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PATENT OFFICE NOTICES

PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-10469; Filed 7-22-71; 8:52 am]

36 F.R. 13694; July 23, 1971

Trademark Rules

[37 CFR Part 2]

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in sec. 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and sec. 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), the Patent Office proposes to amend Title 37, Code of Federal Regulations by revising §§ 2.54, 2.67, 2.87, 2.88 and 2.187.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before December 3, 1971. No oral hearing will be held. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

The proposed revision of § 2.54 would permit the Patent Office to accept substitute drawings in appropriate situations other than those specified in present § 2.54, by deleting the last sentence of present § 2.54.

The proposed revision of § 2.67 is intended to clarify the situations in which an examiner can suspend action on an application.

The proposed revision of § 2.87 and § 2.88 is intended to make clear that both goods and services may be the subject of a single application or certificate of registration in accordance with sec. 30 of the Trademark Act of 1946. Also, a requirement of submitting five specimens for each class would be added to § 2.87.

The proposed revision of § 2.187 would establish a procedure by which the Patent Office could insure that the certificate of registration would issue to the owner of the mark.

The proposed changes are as follows:

1. Revise § 2.54 to read as follows:

§ 2.54 *Informal drawings.*

A drawing not in conformity with §§ 2.51 to 2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before the mark can be published or the application allowed. The necessary corrections will be made by the Patent Office upon applicant's request and at his expense.

2. Revise § 2.67 to read as follows:

§ 2.67 *Suspension of action by the Patent Office.*

Action by the Patent Office may be suspended for a reasonable time for good and sufficient cause. A proceeding pending before the Patent Office or a court which is relevant to the issue of registrability of the applicant's mark, or an application which is the basis for registration under section 44(d) of the Trademark Act pending before a foreign trademark office, will be considered prima facie good and sufficient cause. An applicant's request for a suspension of action must be filed within the response period and may be considered a response. See § 2.62. The first suspension is within the discretion of the Examiner of Trademarks and any subsequent suspension must be approved by the Commissioner.

3. Revise § 2.87 to read as follows:

§ 2.87 *Combined applications.*

An application also may be filed to register the same mark for any or all of the goods and/or services upon or in connection with which the mark is actually used and which fall within a plurality of classes. However, dates of use for each class, five specimens for each class, and a fee equalling the sum of the fees for filing an application in each class are required. A single certificate of registration for the mark may be issued.

4. Revise § 2.88 to read as follows:

§ 2.88 *Applications may be combined.*

(a) When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

(b) The issuance of any original certificate may be suspended upon request of the applicant, for a period not exceeding 6 months, to permit such consolidation.

5. Revise § 2.187 to read as follows:

§ 2.187 *Certificate of registration may issue to assignee.*

The certificate of registration may be issued to the assignee of the applicant provided the assignment is recorded in the Patent Office at least 10 days before the application is allowed, and written notice of the recording of the assignment and the address of the assignee is made of record in the application file by the applicant or assignee.

Dated: September 24, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, Jr.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-14511; Filed 10-1-71; 8:50 am]

Published in 36 F.R. 19315, Oct. 2, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,704,209, Halahan, Lyon and Aronson, PAPER FEEDING MECHANISM; **2,770,458**, same, PAPER FEEDER, **filed** June 9, 1971, D.C., S.D.N.Y., Doc. 71-C-2585, *Halm Instrument Co. v. Brandtjen & Kluge, Inc.*

2,770,458. (See 2,704,209.)

3,179,026, A. F. Crone, SEALING ELEMENT FOR PAVEMENT GROOVES; **3,276,336**, same, SEALING DEVICES FOR GROOVES BETWEEN STRUCTURAL BLOCKS; **3,482,292**, A. Frohlich, ENDSTOP MEMBERS FOR SLIDE FASTENERS, **filed** Mar. 26, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-136, *Acme Highway Products Corp. v. Watson-Bowman Associates, Inc., Stewart C. Watson and Thomas C. Bowman.*

3,276,336. (See 3,179,026.)

3,482,292. (See 3,179,026.)

3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, **filed** Apr. 28, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1010, *The Lase Co. v. Introl Corp.*

3,526,326, J. A. Castaldi, STORAGE RETRIEVAL APPARATUS WITH POSITIONAL CONTROL MEANS, **filed** June 4, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-680, *Supreme Equipment & Systems Corp. v. Atomic Development Corp. et al.*

3,528,542, J. H. Miller, Battery Containers, **filed** Apr. 23, 1971, D.C., W.D. Wis. (Madison), Doc. 71-C-123, *Gold Inc. v. Globe-Union Inc. and Sears, Roebuck and Co.*

3,528,560, R. C. Price, SAMPLE DISPLAY FIXTURE, **filed** June 10, 1971, D.C. Colo. (Denver), Doc. C-3189, *Raymond C. Price and Control Sciences, Inc. v. Lake Sales Supply R.M., Inc.*

3,538,389, Levesque and Harper, SUB-ELEMENT FOR ELECTRONIC CIRCUIT BOARD, **filed** May 4, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1086-CC, *Circuit-Stik, Inc. (California corporation) v. International Rectifier Corp. (California corporation).*

3,540,612, W. T. Brady, BOTTLE CAP AND BOTTLE COMBINATION, **filed** May 18, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1209, *Bio Dynamics, Inc. v. Serosonic Laboratories and Oms Surgical Supply.*

3,553,762, Padgett and Padgett, CONTAINER, **filed** Apr. 6, 1971, D.C., E.D. Va. (Alexandria), Doc. C/A 123-71-A, *Raymond D. Padgett, Jr. and George R. Padgett v. Metropolitan Paint Stores, Inc.*

3,556,391, D. W. Kosterka, PHONOGRAPH RECORD ALBUM PACKAGE, **filed** Apr. 5, 1971, D.C., S.D.N.Y., Doc. 71 C-1521, *Album Graphics, Inc. v. Buddah Records, Inc.*

3,561,146, R. H. Dembar, PHOTOGRAPH DISPLAY APPARATUS, **filed** May 6, 1971, D.C., E.D. Mich. (Detroit), Doc. 36460, *Graphicana Corp. v. Baia Corp.*

3,567,080, M. S. Johnston, TAPPING DEVICE FOR BEER KEGS AND THE LIKE, **filed** Apr. 12, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71-C-150, *Draft Systems, Inc. v. The Perlick Company, Inc.*

3,572,245, B. W. Grayson, APPARATUS AND METHOD OF CONDUCTING STRING SHOT OPERATIONS, **filed** May 5, 1971, D.C., E.D. Calif. (Fresno), Doc. F-525-C, *Bobby W. Grayson v. Ward W. Fisher, Velma L. Fisher, Fisher Oil Well Service.*

3,581,067, Willits and Mohan, PITCH MATCHING DETECTING AND COUNTING SYSTEM, **filed** June 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1335, *Spartanics Ltd. v. Dyntics Engineering Corp.*

Re. 25,613, C. L. Truesdale, DRAPERY HEADING SEAM, **filed** May 6, 1971, D.C., E.D. Va. (Richmond), Doc. 307-71-R, *Plastic Products Inc. v. Colonial Plastics, Inc.*

D. 203,491, G. H. Jones, WALL-MOUNTED SPHYGMOMANOMETER, **filed** May 20, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-608, *Propper Manufacturing Co., Inc. v. W. A. Baum Co., Inc.*

D. 215,707, G. L. Baldwin, DRIVE-IN RESTAURANT, **filed** May 25, 1971, D.C. Ariz. (Phoenix), Doc. C-71-291 PHX, *Snak-Bar International, Inc. v. Systems Bldg. Industries, Inc. et al.*

D. 217,082, H. Koenig, PANTS, **filed** Oct. 9, 1970, D.C., S.D. Fla. (Miami), Doc. 70-1485-C-LK, *Harold Koenig v. Proper Industries, Inc., doing business as Terry Sue Casuals.* Upon stipulation of the parties, it is ordered and adjudged: that U.S. Letters Patent No. 217,082 were legally issued to plaintiff, and plaintiff still is the owner of patent; that a perpetual injunction be issued enjoining defendant; and the counterclaim of defendant be dismissed with prejudice, June 9, 1971.

D. 219,776, E. C. Jacobs, DISPENSER FOR TOILET TANKS, **filed** May 26, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-1019, *Robert F. Castronovo et al. v. Edward Carl Jacobs.*

Certificates of Correction for the Week of Nov. 2, 1971

Re. 27,093	3,557,329	3,575,890	3,585,179
Re. 27,132	3,557,630	3,576,815	3,585,362
D. 213,586	3,558,515	3,576,874	3,585,957
D. 220,212	3,558,551	3,576,900	3,586,138
D. 221,278	3,559,449	3,577,032	3,586,318
3,350,348	3,561,950	3,577,358	3,586,347
3,383,234	3,563,878	3,577,992	3,586,447
3,396,009	3,563,883	3,578,190	3,586,543
3,447,956	3,564,306	3,578,217	3,586,629
3,491,291	3,565,088	3,578,728	3,586,655
3,499,783	3,565,423	3,578,765	3,586,855
3,501,096	3,565,888	3,578,769	3,586,890
3,504,008	3,566,816	3,578,990	3,586,999
3,512,675	3,567,725	3,579,269	3,587,002
3,523,932	3,568,159	3,579,510	3,587,737
3,528,862	3,568,240	3,580,272	3,588,062
3,534,524	3,568,265	3,580,649	3,588,563
3,535,138	3,570,747	3,580,697	3,588,582
3,542,274	3,571,543	3,580,953	3,588,589
3,543,009	3,571,665	3,581,555	3,588,864
3,547,353	3,571,786	3,581,782	3,589,550
3,549,309	3,572,116	3,582,661	3,589,552
3,551,519	3,572,630	3,582,853	3,589,653
3,551,992	3,573,066	3,583,141	3,589,762
3,552,252	3,573,299	3,583,441	3,589,871
3,552,624	3,573,322	3,583,468	3,591,247
3,553,069	3,573,421	3,583,996	3,591,531
3,555,541	3,573,618	3,584,042	3,591,559
3,556,148	3,574,031	3,584,215	3,591,570
3,556,226	3,574,512	3,584,291	3,591,596
3,557,002	3,575,237	3,584,584	3,591,814
3,557,252	3,575,758	3,585,024	

Dedication

3,519,570.—*Charles Bruce McCarty,* Cincinnati, Ohio. ENZYME-CONTAINING DETERGENT COMPOSITIONS AND A PROCESS FOR CONGLUTINATION OF ENZYMES AND DETERGENT COMPOSITIONS. Patent Dated July 7, 1970. Dedication filed June 17, 1971, by the assignee, *The Procter & Gamble Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,534,344.—*George R. Santana,* Saratoga, Calif. METHOD AND APPARATUS FOR RECORDING AND DETECTING INFORMATION. Patent dated Oct. 13, 1970. Disclaimer filed Aug. 9, 1971, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 6, 7, 8, 10, 11 and 12 of said patent.

3,544,013.—*Daniel Dorfman,* Woodbury, N.Y. SOIL TREATING APPARATUS. Patent dated Dec. 1, 1970. Disclaimer filed Aug. 6, 1971, by the assignee, *Lawn-A-Mat Chemical & Equipment Corporation.*

Hereby enters this disclaimer to all of the claims of said patent.

3,592,745.—*Wilbur G. Hespenheide,* Westlake Village, Calif. PROCESS FOR MANUFACTURING A MAGNETIC MEMORY. Patent dated July 13, 1971. Disclaimer filed Aug. 9, 1971, by the assignee, *Burroughs Corporation.*

Hereby disclaims all that portion of the term of said patent which extends beyond July 6, 1982.

3,592,746.—*Wilbur G. Hespenheide,* Webster, N.Y. ELECTROPLATING METHOD OF FABRICATING PLATED WIRE MEMORY UNITS. Patent dated July 13, 1971. Disclaimer filed Aug. 9, 1971, by the assignee *Burroughs Corporation.*

Hereby disclaims all that portion of the term of said patent which extends beyond July 6, 1982.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 19, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-08-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-24-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	2-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-24-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-06-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-25-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-28-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	7-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-10-70

Expiration of patents: The patents within the range of numbers indicated below expire during November 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

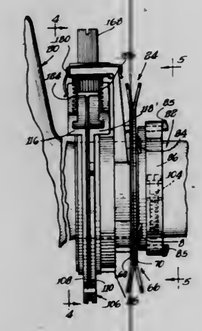
Patents..... Numbers 2,692,987 to 2,695,997, inclusive
Plant Patents..... Numbers 1,312 to 1,327, inclusive

REISSUES

NOVEMBER 2, 1971

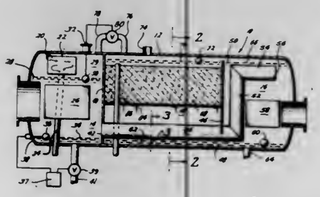
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,209
BLUE LATERAL AND PURITY MAGNET ASSEMBLY
Robert R. Melone, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Original No. 3,332,046, dated July 18, 1967, Ser. No. 457,084, May 19, 1965. Application for reissue Nov. 10, 1969, Ser. No. 875,488
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **16 Claims**



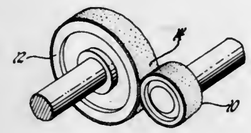
A magnetic correction device for use with cathode ray tubes wherein a pair of axially contiguous magnetic rings having magnetic pole means thereon are arranged to move in a limited arcuate path relative to one another by a common operator. The device may further include a second pair of magnetic rings which are axially spaced from the first pair of magnetic rings and are mounted relative to a supporting base by a resilient locking ring.

27,210
METHOD AND APPARATUS FOR THE TREATMENT OF LIQUIDS
Robert E. McMinn and Clifford C. Dougherty, Jr., Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Original No. 3,396,512, dated Aug. 13, 1968, Ser. No. 581,367, Sept. 22, 1966. Application for reissue Jan. 12, 1970, Ser. No. 2,072
Int. Cl. B01d *53/14*
U.S. Cl. 55—170 **7 Claims**



The present invention is directed to a method and apparatus for the treatment of liquids, and more particularly, to method and apparatus used in the separation of liquids of differing densities and of gases also contained therein. The present invention utilizes a vessel having compartments containing heating means, filtration means, and conveying means, all designed to continue the coalescence and separation. To this end, conveying ducts having a large cross-sectional area are used, which ducts terminate below maintained liquid levels.

27,211
FRICTION DRIVE FLUID
Fred G. Rounds, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original No. 3,394,603, dated July 30, 1968, Ser. No. 567,494, July 25, 1966. Application for reissue Oct. 15, 1969, Ser. No. 871,490
Int. Cl. F16h *15/08*
U.S. Cl. 74—200 **4 Claims**

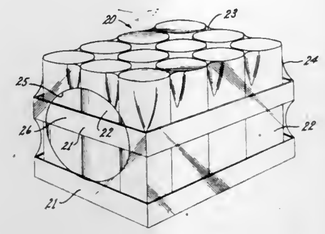


A friction drive transmission such as a toric transmission having two axially aligned opposing power transmitting race members and at least one roller member disposed between the races in tractive rolling contact therewith, and a fluid film between the races and the roller at the points of contact, which fluid is the hydrogenated polymeric hydrocarbon reaction product of at least one of the olefinic hydrocarbon monomers taken from the group consisting of propene, butene and pentene, the polymer having a molecular weight of 300 to 500.

27,212
PLASTIC FILM ENCASED PACKAGE CONSTRUCTIONS
Marion L. Brown, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Original No. 3,331,503, dated July 18, 1967, Ser. No. 573,749, Aug. 2, 1966, which is a continuation of Ser. No. 366,424, May 11, 1964. Application for reissue Mar. 3, 1970, Ser. No. 16,271
Int. Cl. B65d *65/16, 71/00, 85/62*
U.S. Cl. 206—65 S **14 Claims**

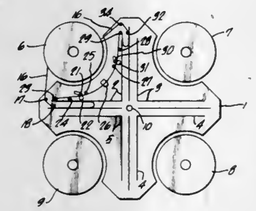
[This disclosure relates to a package construction means having an open ended receptacle means filled with product means, such as product container means or the like, disposed in a heat shrunk film-like tubular member whereby such heat shrunk film-like tubular member tightly compacts the product means and receptacle means together so that the resulting package construction means can be readily shipped and stored without requiring a conventional outer surrounding corrugated cardboard container, the receptacle means at the bottom of such package construction means providing support at the bottom four corners of the heat shrunk tubular film-like member and fully protecting the product means from impact at such four corners.]

Package constructions having open ended receptacle means filled with product containers arranged in rows and disposed in a heat shrunk film-like member holding the receptacle means and product containers tightly together. A plurality of open-ended receptacle means, each filled with rows of containers, can be disposed in stacked relation within the heat shrunk tubular film-like member. These package constructions can be readily shipped and



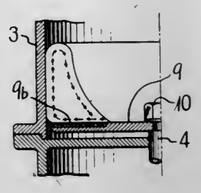
stored without requiring a conventional outer surrounding corrugated cardboard container, the receptacle means at the bottom of the package constructions providing support at the bottom four corners of the heat shrunk tubular film-like member and fully protecting the product containers from impact at the four corners.

27,213
MULTIPLE STATION TAPE HANDLING APPARATUS
Harry F. Rayfield, Bradbury, and Magne Jarle Kjos, Agoura, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Original No. 3,443,766, dated May 13, 1969, Ser. No. 610,257, Jan. 19, 1967. Application for reissue Feb. 26, 1970, Ser. No. 14,688
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—180 **33 Claims**



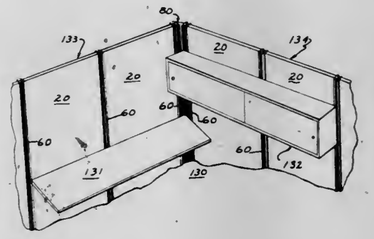
Improvements in multiple station tape handling apparatus, particularly of the type involving coaxially arranged reels. A criterion is involved for locating and orienting cylindrical tape guiding elements on a work surface so as to guide tape from reels canted at an angle with respect to the work surface without exerting axial forces on the tape. In addition, a supporting structure is shock-mounted to a fixed frame and comprises a rigid, tubular hub from which rigid beams extend radially. Reel drive assemblies are mounted on the beams and a deck plate, along which the tape is transported, is mounted on the end of the hub. The drive assembly comprises coaxially arranged shafts that are supported by a novel bearing arrangement.

27,214
METHOD AND APPARATUS FOR MAKING SPHERICAL GRANULES
Nobuo Nakahara, Matsubara, Japan, assignor to Fuji Denki Kogyo Kabushiki Kaisha, Gamaucho, Jotoku, Osaka, Japan
Original No. 3,277,520, dated Oct. 11, 1966, Ser. No. 375,904, June 17, 1964. Application for reissue May 31, 1968, Ser. No. 741,834
Int. Cl. B29c *23/00*
U.S. Cl. 264—15 **8 Claims**



A method of and apparatus for making spherical granules from extrusions of a wet mixture of powdered solid material by introducing such extrusions onto a rotating circular plate having an uneven surface. Such uneven surface propels the extrusions outwardly by centrifugal force against a stationary wall, the extrusions then falling back toward the center of the rotating plate. Such repetitive action is effective to divide the extrusions into short lengths and transform such lengths into substantially uniform spherical granules.

27,215
SPACE DIVIDER SYSTEM
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Original No. 3,425,171, dated Feb. 4, 1969, Ser. No. 526,146, Feb. 9, 1966. Application for reissue Dec. 8, 1969, Ser. No. 883,366
Int. Cl. A47b *5/00;* **E04b** *2/40, 2/72*
U.S. Cl. 52—36 **19 Claims**



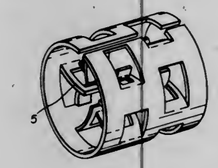
A combination locking joint and accessory hanging structure for utilization in a free-standing space divider system wherein adjacent panels are affixed together by means of an elongated spline having a plurality of pear-shaped apertures therein. A plurality of wedging members extend from the facing edges of the panels, and these wedging members are received by the apertures in the spline. A bearing member is provided across the top of the panels and the spline is shifted upwardly with respect thereto by means of a threaded rod affixed to the spline and bearing against the bearing member. The joint is provided with converging flanges at either side thereof which, in conjunction with the spline, form an accessory anchoring channel adapted to receive wall-hung accessory supporting clips. It is understood that this abstract is not to be utilized to limit the scope of this disclosure.

27,216
EXPANDABLE LINK
Herbert George Empson, 2027 Lynwood Terrace, San Jose, Calif. 95128
Original No. 3,298,173, dated Jan. 17, 1967, Ser. No. 388,896, Aug. 11, 1964, which is a continuation of abandoned Ser. No. 802,283, Jan. 13, 1969. Application for reissue Mar. 26, 1970, Ser. No. 20,476
Int. Cl. F16g *13/24*
U.S. Cl. 59—78 **5 Claims**



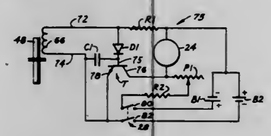
A shock absorbing link for use in tie-down means for cargo in transit, wherein an endless chain is embedded in a resilient body member of elongated configuration.

27,217
[PALL] PACKING RING
John S. Eckert, Silver Lake, Ohio, assignor to The United States Stoneware Company, Tallmadge, Ohio
Original No. 3,266,787, dated Aug. 16, 1966, Ser. No. 177,577, Mar. 5, 1962. Application for reissue June 28, 1967, Ser. No. 653,595
Int. Cl. B01f *3/04*
U.S. Cl. 261—94 **5 Claims**



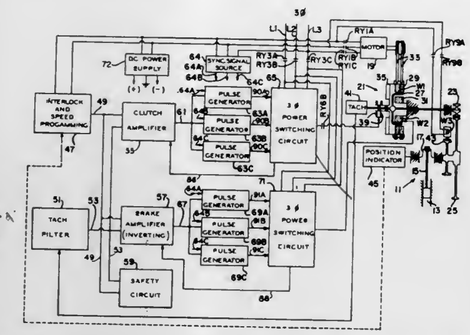
A packing ring having a peripheral wall defining an open space, a flap cut from the wall and bent inwardly into the open space and a tongue cut from the flap and bent away therefrom but contained within the wall.

27,218
VIBRATION DETECTION GAUGE
Thomas E. Bjorn, Northbrook, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Original No. 3,321,960, dated May 30, 1967, Ser. No. 381,665, July 10, 1964. Application for reissue May 23, 1968, Ser. No. 741,829
Int. Cl. G01m *1/22;* **G01h** *1/04*
U.S. Cl. 73—71.4 **9 Claims**



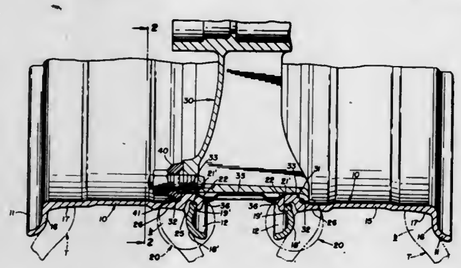
The disclosure of this application relates to apparatus for detecting wheel unbalance and includes a vibratory element for responding to vibrations induced by the wheel unbalance. A magnet carried by the element controls a transistorized circuit for indicating the degree of unbalance. A pneumatic damping device is provided for preventing excessive amplitudes in the movement of the vibratory element and magnet.

27,219
METHOD OF OPERATING A PRESS OVER A 4 TO 1 RANGE OF STROKING RATES
Theodore R. La Vallee, Ferndale, Mich., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Original No. 3,450,912, dated June 17, 1969, Ser. No. 654,166, July 18, 1967. Application for reissue July 13, 1970, Ser. No. 54,672
Int. Cl. H02k *49/04*
U.S. Cl. 310—95 **6 Claims**



A method for operating a press over a wide range of speeds or stroking rates from a flywheel which is rotated at substantially constant speed so that substantially constant energy is available per press stroke. The press is coupled to the flywheel through a coupling which includes an eddy current clutch and an eddy current brake and the clutch and the brake are energized under tachometer feedback control to maintain the press speed at a preselected level. In the apparatus disclosed for practicing the method, the voltages applied to the clutch and brake are varied as inverse functions of the respective current level thereby to force or speed the response of the coupling. Further, safety circuit means are provided for deenergizing the coupling and for applying a mechanical brake if the actual speed of the press deviates from the desired speed by more than a preselected amount for more than a predetermined time.

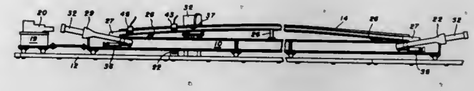
27,220
TIRE RIMS
William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio
Original No. 3,421,797, dated Jan. 14, 1969, Ser. No. 570,269, Aug. 4, 1966. Application for reissue Nov. 19, 1969, Ser. No. 871,506
Int. Cl. B60b *25/06*
U.S. Cl. 301—12 **1 Claim**



A rim for mounting a tire. The rim has a fixed and a removable side flange. The base of the removable side flange is received in a cove on the rim edge and mechanically seats the tire bead. The tire bead is pneumatically sealed against a tapered surface adjacent the cove.

27,221
METHOD FOR HEAT TREATING RAILS
Fernand J. Dewez, Jr., Monroeville, and Joseph M. Wandrisco, Lower Burrell, Pa., assignors to United States Steel Corporation
Original No. 3,124,492, dated Mar. 10, 1964, Ser. No. 230,119, Oct. 12, 1962. Application for reissue Aug. 6, 1969, Ser. No. 853,565
Int. Cl. C21d *1/06, 9/04*
U.S. Cl. 148—131 **5 Claims**

A method of heat treating a railroad rail so as not to distort its substantially straight condition whereby the rail is first elastically bent in the plane of the web and so maintained so that the head thereof is convex. The head portion is then heated progressively along its length sufficient to austenitize the head portion. This is followed by a progressive mild quench sufficient to transform the austenite to pearlite, and then self tempering by absorption of internal heat for a predetermined length of time.



Thereafter the head is quenched to ambient temperatures whereupon the rail is released from its elastically bent position.

PATENTS

GRANTED NOVEMBER 2, 1971

GENERAL AND MECHANICAL

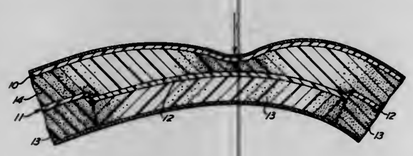
3,616,463
SHOCK ABSORBING HELMET

Michael Theodore, Pittsburgh, and James J. Summers, Bethel Park, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed July 6, 1970, Ser. No. 52,212

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R 9 Claims



A helmet has spaced inner and outer shells of rigid material for covering the head, an outer layer of energy absorbing material between the two shells, an inner layer of energy absorbing material adjoining the inner surface of the inner shell. One of the shells and the energy absorbing layer adjoining its inner surface are subdivided into a plurality of adjoining segments, whereby an impact against the helmet will be distributed throughout the area of the shell segment and energy absorbing segment receiving the impact.

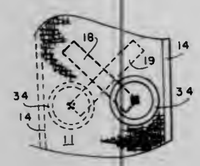
3,616,464
PROTECTIVE GARMENT FOR CHILDREN

Sylvia K. Whitten, 1020 Aberdeen Ave., Livermore, Calif. 94550

Filed Sept. 8, 1969, Ser. No. 855,854

Int. Cl. A41d *13/04*

U.S. Cl. 2—48 6 Claims



The present garment for protecting children's clothing is made of relatively heavy, waterproof fabric, covering the back as well as the front of the child, and can be opened and closed in front by means of Velcro® type fasteners. The heavy material and the positioning and nature of fastener employed make it possible for small children to put on and close subject garment without help from adults.

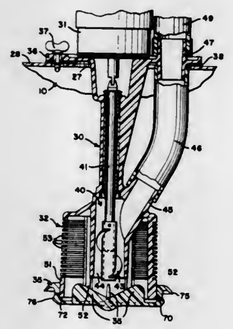
3,616,465
SEWAGE SYSTEM

Robert C. Helke, Dayton, Charles E. Van Gilder, Kettering, and Merlin S. Miller, Bradford, Ohio, assignors to Koehler-Dayton, Inc., Dayton, Ohio

Original application Dec. 9, 1968, Ser. No. 782,240, now Patent No. 3,545,011, dated Dec. 8, 1970. Divided and this application June 4, 1970, Ser. No. 43,445

Int. Cl. E03d *1/00*

U.S. Cl. 4—1 5 Claims



A self-contained, recirculating toilet includes a main holding tank having a drain opening in the bottom thereof and an access opening in the top of the tank in substantially vertically spaced relation to the drain opening. A unitary pump, filter, and drain valve assembly is inserted through the access opening with said drain valve sealing the drain opening when the assembly is locked in place. The drain valve seal forms part of the filter and includes an outwardly extending lip which engages the surface of the tank to form one seal, and a circumferentially extending ridge axially spaced from the ridge which engages the inside of the drain opening to form a second seal.

3,616,466
ADJUSTABLE SHOWER HEAD

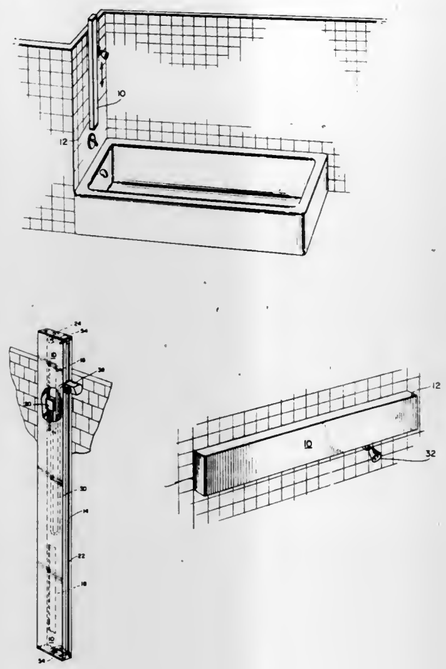
Oliver Thurston Davis, Rte. 1, Dunlap, Tenn. 37237

Filed Feb. 26, 1970, Ser. No. 14,371

Int. Cl. A44k *3/22;* F24h *1/06*

U.S. Cl. 4—145 7 Claims

A shower head vertically adjustable as to height within a range for use by children and tall adults which includes an elongated casing having an elongated slot for the projecting shower head in its sidewall which faces the rear of the shower stall so that the casing as viewed from the front of the shower stall presents an unbroken attractive appearance; extendable and retractable tape means movable with the shower head to cover portions of the elongated slot which would otherwise be exposed; and friction clutch means within the casing to hold the shower head in selected adjusted position.



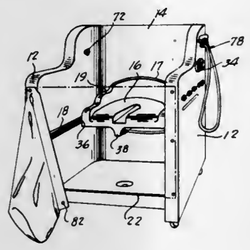
3,616,467
BATHING DEVICE

John I. Drain, 906 Mulberry St., Loudon, Tenn. 37774

Filed Jan. 30, 1970, Ser. No. 7,035

Int. Cl. A47k *3/08*

U.S. Cl. 4—146 9 Claims



A mobile bathing device for invalid use comprising a wheeled body with a supporting chair therein, with track means upon which said chair is carried and hydraulic means for moving said horizontally chair in a forward direction in said body and in a rearward direction in said body, with mixing valve means therein for regulating the temperature of water to be used by a person utilizing said device, with a water manifold disposed therein for supplying water to shoulder spray means, shampoo spray means, and seat spray means, said device having drain means in the bottom thereof for discharging water therefrom.

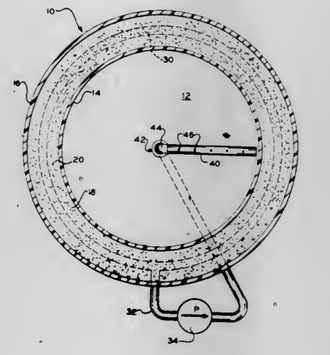
3,616,468
SWIMMING POOL INCLUDING INTEGRAL FILTER

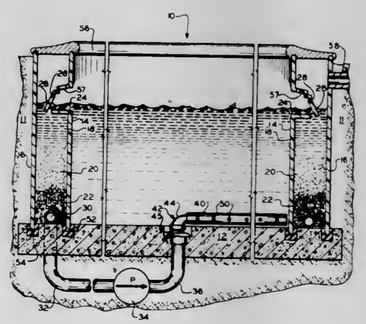
John G. Takacs, Oakland Drive, Whitehouse Station, N.J. 08889

Filed Mar. 26, 1970, Ser. No. 22,865

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.15 16 Claims





A swimming pool with flexible spaced inner and outer peripheral walls, the space between which is employed as a filter, thereby providing a filter of extremely large capacity. The filter material is preferably of the sand-gravel type, fluent solid material of this type serving to support and reinforce the flexible inner and outer walls. As an optional feature, the filtered water is returned to the main pool volume through a radial tube which is rotatable about a vertical axis at the pool center adjacent the pool bottom. The reaction force of the water discharging sideways from the tube causes the tube to continuously sweep around the pool bottom to prevent debris from collecting on the pool bottom.

3,616,469
COLLAPSIBLE BED RAIL

Stanley G. Injeski, Milwaukee, Wis., assignor to Worldsbest Industries, Inc., Sturgis, Mich.

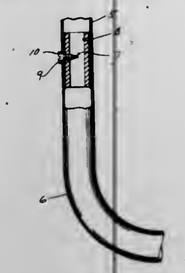
Filed May 7, 1969, Ser. No. 822,485

Int. Cl. A47c *21/00, 19/12;* A47f *5/00*

U.S. Cl. 5—331 2 Claims

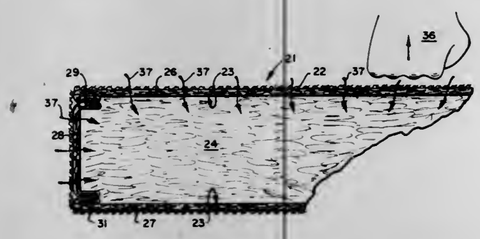
A collapsible bed rail for use with conventional mattresses and springs which has anchoring arms that extend under a mattress, to brace the rail in position, that are pivotally attached to the guard portion of the rail with a

connection that includes a slot and headed stop which both limits the degree of pivot and retains the parts in assembly. There is further shown a guard portion that extends



above a mattress which is subdivided into halves that are hinged to one another so that the bed rail can be folded to one-half its full length.

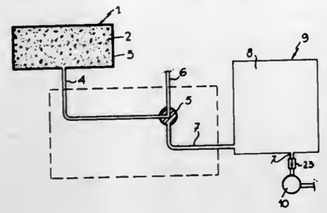
3,616,470
RESILIENT VENTILATED PILLOW AND CUSHION ASSEMBLIES
Robert Steven Young, 185 S. King St., and Samuel Young, 14 Crest Road, both of Danbury, Conn. 06810
Filed Dec. 8, 1969, Ser. No. 882,926
Int. Cl. A47g *9/00*
U.S. Cl. 5—337 **1 Claim**



Porous resilient pillow assemblies characterized by a resilient compressible pillow insert adapted for insertion within an outer casing or cover and characterized by a porous envelope of felted resilient fiber material formed of interlocked polymer fibers in a layer of substantial thickness, serving to enclose and contain a resilient, depressible body of porous filler and forming therewith a readily depressed resilient body of pillow or cushion-shape combining resilient depressibility with springy resilient return capability enhanced by the highly porous nature of both the envelope and the enclosed filler material, allowing facile entrance and exit of the surrounding air through the envelope into the interior of the pillow or cushion.

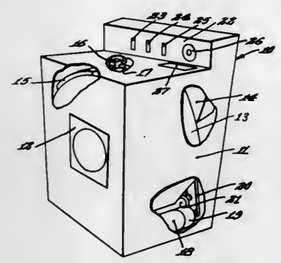
3,616,471
CUSHION
Francois Marie Joseph Braun, Kraainem, Belgium, assignor to Societe Anonyme belge d'Exploitation de la Navigation aerienne (SABENA), Brussels, Belgium
Filed Apr. 28, 1969, Ser. No. 819,867
Claims priority, application Belgium, May 7, 1968, 58,084
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 **6 Claims**

A cushion for a seat, a couch or a mattress comprising in combination (1) a flexible, tight non-subdivided envelope, which is substantially compressible in the direction of the thickness of the cushion, (2) connecting means for selectively connecting the interior of said envelope with an ambient environment or with vacuum means in order to regulate the internal pressure in the envelope, (3) closing means for closing off the interior of said envelope in order to maintain a determined pressure in the interior of the envelope, and (4) a porous mass which is elastically compressible and is contained in the envelope, so as to



be compressed when the interior of the envelope is connected to the vacuum means by said connecting means and so as to be inflated when the interior of the envelope is connected to the ambient environment by said connecting means.

3,616,472
COMBINATION WASHER-DRYER CONTROL CIRCUIT
William B. Ripsco, Coloma, and Marvin G. Steffey, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 3, 1970, Ser. No. 15,993
Int. Cl. D06f *33/02*
U.S. Cl. 8—159 **7 Claims**

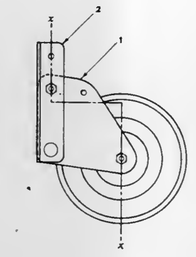


A control circuit for a combination washer-dryer laundry appliance which includes the capability of a pre-soak cycle prior to the commencement of the main washing cycle and an anti-wrinkle cycle following the normal drying operation, the various cycles of the appliance being under the control of a main timer means, with a pulser means being provided in conjunction therewith to intermittently actuate the main timer and drive means prior to the initiation of the washing cycle so that articles can be intermittently agitated in a pre-soak interval, with the pulser means also being capable of intermittently actuating the main timer and drive means at the conclusion of the normal drying cycle to provide the anti-wrinkle fluffing period.

3,616,473
DYEING-ASSISTANTS FOR SYNTHETIC FIBERS
James M. Leach, Greensboro, N.C., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.
No Drawing. Filed Jan. 17, 1968, Ser. No. 698,391
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 **3 Claims**

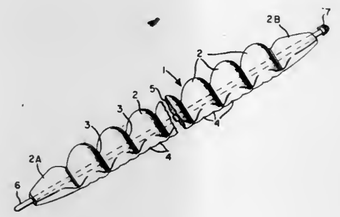
In the dyeing of synthetic fibers, the use of various bis-(acetoxy- and propionoxyalkyl)acetamides, and substituted and unsubstituted N,N-dialkylbenzamides and N,N,N′,N′-tetraalkylphthalamides, as dyeing assistants.

3,616,474
RETRACTABLE BOAT LAUNCHING WHEEL
Cyril Martin Lindblad, 1533 East Ave., Napa, Calif. 94558
Filed Nov. 7, 1969, Ser. No. 870,217
Int. Cl. B63c
U.S. Cl. 9—1 T **1 Claim**



A retractable launching wheel having two aluminum angle beams secured to the transom of the boat. Two plates with a wheel thereon are pivotally attached to the beams and movable from a retracted to an extended position.

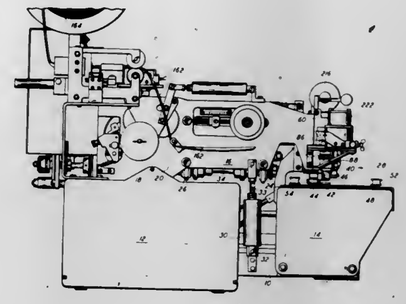
3,616,475
FOAMED POLYLACTAM BUOYANT BELT
Edward F. Lewis, Wycliffe, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 14, 1969, Ser. No. 850,114
Int. Cl. B63c *9/10*
U.S. Cl. 9—340 **7 Claims**



A buoyant belt comprising a continuous elongated body of foamed polylactam, said body having a plurality of segments that are attached to one another by integral, flexible, hinge portions, and means for holding the belt around the body of the wearer.

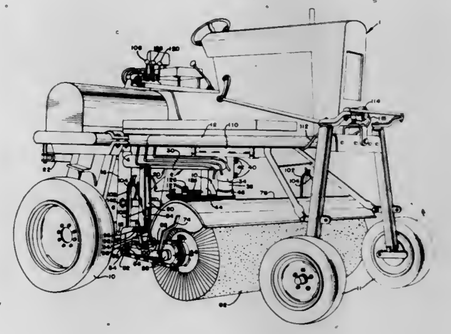
3,616,476
RIB APPLYING MACHINE WITH MOVABLE PLOUGH
Horst M. Leonhardt, Boston, Mass., assignor to Jacob S. Kamborian, Jr., Lincoln, Mass.
Filed July 31, 1970, Ser. No. 59,891
Int. Cl. A43d *43/06*
U.S. Cl. 12—20 **13 Claims**

A machine for applying a flange of a rib, having a fold extending away from the flange, along the periphery of an insole. The machine incorporates a plough that is engageable with the fold as the rib exits from a mechanism that applies the rib to the insole. The plough is movably mounted between a position wherein the plough can intersect and move the fold away from the flange and a



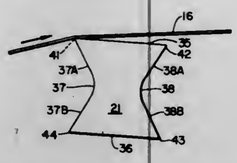
position wherein the plough is out of intersecting relationship with respect to the fold.

3,616,477
POWER DRIVEN ROAD SWEEPER WITH LATERALLY AND ANGULARLY ADJUSTABLE BRUSH
Walter F. Larson, % W. Larson, Inc., P.O. Box 1967, Plainview, Tex. 79072
Continuation-in-part of application Ser. No. 638,831, May 16, 1967. This application May 2, 1969, Ser. No. 827,466
Int. Cl. E01h *1/05*
U.S. Cl. 15—82 **14 Claims**



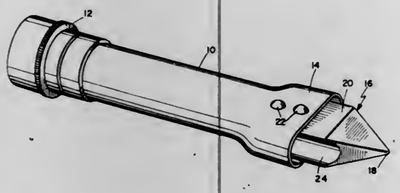
A power driven mobile sweeper, having a high frame and a relatively short wheel base, with a transversely movable support frame thereunder. A rotary brush mounting frame mounted on a vertical axis on the transversely movable support frame therebelow and below the mobile sweeper. The transversely movable support frame is movable transversely of the tractor by fluid actuated means, such as a fluid cylinder, and the brush mounting frame is movable arcuately, with respect to the transversely movable support frame, by fluid actuated means, such as a fluid cylinder. This enables the rotary brush mounting frame to be moved from side to side of the support frame and extend outwardly on either side of the mobile sweeper at different angles. The brush is driven by a prime mover, such as a fluid powered motor connected thereto in geared relation.

3,616,478
APPARATUS FOR CLEANING MAGNETIC RECORDING TAPE
William B. Martz, Manchester, and Leonard L. Curado, Marshfield Hills, Mass., assignors to Computer-Link Corporation, Burlington, Mass.
Filed July 17, 1970, Ser. No. 55,841
Int. Cl. G11b *5/00*
U.S. Cl. 15—93 **4 Claims**



In the tape cleaning apparatus disclosed herein, magnetic tape is drawn across a cutting edge on a ceramic blade so as to slice any adhering foreign particles from the coated face of the tape. The blade is constructed in elongate form and has a generally hourglass-shaped cross-section providing four parallel cutting edges, each edge having an included angle of about sixty degrees. Further, the path of the tape is arranged so that it approaches the cutting edge at an angle which produced a cutting action rather than a scraping action.

3,616,479
PLUMBER'S NOZZLE
George K. De Hart, Imperial Beach, Calif., assignor to Floyd E. Minor, Pacific Beach, and Douglas A. McGrew, Chula Vista, Calif., fractional part interest to each
Filed July 24, 1970, Ser. No. 57,987
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 **3 Claims**



A clean-out tool for unblocking plumbing and designed for use by plumbers and householders. Being attached to the end of a flexible hose it forms an extension thereof and the flushing action is localized as two jets of water at opposite sides of a uniquely shaped chisel attached in the end of the hose and cooperating with the hose to define a fluid outlet in two parts and of reduced size to assure such jet action.

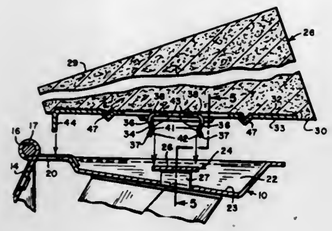
3,616,480
FLAGGED BRISTLE
John Feroce, Cincinnati, and Edward D. Zelinski, Urbana, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Nov. 19, 1968, Ser. No. 777,069
Int. Cl. A46b *1/00*
U.S. Cl. 15—159 A **5 Claims**

The invention is concerned with new flaggable bristle formations useful in the manufacture of brooms. The formulations are comprised of a mixture of two or more incompatible thermoplastic resins from the following groups:

(1) Propylene copolymers, ethylene copolymers, polyallomer block copolymers, and mixtures of these.

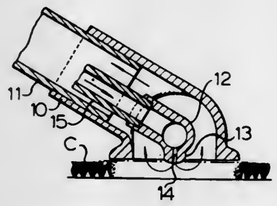
(2) Polystyrene, acrylonitrile-butadiene styrene terpolymers and mixtures of these.

3,616,481
REPLACEABLE SPONGE MOP HEAD
Cornelis van Spronsen, Berea, Ohio, assignor to Nylonge Corporation, Cuyahoga County, Ohio
Filed Feb. 18, 1970, Ser. No. 12,272
Int. Cl. A47l *13/16*
U.S. Cl. 15—244 R **8 Claims**



A universal replaceable sponge mop head includes a sponge block having a rectangular backing plate cemented to a face thereof. The backing plate has integrally formed therewith a pair of longitudinally spaced fasteners, each including a pair of similar transversely spaced apertured resilient legs, provided with longitudinal ridges directed toward each other. Locating tabs project from the backing plate rear edge and the side edges are medially inwardly offset for the reception of a tool. Longitudinally spaced fastener receiving apertures are medially formed in the backing plate.

3,616,482
SUCTION OPERATED WASHING AND CLEANING APPARATUS
Wladyslaw Brycki, 19 Mayfield Road, Liverpool 19, England
Filed Nov. 13, 1967, Ser. No. 683,097
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **2 Claims**



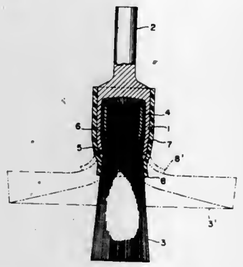
The present suction cleaning device is a part of or for attachment to a source of suction such as a vacuum cleaning machine and includes a nozzle with a liquid supply and a suction tube opening in said nozzle and a container connected to said suction tube and the source suction for removing and collecting used liquid from the air passing through said container from said nozzle.

3,616,483
TWISTER TYPE SELF-WRINGING MOP
Jean Mantelet, Paris, France, assignor to Moulinex S.A., Bagnolet, France
Filed Apr. 13, 1970, Ser. No. 27,633
Claims priority, application France, May 8, 1969, 6914803; Feb. 13, 1970, 7005113
Int. Cl. A47l *13/142*
U.S. Cl. 15—120 A **20 Claims**

A mop for cleaning floors and windows comprises an absorbent pad carried by a handle provided with mechanical means for expressing liquid from the pad. The pad comprises a sponge sheathed in a wrapper such as sackcloth and has secured at its opposite ends hubs one of which is rotatable relative to the other through the medium of a rod which is rotated by mechanical means associated with the handle. The second of the hubs may be partially rotatable through a predetermined angle. The relative rotation of the hubs causes twisting of the pad in a manner which simulates hand wringing.



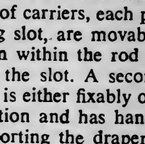
3,616,484
ROTARY BRUSH WITH COLLAR
Vernon K. Charvat, Bay Village, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio
Filed Mar. 9, 1970, Ser. No. 17,435
Int. Cl. A46b *3/10*
U.S. Cl. 15—180 **6 Claims**



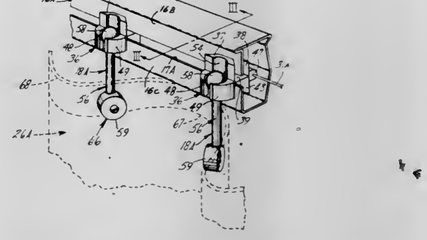
A power driven rotary end brush having a unitary tubular collar mounted on the bristle holding element and encircling the bundle of bristles in the region where the latter emerge from the holder, such collar being resiliently deformable and pre-stressed to exert an active controlled pressure grip within a predetermined pressure range upon such bundle of bristles in both static and dynamic conditions of the brush.

3,616,485
DETACHABLE WINDSHIELD WIPER BLADE UNIT
William J. Quinlan and Lawrence L. Huver, Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.
Continuation-in-part of application Ser. No. 725,325, Apr. 30, 1968. This application Dec. 10, 1969, Ser. No. 883,928
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.42 **10 Claims**

A flexible wiper element supported by a resiliently flexible backing strip. In some embodiments the wiper element and backing strip are bonded together. In other embodiments the backing strip includes a pair of transversely spaced strip members which retain the wiper element therebetween. Longitudinal edge portions of the backing strip are embraced by the usual claws of a wiper pressure unit, and longitudinally spaced detents are provided on the backing strip to releasably or snap-fittingly receive one of the claws between them, whereby to releasably hold the blade unit and pressure unit in assembled relation.



3,616,486
SWIVEL SUPPORTED DRAPERY HANGER FOR USE WITH TRAVERSE RODS HAVING A REARWARDLY OPENING SLOT
James A. Ford, David E. Bell, and Paul P. Clark, Sturgis, Mich., assignors to Kirsch Company, Sturgis, Mich.
Continuation-in-part of application Ser. No. 676,104, Oct. 18, 1967. This application Sept. 23, 1969, Ser. No. 860,388
The portion of the term of the patent subsequent to Aug. 4, 1987, has been disclaimed
Int. Cl. E05d *13/02*; **A47k** *13/16*
U.S. Cl. 16—87.2 **12 Claims**

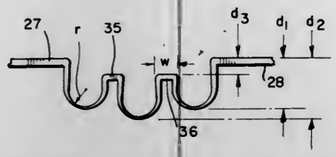


A drapery material carrier system having a hollow traverse rod with at least one rearwardly opening slot therein. A pluality of carriers, each projecting through the rearwardly opening slot, are movable along the rod and have a first portion within the rod greater in dimension than the width of the slot. A second portion externally of the traverse rod is either fixably or swivelably connected to the first portion and has hanger means associated therewith for supporting the drapery material. An elongated flexible element is arranged along the rod and each of the carriers is formed of a moldable synthetic organic plastic material and connected at spaced intervals to and along the flexible element by having a portion thereof molded therearound.

3,616,487
BOX HINGE
Timothy E. Dearth, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 10, 1969, Ser. No. 805,466
Int. Cl. E05d *9/00*
U.S. Cl. 16—150 **1 Claim**

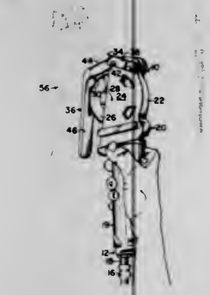
A hinge design formed from plastic sheet material susceptible to formation by heat and pressure whereby two

flush surfaces may be integrally hinged. The hinge is formed by conforming plastic sheet material into three



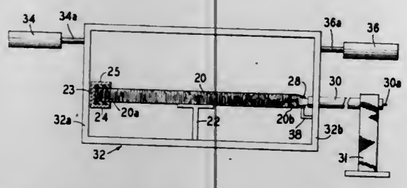
longitudinal valleys in a mold which are separated by a pair of longitudinal ridges.

3,616,488
APPARATUS FOR OPENING THE BODY CAVITY OF A POULTRY CARCASS
William A. Barefield, Hall County, near Gainesville, Ga., assignor to J. D. Jewell, Inc., Gainesville, Ga.
Original application Oct. 28, 1966, Ser. No. 590,388, now Patent No. 3,518,718, dated July 7, 1970. Divided and this application Oct. 13, 1969, Ser. No. 870,705
Int. Cl. A22c *21/00, 21/06*
U.S. Cl. 17—11 **4 Claims**



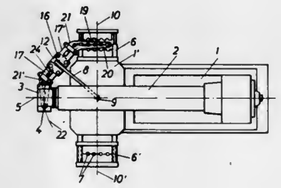
A cutting tool for opening the body cavity of chickens to allow easy evisceration and inspection. The tool has a power driven, circular cutting blade which is power driven from a motor contained within a housing that is held in the hand. A guide means extends below the edge of the cutting blade and beneath the tool housing and hand and is inserted into the chicken carcass. There is a blade shield around the front of the blade whereby the only entrance to the blade is between the housing and the insertion member.

3,616,489
METHOD AND APPARATUS FOR MOISTURIZING SHIRRED CASING STICKS
David Voo, Park Forest, and Louis L. Winokur, Evanston, Ill., assignors to Union Carbide Corporation
Filed May 10, 1967, Ser. No. 637,537
Int. Cl. A22c *13/00, 11/02;* **B08b** *3/02*
U.S. Cl. 17—42 **7 Claims**



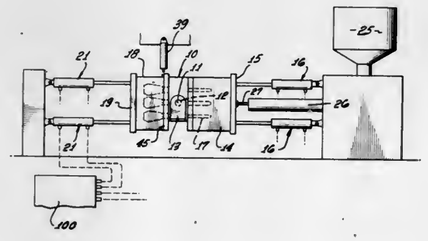
Shirred casing sticks are moisturized with water after being shirred but prior to being packaged into cartons for subsequent shipment.

3,616,490
MACHINE FOR BLOW MOLDING HOLLOW PLASTIC ARTICLES
Tibor Szabo, Heidenheim (Brenz), Germany, assignor to Firma J. M. Voith GmbH, Heidenheim, Germany
Filed Jan. 21, 1969, Ser. No. 792,295
Claims priority, application Germany, Jan. 23, 1968, P 17 04 374.2
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 BT **4 Claims**



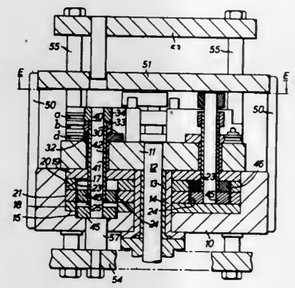
A blow molding machine has an extruder head with a vertically disposed nozzle for extruding a tubular parison of a thermo plastic synthetic material corresponding in length to the article to be molded. The extruded parison is gripped by a gripping and transfer arrangement which is pivotally mounted on the frame of the machine for pivotal movement in a horizontal plane. Two blow molding stations are each mounted on opposite sides of the machine. The vertical pivotal axis of the gripper and transfer mechanism is so positioned at the side of the extruder head directed toward the machine frame that pivotal movement of the gripper mechanism transfer the parisons from the extruder head to a blow molding station. The gripper mechanism comprises a pivot arm with a gripper on each side of the arm so that in the end positions of the gripper mechanism one gripper will be at the extruder head and the other gripper at a blow molding station.

3,616,491
CONTAINER MOLDING APPARATUS
Gary L. Vollers, Upland, Calif., assignor to Pactra Incorporated, Los Angeles, Calif.
Filed Oct. 27, 1969, Ser. No. 869,564
Int. Cl. B29c *17/07*
U.S. Cl. 18—5 BJ **5 Claims**



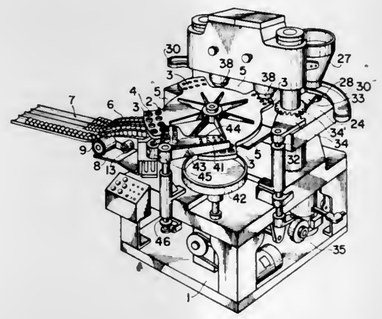
A plastic parison is extruded over a blow nozzle at a forming station; the parison and nozzle are transferred to a blowing station where blowing of the parison into hollow object (for example, a container) form is accomplished; a neck mold releases the container neck; and the blow mold separates the container from the blow nozzle and away from the neck mold, and then releases the container, initial release of the container from the blow mold cavity also being effected during the separation from the blow nozzle.

3,616,492
MOULDING
Bartholomew Camprubi, 29 Campden Road, Ickenham, Middlesex, England
Filed Feb. 14, 1969, Ser. No. 799,315
Int. Cl. B29c *9/00*
U.S. Cl. 18—20 RR **24 Claims**



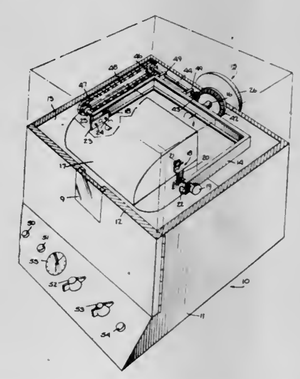
A machine is disclosed for the automatic separation and realignment of parts of a sub-mould in which an article such as a commutator is produced on a separate moulding machine. The machine incorporates a number of separable carriers which are automatically moved to carry the sub-mould parts away from one another to enable operations to be carried out on at least some of the sub-mould parts, e.g. ejection of the article moulded and subsequent cleaning, followed by automatic insertion of mould inserts prior to closure of the sub-mould ready for a further moulding operation.

3,616,493
APPARATUS FOR COMPRESSION MOULDING POWDER MATERIAL WITHIN CONTAINERS
Kei Okubo, Neyagawa, Toru Horiguchi, Kadoma, Miyoji Nakai, Neyagawa, and Haruhisa Shimada, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 24, 1970, Ser. No. 22,339
Claims priority, application Japan, Mar. 31, 1969, 44/24,940
Int. Cl. B29c *3/02, 3/04, 3/06*
U.S. Cl. 18—20 C **4 Claims**



An apparatus for supplying powder material into a plurality of containers such as cans and compression moulding said powder material into a required shape at the same time within said plurality of containers, which apparatus comprising an intermittently rotated table formed at its periphery with a plurality of angularly equally spaced protruded portions and extending radially outwardly, container holding means provided in said each protruded portion of the table, and means for supplying said powder material into and subsequently compression moulding said powder material into a predetermined desired shape within said plurality of containers simultaneously, whereby the containers having therein moulded powder material of a required shape can be produced in large numbers during a single rotation of the table, said apparatus being suitable in particular for moulding anode depolarizer for the cell.

3,616,494
TEACHING APPARATUS FOR ROTATIONAL MOLDING OF PLASTICS MATERIALS
Howard Natter, 185 Grandview Blvd., Yonkers, N.Y. 10710
Filed Jan. 20, 1970, Ser. No. 4,245
Int. Cl. B29d *23/00;* **B29c** *5/00*
U.S. Cl. 18—26 RR **12 Claims**

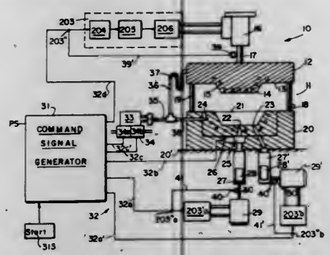


The apparatus is constructed so that the mold is rotated while the mold holder is also rotated. In this way, the plastic material which is contained within the mold is allowed to uniformly coat the inside surfaces of the mold and to solidify into the shape of the mold. A hollow molded plastic structure is thus obtained under gravity forces.

3,616,495
MOLDING APPARATUS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of applications Ser. No. 421,860 and Ser. No. 421,817, both Dec. 29, 1964, and Ser. No. 439,549, Mar. 15, 1965, which in turn are continuations-in-part of application Ser. No. 734,340, May 9, 1958, now Patent No. 3,173,175. This application also is a continuation-in-part of application Ser. No. 142,405, Oct. 2, 1961, now Patent No. 3,422,648. This application Apr. 15, 1968, Ser. No. 721,401
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 CK **16 Claims**

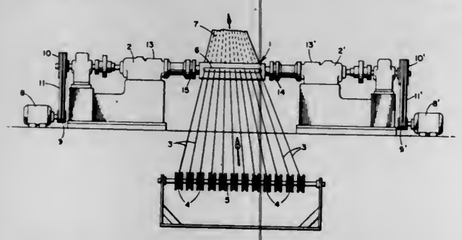
An apparatus and method for the controlled molding of materials is provided whereby a plurality of molding variables may be predeterminately controlled in accordance with variations in the molding materials, size and shape of the molded parts and desired physical characteristics of the finished article. Molding variables such as movement of one or more mold components, timing of the injection of molding material, variations in flow of molding material and heating or cooling of the mold walls

may be preprogrammed so as to each vary predetermined degrees during a molding cycle so that such variables increase and/or decrease in predetermined relationship to each other to provide a molded article having predetermined and optimum physical characteristics.



In one form of the invention, molding variables are controlled by the reproduction of prerecorded analog signals from a recording member which signals are used to variably control motors controlling the molding variables. The analog signals may be derived from transducers indicating variations in said motors during the operation of an optimum molding cycle.

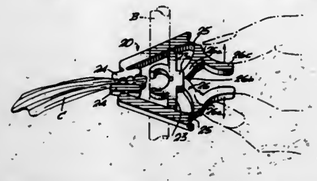
3,616,496
APPARATUS FOR PRODUCING A BAND OF UNCURED ELASTOMERIC MATERIAL EMBEDDING A PLURALITY OF REINFORCING WIRES
Attilio Angioletti and Nino Madonini, Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy
Filed July 28, 1969, Ser. No. 845,386
Claims priority, application Italy, Mar. 15, 1969, 839,577/69
Int. Cl. A22b *5/08*
U.S. Cl. 18—13 H **7 Claims**



Apparatus for producing a band of uncured elastomeric material in which a reinforcement in the form of a plurality of strands disposed parallel to each other is embedded. The apparatus comprises a generally rectangular hollow extrusion head having a discharge opening, parallel guides in the extrusion head for receiving the strands and guiding the strands to an elongated discharge opening in one wall of the extrusion head, and means communicating with the extrusion head for supplying elastomeric material to the extrusion head so that the strands may be embedded in the elastomeric material as the latter is extruded in uncured condition and in the form of a band from the extrusion head.

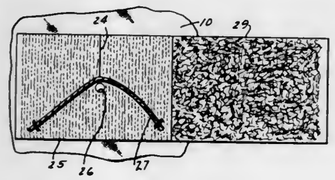
3,616,497
INTEGRAL CLAMPING INSTRUMENTS FOR MEDICAL AND SURGICAL APPLICATIONS
Vincent J. Esposito, Jr., Box 741, Wayne, N.J. 07470
Filed June 24, 1970, Ser. No. 49,337
Int. Cl. A44b *21/00*; **A61b** *17/12*
U.S. Cl. 24—81 HS **11 Claims**

An integral clamping instrument, molded of elastomeric material, has a pair of arms, each being pivotally mounted at a midportion thereof to opposite ends of a rigid bar which acts as a fulcrum. On one end the arms carry opposing jaws and the other ends are hinged to a spreader comprising two hinged half sections which are adapted to snap across a straight-line maximum length condition between a first angular relaxed position, wherein the other arm ends are free to move toward each other for opening the jaws, to a second angular locked



position, wherein said other arm ends are retained in a spread apart condition closing the jaws. Finger manipulatable members extend from the spreader half sections and are located for gripping between thumb and forefinger to effect the snapping from the first to the second position. Different instruments in the form of retainer clips, sponge forceps or hemostats are readily fashioned by varying the size and configuration of the arms, jaws and finger manipulatable members.

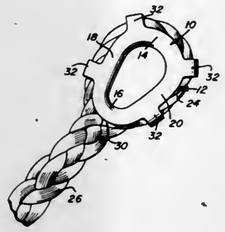
3,616,498
BUTTON PROTECTOR
Burton L. Rosenthal, 3707 W. North Shore, Lincolnwood, Ill. 60045
Filed June 10, 1969, Ser. No. 831,966
Int. Cl. A44b *1/18*; **D06f** *29/00*
U.S. Cl. 24—90.5 **1 Claim**



Protector for buttons on clothes during cleaning consisting of two pieces of fabric material sewed together along one edge of each piece and hinging the pieces together to accommodate the top piece to fold over the bottom piece and protect a button on a garment and between the two pieces of fabric material. The bottom piece of fabric material has a slit forming a buttonhole, to accommodate the insertion of a button through the hole when sewed to clothes to be cleaned. A flexible retainer member in the form of a cord or thread of plastic material is sewed to the top surface of the bottom piece of fabric material and extends over the buttonhole to be slipped over a button in the buttonhole and hold small buttons to the buttonhole. The two pieces of material are secured together by detachable fastening means which preferably is of a pile fabric on one piece of material and a hooked fabric on the other piece of material and made from fastening materials manufactured under the trademark "Velcro."

3,616,499
ROPE THIMBLE
Archie J. Lowery, Sr., 500 Ave. J, Marrero, La. 70072
Filed Jan. 14, 1970, Ser. No. 2,865
Int. Cl. F16g *11/04*
U.S. Cl. 24—123 G **6 Claims**

An elongated open frame including first and second opposite semi-cylindrical end portions opening toward each other and connected by generally straight opposite side frame portions extending between corresponding sides of the end portions. The radius of curvature of the first end portion is generally twice the radius of curvature of the second end portion and the side frame members are convergent toward the second end portion. Further, side and end portions define a semi-cylindrical outwardly opening continuous groove extending about the outer periphery of the frame for seatingly receiving the

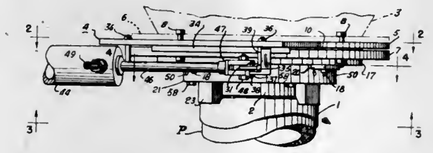


inner peripheral portions of a cable or rope eye splice therein. Also, the radius of curvature of the semi-cylindrical groove is gradually increased in the area of the smaller radius end portion of the frame and the frame includes peripherally spaced inwardly opening generally semi-cylindrical strap portions formed integrally with the frame which, together with the adjacent portions of the groove, define tubular guide portions for retaining a rope or cable eye splice on the frame.

ERRATUM

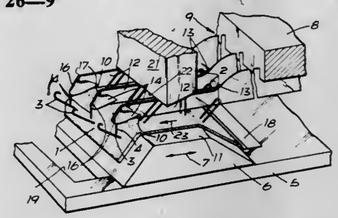
For Class 24—205.11F see:
Patent No. 3,616,939

3,616,500
MEANS FOR FORMING GASKET GROOVES IN CONCRETE PIPE SPIGOTS
Harry T. Peck and Harold W. Schneider, Arlington, Tex., assignors to Gifford-Hill Pipe Company, Dallas, Tex.
Continuation-in-part of application Ser. No. 796,118, Feb. 3, 1969. This application Oct. 22, 1969, Ser. No. 871,509
Int. Cl. B28b *21/00*
U.S. Cl. 25—39 **32 Claims**



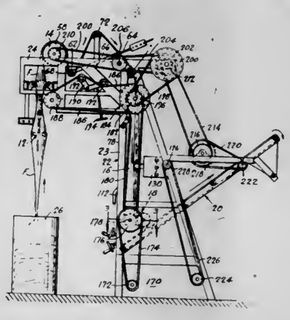
Method of and means for forming gasket-receiving grooves in concrete or cement asbestos pipe spigots having a split groove-forming ring engaged in a channel between a pair of spigot-forming members and of less internal and external diameters than the channel for contraction and expansion into and out of operative position, the ring and members being adapted to undergo limited rotation relative to a spigot and its groove for breaking the adhesion of the concrete thereto. The invention includes means for circulating a cleansing fluid through its channel and around the expanded ring to prevent setting up of cement.

3,616,501
LOOP-CUTTING APPARATUS
Norbert Stefan Waller, Weil im Schonbuch, Germany, assignor to Fa. Gottlieb Binder, Baden-Wurttemberg, Germany
Filed June 23, 1970, Ser. No. 48,987
Claims priority, application Germany, June 27, 1969, P 19 32 553.2
Int. Cl. D06c *13/08*
U.S. Cl. 26—9 **7 Claims**



An apparatus for cutting loops, which project from a surface, into two parts of unequal length, using a row of comb-like teeth whose free ends are bent back and formed each with a curved cutting edge. The row of curved cutting edges co-operates in scissors fashion with a transverse knife edge for cutting loops engaged on the free ends of the teeth.

3,616,502
APPARATUS FOR TREATING OF TUBULAR FABRICS
Edward I. Aronoff, 605 Dorais St., St. Laurent, Quebec, Canada
Filed June 10, 1969, Ser. No. 831,956
Int. Cl. D06c *5/00*
U.S. Cl. 26—55 R **4 Claims**

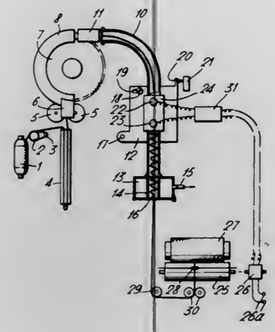


The apparatus includes in succession a floating pilot spreader for spreading a tubular fabric from twisted rope shape to a floating spreader for laterally overstretching the fabric, guide means preceding the overstretching spreader for aligning the pattern of the tubular fabric as it is fed onto the spreader, rolls for taking the fabric off the spreader and a conveyor for carrying the fabric to a subsequent finishing step, such as drying.

3,616,503
METHOD FOR CRIMPING AND THERMALLY TREATING YARN
Denis Albert Edward Mattingly, London, England, assignor to The Klinger Manufacturing Company Limited, London, England
Filed Jan. 3, 1968, Ser. No. 695,369
Claims priority, application Great Britain, Jan. 6, 1967, 892/67
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 **6 Claims**

Crimped yarn in the form of a plug, such as is produced by longitudinally compressing and bunching the yarn in

a stuffer box, is conveyed, while in the plug form, through a treating zone with the aid of a flow of gas. In the treating zone the plug of crimped yarn may be subjected to



heating and/or cooling treatment to improve the properties of the yarn. The flow of gas is induced through the treating zone in the direction of travel of the plug preferably by suction at the exit end of the treating zone.

3,616,504
LINEAR POLYESTER FIBER SHRINKAGE WITH HNO_3 OR FORMIC ACID IN A HALOGENATED HYDROCARBON AND THE PRODUCTS SO SHRUNK

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

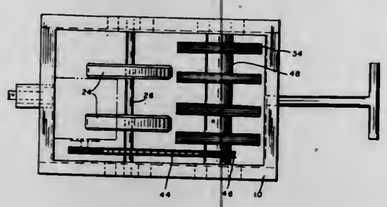
No Drawing. Filed Oct. 23, 1968, Ser. No. 770,112
Int. Cl. D04b *19/00;* D06m
U.S. Cl. 28—72.16 25 Claims

Process, and the resulting products, for treating materials composed of or containing polyester structures to enhance their physical and aesthetic properties and improve the affinity of the polyester structures to dyestuffs and other chemicals, comprising the step of contemporaneously contacting solid polyester structures with a halogenated hydrocarbon of the formula $C_nH_mX_p$, wherein X=chlorine or fluorine, n=1 or 2, p=1 to $2n+1$, and $m=2n+2-p$, and an acid selected from the group consisting of formic and nitric acid.

3,616,505
PAINT AND SCALE REMOVING APPARATUS

Daniel Klockner, Jr., 294 Boulevard,
Mountain Lakes, N.J. 07046

Filed Feb. 16, 1970, Ser. No. 11,429
Int. Cl. B21c *43/00*
U.S. Cl. 29—81 11 Claims

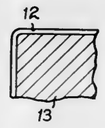


A brush machine includes a grouping of adjustably positioned brushes carried on a shaft mounted on a frame adapted for hand manipulation and operator propulsion. The brushes are rotatably driven in the frame which is pivotally supported so that the brushes may be brought into localized engagement with the top of a structural beam so as to remove at selected positions and spacing the scale, dirt and paint on top of the beam. The cleaned surface is thus in condition for the welding of studs to the top of the beam.

3,616,506
INSERT FOR MACHINING STEEL OR SIMILAR MATERIAL

Carl Sven Gustaf Ekemar, Lannersta, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed Jan. 13, 1970, Ser. No. 2,540
Claims priority, application Sweden, Jan. 2, 1969, 32/69; Feb. 21, 1969, 2,400/69
Int. Cl. B26d *1/00;* B21k *21/00*
U.S. Cl. 29—95 21 Claims

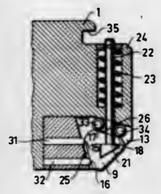


In the field of covering a face of a cemented carbide cutting body with a layer of wear-resistant material, the improvement consists in depositing said material from a gaseous phase containing a gaseous compound of a carbide-forming metal, hydrogen and methane or similar gaseous hydrocarbon, said deposition being effected at an elevated temperature and at sub-atmospheric pressure.

3,616,507
MILLING CUTTER

Sven Axel Olof Wirfelt, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed July 10, 1969, Ser. No. 840,685
Claims priority, application Sweden, July 12, 1968, 9,598/68
Int. Cl. B26d *1/00*
U.S. Cl. 29—105 16 Claims



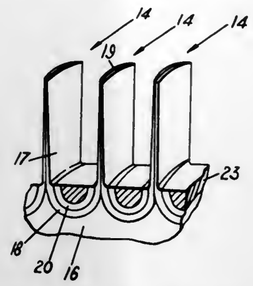
In a milling cutter, more particularly a multiple-insert milling cutter, the removably clamped inserts are not locked in recesses but are retained in recesses solely by spring means. Side edges of the inserts rest against fixed location members in the recesses and are pressed against said members by cutting forces arising from use of the tool.

3,616,508
METHOD OF MAKING COMPRESSOR OR TURBINE ROTOR OR STATOR BLADES

John Stanley Wallett, Allestree, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed Jan. 27, 1969, Ser. No. 794,138
Claims priority, application Great Britain, Feb. 8, 1968, 6,219/68
Int. Cl. B21k *3/04;* B23p *15/02, 15/04*
U.S. Cl. 29—156.8 R 5 Claims

A method of making an annulus of blades for a gas turbine engine is proposed in which a blade row is formed from an annular array of pieces, each comprising a blade flank, an interconnecting portion, and an opposing flank of an adjacent blade. The pieces are made

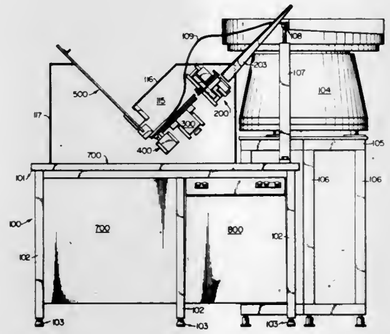


from fiber reinforced material and preferred method of manufacture of the pieces using filament winding techniques are utilized in making the individual pieces.

3,616,509
IN-LINE UNIT CARRIER LOADER

Albert W. Zemek and Stephen Gelo, Jr., Binghamton, and Robert H. Holmes, Marathon, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,719
Int. Cl. B23g *7/10;* H01r *43/04;* H05k *13/00*
U.S. Cl. 29—203 29 Claims



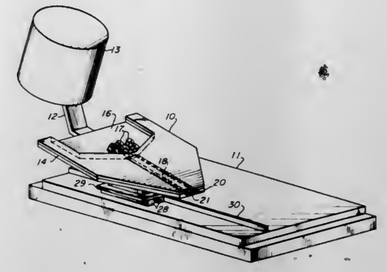
An apparatus for inserting dual in-line lead electrical components into unit carriers having a component supply, a component lead straightening assembly, a component escape mechanism which allows components to leave said straightening assembly and which aligns said components with a unit carrier for assembly, a component insertion assembly including an insertion head for loading components in unit carriers and a loading head for supplying loaded unit carriers to a magazine, and a magazine escape assembly to automatically supply a fresh magazine when another is filled with loaded unit carriers. The system is pneumatically controlled.

3,616,510
PREFORM LOADER

Alfred R. Kroehs, Belford, N.J., assignor to Alpha Metals, Inc., Jersey City, N.J.

Filed June 23, 1969, Ser. No. 835,676
Int. Cl. H05k *13/04;* B23g *7/10*
U.S. Cl. 29—203 B 3 Claims

A preform loader wherein contact pins to be connected to a circuit board are moved through a slot in a channel containing preforms, and in so doing, each pin picks off a preform by entering a hole in the preform and sliding it

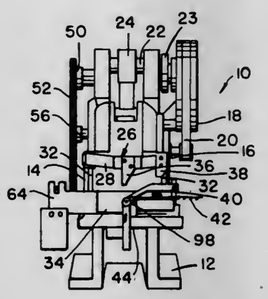


out of the channel, overcoming a deflectable detent at the end of the channel.

3,616,511
COILFORM ORIENTER

Robert W. De Lisle, Dover, Pa., assignor to Berg Electronics, Inc. New Cumberland, Pa.

Filed Dec. 15, 1969, Ser. No. 885,305
Int. Cl. H05k *13/04;* H01r *43/04*
U.S. Cl. 29—203 R 12 Claims



A machine is provided for successively staking terminals onto a tubular coilform. The coilform is of the type used in electrical apparatus. The machine includes a mandrel structure including an outer mandrel shaft for indexing the coilform during the staking operation and an inner mandrel shaft to initially receive the coilform and turn it to a position where a slot in the coilform will engage a finger on the outer mandrel shaft to thereby orient the coilform with respect to the outer mandrel shaft and lock the coilform to the outer mandrel shaft for rotation therewith.

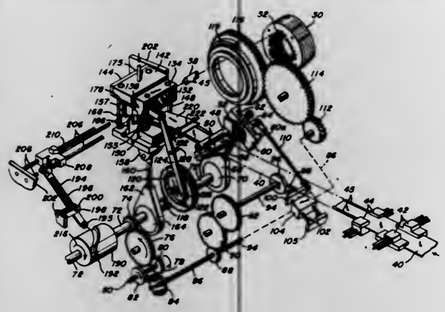
3,616,512
APPARATUS FOR INSERTING INSULATOR PIECES INTO STATOR SLOTS

Robert C. Appenzeller, Robert E. Lang, and Donald A. Ludwig, Dayton, Ohio, assignors to Machine Products Corporation, Dayton, Ohio

Filed Dec. 1, 1969, Ser. No. 881,238
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 E 20 Claims

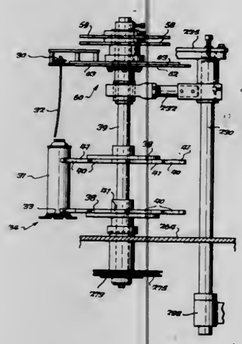
Apparatus for inserting pieces of insulation or insulator material into slots of stators of electric machines in which the stator slots are of various dimensions. A continuous strip of insulation material is employed. The apparatus folds the strip at opposed edges thereof and thereby "cuffs"

the strip at each of the opposed edges thereof. The strip is then severed to provide a piece of the insulation material which is of the proper length to insulate a given stator slot. The piece of insulation material is then formed properly to enter the given slot, and then the piece is forced



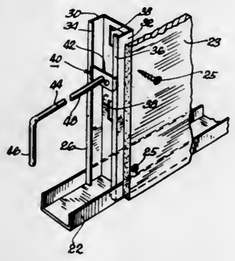
into the given slot. Due to the fact that the stator slots are of various dimensions, the apparatus is arranged to cut and form each piece of insulation material, particularly for the slot within which the piece is intended to be inserted.

3,616,513
CAPPING EQUIPMENT
George H. Dimond, East Aurora, N.Y., assignor to Consolidated Packaging Machinery Corporation, Buffalo, N.Y.
Filed Apr. 21, 1969, Ser. No. 817,850
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **31 Claims**



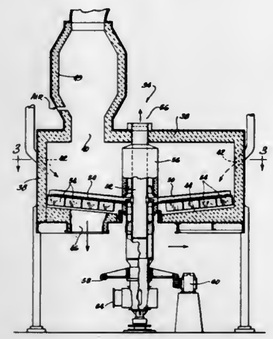
A machine for applying closure elements having dip tube extensions to aerosol containers which includes a multi-station rotary turret arranged to receive the containers from an infeed conveyor. A pair of spaced-apart sorters are provided for alternately feeding the closure elements to a feeding mechanism which directs the elements to a predetermined pick-up location adjacent the turret. A plurality of capping chucks mounted on the turret receive successive closure elements from the pick-up location, and each chuck is effective to grip its element through the use of a plurality of spring biased chuck jaws. When a given chuck picks up a closure element, an extension guide mechanism adjacent the chuck is effective to move two overlapping finger members around the upper portion of the dip tube extension. The finger members are then directed downwardly along the extension to a position immediately above one of the containers on the turret, and the chuck descends until the extension has entered the mouth of the container, at which point the finger members move out of the way. Upon continued downward movement of the chuck, the spring biased chuck jaws resiliently urge the closure element into seating engagement with the container.

3,616,514
STUD SUPPORTING TOOL
Richard C. Laverty, Schaumburg, Ill., assignor to MSL Industries, Inc.
Filed Mar. 30, 1970, Ser. No. 23,614
Int. Cl. B25b *3/00;* **E04g** *21/16*
U.S. Cl. 29—283 **12 Claims**



A tool used to prevent the channel-shaped metal studs used in drywall construction from bending during connection of the drywall to the metal studs. The tool includes a supporting member which maintains the width of the studs and resilient means carried by the supporting member which retains the supporting member in a desired position within a stud. A handle is connected to the supporting member for simple manipulation of the supporting member with respect to the stud.

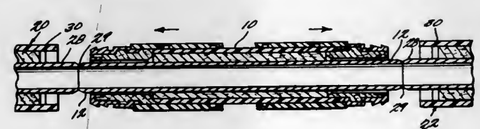
3,616,515
SYSTEM FOR HOT DE-OILING AND HOT BRIQUETTING
James E. Moore, Glenview, Ill., assignor to Komarek-Greaves and Company, a division of Berwind Corporation, Rosemont, Ill.
Original application Apr. 15, 1968, Ser. No. 721,474, now Patent No. 3,497,190, dated Feb. 24, 1970. Divided and this application Dec. 18, 1969, Ser. No. 886,157
Int. Cl. B23q *17/00;* **C21b** *11/00*
U.S. Cl. 29—403 **7 Claims**



A system for hot de-oiling and hot briquetting material wherein the material is heated to burn off or vaporize foreign substances and is then transported to a briquetting

machine for forming of the material into briquets. The improvements of the invention relate to a furnace construction and method of operation for heating the material. The furnace construction includes a single hearth providing a combustion zone whereby the material can be fed to the combustion zone from inlet means defined at the side of the furnace. An outlet is defined in the hearth and movable rake means are provided for moving the materials within the furnace to the outlet for discharge and for delivery of the materials to briquetting equipment.

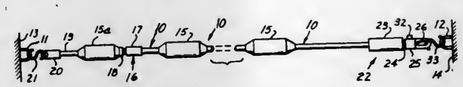
3,616,516
METHOD AND APPARATUS FOR REPAIRING INSULATED PIPE
Winfield F. Corriston, Far Hills, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,237
Int. Cl. B22d *19/10;* **F01b** *25/02;* **F01c** *21/12*
U.S. Cl. 29—401 **14 Claims**



Method and apparatus are described for repairing insulated pipe. The insulated pipe repair apparatus comprises an inner transfer pipe, an outer conduit surrounding the inner transfer pipe forming an annular space having insulation material therein with the outer conduit supporting slidable coupling means. The apparatus is used in the repair of insulated pipeline by removing a section of the insulated pipeline which is to be replaced and preparing the exposed sections of the remaining insulated pipeline. The preparation consists of cutting off a predetermined amount of the outer casing and insulation material leaving the inner transfer pipes extending outwardly from the end of outer conduits. End seals are then inserted into the annular space formed by removal of the insulation material.

The pipe repair apparatus is lowered into position so that its inner transfer pipe is coaxially aligned with the inner transfer pipe of the sections of the insulated pipeline at which time the inner transfer pipes are secured together. The coupling means on the repair apparatus are moved away from the outer casing, bringing them into contact with the end seals. The space left by the movement of the coupling means, away from the outer casing, is filled with insulation material and sealed so that a continuous insulated pipeline is formed.

3,616,517
MEANS AND METHOD OF CLAMPING, CUTTING AND EXTENDING CABLE
David A. Stanwood and Billy G. Epperson, Jr., West Covina, Calif., assignors to Swimquip, Inc., El Monte, Calif.
Filed Aug. 11, 1969, Ser. No. 849,103
Int. Cl. B23p *17/00, 19/00;* **B21d** *39/00*
U.S. Cl. 29—414 **7 Claims**



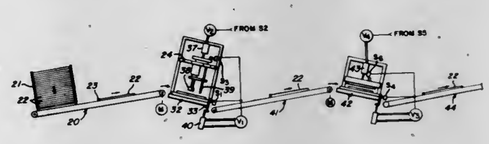
A cable clamping and cutting device comprising a body having a bore through which the cable passes and a hollow nut threadable onto the body, so that the cable passes through the nut and the bore. Tapered wedging elements are placed within the nut which engage correspondingly tapered inner surfaces of the nut so that when the nut is turned on the threads the wedge members grip the cable. The body portion has a second bore, intersecting the first-mentioned bore, in which a punch may be inserted, which when struck a blow will sever the cable within the body while the cable is clamped. The body contains an eye member which can be engaged by a suitable hook or the like as a cable termination.

3,616,518
METHOD OF SIMULTANEOUSLY FORMING AN APERTURED PANEL AND A RELATED CLOSURE PANEL
Bernard Brian Hundy, Woodstock, England, assignor to Pressed Steel Fisher Limited, Oxford, England
Filed Mar. 18, 1969, Ser. No. 808,249
Claims priority, application United Kingdom, Mar. 21, 1968, 13,679/68
Int. Cl. B23p *17/00*
U.S. Cl. 29—414 **4 Claims**



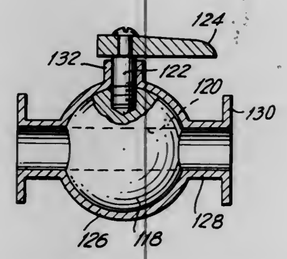
A method of forming an apertured panel and a closure panel for the aperture or for another aperture in a related apertured panel, which includes forming the closure panel and the apertured panel simultaneously from a single sheet of material with the general planes of the panels mutually displaced by a (preferably tapered) wall portion, the wall portion is then severed to separate the panels and the portions of the wall remaining on one or both panels provides material for clinching over or for forming a flanged edge.

3,616,519
REEL FABRICATION
William W. Hanshew, Rte. 1, Brookville, Ohio 45309
Filed July 3, 1969, Ser. No. 838,965
Int. Cl. B23p *19/00, 23/04, 11/00*
U.S. Cl. 29—430 **30 Claims**



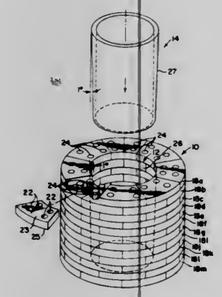
Continuous system and method for fabricating reels having circular end discs and a core section, comprising a mechanism for boring and drilling blanks, a printer, a saw mechanism for cutting circular discs from said blanks, an assembly station at which two end discs and a core are positioned in final assembly, a riveting mechanism for securing a disc to each end of each core, conveyor means preceding each of said bore and drill mechanism, printer, saw mechanism, assembly station and riveting mechanism, and actuating switches contacted by said blanks or discs in an automatic movement and positioning thereof to energize the respective mechanism, to hold the blanks or discs in predetermined position and to release the blanks or discs for movement to the next mechanism. The riveting mechanism inserts a blind rivet through aligned holes drilled in an assembled disc and core and on retraction flares the end of the rivet outwardly into clamping engagement to complete the fabrication cycle.

3,616,520
MANUFACTURING ASSEMBLIES OF PRECISION-FITTED RELATIVELY MOVABLE COMPONENTS
Louis Bucalo, Holbrook, N.Y., assignor to Kinemotive Corporation, Farmingdale, N.Y.
Continuation-in-part of application Ser. No. 588,231, Sept. 28, 1966. This application May 22, 1969, Ser. No. 826,992
Int. Cl. B21d *53/00, 53/10*
U.S. Cl. 29—441 **13 Claims**



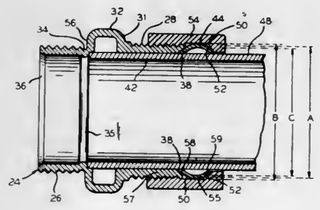
A method for manufacturing an assembly of at least two precision-fitted components, wherein at least one of the components is movable relative to the other. One of the components is formed directly on the other by techniques already known in connection with deposition of molecular layers when forming coatings, linings, and the like. However, the materials are selected so that the deposited molecular layers do not adhere to the surface on which they are deposited, or are provided with a strippable coating. As a result the two components will have perfectly complementary surfaces providing a prefect precision fit. Thus, it becomes possible to provide between a pair of components, at least one of which is movable relative to the other, a perfectly precise fit.

3,616,521
METHOD OF MAKING A PRESTRESSED SEGMENTED CONTAINER
F. George Boggio, Glen Rock, N.J., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Original application May 22, 1967, Ser. No. 640,311, now Pat. No. 3,433,382, dated Mar. 18, 1969. Divided and this application Nov. 7, 1968, Ser. No. 774,008
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 **2 Claims**



An improved method of forming a pressure vessel of the type comprising an outer support cylinder formed from a plurality of discrete ring sectors and having a generally cylindrical bore extending longitudinally therethrough with a sleeve-like member positioned within the bore. The method comprises expanding the segmented outer support cylinder either prior to, or simultaneously with, the insertion of the annular sleeve-like member so that the tendency of the support cylinder to contract produces hoop compression in the sleeve-like member.

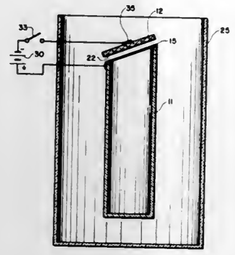
3,616,522
METHOD OF MAKING COMPRESSION FITTING
Nathan H. Rudolph, Aurora, and Ronald G. Boyd, Galva, Ill., assignors to All-Steel Equipment Inc., Aurora, Ill.
Filed Dec. 4, 1968, Ser. No. 781,188
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—458 **6 Claims**



The disclosure pertains to a compression fitting for connecting conduit to outlet boxes and the like in which the body member is made by a series of press forming operations on a tubular blank to define a central upset portion having a hex configuration, and roll formed threaded end portions of different external diameters in which the diameter of the tubular blank is equivalent to the pitch diameter of the large end of the completed body member, and an indentation is rolled into the blank adjacent its smaller end to define the maximum throat size of the fitting and a stop for the conduit when received in the body member larger end. In making the body member, the blank is formed by severing same from the tubing to include the indentation located adjacent one end of same, the ends of the blank are deburred, the said one end of the blank is necked down to approximately the indentation, the blank is upset intermediate its ends to define the hex configuration, and then the threads are rolled into the blank ends, after which the body member is suitably coated. The reduced end of the body member receives a conventional box engaging lock nut while the larger body member end is equipped with a clamp nut and cooperating gland for fixing the conduit to the fitting. Also disclosed is a special die arrangement for necking down and upsetting the fitting body member.

3,616,523
GLASS LASER WINDOW SEALANT TECHNIQUE
Bernard Smith, Neptune, N.J., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 24, 1970, Ser. No. 92,392
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.7 **8 Claims**

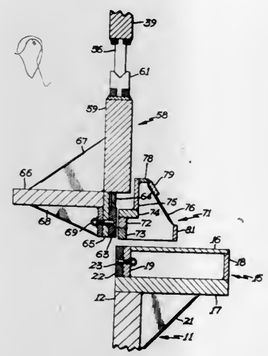
A technique for sealing electrically non-conductive optical windows to electrically non-conductive electron discharge device envelopes, such as laser bodies, without distorting or destroying the optical properties of the window, particularly during sealing-in process at temperatures often in excess of about 350 degrees C. The technique involves optically polishing the mating surfaces of the window and the body, coating said surface or edge of the body with a thin electrically conductive or semiconductive sealant, placing the window over the aforesaid edge and applying a high unidirectional potential between the sealant and the window while heating the body and window in an oven to a high temperature which is below the softening temperature for the window and body.



3,616,524
METHOD OF MAKING AN ARTICLE, CONSISTING AT LEAST SUPERFICIALLY OF COPPER, SUITABLE FOR THE CONNECTION BY MEANS OF SPOT WELDING
Iohannes Wilhelmus Hendrikus Maria de Vries, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
No Drawing. Filed Feb. 4, 1969, Ser. No. 796,574
Claims priority, application Netherlands, Feb. 9, 1968, 6801828
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 **2 Claims**

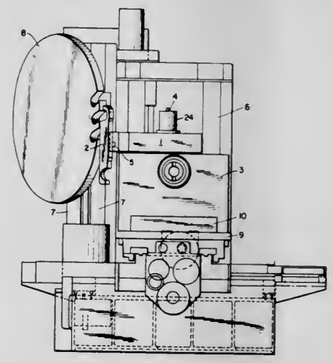
A method of joining a metal article having a copper surface to another metal article by spot welding in which the copper surface is first oxidized to form cuprous oxide and then reduced in a hydrocarbon atmosphere to form a layer of carbon particles between copper particles.

3,616,525
COMBINATION SHEAR AND PRESS BRAKE MACHINE
Lloyd L. Barthel, Elk River, Minn., assignor to Elk River Machine Company, Elk River, Minn.
Filed Oct. 2, 1969, Ser. No. 863,118
Int. Cl. B23p *23/00*
U.S. Cl. 29—560 **8 Claims**



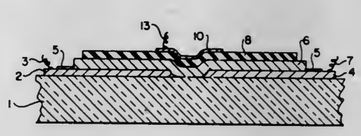
A combination metal shear and press brake machine having a base, an upper beam and a center beam. The beams are relatively movable vertically with respect to the base and to each other. The machine is arranged so that when the machine is to be used as a press brake, the upper beam may be hydraulically driven upwardly and downwardly to bend metal between dies carried by the lower edge of the movable upper beam and by the upper edge of the center beam. When the machine is to be used as a shear, the upper and center beams are secured together to operate as a single movable member and are hydraulically driven upwardly and downwardly to cut metal between cutting blades carried by the lower edge of the center beam and by the upper edge of the base.

3,616,526
TOOL CHANGING DEVICE FOR A MACHINE TOOL
Masaharu Tajima, Kanagawa Prefecture, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1969, Ser. No. 802,376
Claims priority, application Japan, Apr. 3, 1968, 43/21,483
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **4 Claims**



A tool changing device for a machine tool. The device has a tool drum mounted on a tool drum mounting column which is different from the column that carries the headstock. A swing arm is pivotally connected to the headstock and a tool changing arm is rotatably mounted on the swing arm. The tool drum is synchronously moved with the headstock and the swing arm is adapted to transfer the tools between the tool drum and the main spindle of the headstock.

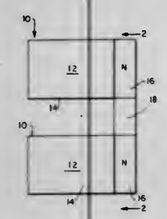
3,616,527
METHOD OF ACCURATELY DOPING A SEMICONDUCTOR MATERIAL LAYER
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed July 15, 1968, Ser. No. 744,991
Int. Cl. B01j *17/34*
U.S. Cl. 29—571 **1 Claim**



The present invention relates to a method of accurately doping a semiconductor material layer so as to control the electrical conductivity of said doped semiconductor

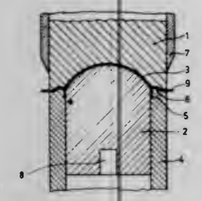
material layer, such as a doped semiconductor material layer within a thin film insulated gate field effect semiconductor device, by depositing a thin film of dopant atoms upon a substrate, as between a source electrode layer and a drain electrode layer which are upon a substrate, and evaporating said semiconductor material layer upon said thin film of dopant atoms.

3,616,528
SOLID STATE MATRICES
T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of Walter A. Hasbach, West Covina, and John V. Goldsmith, Glendale, Calif.
Filed Nov. 15, 1968, Ser. No. 776,185
Int. Cl. B01j *17/00;* **H01c** *7/08;* **H01j** *9/00*
U.S. Cl. 29—572 **7 Claims**



An electrically-connected matrix of discrete solar cell blanks is disclosed. Electrode contact receiving areas are provided on the light-sensitive surface of each blank and discrete continuous conducting layers are directly attached to said contact areas and extend between at least two of said blanks to form integral electrode contacts on and interconnections between said blanks. The cell blanks are disposed in separated, adjacent, side-by-side arrangements with their light-sensitive faces lying in substantially the same plane. Bridges for supporting the interconnection are placed in the separations. Portions of the blanks are masked and metal is deposited through said mask onto said bridges and surfaces to form integral electrode contacts on and interconnections between said separated blanks.

3,616,529
TRANSDUCER AND METHOD OF MAKING SAME
Wilhelmus Hermanus Iding, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 20, 1968, Ser. No. 754,032
Claims priority, application Netherlands, Aug. 31, 1967, 6711958; July 13, 1968, 6809978
Int. Cl. H04r *31/00*
U.S. Cl. 29—594 **6 Claims**

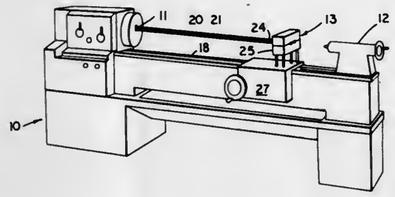


A method of manufacturing a transducer including pretinning the ends of a coil and of conductor leads, disposing the tinned ends adjacently within the cavity of a mold, injecting a thermosetting resin into the mold cavity and heating the resin to form a diaphragm therein, with the heat from the resin causing the adjacent tinned ends to become soldered, said ends also being embedded in the resin.

3,616,530
METHOD OF FABRICATING A SUPER-CONDUCTING COMPOSITE
Peter Francis Chester, Mollington, England, assignor to Imperial Metal Industries (Kynoch) Limited, Witton, Birmingham, England
No Drawing. Continuation of application Ser. No. 494,869, Oct. 11, 1965. This application Oct. 28, 1969, Ser. No. 871,969
Claims priority, application Great Britain, Nov. 20, 1964, 47,408/64
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **5 Claims**

A composite electrically conducting material suitable for carrying large currents comprises an array of Type I superconducting ribbons, layers or filaments in a matrix of normal material of high electrical and thermal conductivities. The superconducting material is preferably an alloy of niobium with titanium or zirconium and the normal material is conveniently copper, silver, aluminum, indium or cadmium.

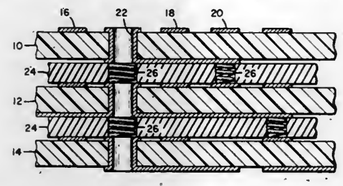
3,616,531
METHOD FOR MAKING A DOUBLE HELIX TYPE OF SUPPORTED FIRE DETECTOR SENSOR
Maurice E. Tyler, Orinda, Calif., assignor to John E. Lindberg, Lafayette, Calif.
Filed Oct. 21, 1969, Ser. No. 868,013
Int. Cl. H01c *7/04*
U.S. Cl. 29—612 **2 Claims**



A method of providing a double helix for two linearly extending members having quite different rigidities. The more rigid members are twisted together in pairs to deform them into a double helix of the desired number of turns per length. The two members are then unthreaded from each other without further deforming them, and the more flexible member is wound into each of the helically shaped more rigid members, only the more flexible member being deformed, to give two of the required assemblies.

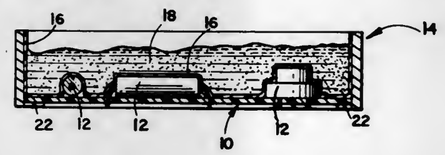
3,616,532
MULTILAYER PRINTED CIRCUIT ELECTRICAL INTERCONNECTION DEVICE
Ronald A. Beck, Bloomington, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,931
Int. Cl. H05k *3/36*
U.S. Cl. 29—625 **2 Claims**

A method and apparatus for establishing interconnections between conductive layers in multilayer printed circuit assembly wherein a solder coated compression type coil spring is inserted into an aperture in an insulating substrate which is positioned between the layers of circuitry which is to be interconnected. Upon heating, the solder melts to permit the spring to expand and thereby establish contact between the conducted surfaces. When



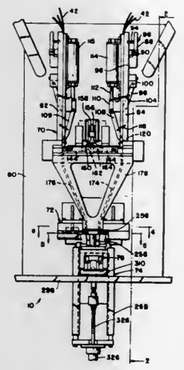
the solder again cools, a positive and extremely reliable connection is established.

3,616,533
METHOD OF PROTECTING ARTICLES IN HIGH TEMPERATURE ENVIRONMENT
Richard T. Heap, Stanton, and Joseph C. Widmont, Newport Beach, Calif., assignors to North American Rockwell Corporation
Filed Oct. 28, 1969, Ser. No. 874,085
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **13 Claims**



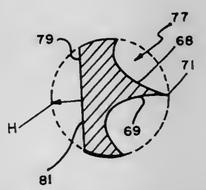
Electrical components mounted on a printed circuit board are protected from heat by covering the components with a viscous coolant in a container conforming to the configuration of each of the components The coolant comprises a viscous liquid suspension of powdered material in water. The liquid suspension provides a heat sink and is cohesive to retain a minimum surface area upon accidental spillage on molten solder or like heated surface area whereby "flash" vaporization is avoided.

3,616,534
BOBBIN LUGGER
Richard W. Black, Manchester, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed Nov. 18, 1969, Ser. No. 877,621
Int. Cl. H05k *3/30, 13/04;* **H01r** *43/04*
U.S. Cl. 29—626 **23 Claims**



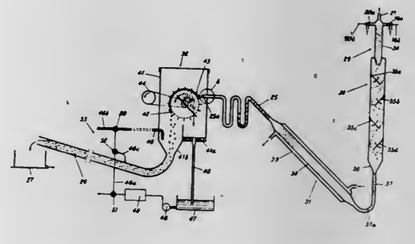
The bobbin lugger of the invention is adapted to simultaneously lug a plurality of electrical terminals to a bobbin structure. In the embodiment illustrated, six separate terminal strips are fed into a terminal feed structure. Individual terminals are severed from each strip and gravity fed into positioning means which are aligned with openings of a bobbin. After being located by the positioning means, the terminals are held in place by clamping means and the positioning means are retracted to expose a portion of each terminal for insertion through openings in the bobbin. The bobbins are individually loaded onto an elevator structure which is positioned beneath the clamped terminals. The elevator structure carries the bobbins up to the terminals. A portion of the terminals is then bent over onto a bobbin surface and the bobbins are then retracted and ejected from the apparatus whereupon the sequence is repeated.

3,616,535
WIRE CUTTING ARTICLE
George J. Ablah, 9100 E. 13th St. 67206, and James B. Townsend, both of Wichita, Kans.
Filed Dec. 30, 1968, Ser. No. 787,678
Int. Cl. B26b *21/26*
U.S. Cl. 30—40.1 **7 Claims**



This invention is a wire type cutting article operable in a magazine type razor having portions for maintaining stability and an outwardly projecting cutting edge shaped from the wire material so that the same is readily flexible in all directions adapted to be wound upon a cartridge or the like. More particularly, this invention is wire cutting articles constructed from circular, square, and triangular wires to provide at least one cutting edge therealong.

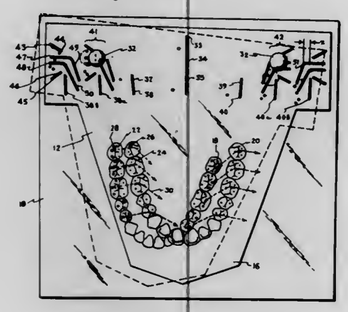
3,616,536
APPARATUS FOR THE CONTINUOUS MANUFACTURE OF CHEESE
Pierre Stenne, Vitry-le-Francois, France, assignor to Paracurd S.A., Geneva, Switzerland
Continuation-in-part of applications Ser. No. 549,669, May 12, 1966, and Ser. No. 833,831, Mar. 28, 1969, the latter being a continuation-in-part of application Ser. No. 439,829, Mar. 15, 1965. This application June 27, 1969, Ser. No. 842,431
Claims priority, application France, May 12, 1965, 1458172
Int. Cl. A01j *25/00*
U.S. Cl. 31—46 **9 Claims**



Apparatus for the continuous manufacture of cheese comprises means for continuously advancing inoculated

condensed milk while rennet and water are successively added thereto, syneresis is completed, and the whey is separated from the curds.

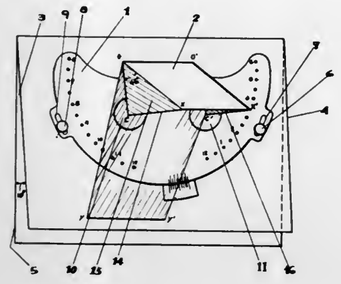
3,616,537
VISUAL AID DEVICE
George E. Schuchard III, 5389 Riverside Drive, Chino, Calif. 91710
Filed Feb. 11, 1970, Ser. No. 10,503
Int. Cl. A61c *19/00*
U.S. Cl. 32—71 **12 Claims**



A device is described which permits the visual demonstration of anatomical movements of the human mandible and the relationship of such movements to the human teeth. The device comprises a pair of plates, one of which bears a view of the mandibular teeth and the other of which bears a view of the maxillary teeth taken along horizontal, sagittal or coronal planes. The location of working and functional cusps are identified on the views and, preferably, at least the upper plate is transparent so that the relative movements of these cusps can be directly observed. The upper plate can also be perforated at the locations of the functional cusps so that a stylus can be inserted to trace the pathways of the cusps on the view of the lower plate. The plates are interconnected by means that permit two dimensional simulation of the anatomical movements and such means can be a plurality of grooves at the right and left sides of one plate with an aperture in the other plate vertically aligned over each groove with a pair of pins, one at each side of the plates, inserted between an aperture and mating groove to link the plates together. Alternative means comprise a dental articulator that permits three dimensional simulation of the anatomical movements.

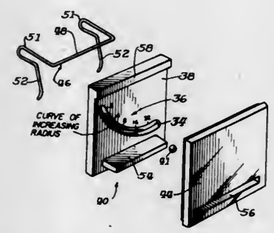
3,616,538
STANDARD TIME SUNDIAL
Tokutaro Yabashi, 265 Akasaka-cho, Ogaki City, Japan
Filed June 19, 1968, Ser. No. 738,334
Claims priority, application Japan, June 19, 1967, 42/52,545
Int. Cl. G04b *49/02*
U.S. Cl. 33—62 **2 Claims**

A sundial comprising a base adapted to be vertically disposed and having an inclined mounting surface, a pivot mounted on such surface and an arcuate dial plate rotatably mounted on the pivot. A style plate is mounted at an angle to the surface and has two parallel shadow casting edges, one for before noon and the other for afternoon, spaced by a selected distance so that the shadow of an edge upon the arcuate dial plate can indicate time. The arcuate dial plate has approximately equally spaced hour-marks graduated on a fixed radius from the pivot. A "location" correction scale is fixed



to the surface adjacent to the edge of the arcurate dial plate. The dial plate has "season" correction reference indicia for selectively setting the dial plate with respect to the "location" correction scale.

3,616,539
RANGE FINDER
Richard K. Carlson, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Feb. 3, 1969, Ser. No. 795,810
Int. Cl. G01c *3/00, 9/10*
U.S. Cl. 33—71 **2 Claims**

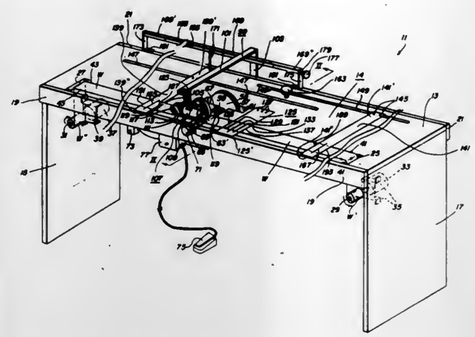


The distance of an optical instrument to a subject is determined according to the principle of triangulation by the position of a gravity orientable ball, in an arcuate track movable with the instrument, and arranged so that at each angle of inclination of its optical axis to a horizontal base, a predetermined track part is closest to the base. A scale of indicia along the track enables read-out of distance according to the position of the ball.

3,616,540
MACHINE FOR SCRIBING A TAPE TEMPLATE
Charles L. Clifton, 1906 W. 34th, Pine Bluff, Ark. 71601
Filed Jan. 2, 1970, Ser. No. 193
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 R **10 Claims**

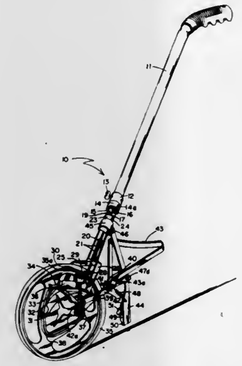
A machine to be used for scribing a tape template which is used to simplify laying out the framework for wall construction. The machine includes a table-like structure having an electric motor driven platen which carries the tape, to be scribed, across the table, a pair of electric

motor-driven tape take-up reels, a rotary measuring instrument, rough opening indicators which are used in con-



junction with a multi-sided locater bar, a center finder template and switches for activating the electric motors.

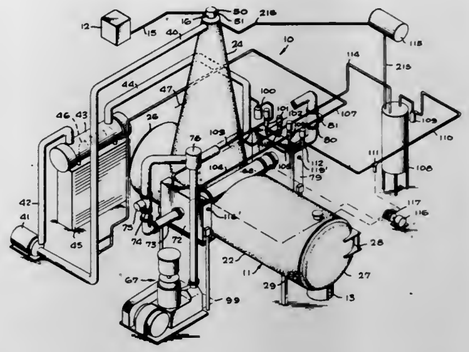
3,616,541
MEASURING WHEEL
Charles A. Crayton, 455 North St., Randolph, Mass. 02368
Filed Jan. 15, 1970, Ser. No. 3,177
Int. Cl. A47j *43/28*
U.S. Cl. 33—141 R **7 Claims**



A measuring wheel for measuring and marking off long distances, comprising a wheel, counter and handle. A brake is provided which is operated by pivoting the upper portion of the handle.

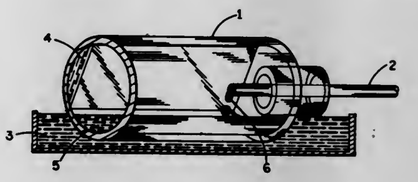
3,616,542
APPARATUS AND PROCESSES FOR PRODUCING FREEZE DRIED PRODUCTS
Earl L. Rader, 154 W. Providencia, Burbank, Calif. 91502
Filed Feb. 24, 1969, Ser. No. 801,383
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **43 Claims**

Freeze drying equipment and methods in which a liquid is sprayed into a refrigerated chamber, maintained under a high vacuum, and is frozen into small preferably snow-like particles or flakes before the liquid can fall onto any surface in the chamber, following which the frozen particles fall downwardly onto a conveyor in the lower portion of the chamber, and are advanced slowly



along the conveyor while heat is supplied to the particles in a manner subliming moisture from them.

3,616,543
METHOD OF PRODUCING A MULTICOMPONENT LYOPHILIZED PRODUCT
Eugene S. Barclay, West Chester, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Oct. 31, 1969, Ser. No. 873,111
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **6 Claims**

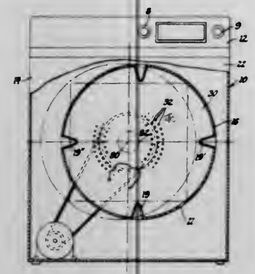


A solution is charged to a container, the solution is frozen, the container is rotated about an axis in such a manner that a second solution introduced to the container does not come in contact with the frozen first solution and then it is frozen. This process is repeated as often as desired or as often as the relative sizes of the container and solution volumes will permit. The frozen masses are then simultaneously lyophilized.

3,616,544
METHOD OF DRYING LUMBER
Aldo Ottolenghi, 25 de Mayo 294, Buenos Aires, Argentina
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,737
Int. Cl. F26b *3/00, 7/00*
U.S. Cl. 34—9.5 **6 Claims**

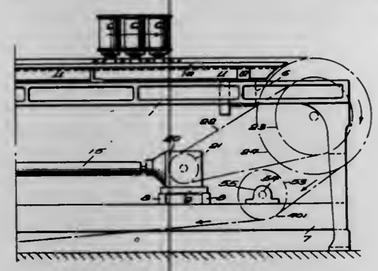
In a lumber-drying method, the lumber is submerged in a bath of water having a temperature of 80° C. or higher. When the lumber has been submerged for a time sufficient for water from the bath to be absorbed and to at least partially replace the original colloidal substances-containing moisture component of the lumber, the latter is removed from the bath and dried by exposure to hot gas, but under exclusion of contact with the ambient atmosphere, until the moisture content of the lumber is reduced to less than about 20% of the original moisture content.

3,616,545
CLOTHES DRYER WITH MEANS TO VARY CENTRIFUGAL FORCES ON THE CLOTHES
James W. Jacobs, Dayton, Ohio, assignor to General Electric Corporation, Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,609
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 **6 Claims**



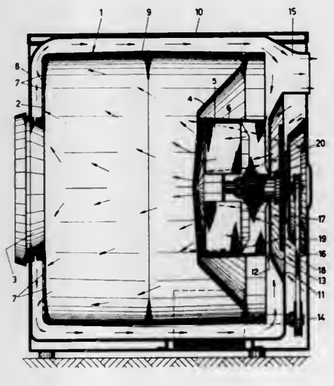
A domestic clothes dryer has a tumbling drum, rotatable about a horizontal axis, in which the center of rotation for the tumbling drum is offset from the geometric center of the tumbling drum. As the tumbling drum rotates, the clothes experience varying amounts of centrifugal force during tumbling thereof to vary their tumbling pattern with respect to a fixed air stream.

3,616,546
APPARATUS FOR PACKAGING GROUPS OF ARTICLES IN A TUBULAR SLEEVE
John George Selby Billingsley, Newark, and Jack Edgar Colsen, Hockessin, Del., Edward Stanley Pierce, Sinking Springs, Pa., Harold Eugene Ramsey, Wilmington, Del., and Paul Glenn Stephan, Landenberg, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Application Nov. 12, 1968, Ser. No. 778,360, now Patent No. 3,513,620, which is a continuation of application Ser. No. 483,945, Aug. 31, 1965. Divided and this application Sept. 5, 1969, Ser. No. 855,675
Int. Cl. B65b *1/02*
U.S. Cl. 34—217 **6 Claims**



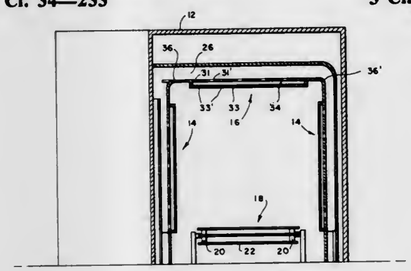
A high speed apparatus and process for continuously automatically packaging groups of articles in a tubular sleeve member, involving continuously conveying a plurality of articles from a first position along a given path to a second position, forming said articles into a series of spaced groups, supplying shrinkable film continuously into operative association with said articles, forming the film into an elongated surrounding envelope around said articles, sealing said film to form a unitary sleeve assembly surrounding said articles, severing said sleeve assembly to form individual groups of articles each enclosed by a tubular sleeve member having open end portions, first shrinking the end portions only of the sleeve member to form at least partial end closures therefrom and then shrinking the entire sleeve member into secure engagement with said articles contained in each sleeve member.

3,616,547
DRYER
Fredrik Adolf Schuurink, 27 Fr. Rooseveltlaan, Breda, Netherlands
Filed Nov. 14, 1969, Ser. No. 877,058
Claims priority, application Netherlands, Nov. 20, 1968, 6816567
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 **5 Claims**



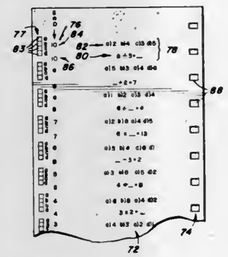
A laundry dryer having a rotatable drum and a fan to force heated air into the center of the drum. The air enters the back of the dryer, passes around a sheet to a heater and into the fan. The air exits on the opposite side with passages being arranged to discharge part of it to the atmosphere and part is re-circulated by passing through a slit and back to the fan.

3,616,548
APPARATUS FOR SHRINK PACKAGING
John A. Nichols, Canton, Mass., assignor to Mill Industries, Inc., Shreveport, La.
Continuation-in-part of application Ser. No. 781,440, Dec. 5, 1968. This application June 2, 1970, Ser. No. 42,693
Int. Cl. F26b *19/00*
U.S. Cl. 34—233 **3 Claims**



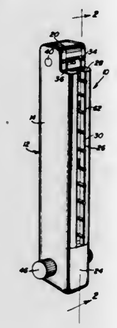
A shrink tunnel for heat shrinking wrapping material about articles by introducing heated and pressurized air through spaced perforated discharge members within the tunnel whereby the air is distributed against at least the top and sides of the heat shrinkable material with substantially equalized volume and velocity to uniformly shrink the material around the articles.

3,616,549
TACHISTOSCOPIC DEVICE
Steven A. Warren, 480 Saunders Road, Lake Forest, Ill. 60045
Filed Dec. 24, 1969, Ser. No. 888,001
Int. Cl. G09b *3/06, 17/04*
U.S. Cl. 35—9 R **4 Claims**



A tachistoscopic device for use with a sheet of symbols to be recognized when momentarily exposed. The device includes a frame having a symbol viewing window, and a shutter is movable past the window to momentarily expose the symbol to be viewed. The sheet of symbols preferably includes a plurality of sets of symbols, each set including a symbol to be viewed, such as a question, and an evaluation symbol to be compared therewith, such as a multiple choice answer. The sheet also includes a marking zone for each question with each zone having a plurality of rectilinearly spaced areas, each area corresponding to one answer of said multiple choice answers. A manually operable rectilinearly movable marking device is mounted in the frame for marking a selected area of the sheet after the questions have been flashed and the multiple choice answers have been exposed.

3,616,550
TEACHING AID
Jane M. Pexton, 1509 Carlton Way, Oklahoma City, Okla. 73120
Filed Jan. 8, 1970, Ser. No. 1,374
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 R **7 Claims**



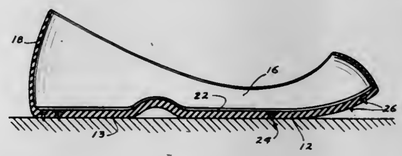
A plurality of insert elements of different lengths representing entry quantities, are inserted into the guide portion of a teaching aid to illustrate a mathematical problem. By moving of an endless tape, on which the inserted elements are supported, to a readout position, indicia on the tape is exposed through an indicator opening representing the solution to the entered problem.

3,616,551
TEACHING AID
Jetta Sue Conrad, 105 Glenrock Drive, Claymont, Del. 19703
Filed Oct. 15, 1969, Ser. No. 866,647
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 J **6 Claims**



A device for use in the teaching of reading and writing is provided. It is a three-dimensional element made up of or capable of being made up of a letter or a combination of letters. These comprise long vowels, vowel variants, short vowels, dipthongs, blends, suffixes, prefixes, digraphs, consonants and the like all of which, as separate elements, are capable of being placed in or on a base which is representative of a line upon which writing is to be placed. The base and the letter-carrying element have co-acting parts which allow the user to place them together in a fixed position. This allows the user to pick up, handle and move about the new combination of letters he has just made. While the parts are three dimensional, the thickness is small, being in the order of that of ordinary paper stock so that the combinations made lie flat much like ordinary written or printed matter.

3,616,552
ANTISKID FOOTWEAR
Alvin R. Kniffin, 2312 10th Ave. E., and Richard B. Haro, 3802 2nd Ave. E., both of Hibbing, Minn. 55746
Filed Sept. 8, 1969, Ser. No. 856,029
Int. Cl. A43b *1/10*
U.S. Cl. 36—7.3 **1 Claim**

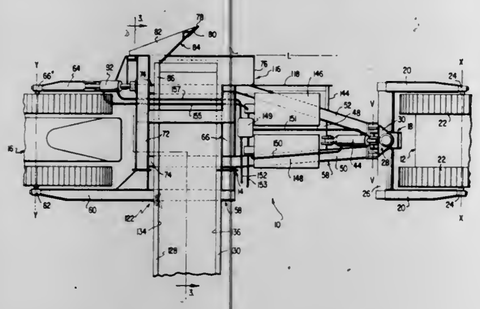


An antiskid footwear including an upper connected to a sole and a spike having a head from which extends a pointed portion, the spike being embedded in the sole with the head substantially centrally transversely of the thickness of the sole and the pointed portion extending outwardly from the bottom surface of the sole.

3,616,553
ELEVATING BELT LOADER AND EXCAVATION APPARATUS
Francis H. Holland, P.O. Box 20223, Billings, Mont. 59102
Continuation-in-part of application Ser. No. 804,045, Feb. 10, 1969. This application May 27, 1970, Ser. No. 40,775
Int. Cl. E02f *5/00*
U.S. Cl. 37—110 **9 Claims**

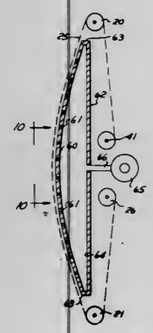
A horizontal platform is devoid of an undercarriage and supports horizontal and vertical excavating blades for depositing excavated earth on an endless conveyor

adapted to discharge the material to one side of the platform. The platform is coupled to a leading prime mover for pivoting about orthagonal axes which pivot axes may be raised and lowered vertically. The rear end of the platform is coupled to the track center of the trailing prime mover by paired arms which in turn pivot about a horizontal axis passing through the mover. Hydraulic means independently raises and lowers the platform about the horizontal axis extending through the trailing prime mover and allows tilting of the platform about a



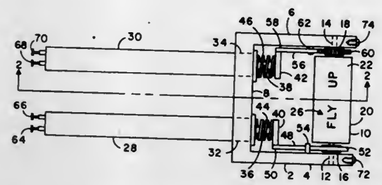
longitudinal axis. The horizontal cutting blade extends upwardly and rearwardly in inclined fashion from a position below the platform to direct excavated earth onto the endless conveyor. The vertical cutting blade lies outboard of and rearwardly of the horizontal blade and is inclined outwardly and forwardly, and a vertical planar fence extends above and along the full inboard edge of the horizontal blade and forwardly beyond the end of the same to insure that the excavated material falling inwardly from the vertical blade lies in the narrow path in front of the horizontal blade.

3,616,554
CHANGEABLE MESSAGE OUTDOOR ADVERTISING SIGN
Karl Singer, 26126 Meadowcrest, Huntington Woods, Mich. 48070, and Lewis P. Vogel, Livonia, Mich.; said Vogel assignor to said Singer
Filed Sept. 2, 1969, Ser. No. 854,449
Int. Cl. G09f *11/295*
U.S. Cl. 40—31 **4 Claims**



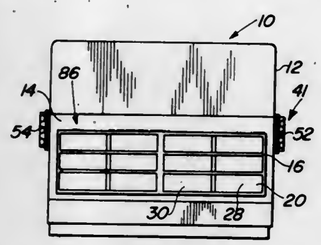
A large outdoor advertising sign having a support surface and a long, advertising message strip arranged in contact with the surface, extending around opposite edges of the surface and wound upon powered rolls at the rear of the surface, so that the strip is first wound around one roll to move along the surface in one direction and then reversely in the opposite direction. One roll is removable for replacing the advertising strip, the other is normally non-removable and has a lead strip fastened thereto for extending around the surface to the other strip where it may be releasably joined to the advertising strip by a conventional zipper. Means is provided for holding the strip upon the surface against wind pressures.

3,616,555
COMPACT ANNUNCIATOR PACKAGE
Melvin L. Campbell, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.
Filed Oct. 14, 1969, Ser. No. 866,307
Int. Cl. G09f *11/10*
U.S. Cl. 40—52 **7 Claims**



This invention relates to a compact annunciator package comprising a prism mounted for rotation about its axis and formed with a plurality of information-bearing surfaces coated with fluorescent paint, together with solenoid means coupled to the prism and actuable to position the prism to selectively present a desired one of its information-bearing surfaces for display.

3,616,556
MOVABLE DISPLAY
Bernhard O. Williams, Elmhurst, Ill., assignor to Walter E. Heller & Company, Chicago, Ill.
Filed Sept. 4, 1969, Ser. No. 855,244
Int. Cl. G09f *11/14*
U.S. Cl. 40—97 **6 Claims**



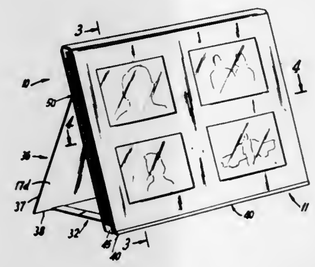
A housing having a window in one vertical wall thereof encloses a series of rectangular display carriers which are pivotally mounted on endless belts. The belts are rotatable, in a track within the housing, about a horizontal axis and are adapted to carry the displays borne by the carriers past the window in sequential order. When the device is employed in a remote control phonograph wall box, each carrier bears a display of record titles on each of its opposing broad faces, and a pair of projecting fingers is positioned adjacent the track at one end of the housing to engage each carrier, in turn, as the belt is rotated, and to cause each carrier to flip over and exhibit its opposing face. On successive rotations of the belt, which is operated by a drive mechanism manually actuated by a customer, first one side of each of the carriers may be viewed through the window, in sequence, and then the opposing side of each carrier is exhibited at the window, also in sequential order.

3,616,557
KNOCK DOWN HIGHWAY SIGN
Arthur G. Vara, Sr., 115 Westview Ave., Hamburg, N.Y. 14075
Filed Nov. 4, 1969, Ser. No. 873,994
Int. Cl. G09f *1/00, 19/02*
U.S. Cl. 40—138 **14 Claims**



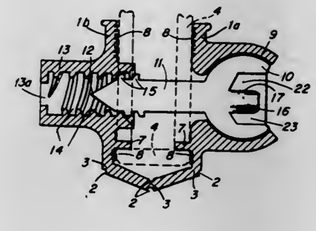
A knock down highway sign adapted to be readily folded from a storage position into an erected position. When erected, the sign is resistant to being tipped over by high wind conditions while being adapted to be swung down into engagement with the ground without substantial injury thereto in the event that the sign is hit and run over by a vehicle.

3,616,558
DEVICE FOR DISPLAY AND SAFE KEEPING OF SNAPSHOTS
Fred L. Jahn, Pittsfield, Mass., assignor to Textron Inc., Providence, R.I.
Filed Aug. 28, 1969, Ser. No. 853,751
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **14 Claims**



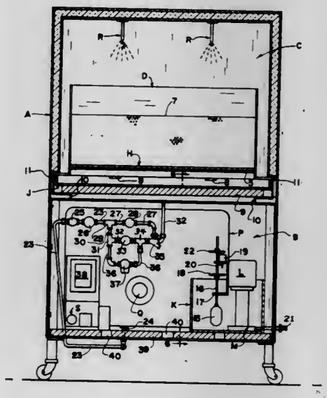
This display device comprises a stand that has hinged foldable leaves with means to support therebetween, a pair of snapshot albums. The leaves are held closed by magnetic means. The front leaf of the stand has window openings through which selected snapshots in the album may be seen. The albums may be easily rearranged to display newly selected snapshots. The snapshot albums, each comprises a plurality of transparent pockets on a binder. The front leaf of the stand has a pair of windows for each album. The albums can be easily placed into the stand with the binder of each holder to the right or left. Each pocket is transparent and can hold two snapshots on each side of a central filler or divider sheet. The pockets are swingable about the binder to bring any desired snapshots to position for exposure through the windows of the front leaf of the stand.

3,616,559
FIREARM TRIGGER LOCK FITTING ON THE TRIGGER GUARD
Edward J. Sobolewski, Moorestown, N.J., deceased, by Helena Sobolewski, spouse of decedent, 159 Haines Drive, Moorestown, N.J. 08057
Filed Sept. 12, 1968, Ser. No. 759,349
Int. Cl. F41c *17/02*
U.S. Cl. 42—1 **10 Claims**



To prevent a gun trigger surrounded by a trigger guard from being actuated accidentally or by an unauthorized person, a trigger lock of pliable material is bent upon itself around the guard and locked in place by a specially formed key wrench. The lock then prevents access to the trigger so long as it remains in place. However, the lock is so constructed that it can be removed quickly with the aid of the special key wrench.

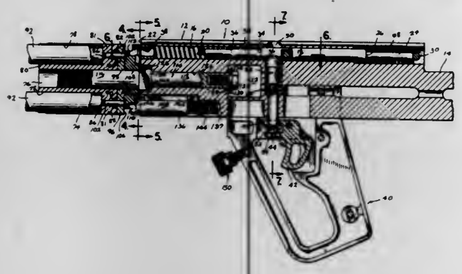
3,616,560
BEAN SPROUT GROWING MACHINE
Henry C. Mun, 162 7th St., Oakland, Calif. 94607
Filed Sept. 12, 1969, Ser. No. 857,413
Int. Cl. A01g *9/02*
U.S. Cl. 47—1.2 **3 Claims**



A bean sprout growing machine in which automatic means is provided for spraying hot water at a predetermined temperature and at predetermined time periods and for a given length of time for each period to cause beans

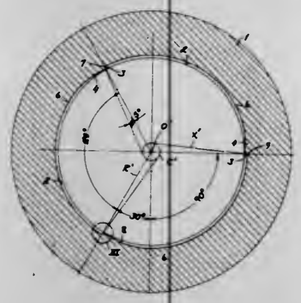
to sprout and grow. Any excess water is immediately drained from the bean sprout growing container and novel means is used for maintaining an unobstructed air passage through the mass of beans from the water drain at the bottom of the container to the top of the compartment so that moist air at a temperature of about 80° F. will constantly fill the container.

3,616,561
MULTIPLE BORE GUN HAVING A ROTATABLE BARREL
Grover E. Hendricks, 2241 Lake St., Niles, Mich. 49120
Filed Mar. 3, 1969, Ser. No. 803,892
Int. Cl. F41c *1/00*
U.S. Cl. 42—1 L **3 Claims**



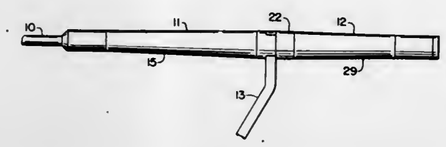
A multiple bore gun having a rotatable barrel member mounted to a gun stock. The barrel member includes a plurality of bores therethrough each equally spaced from the axis of rotation of said bore and having an ammunition cartridge receiving end part which is positionable adjacent to and alignable with a longitudinal bore in the stock upon rotation of the barrel member. A detonating pin is slidably positioned within the stock bore and is shiftable therein between a cocked position and a firing position in which the pin is adapted to engage and detonate an ammunition cartridge seated within an aligned receiving end part.

3,616,562
GUN-BARREL RIFLING
Karl Burgsmüller, Haus Hainberg, 335 Kreiensen, Germany
Filed Sept. 2, 1969, Ser. No. 854,565
Int. Cl. B41c *21/00, 21/04*
U.S. Cl. 42—78 **6 Claims**



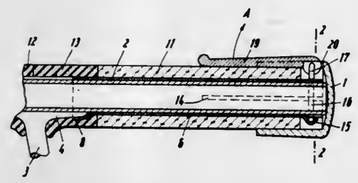
The rifling of a gun barrel consists of three peripherally equispaced shallow helical grooves separated by lands of sawtooth-shaped profile with an apex angle of approximately 90° to define a generally radial guiding edge facing in the direction of twist as viewed when looking toward the muzzle. The bottom of each groove, centered on the barrel axis, extends over an arc of substantially 90° and merges tangentially into the rising flank of the adjoining sawtooth.

3,616,563
REEL ATTACHMENT
Robert Thomas Catignani, Fort Lee, N.J., assignor to The Garcia Corporation
Filed Jan. 27, 1970, Ser. No. 6,231
Int. Cl. A01k *87/06*
U.S. Cl. 43—22 **3 Claims**



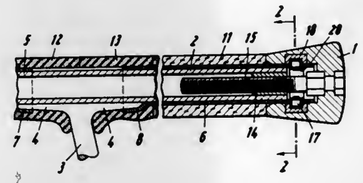
A spinning reel is attached to a fishing rod handle, the spinning reel having a stalk terminating in a flat foot having an enlarged end. The fishing rod handle has a rear flange and a smaller diameter extension thereof, said rear flange and said extension containing a vertical opening longer than the width of said enlarged end of said foot. The opening has sides shaped to conform to the profile of said foot so that the stalk, after passing through the opening, may be rotated 90° to seat in the opening, after which locking means is advanced over said extension to clamp said foot in the front end of said opening.

3,616,564
DEVICE FOR ATTACHING FISHING REELS TO FISHING TACKLES
Rudolf Schultz, Berlin, Germany, assignor to Deutsche Angelgerate Manufaktur (DAM) Hellmuth Kuntze Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft, Berlin, Germany
Filed Nov. 5, 1969, Ser. No. 874,257
Claims priority, application Germany, Dec. 10, 1968, G 68 11 310.0–7401
Int. Cl. A01k *87/06*
U.S. Cl. 43—22 **2 Claims**



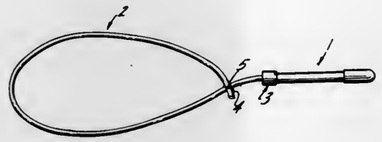
A fishing tackle has a handle carrying the fishing rod. Two sleeves are mounted upon the handle. One of these sleeves is fixed to the handle while the other is slidable thereon. The two sleeves have opposed shoe-like extensions with inclined surfaces adapted to overlap opposite ends of flanges carried by a foot constituting the support of the fishing reel. The sleeves are enclosed by covers of poor heat conducting material. The T-shaped reel support is clamped and held firmly by the two sleeves and their covers. The movable sleeve has elongated slits extending from its free end and terminating intermediate its ends; a resilient clamping ring encloses this end of the sleeve and has outwardly extending legs engaging inner inclined surfaces of a fork constituting an end of a tensioning lever pivotally secured to the ends of said legs. When the lever is swung, the ring will firmly clamp the sleeve upon the handle. An end cap is connected with the cover enclosing the movable sleeve and has a recess for the tensioning lever.

3,616,565
DEVICE FOR ATTACHING FISHING REELS TO FISHING TACKLES
Rudolf Jung, Berlin, Germany, assignor to Deutsche Angelgerate Manufaktur (DAM) Hellmuth Kuntze Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft, Berlin, Germany
Filed Nov. 5, 1969, Ser. No. 874,247
Claims priority, application Germany, Dec. 10, 1968, G 68 11 311.1–7401
Int. Cl. A01k *87/06*
U.S. Cl. 43—22 **4 Claims**



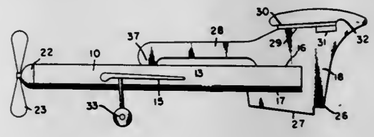
A fishing tackle has a cylindrical handle carrying the fishing rod. Two cylindrical sleeves are mounted upon the handle and at least one of them is movable thereon. The fishing reel has a T-shaped support with opposed flanges which can lie against the handle. The two sleeves have opposed shoe-like extensions with inclined surfaces extending over the edges of the flanges. Each sleeve is enclosed by covers consisting of poorly heat conducting material. A cap mounted upon the end of the handle is used to press the sleeves and their covers against the reel support. The present invention is particularly characterized by a removable connection between the cap and the end of the handle and by a driver element connecting the cap with the adjacent sleeve.

3,616,566
TOY SPINNING ROPE
Marguerite Simpson and Frances S. Grays, both of 137—51 S. Gate St., Springfield Gardens, N.Y. 11413
Filed Oct. 21, 1969, Ser. No. 868,031
Int. Cl. A63h *33/00*
U.S. Cl. 46—51 **5 Claims**



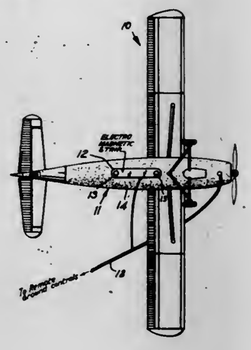
A hand-manipulated lasso having a hollow cylindrical handle and a rotatable shaft within the handle, an elongated plastic-like tubular luminous material having one end thereof connected to the shaft and the other end elastically connected to a point intermediate the shaft end to produce a singular loop, and an orbital type object attached to the loop so that the rotation of loop via the manipulation of handle gives an orbiting effect to the object.

3,616,567
TOY AIRPLANE
Harold Goodman, Newark, N.J., assignor to Goodtone Manufacturing Co., Middletown, N.J.
Filed Aug. 11, 1969, Ser. No. 848,914
Int. Cl. A63h *27/00*
U.S. Cl. 46—78 **4 Claims**



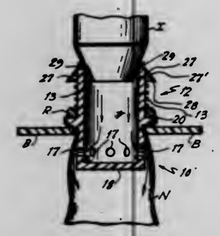
A toy airplane made of hard paper or cardboard has an elongated tubular body which is open on both ends. The front end is covered by a cap through which a pin extends. The outer end of the pin carries the usual propeller. The inner end of the pin has the shape of a hook over which extends one end of a double rubber band serving as the motor. The opposite end of the rubber band fits over a two-headed rivet which extends through the tubular body adjacent the tail. The tubular body has two aligned slots through which the wings extend. The rear end of the tubular body has aligned slots perpendicular to the wing slots through which the rudder extends. An elevator fits into a slit provided in the rudder and is supported by a plastic clip to prevent it from wobbling. Wheels are carried by a support member having angular portions extending over the top surfaces of the wings to prevent the wheels from shifting.

3,616,568
PARACHUTIST DEVICE FOR MODEL AIRPLANES
Robert E. Powell, 1114 61st St., Kenosha, Wis. 53140
Filed Mar. 17, 1970, Ser. No. 20,321
Int. Cl. A63h *33/20*
U.S. Cl. 46—86 B **7 Claims**



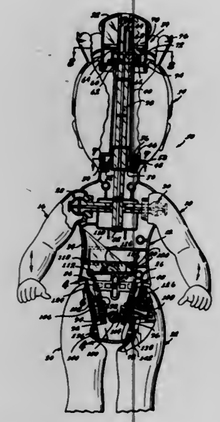
An electro-magnetic arrangement for model aircraft, having the ability to retain a toy parachutist until it is desired to release the chutist. This device is controlled through the use of a remote control cable to the craft from the ground and enables the user to drop the chutist while the craft is in flight in order that it may strike the given target area.

3,616,569
BALLOON AND VALVE ASSEMBLIES AND SUPPLY THEREOF FOR DISPENSING MACHINE
Donald D. Litt, Scarsdale, and David B. Jaroff, New York, N.Y., assignors to Miner Industries, Inc., New York, N.Y.
Filed June 30, 1969, Ser. No. 837,691
Int. Cl. A63h *3/06*
U.S. Cl. 46—90 **9 Claims**



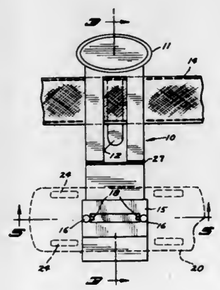
A balloon assembly particularly suited for dispensing by a vending machine has a one-piece valve body elastically engaged by the neck of a balloon to normally seal radial passages opening from an axial bore extending from the outer end of the valve body. The surface of the valve body is given a particular configuration to retain the balloon neck thereon during inflation, and the openings of the radial passages are located to permit such inflation and to retain the inflating gases in the balloon even when comprised of a mixture of air and helium. A plurality of such balloon assemblies are releasably held in the spaced openings of a flexible belt to serve as a supply of balloons for a balloon dispensing or vending machine, with the edge of each belt opening ensuring the retention of the balloon neck on the respective valve during inflation.

3,616,570
ANIMATED DOLL
Sydney L. Groves, Redondo Beach, Joseph Kossoff, Hawthorne, and Joe W. Young, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 12, 1970, Ser. No. 10,838
Int. Cl. A63b *11/00*
U.S. Cl. 46—120 **8 Claims**



A simple ballerina doll whose legs can pivot together or separately, to perform kicks, toe stepping, and splits, or to assume a sitting position. The doll includes a pair of pivotally mounted legs and an actuator member with a vertical slot that receives a shaft on the doll body, so that the actuator member has opposite ends coupled to a different one of the legs, so that if the actuator member merely pivots, then the legs may move in opposite directions, while if the actuator member is moved down without pivoting, then both legs move up together. A button on the side of the doll enables a child to push the actuator member down or allow it to move up without touching the legs. The doll also has a pivotally mounted knob on its head which a child can hold while turning the doll, and a head spotting mechanism for making the doll face in the same direction for about 90° of each turn.

3,616,571
COMBINATION TOY VEHICLE AND HOLDING MEANS THEREFOR
Cecil F. Adickes, Playa del Rey, Calif., assignor to Tonka Corporation, Mound, Minn.
Filed Feb. 11, 1970, Ser. No. 10,402
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **2 Claims**



A combination toy vehicle and means for suspending the vehicle from a belt or hat or the like, said vehicle having a pair of apertures on the underside thereof and said means comprising an elongated hanger strap of flexible material having a clip at one end for attachment to the belt and a pair of spaced studs near the other end for insertion one into each of said apertures on the vehicle. The studs have resiliently deformable heads which compress as they pass through the apertures.

3,616,572
BLINKING EYE DOLL
Witold W. Kosicki, Columbia, and Charles M. Hollingsworth, West Columbia, S.C., assignors to Horseman Dolls Inc., Columbia, S.C.
Filed Nov. 18, 1969, Ser. No. 877,789
Int. Cl. A63h *3/40*
U.S. Cl. 46—235 **19 Claims**

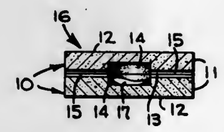


A blinking eye doll in which respective coils are energized to draw permanent magnet slugs into the coils to drive slidably supported actuators to move pivotally supported eyes from open to closed positions against the action of counterweights. Gravity activated automatic circuitry energizes the coils to provide a periodic rapid blinking action of both eyes when the doll is erect with both arms down and a slower winking action of one eye when the doll is erect and its opposite arm is raised.

ERRATUM

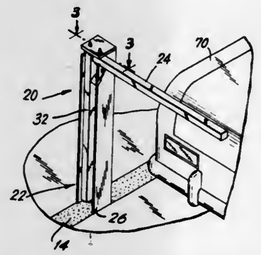
For Class 47—2 See:
Patent No. 3,616,560

3,616,573
SEED CAPSULE
Peter J. Clifford, Fresno, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Jan. 22, 1969, Ser. No. 793,121
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 **1 Claim**



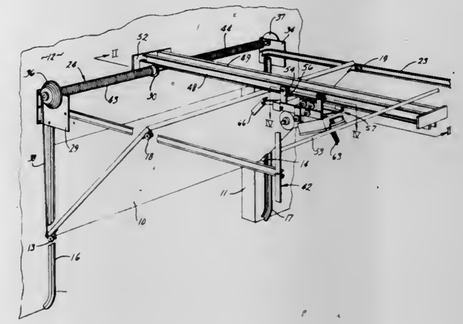
Ventilated seed capsules are formed by preparing a charge of seed bed materials, such as vermiculite and binder, compressing the charge to form a base capsule segment having a cylindrical recess therein with radial grooves extending from the cylindrical recess to the outer perimeter of the base segment, drying the base segment, placing a seed in the recess, and enclosing the recess to form a seed containing cavity by securing to the base a cover that has been prepared in the same manner as the base.

3,616,574
PARKING SPACE BARRIER
Alex Danin, 108 Mamaroneck Ave., White Plains, N.Y. 10603
Filed Jan. 29, 1970, Ser. No. 6,762
Int. Cl. F01f *13/00*
U.S. Cl. 49—35 **7 Claims**



A parking space barrier for preventing unauthorized use of a parking space. The barrier includes a barrier arm which has a blocking position extending at least partly transversely across and over a parking space. The barrier has for this barrier arm a support structure which supports the arm for movement from a non-blocking position hanging down between a pair of adjoining parking spaces first about a substantially horizontal axis in a vertical plane to a blocking elevation and then about a substantially vertical axis in a horizontal plane to its blocking position where the barrier arm is situated at an elevation high enough to clear the hood or trunk of an automobile while still being too low to clear the roof of an automobile.

3,616,575
HIGH-SPEED DOOR OPERATOR
Donald S. Harris, Dallas, Tex., assignor to Overhead Door Corporation, Dallas, Tex.
Filed Oct. 1, 1969, Ser. No. 862,688
Int. Cl. E05f *15/12*
U.S. Cl. 49—200 **11 Claims**

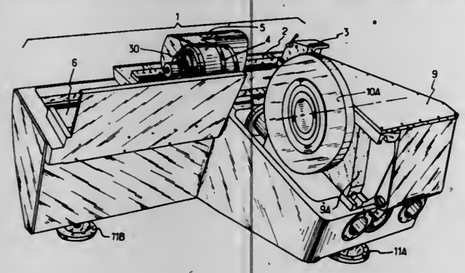


A door operator adapted to move an upwardly acting door along tracks between open and closed positions. The operator includes a carriage mounted upon a substantially horizontal rail extending perpendicularly away from the closed position of the door. An endless chain is arranged in an elongated loop extending along the rail and supported for movement relative thereto. One end of the loop can rotate a shaft mounted above the closed position of the door. Cables are connected between the shaft and the lower edge of the door. Drive means on the carriage engages the chain and causes the carriage to move relative to the chain and the rail. Linkage connects the carriage to the door and cooperates with the cables for opening and closing the door.

3,616,576
EXTERNAL GRINDER WITH AN AUXILIARY GRINDING WHEEL
Jean Piat, La Varenne, France, assignor to Etablissements Piat, Montreuil, Seine-St. Denis, France
Filed Jan. 14, 1969, Ser. No. 790,956
Claims priority, application France, Jan. 16, 1968, 136,274
Int. Cl. B24b *49/14*
U.S. Cl. 51—165.73 **13 Claims**

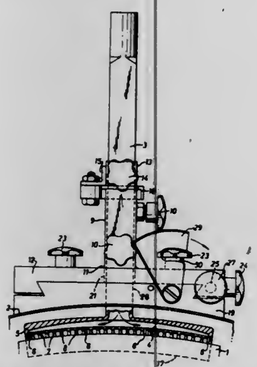
External grinder of generally rectilinear overall shape having an upper plane which is inclined toward the back at an angle of approximately 20° in relation to the horizontal with provision for the operator within the rectilinear shape and with the main table located at the front of the operator and a grinding set at the side of the operator, the whole machine resting on three legs at least one of which is adjustable as to height, the frame of the machine being essentially composed of two water-tight vats forming interlocking caissons filled with a refrigeration liquid arranged for constant circulation. The constituent elements of the machine are tooled perpendicularly among themselves and are provided with an opening and the

added parts are circular, the apparatus being provided with a main grinding wheel with a movable carriage moving perpendicularly to the trajectory of the table holding the part to be ground on a main carriage which is movable perpendicularly to the aforementioned trajectory of the table holding the parts, and an auxiliary grinding wheel having a carriage which moves obliquely with respect to that of the main grinding wheel on the same main carriage, the machine being provided with an electronic control so that as soon as one or the other of the two wheels has selectively reached the position corresponding to the fictitious zero from which a numerical count may begin,



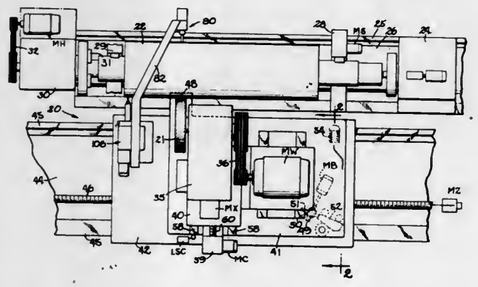
the forward progress is brought about by the movement of the main carriage bearing the grinding set. The main carriage bearing the grinding set is arranged to slide up on two lateral guides while its forward progress is obtained by means of a jack-screw placed between the two guides and nearer to the main grinding wheel. The screw causing forward progress of the main carriage is of the moto-reducer type with electronical numerical counting. The lead screw is associated with a sleeve nut attached to the main carriage through compensating bellows means. The table holding the part to be ground has a fixed tail-block which constitutes the zero reading.

3,616,577
GRINDING APPARATUS
Norman H. Hutton, 85 Wick Hall, Furze Hill, Hove, Sussex, England
Filed Mar. 25, 1970, Ser. No. 22,434
Int. Cl. B24b *55/02*
U.S. Cl. 51—267 **8 Claims**



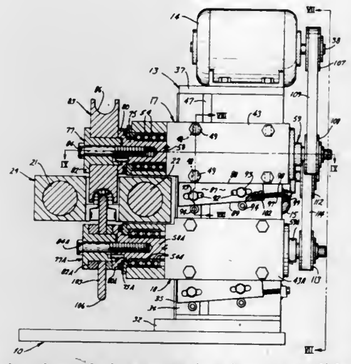
A grinding machine of the kind described in Pat. No. 3,334,451 is modified for use with a grinding element formed with a peripheral grinding edge, by providing the deflector element with a side wall which extends radially in close proximity to the grinding edge and the adjacent side surface of the grinding element and is formed with outlets for directing liquid coolant onto a grinding edge and side surface of the grinding element in directions substantially at right angles thereto so as to effectively remove grinding debris therefrom and is also formed with ridges forming continuations of the ridges on the curved plate of the deflector element for deflecting coolant back onto the grinding edge and adjacent side surface of the grinding element repeatedly without material loss of imparted velocity. The deflector element is also adjustable in an axial direction relative to the grinding element to maintain a constant clearance between the deflector side wall and grinding elements of different widths.

3,616,578
METHOD FOR TURNING WORKPIECES
Stephen C. Clark, Jr., Williamstown, Mass., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Filed Jan. 10, 1969, Ser. No. 790,323
Int. Cl. B24b *3/00*
U.S. Cl. 51—326 **17 Claims**



Disclosed here are methods and automatic apparatus for grinding cylindrical workpieces, such as the contoured rolls used in metal rolling mills. The methods and apparatus involve (1) automatic finding of the lengthwise center of rolls of different and undetermined lengths so as to establish a reference position for the execution of a numerically programmed path defined relative to the center of a roll as a point of symmetry, (2) the storage of the successive instructions of multi-axis movements making up a numerically defined profile or contoured path, and the use of those instructions repeatedly and in whole or in part as called for by different ones of a sequence of commands read from storage and executed in succession, (3) the automatic alignment of the roll axis parallel to the longitudinal axis of motion in a grinding machine by pivoting of one end of the roll about the other until the sensed difference in positions of the roll surface, along an axis transverse to the longitudinal axis and at locations near opposite ends of the roll, is changed to a predetermined fraction of the originally sensed difference, (4) the initiation of grinding passes from that end of a roll which is largest in diameter, so as to avoid "digging in" or increasing the depth of wheel bite as the wheel moves lengthwise of the roll, (5) the execution of continuous passes of the grinding wheel with pre-programmed values of feed rate, wheel speed, roll speed, continuous infeed and incremental infeed until a pre-programmed thickness of material has been removed from the roll surface, and (6) the grinding down of a roll until it is reduced to a diameter equal that of a previously ground roll of a matched pair. These functions are all obtained by the calling out and execution of pre-established routines in response to the reading from storage of pre-programmed sequence commands, so that in the disclosed method and apparatus there is an automatic progression from each type of operation to the next, and with the following of numerically defined profile whenever it is required.

3,616,579
GRINDING MACHINE
John A. MacKay, Warren, Mich., assignor to Unison Corporation, Madison Heights, Mich.
Filed Jan. 7, 1970, Ser. No. 1,256
Int. Cl. B24b *7/00*
U.S. Cl. 51—82 R **15 Claims**



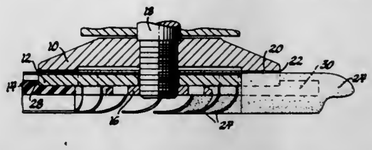
A pair of workpiece-engaging jaws are slideably supported upon guide rods for independent movement lengthwise thereof and said guide rods are supported by pedestals mounted upon a base. The workpiece is channel shaped in this embodiment and opens downwardly when it is held between the jaws. A pair of vertically aligned grinding wheels, one having a convex, peripheral face and the other having a concave, peripheral face are mounted upon spindles for rotation about parallel axes. The wheel spindles are supported in bearing assemblies adjustably mounted upon an upright column connected to the base. A pair of motors are mounted upon the column and connected to the spindles for rotating same independently. The jaws are urged toward and away from each other by hydraulic actuators supported upon the pedestals.

3,616,580
METHOD OF ABRADING TITANIUM AND TITANIUM ALLOYS
Ernest J. Duwell, Hudson, Wis., and In Sun Hong, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Feb. 10, 1969, Ser. No. 798,175
Int. Cl. B24d *5/02, 1/00*
U.S. Cl. 51—281 **2 Claims**

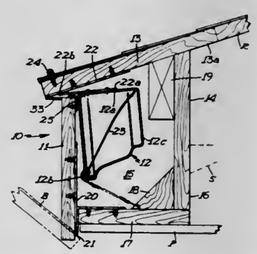
Titaniferous metals are ground more efficiently, more rapidly, and with improved surface finish using a silicon carbide coated abrasive product having a polyvinyl or polyvinylidene halide as a surface coating, e.g., included as a particulate filler in the sandsize adhesive.

3,616,581
POLISHING AND GRINDING ROTARY FINISHING TOOL
Roger W. Johnson, Rochester, Steve M. Senko, Clawson, and Frank J. Sienkiewicz, Warren, Mich., assignors to General Electric Corporation, Detroit, Mich.
Filed Oct. 8, 1969, Ser. No. 864,595
Int. Cl. B24d *9/08*
U.S. Cl. 51—337 **4 Claims**

A nonloading, self-cleaning rotary surface finishing assembly for both grinding and polishing operations using the same abrasive grit. The assembly includes a rigid backup pad and a composite front plate having integral flexible fingers extending radially beyond the backup pad. A plurality of radially arrayed, overlapping, generally tapered flaps, extending out from the fingers, are clamped in place between the backup plate and a rigid central portion on the front plate. The outer periphery and trailing edge of each flap is arcuate, and the trailing edge preferably has a notch near its innermost end for improved wear life.

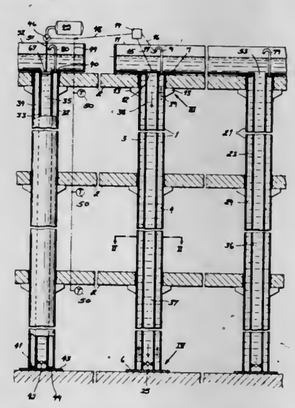


3,616,582
RAIN GUTTER CONSTRUCTION
Gerald E. Walek, 556 E. Nevada St., St. Paul, Minn. 55101, and Arvid A. Olson, 212 Daphne Ave., Cottage Grove, Minn. 55016
Filed Aug. 15, 1969, Ser. No. 850,490
Int. Cl. E04d *13/00*
U.S. Cl. 52—15 **3 Claims**



Rain gutters for a building hinged to swing downwardly and inwardly of the edge of the roof for winter storage behind the facia board which is hinged at its lower edge. An empty space is between the facia board and the ends of the rafters and joists to confine the gutter for storage.

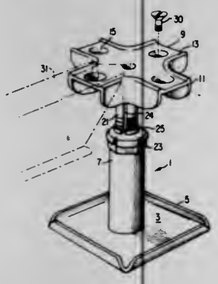
3,616,583
COLUMN ARRANGEMENT FOR MULTISTORY STRUCTURES
Hans Weineck and Gottfried Jacob, Oberhausen, Germany, assignors to Huttenwerk Oberhausen AG, Oberhausen, Germany
Filed June 9, 1969, Ser. No. 831,459
Claims priority, application Germany, June 12, 1969, P 17 59 835.5
Int. Cl. E04b *1/92, 1/74*
U.S. Cl. 52—168 **6 Claims**



A steel-column arrangement for multistory steel structures in which the column is hollow and a coaxial inner

duct is provided for introducing water permanently or upon the development of fire into the chamber surrounding the inner duct and enclosed by the outer column. An equalizing receptacle at the top of the column communicates with the inner duct which connects with the surrounding circumferential space at its bottom. A standpipe opening above the water level in the container is provided at the top of this outer space to vent vapor therefrom.

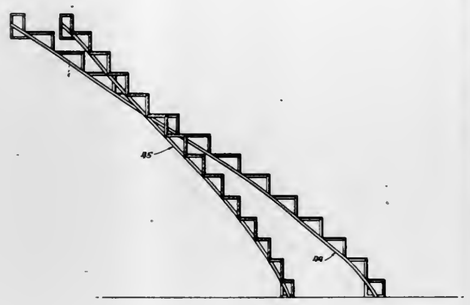
3,616,584
ELEVATED FLOOR ASSEMBLY
R. Gerald Sartori and Eugene L. Swensen, Rockville, Md., assignors to Liskey Aluminum, Inc., Glen Burnie, Md.
Filed Jan. 6, 1970, Ser. No. 931
Int. Cl. E04c *3/32;* **E04d** *15/18*
U.S. Cl. 52—126 **7 Claims**



An elevated floor structure of panels is supportable on pedestals with or without stringers, bridging the pedestals. The pedestals include a base with an upstanding hollow tube and a cap having a depending threaded shaft that slides within the tube. A stop nut with an encapsulating member keyed to the shaft holds the cap and shaft at the desired height while permitting the cap to rotate relative to the base. The cap is cruciform in plan view with four laterally extending arms which support the corners of the panels. The arms each have raised ribs at their longitudinal peripheries with an aperture between the peripheries to receive an insertion. Depending on whether or not stringers are used, the insertion can be fastening, securing or spacer devices that correctly position the pedestals with respect to one another. The raised ribs of the cap interfit with panel or stringer rims.

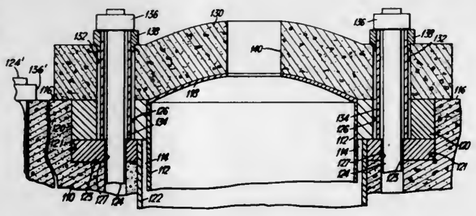
3,616,585
CURVED STAIRCASE FRAME AND METHOD OF MAKING
Adam J. Cirgenski, Lambertville, Mich., and Vernon C. Stiles, Toledo, Ohio, assignors to Stile-King Stairs, Inc., and Scholz Homes, Inc., Toledo, Ohio, fractional part interest to each
Filed June 4, 1968, Ser. No. 734,413
Int. Cl. E04f *11/10, 11/12*
U.S. Cl. 52—187 **3 Claims**

Right-angle braces are formed of two sections of angle iron mitered together. One leg of the brace is adapted to receive the riser of a stair; and the other leg is adapted to receive the tread of the stair. A number of these braces, each designed to define one side of a step in a curved staircase, are mounted on a flat metal bar to form a flat string for the staircase. A similar flat metal bar is placed in a jig at the pitch and curvature the finished staircase is intended to assume; and the formed string is placed in the jig with the two flat bars engaging each other throughout their lengths. The two bars are then welded together to form a lamination while in the jig to provide the curved horse for one side of the staircase with the laminated bars retaining the desired curve and pitch after removal from the jig. Another metal horse is similarly formed for the other side of the staircase, but in a separate jig of different curvature. After the two



curved horses are installed, the treads and risers are attached to a pair of associated braces by screws inserted from beneath the metal frames.

3,616,586
PRESSURE VESSELS
Anthony W. T. Mottram, Rugby, England, assignor to Rolls Royce Limited, Derby, England
Filed July 17, 1969, Ser. No. 842,579
Claims priority, application Great Britain, July 17, 1968, 33,975/68
Int. Cl. E04h *7/20;* **G21c** *13/08*
U.S. Cl. 52—224 **7 Claims**

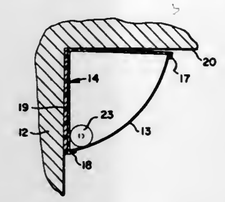


A prestressed pressure vessel having an opening in one of its external surfaces to the interior thereof, the vessel being prestressed by a plurality of prestressing cables extending through the material of the vessel substantially perpendicular to the one surface. At least some of the prestressing cables are utilized for maintaining a removable closure member over the opening, there being means for maintaining at least some of the tension in these cables when the closure member is removed so that they still function to prestress the vessel.

3,616,587
DECORATIVE WIRE MOLDING
Hubert J. Schlafly, Jr., Fort Lee, N.J., assignor to Teleprompter Corporation, New York, N.Y.
Filed Aug. 2, 1967, Ser. No. 657,854
Int. Cl. E04b *19/04*
U.S. Cl. 52—288 **4 Claims**

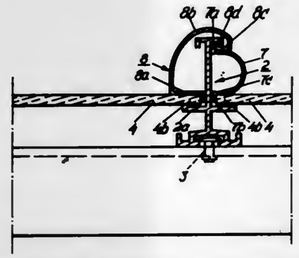
A decorative molding for housing wires, cables and the like and a method for installing the molding on a

building surface are described. The molding comprises a molding slat and at least one bracket adapted to hold the opposite edges of the slat and to mount it on a building surface. In one embodiment the bracket comprises two legs of resilient material, each joined at one end and having a hook portion at the free end. The legs are formed so that the distance between the free ends is less than the distance between the opposite edges of the



slat. To install the molding, one leg of the bracket is fixed to the building surface and the molding slat is inserted between the hook portions of the bracket to distort the bracket legs so that the distance between their free ends equals the width of the slat which is held securely by the hook portions. A second embodiment provides a flat bracket with hook portions at each end, and a flexible slat which is distorted to fit between the hook portions.

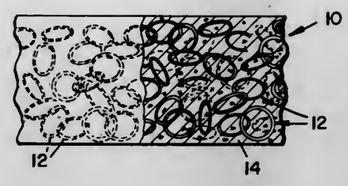
3,616,588
MOLDING FOR USE IN GLAZING GREENHOUSE FRAMES AND THE LIKE
Kurt Ake Valdemar Hansson, Hishult, Sweden
Filed Nov. 25, 1968, Ser. No. 778,552
Claims priority, application Sweden, June 6, 1968, 7,566/68
Int. Cl. E06b *3/60*
U.S. Cl. 52—495 **2 Claims**



A moulding, for use in glazing greenhouse frames and the like, has a strip of resiliently flexible material bent in parallel relation to its longitudinal axis at approximately right angles so as to include one straight leg and one convexly curved leg, and has edge portions bent in directions away from each other respectively for fitting the edge of the pane and for hooking into a structural element of the frame.

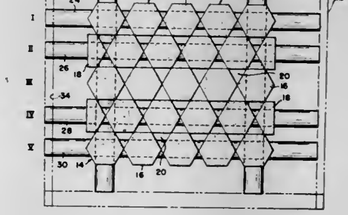
3,616,589
FIBER REINFORCED CONCRETE
James L. Sherard, 70 Hillcrest Road, Berkeley, Calif. 94705
Filed Oct. 31, 1968, Ser. No. 772,343
Int. Cl. E04c *5/01*
U.S. Cl. 52—659 **1 Claim**

A reinforced composite material such as concrete made up of matrix of cementitious material combined with a multiplicity of closely spaced but randomly distributed oriented reinforcing elements. The reinforcing elements are made of high tensile strength wire, rods or bands each in the form of an endless ring or some other closed shape in which there are no free ends so that they cannot slip with respect to the matrix as the result of a failure of bond between the two materials. They are distributed uniformly and randomly throughout the mass in such a way that each portion of reinforced concrete has essentially



the same amount of reinforcing elements by weight. Also, since the inclination of the planes of the individual reinforcing elements are completely random, the composite material has essentially the same structural properties at every point within the mass, including increased compressive, tensile and shear strength.

3,616,590
PREFABRICATED CORE STRUCTURE FOR A PREFABRICATED STRUCTURAL PANEL
Albert Shotmeyer, Wyckoff, N.J. (46 Westerly Road, Saddle River, N.J. 07458)
Filed Oct. 8, 1969, Ser. No. 864,605
Int. Cl. E04c *2/10, 2/36*
U.S. Cl. 52—663 **3 Claims**

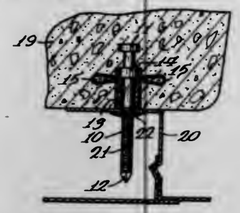


A prefabricated core structure for a prefabricated structural panel made up of a plurality of relatively short, solid, members arranged in side-by-side abutting relation in tiered rows having spaces between the members to form a honeycomb structure, and a series of elongated tubular members disposed at right angles to each other and passing through the honeycomb structure to retain the members in assembled relation.

3,616,591
FASTENER WITH ANCHORING HEAD
Rannalt C. Bahr, 146 Ingalton Ave., West Chicago, Ill. 60185
Filed Nov. 12, 1969, Ser. No. 875,808
Int. Cl. E04b *1/41*
U.S. Cl. 52—701 **2 Claims**

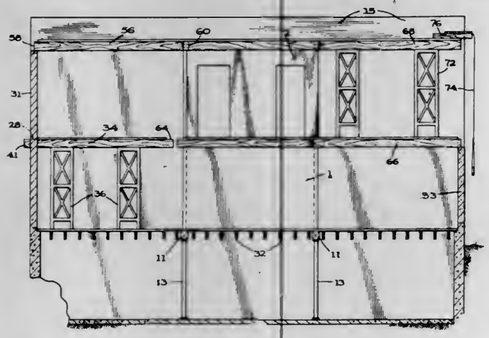
A fastener having a driving head, a pointed end and a radially expandable portion consisting of a plurality of bands extending between a fixed subhead and a collar which is movable toward the subhead to accomplish the expansion of the connecting bands. The expanded head

is received in a mass of concrete pending solidification for securely anchoring the fastener whereby the exposed



pointed end may be used as a hanger to support accessories to the concrete mass.

3,616,592
METHOD OF CONSTRUCTING BUILDING UNITS
Irving Rothman, 16 Halcyon Court, Baltimore, Md. 21208
Filed Feb. 9, 1970, Ser. No. 9,715
Int. Cl. E04g *21/00*; E04h *1/04*
U.S. Cl. 52—745 **22 Claims**

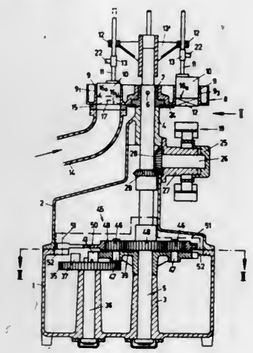


The space between the lateral party walls of a selected existing dwelling of a row-house complex is gutted and the entire space cleared; and a transverse wall defining the rear end of the new or rehabilitated unit is erected between the party walls up to the second story ceiling level. Floor panels are installed on temporary supports at the second floor level so as to extend inwardly from the rear wall; and two prefabricated modules are delivered to the site, one containing a kitchen and the other a completely equipped bathroom, and each extending through a height of one story. The former is conveyed between the party walls to a location adjacent the floor panel, and against one of the party walls approximately midway of its length, and the latter is placed upon the former. The floor panels are then tied to the rear wall and the rear side of the modules, and the remainder of the unit, i.e., floors, walls, partitions, roofing, etc., is then completed around the modules which serve as an inner core.

3,616,593
METHOD FOR PREPARING CHEMILUMINESCENT COMPOSITIONS AND DEVICES CONTAINING TETRAKIS(DISUBSTITUTEDAMINO)ETHYLENES
Sydney Shefler, China Lake, and Harold S. Duff, Ridgecrest, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed May 15, 1969, Ser. No. 825,049
Int. Cl. B65b *1/04*
U.S. Cl. 53—37 **3 Claims**

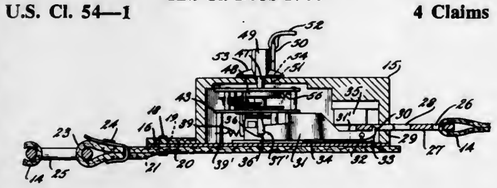
A method for preparing chemiluminescent compositions and devices containing tetrakis(disubstitutedamino)ethylenes, which comprises formulating the composition or filling the device in a normal atmosphere.

3,616,594
MACHINE FOR MOLDING AND WRAPPING BUTTER, MARGARINE, AND OTHER SUBSTANCES OF LIKE CONSISTENCY
Paul Graf, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Aug. 28, 1969, Ser. No. 853,650
Claims priority, application Switzerland, Sept. 12, 1968, 13,627/68
Int. Cl. B65b *65/09*
U.S. Cl. 53—122 **8 Claims**



The shafts of the mold and wrapping wheels are at right angles, drivingly connected together by bevel gears, and turned stepwise by a common stepping gear unit consisting of a Maltese-cross transmission and planetary gearing.

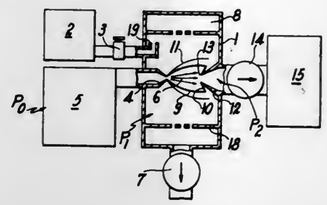
3,616,595
AUTOMATIC FLANK STRAP RELEASE
Blue H. Townsend, 2400 N. 49th, Waco, Tex. 76710
Filed Oct. 15, 1969, Ser. No. 866,693
Int. Cl. B68b *1/00*
U.S. Cl. 54—1 **4 Claims**



Flank strap release mechanism for automatically releasing a flank strap applied around the flanks of a horse or other animal, during a rodeo or other performance, to produce pressure and induce bucking of such animal, such release and the relieving of pressure resulting in the animal becoming calmer and consequently capturable. The release mechanism is a spring-actuated clock-type timer, the mainspring of which is adapted to be wound manually and held against unwinding by a release pin with a cord attached and adapted to be withdrawn by a rider of the animal or other person so that the flank strap will be released after the expiration of the time set.

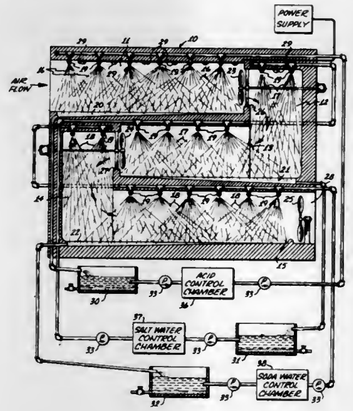
3,616,596
PROCESS AND DEVICE FOR THE SEPARATION OF MOLECULES OF DIFFERENT MASSES
Roger Campargue, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Feb. 17, 1969, Ser. No. 799,611
Int. Cl. B01d *57/00*
U.S. Cl. 55—17 **8 Claims**

A gaseous mixture containing molecules of different masses which are to be separated is admitted into a casing at a predetermined pressure through an inlet tube located at a suitable distance from an auxiliary gas inlet nozzle. Said auxiliary gas is admitted into said casing at a supersonic velocity so as to form a jet, the gaseous mixture being extracted along the axis of said auxiliary gas



jet through a discharge duct whose rim is placed downstream of the Mach disc or transverse downstream face of the shock structure produced by said jet. The gaseous mixture which is thus extracted is found to be substantially enriched in light molecules.

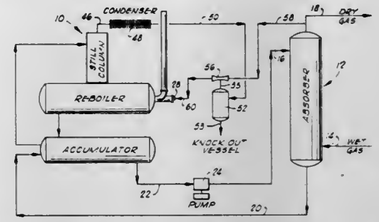
3,616,597
METHOD FOR TREATING AND PURIFYING AIR
Solomon L. Stewart, 4902 W. Bethany Home Road, Glendale, Ariz. 85301
Filed May 11, 1970, Ser. No. 36,072
Int. Cl. B01d *47/06, 53/14*
U.S. Cl. 55—19 **6 Claims**



A method for treating and purifying air by means of a series of different spray treatments resulting in the residue from each spray treatment being delivered to a different sump tank.

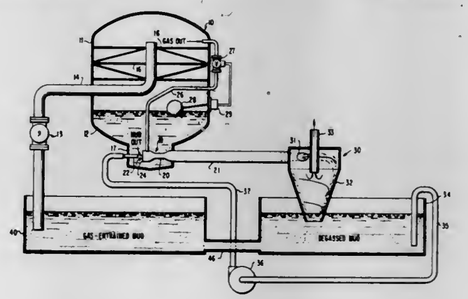
3,616,598
METHOD AND SYSTEM FOR RECONCENTRATING LIQUID ABSORBENT
Adolph J. Foral, Jr., Oklahoma City, Okla., assignor to Black, Sivalls & Bryson, Inc., Kansas City, Mo.
Filed Aug. 14, 1969, Ser. No. 850,096
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **29 Claims**

The present invention relates to methods and systems for continuously reconcentrating a solution of liquid absorbent and solute. The solution to be reconcentrated is introduced into a reconcentrator having a fuel burner and fire box assembly disposed therein. A stream of fuel is burned in the burner and fire box assembly thereby vaporizing the solute and reconcentrating the liquid absorbent. Prior to burning, the stream of fuel is passed through a jet ejector.



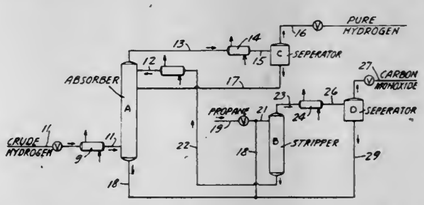
The suction chamber of the jet ejector is connected to the reconcentrator so that vaporized solute is evacuated therefrom and the pressure therein is reduced.

3,616,599
METHOD AND APPARATUS FOR THE DEGASIFICATION OF DRILLING MUDS
Gerald E. Burnham, Sr., Lafayette, La., assignor to Thermotics, Inc., Houston, Tex.
Filed Feb. 19, 1970, Ser. No. 12,543
Int. Cl. B01d *19/00*
U.S. Cl. 55—41 **20 Claims**



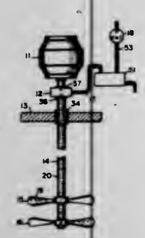
Drilling mud degasification apparatus having baffle plates in a vacuum tank over which thin films of mud are degassed as they flow downward to a receiving area of the tank. Venturi-type dual ejector apparatus is located in a sump in the tank to remove degassed mud and to draw a vacuum on the upper portion of the tank.

3,616,600
GAS PURIFICATION PROCESS
Fred Kurata and George W. Swift, Lawrence, Kans., assignors to The Kansas University Endowment Association, Lawrence, Kans.
Continuation-in-part of application Ser. No. 606,900, Jan. 3, 1967. This application Apr. 4, 1969, Ser. No. 813,676
Int. Cl. B01d *47/06*
U.S. Cl. 55—48 **5 Claims**



Treatment of raw hydrogen to remove low boiling impurities such as carbon monoxide by scrubbing the raw hydrogen with liquefied propane.

3,616,601
OBTAINING AIR FROM WATER BY A MECHANICAL PROCESS
Alexander M. Senkewich, 545 W. 164th St., New York, N.Y. 10032
Continuation of application Ser. No. 423,609, Jan. 5, 1965. This application Feb. 24, 1969, Ser. No. 813,372
Int. Cl. B01d *19/00*
U.S. Cl. 55—52 **6 Claims**



The extracting of air by means of a pump from air pockets formed in water around the propeller blades.

3,616,602
LOW-TEMPERATURE PURIFICATION OF FLUIDS
George E. Hays and Melvin A. Albright, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,970
Int. Cl. B01d *53/02*
U.S. Cl. 55—66 **10 Claims**

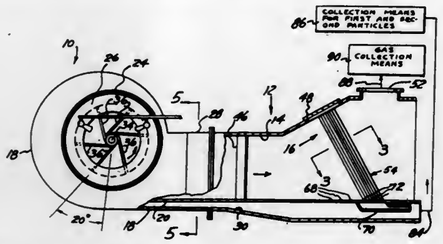
An adsorption method of purifying liquid or gas streams which employs a temperature at or below the freezing point of the constituents to be adsorptively removed from the stream. Operating at or below such temperature greatly increases the adsorption capacity of the adsorptive material.

3,616,603
DECOMPOSABLE FILTER MEANS AND METHOD OF UTILIZATION
John Glenn Warner, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
No Drawing. Filed Nov. 21, 1969, Ser. No. 878,942
Int. Cl. B01d *37/00*
U.S. Cl. 55—97 **4 Claims**

A decomposable filter utilized in collecting particles of gasborne materials from a moving atmosphere. The filter comprises a formed filter medium of a water soluble organic material having structural stability in an environment having an ambient relative humidity ranging less than 90 percent and an ambient temperature ranging under 100 degrees centigrade. The filter medium is oriented in a holding means in a position to facilitate passage of the moving gas therethrough. The particles retained therein are reclaimed by dissolving the filter in water.

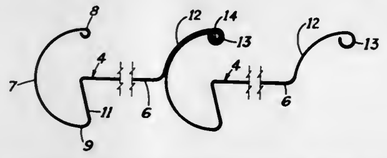
3,616,604
LIQUID RECOVERY APPARATUS
Arthur C. Schouw, Corunna, Mich., assignor to Tri-Mer Corporation, Owosso, Mich.
Continuation-in-part of application Ser. No. 548,729, May 9, 1966. This application Jan. 2, 1968, Ser. No. 695,198
Int. Cl. B03c *3/30*
U.S. Cl. 55—103 **8 Claims**

Apparatus for recovering compounds from industrial gases by introducing a liquid substance thereto and delivering them to a mixing chamber having a fan for mixing the two substances together. The fan delivers the gas and



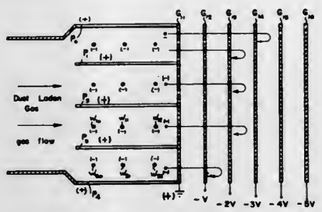
liquid mixture to a tubular filter pack that separates the liquid from the gas.

3,616,605
COLLECTING ELECTRODE PLATE ASSEMBLY
George D. Krause, Somerville, N.J., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed July 2, 1969, Ser. No. 838,446
Int. Cl. B03c *3/00*
U.S. Cl. 55—130 **1 Claim**



A collecting electrode plate assembly wherein each collecting electrode is made up of aligned sections, each section including a generally flat planar central body portion, a semicircular baffle leading edge portion, and a quarter circular baffle trailing edge portion, the trailing edge portion of one section nesting with the leading edge portion of a successive adjacent similar section.

3,616,606
MULTISTAGE ELECTROSTATIC PRECIPITATOR
James Henry Vincent, Plainfield, N.J., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 804,050, Feb. 25, 1969. This application Oct. 24, 1969, Ser. No. 869,195
Int. Cl. B03c *3/08, 3/12*
U.S. Cl. 55—131 **4 Claims**



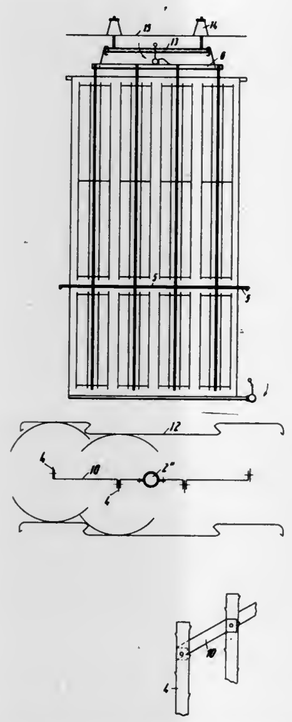
Covers an electrical precipitator composed of two tandem electrostatic sections arranged to eliminate dust or dirt or any form of particulate matter which may be conveyed with air or gas or any other fluid medium. The first section may include one or more pairs of positively charged vertical plates between each pair of which are positioned a plurality of negatively charged vertical wires, so that a corona discharge may be developed between the vertical wires and the two parallel plates of each pair. The second section, which is contiguous to the

end of the first section, includes a plurality of grids which are parallel to each other, but perpendicular to the plates of the first section. The first grid of the second section may be charged to a positive potential, and the remaining grids are arranged in different charged formations so that particles of matter entering the second section will be urged to turn back so that the particles may be collected and removed from the fluid medium.

3,616,607
SEPARATION OF NITROGEN AND METHANE CONTAINING GAS MIXTURES
Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, Ill., assignors to Northern Natural Gas Company, Omaha, Nebr.
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,129
Int. Cl. B01d *59/10*
U.S. Cl. 55—16 **10 Claims**

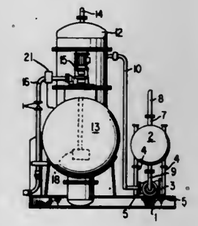
A membrane diffusion process for selectively permeating nitrogen from a methane-nitrogen containing mixture to obtain enriched separated fractions.

3,616,608
DISCHARGE ELECTRODE FOR ELECTROSTATIC DUST COLLECTORS
Walter Steuernagel, Frankfurt am Main, Helmut Gilles, Bergen-Enkheim, Horst-Günter Eishold, Frankfurt am Main, and Theo Wilhelm, Egelsbach, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed July 8, 1969, Ser. No. 839,906
Claims priority, application Austria, July 15, 1968, 6,822/68
Int. Cl. B03c *3/41*
U.S. Cl. 55—148 **3 Claims**



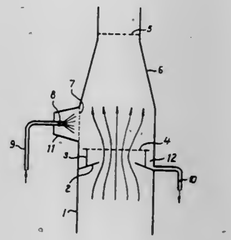
The discharge electrode for an electrostatic dust collector is prefabricated for shipment to the field construction site. It is composed of pairs of spaced electrode strips attached to opposite sides of a mast. Groups of the electrodes can be preassembled into an areal discharge electrode structure.

3,616,609
APPARATUS FOR THE STORAGE AND FEEDING OF WATER TO BOILERS
Adelino Jose Rodrigues Soares de Melo, Lisbon, Portugal, assignor to Termec-Equipamentos Termicos de Coimbra, LDA, Lisbon, Portugal
Filed Dec. 18, 1969, Ser. No. 886,135
Claims priority, application Portugal, Dec. 18, 1968, 50,876
Int. Cl. B01d *19/00*
U.S. Cl. 55—164 **14 Claims**



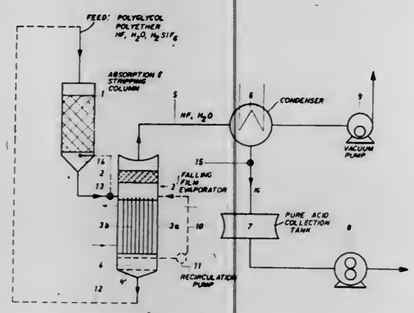
From the description given it results that the present patent application relates to improvements in the assembly of devices for feeding water to boilers bringing about great practical advantages. Among these, the description stresses the possibility of manufacture, assembly and transport of the apparatus as a single block and the facility of automatic regulation of the intake pressure in the manifold of the boiler pumps.

3,616,610
APPARATUS FOR SEPARATING DUST FROM A GAS
Bronislav S. Javorsky, Huddinge, and Erik A. Gramer, Spanga, Sweden, assignors to Alfa-Laval AB, Tumba, Sweden
Filed Nov. 14, 1968, Ser. No. 775,663
Claims priority, application Sweden, Nov. 16, 1967, 15,724/67
Int. Cl. B01d *19/02, 47/04*
U.S. Cl. 55—178 **7 Claims**



The dust-containing gas is caused to flow through a channel, and the latter is charged with a foam which is formed substantially independently of the kinetic energy of the flowing gas, the gas being forced to pass through and be filtered by the foam.

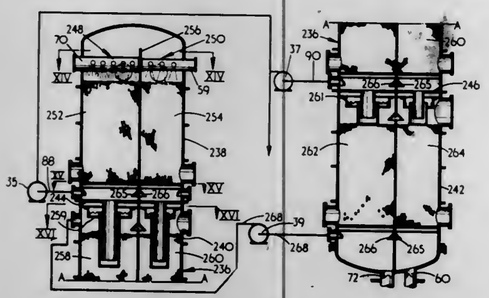
3,616,611
APPARATUS FOR THE CONTINUOUS RECOVERY OF ACIDS FROM INERT ORGANIC MEDIA
Renato Gentili, Muttenz, Switzerland, assignor to Buss AG, Basel, Switzerland
Filed Dec. 13, 1968, Ser. No. 783,553
Claims priority, application Germany, Dec. 22, 1967, P 16 19 843.9
Int. Cl. B01d *3/10, 15/00*
U.S. Cl. 55—165 2 Claims



Apparatus for the continuous recovery of pure acids and water-acid mixtures, which are present in contaminated inert organic media such as absorber solutions, comprising:

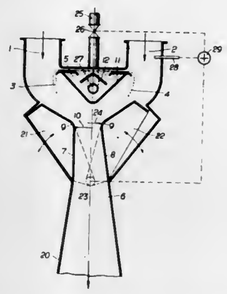
(a) heating means to heat said absorber solutions;
(b) desorption means including a falling-film evaporator operating under vacuum to separate a desorbed acid-water mixture which has much higher HF strength than the azeotrope;
(c) means for withdrawing the desorbed water-acid mixture in the vapor phase from said falling-film evaporator;
(d) condensing means to liquefy said desorbed water-acid mixture; and
(e) pumping means and recycling means to transport the absorbent from the evaporator to an absorption tower for re-use.

3,616,612
DESALINATION
Allan Martindale, Bramhall, Bryan R. Parr, Sale, and Michael J. S. Smith, Abingdon, England, assignors to Simon-Carves Limited, Cheshire, England
Continuation of application Ser. No. 697,803, Jan. 15, 1968. This application Jan. 16, 1970, Ser. No. 3,549
Claims priority, application Great Britain, Jan. 17, 1967, 2,348/67
Int. Cl. B01d *19/00*
U.S. Cl. 55—193 3 Claims



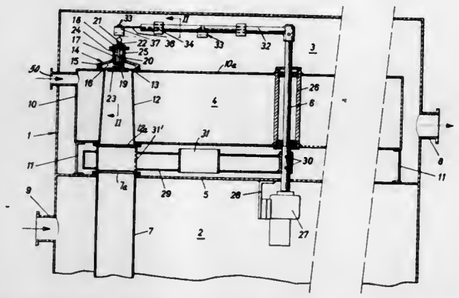
In a desalination plant, small quantities of refrigerant are stripped from the fresh and saline waters by subjecting the water to different degrees of vacuum and then, preferably to stream of air.

3,616,613
VENTURI APPARATUS FOR SCRUBBING GAS
Heinz Loquenz and Horst Weber, Vienna, and Helmut Pfisterer, Kritzendorf, near Vienna, Austria, assignors to Waagner-Biro AG, Vienna, Austria
Filed Sept. 5, 1968, Ser. No. 757,545
Claims priority, application Austria, Sept. 14, 1967, A 8,422/67
Int. Cl. B01d *47/10*
U.S. Cl. 55—227 10 Claims



An apparatus for scrubbing a gas such as a crude gas laden with dust particles which are to be removed from the gas stream. The gas which is to be cleaned is directed along the interior of a Venturi, first through a converging portion, then through the throat, and then through the diverging portion or diffusor of the Venturi. Upstream of the Venturi throat a liquid-supply means is located for situating in the path of gas flow a screen of washing liquid which falls by gravity across the gas stream so that the latter by its kinetic energy will break up the screen of washing liquid into fine and very fine droplets which become uniformly distributed across the gas stream to flow with the latter through the Venturi throat and then along the diffusor portion of the Venturi.

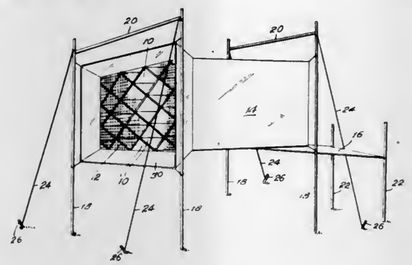
3,616,614
PNEUMATIC DUST REMOVAL MACHINE
Edwin B. Eisenegger, Bronschhofen, Switzerland, assignor to Gebruder Buhler AG, St. Gall, Switzerland
Filed June 18, 1969, Ser. No. 834,434
Claims priority, application Switzerland, June 20, 1968, 9,204/68
Int. Cl. B01d *46/04*
U.S. Cl. 55—294 7 Claims



A pneumatic dust removal machine includes a dusty air chamber having a plurality of filter hoses having exterior sides which communicate with the dusty air chamber and an interior which communicates at one end with a clean air chamber. A rinsing air chamber is mounted within the clean air chamber and it carries a blow nozzle having one end of which is aligned with the end of the filter

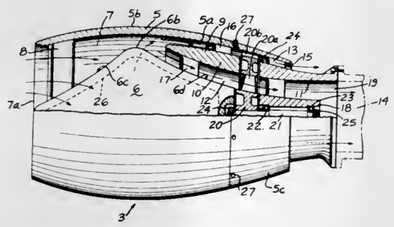
hose communicating with the clean air chamber. The rinsing air chamber is spaced away from the dusty air chamber and in the space therebetween there is moveable an arm member which carries a connecting tube which may be aligned with the blow nozzle and the filter hose. The arm member is moved in conjunction with an actuating member which opens a valve disposed between a connection of the blow nozzle at its opposite end to the rinsing air chamber. As the valves of each hose are actuated the connecting tube will be aligned between the blow nozzle and the filter hose to permit the rinsing air to move through the blow nozzle and the connecting tube into the filter hose. Subsequently, the valve is closed and a connecting tube moved out of alignment between the blow nozzle and the filter hose to continue the communication of the interior of the filter hose to the clean air chamber which discharges through an outlet.

3,616,615
COLLOIDAL DROPLET COLLECTOR
Robert L. Woodbury, Darlington, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed Sept. 11, 1969, Ser. No. 857,076
Int. Cl. B01d *46/00*
U.S. Cl. 55—278 3 Claims



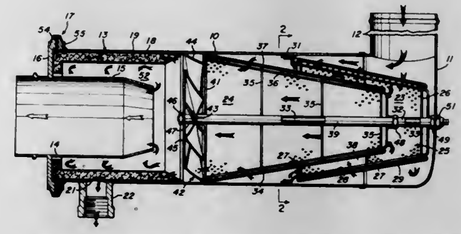
An apparatus for the direct interception of liquid water from clouds comprising an array of open end ducts in juxtaposition, a grid positioned in front of the array, and collecting means positioned at the bottom of the array.

3,616,616
PARTICLE SEPARATOR, ESPECIALLY FOR USE IN CONNECTION WITH JET ENGINES
Joseph Flatt, Dayton, Ohio, assignor to Tech Development, Inc., Dayton, Ohio
Filed Mar. 11, 1968, Ser. No. 712,190
Int. Cl. B01d *45/12*
U.S. Cl. 55—306 11 Claims



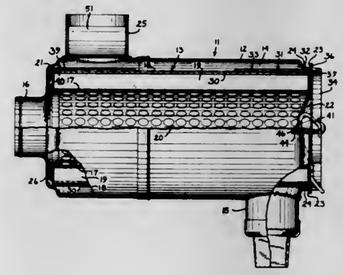
A particle separator, especially for use in connection with a gas turbine, which comprises cowl means having an inlet end and outlet end and together with a deflector body arranged within said cowl means in spaced relationship thereto forms passage means extending from said inlet means to said outlet means while the outer contour of said deflector body ascends from said inlet end to a hump on the deflector body between said inlet and outlet ends, that portion of said passage means which is located between the outlet end of said cowl means and the said hump being divided into an outer passage for discharging separated particle means to the atmosphere and to an inner passage for discharging air to a turbine engine to which the deflector is connected.

3,616,617
LIQUID SEPARATOR
Raymond S. De Groote, Centerville, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Jan. 13, 1969, Ser. No. 790,697
Int. Cl. B01d *50/00*
U.S. Cl. 55—307 12 Claims



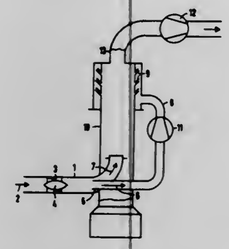
A liquid separator in which nested, frusto-conical coalescer elements provide a large surface area for contact with a moisture holding flowing air, the elements between them defining a continuously open, relatively restricted fluid by-pass. Downstream of the coalescer elements means collects and drains formed liquid droplets while the dried air discharges separately.

3,616,618
AIR FILTER GASKET ELEMENT
Donald D. Gronholz and Delmer L. Radeztsky, Minneapolis, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Aug. 13, 1969, Ser. No. 849,727
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 14 Claims



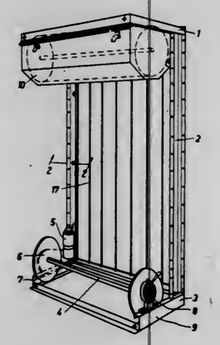
The disclosure is directed to a centrifugal air cleaner having a removable filter assembly that fits within an outer container of the air cleaner and forms air passages therewith. Forming part of the air filter assembly is a resilient gasket casing which encircles a part of the assembly to provide (a) air sealing function between the assembly and the outer container; (b) an inwardly extending baffle to prevent centrifugally collected dust from entering the air filter; and (c) a handle extending outwardly from the air cleaner to facilitate removal of the air filter assembly for inspection and cleaning.

3,616,619
TORNADO-FLOW SEPARATOR WITH RAW-GAS PRECLEANSER
Heinrich Klein, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Continuation of application Ser. No. 743,514, July 9, 1968. This application Nov. 19, 1969, Ser. No. 871,693
Claims priority, application Germany, Sept. 27, 1967, S 112,044
Int. Cl. B01d *45/12*
U.S. Cl. 55—338 2 Claims



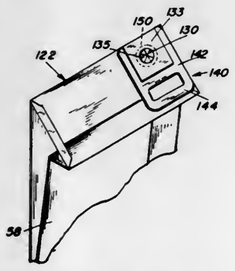
A dust-from-gas separator of the tornado-flow type has its row-gas inlet equipped with a device for partially precleaning the entering gas flow. The device comprises a flow-guide structure shaped as a body of rotation and coaxially mounted in the gas inlet duct so as to leave an annular interstice in which a coaxial group of guide vanes provides a helically twisting path for the gas flow. An axial tube of smaller diameter than the gas inlet duct has its inlet opening situated behind the vanes and receives the precleaned partial current of gas which flows near the axis of the duct, whereas the more heavily dust-laden outer portion of the gas flow enters into the tornado-flow separator vessel proper.

3,616,620
AUTOMATIC ROLLER BAND FILTER
Gerhard Max Neumann, Berlin-Dahlem, Germany, assignor to Delbag Luftfilter G.m.b.H., Berlin, Germany
Filed Dec. 30, 1968, Ser. No. 787,692
Claims priority, application Germany, Dec. 30, 1967, D 37,221
Int. Cl. B01d *46/18*
U.S. Cl. 55—354 3 Claims



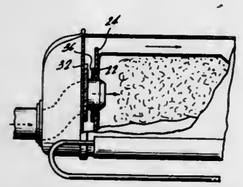
In automatic roller band filter assemblies of the type in which a filter band wound on a freely-rotatable bobbin in an upper portion is pulled down through a filtering intermediate portion by a driven bobbin mounted in a lower portion, a problem exists in ensuring that an adequate seal is provided at the edges of the filter band during its downward travel through the intermediate zone. This is provided according to the invention by the provision of girder-shaped members extending from the upper to the lower portions in association with a right-angled pressure plate mounted on the said girder member whereby a sealing surface of the said sealing member may be moved onto the filter band passing over the said girder-shaped members. In a particular embodiment of the invention the said girder-shaped members are hat-shaped members, and the right-angled sealing members are mounted to engage in slots in the girder members to allow the said movement to and from a sealing position.

3,616,621
VACUUM CLEANER FILTER BAG
John J. Fesco, 1100 Steele Blvd., Baldwin, N.Y. 11510
Filed Apr. 14, 1969, Ser. No. 815,905
Int. Cl. B01d *46/02*
U.S. Cl. 55—367 10 Claims



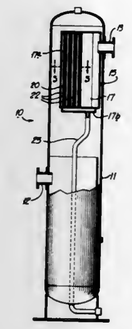
A vacuum cleaner filter bag which can be manufactured on machinery designed for conventional vacuum cleaner filter bags, and yet having an increased capacity for dirt and dust, by the provision of off-center access means associated therewith.

3,616,622
MOUNTING MEANS FOR VACUUM CLEANER BAGS
Abraham Friedman, Brooklyn, N.Y., assignor to Studley Paper Company, Inc., Far Rockaway, N.Y.
Continuation-in-part of abandoned application Ser. No. 555,546, June 6, 1966. This application May 16, 1969, Ser. No. 830,910
Int. Cl. B01d *46/02*
U.S. Cl. 55—376 21 Claims



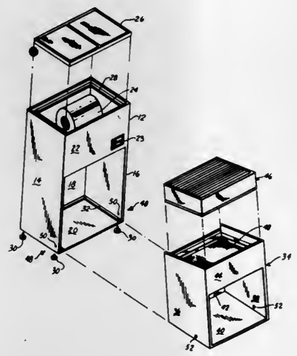
Mounting means for detachably securing a vacuum cleaner filter bag to a vacuum cleaner such that the inlet to the bag is in fixed registry with the inlet from the vacuum cleaner itself, the novel vacuum cleaner bag itself and a combination of a vacuum cleaner and a vacuum cleaner bag wherein either the vacuum cleaner or the bag is provided with a magnet and the other is provided with a magnetically-susceptible member each of which encircle the inlet to said bag or said vacuum cleaner.

3,616,623
MIST ELIMINATOR
Laurance S. Reid, 610 Broad Lane, Norman, Okla. 73069
Continuation-in-part of application Ser. No. 596,389, Nov. 15, 1966, which is a continuation-in-part of application Ser. No. 377,273, June 23, 1964. This application Jan. 19, 1970, Ser. No. 3,988
Int. Cl. B01d *45/08*
U.S. Cl. 55—440 1 Claim



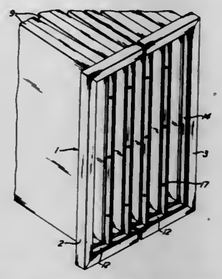
There is provided an improved mist eliminator for use in an apparatus for removing an entrained liquid mist from a liquid particle containing carrier gas of the type including a pressure shell having a gas inlet and a gas outlet. The mist eliminator includes a plurality of generally parallel vanes defining flow paths for the gas, and baffles of permeable porous or fibrous material cover the surfaces of the vanes along the paths.

3,616,624
LAMINAR FLOW WORK BENCH
Robert Claude Marsh, Albuquerque, N. Mex., assignor to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Nov. 4, 1969, Ser. No. 874,009
Int. Cl. B01d *46/02*
U.S. Cl. 55—472 4 Claims



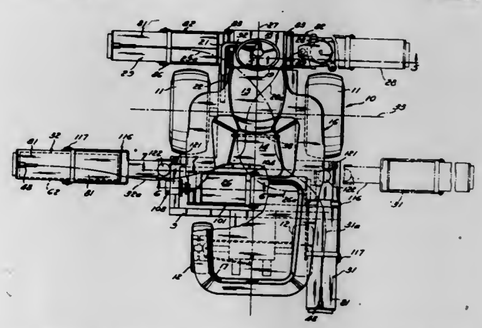
A dust free work bench is provided comprising a cabinet containing a blower and prefilter and having an opening to receive a work area enclosure and a removable work area enclosure including a high efficiency particulate air filter. The HEPA filter is presealed to the work area so that leakage can be tolerated between the cabinet and enclosure without resulting in contamination of the air flow within the enclosure.

3,616,625
AIR FILTER CONTAINING FILTER BAGS
Harry N. Cotabish, Allison Park, Frank W. Smith, Fox Chapel, and Wayne L. Smith, Bradford Woods, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Mar. 4, 1970, Ser. No. 16,481
Int. Cl. B01d *46/02*
U.S. Cl. 55—483 3 Claims



The top and bottom and sides of an upright rectangular outer frame are provided with longitudinal channels opening toward the inside of the frame. Glued into these channels is a gasket. Filter bags behind the frame have open ends disposed side by side inside the frame. The top and bottom portions of the gasket are glued to the adjoining ends of the bags. A narrow rectangular inner frame is inserted in the open end of each bag with its top and bottom held in the top and bottom channels. A U-shape clamping strip is disposed in each side channel and straddles the outer sides of the adjoining bag and inner frame to clamp them together. The outer side of each clamping strip is glued to the adjoining side portion of the gasket.

3,616,626
MOWER
Robert K. Bramley, Cleveland, and Hugh A. Bourassa, University Heights, Ohio, assignors to Hahn, Inc., Evansville, Ind.
Filed Feb. 14, 1968, Ser. No. 705,395
Int. Cl. A01d *75/30*
U.S. Cl. 56—7 5 Claims



A power mower including five reel-type mower units mounted on a motor driven vehicle. The forward vehicle wheels are driven and the rearward wheels are steerable. The operator's seat is at the front of the vehicle. Two forward reel mower units are mounted with one on each side of the vehicle positioned to overlap a center reel unit mounted behind the drive wheels at the center of the vehicle. Two outboard reel units are mounted with one on each side of the vehicle in substantial alignment with the center unit. Each of the reels is driven by the vehicle mounted engine through a flexible cable drive including an automatic overload slip clutch. Each of the mower

units is provided with a power retraction unit for moving the units toward the retracted position from the operative position. Counterbalancing is provided in the retraction units to support a substantial portion of the weight of each unit. The mowers are free floating and can raise and lower as well as tip to follow the ground contour.

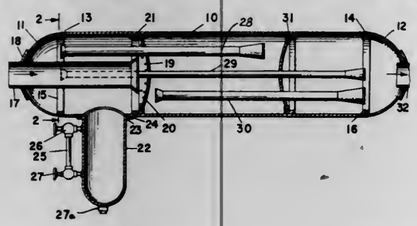
3,616,627
COMBINATION PULSATION DAMPENER AND FLUID SEPARATOR

Wilhelm S. Everett and Robert C. Glover, Santa Paula, Calif., assignors to American Air Filter Company, Inc.

Continuation of application Ser. No. 606,461, Dec. 30, 1966, which is a continuation of application Ser. No. 516,816, Nov. 5, 1965, which in turn is a continuation-in-part of application Ser. No. 210,683, July 18, 1962, all now abandoned. This application Apr. 1, 1968, Ser. No. 718,017

Int. Cl. B01d *45/06, 45/08*

U.S. Cl. 55—274 **3 Claims**



A combination pulsation dampener and fluid separator is provided wherein particles of fluid entrained in a gaseous flow are separated out in the inlet chamber portion of the pulsation dampener. Towards this end the fluid and gas mixture inlet to the dampener terminates at a distance less than one diameter of the inlet pipe from a wall or partition portion of the inlet chamber. This wall or partition portion may be provided with protuberances against which the fluid impinges. The outlet from the inlet chamber to a further chamber in the pulsation dampener is disposed in a pipe so that reverse flow is necessary over a given distance during which time separation takes place. A suitable drain is disposed from the inlet chamber to collect the separated fluid or other particles.

ERRATUM

For Class 56—7 see:
Patent No. 3,616,626

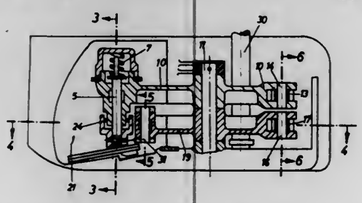
3,616,628
DRIVE ARRANGEMENT FOR REAPER CUTTING APPARATUS

Ernst Weichel, 1 Bahnhofstrasse, 7326 Heiningen, Germany, and Friedrich Philipp, 26 Am Kattenbusch, 5608 Radevormwald, Germany

Filed Apr. 21, 1969, Ser. No. 817,879

Int. Cl. A01d *55/02*

U.S. Cl. 56—297 **14 Claims**



In a reaper apparatus employing one or a pair of moving blades, a drive lever is secured to each moving blade and is mounted to pivot about a vertical axis for imparting a reciprocating action to the blade. Pin connections, in parallel relationship with the axis of the pivot for the lever, secure the lever to the blade and to drive means. The upper blade is resiliently held against the lower blade during operation.

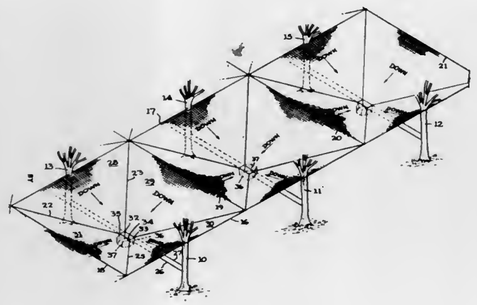
3,616,629
NUT AND FRUIT HARVESTING SYSTEM

Hiroshi Ooka, Hilo, Hawaii, assignor to Castle & Cooke, Inc., Honolulu, Hawaii

Filed Feb. 13, 1970, Ser. No. 11,229

Int. Cl. A01g *19/06*

U.S. Cl. 56—329 **7 Claims**



Nuts and fruit growing on trees planted in rows are harvested by nets mounted on parallel wires extending down the rows of trees. The wires are secured to the trees at heights to allow vehicles to pass thereunder. Net panels slope downwardly toward a point between opposite trees of adjacent rows of trees. A net catchment container is located at the low point of the net panels and receives nuts or fruit dropping from the trees. When full, the container is tipped to discharge its collected contents.

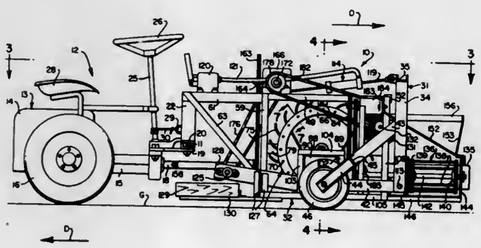
3,616,630
MACHINE FOR HARVESTING FRUIT ON LOW PLANTS

Gleason L. Gray, Brewer, and Hayden M. Soule, Jr., Orono, Maine, assignors to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,448

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **4 Claims**



A mechanical harvester is disclosed which picks fruit from relatively low plants such as lowbush blueberries, the picker being movable over the plants and comprising rows of laterally spaced tines or teeth which descend successively into the plants and move rearwardly therethrough and thence upwardly to comb or rake the fruit from the plants, carrying the fruit upwardly and dumping it so that it can be conveyed to a suitable collection location.

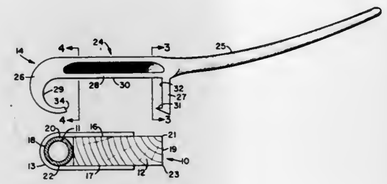
3,616,631
SNAP-ON TOOTH FOR AGRICULTURAL EQUIPMENT

Henry A. Quam, Edmonton, Alberta, Canada, assignor to Imperial Oil Limited, Toronto, Ontario, Canada

Filed Jan. 12, 1970, Ser. No. 2,209

Int. Cl. A01d *7/00*

U.S. Cl. 56—400 **2 Claims**



A snap-on tooth for an agricultural implement wherein the tooth includes a mounting base and a tine extending from the base. The base clamps to a tooth supporting bar in a snap-on manner. The hooks or other clamping elements of the base are resiliently yieldable to permit snap-on attachment at any longitudinal location along the bar.

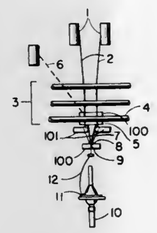
3,616,632
METHOD OF AND APPARATUS FOR SPINNING, DOUBLING AND THREADING STAPLE FIBERS AND/OR SILK

Kurt Helmar Reuter, Oederan, Maria Elisabeth Steinhauser and Horst Sacher, Karl-Marx-Stadt, and Karl Heinz Silbermann, Mittweida, Germany, assignors to Vereinigung Volkseigener Betriebebaumwolle Wissenschaftlich-Technisches Zentrum Baumwollspinnerei und Zwirnerei, Karl-Marx-Stadt, Germany

Filed May 7, 1969, Ser. No. 822,471

Int. Cl. D01h *5/28*

U.S. Cl. 57—36 **23 Claims**



A method of and apparatus for spinning, doubling and twisting staple fibers and/or silks, wherein the complete dissolution of false twist is prevented by so-called "fixing" while simultaneously imparting genuine twist upon the fibers or silks by supplying the refined fiber band from the drafting device to a rotating tubular member, or to a rotating tubular member and subsequently to a thread guiding element, or directly to a thread guiding element.

3,616,633
TETRALOBAL SYNTHETIC FILAMENT, PROCESS FOR PRODUCING THE SAME, AND ARTICLE MADE THEREFROM

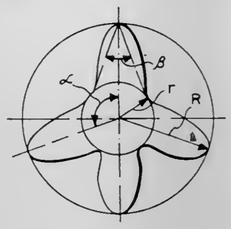
Genevieve Chevalier-Seyvet, Romans, and Jean Joly, Brindas, France, assignors to Societe Rhodiaceta, Lyon, France

Filed June 12, 1970, Ser. No. 45,836

Claims priority, application France, June 13, 1969, 6919786

Int. Cl. D02g *3/02*

U.S. Cl. 57—140 J **10 Claims**



A novel synthetic filament and articles produced therefrom wherein said filament has a tetralobal configuration, the filament and article produced therefrom possessing improved characteristics of rigidity and good covering power. Such filaments are characterized in that the ratio of the radius of the inscribed circle, i.e., the circle which passes through the connecting point of the lobes, to the radius of the circumscribed circle, i.e., the circle which passes by the apex of the lobes, is within the range of 0.25 and 0.42. The tetralobal configuration is further characterized in that two adjacent angles formed by the axes of the lobes are between greater than 90° to 120°.

The tetralobal synthetic filaments are prepared by extruding a thermoplastic polymer in a molten condition through a spinneret, the apertures of which are composed of four slits of substantially equal length forming a cross of two adjacent angles of between greater than 90° to 120°, the filaments being thereafter passed through a gaseous atmosphere and through a cooling bath maintained at a temperature lower than 100° C.

3,616,634
POLYESTER COMPOSITE FILAMENT YARN HAVING STABLE CRIMPS

Kazuo Tomiita, Nagaizumi-cho, Sunta-gun, Shizuoka-ken, Takeshi Takase, Mototada Fukuhara, and Chikara Sano, Mishima-shi, Shizuoka-ken, and Nobuo Ohmae, Otsu-shi, Shiga-ken, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed June 4, 1969, Ser. No. 830,250

Claims priority, application Japan, June 11, 1968, 43/39,663

Int. Cl. D02g *3/04;* **D02j** *1/12;* **D03d** *13/00*

U.S. Cl. 57—140 R **3 Claims**

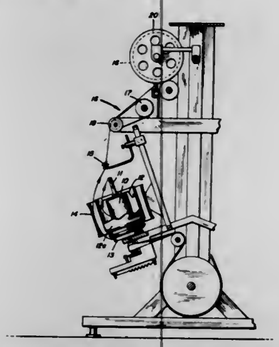
A polyester composite multifilament yarn composed of a plurality of individual filaments having combined properties of the shrinking properties restricted as follows.

	Percent
(1) A range of apparent shrinkage when the yarn is treated in hot water at a stretched condition of approximately 5 mg./denier	0~20
(2) Substantial shrinkage when the yarn is treated by the same manner as in case of measuring the apparent shrinkage of yarn	Lower than 3

The above-mentioned composite multifilament yarn can be also defined with respect to the density of filament, or number of crimps after treatment in boiling water. The

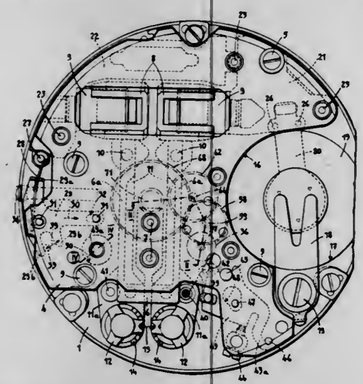
preferable condition of the density of filament is restricted at more than 1.3850 while the number of crimps is restricted a range from 10 to 35/cm.

3,616,635
METHOD FOR HEAT STABILIZATION OF SYNTHETIC THERMOPLASTIC YARNS OR THREADS
Philip R. Petersen, Charlotte, N.C., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.
Filed Sept. 16, 1968, Ser. No. 762,235
Int. Cl. D01h *1/10, 13/28*
U.S. Cl. 57—157 R **3 Claims**



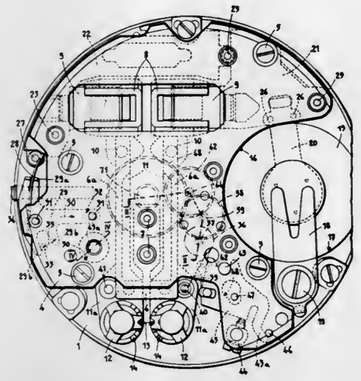
This application discloses a two-for-one twister with a tension-control to the collecting bobbin where a dense body of thread is wound for subsequent heat-treatment to stabilize elongation characteristics.

3,616,636
ELECTRIC TIMEPIECE
Remy Chopard and Rene Besson, Neuchatel, Switzerland, assignors to Ebauches S.A.
Filed Feb. 27, 1970, Ser. No. 15,028
Claims priority, application Switzerland, Mar. 17, 1969, 3,925/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **5 Claims**



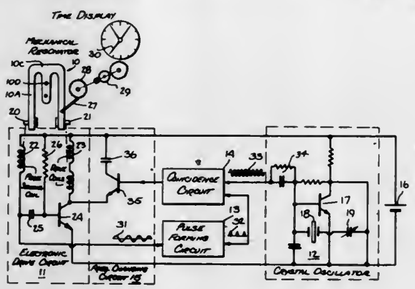
In an electric timepiece, the combination of a flexible resonator having a vibrating flexible blade for driving a ratchet counting wheel, in a step by step manner through a train including a pawl, a circular gauge of a smaller diameter than the ratchet counting wheel diameter for functioning in lieu of the ratchet counting wheel in the setting and adjusting operations with the pawl being contactable with the gauge wherefor the tension of the pawl corresponds to a value sufficient to satisfactorily operate the counting mechanism.

3,616,637
ELECTRIC TIMEPIECE
Rene Besson, Neuchatel, Switzerland, assignor to Ebauches S.A.
Filed Feb. 27, 1970, Ser. No. 15,062
Claims priority, application Switzerland, Mar. 17, 1969, 3,924/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **2 Claims**



A frame of an electrical timepiece characterized by a pair of base plates removably secured to each other, one mounting the driving and regulating devices and the other mounting the hour indicating element and gearing therefor, with an intermediary rotatable element insuring the connection between the gearing and the driving and regulating devices and being rotatably mounted by one of its ends in one base plate and by its other end in the other base plate.

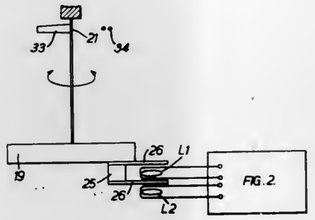
3,616,638
CRYSTAL-CONTROLLED MECHANICAL RESONATOR
William O. Bennett, Bayside, N.Y., and Dale R. Koehler, Westwood, N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.
Filed Mar. 19, 1970, Ser. No. 21,033
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 TF **10 Claims**



A miniature timepiece driven by a tuning-fork motor whose vibratory action is electromagnetically sustained by an electronic drive circuit. To regulate the timing rate of the motor, a frequency standard is provided in the form of a crystal oscillator whose frequency is an exact multiple of the prescribed timing frequency of the motor. The motor is preset to operate at a timing rate displaced to one side of the prescribed frequency to a degree determined by the maximum anticipated deviation in timing rate characteristic of the motor. To effect regulation, pulses

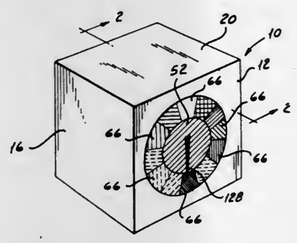
are derived from the electronic circuit, the pulses having a periodicity equal to the operating frequency of the fork. These pulses are compared in a coincidence circuit with the standard oscillations to produce an error signal only when the pulses are displaced in phase from the particular submultiple of oscillations which corresponds to the prescribed frequency. The error signal activates a frequency-correction circuit coupled to the electronic drive circuit associated with the tuning-fork motor, whereby the phase of the pulses derived from the electronic circuit shifts in a direction to bring about phase-locking with said submultiple.

3,616,639
PULSE GENERATOR
William R. Boyle, Wimborne, England, assignor to The Glacier Metal Company Limited, Alperton, Wembley, Middlesex, England
Filed Oct. 24, 1968, Ser. No. 770,244
Claims priority, application Great Britain, Oct. 26, 1967, 48,782/67; July 1, 1968, 31,289/68
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 **11 Claims**



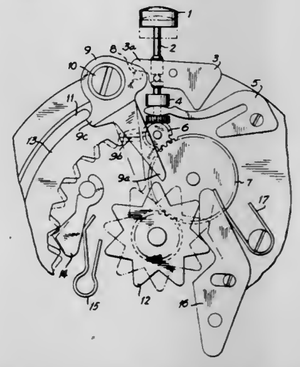
This invention is a method of accurately timing control pulses for a clock mechanism using a pendulum. The nearest prior art known is an extract from a book "Horlodges a Balancier Pendulaire" pages 67 and 68, a copy of which is attached.

3,616,640
CHROMATIC CLOCK
Morton Resnicoff, New York, N.Y., assignor to Art Cycle Inc.
Filed Mar. 12, 1970, Ser. No. 18,911
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 **14 Claims**



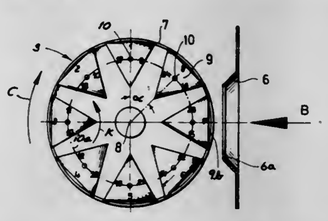
A chromatic clock in which twelve segments of an annular space on the clock face are continuously illuminated with different respective colors and in which the enclosed circular space is sequentially illuminated with colors matching those of the segments as the hours pass so that an observer is immediately made aware of the hour of the day. A minute hand cooperates with the segments of the annulus immediately to make the observer aware of the particular five-minute interval of the hour.

3,616,641
DATE AND DAY CORRECTING DEVICE OF A CALENDAR TIMEPIECE
Tooru Komori, Suwa-shi, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed May 18, 1970, Ser. No. 38,001
Claims priority, application Japan, May 21, 1969, 44/38,930
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **2 Claims**



A calendar watch having date and day-of-week indicators whereby both date and day-of-week indicators can be changed simultaneously by axial movement of the winding stem or day-of-week only can be changed by said axial movement.

3,616,642
DIGITAL CLOCK
Oskar Obergfell and Günter Hummel, St. Georgen, Germany, assignors to Kundo-Kieninger & Obergfell, St. Georgen im Black Forest, Germany
Filed Apr. 28, 1970, Ser. No. 32,660
Claims priority, application Germany, Apr. 30, 1969, P 19 21 955.7
Int. Cl. G04b *19/02, 45/00;* **G06c** *27/00*
U.S. Cl. 58—125 C **3 Claims**

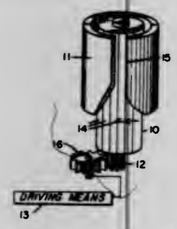


A direct reading clock provided with a unitarily molded hour drum having a number of multi-faced numeral display bodies equispaced along its periphery. A stationary apron overhangs a reduced portion of the bodies to maintain orientation of the bodies. A stepping pawl is formed on the apron at a predetermined position to engage each body in turn at that position to rotate the body and exposed a different surface thereof.

3,616,643
TIMEPIECE FOR IDENTIFYING TIME BY COLOR
Marilyn J. Maue, 20 Melwex St., Belleville, N.J. 07109
Filed Jan. 10, 1968, Ser. No. 696,940
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 **32 Claims**

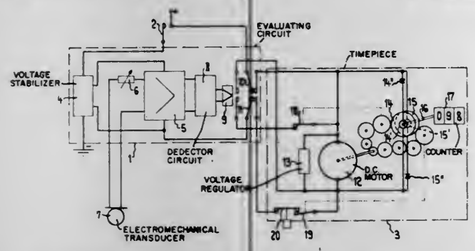
A timepiece for indicating time, preferably a twelve or a sixty minute period, in distinguishable colors each cor-

responding to a standard unit of the time period, which colors are coded on a color carrying member and indicated successively within the time period by a uniform rate of movement between the color carrying member and a point of reference carried by a separate casing member which is employed in association with the color carrying member. A particular timepiece of this invention comprises a cylinder on which is coded, preferably in longitudinal



sections, the distinguishable colors, each color corresponding to a standard unit of the time period, and a casing substantially enclosing the display surface of the cylinder; said casing having a point of reference which indicates the distinguishable color corresponding to the correct unit of time, and driving means adapted to cause uniform rotational movement between the casing and the cylinder so as to display each of the distinguishable colors within the time period.

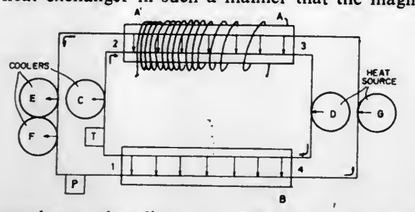
3,616,644
AUTOMATIC PARKING-TIME INDICATOR
Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, Switzerland, assignors to Biviator S.A., Geneva, Switzerland
Filed Aug. 11, 1969, Ser. No. 848,789
Claims priority, application Switzerland, Aug. 24, 1968, 12,738/68
Int. Cl. G07c *1/30*
U.S. Cl. 58—143 **8 Claims**



An automatic parking-time indicator mounted in a vehicle, particularly a motor car, and automatically controlled by a transducer mounted on the differential gear of Cardan joint of the vehicle for automatic indication of the parking time and automatic resetting of the time indicator when the vehicle is removed from a parking field.

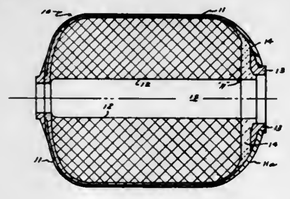
3,616,645
CONVERSION OF HEAT INTO KINETIC ENERGY
Eric van der Voort, Ispra, Italy, assignor to European Atomic Energy Community-Euratom, Brussels, Belgium
Filed Aug. 5, 1968, Ser. No. 750,152
Int. Cl. F01k *27/00*
U.S. Cl. 60—1 **4 Claims**

Converter of heat into kinetic energy using a fluid or suspension having ferromagnetic characteristics, a secondary fluid, a first heat exchanger in which heat is transferred by a secondary fluid to the ferromagnetic fluid; the secondary fluid being caused to circulate in the opposite direction to the ferromagnetic fluid by means of a pump and extracting in a second heat exchanger thermal energy; and varying the magnetic field in the first heat exchanger in such a manner that the magnetic



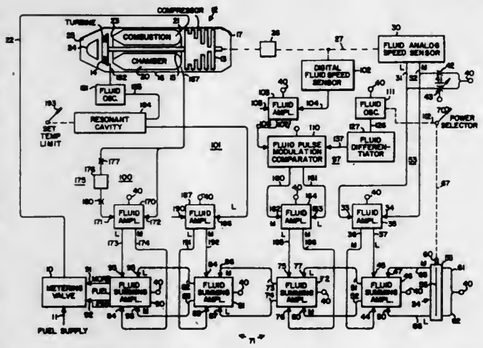
entropy due to the alignment of the magnetic particles of the fluid by means of the magnetic field remains constant.

3,616,646
FORWARD OR AFT STRESS RELIEF FOR A CASE BONDED SOLID PROPELLANT
Alan J. Mikeska, Annandale, and Carl W. Anderson, Jr., Springfield, Va., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Mar. 24, 1970, Ser. No. 22,317
Int. Cl. F02k *9/04*
U.S. Cl. 60—255 **4 Claims**



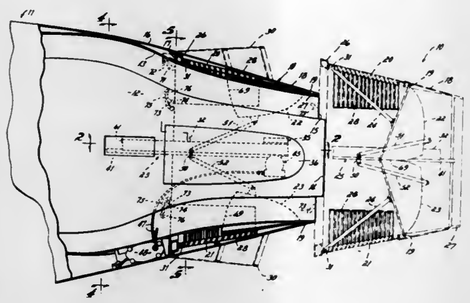
A solid rocket motor-body enclosing a solid propellant grain and having an elastomeric liner interposed in sealed relation between the propellant grain ends and the walls of the motor body to thereby prevent the flow of hot combustion gases thereinto and thus provide for the relief of critical stress concentrations formed during the firing of the propellant grain.

3,616,647
FLUIDIC ENGINE CONTROL SYSTEM
Elmer G. Johnson, Delwood, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 4, 1966, Ser. No. 519,403
Int. Cl. F02c *9/04*; **F02g** *3/00*
U.S. Cl. 60—39.28 **5 Claims**



A pure fluid engine control system for controlling the flow of fuel to a gas turbine engine in accordance with a command signal and with the values of various engine variables.

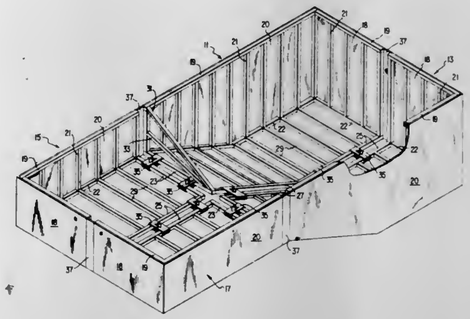
3,616,648
THRUST REVERSER FOR FAN JET ENGINES
Carl A. Weise, San Pedro, Calif., assignor to Aeronca, Inc., Torrance, Calif.
Filed June 26, 1970, Ser. No. 50,224
Int. Cl. F02k *3/02*
U.S. Cl. 60—226 **21 Claims**



A thrust reverser for a fan jet engine of the type having a main discharge duct surrounded by a fan duct terminating in substantially the same plane. The thrust reverser includes a movable cowl disposed around the outer duct wall of the fan duct during normal operation of the engine. The movable cowl is provided with two sets of forwardly angulated cascades which are normally covered by mounted cover doors. The movable cowl also carries two arcuate blocker doors normally disposed in a stowed position adjacent to the inside wall of the movable cowl. The movable cowl is carried by a pair of translatable rails. The rails are effective to shift the cowl to a position aft of the exhaust ends of the main jet and fan jet ducts. The rails are driven by a rack which is releasably latched to the rails. After the rails have shifted the cowl to its rearmost position, the rack is disengaged from the rails, and is moved rearwardly along the rails. The rack is linked to the movable blocker doors and during its final movement is effective to shift these blocker doors inwardly to block off interior passage through the movable cowl. With the doors in their deployed position, both the main jet stream and fan jet stream impinge upon the doors and are redirected to be discharged through the cascades, whereby they are reversed in direction.

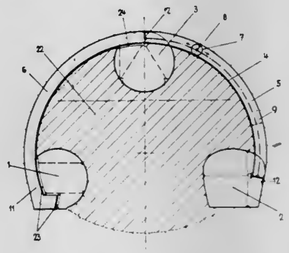
3,616,649
METHOD FOR CASTING LARGE MONOLITHIC CONCRETE STRUCTURES
Randolph Neil Laing, 4500 Richmond Henrico Turnpike, Richmond, Va. 23222
Continuation of application Ser. No. 718,065, Apr. 2, 1968. This application Apr. 10, 1970, Ser. No. 27,440
Int. Cl. E04b *1/16*
U.S. Cl. 61—35 **17 Claims**

This disclosure describes a method and apparatus for casting concrete swimming pools, tanks or walls, etc. In the below-the-ground applications, the preferred method generally comprises the steps of: excavating a hole in the earth; placing inner permanently prebraced forms in the hole; aligning the forms in spaced relationship with the sides of the hole; locking the forms together in an open position; anchoring the forms in the hole; filling open spaces in the sides of the forms; pouring concrete between the forms and the sides of the hole; disconnecting the forms; closing the forms; removing the forms; and, pouring a bottom. The apparatus is adapted to carry out the method and generally comprises a plurality of inner permanently prebraced form sections. Each form section includes outside wall surfaces that define the inner walls of the pool, or the like. These form sections are braced against inner or center brace members. The inner brace members of each form section are locked to inner brace members of other form sections in a separated, predetermined relationship. Also included are means for filling



wall spaces occurring between the wall surfaces of adjacent form sections; and, where applicable, means for attaching the form sections to the bottom of a hole. In addition, in connection with swimming pools means are provided for forming a coping at the upper edges of the wall surfaces of the form sections.

3,616,650
METHOD AND APPARATUS FOR CONSTRUCTING SUBTERRANEAN STRUCTURES
Arnold Ph. Eber, Munich, Pasing, and Johann A. Heilbrunner, Munich, Solln, Germany, assignors to Alfred Kunz & Co., Munich, Germany
Filed Sept. 18, 1969, Ser. No. 859,098
Claims priority, application Germany, Jan. 27, 1969, P 19 03 911.3
Int. Cl. E01g *3/04*
U.S. Cl. 61—42 **4 Claims**



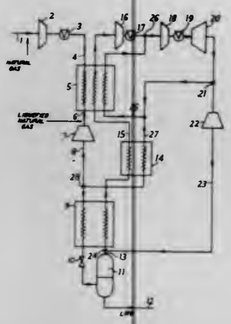
The invention relates to a method for excavating cavities in the construction of subterranean structures such as tunnels where pilot tunnels are driven within the cross-section of a main tunnel to be formed, peripheral cavities are formed between the pilot tunnels, concrete is poured into the peripheral cavities to form the main tunnel lining, and the earth between the pilot tunnels then excavated. The partial peripheral cavities are formed by moving a cutting tool back and forth throughout the cross-sectional peripheral path of the main tunnel and advancing the cutting tool longitudinally of the tunnel.

3,616,651
APPARATUS AND METHODS FOR LAYING UNDERWATER PIPELINES
N. Ming Chang, San Francisco, and Harold V. Anderson, Novato, Calif., assignors to Santa Fe International Corporation
Filed Sept. 24, 1969, Ser. No. 860,643
Int. Cl. F16l *1/00*; B25j *5/02*
U.S. Cl. 61—72.3 12 Claims



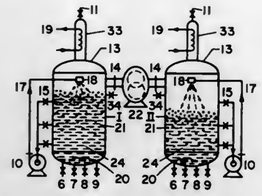
A cable extends from the shore in a prepared trench on the sea bottom out to an offshore site and is there anchored. A pipe pulling assembly, including a pair of fluid actuated cable grippers and a pair of hydraulic cylinders, is coupled to the cable adjacent the shore. The seaward end of the pipeline is connected to the pipe pulling assembly. The pipe pulling assembly and pipeline are carried on sleds having flotation devices. The grippers are alternately actuated to grip the cable. The cylinders are actuated to successively advance the lead gripper along the cable in the seaward direction away from the following gripper which is clamped to the cable and then to advance the released following gripper along the cable in the seaward direction toward the lead gripper which is clamped to the cable in the advanced position thereby pulling the pipeline behind the pipe pulling assembly.

3,616,652
PROCESS AND APPARATUS FOR LIQUEFYING NATURAL GAS CONTAINING NITROGEN BY USING COOLED, EXPANDED AND FLASHED GAS THEREFROM AS A COOLANT THEREFOR
Manfred O. Engel, Newcastle-upon-Tyne, England, assignor to Conch International Methane Limited, Nassau, The Bahamas
Filed Sept. 11, 1967, Ser. No. 666,680
Claims priority, application Great Britain, Sept. 27, 1966, 43,031/66
Int. Cl. F25j *3/00*
U.S. Cl. 62—11 8 Claims



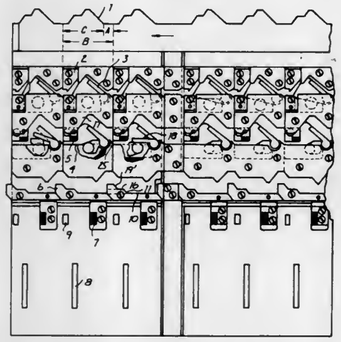
A liquefaction process for natural gas in which the gas is initially liquefied at high pressure, the liquid is expanded and cooled and then flashed to give low pressure liquid and flash gas, and the flash gas is recirculated to cool the incoming gas at various stages of the process. The recirculated flash gas can be cooled by compression and expansion and re-introduced into the system at various points including that at which the liquid gas before flashing is present.

3,616,653
REFRIGERATION IN CYCLES OF FREEZING AND MELTING
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201
Filed Oct. 4, 1967, Ser. No. 672,755
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 13 Claims



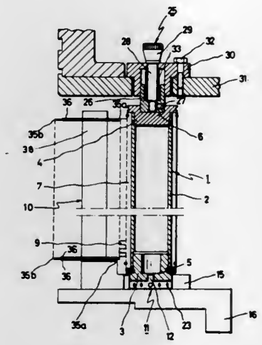
Two similar unitary vessels may be used in a refrigeration cycle to freeze solvent from a solution and to melt the frozen solvent crystals. While the first vessel is used for the evaporation step A, the second is used for the condensation step B. Then the cycle is reversed, with the first being used for step B and the second for step A.

3,616,654
NEEDLE SELECTING MECHANISM FOR MULTI-FEED CIRCULAR KNITTING MACHINES
Juan Bibolas Llinas, Calle San Pedro 46, Arenys de Mar, Barcelona, Spain
Filed June 16, 1969, Ser. No. 833,469
Int. Cl. D04b *9/06, 9/38*
U.S. Cl. 66—25 4 Claims



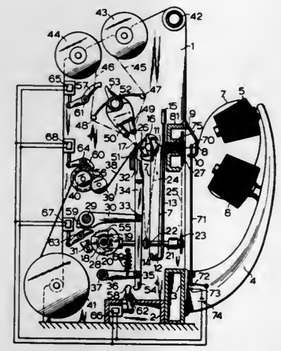
A multi-feed circular knitting machine having a mechanism capable of bringing about needle selection even though an extremely small circumferential space is available for this purpose. A cam cylinder carries a plurality of circumferentially distributed cam sets each of which has an initial needle-selecting region and a subsequent much wider knitting region. The needle cylinder has lower selecting jacks, upper needle jacks, and intermediate selection-transmission jacks. Each cam set has an upper knitting region and a lower selecting region. This lower selecting region of each cam set coacts with the lower jacks and the intermediate jacks for retaining at the intermediate jacks selections made with the lower jacks so that in the lower selecting region of each cam set selections may initially be made for needles which are to carry out knitting functions in the next-following cam set. At this next-following cam set there is in circumferential alignment with the initial region thereof a camming structure which transmits the selection retained by the intermediate jacks to the upper jacks substantially instantaneous selection of needles in an extremely small circumferential space at the initial region of each cam set.

3,616,655
SELECTOR DRUMS FOR CIRCULAR KNITTING MACHINES
José M. Dalmau Guell, San Bruno 103, Badalona, Spain
Filed July 10, 1970, Ser. No. 53,817
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 3 Claims



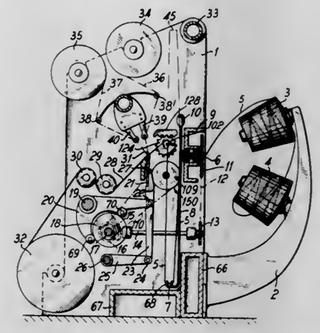
Selector drums for circular knitting machines with a lower base having a slot and a bore corresponding respectively with a diametral rib and pin of a rotary pad mounted on one ring of the machine, the upper cover of said drum being rotatably couplable to an axially displaceable shaft mechanism. The upper cover has a recess in which there is inserted a bushing fixed to an axial rod surrounded by a helical spring which urges the bushing into coupling engagement with the recess in the cover, the axial rod being connected to a knob to which traction may be applied against the spring pressure to pull the bushing out of the recess, leaving the upper end of the drum free and allowing for its easy removal.

3,616,656
WARP KNITTING MACHINE
Stefan Fürst, Monchen-Gladbach, Germany, assignor to Walter Reiners, Monchen-Gladbach, Germany
Filed July 17, 1969, Ser. No. 842,553
Claims priority, application Germany, July 19, 1968, P 17 60 922.2
Int. Cl. D04b *23/00*
U.S. Cl. 66—84 9 Claims



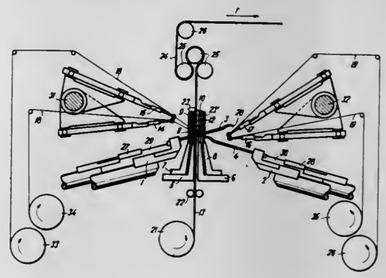
Warp knitting machine, such as a Raschel knitting machine particularly, having a device for filling a weft includes thread monitoring means disposed in the path of the weft and responsive to a break in the weft for controlling the stitch-forming members and the knitted fabric winding means of the machine.

3,616,657
WARP KNITTING MACHINE
Stefan Fürst, Monchen-Gladbach, Germany, assignor to Walter Reiners, Monchen-Gladbach, Germany
Filed July 24, 1969, Ser. No. 844,392
Claims priority, application Germany, July 26, 1968, P 17 60 974.4-26
Int. Cl. D04b *23/00*
U.S. Cl. 66—84 8 Claims



Warp knitting machine having a needle bar zone and means for supplying warp threads thereto includes a weft-filling device having holder members for making a weft ready outside the needle bar zone, the holder members being dispoesd in the vicinity of weft reversal locations and being rotatable in closed travel paths through positions wherein the weft is taken up and delivered by the holder members to the needle bar zone, means for guiding the weft to the warp threads, thread guide means cooperating with the holder members for making the weft ready, the thread guide means being displaceable in the travel path of one of the holder members, the holder members being displaceable in substantially vertical direction and in direction transverse thereto within a plane disposed transversely to the needle bar.

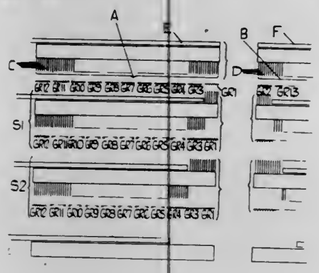
3,616,658
APPARATUS AND METHOD FOR MAKING PILES ON A BASE FABRIC
Frantisek Jindra, Domazlice, Richard Boruta, As, and Bohumil Barton, Kdyne, Czechoslovakia, assignors to Elitex-Zavod textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia
Filed Sept. 18, 1969, Ser. No. 858,935
Claims priority, application Czechoslovakia, Sept. 19, 1968, 6,558/68
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 9 Claims



A base fabric, such as a fibrous fleece sheet, is perforated from opposite sides by needles knitting wales and courses. The loops of successive courses are alternatingly

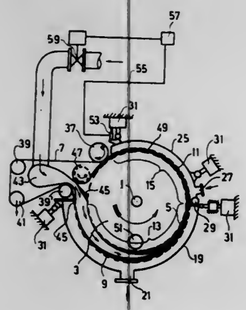
placed in adjacent wales so that back loop portions extend between adjacent wales, and can be drawn out to form pile loops.

3,616,659
STRAIGHT BAR KNITTING MACHINES
Peter Le Good and Reginald Richard Billson, Loughborough, Leicestershire, England, assignors to William Cotton Limited
Filed Nov. 15, 1968, Ser. No. 776,143
Claims priority, application Great Britain, Nov. 25, 1967, 53,727/67
Int. Cl. D04b *11/04*
U.S. Cl. 66—88 **9 Claims**



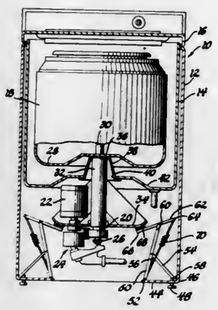
In a method of changing from rib to plain fabric, in a straight bar knitting machine, wherein there are half as many machine needles as frame needles, using loop spreader elements associated with the machine needles for transferring their rib loops to adjacent empty frame needles, and at the same time using spaced individual ones of modified loop spreader elements to double their associated loops with loops on their adjacent frame needles, the spaced groups of loops thus formed by the spaced loop doublings being subsequently closed together, by use of points for ensuing production of non-rib fabric.

3,616,660
APPARATUS FOR WASHING FIBROUS MATERIAL
Gosta Ingemar Ingermarsson, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden
Filed May 22, 1969, Ser. No. 826,873
Claims priority, application Sweden, May 24, 1968, 7,004/68
Int. Cl. D06f *29/00*
U.S. Cl. 68—22 R **15 Claims**



Apparatus for washing a fibrous, cellulosic material suspended in a liquid comprises a drum having a shell pervious to the suspension liquid and substantially non-pervious to the fibrous material, a member defining a web-forming zone along the portion of the drum, a liquid pervious member defining a washing zone along a second portion of the shell and a flexible foraminous belt trained around the drum within the members and mounted for movement with the drum surface. The suspension liquid is introduced at the upstream end of the web-forming zone between the foraminous belt and the drum surface. The member defining the web-forming zone is formed and positioned such that the web-forming zone is tapered in the direction of rotation of the drum, and thus under the influence of the pressure supply of the suspension, the fibrous material is drained inwardly through the shell and a web is formed on the drum surface. Wash liquid is supplied under pressure from outside the liquid pervious member defining the washing zone and displaces suspension liquid from the web. The liquids expressed and displaced from the web are conducted away from inside the drum. The liquid pervious member defining the washing zone is so formed and positioned relative to the drum surface that the thickness of the web is maintained at all points throughout the washing zone at a value not greater than the thickness of the web at any point in the web forming zone. Consequently, the fibrous material is not allowed to expand in the washing zone. The apparatus also comprises a press roll downstream of the washing zone for dewatering the web and a device for removing the web from the apparatus.

3,616,661
FULCRUM LEVER AND SPRING SUPPORT FOR A CENTRIFUGAL SPIN TUB
Melvin A. Menk, Edgewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 7, 1970, Ser. No. 52,885
Int. Cl. D06f *37/24*
U.S. Cl. 68—23.3 **3 Claims**

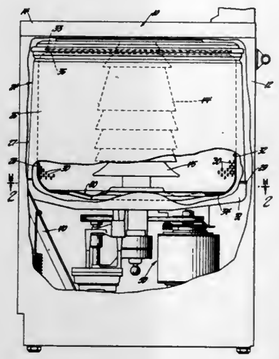


A support arrangement for a centrifugal extracting tub such as a water extracting tub in a clothes washer wherein a clothes containing spin tub and its associated driving components are mounted on a snubber plate. A plurality of levers are pivotally secured within a cabinet and are spring biased into engagement with the snubber plate thereby resiliently supporting the tub within the cabinet.

3,616,662
CLOTHES WASHER TUB HAVING STEP MEANS FOR SEDIMENT REMOVAL
Byron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1970, Ser. No. 55,883
Int. Cl. D06f *23/04, 39/10*
U.S. Cl. 68—18 D **5 Claims**

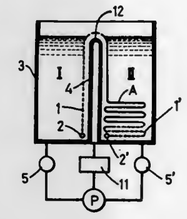
A domestic clothes washer has a pair of nested tubs one of which is imporforate to retain the washing fluid, the other of which is perforate and rotatable to centrifuge the washing fluid from clothes being washed therein. An

agitator in the perforate tub provides a pulsating toroidal circulation of washing fluid. The bottom wall of the perforate tub has a series of sediment removal holes protected from the pulsing circulation of washing fluid by an annular step down outboard of the agitator. The protection



of the step down creates eddy currents over the holes during each pulse of washing fluid to trap sediment. Between each pulse sediment thus trapped drops through the holes for removal from the clothes washer during rotation of said perforate tub.

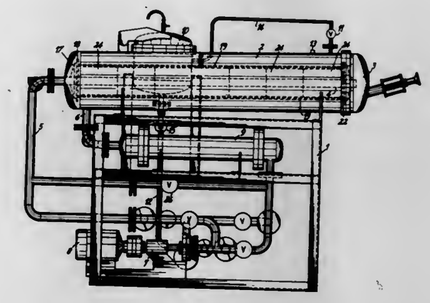
3,616,663
APPARATUS FOR DYEING CLOTH
Goro Matsuda, 73, 1-chome, Kurokawa Honduri Kitaku, Nagoya, Aichi Prefecture, Japan
Filed Nov. 14, 1969, Ser. No. 876,947
Int. Cl. D06f *17/02, 39/04*
U.S. Cl. 68—184 **1 Claim**



The invented apparatus for dyeing cloth in a flat state comprises a dyeing vat divided into two compartments of substantially equal volumes by means of a hollow partition wall having fluid jetting openings at its top. The dyeing solution contained in one compartment is jetted from the top of said partition wall so as to raise the cloth striding over the partition wall and at the same time, the cloth is carried successively in a flat state into the adjacent compartment by the overflow of the dyeing solution.

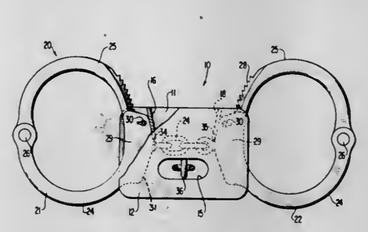
3,616,664
INSTALLATION FOR DYEING SLEEVES
Pierre Libbrecht, Tournai, Belgium, assignor to S.A. Teinturerie des Francs, Tourcoing, France
Filed Sept. 12, 1968, Ser. No. 759,291
Int. Cl. B05c *8/02*
U.S. Cl. 68—189 **1 Claim**

Apparatus for dyeing and the treatment of loosely wound sleeves comprising a horizontal working tank, a horizontal perforated material holder for the sleeves within the tank, an extractor disc slidably mounted on the holder, operating rods extending parallel to the holder and



fixed to the disc and a second disc slidably mounted on the holder and detachably secured to the opposite ends of the rods.

3,616,665
HANDCUFF SHIELD
Samuel Nathan Rosenthal, 2638 Midway Road, Decatur, Ga. 30030
Filed Dec. 31, 1969, Ser. No. 889,539
Int. Cl. E05b *75/00, 17/14*
U.S. Cl. 70—16 **5 Claims**

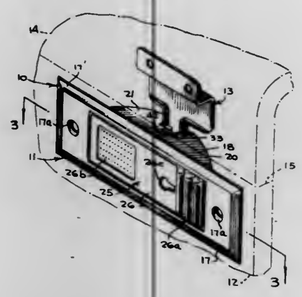


A handcuff shield comprising a pair of spaced apart parallel plates rigidly connected to each other by a pair of braces extending between the plates. Aligned openings are defined in the central portion of the plates. The plates are passed downwardly about the chain which connects together a pair of handcuffs, and the braces between the plates are spaced apart and angled so as to abut the bracelets of the handcuffs and hold the chain in a substantially taut condition. The prisoner's waist chain is passed through the aligned openings of the plates below the handcuff chain to confine the handcuff chain in the shield, and the key openings to the bracelets of the handcuffs are confined within the space between the plates.

3,616,666
ROCKER TYPE LATCH CONSTRUCTION
Wallace E. Atkinson, Rte. 4, Box 210, Petersburg, Va. 23803
Filed Aug. 31, 1970, Ser. No. 68,333
Int. Cl. E05b *65/52*
U.S. Cl. 70—70 **14 Claims**

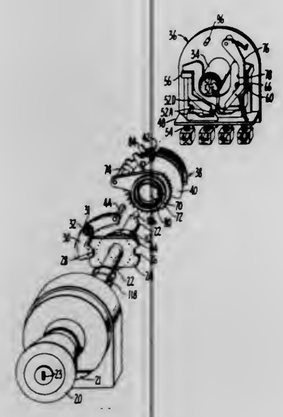
A latch including lock means for luggage cases and the like including a keeper to be mounted on the upper case section, and a latch unit to be mounted on the lower case section. The latch section includes a housing

defining a concave well and a latch member supported therefrom for circumferential movement between latching and unlatching positions. The latch member is formed of sheet material, having circular segment upper and



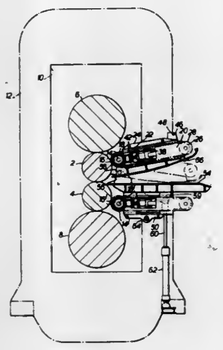
lower flanges which may be sprung inwardly somewhat during assembly and have outwardly projecting lug protions which are interfitted into slots in upper and lower walls of the concave well to slidably support the latch member in the well.

3,616,667
PUSH BUTTON DOOR LOCK
Thomas K. McGourty, Aptos, Calif., assignor to Time Research & Development Corporation
Filed Jan. 27, 1970, Ser. No. 6,167
Int. Cl. E05b *37/16*
U.S. Cl. 70—285 **9 Claims**



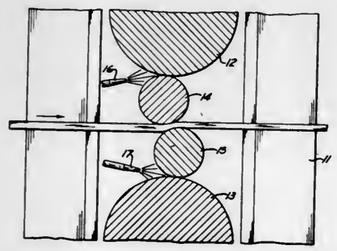
A compact push button door lock is provided which can be installed in an ordinary door without enlarging the normal opening through which a conventional lock is installed and utilizing a standard latch. The lock includes a plurality of friction driven discs each of which has a control button. A large number of permutations are possible despite the small size of the lock making it almost impossible for someone who does not know the combination to open the lock. In accordance with one embodiment of the present invention, the discs are provided with breakout members so that the home owner can provide his own combination. The lock can also be opened in the usual manner with a key.

3,616,668
ROLL CLEANING BRUSHES FOR ROLLING MILLS
Cyril E. Smith, Ringwood, England, assignor to Loewy Robertson Engineering Company Limited, Dorset, England
Filed Nov. 26, 1969, Ser. No. 880,245
Int. Cl. B21b *45/02, 27/04*
U.S. Cl. 72—40 **7 Claims**



Roll cleaning apparatus for a rolling mill comprises for each work roll a rotatable brush mounted on displaceable carriers, the carriers are displaced between a first position in which the brush is in brushing relation with the roll and a second position in which the roll is away from the vicinity of the roll. The brushes may be removed from the carriers when the carriers are in the second position. The carriers are pivotable about fixed pivots and when both work rolls have roll cleaning apparatus, the carriers of one brush are pivoted about the mill housings and the carriers of the other brush are pivoted about the carriers of the first brush. The carriers of the two brushes may be connected together and the carriers pivoted together about the mill housings.

3,616,669
METHOD OF AND APPARATUS FOR ROLLING FLAT STRIP
Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed June 13, 1969, Ser. No. 833,045
Int. Cl. B21b *27/06*
U.S. Cl. 72—200 **6 Claims**



The disclosure of the present invention relates to a 4-high strip rolling mill, wherein the work rolls are offset and on opposite sides of a plane containing the axes of the backup rolls of the mill. The strip is caused to alternately wrap around a portion of each work roll in a

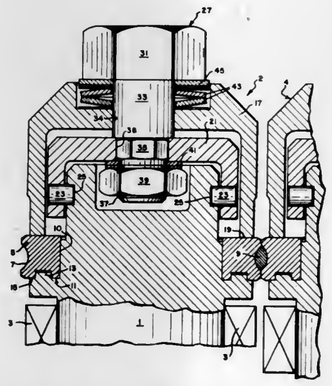
manner to effect an overall reduction in the thickness of the strip by compression from the rolls, and at the same time subject the opposite sides of the strip as they come into contact with the work rolls alternately to a tension force sufficient to elongate by tension the opposite sides of the strip. The disclosure includes a roll heating and cooling system for varying the crown of the work rolls and hence, the amount of the tension force alternately imposed on the opposite sides of the strip in order to change the degree of elongation transversely across the strip.

3,616,670
DEVICE AND METHOD FOR ROTATING THE MANDREL IN A ROTARY FORGING MILL
Jean-Paul Calmes, En Pernessy, Le Mont-sur-Lausanne, Switzerland
Filed July 16, 1969, Ser. No. 842,118
Claims priority, application Germany, July 31, 1968, P 17 52 888.0
Int. Cl. B21b *17/08*
U.S. Cl. 72—209 **7 Claims**



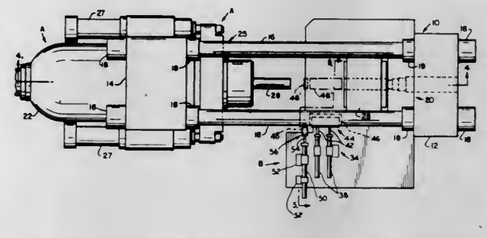
The recoil device of a rotary forging mill is enabled to obtain uni-directional rotation of the hollow, or workpiece, between working strokes in such a manner that the angle of rotation is independent of the length of stroke of the recoil piston. There is a shaft operatively connected to the mandrel holder in such a way that rotation of the shaft is transmitted to the mandrel holder. The shaft is rotated by two pressure-fluid operated pistons which can be coupled in turn to the shaft. The pistons are also coupled to each other so that as one piston makes a working stroke the other piston makes a return stroke.

3,616,671
ROLL FOR ROLLING MILLS
Georges Notari, Monte Carlo, Monaco, assignor to Ugine-Carbone, Paris, France
Filed Oct. 21, 1969, Ser. No. 868,164
Claims priority, application France, Oct. 22, 1968, 170,807
Int. Cl. B21b *31/08*
U.S. Cl. 72—237 **4 Claims**



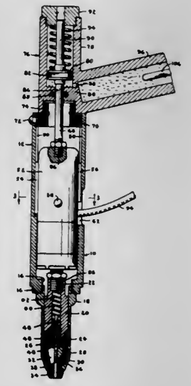
A rolling mill roll includes a shaft having a shoulder thereon, a profile-defining ring engaged about the shaft and against the shoulder, and quick-release means for holding the ring in place. These comprise an outer dished ring fitting with clearance over the end of the shaft and bearing against the profile ring, an inner dished ring coupled to the outer ring, and at least one pin extending radially inward from the inner dished ring for engagement with a helical thread cut on the shaft, the thread terminating in a length of zero or reverse pitch.

3,616,672
DUMMY BLOCK AND/OR BILLET LOADING DEVICE FOR EXTRUSION PRESSES
Alois J. Moos, Kew Gardens, N.Y., assignor to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
Filed Aug. 19, 1969, Ser. No. 851,194
Int. Cl. B21c *33/00;* **B21j** *13/10*
U.S. Cl. 72—270 **7 Claims**



The drawings show a long stroke extrusion press provided with mechanisms for supplying dummy blocks and billets to the pressure container. The mechanisms include tubular, open ended, holder assemblies having an internal diameter to receive the billets or dummy blocks. The holders are open along one side throughout an arcuate or circumferential extent of slightly less than 180° to maintain billets or dummy blocks therein. However, the chordal extent of the opening is greater than the diameter of the press ram to permit the holder to retract over the ram.

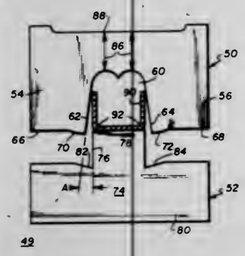
3,616,673
COMBINATION ROTATING AND RECIPROCATING RIVET TOOL
Louis F. Miklos, 6151 Delaware St., Gary, Ind. 46409
Filed Aug. 12, 1969, Ser. No. 849,432
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 **6 Claims**



A combination rotating and reciprocating tool for holding a blind rivet. It is contemplated that the blind rivet be

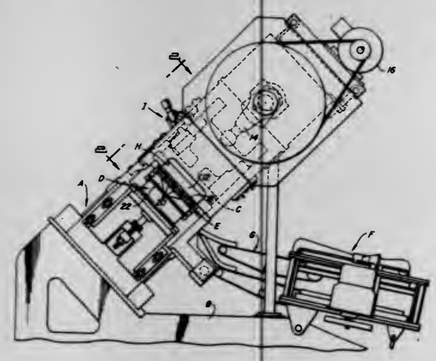
formed with a drill head which is rotated by the tool for purposes of drilling through panel or structural members to be riveted together. Upon the drilling of the hole through the panel members, the tool is actuated to pull the stem of the rivet to upset the rivet and form the rivet into a fastening element. Further pulling will accomplish the breaking of the stem. This invention accomplishes the entire drilling and riveting operation in rapid sequence.

3,616,674
DIE SET
Raymond F. Piasecki, Hazlet, and Lai Che Kuo, Elizabeth, N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Mar. 4, 1970, Ser. No. 16,292
Int. Cl. B21d *37/00*
U.S. Cl. 72—412 **49 Claims**



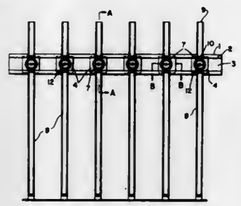
A die set comprised of a first deflectable die member and a matingly cooperable second die member, for selectively deforming a ferrule or similar article interposed in the cavity of said first die member. The interengagement of said first and second die members causes the partial deflection of said first die member, and the consequent alteration of the width of said cavity. Deflectable lever means, positioned within said cavity, assist the release of the deformed ferrule from within the die upon the disengagement of the die members.

3,616,675
BLANK EJECTOR ASSEMBLY FOR PRESSES
Ronald H. D. Armbruster, Battle Creek, and Jon Harrison Brownell, Hastings, Mich., assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
Filed Aug. 26, 1969, Ser. No. 853,144
Int. Cl. B21d *45/00;* **B26d** *7/00*
U.S. Cl. 72—427 **3 Claims**



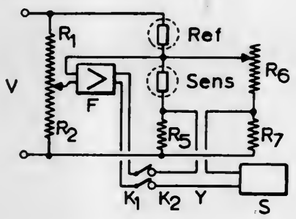
An ejector assembly for ejecting blanks from the die area of a press having multiple dies. The dies are arranged diagonally across the press bed, and the ejector assembly is positioned on one side of the press so that some of the dies are remote from the assembly. The assembly comprises a kicker arm pivotably suspended from the press above the die area, an elongated kicker slide, a stationary slide holder mounted on the press on which the kicker slide is guided into an out of the area of the remote dies, and linkage means connecting the kicker arm with the kicker slide to translate arcuate motion of the arm into linear motion of the slide. A cam means on the press ram actuates the kicker arm in timed relationship therewith whereby the slide ejects blanks from the die area.

3,616,676
JIG DEVICE FOR BENDING SHELL PLATING IN SHIP BUILDING WORK
Isaburo Takeyasu, 5–21 Nogami, 2-chome, Takarazuka, Hyogo Prefecture, Japan
Filed May 8, 1969, Ser. No. 822,927
Int. Cl. B21d *37/04*
U.S. Cl. 72—481 **2 Claims**



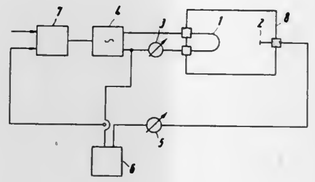
A jig device for bending shell or outside plating in ship building work, which comprises a channel shaped main bar, a plurality of crosshead members slidable along said channel shaped main bar, a plurality of channel shaped slide bars, each adapted to slide longitudinally and adapted to be oscillated according to sliding movement of said crosshead members, and a resilient strap connected to one end of each of said slide bars.

3,616,677
ELECTRICAL RESISTANCE BRIDGE WITH A HEAT SENSITIVE RESISTOR FOR THE MEASUREMENT OF THE THERMAL DISPERSION WITHIN THE AMBIENCE OF THE RESISTOR
Mogens Oppegaard, Torshov, Norway, assignor to Asbjorn Oppegaard, Lillestrom, Norway
Filed Aug. 28, 1969, Ser. No. 853,664
Claims priority, application Norway, Aug. 28, 1968, 3,345/68
Int. Cl. G01n *27/18;* **G01r** *27/00*
U.S. Cl. 73—27 **1 Claim**



An electric resistance bridge circuit, including a main bridge and an auxiliary bridge, the main bridge including a temperature sensitive reference resistor adapted to be influenced by its ambience in a normal or reference state, a temperature sensitive sensing resistor adapted to be influenced by its ambience in a state differing from said normal or reference state, and a bridge resistor in series with said sensing resistor. The reference resistor is arranged in one arm of said main bridge, and the sensing and the bridge resistors are arranged in another arm of said main bridge, an amplifier is included, the input of which is connected to the output of the main bridge, a recording instrument is connected to receive as its input signal a signal derived from the output of the amplifier, the output of the amplifier being connected to diagonally opposite points of said auxiliary bridge, the auxiliary bridge having one of its arms formed by said sensing resistor and another of its arms formed by the bridge resistor, one of the diagonally opposite points being the point of junction between the sensing resistor and the bridge resistor, whereby any imbalance signal in the main bridge is amplified by the amplifier and the resulting output signal current therefrom is divided into a compensating current through said sensing resistor, and a current through said bridge resistor, thus keeping the total voltage across the series connection of the sensing resistor and the bridge resistor as well as the current through the reference resistor substantially constant.

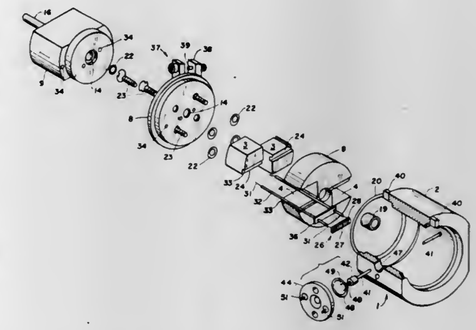
3,616,678
PROCESS FOR MEASURING OXYGEN PARTIAL PRESSURE
Peter Batzies, Am Hirschwald, Germany, assignor to Brown-Boveri & Cie Aktiengesellschaft, Mannheim-Kafertal, Germany
Filed Sept. 15, 1969, Ser. No. 857,830
Claims priority, application Switzerland, Sept. 16, 1968, 13,882/68
Int. Cl. G01n *27/14;* **G01r** *5/28*
U.S. Cl. 73—26 **4 Claims**



The partial pressure of oxygen in a high vacuum is measured with an emission electrode emitting "heated" electrons and disposed in a heating circuit in electric circuit with a collector electrode. The temperature is kept so high that oxygen alone is adsorbed on the emitter electrode. The system is adaptable for measurements within a chamber or in outer space.

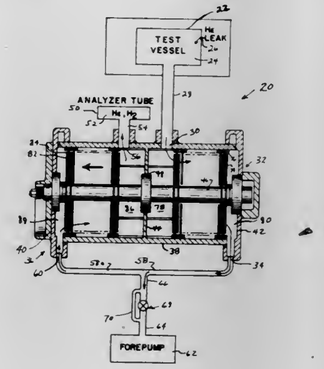
3,616,679
PARAMAGNETIC OXYGEN DETECTOR
Emilio G. Meyer and Gianmario Bardoni, Milan, Italy, assignors to Mine Safety Appliances Italiana, S.p.A., Milan, Italy
Filed Nov. 6, 1969, Ser. No. 874,489
Int. Cl. G01n *27/72*
U.S. Cl. 73—27 A **9 Claims**

This invention relates to a paramagnetic gas analyzer of the "magnetic wind" type, operating on the principle that the magnetic susceptibility of a gas, such as oxygen, varies inversely with its temperature. A sample gas is heated in a non-homogeneous magnetic field inside a cylindrical test chamber. The heating elements are recessed in the surfaces of the end walls of the chamber and function only to generate the magnetic wind, which is,



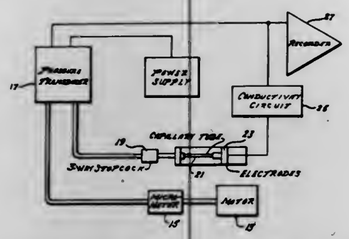
in turn, measured by its thermal effect on separate electrical resistance sensors.

3,616,680
LEAK DETECTOR
Wilhelm F. Schrader, Skokie, Ill., assignor to Sargent-Welch Scientific Company
Filed Oct. 27, 1969, Ser. No. 869,556
Int. Cl. G01m *3/20*
U.S. Cl. 73—40.7 **5 Claims**



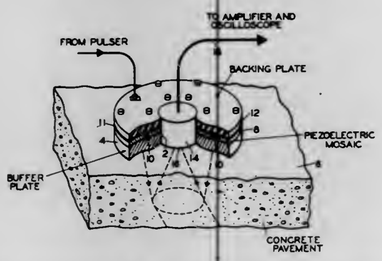
A gas leak detecting system which includes a chamber to be tested or to receive therein articles to be tested for gas tightness under vacuum conditions. A turbo-pump having two compressor pump sections, each having inlet and outlet ends, are provided. The turbo-pump in one section evacuates the vessel through a gas flow line connected to a vacuum fore pump, and the other turbo-pump is an analyzer pump having a low molecular weight gas detector operatively associated with its inlet end, and its outlet end connected to the gas flow line extending between the other turbo-pump and the fore pump. Control means are provided in the gas flow line downstream of this connection, and, under proper conditions, the analyzer pump evacuates high weight molecular gases from the inlet end thereof while permitting the low molecular weighet trace gas to enter the inlet area for accurate detection at a controllably low pressure level.

3,616,681
ELECTRODE SYSTEM FOR SURFACE TENSION DETERMINATION OF FLUIDS
Leopoldo L. Rodriguez, 5511 Rolling Dale, San Antonio, Tex. 78228; Kenneth G. Ikels, 28 Ridge Drive, New Braunfels, Tex. 78130; and James Ryan Neville, 213 Tuttle Road, San Antonio, Tex. 78209
Filed Dec. 16, 1969, Ser. No. 885,575
Int. Cl. G01n *13/02*
U.S. Cl. 73—64.4 **3 Claims**



An electrode system is attached relative to a capillary tube so that an electrical circuit is completed when the meniscus in the capillary tube holding the sample flattens out as pressure is applied by a motor driven micrometer through a pressure transducer. When this occurs, the conductive properties of the solution close a conductivity circuit which applies a voltage to a recorder thus indicating the end point. The pressure noted at this point is used in the calculation of the surface tension of the liquid sample.

3,616,682
ULTRASONIC NONDESTRUCTIVE THICKNESS GAUGE
Matthew J. Golis, Robert C. McMaster, and Gary L. Cooper, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio
Filed Sept. 23, 1968, Ser. No. 761,645
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.7 **8 Claims**

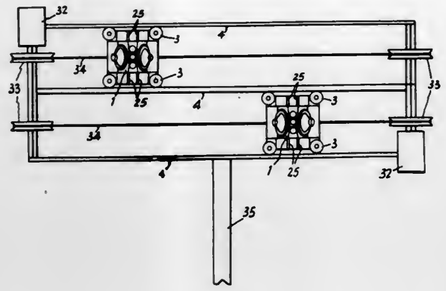


The invention is for an ultrasonic transmitting and receiving device for the nondestructive measuring of the thickness of heterogeneous materials.

3,616,683
APPARATUS FOR THE CONTINUOUS CHECKING OF OVERHEAD CONTACT LINES FEEDING ELECTRICALLY DRIVEN RAILROAD VEHICLES
Sylvestre Pachurka, Cachan, France, assignor to Societe dite: S.A. Materiels Industriels Matisa, Paris, France
Filed July 2, 1969, Ser. No. 838,506
Claims priority, application France, Dec. 23, 1968, 179,978
Int. Cl. G01n *24/00*
U.S. Cl. 73—71.5 **3 Claims**

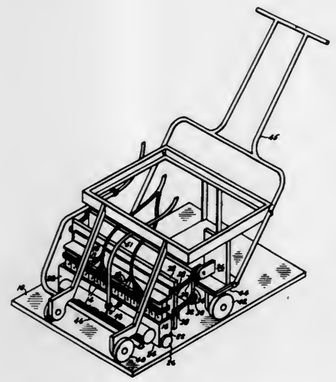
Apparatus for the continuous checking of overhead contact lines feeding electrically driven railroad vehicles.

An apparatus adapted to slide along the overhead wires to be checked for varying diameters and possible defects and to move transversely to follow said wires. It includes a support in which at least one piezo-electric cell is adapted to engage the wire with the interposition of a layer of



water or the like viscous liquid flowing preferably along a closed circuit. The cell transmits signals through a transformer or condenser to indicating or recording instruments.

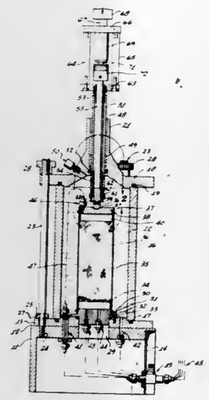
3,616,684
ULTRASONIC INSPECTION CARRIAGE
Edward M. Nusbickel, Jr., Allentown, Pa., assignor to Bethlehem Steel Corporation
Filed Nov. 20, 1969, Ser. No. 878,481
Int. Cl. G01n *24/00*
U.S. Cl. 73—71.5 **1 Claim**



A carriage is adapted to be moved relative to a flat workpiece during the ultrasonic inspection thereof. A housing containing a row of transducers is suspended from the carriage whereby, as the housing or carriage traverses undulations in the surface of the workpiece, the row of transducers is maintained horizontal and transversely disposed to the direction of movement of the carriage relative to the workpiece. In addition, the bottom of the housing is maintained at a constant distance from the workpiece, while the vertical axes of said transducers are maintained perpendicular to the plane of the workpiece.

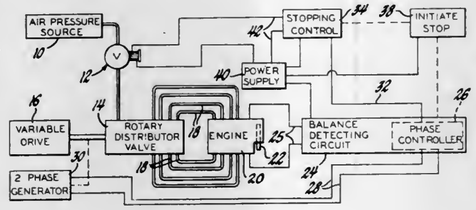
The transducers are ultrasonically coupled to a column of water contained in said housing. A jet of water provides a continuous flow of water between the bottom of said housing and the flat surfaces of said workpiece oppositely disposed therefrom. The housing is supported relative to said flat surfaces such that there is sufficient surface tension to maintain a continuous layer of water between the opposing surfaces of said flat surfaces and said bottom.

3,616,685
LOAD APPLYING DEVICE FOR A PRESSURE TEST CHAMBER
James A. Strom, Whittier, Calif., assignor to Dames and Moore, Los Angeles, Calif.
Filed June 29, 1970, Ser. No. 50,528
Int. Cl. G01n *3/02*
U.S. Cl. 73—84 **8 Claims**



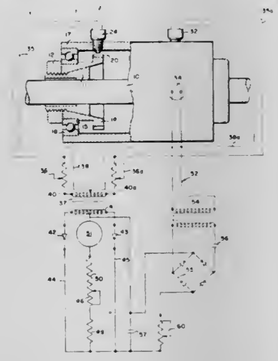
A device for applying a load to a sample within a pressure test chamber employing an outer hollow cylindrical load sleeve sealed by an O-ring in a chamber entrance. An inner load rod slides in the outer load sleeve in longitudinally recirculating ball bushings to move with a minimum of friction and is connected to the end of the load sleeve through a bellows assembly attached both to the end of the inner load rod and to the outer load sleeve. The inner load rod engages the sample within the pressure chamber and the load pressure is measured by that applied to the inner rod independently of any load which may be applied to the load sleeve. The effect of the chamber pressure on the inner load rod may be zeroed out of a read-out or recording device or may be readily computed from the value of the chamber pressure and deducted from the total load on the inner rod to give the actual load applied to the sample in the chamber.

3,616,686
ENGINE STOPPING CONTROL FOR AN AIR-MOTORED ENGINE BALANCING SYSTEM
Joseph F. Lash, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 14, 1970, Ser. No. 63,841
Int. Cl. G01n *15/00*
U.S. Cl. 73—116 **4 Claims**



A circuit is provided in conjunction with an engine balancing system for stopping an engine driven by air pressure with the position of engine unbalance at a predetermined location. A phase-adjusting device in the circuit takes into account the angular position of engine unbalance as well as the amount of engine coasting occurring after a stop signal is issued.

3,616,687
APPARATUS FOR INDICATING HORSEPOWER
Albert H. Wignall, 60 Garrick St., Newark, Ohio 43055
Filed Oct. 16, 1969, Ser. No. 866,842
Int. Cl. G01l *3/00*
U.S. Cl. 73—133 **5 Claims**

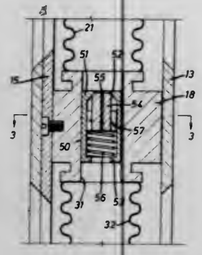


A horsepower indicator for power levels up to about 2,000 H.P. comprising a pair of spaced gears affixed to the power transmitting shaft; the gears having teeth which are equidistant from root to point and of equal pitch on both sides of each point and of each root whereby they are adapted to generate, in an adjacent magnetic pickup, square shaped alternating electric waves having an ampliude proportional to the speed of the gears involved; said gears having a relative position whereby at zero horsepower the generated waves cancel, but when the shaft twists due to applied torque, the waves are of the same polarity for a time span proportional to the amount of relative shift between the gears. In this relationship, the waves combine to generate negative and positive square wave form pulses which are rectified and passed through a galvanometer which is calibrated for horsepower. A reverse bias is also applied to the current leading to the galvanometer by rectifying further waves generated through a magnetic pickup for one of the gears, filtering same, and applying voltage thereby generated across a resistance in series with the galvanometer; the purpose of the reverse bias being to compensate for errors otherwise introduced by vibration and other variables in the apparatus.

3,616,688
GRADIOMANOMETER APPARATUS
Rene Roussin, Marnes-la-Coquette, and Jean-Loup Bonnet, Verrieres-le-Buisson, France, assignors to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 21, 1969, Ser. No. 867,993
Claims priority, application France, June 12, 1969, 6919455
Int. Cl. E21b *47/00, 47/06*
U.S. Cl. 73—151 **5 Claims**

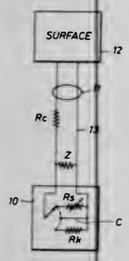
An illustrative embodiment of the present invention includes improvements for use in borehole fluid density measuring apparatus of the gradiomanometer type including an inertia operated check valve. The inertia operated check valve permits free fluid movement from

a measuring bellows of the device into an expansion bellows if the measuring instrument experiences a sudden



acceleration in excess of a predetermined value in moving through a well bore.

3,616,689
HIGH TEMPERATURE MEASUREMENT METHOD AND APPARATUS
André Scholberg, Boulogne-Billancourt, France, assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 24, 1969, Ser. No. 869,293
Claims priority, application France, Dec. 17, 1968, 178,578
Int. Cl. E21b *47/06*
U.S. Cl. 73—154 **17 Claims**



An illustrative embodiment of the invention includes methods and apparatus for measuring temperature and other parameters of interest in a well bore by use of a monocable logging tool. A temperature sensitive element connected to the end of a monocable is supplied with a constant current. The voltage produced at the surface is thereby a function of the resistance of the element. The voltage produced with the temperature sensitive element shorted out and that produced with a known value calibration resistor may then be combined in a manner to eliminate errors due to the resistance of the monocable conductor or any stray monocable insulation leakage resistance.

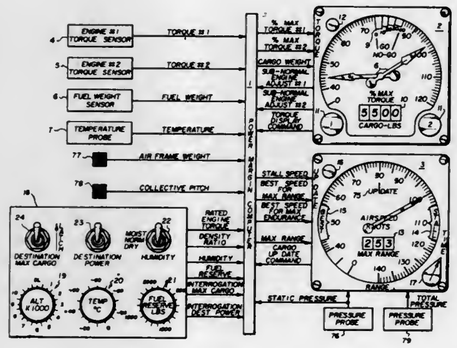
3,616,690
WEIGHT MEASURING APPARATUS
Charles M. Harden, Natick, Mass., assignor to Searle Medidata, Inc., Waltham, Mass.
Filed June 25, 1970, Ser. No. 49,616
Int. Cl. G01g *3/14, 9/00*; G01m *19/00*
U.S. Cl. 73—172 **8 Claims**

Apparatus especially useful in medical screening for determining gross weight and relative weight distribution between the left and right foot of an individual and between the ball and heel of each foot. A platform is provided to support an individual and is in turn supported on three springs each of which has affixed thereto a plurality of strain gauges. The strain gauges are selectively coupled to associated signal processing circuitry operative



to provide electrical output signals representative of the total weight and relative weight distributions of the individual standing upon the platform.

3,616,691
MISSION CAPABILITY INDICATING SYSTEM
William E. Brandau, Westwood, N.J., assignor to The Bendix Corporation
Filed Mar. 26, 1969, Ser. No. 810,668
Int. Cl. G01c *21/00*
U.S. Cl. 73—178 H **19 Claims**

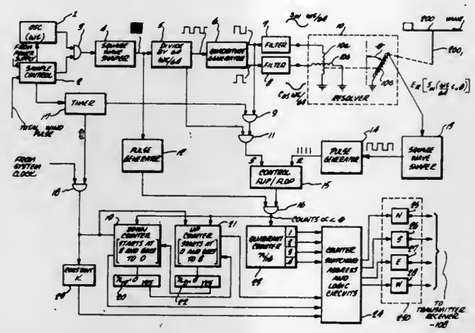


A computer especially adapted for use in helicopters for determining prior to takeoff if the engine has sufficient capability to complete the assigned mission. The computer senses ambient conditions and actual engine torque, and computes percent of maximum torque output to predict maximum cargo weight, maximum range, stall speed and best operational airspeeds for maximum range and endurance.

3,616,692
DATA ACQUISITION SYSTEM
Elbert Gerald Keller, Camarillo, Calif., assignor to Leach Corporation, South Pasadena, Calif.
Filed Sept. 8, 1969, Ser. No. 856,035
Int. Cl. G01f *13/00*
U.S. Cl. 73—189 **14 Claims**

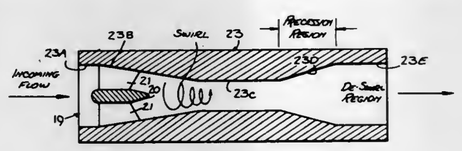
A low power requirement data acquisition system is disclosed. The system is adapted to continuously digitally

record a sensed scaler measurement which may represent, for example, an environmental condition such as "total wind." The system is further adapted to record directional indication values correlated with the scaler measurements. Digital representations of the magnitude



and directional values are stored for later transmission to a remote central processing point. The representative digital data may readily be converted to an accurate vectorial representation to provide an accurate history of the sensed vectorial events.

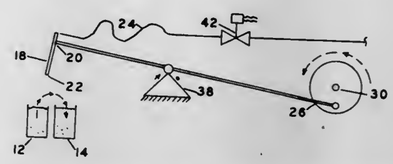
3,616,693
SWIRL-TYPE FLOWMETER
Thomas H. Burgess, Horsham, Pa., assignor to Fischer & Porter Co., Warminster, Pa.
Filed June 16, 1969, Ser. No. 833,449
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 C **10 Claims**



A swirl-type flowmeter whose output frequency is a function of fluid-flow rate, the frequency being substantially linear throughout a broad Reynolds number range. The meter includes a flow tube whose inlet section has a set of fixed swirl blades therein which impart a swirling motion to incoming fluid, the swirling flow being caused to precess in an enlarging section of the tube. The precessional motion is detected to produce voltage pulses whose frequency depends on flow rate. To maintain the desired linear relationship between flow rate and frequency, the geometry of the swirl blades and the inlet section associated therewith is made such as to accelerate flow therethrough to minimize boundary-layer separation along the surface of the blades.

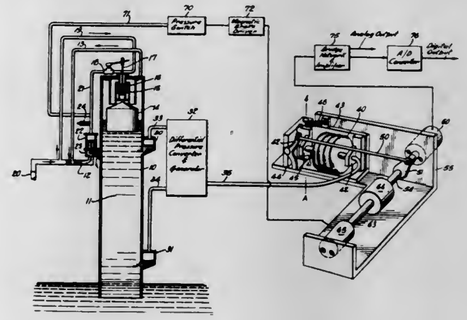
3,616,694
PROPORTIONAL SAMPLING APPARATUS
Edward J. Trebes, Tampa, Fla., assignor to Cities Service Company, New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,435
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A **6 Claims**

A proportional sampling apparatus for selectively withdrawing and proportionately mixing two separate fluids for sampling purposes is disclosed herein. The apparatus comprises a suction conduit vertically mounted on one end of a lever arm, the other end of the lever arm being coupled to a crank wheel. A cam follower is mounted on the lever arm adjacent a triangular shaped cam, acting as the lever arm fulcrum. A pair of launders each containing one of the fluids to be withdrawn is mounted below the suction



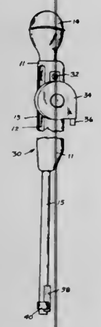
conduit, the adjacent walls of each launder being positioned below the level of the suction conduit when it is raised above the level of fluid in the launders. Fluid withdrawn sequentially through the suction conduit is metered into a mixing tank through a solenoid valve responsively controlled by switch means, the switch means being responsive to the crank wheel position.

3,616,695
APPARATUS FOR CONVERTING A PULSATING PNEUMATIC SIGNAL TO A PEAK-HOLDING SIGNAL
Herbert A. Rundell, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,160
Int. Cl. G01n *9/12*; G01l *7/00*
U.S. Cl. 73—438 **8 Claims**



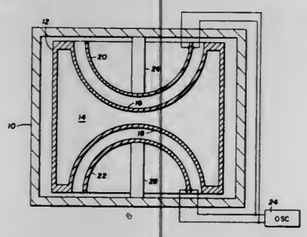
Disclosed is apparatus usable in connection with a borehole drilling fluid density measuring device for converting a pulsating pneumatic signal to a peak-holding signal including a pressure sensing cell for converting the pneumatic signal to mechanical movement of a reciprocating nature, a first shaft coupled with the cell through a movement multiplication linkage adapted to provide angular displacements of the first shaft corresponding to the pneumatic signal, the coupling being adapted to permit the shaft to retain its position during declining periods of the pneumatic signal, a second shaft, a friction clutch coupling the first and second shafts, a return spring urging the first shaft through the linkage to rotate in a downward direction, means including a pressure switch for providing a peak-identifying signal when the pneumatic signal attains each peak and for providing a decline identifying signal when each peak commences its decline, and a magnetic brake coupled to the second shaft for holding it fixed in response to the peak-identifying signal and for releasing it in response to the decline identifying signal. The apparatus further includes output signal generating means for providing an output signal corresponding to the position of the first shaft.

3,616,696
APPARATUS FOR DETERMINING THE SUITABILITY OF SOLUTIONS SUCH AS RADIATOR COOLANT
Thomas B. Ludlow, Arden Hills, and John D. Skildum, St. Paul, Minn., assignors to Johanna Plastics, Roseville, Minn.
Filed Aug. 4, 1969, Ser. No. 847,076
Int. Cl. G01n *9/10, 31/22*
U.S. Cl. 73—441 **7 Claims**



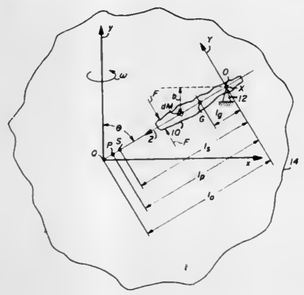
Because the corrosiveness and freezing point of radiator coolant are related, the suitability of the coolant depends on both factors. To determine the condition of the coolants in accordance with the invention the pH and specific gravity are measured simultaneously. This is accomplished by placing a pH measuring color indicator on the nozzle or other portion of a hydrometer that is adapted to enter the solution when the hydrometer is filled. In a preferred form of the invention indicator consists of a matrix composed of a continuous phase of a moisture permeable material in which is dispersed a water insoluble pH sensitive indicator.

3,616,697
SECOND SOUND SUPPORTED MASS
Donald L. Ensley, San Leandro, Calif., assignor to Harvest Queen Mill & Elevator Co., Dallas, Tex.
Filed Apr. 5, 1968, Ser. No. 719,134
Int. Cl. G01p *15/08*
U.S. Cl. 73—505 **18 Claims**



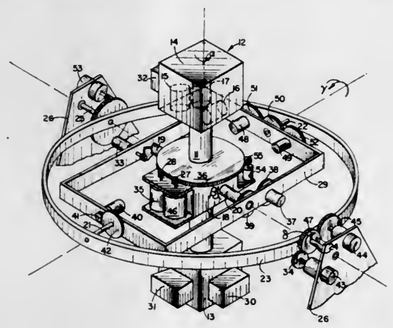
Apparatus and a method for positioning a mass three dimensionally in a stable force field generated by producing entropy waves in liquid helium II. A mass, preferably having an evacuated inner chamber, is contained within a housing filled with the liquid helium II in the space outside the mass. Current passing through a carbon resistance heater mounted within the housing produces entropy waves which produce either a convergent or a divergent force field. The entropy waves produce time average forces at the mass surface that are useful for positioning the mass in the center of the housing cavity.

3,616,698
PENDULOUS ACCELEROMETER
Victor B. Corey and Phillip C. Linwick, Bellevue, and Allan F. Potter, Redmond, Wash., assignors to United Control Corporation, Redmond, Wash.
Filed Apr. 12, 1968, Ser. No. 720,794
Int. Cl. G01p *15/00*
U.S. Cl. 73—514 **13 Claims**



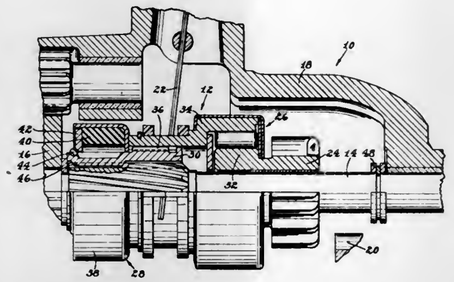
A pendulous accelerometer having a pendulum shaped and pivoted such that its center of spin insensitivity and its center of angular acceleration insensitivity substantially coincide. The accelerometer is mounted with its substantially coincident centers of spin and angular acceleration insensitivity to coincide with the center of gravity of an unstabilized vehicle whose linear acceleration it is to measure, and the accelerometer thereby becomes insensitive to any and all angular accelerations and angular velocities of the vehicle about axes passing through the vehicle center of gravity.

3,616,699
GIMBAL ZONE TRANSFER APPARATUS
Zay C. Brand, Seal Beach, Calif., assignor to North American Rockwell Corporation
Filed Sept. 29, 1969, Ser. No. 861,741
Int. Cl. G01c *19/28*
U.S. Cl. 74—5.2 **7 Claims**



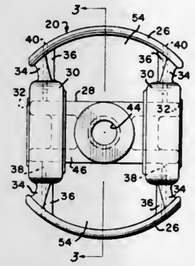
A follow-up control system for a three gimbal four axis inertial platform which utilizes Euler angle logic and electronic sign changing to avoid gimbal flipping when the vehicle on which the platform system is mounted is maneuvering at or near the pitch 90° attitude with a limited amount of roll attitude and which allows gimbal flipping when the aircraft pitches with an amount of roll that allows satisfactory dynamic control of the gimbal.

3,616,700
ROLL CLUTCH STARTER DRIVE WITH SHOCK ABSORBER
Philip L. Patchett, Horseheads, N.Y., assignor to The Bendix Corporation
Filed Oct. 31, 1969, Ser. No. 872,908
Int. Cl. F02n *15/06*
U.S. Cl. 74—7 R **7 Claims**



A roll clutch starter drive is provided with a compressible cushion member compressed by axial translation of a splined sleeve to reduce the peak torque applied to the components of the starter drive and to extend the service life of the starter motor and drive.

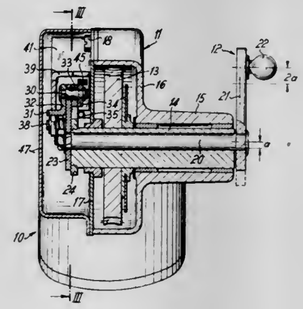
3,616,701
ONE-PIECE CROSSHEAD INCORPORATING A HYDRODYNAMIC BEARING
Robert W. Decker and Frank D. Howe, Painted Post, N.Y., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,805
Int. Cl. F16h *21/22*
U.S. Cl. 74—44 **13 Claims**

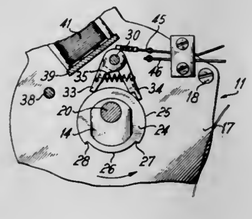


One-piece, cast-iron crosshead, open-ended with throughgoing passages formed therein to avoid a "piston" effect with reciprocation of the casting. Either axial ends of the crosshead are of smaller outside or girth dimension than the intermediate portion, as the shoes have tapered areas at the ends. The tapered areas insure the maintenance of the lubricant-providing bearing, between the shoes and the crosshead guide, in cooperation with lubricant supplied therebetween.

3,616,702
WINDSHIELD WIPER DRIVE
Erich Kolb, Eisental, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 2. 1969, Ser. No. 881,391
Claims priority, application Germany, Dec. 3, 1968, P 18 12 307.4
Int. Cl. A47l *1/00;* **F16d** *11/06;* **F16h** *21/18*
U.S. Cl. 74—50 **9 Claims**

A rotatable inner shaft has opposite ends and is eccentrically located for rotation in a hollow outer shaft which is arranged in axial parallelism. The shafts are rotatable independently of one another. An actuating arm is rigid with one end of the inner shaft projecting transversely thereto for rotation in a circular orbit about a predetermined axis. A shoulder is provided at the circumference of the outer shaft and extends at least substantially radially of the axis. A coupling member is mounted at the upper end of the inner shaft for pivotal movement between two positions in one of which it abuts against the circumference of the outer shaft and engages the shoulder to couple the shafts for joint rotation and



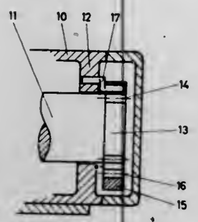


another position in which it is out of abutment with the circumference and therefore out of abutment with the shoulder. Biassing means permanently urges the coupling member to its one position and into abutment with the circumference of the outer shaft. Drive means is provided for rotating the outer shaft and energizing means for energizing and de-energizing the drive means. Control means is operative for moving the coupling member to its other position and for thereupon effecting relative movement of the shafts in a sense causing radial displacement of the actuating arm with reference to its ciricular orbital path.

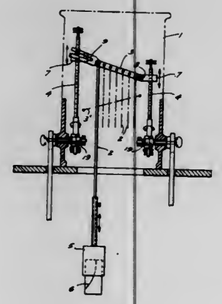
3,616,703
VIBRATION GENERATOR
Hans-Georg Waschulewski, Mettmann, Hans-Reinhard Lambertz, Hochdahl, and Wilhelm Stoye, Dusseldorf, Germany, assignors to Losenhausen Maschinenbau A.G., Dusseldorf-Grafenberg, Germany
Filed June 12, 1970, Ser. No. 46,167
Claims priority, application Germany, June 13, 1969, P 19 30 078.8
Int. Cl. B06b *1/16*
U.S. Cl. 74—87 **10 Claims**

Three radius rods have a first set of rotatable connections between one end of the rods and a centrifugal weight and a second set of rotatable connections between the other ends of the rods and the frame and with the connections of each set being positioned 120° from each other so that the weight will move in a curvilinear path

defined by the rod combination. A gear drive between the motor and the weight moves the weight about that path. A second similarly mounted centrifugal weight is connected to a rotationally adjustable part of the frame and by changing the rotational position of that part one may change the amplitude of vibration.



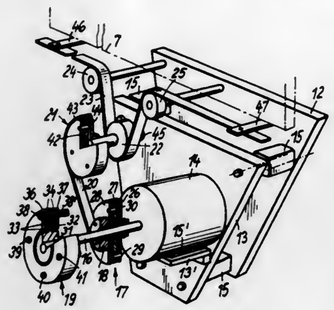
3,616,704
APPARATUS FOR REGULATING THE ADMISSION OF COMBUSTION AIR TO BURNER GRATES HAVING INDIVIDUAL COMBUSTION ZONES
Johannes Josef Martin, 248 Leopoldstrasse, Munich 23, Germany
Filed Oct. 23, 1969, Ser. No. 868,734
Int. Cl. F16h *1/18, 27/02*
U.S. Cl. 74—89.15 **7 Claims**



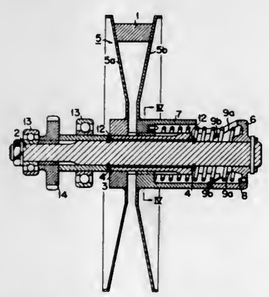
A plurality of at least substantially parallel control rods are each shiftable a predetermined maximum distance in opposite directions between end positions in which each rod closes and fully opens, respectively, an air admission port communicating with one of the combustion zones of the grate. A linking member extends transversely to the aforementioned directions and is connected with the control rods. Shifting means effects shifting of the linking member in the aforementioned directions in a sense effecting shifting of the respective control rods through different distances between their end positions.

3,616,705
APPARATUS FOR ISOTOPE DIAGNOSIS
Winfried Platz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed May 15, 1969, Ser. No. 824,955
Claims priority, application Germany, May 30, 1968, P 17 64 397.9–33
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.22 **2 Claims**

In an apparatus for isotope diagnosis to determine the distribution of radioactive substances in a body by means of a radiation detector, drive means is provided for effecting linear scanning movement of the detector over an examination zone of the body. The drive means include a stepping motor which is resiliently mounted in the apparatus and the drive contains vibration damping elements.



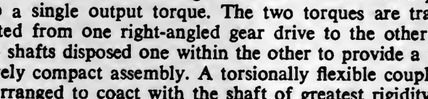
3,616,706
TRANSMISSION DEVICE OF A SHEAVE DRIVE TYPE
Susumu Shimamoto, Hamamatsu-shi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan
Filed May 15, 1969, Ser. No. 824,922
Claims priority, application Japan, May 18, 1968, 43/40,724
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **7 Claims**



This transmission device is characterized by having a hollow cylinder which is rotatably secured to the driven shaft, though immovable in the axial direction. To the hollow cylinder is secured a driven sheave pulley consisting of a pair of first and second conically shaped disks, said first disk being fixed to said hollow cylinder and said second disk being splined to said driven sleeve movably in its axial direction within a specified range, though immovably in its rotating direction. Torques are applied only through said second disk from said pulley to the driven shaft, and vice versa.

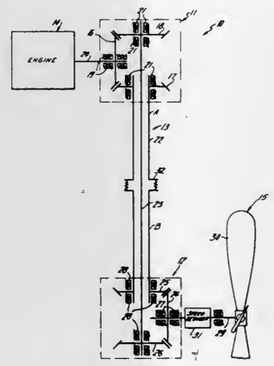
3,616,707
FLAT LINK CHAIN
Ilya Ilich Ivashkov, 9 Parkovaya, ulitsa 43/26, kv. 198, and Vasily Alexandrovich Frolovtsev, Ferganskaya ulitsa 18, kv. 263, both of Moscow, U.S.S.R.
Filed Jan. 2, 1970, Ser. No. 278
Int. Cl. F16g *13/02*
U.S. Cl. 74—245 P **5 Claims**

A flat-link chain, the hinge joints of whose links are formed by support member secured in the end portions of the plates and contacting one another with their outer working surfaces of which one is convex and the other one concave, in which chain the support members with a concave working surface are made from a polymeric material.



The proposed chain is highly reliable, durable and noise-less in operation when used with sprockets.

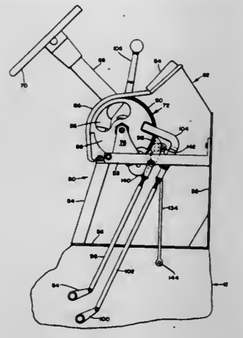
3,616,708
ROTARY POWER TRANSMISSION ASSEMBLY
Charles S. Davis, New York, N.Y., assignor to Curtiss-Wright Corporation
Filed June 10, 1970, Ser. No. 44,918
Int. Cl. F16h *57/00, 37/06*
U.S. Cl. 74—410 **9 Claims**



The rotary power transmission assembly comprises two spaced approximately right-angled gear drives in which one of the drives is constructed and arranged to divide the input torque into two torques and the other drive of similar construction, but arranged to combine the two torques into a single output torque. The two torques are transmitted from one right-angled gear drive to the other by two shafts disposed one within the other to provide a relatively compact assembly. A vibration dampening means is provided to coact with one or more bearings located closest to the point of vibration antinode to minimize resonant vibrations. The torsionally flexible coupling and the vibration dampening means contributing to providing equal loading on the teeth of the meshing gears of the right-angled gear drives and the minimization of fretting corrosion and failure of the gear teeth.

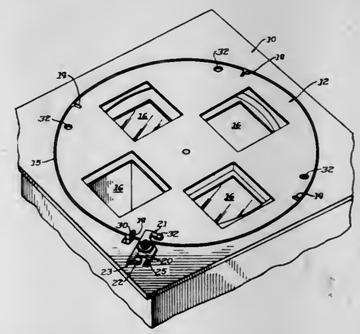
3,616,709
TRANSMISSION CONTROL MECHANISM FOR A TRACTOR HAVING A RESILIENTLY-MOUNTED CONTROL CONSOLE
Donald Irwin Malm, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Apr. 14, 1970, Ser. No. 28,327
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 R **5 Claims**

A tractor is provided with an operator's station including a platform, seat, and control console which are secured as a unit to the tractor chassis by resilient mount assemblies which provide vibration isolation and permit limited vertical movement of the operator's station relative to the tractor chassis. A transmission speed and range control mechanism for selectively establishing desired conditions in the transmission is fixed to the control console and includes speed and range selector drums selectively pivotally mounted for rocking about a common axis, which drums have rigid links connected there-



to and to transmission shift elements fixed to the chassis. To prevent the transmission from being shifted due to relative movement between the operator's station and the tractor chassis, a compensator linkage is connected between the chassis and selector drums in such a way as to guarantee that no movement is imparted to the rigid links connecting the selector drums to the transmission shift elements.

3,616,710
MOTION LIMITING DEVICE
John W. Hipelius, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 23, 1969, Ser. No. 860,336
Int. Cl. G05g *5/06*
U.S. Cl. 74—527 **9 Claims**

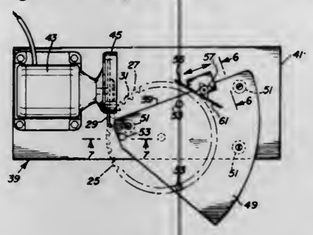


A device that permits unlimited uni-directional sequential relative motion between two bodies but limits reverse relative motion to a single sequence.

3,616,711
METHOD AND MACHINERY FOR SHARPENING THE TEETH OF CIRCULAR SAWS
Bryon G. Daggett, San Diego, Calif., assignor to Noryb Manufacturing, Inc., San Diego, Calif.
Filed Oct. 7, 1969, Ser. No. 864,408
Int. Cl. B31b *1/00*
U.S. Cl. 76—37 **11 Claims**

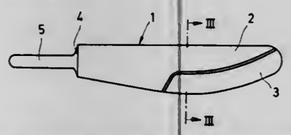
Method and machinery for sharpening teeth of circular saws of the type in which teeth each have a portion which extends further outwardly from the plane of one side of the saw than the next adjacent tooth, and the next adjacent teeth each has a portion which extends outwardly

further from the plane of the opposite side of the saw than the said alternate teeth. One machine is utilized for grinding the cutting faces of the teeth of the saw.



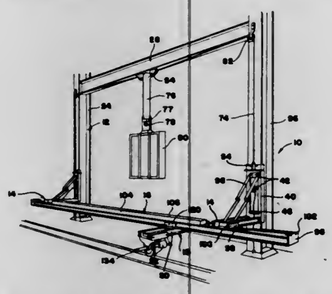
Another machine is utilized for grinding the side faces of the teeth. And a third machine is utilized for grinding the peripheral surface of the teeth.

3,616,712
STAINLESS STEEL KNIFE BLADE AND PROCESS FOR THE MANUFACTURE THEREOF
Rolf-Jurgen Eickhorn, 51 Pfaffenberger Weg, 565 Solingen, Germany
Filed May 18, 1970, Ser. No. 38,329
Claims priority, application Germany, May 21, 1969, P 19 25 846.9
Int. Cl. B21k *11/00*
U.S. Cl. 76—104 R **6 Claims**



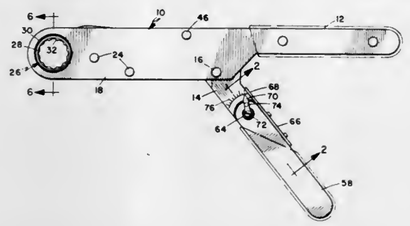
Stainless steel knife blades having improved edge hardness and cutting stability are produced in a multistage process. A semi-finished blade is produced, e.g. by forging a workpiece, having a relatively thick portion of metal in the vicinity of the eventual cutting edge. In this way the hardness of the core material in the area of the cutting edge is not reduced in the forging process and the cutting edge is revealed by grinding or cutting away the surplus metal from the semi-finished product.

3,616,713
RAILROAD CAR DOOR OPERATING MECHANISM
William Z. Crouch, Houston, Tex., assignor to Cargill, Incorporated, Minneapolis, Minn.
Filed Jan. 2, 1970, Ser. No. 198
Int. Cl. B25b *17/00, 21/00, 29/00*
U.S. Cl. 81—57.4 **9 Claims**



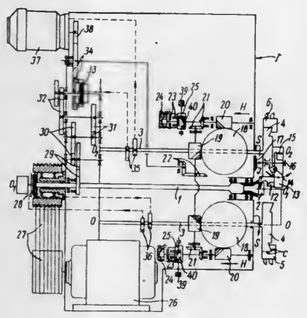
A wall mounted apparatus for power opening and closing of a door of a railroad car including a motor mounted for movement in three mutually perpendicular directions relative to the door of the car. The movement is effected by means of mutually perpendicular tracks and rollers mounted in the tracks. The apparatus retracts when not in use to a storage position along the wall.

3,616,714
RACK AND PINION SQUEEZE ACTION WRENCH
Gerrett W. Gregory, 68 Casselman Place, Chula Vista, Calif. 92010
Filed Aug. 25, 1969, Ser. No. 852,807
Int. Cl. B25b *13/00, 13/46*
U.S. Cl. 81—57.39 **4 Claims**



A socket type wrench has a fixed handle and a movable handle for one handed operation by squeezing, the socket element having a ratchet pinion driven by a sliding, multiple toothed rack bar which is cam actuated in the driving stroke and spring returned. A readily readable torque indicator is incorporated into the movable handle.

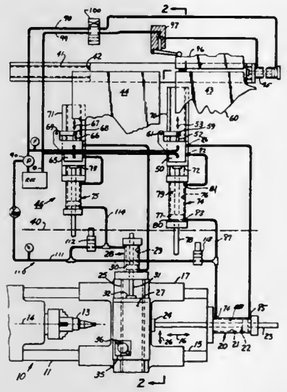
3,616,715
MULTIPLE CUTTER LATHE
Grigor Arutjunovich Shaumyan, Ananievsky pereulok 5, kv. 63, Moscow, U.S.S.R.; Karen Armenakovich Ter-Akopyan, Ulitsa Paronyana 11, kv. 5; and Kolya Atanesovich Karapetyan, Pereulok Alabyana 17/14, kv. 16, both of Erevan, U.S.S.R.; Alexandr Ivanovich Lobanov, Ladozihzkaya ulitsa 2/9, kv. 103, Moscow, U.S.S.R.; Petr Mikhailiovich Chernyansky, Ulitsa Gorkogo 1, kv. 9, poselok Zavety Ilicha, Moskovskoi oblasti, U.S.S.R.; Akop Minasovich Epremyan, Ulitsa Erzinkyana 41, Erevan, U.S.S.R.; Sergei Andreevich Savkin, Studencheskaya ulitsa 35, kv. 18, Moscow, U.S.S.R.; Jury Mikhailovich Ermakov, Sovetskaya ulitsa 6, kv. 20, Balashikha Moskovskoi oblasti, U.S.S.R.; Viktor Sergeevich Kiselev, Sadova-Triumfalnaya ulitsa 21, kv. 17 Moscow, U.S.S.R.; and Alexei Yakovlevich Zagorodnikov, deceased, late of Ulitsa Osipenko 58/60, kv. 31, Moscow, U.S.S.R.; by Valentina Fedorovna Zagorodnikova, Alexandr Alexeevich Zagorodnikov, and Elena Alexeevna Zagorodnikova, administrators, all of Ulitsa Osipenko 58/60, kv. 31, Moscow, U.S.S.R.
Filed Oct. 17, 1968, Ser. No. 768,977
Int. Cl. B23b *3/00, 3/28*
U.S. Cl. 82—2 **3 Claims**



A multiple cutter lathe comprises cutters carried by rests operatively connected to respective cam shafts for

rotation therewith. The cutters are mounted in rows in angular displacement with one another and the cutters of one rest are displaced relative to the row of cutters of the other rests in relation to the centers of rotation of the rests and the drive spindle for a workpiece by an angle smaller than the angular displacement of adjacent cutters. The cutters of the rests thus alternately machine the workpiece in the lathe.

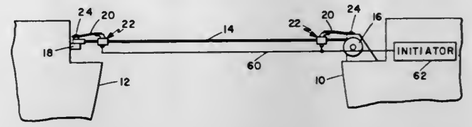
3,616,716
MEANS FOR EXERTING A CONTINUOUS PATH CONTROL FROM A REMOTE LOCATION
Paul J. Weaver, San Marino, Calif., assignor to Automatic Control Systems, Inc., El Monte, Calif.
Filed Oct. 30, 1969, Ser. No. 872,547
Int. Cl. B23b *3/28;* **B23c** *1/18*
U.S. Cl. 82—14 A **8 Claims**



A control system for controlling the movement of an element such as a cutting tool under continuous path control, the plane of said path relating to two coordinate axes. The device includes a pair of non-parallel working slides and remotely located control slide means for holding a pair of templates which bear positioning information relative to respective coordinate axes. A tracer mechanism is provided to respond to each of the templates, and through a hydraulic link which forms a portion of a power system, to control the respective motion of the working slides, thereby to move the cutting tool along a continuously controlled path. The templates are driven simulaneously, and are of indefinite length so that a plurality of paths representing a plurality of cutting passes can be made with one template for each axis. The controls can be located at a distance from the working element, and the motions may be hydraulically dimensionally amplified, if desired.

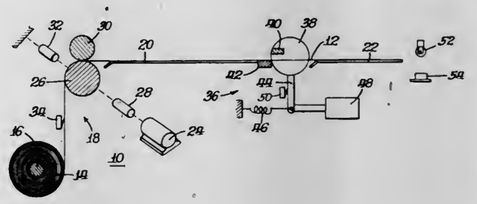
3,616,717
PAIRED CABLE CUTTERS AND METHOD OF USING SAME
James R. Jones, Jr., 2944 Renault Place, San Diego, Calif. 92122
Filed Apr. 16, 1970, Ser. No. 29,175
Int. Cl. B26d *11/00*
U.S. Cl. 83—39 **8 Claims**

Safe parting of a tensioned cable is achieved by simultaneously parting the cable at both ends so that even when the cable has been under high tension it will not whip toward either end. Personnel injury and property damage is thus prevented. One special use is the emergency cutting of cables between ships in re-fueling operations and the like where the operation is normally externally or manually initiated. Another use is in various types of towing procedures. As a variant system operation of the cutters



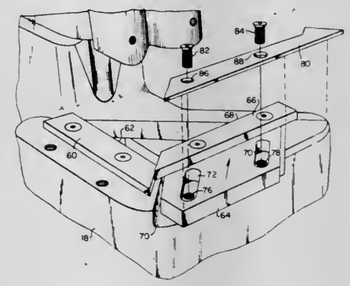
is automatically initiated by a strain responsive device sensing overstrain in the cable.

3,616,718
SHEET SUPPLY APPARATUS
Albert J. Di Giulio and Frank B. Naujokas, Arlington Heights, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed June 30, 1969, Ser. No. 837,806
Int. Cl. B26d *5/40*
U.S. Cl. 83—210 **4 Claims**



A sheet supply apparatus includes a support for a web of material and a drive means for advancing the web along a path past a web cutting device. The leading edge of the advancing web interrupts a light path between a light source and a light sensitive element. The operation of a continuously adjustable time delay relay is initiated when the light path is broken, and after a predetermined period of time the web is stopped and cut thereby to sever a sheet of desired length from the web. The apparatus can also carry out a multiple sheet supply operation wherein a preselected number of sheets of a desired length is supplied.

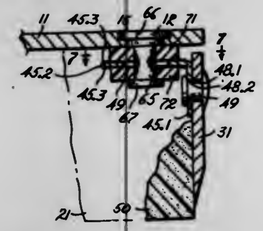
3,616,719
NOTCHING SHEET MATERIAL
Robert B. Tassie, South Burlington, Vt., assignor to J. F. Kidder Manufacturing Company, Inc., South Burlington, Vt.
Filed Sept. 25, 1969, Ser. No. 860,989
Int. Cl. B26f *1/12*
U.S. Cl. 83—620 **13 Claims**



Press for notching sheet material with upper and lower blade assemblies each having a pair of blades abutting at

a plane and having respective cutting edges terminating at that plane, each pair including a blade adjustable along a path parallel to the abutment plane.

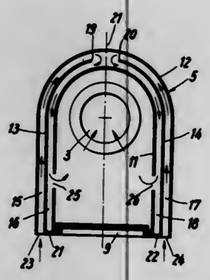
3,616,720
CUTTING DIE SYSTEM
Robert A. Larson, Norwell, Mass., assignor to Boston Cutting Die Company, Dorchester, Mass.
Filed Aug. 20, 1969, Ser. No. 851,675
Int. Cl. B26f *1/44*
U.S. Cl. 83—691 **6 Claims**



Several die units for simultaneously cutting multiple portions of flat material are mounted on a backer plate with double headed smooth pins which engage smooth perforations of brackets fastened at balance points to blade sections of the individual die units, and corresponding smooth perforations of the backer plate. Elastic grommets with elongate holes and tabs are inserted between backer plate and bracket, and between bracket and inner pin head, the outer pin head resting in a counterbore of the free side of the backer plate. The back edge of the blades are distanced from the backer plate.

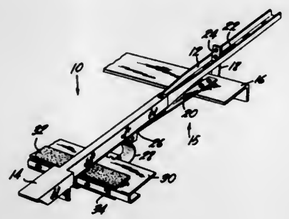
In a modification, a single die unit is fastened to a backer plate with the same type of double headed smooth pins, but only one grommet between bracket and inner pin head and with the back edge of the blade resting on the plate.

3,616,721
WIND GENERATOR FOR MUSICAL INSTRUMENTS, IN PARTICULAR PIPE ORGANS, AND A SOUND DAMPER THEREFOR
Otto Laukhuff, Weikersheim, Germany, assignor to August Laukhuff, Weikersheim, Germany
Filed Feb. 12, 1969, Ser. No. 798,629
Claims priority, application Germany, Feb. 17, 1968, P 16 22 155.9
Int. Cl. G10b *3/02*
U.S. Cl. 84—355 **9 Claims**



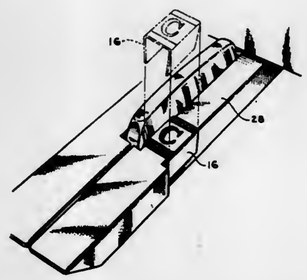
A wind generator for musical instruments particularly pipe organs comprises a sound damper arranged in front of the air intake of the wind generator. The damper comprises a housing the interior of which communicates with the wind generator intake, and the damper itself comprises an air intake which is provided with a flap or similar obturating element, which can be moved from a closed condition under the effect of air flow produced in the damper housing, into a condition in which the damper air intake is uncovered to a greater or lesser extent. The housing wall of the damper has, at least locally, a double-wall construction and defines one or more secondary flow ducts which communicate freely with the atmosphere. The obturating element has a preload acting in the direction of closure which prevents it from opening until a predetermined vacuum level is produced in the interior of the damper housing.

3,616,722
KEYBOARD FOR MUSICAL INSTRUMENTS
Ricardo Hochleitner, Jr., 19 E. Greenleaf St., Emmaus, Pa. 18049
Filed Oct. 22, 1969, Ser. No. 868,361
Int. Cl. G10c *3/12*
U.S. Cl. 84—434 **7 Claims**



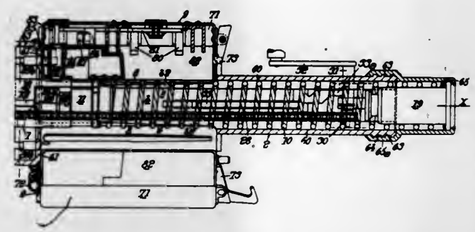
A keyboard for musical instruments includes a pair of springs affixed to a key bed and supportably engaging a key. The springs form a flexural pivot and are aligned in planar relation to permit movement of the key in a single plane only. The spring rate is modified by providing a toggle spring affixed at its ends to the key bed and key, respectively.

3,616,723
MUSIC SYSTEM WITH CLIPS
Cecil F. Gullickson, 2018 Fosgate Drive, Winter Park, Fla. 32789
Filed Aug. 15, 1969, Ser. No. 850,473
Int. Cl. G09b *15/02*
U.S. Cl. 84—478 **4 Claims**



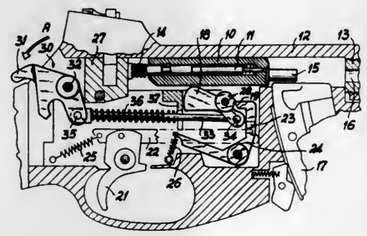
An arrangement of clips or tabs to be applied to the keyboard of a musical instrument so as to simplify an identification of the keys constituting certain chords, as well as identifying individual keys. These clips or tabs may be easily removed when the musician has become familiar with the keyboard, inasmuch as they do not in any way mar the keys. They are not prone to become accidentally displaced. Clips associated with an identification of typical chords may carry a certain code or identification that may be carried over to the sheet music, thus to enable the user to tell at a glance which is the right chord to play in a given instance.

3,616,724
CARTRIDGE FEED MECHANISM FOR A FIREARM
Bernard Maillard, Geneva, Switzerland, assignor to Brevets Aero-Mecaniques S.A., Geneva, Switzerland
Original application Apr. 1, 1968, Ser. No. 714,524, now Patent No. 3,447,418, dated June 3, 1969. Divided and this application Oct. 21, 1968, Ser. No. 810,861
Claims priority, application Luxembourg, July 31, 1967, 54,210
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 SF **7 Claims**



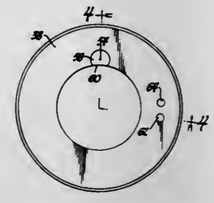
The breechcase of the firearm has two large sides with openings for the cartridges coming alternately from two feed mechanisms on opposite sides of the breechcase. A single motor member in the form of a fork connected to the recoiling part of the firearm reciprocates longitudinally and is of such shape and position that it drives at one time only the driving member of that feed mechanism which is in firing position.

3,616,725
REPEATING FIREARM ACTIONS
Armando Piscetta, 4 Via Alcardo, 20141 Milan, Italy
Filed Feb. 25, 1969, Ser. No. 801,992
Claims priority, application Italy, Feb. 26, 1968, 13,205/68
Int. Cl. F41c *19/14*
U.S. Cl. 89—132 **7 Claims**



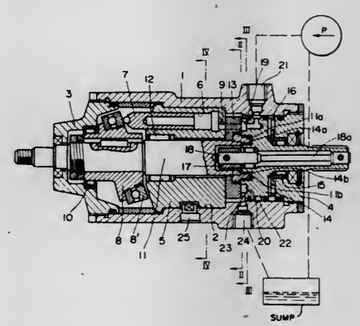
An action mechanism for repeater or semi-automatic firearm such as a small caliber rifle or carbine having a longitudinally sliding breech bolt and an inner or concealed firing pin striking hammer and an outer cocking means linked to said inner hammer whereby, while both said inner hammer and bolt are fully concealed and protected within the firearm breech body, the inner hammer can be controlled, cocked and half-cocked by the user by acting on said outer cocking means.

3,616,726
POWER TRANSMISSION
Dean L. Ruger, Camden, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Apr. 2, 1970, Ser. No. 25,123
Int. Cl. F04b *1/02*
U.S. Cl. 91—488 **4 Claims**



A variable displacement axial piston pump of the in-line type is arranged to reduce commutation noise by gradual decompression of the fluid trapped in the cylinder at top dead-center. The decompression means is variable with changes in swash plate tilt and takes place principally through the piston shoes and a bleed hole in the swash plate at small angles of tilt; which bleed hole is progressively closed as the tilt angle increases, allowing decompression to take place through piston motion at larger tilt angles.

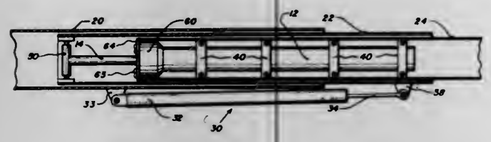
3,616,727
POWER STEERING APPARATUS
Akira Suzuki and Takao Taira, Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, trading as Toyoda Machine Works, Ltd., Kariya, Aichi Prefecture, Japan
Filed June 16, 1969, Ser. No. 833,537
Claims priority, application Japan, June 21, 1968, 43/43,070
Int. Cl. F01b *3/02, 13/04;* F15b *9/10*
U.S. Cl. 91—499 **11 Claims**



The present invention relates to power steering apparatus, in which a cylinder barrel and a valve plate are relatively rotatable and in surface contact with each other. Either the cylinder barrel or the valve plate, whichever is rotatable relative to the main body of the apparatus, is in rotatable abutment with a valve member which is rotated

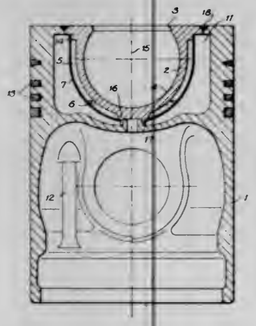
by a steering wheel. Pressure fluid is supplied through this valve member to a cylinder chamber in the cylinder barrel and exhausted through said valve plate from said chamber, thereby pressing a piston in the cylinder chamber against an inclined ring to generate a torque which boosts the steering force.

3,616,728
ACTUATOR MOUNTING ASSEMBLY FOR TELESCOPIC PARTS
Ray L. Kennedy, Excelsior, Minn., assignor to Tel-E-Lect, Inc., Minneapolis, Minn.
Filed Dec. 5, 1969, Ser. No. 882,412
Int. Cl. F01b *7/20*
U.S. Cl. 92—51 **7 Claims**



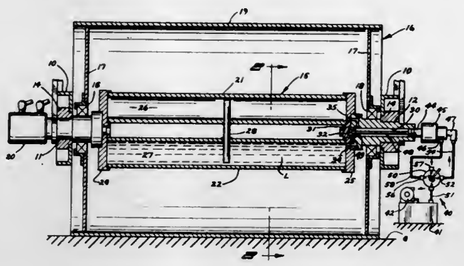
An actuator mounting assembly for telescopic parts in which mounting blocks are positioned around the body of the actuator and at spaced points along the same and rigidly mount the actuator in a telescopic part such that the body of the actuator flexes with the flexure of the telescopic part to maintain alignment of piston and cylinder walls.

3,616,729
PISTON COOLING FOR INTERNAL COMBUSTION ENGINE
Hans Fischer, Nuremberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nuremburg, Germany
Filed Dec. 2, 1969, Ser. No. 881,389
Claims priority, application Germany, Dec. 12, 1968, P 18 14 123.6
Int. Cl. F01p *3/06, 3/10*
U.S. Cl. 92—176 **6 Claims**



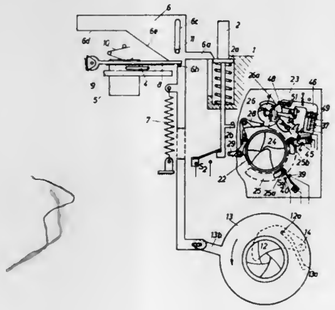
A piston having a combustion chamber surrounded by an inner cooling chamber partially filled with a coolant solid at lower temperatures but melted at the operating temperature for the piston in which the inner cooling spaces are segmented to provide symmetrical disposition of the coolant when the piston is used in a sloping position, and also to provide for use of coolants of different melting points in one or more segments of the inner cooling chamber to compensate for unequal heating of the combustion chamber walls.

3,616,730
VIBRATORY ROLLER
Melvin H. Boone, Fridley, and Brian J. Bush, Spring Lake Park, Minn., assignors to American Hoist & Derrick Company, Minneapolis, Minn.
Filed June 29, 1970, Ser. No. 50,519
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 V **7 Claims**



A vibratory roller having a frame journaling an earth compacting drum adapted to be rolled over the ground surface, a power driven vibrating mechanism journaled axially within the drum, said mechanism including means forming diametrically opposing first and second liquid chambers which counterbalance each other when the first chamber is filled with liquid and the second chamber is empty, passage means providing open communication between the chambers, and means for admitting gas under pressure to either chamber to force a desired amount of liquid from one chamber to the other to selectively destroy said counterbalance and cause the mechanism to vibrate the drum at any desired amplitude or to restore said counterbalance and terminate drum vibration.

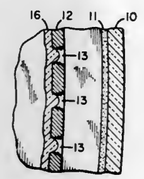
3,616,731
PHOTOGRAPHIC CAMERA HAVING AN APERTURE SETTING SCANNING MECHANISM
Waldemar T. Rentschler, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany
Continuation of application Ser. No. 644,371, June 7, 1967. This application May 15, 1970, Ser. No. 37,851
Claims priority, application Germany, June 18, 1966, P 39,746
Int. Cl. G03b *7/08, 7/12*
U.S. Cl. 95—10 C **4 Claims**



An aperture setting and shutter timing control device for use in photographic cameras. The device comprises a photosensitive circuit including an exposure meter pointer

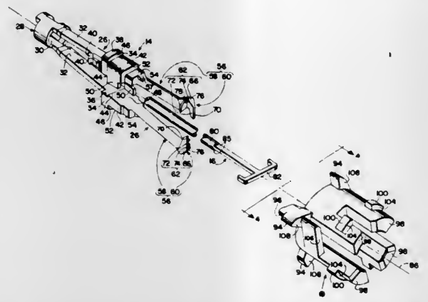
adapted to be clamped into position on the commencement of the exposure sequence and is adapted to be scanned by a mechanical device which sets an appropriate iris diaphragm aperture and, when the diaphragm aperture is at its maximum opening, the exposure time of the shutter is regulated.

3,616,732
APERTURE MASK OPTICAL SYSTEM
Michael E. Rucinski, St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed Nov. 6, 1969, Ser. No. 874,504
Int. Cl. C23c *17/00;* **B44d** *1/02*
U.S. Cl. 95—1 R **6 Claims**



A method for utilizing a shadow mask as a pattern for laying down a phosphorus dot pattern without affecting the physical characteristics of the mask.

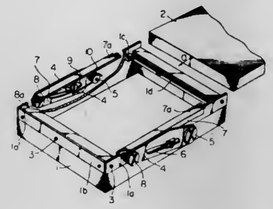
3,616,733
RETAINER FOR MULTILAMP PHOTOFLASH UNIT
John B. Morse, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed July 1, 1969, Ser. No. 838,211
Int. Cl. G03b *9/70;* **H01r** *13/54*
U.S. Cl. 95—11 R **20 Claims**



Apparatus for releasably mounting a multilamp photoflash unit including a plurality of resilient prongs adapted to have a hollow post of such unit inserted thereon. Adjacent surfaces of the prongs are formed to provide contours which prevent insertions of any portion of the hollow post between the prongs.

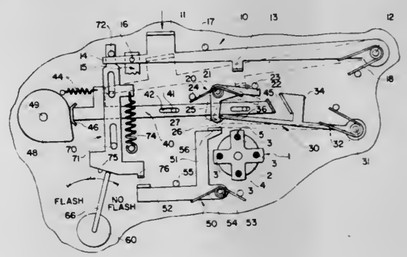
3,616,734
DEVICE FOR DETACHABLY MOUNTING A PHOTOGRAPHIC FILM OR PLATE HOLDER ON A PHOTOGRAPHIC CAMERA
Yasuo Inoue, Konosu-shi, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 20, 1970, Ser. No. 4,312
Claims priority, application Japan, Jan. 23, 1969, 44/4,988
Int. Cl. G03b *19/00, 27/58*
U.S. Cl. 95—11 **4 Claims**

Device for detachably mounting a photographic film or plate holder on an exposure window frame of a photographic camera comprising a pair of first levers each pivotally mounted at its one end on the respective opposite side of the window frame, a pair of second levers each pivotally connected at its one end to the other end of each of the first levers and a pair of springs each secured at its one end to each of the second levers and at its other end to a stationary portion of the camera so that the second levers are urged toward the window frame. The second levers are provided with longitudinal bent edge portions, respectively, adapted to engage with the holder mounted on the window frame



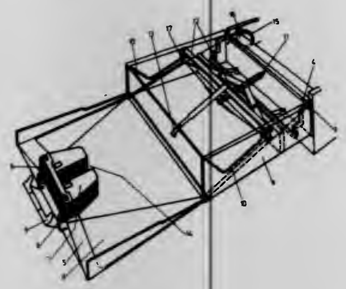
so that the holder is held on the window frame. The first and second levers are formed with longitudinal elongated holes, respectively. A manually operable stud member is slidably fitted in the hole of the first lever as well as in the hole of the second lever pivotally connected to the first lever so that the second lever is urged toward the window frame to hold the holder on the window frame when the stud members are moved in one direction while the holder is released from the window frame when the stud members are moved in the opposite direction.

3,616,735
BLOCKING MECHANISM FOR USE WITH PHOTOGRAPHIC APPARATUS TO AUTOMATICALLY CONTROL FLASH IN RESPONSE TO SCENE BRIGHTNESS
Richard J. Bresson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 767,099, Oct. 14, 1968. This application Aug. 12, 1970, Ser. No. 63,250
Int. Cl. G03b *9/70, 15/04*
U.S. Cl. 95—11.5 **11 Claims**



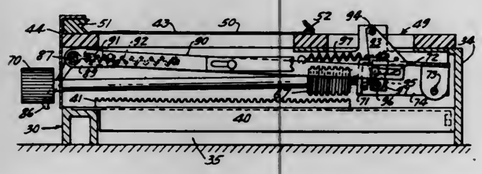
A mechanism is provided which automatically controls the position of a blocking member with respect to the path of movement of an actuator for a percussion-ignitable flash lamp or other flash lamp ignitable by striking. The control is responsive to scene light conditions and to the operation of the shutter release lever of a camera.

3,616,736
DEVICE SUPPLYING FILM SHEETS TO A FILM EXCHANGER
Lennart S. E. Bergstrom, Solna, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Dec. 29, 1969, Ser. No. 888,536
Claims priority, application Sweden, Jan. 15, 1969, 501/69
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 **2 Claims**



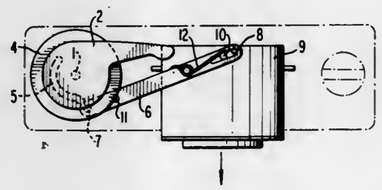
A device for the magazine which transmits film to a film exchanger is characterized in that the magazine is provided with a film holder wherein separate film sheets are held by spring pressure between discs forming a pile. An arm actuated by the film exchanger has a claw penetrating into a recess of the disc pile in such manner that the claw engages a film sheet at its rear edge and pulls it out through a slit in the magazine in the direction of the illuminated field of the film exchanger. Guides are located in the magazine at opposed side edges of the film sheets. These guides hold down the sheet edges and impart to the film sheets a curved shape and greater stability.

3,616,737
MICROFICHE HANDLER WITH FREE FLOATING AND VERNIER-TYPE MOVEMENT OF SUPPORT FRAME
Floyd L. Foslien, East Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 23, 1968, Ser. No. 786,073
Int. Cl. G03b *21/11*
U.S. Cl. 95—37 **5 Claims**



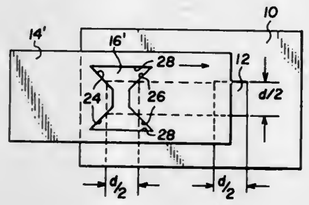
A control mechanism for a microfiche handler affording selectively free-floating movement and a vernier-type movement of a frame supporting a microfiche relative to the optical system of a reader and/or printer. The control mechanism utilizes systems of interlocking gears, including rotatable driving gears on one frame, which gears are separated from their cooperating gears to achieve the free-floating movement and which are biased independently into driving engagement for vernier-type adjustment.

3,616,738
CAMERA WITH A RETRACTABLE LENS BARREL
Susumu Fujita, Nishinomiya-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 5, 1969, Ser. No. 882,796
Claims priority, application Japan, Dec. 6, 1968, 43/89,700
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 **3 Claims**



A retractable lens barrel is connected with a lever which is turned according to rotation of a cam. The cam is actuated by operating the film wind-up lever.

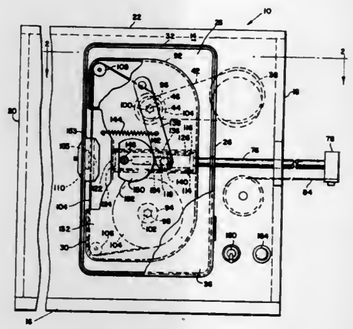
3,616,739
CAMERA HAVING SHUTTER SPEED CONTROLLED BY LENS APERTURE
Allen G. Stimson, Rochester, and Loren J. Craig, Springwater, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 7, 1969, Ser. No. 839,593
Int. Cl. G03b *9/24*
U.S. Cl. 95—55 **5 Claims**



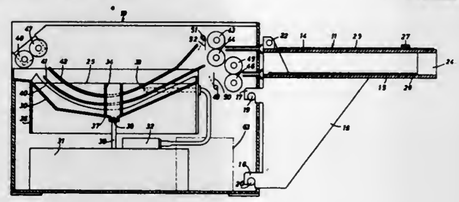
A camera adapted for exposure by relative movement of a shutter aperture and a lens aperture includes a shutter aperture configured to vary in width as the lens aperture varies in height. The height of the lens aperture may be varied by a masked single vane or a Waterhouse-stop wheel. The shutter aperture may be shaped with converging sides or may have an opaque mask in the center with spaced transparent openings.

3,616,740
SYSTEM AND METHOD FOR PROCESSING A STRIP OF EXPOSED PHOTOGRAPHIC MATERIAL
Vaito K. Eloranta, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 13, 1969, Ser. No. 790,553
Int. Cl. G03d *5/00*
U.S. Cl. 95—89 R **13 Claims**

A motion picture film processing system and method employing an applicator in which processing fluid is initially stored and having a doctor blade formed at one end thereof. The applicator also includes a plunger slidably mounted on the opposite side of the processing fluid from the doctor blade so that displacement of the plunger inwardly of the applicator causes the processing fluid to be expressed from the applicator across its doctor blade. An exposed strip of film is initially coiled around a supply reel with a leader extending to a takeup reel and, in passing from the supply reel to the takeup reel, the film is drawn across the doctor blade. A cam, which controls the displacement of the plunger within the applicator, is connected to the takeup reel to make substantially one complete revolution during the time that the takeup reel has made the number of revolutions required to draw the entire exposed film strip across the doctor blade. Additionally, a variable resistor in series with the processors motor varies the speed of the motor to impart a substantially constant speed of the film strip as it passes across the doctor blade.

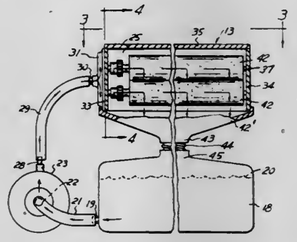


3,616,741
APPARATUS FOR USE IN DIFFUSION TRANSFER COPYING
Renato Simioni, Hans Kappeler, and Hans Waller, Zurich, Switzerland, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Mar. 17, 1969, Ser. No. 807,717
Claims priority, application Great Britain, Apr. 26, 1968, 19,889/68
Int. Cl. G03d *9/00*
U.S. Cl. 95—89 L **7 Claims**



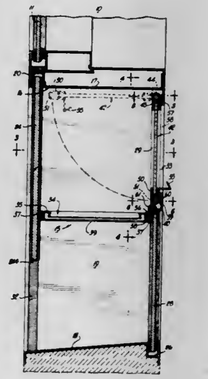
A copying apparatus for use in silver complex diffusion transfer copying and the like wherein the leading edges of sheet material processed within such apparatus are precisely adjusted relative to one another in a variable or adjustable way. The sheets are separately fed by separate independently operable feeding rolls, the feeding of which is stopped when the leading edge of each sheet reaches a sensing means disposed at a predetermined point between the feeding rolls and the processing zone. The sensing means for the second sheet reinitiates the feeding of the first sheet and activates a time-delay device which, after a variable pre-set period of delay, reinitiates the feeding of the second sheet so that the sheets arrive at the processing zone with their leading edges in precisely determined, spaced-apart relation which can be adjusted as desired.

3,616,742
POROUS ROLLER FILM TRANSPORT AND PROCESSING SYSTEM
Clifford J. Boyle and Richard B. Belanger, Detroit, Mich., assignors of fractional part interest to DuWayne E. Gilkey, Berkley, Mich.
Filed Mar. 25, 1969, Ser. No. 810,105
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **4 Claims**



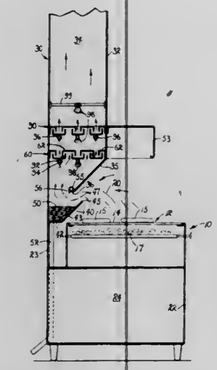
A film transport and processing system which includes a tank containing a film developing fluid, a film fixing solution or water and a housing overlying the tank in communication therewith, a series of vertically spaced pairs of film receiving roller assemblies within the housing for passing a film through the housing for application thereto of the processing fluid, together with a pump and manifold for continuously circulating the tank fluid to the roller assemblies, the roller assemblies including an inner perforated support tube mounted on the housing, a perforated power rotated outer tube journalled upon the inner tube, and a resilient porous plastic film engaging roller mounted upon the outer tube.

3,616,743
VENTILATOR STRUCTURE
Vladimir Alter, Newmarket, Ontario, Canada, assignor to American Metal Climax, Inc., New York, N.Y.
Continuation of application Ser. No. 729,269, May 15, 1968. This application Mar. 5, 1970, Ser. No. 15,315
Int. Cl. E06b *7/02*
U.S. Cl. 98—99 **18 Claims**



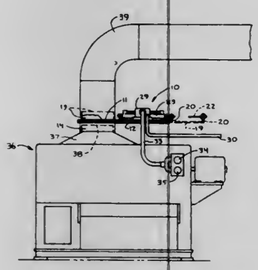
There is provided a ventilator structure including a frame that defines an opening. An outer panel extends downwardly from the top of the opening, terminating above the bottom of the opening. An inner panel extends upwardly from the bottom of the opening, terminating below the top of the opening and above the bottom edge of the outer panel. A transverse, generally horizontally positioned screen extends between the two panels.

3,616,744
AIR CLEANSING SYSTEM FOR COOKING RANGES
Donald D. Jensen, 3604 E. Butler Ave., Fresno, Calif. 93721
Filed Aug. 21, 1969, Ser. No. 852,026
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 K **6 Claims**



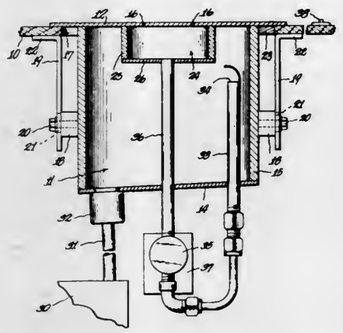
An air cleansing system, for cooking ranges and the like, adapted to remove heat and contaminants such as grease-laden fumes generated from the heating surfaces of such ranges, providing an exhaust duct extended from a position adjacent to said heating surface at which it has an intake opening to a remote exhaust opening, said duct having a constricted portion near the heating surface, means for drawing fumes in the intake opening for discharge from the exhaust opening, a spray bath located at the constricted portion of the duct, and a pan disposed below the bath to collect spray therefrom together with contaminants dissolved therein. The stream of air generated through the duct is cleansed by the washing action of the spray bath, the cooling effect thereof resulting in condensation of volatile contaminants, and by successive humidification and dehumidification of the stream. The invention also has to do with a unique form of trap having particularly significant utilization in the system.

3,616,745
AUTOMATIC DAMPER CONTROL
James C. Russell, Sr., 703 Pennington Ave., Thomasville, N.C. 27360
Filed Oct. 1, 1969, Ser. No. 862,882
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 R **2 Claims**



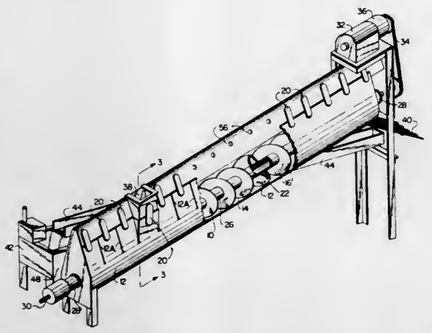
In abstract, a preferred embodiment of this invention is an automatic damper control to open suction lines that remove chips, dust and other debris during operation of wood working type machines and to close the suction lines when the machine is shut down.

3,616,746
FOOD HEATING APPARATUS
Robert H. Sliwoski, Rankin, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed July 15, 1970, Ser. No. 55,107
Int. Cl. B01j *3/00*
U.S. Cl. 99—234 R **7 Claims**



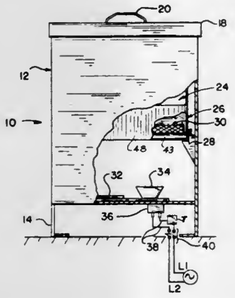
Food heating apparatus, particularly for warming and freshening rolls and buns, comprising a plate on which the food product is placed, the plate forming the top of a main steam chamber. A dry steam chamber, within the main steam chamber, receives steam from the latter, the steam from the dry steam chamber issuing from through apertures in the top plate to warm the food products thereon. The dry steam chamber is considerably smaller than the main chamber so that steam within the latter maintains the top plate in heated condition.

3,616,747
ARCHIMEDEAN SCREW TYPE COOKER CONVEYOR
James M. Lapeyre, New Orleans, La., assignor to Laitram International, Inc., New Orleans, La.
Filed Mar. 26, 1969, Ser. No. 810,701
Int. Cl. A47j *35/00*
U.S. Cl. 99—405 **3 Claims**



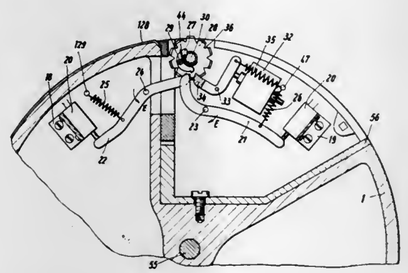
This disclosure relates to a cooker conveyor and method of cooking therewith in which a hollow Archimedean screw has a flexible and/or resilient blanket wrapped about it in water tight seal therewith and in which a heating fluid such as steam is passed through the screw to heat a conveying medium such as water into which the product to be cooked is introduced. As the screw rotates, the product to be cooked and the conveying medium are advanced along the length of the screw in discrete pockets of liquid conveying medium which is elevated to cooking temperature by the heating fluid passed through the hollow flights of the Archimedean screw. The axis of the screw may be horizontal, inclined or declined due to the water tight seal between the flights of the screw and the flexible blanket wrapped thereabout.

3,616,748
BARBECUING APPARATUS
Dave O. Foreman, 606 E. Broadway, Andrews, Tex. 79714
Filed Oct. 25, 1968, Ser. No. 770,757
Int. Cl. A47j *43/18*
U.S. Cl. 99—450 **5 Claims**



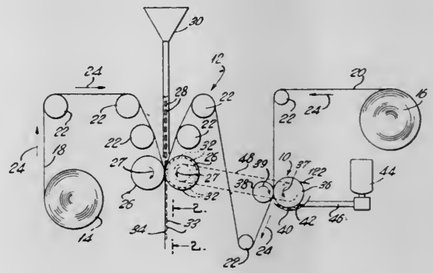
A barbecue apparatus which includes an enclosure supported by legs with a heating element located in the bottom of the enclosure and a lid telescopingly received at the top. A removable food chamber is supported clear of the walls and provided with a grill means which is spaced apart from the bottom of the food chamber. The bottom of the food chamber is in the form of a dead air space. Food, when placed on the grill, may be completely and uniformly cooked without further disturbance and in a minimum amount of time.

3,616,749
KEY CONTROLLED SETTING APPARATUS FOR PRINTING WHEELS IN ROTARY DUPLICATORS
Gerhard Ritzerfeld, 14 Schorlemer Allee, 1000 Berlin, 33 Dahlem, Germany
Filed Mar. 20, 1969, Ser. No. 809,487
Claims priority, application Germany, Mar. 25, 1968, P 17 61 035.4
Int. Cl. B41l *11/08, 47/46*
U.S. Cl. 101—91 **25 Claims**



A printing mechanism including an ordinal series of digital printing wheels is set to selected digital positions by an electric control circuit including an ordinal series of digital sets of manually operated key switches. After actuation of a key switch for each printing wheel, a start switch is operated whereupon the printing wheels are automatically set to the selected printing position. The mechanism is built into a cavity of a printing cylinder so that a copy sheet imprinted by the same is also imprinted by the printing wheels. It is also possible to arrange the printing wheels in the path of movement of a copy sheet imprinted in a printing machine, and to use the printing wheels to print additional information on the copy sheet.

3,616,750
ROTARY WEB MARKING AND SEGMENTING APPARATUS
Ira S. Gottscho, Milburn, N.J., and Francis C. Worth, Ridgewood, N.Y., assignors to Adolph Gottscho Inc., Union, N.J.
Filed Apr. 9, 1969, Ser. No. 814,752
Int. Cl. B41f *9/00, 13/56*
U.S. Cl. 101—157 **7 Claims**

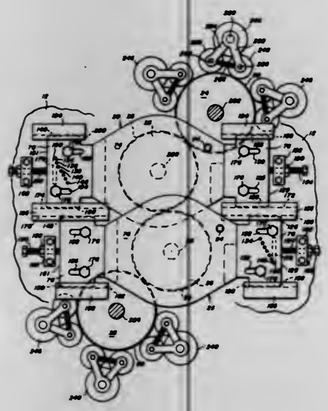


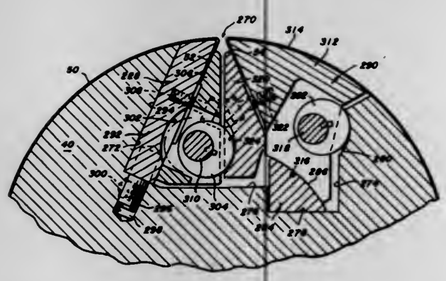
Apparatus for marking a moving continuous web for connection with a segmenting system including a rotatable segmenting wheel engaging said web for defining a plurality of segments in said web, said apparatus including a marking means having a rotatable die wheel engaging said web for marking same and operably connected to the means for driving said segmenting wheel for rotation thereby at a circumferential speed substantially equal to the circumferential speed of said segmenting wheel. The die wheel is removably mounted on the frame of the marking means for substitution of a die wheel selected from a group of die wheels of different diameters, adjustment means being provided for laterally displacing the impression roller, well and doctor means of said marking means relative to the longitudinal axis of said die wheel to accommodate said die wheels.

3,616,751
VARIABLE CUT-OFF WEB PERFECTING PRESS
Harry E. Mowry, Pittsburgh, Pa., assignor to Miller Printing Machinery Co., Pittsburgh, Pa.
Filed Nov. 19, 1968, Ser. No. 777,017
Int. Cl. B41f *7/12, 13/44, 27/06*
U.S. Cl. 101—220 **15 Claims**

A web fed perfecting press for printing offset images of different size on the printed web. Both the top and bottom plate cylinders are journaled in a press frame for rotation about fixed axes. The top and bottom blanket cylinders are journaled in auxiliary frames that are supported by the main frame. The auxiliary frames are adjustable horizontally on the main frame to move the blanket cylinders toward and away from each other and toward and away from the fixed plate cylinders. Both of the blanket cylinders are mounted in eccentric bearings for vertical adjustment within the auxiliary frames so that the blanket cylinders are also adjustable vertically relative

to each other. The plate and blanket cylinders are arranged to have annular plates of different circumferences mounted thereon with different sized annular filler shims between the cylinders and the plates. The various sized plates and filler shims provide different lengths for the printed offset images on the printed web. The drive gearing and bearers for the pairs of plate and blanket cylinders include idler gears and idler bearers suitably mounted to drive the plate and blanket cylinders of different diameters. To change the diameter of the plate and blanket

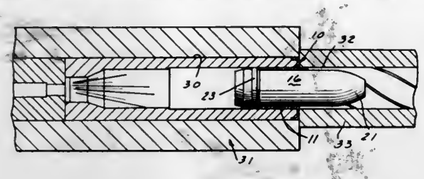




cylinders, the annular plates and annular shims are removed from the cylinders and other preferably preregistered plates and annular shims are positioned on the cylinders within the press to change the circumferential dimension of the plate and blanket cylinders. The auxiliary frames are adjusted horizontally and the blanket cylinders are adjusted vertically to move the periphery of the blanket cylinders into abutting relation with the plate cylinders and into abutting relation with each other for perfecting printing on both sides of the web.

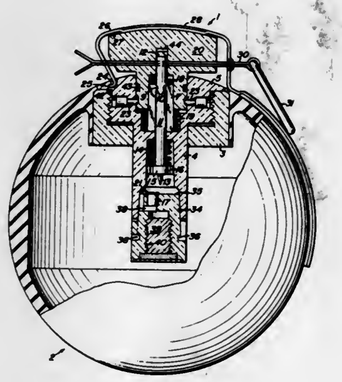
3,616,752
PROJECTILE GUIDE FOR TELESCOPED AMMUNITION
William E. Lahey, Oak Harbor, and Duane A. Somers and Edward S. Daniels, Port Clinton, Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed Jan. 30, 1969, Ser. No. 795,206
Int. Cl. F42b *5/18, 9/16, 31/00*
U.S. Cl. 102—38 **7 Claims**

A J-shaped cross section plastic guide for telescoped projectile ammunition, especially of the caseless type. A cylindrical portion of the guide extends into the central bore of the ammunition round and defines the front end thereof; the bight portion of the J-shaped cross section overlies the annular ring front end of the round with the short leg of the J defining a portion of the outer diameter of the round. The cylindrical portion of the guide is designed to be stripped from the remainder thereof by



the projectile during firing and carried out of the weapon through the barrel thereof. The remainder of the guide is either consumed during firing or broken up and forced through the barrel by the projectile gases.

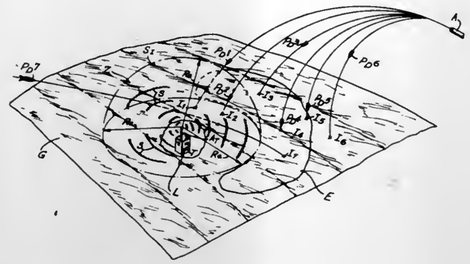
3,616,753
OUT OF LINE FUZE MECHANISM
Melvin J. Carlson, Havre de Grace, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed May 22, 1969, Ser. No. 826,841
Int. Cl. F42b *27/00*
U.S. Cl. 102—64 **12 Claims**



A fuze to detonate the payload within a munition wherein the striker point to detonate the primer means is out of line with the primer means when the munition is stored, shipped, or handled and is brought in line by rotating an actuating knob in a clockwise direction; the actuating knob being under spring tension and forced off of a cylinder means when pin means within a mounting head are disengaged from recesses in a tubular portion of the knob; the knob forces lips integral with the cylinder inner wall into a recess in a piston shaft to prevent the piston shaft from being forced downward to detonate the primer means while the knob is engaged with the cylinder means.

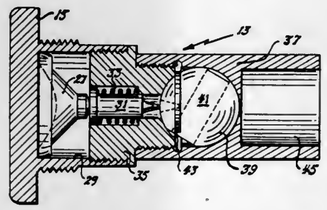
3,616,754
METHOD AND APPARATUS FOR SELECTIVELY PREVENTING THE EXPLOSION OF EXPLODABLE PROJECTILES
Marvin A. Frenkel, 26323 Hendrie Blvd., Huntington Woods, Mich. 48070
Filed Aug. 10, 1967, Ser. No. 659,688
Int. Cl. F42c *13/04, 15/40, 19/12*
U.S. Cl. 102—70.2 R **16 Claims**

Providing about a location to be protected a wireless signal having a predetermined intensity at a given range from said location, and detecting said signal of predetermined intensity so as to prevent explosion of friendly



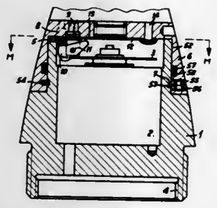
projectiles in the event the latter come within said given range of said location.

3,616,755
ALL ANGLE BASE DETONATING FUZE
Dale M. Davis, Freeport, Fla., assignor to the United States of America as represented by the Secretary of the Air Force
Filed June 11, 1969, Ser. No. 832,112
Int. Cl. F42c *15/22*
U.S. Cl. 102—73 A **4 Claims**



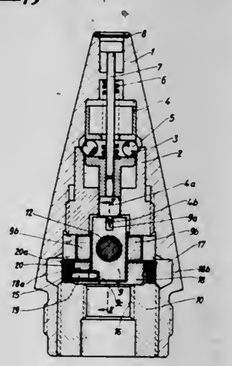
A base detonating fuze for use with a high explosive shell including an inertia weight striker having unique spherical surfaces in loose contact with the bore of the base plus such that the mass centroid of the striker is noticeably forward of its contact area. Oblique angular contact of the shell with the target produces an inertial torque couple and causes a forward "roll" of the striker thereby contacting the firing pin in exact center and applying the required axial thrust thereto.

3,616,756
TIME FUZE FOR PROJECTILES
Robert Simmen and Francis Liengme, Geneva, Switzerland, assignors to Mefina S.A., Fribourg, Switzerland
Filed Feb. 24, 1969, Ser. No. 801,705
Claims priority, application Switzerland, Apr. 4, 1968, 5,013/68
Int. Cl. F42c *9/02, 15/34, 15/04*
U.S. Cl. 102—76 **11 Claims**



Two separate trains of safety elements, one being an inertial safety mechanism that releases the clockwork only when the projectile is accelerated, each prevents the primer charge from being moved into alignment with the firing pin until the projectile is accelerated and, in the case of the non-inertial train, until the clockwork runs.

3,616,757
IMPACT FUSE FOR A SPINNING PROJECTILE
Fritz Berger, Dusseldorf, Germany, assignor to Firma Rheinmetall G.m.b.H., Dusseldorf, Germany
Filed July 5, 1968, Ser. No. 742,592
Claims priority, application Germany, July 5, 1967, P 15 78 502.1
The portion of the term of the patent subsequent to Nov. 21, 1984, has been disclaimed
Int. Cl. F42c *15/22, 15/26*
U.S. Cl. 102—79 **8 Claims**

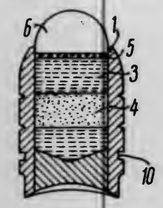


A percussion fuse for spinning projectiles which comprises a casing having a front part and a rear part and a sleeve secured in the rear part of the casing and having a bearing surface. A ball carrier with balls is mounted slidably in the casing and in the sleeve and has a striker pin thereon. A fuse body is secured in the rear part of the casing and spaced on the sleeve. A rotor is mounted to rotate between the fuse body and the sleeve and has a coiled band around the rotor and has a percussion cap therein. A fuse plunger is slidably mounted in the casing and extends into the sleeve. The rotor is normally held in inoperative position by the coiled band and when the projectile is fired a centrifugal spinning force will act on the band to hold the rotor in an unarmed position for a predetermined period of time, so that when the balls in the ball carrier force the latter away from the rotor, the striker pin will be in position to plunge into the percussion cap when the projectile strikes a target. The coiled band surrounds at a distance the rotor in its inoperative position, and a locking pin is disposed radially and bridging the distance engaging the inner coil layer of the coiled band and entering a recess of the rotor such, that the release and erection of the latter is possible only, when the innermost coil layer has expanded at least for the amount of depth of penetration of the locking pin into the recess.

3,616,758
SHELL FOR THE IMMOBILIZATION OF ANIMALS
Vladil Afanasievich Komarov, St. Grafskaya Voronezhsky gosudarstvenny zapovednik, Voronezhskaya obl., U.S.S.R.
Filed Oct. 24, 1968, Ser. No. 770,216
Int. Cl. F42b *11/30*
U.S. Cl. 102—92 **19 Claims**

A shell for the immobilization of animals comprises a hollow body having opposite ends one of which is open and the other of which is closed. A ballistic head is seated in the open end of the hollow body and an immobilizing substance is contained in the hollow body. A sealing layer of fat is interposed between the ballistic head and the

immobilizing substance to prevent the immobilizing substance from being exposed to the atmosphere should there be a leak in the hermetic sealing of the ballistic

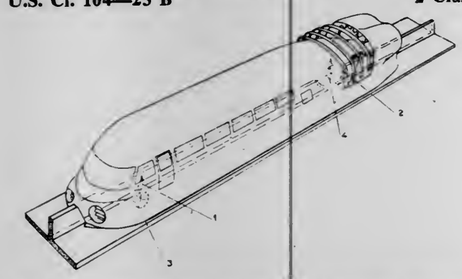


head in the hollow body. A plurality of guide grooves are provided on the exterior of the hollow body in intersecting relation along which the body deforms upon impact with an animal.

3,616,759
PROPELLANT COMPRISING NITROCELLULOSE BONDED WITH NITROMETHANE
Rudolf Meyr, Munich, Eberhard Häussermann, Waldkraiburg, and Peter Semmler, Ebersberg, Germany, assignors to Nitrochemie G.m.b.H., Muhldorf, Upper Bavaria, Germany
Filed Jan. 7, 1966, Ser. No. 520,302
Claims priority, application Germany, Jan. 7, 1965, N 26,044
Int. Cl. F42b *1/00, 1/02*
U.S. Cl. 102—100 **8 Claims**

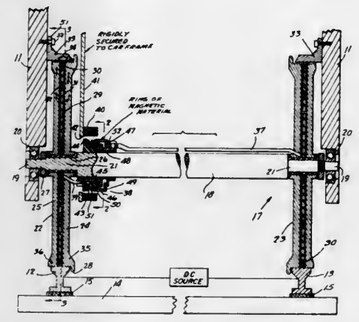
A composite solid propellant body which upon combustion will not form a pressure drop in the zone of adhesion between the individual bodies of the composite body, consisting of a plurality of solid propellant bodies, each of which consists of an explosive composition based on the combination of nitrocellulose and polyalcohol nitrate and which individual bodies are adhered to each other by means of nitromethane as the sole or essential constituent of an adhesive material.

3,616,760
AUXILIARY PROPULSION FOR AIR-CUSHION VEHICLES
Rene Lucien, Neuilly-sur-Seine, Pierre Marie Ghobert, Paris, and Yves Andre Pascal, Montrouge, France, assignors to Societe Messier and Societe de l'Aerotrain, both of Paris, France
Filed Dec. 3, 1969, Ser. No. 881,726
Claims priority, application France, Dec. 3, 1968, 176,464
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 B **2 Claims**



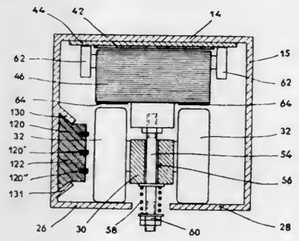
An air cushion vehicle including a ground-effect propulsion system consisting of a main propulsion system and an auxiliary propulsion system usable during certain operating conditions of the vehicle over portions of the vehicle track. The auxiliary propulsion system is constituted of one or more retractable wheels actuated by a hydraulic system and is intended for use below a predetermined vehicular transition speed.

3,616,761
HOMOPOLAR LOCOMOTIVE RAILWAY
Alberto Serra Valls, Apartado 1827, Caracas, Venezuela
Filed July 16, 1968, Ser. No. 745,166
Int. Cl. B61b *13/00;* **B61c** *9/46;* **H02k** *31/02*
U.S. Cl. 104—148 R **12 Claims**



A direct current propulsion system for homopolar electric locomotive railways wherein driving current is delivered to self-contained motor-wheel assemblies through the track rails. Each motor-wheel assembly consists of a spiral homo-polar winding mounted between a pair of circular discs of magnetic material. A magnetic housing member carried by the vehicle frame extends adjacent the peripheries of the discs and provides a flux path therebetween. Electrical contact with the associated rail is made to the winding at its peripheral end and its inner end is connected through an electromagnetically-operated control switch to the internal end of the winding of the opposite motor-wheel assembly. The two cooperating wheel assemblies and the control switch are coaxially-mounted on, but are insulated from a common axle. The switch control winding is rigidly-secured to the vehicle frame surrounding a pair of concentric arcuate contact segments secured on and insulated from the axle. A bridging ring is drawn into conductive engagement with the segments responsive to the energization of the control winding.

3,616,762
OVERHEAD CONVEYOR SYSTEM
Jean-René Benner, Courtry, France, assignor to Linerail, manutention par moteur lineaire, Neuilly, France
Filed Sept. 16, 1969, Ser. No. 858,272
Claims priority, application France, Sept. 25, 1968, 167,424; Oct. 17, 1968, 170,196; Apr. 15, 1969, 6910168
Int. Cl. B60l *9/18, 13/00*
U.S. Cl. 104—148 LM **6 Claims**



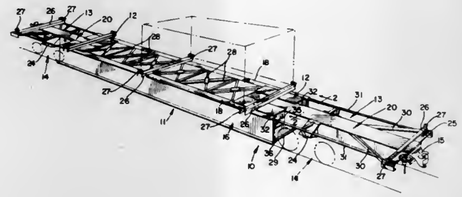
Overhead conveyor system with self-propelled truck driven by an electrical linear induction motor along an overhead track of rectangular box-like section with a lon-

gitudinal slot in the bottom wall. The top wall of the track forms the armature of the linear motor and the inductor is borne by the truck. Positioning rollers provide a constant gap between the inductor and the armature of the motor.

3,616,763
LINEAR INDUCTION MOTOR RAIL
Norman Whitfield Colling and George Philip Quayle, Fulwood, England, assignors to Tracked Hovercraft Limited, London, England
Filed June 13, 1969, Ser. No. 833,026
Claims priority, application Great Britain, June 14, 1968, 28,379/68
Int. Cl. B60m *1/30*
U.S. Cl. 104—148 **10 Claims**

The thrust speed characteristic of a linear induction motor is varied by varying the composition of the linear motor rail. The rail can have an initial length of low resistivity, such as aluminium, to produce a low starting thrust followed by a length of progressively increasing resistivity to produce a progressively increasing thrust, followed by a length of high resistivity, such as manganese steel alloy. There may be a final length of lower resistivity again, such as aluminium for high speed operation.

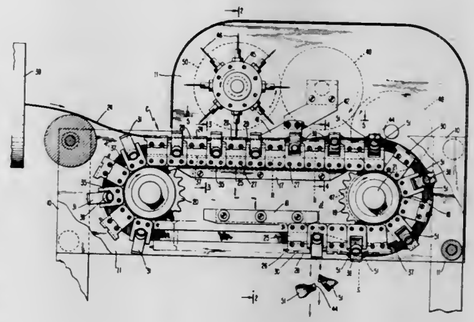
3,616,764
LIGHTWEIGHT RAILWAY CONTAINER CAR
Kent N. Johnson, South Holland, John H. Spence, Chicago Heights, and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed July 7, 1969, Ser. No. 839,351
Int. Cl. B60p *7/10;* **B65j** *1/22*
U.S. Cl. 105—366 **15 Claims**



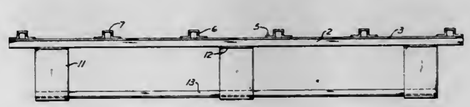
A railway car of lightweight design consisting of an intermediate frame structure, which includes a pair of laterally spaced side sills of I-beam construction having a substantial depth, has connected at opposite ends thereof transition structures of boxlike design. The intermediate structure supports between the longitudinal side sills end frame structures each of which includes a section of box-like center sill projecting outwardly from the transition structures providing structural supports for said center sills. The end frame structures are also provided with cross members providing sill platforms which support container brackets. Additional container brackets are supported on the side sills of the intermediate structure.

3,616,765
APPARATUS FOR FORMING FOOD PRODUCTS OR THE LIKE
Arthur J. Griner, Wyckoff, N.J., assignor to National Biscuit Company
Filed July 16, 1969, Ser. No. 842,170
Int. Cl. A21c *11/10*
U.S. Cl. 107—69 **11 Claims**

Apparatus which continuously conveys a flexible, ribbon-like strip of edible material, such as gelatinized dough, including sections severed from the leading end thereof, bends the advancing ribbon or sections along or near the longitudinal center line thereof to form folds centrally of such sections and presses the sides of the folds together, transversely severs the strip between successive folds and at the center of each fold to thereby form scoop-like articles each having a finger grip portion at one end and a transversely bowed portion at the other end.



3,616,766
METAL PALLET
Maurice A. Weiss, Steubenville, Ohio, assignor to Follansbee Steel Corporation, Follansbee, W. Va.
Filed Sept. 23, 1969, Ser. No. 860,324
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **6 Claims**

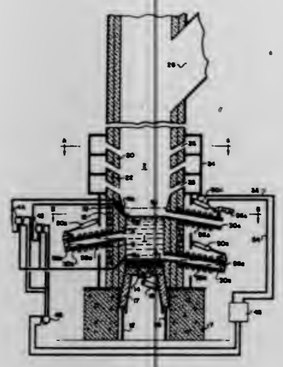


Several spaced parallel sheet metal channels are arranged in two rows, one on top of the other. The upper row is welded to the lower row. Each channel in the lower row has a flat bottom, and upstanding side walls with laterally projecting flanges along their upper edges supporting and welded to the channels in the upper row, which are inverted. The channels are supported by a number of sheet metal feet, each of which has a bottom, and upwardly diverging side walls with laterally projecting flanges along their upper edges welded to the bottoms of the channels in the lower row.

3,616,767
APPARATUS FOR THE DESTRUCTION OF REFUSE
Kenneth J. Southwick, Quincy, Mass., assignor to Pyro-Magnetics Corporation, Needham, Mass.
Continuation-in-part of application Ser. No. 786,685, Dec. 24, 1968, now Patent No. 3,527,178. This application June 9, 1970, Ser. No. 44,788
Int. Cl. F23g *5/10*
U.S. Cl. 110—8 E **14 Claims**

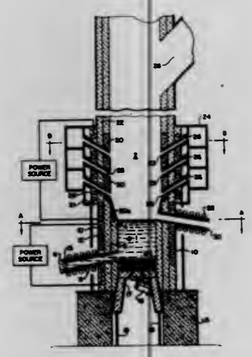
In a novel apparatus useful for the incineration of refuse material employing electrical heating means, the improvement which comprises level sensing means coupled with means for exhausting a portion of the incinerator to limit the level of residue contained within

the incinerator. Essentially, a plurality of spouts are employed along the vertical axis of the incinerator which



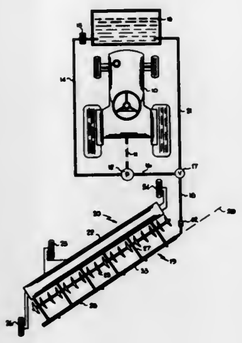
spouts are opened or closed depending upon the level of residue desired as indicated by the sensing means.

3,616,768
APPARATUS FOR THE DESTRUCTION OF REFUSE
Kenneth J. Southwick, Quincy, Mass., assignor to Pyro-Magnetics Corporation, Needham, Mass.
Continuation-in-part of application Ser. No. 786,685, Dec. 24, 1968. This application June 16, 1970, Ser. No. 46,694
Int. Cl. F23g *5/10*
U.S. Cl. 110—8 E **5 Claims**



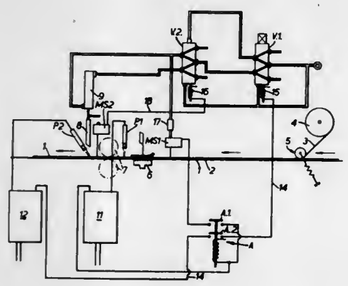
In a novel apparatus useful for the incineration of refuse material comprising adjacent first and second zones in which the first zone is a heat generating zone in which electrical heating means are employed to heat a mass of material disposed therein thereby providing a high temperature environment for a second zone communicating therewith and in which the second zone is the incineration zone and comprises means to introduce refuse material thereto and means to introduce fluids thereto which promote and/or support the incineration of the refuse material, the improvement which comprises auxiliary heating means for providing additional heat within the second zone for limiting the amount of oxygen reaching the first zone, for preheating the oxygen and for preventing slag build-up on the walls of the second zone.

3,616,769
WILD OAT SPRAYER ATTACHMENT
William E. Normand, 3003 Assiniboine Ave., Regina, Saskatchewan, Canada
Filed Nov. 26, 1969, Ser. No. 880,145
Claims priority, application Canada, Jan. 20, 1969, 40,540
Int. Cl. A01g *23/02*
U.S. Cl. 111—6 **1 Claim**



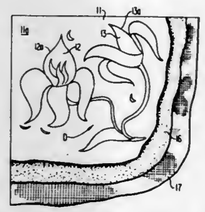
A spray boom is mounted upon a tilling implement so that it can direct the spray directly upon the soil being turned by the disks or tillage members. An arcuately curved shield directs the spray downwardly into the turned soil before it turns completely over so that the spray becomes trapped by the soil, and also prevents the soil from coming into contact with the spray prematurely.

3,616,770
MANUFACTURE OF ELASTICATED GARMENTS
Stanley Charles Blyther, Bassett, and Colin Philip Jones, London, England, assignor to LR Industries Limited, London, England
Filed Jan. 13, 1970, Ser. No. 2,498
Claims priority, application Great Britain, Jan. 15, 1969, 2,360/69
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.26 **5 Claims**



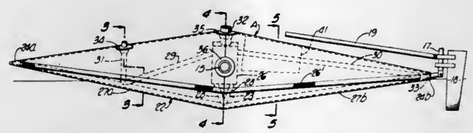
A continuous elastic band is drawn by feed rollers in stretched condition across a work surface and is sewn to garments on the work surface. A pilot photo-cell detects the trailing edge of a garment just before it enters the feed rollers and produces a signal which sets a second photo-electric device. A pneumatically operated cutting device positioned immediately after the feed rollers cuts the elastic band between garments when the second photo-electric device which is adjacent the cutter blade detects a gap between garments. The cutting device will not operate unless the second photo-electric device has been set by a signal from the pilot photo-cell.

3,616,771
EDGE GUIDANCE MECHANISM FOR FLEXIBLE SHEET MATERIAL
Richard W. Gray, Marblehead, Paul E. Morgan, Melrose, and Paul G. Rumball, Beverly, Mass., assignors to USM Corporation, Boston, Mass.
Filed Mar. 13, 1970, Ser. No. 19,257
Int. Cl. D05b *35/10*
U.S. Cl. 112—153 **2 Claims**



A sewing machine bed, for instance, is provided, ahead of its stitch forming mechanism, with an edge gage and means acting normal to the direction of feed of a feed dog and presser foot for urging the margin of a workpiece yieldingly against the edge gage, whereby the workpiece receives a seam parallel to its marginal edge even if the latter is curvilinear.

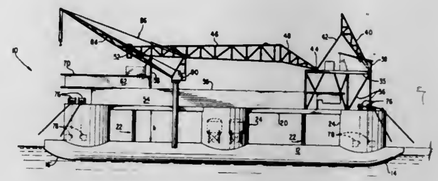
3,616,772
FLOAT AND METHOD OF MAKING SAME
John R. Popkin, 849 S. Normandie Ave., Apt. 104, Los Angeles, Calif. 90005
Filed Sept. 12, 1969, Ser. No. 857,405
Int. Cl. B63b *7/08*
U.S. Cl. 114—.5 F **1 Claim**



An improved float structure which finds particular use as a support for water-borne vehicles, such as boats, aircraft, and the like, in which a rigid generally planar elongated skeletal frame structure is encased within a flexible envelope casing which can be sealed with flexible pliable buoyant means therein, or can be provided with one or more removable air filled bladders, the frame structure being characterized by an elongated member extending longitudinally along the bottom of the casing in a manner such that a load force receiving surface is provided with respect to the casing bottom.

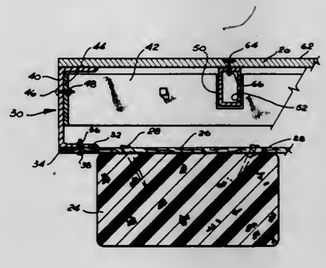
3,616,773
TWIN HULL, VARIABLE DRAFT DRILLING VESSEL
Samuel Harry Lloyd III, Mill Valley, Calif., assignor to Santa Fe International Corporation, Orange, Calif.
Continuation-in-part of application Ser. No. 666,395, Sept. 8, 1967. This application Sept. 4, 1968, Ser. No. 766,662
Int. Cl. B63b *35/00*
U.S. Cl. 114—.5 **84 Claims**

The vessel comprises a pair of laterally spaced elongated hulls having a plurality of upstanding columns spaced therealong supporting a working platform in spaced relation above the hulls a distance slightly greater than the maximum anticipated wave height. The hulls buoyantly support the vessel in a low draft floating condition with the hulls having freeboard. The hulls have ballast compartments to submerge the hulls and portions of the stabilizing columns to a distance of approximately half the



effective height of the stabilizing columns which is slightly greater than maximum anticipated wave height, to maintain the vessel in a high draft floating condition with the platform elevated above the waterline. The columns stabilize the vessel in the high draft condition about roll and pitch axes. The working platform mounts either a drilling rig or a heavy duty crane or like operational equipment along the centerline of the vessel.

3,616,774
FLOATING DOCK STRUCTURE
Kenneth L. Thompson, Huntington Beach, Calif., assignor to Ye Dock Masters, Inc.
Filed Aug. 15, 1969, Ser. No. 850,608
Int. Cl. B63b *35/00*
U.S. Cl. 114—.5 **13 Claims**

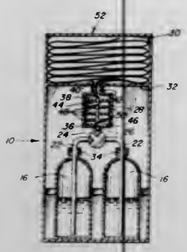


A floating dock structure wherein flotation members support longitudinal frame members which, in turn, support decking for the dock. A plurality of flooring members can be secured to the flotation members and the frame members can be metal channels secured to the floor members. Tying members are secured transverse of the structure, between the channels and support longitudinal underpinning members, extending the length of the structure, to which the decking is secured.

3,616,775
EMERGENCY BUOYANCY GENERATING APPARATUS
Delane A. Holter, Manhattan Beach, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed July 14, 1969, Ser. No. 841,494
Int. Cl. B63c *7/12*
U.S. Cl. 114—54 **6 Claims**

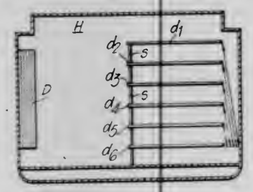
A negatively buoyant body (e.g. damaged marine vessel, aircraft downed at sea, practice torpedo, practice

guided missile etc.) is rendered water-buoyant on command by generating polymer foam reaction mix in a



flexible bag, which is stored prior to use in a collapsed folded condition, and which expands after filling with polymer foam mix to provide the desired buoyancy.

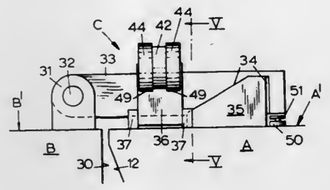
3,616,776
STORABLE 'TWEEN DECKS
Per Arvid Anker-Nilsen, Dr. Lorentzens vei 9, Tonsberg, Norway
Filed Oct. 7, 1969, Ser. No. 864,394
Claims priority, application Norway, Oct. 10, 1968, 4,035/68
Int. Cl. B63b *25/18*
U.S. Cl. 114—76 **8 Claims**



Storable 'tween decks for a cargo ship comprising a plurality of deck members, each of which is movable from a stored position to a use position. In its stored position, the deck member is positioned vertically and generally parallel with the side of the hold section and with the other deck members located in that stored position. In its use position, the deck member extends generally horizontally in the hold section. The edge of each deck member lowermost when the deck member is in a stored position is guided generally vertically at the side of the hold section during movement of the deck member between its stored and use positions. Spacing means are provided at the edge of each deck member which is uppermost in stored position and also at its lowermost edge to space the decks when in use position.

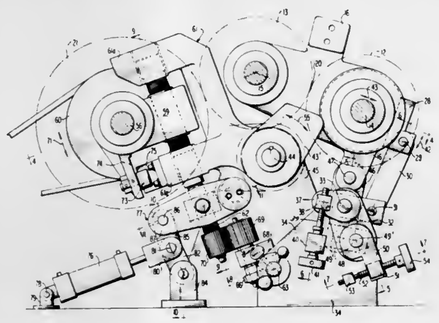
3,616,777
PUSH-TOW CARGO-CARRYING ASSEMBLAGES
Geoffrey Stockdale, 57 Greenleas Road, Wallasey, Cheshire, England
Filed Aug. 29, 1969, Ser. No. 854.097
Claims priority, application Great Britain, Sept. 6, 1968, 42,395/68
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **1 Claim**

This invention provides a tug-boat characterised in that its bow or stem is constituted by at least one fairing piece which is displaceable to an out-of-the-way position thereby to leave exposed a bulkhead for being connected push-tow fashion with a barge so as to provide an assembly which can be navigated as a unitary vessel in weather conditions which normally would prevent conventional push-tow arrangements from being employed. Preferably two buoyant fairing pieces are provided pivotally connected one at each side of the vessel and arranged to abut when closed on the longitudinal centre line of the vessel so as to constitute a conventional bow shape. The invention also provides for a push-tow tug-boat and barge



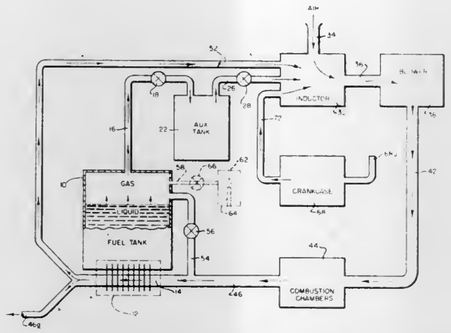
assembly provided with quick release coupling means for connecting same in navigable state. Preferably said coupling means comprise a pair of apertured lugs rigidly mounted at the stern of the barge, a metal strap pivoted between said lugs, a pair of knee brackets mounted at deck level on said tug-boat adjacent to its exposed bulkhead, said metal strap being adapted for operative engagement with said knee brackets, means for locking said metal strap in engagement with said knee brackets, and fluid operable piston and cylinder devices for forcibly releasing said coupling means.

3,616,778
OVERVARNISH ASSEMBLY FOR CONTINUOUS CAN PRINTING MACHINES
Enn Sirvet, Ridgefield, Edward J. Whelan, Hasbrouck Heights, and John P. Skrypek, Clifton, N.J., assignors to Sun Chemical Corporation, New York, N.Y.
Filed June 12, 1969, Ser. No. 832,765
Int. Cl. B05c *1/00*
U.S. Cl. 118—262 **7 Claims**



A pair of metering rollers are adjustably mounted relative to each other, and as a unit relative to a coating roller for controlling the amount of varnish transferred to the coating roller; the coating roller being adjustable relative to a printed container, being conveyed from a printing station, whereby the thickness of the varnish coating applied to the exterior surface of the container may be controlled.

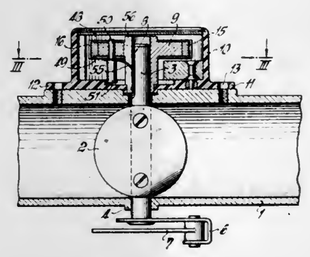
3,616,779
GAS FUELED INTERNAL COMBUSTION ENGINE
Marc S. Newkirk, Lynnfield, Mass., assignor to American Environmental Research Corporation, Malden, Mass.
Filed June 22, 1970, Ser. No. 47,990
Int. Cl. F02m *21/00;* **F02f** *9/00*
U.S. Cl. 123—27 GE **2 Claims**



An internal comustion engine is powered by a gaseous fuel such as hydrogen. The gas is stored in liquid form in an insulated tank. A heat exchanger associated with the tank converts the liquid to a gas at a controlled rate dependent upon the demands of the engine. The gas is then fed to the engine inductor. In the inductor, the gaseous fuel is mixed with air and then pumped under relatively high pressure into the engine combustion chambers to achieve a high compression ratio.

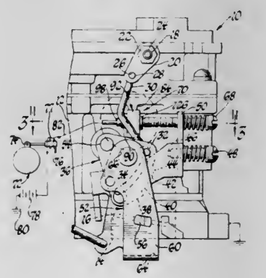
High energy steam exhausting from the combustion chambers is circulated through the heat exchanger where it gives up some of its heat and thence back to the engine combustion chambers where it functions as a cooling and working medium. Any flammable gas which finds it way into the crankcase is scavenged therefrom in order to minimize the likelihood of explosions at that location.

3,616,780
ELECTRICALLY CONTROLLED FUEL INJECTION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES
Hans Joachim Helle, Tubingen-Lustnau, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Sept. 26, 1969, Ser. No. 861,280
Claims priority, application Germany, Sept. 28, 1968, P 17 76 155.6
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **10 Claims**



A fuel injection arrangement in which a monostable multivibrator applies control pulses to electromagnetically actuated fuel injection valves of the engine. A switching circuit is linked to the throttle of the engine for the purpose of applying auxiliary injection between each two successively occurring pulses from the multivibrator which is actuated synchronously with the rotational speed of the engine. The switching circuit includes a cam member which is coupled to the throttle through an overrunning slip clutch. The cam member is rotated with the throttle only during the opening motion thereof, whereas the clutch disengages the cam member from the throttle when the latter executes closing motions.

3,616,781
ELECTRICAL SWITCH ASSEMBLY
Robert F. Sciotti, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed Sept. 16, 1969, Ser. No. 858,360
Int. Cl. F02p *5/04;* **F02m** *1/08*
U.S. Cl. 123—119 F **1 Claim**

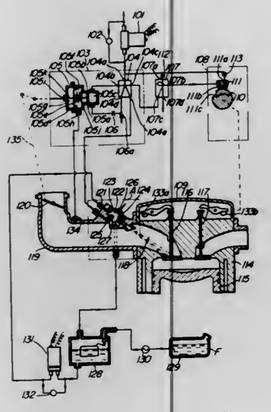


A carburetor body has a projecting boss formed thereon with an aperture formed therethrough including a slot extending axially thereof the full length of the aperture; and an insulating body having a tubular extension is assembled to the boss by inserting the tubular extension through the boss aperture; and a generally cylindrical contact and throttle stop member is assembled thereto by inserting the body of the contact member through the tubular extension until cooperating detent-like locking means are engaging causing the contact member, and insulating body to be locked to the boss.

3,616,782
FUEL SUPPLY DEVICE FOR INTERNAL COMBUSTION ENGINES
Kazuma Matsui, Toyohashi-shi, and Takashi Yamada, Anjo-shi, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Dec. 23, 1969, Ser. No. 887,609
Claims priority, application Japan, Dec. 27, 1968, 43/862
Int. Cl. F02m *37/14;* **F15c** *1/00*
U.S. Cl. 123—119 R **14 Claims**

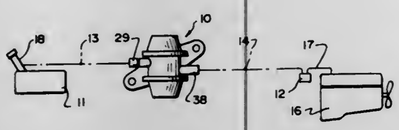
A fuel supply device for internal combustion engines, wherein fuel such as gasoline or other fluid fuel is controllably injected into suction air to be supplied to the engine as a fuel-air mixture, characterized in that the fuel is continuously ejected from a fuel ejecting nozzle under a constant pressure throughout the period of engine operation and whether a fuel jet ejected from said nozzle is supplied into the suction air or received by a fuel receiver to be returned to a fuel reservoir is determined by an air jet which controllably traverses the fuel jet. The performance of said air jet is controlled by supplying compressed air to an air ejecting nozzle in a form of air pulses which are modified from a constant fluid supply by a fluidic control circuit or fluid multivibrator oscillated by

a fluidic or air trigger pulse generator driven in synchronism with the engine. Frequency and duration of the



air pulses determine the amount of fuel supplied to the engine.

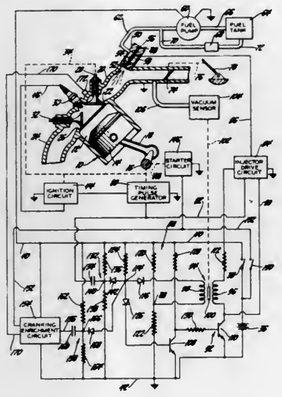
3,616,783
VAPOR CONTROL VALVE
George D. La Masters, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 6, 1970, Ser. No. 17,092
Int. Cl. F02m *59/00*
U.S. Cl. 123—136 **2 Claims**



A multifunction valve for controlling vapor from a fuel tank, opens at a first pressure permitting vapor flow toward vapor collecting apparatus and remains open until the pressure has dropped to a second lower pressure; in addition a check valve is provided to compensate for negative pressure or lowering of fuel level, and a safety relief valve is provided to protect the tank and system from excessive pressure.

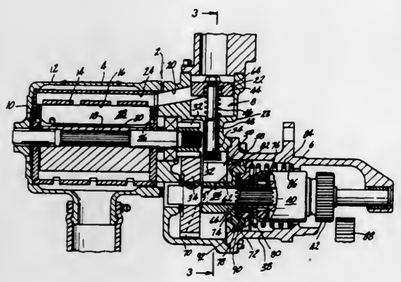
3,616,784
FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE PROVIDING TIME AND VOLTAGE COMPENSATED CRANKING ENRICHMENT
Paul N. Barr, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1970, Ser. No. 55,630
Int. Cl. F02n *11/08*
U.S. Cl. 123—179 G **4 Claims**

In an electronic fuel injection system, fuel is applied to an internal combustion engine for the duration of individual control pulses developed in synchronization with the rotation of the engine. The engine starting sequence is divided into alternate cranking periods and resting periods. During each cranking period, additional control pulses are supplied at a frequency which is inversely related to the temperature of the engine and which is also inversely related to the supply voltage of a power source. Further, the additional control pulses are supplied only during an enrichment interval. The minimum possible duration of the enrichment interval is determined as a



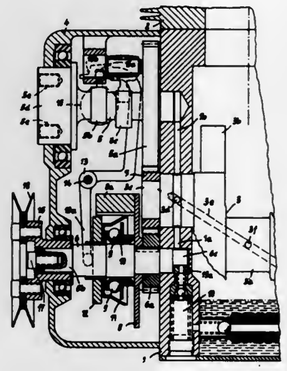
direct function of the duration of the instant cranking period. The maximum possible duration of the enrichment interval is determined as a direct function of the duration of the previous resting period and as an inverse function of the duration of the previous cranking period.

3,616,785
FLUID ACTUATED STARTER ASSEMBLY
Lester E. Smith and Donald E. Bender, Williamson, Ill., assignors to Olin Corporation
Filed June 11, 1970, Ser. No. 45,445
Int. Cl. F02n *7/08, 13/00*
U.S. Cl. 123—179 F **8 Claims**



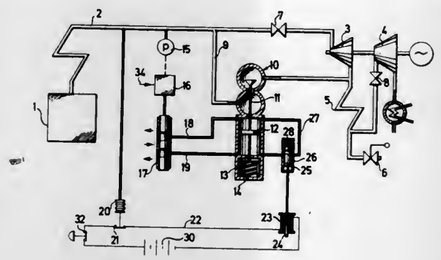
An improvement in a starter assembly of the type including a fluid motor, a shaft driven thereby, and a pinion gear axially moveable along the shaft for engagement with an engine gear. A fluid inlet is provided in the housing and a port connects the fluid inlet with the fluid motor, and a piston is provided in the inlet for opening and closing the port. Mechanical means are provided interconnecting the piston with the pinion gear to move the pinion gear axially along the shaft in response to fluid pressure. The piston is so positioned that it is moveable to a position wherein the port is slightly exposed when the pinion gear is about to engage the engine gear to permit a portion of the pressurized fluid to enter the fluid motor and cause rotation of the shaft.

3,616,786
INTERNAL COMBUSTION ENGINE
Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hatz KG., Ruhstorf, Germany
Filed May 19, 1970, Ser. No. 38,655
Claims priority, application Germany, June 10, 1969, P 19 29 386.8
Int. Cl. F02b *75/06, 77/14*
U.S. Cl. 123—192 B **9 Claims**



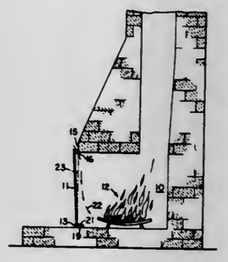
An internal combustion engine, particularly a single cylinder diesel engine, has a crank shaft which drives, on the control side of the engine, two axially-parallel shafts, one of which is a valve control shaft and the other an imbalance shaft. The crank shaft terminates immediately adjacent the main bearing in a short spindle or the like for a pinion which drives both the other shafts. These shafts are arranged on opposite sides of the crank shaft axis and are provided at their ends which project out of the housing with means for driving accessory apparatus or equipment. The imbalance weight on the imbalance shaft is so arranged that the movable elements of a centrifugal regulator occupy the free space within the path of movement of the weight. One end of the imbalance shaft is arranged to drive a lubricating-oil piston pump.

3,616,787
OVERFLOW VALVE FOR A STEAM PLANT
Ernst Vogeli, Wiesendangen, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Jan. 2, 1970, Ser. No. 310
Int. Cl. F22d *7/12*
U.S. Cl. 122—406 R **10 Claims**



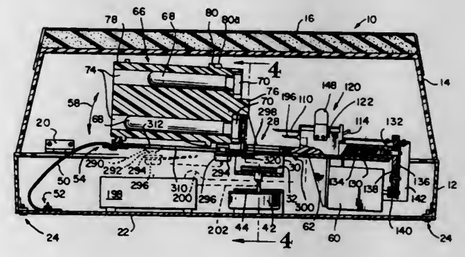
The overflow valve is combined with a servo-piston which opens and closes the valve. The servo-piston is actuated by the opening of a valve in a bridging circuit of the servo-piston which thus allows a flow of oil from one side of the servo-piston to the other via a pair of oil conduits.

3,616,788
HEATING UNIT HAVING TRANSPARENT WINDOW
Harold W. Hannebaum, Gooding, Idaho (P.O. Box 264, Bellevue, Idaho 83313)
Filed Dec. 22, 1969, Ser. No. 887,103
Int. Cl. F24b *1/18*
U.S. Cl. 126—135 **10 Claims**



A heating unit having glass walls or doors where a cool vertical curtain of air is provided over the glass by providing a top air vent so that most of the air enters mainly at the top of the fireplace with a substantially vertical velocity vector downward across the glass.

3,616,789
BLOOD SPECIMEN APPARATUS
Robert H. Grabhorn, Indianapolis, Ind., assignor to Systematiks, Inc., Indianapolis, Ind.
Filed Mar. 2, 1970, Ser. No. 15,511
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 R **39 Claims**

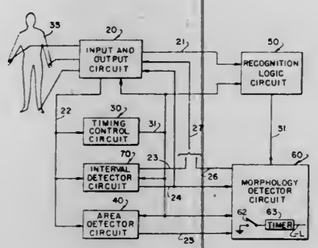


A blood specimen collecting device comprising cartridge means for holding a plurality of test tubes, each of which is closed by a sealing means disposed in its end, means for rigidly gripping a first cannula which is connected by means such as a flexible tube to a second cannula suitable for penetrating into a vein, drive means for providing relative reciprocation between the gripping means and the cartridge means to penetrate such first cannula through such sealing means, and indexing means for moving said cartridge means relative to said gripping means each time there is such relative reciprocation sequentially to place each such sealing means adjacent such first cannula. A third cannula can be provided and connected to the gripping means to be penetrated through such sealing means with the first cannula, this third cannula being connected to a vacuum pump means effective at least partially to evacuate each tube into which the third cannula is penetrated. Means are provided for constricting the flexible tube connecting the first and second cannulae when the first cannula is not penetrated into a test tube, this constricting means being operated by the relative movement of the cartridge means and gripping means.

3,616,790
MULTIFORM VENTRICULAR PREMATURE BEAT DETECTOR

George J. Harris, Framingham, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 21, 1970, Ser. No. 4,670
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 A 10 Claims

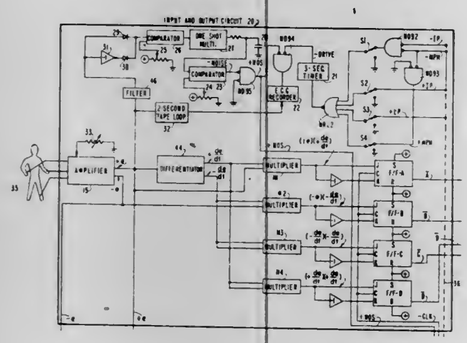


A multiform ventricular premature beat (VPB) detector. Each VPB is classified in one of eight morphological categories. As long as all VPB's are classified in the same category a multiform alarm circuit is not energized. As soon as a VPB of a different morphology is detected, the alarm circuit is triggered to indicate a multiform VPB condition.

3,616,791
ELECTROCARDIOGRAPHIC MORPHOLOGY RECOGNITION SYSTEM

George J. Harris, Framingham, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 30, 1969, Ser. No. 820,554
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 A 58 Claims

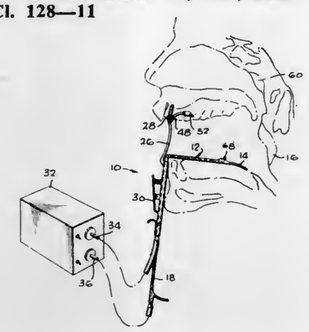


An electrocardiographic monitoring system which recognizes QRS complexes, their rhythm and morphologies. The morphologies of the QRS complexes are memorized during a learning interval at the start of monitoring. Thereafter, different morphologies are identified as abnormal. Each QRS complex is recognized by differentiating it, forming various product signals of itself and its derivative, and registering the sequence in which the various product signals exceed and fall below threshold values. The system also continuously updates a 10-second average of the R-R interval in order to identify premature and late beats, and compensatory pauses.

3,616,792
ILLUMINATING SURGICAL SPECULA

Lawrence Pleet, Los Angeles, Calif. (18851 Pasadero Drive, Tarzana, Calif. 91356)

Filed Apr. 10, 1969, Ser. No. 815,096
Int. Cl. A61b 1/06, 1/24; G02b 5/16
U.S. Cl. 128—11 3 Claims

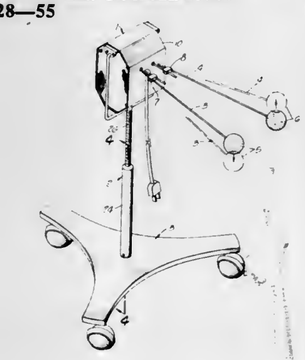


Illuminating surgical specula combining the features of ordinary specula for maintaining access into body cavities and passages with built-in illumination means to provide optimum light upon specific and general regions in which surgical procedures are to be performed. Pharyngeal specula are disclosed in which light is provided by optical fibers which project the proper intensity upon the lymphatic areas of tonsils and adenoids so that surgery is easily accomplished. The fiber optics include a separate light source, connected by means of flexible optical fibers to the speculum, together with the termination of the fiber optics on the speculum to discharge the light at the desired area. A directable nozzle is disclosed for terminating the fiber optics whereby the light can be directed and maintained at the desired region. A pluruality of nozzles are disclosed in combination with a variety of oral dams and tongue depressors for achieving maximized illumination on tonsils and adenoids during surgery thereon.

3,616,793
MASSAGING DEVICE

David A. Draper, 4122 W. 142nd St., Hawthorne, Calif. 90250

Filed Feb. 26, 1969, Ser. No. 802,577
Int. Cl. A61h 23/00
U.S. Cl. 128—55 8 Claims

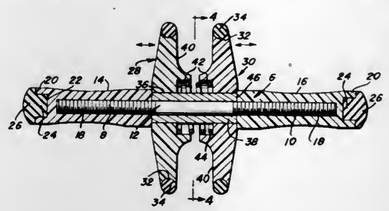


A pendantly mounted massaging device is disclosed having a plurality of independently oscillating balls driven by a motor so that each ball will strike the user independently to perform a massaging action. The balls are mounted on elongated members which are caused to oscillate by contact with a rotating cam surface.

3,616,794
BODY ROLLER

Kenneth L. Gromala, 817 College Ave., Santa Rosa, Calif. 95401

Filed Aug. 19, 1969, Ser. No. 851,176
Int. Cl. A61h 15/00
U.S. Cl. 128—57 9 Claims

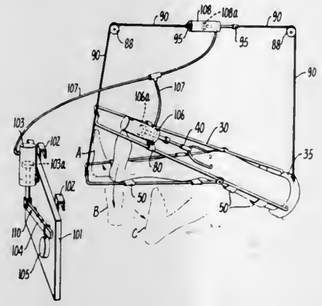


A manually usable portable appliance uniquely adapted for use by a qualified doctor or a knowledgeable and trained assistant and such in construction that it can be expertly and efficaciously used to properly goad, act on and relax super contracted muscles known to be proximal to and functionally involved in the use and control of a patient's spinal column. It is characterized by a shaft having left and right axially twistable handgrips. The median portion is equipped with balanced free turning but spring biased applicator rollers which are paired, spaced, and shiftably adjustable toward and from each other to achieve the results desired.

3,616,795
FLUID PRESSURE TRACTION DEVICE

Roy Y. Powlan, 1 Chapel Drive, Lafayette, Calif. 94549

Filed Apr. 21, 1969, Ser. No. 817,915
Int. Cl. A61f 5/04
U.S. Cl. 128—85 9 Claims

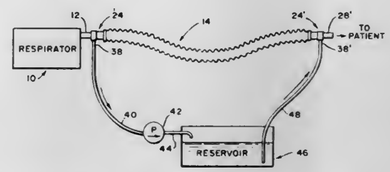


A fluid pressure device for applying traction to orthopedic patients utilizes hydraulic cylinders connected together in a closed fluid system and actuated by applying torque through a calibrated counterweight, resulting in the application of a constant regulated tension on a patient in traction.

3,616,796
HUMIDIFIED RESPIRATORY TUBE AND METHOD

Richard Robert Jackson, 8 Trinity Road, Marblehead, Mass. 01945

Filed June 30, 1969, Ser. No. 837,397
Int. Cl. A62b 7/02
U.S. Cl. 128—212 5 Claims

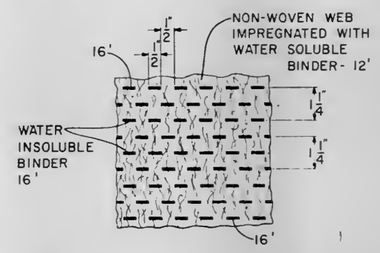


A system for humidifying and delivering gases such as air or oxygen to a patient from a respirator, anesthesia machine or oxygen outlet. The system includes a composite tube formed from an inner water permeable tube through which the gas flows and an outer tube which surrounds the inner tube to define a jacket about the inner tube. Warm water is caused to flow through the jacket and permeates the inner tube so that the water is exposed and absorbed by the air stream. The outlet from the inner tube is directed to the patient who receives the humidified, conditioned gas.

3,616,797
FLUSHABLE WRAPPER FOR ABSORBENT PADS

John F. Champaigne, Jr., Neenah, and Howard A. Whitehead, Appleton, Wis., assignors to Kimberly-Clark Corporation. Neenah, Wis.

Filed Feb. 6, 1970, Ser. No. 9,261
Int. Cl. A61f 13/16, 13/18
U.S. Cl. 128—290 9 Claims

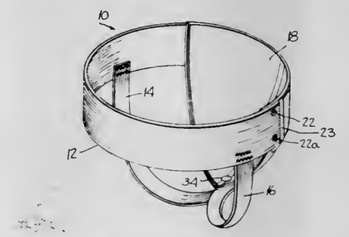


A flushable wrapper for sanitary napkins, disposable diapers and other absorbent pads. The wrapper comprises a non-woven fiber web bonded by a water-soluble adhesive and overprinted with another binder comprising a spaced pattern of water-insoluble adhesive. The pattern of the latter adhesive is arranged so as to permit the web to be broken up into pieces approximating the size of a postage stamp when the web is soaked in excess water.

3,616,798
DRY INCONTINENT GARMENT

Julius Garfinkel, 8851 18th Ave., Brooklyn, N.Y. 11214

Filed Dec. 18, 1967, Ser. No. 691,606
Int. Cl. A61f 13/16
U.S. Cl. 128—295 2 Claims



A dry incontinent garment constructed with a waist band adapted to partially surround the body of the user and having support means attached to the waist band on one end. A detachable incontinent member is provided which is adapted to be connected to a waist band and the

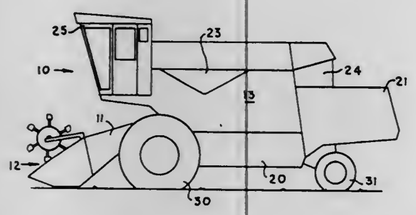
support means. Fastening means detachably connect the incontinent member with the waist band and the support means. The fastening means is advantageously adapted to be spaced away from the body of the user. Advantageously, the incontinent member has an outer cover of waterproof material and an inner layer of fluid permeable, non-absorbent material adapted to be disposed adjacent the body of the user. A layer of fluid absorbent material is disposed between the outer cover of waterproof material and the inner layer of fluid permeable non-absorbent material.

3,616,799
TUBES WITH SAIL CUFFS FOR TRACHEAL INTUBATION
Charles H. Sparks, 3725 SE. Martins, Portland, Oreg. 97202
Filed Oct. 8, 1969, Ser. No. 864,773
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **8 Claims**



The present cuff is an open ended flaring skirt which is pressed against the tracheal wall during the positive pressure phase of mechanical ventilation of the patient's lungs. The sealing pressure is applied by the ventilating gas itself whereby the pressure of the cuff against the tracheal wall can never exceed that of the ventilating gas and whereby the cuff is relaxed in each breathing cycle when the ventilating gas is not above atmospheric pressure. A slidable sleeve sheaths the skirt for intubation and unsheaths the skirt after intubation. The cuff is used on endotracheal, nasotracheal and tracheostomy tubes.

3,616,800
AXIAL FLOW TYPE COMBINE WITH A DISCHARGE CONVEYOR
Edward William Rowland-Hill and James W. McDuffie, New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Nov. 24, 1969, Ser. No. 879,215
Int. Cl. A01f *7/06*
U.S. Cl. 130—27 T **14 Claims**

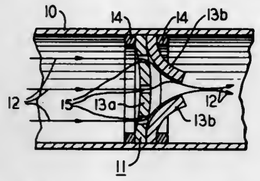


An axial flow type combine has an axial flow threshing and separating means threshing and separating grain from crop material and discharging the crop material onto a conveyor for removal of remaining entrained grain and discharge of the crop material at the rear of the combine.

3,616,801
PROCESS FOR THE TREATMENT OF TOBACCO TO EFFECT ION REMOVAL
John D. Hind, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,268
Int. Cl. A24b *3/14, 15/08*
U.S. Cl. 131—143 **1 Claim**

This disclosure relates to a process for the treatment of tobacco. More particularly, the disclosure relates to a process for improving the burning properties of the tobacco, the flavor of the tobacco smoke and the quality of the tobacco ash, by controlling the ion content of the tobacco. The process involves the steps of (1) contacting tobacco plant parts with water to obtain an aqueous tobacco extract, (2) treating said extract to adjust its content of certain metallic ions, without removing desirable tobacco constituents and (3) recombining the treated aqueous tobacco extract with the extracted tobacco parts. The adjustment of the ion content of the aqueous tobacco extract may be accomplished by contacting the extract with an ion-exchange resin. If desired, other ions may be added to the treated tobacco plant parts to further improve the final tobacco product.

3,616,802
FILTERING DEVICE
Frank A. Marinaccio, Clark Road, Bernardsville, N.J. 07924
Filed Aug. 20, 1969, Ser. No. 851,637
Int. Cl. A24d *1/04;* **A24f** *7/04, 13/06*
U.S. Cl. 131—261 B **7 Claims**



A filter is disclosed which includes an accelerating member and a flap member. The accelerating member is perforated with a number of holes or orifices, while the flap member includes at least one hinged flap.

3,616,803
REMOVAL OF DYE FROM HAIR
John Menkart, Bethesda, Md., and Agnes Eleanor Davis, Vienna, Va., assignors to The Gillette Company, Boston, Mass.
No Drawing. Filed May 21, 1969, Ser. No. 826,660
Int. Cl. A61k *7/12*
U.S. Cl. 132—7 **3 Claims**

Composition for application to human hair to remove dye therefrom is a two-phase liquid system of water and organic solvent for the dye, the system containing at least 1% by weight of dissolved salt and having a pH of 7.5–11.5.

3,616,804
HAIR STYLING DEVICE
Curtis J. Simoneaux, Belle Rose, La. 70341
Filed May 26, 1969, Ser. No. 827,621
Int. Cl. A45d *2/00*
U.S. Cl. 132—40 **4 Claims**

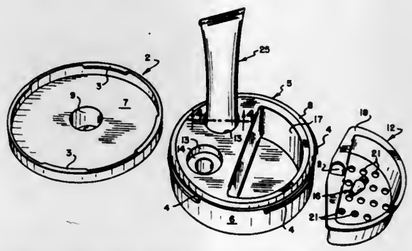
The hair styling device includes a cylindrical roller having an axially extending slot through its wall and opening at one end of the roller. The slot terminates

short of the opposite end of the roller. The edges of the slot diverge at its open end to facilitate reception of hair into the slot. The hair is initially rolled about a first roller and the larger diameter slotted roller is received axially about the first roller with the rolled hair about the first roller extending through the slot of the



second roller. The hair is then rolled about the slotted roller. A third roller having a similar slot formation and a larger diameter than the second roller is receivable axially about the first and second rollers, with the rolled hair about the second roller extending through the slot in the third roller.

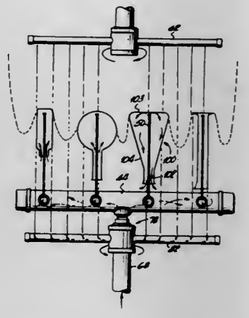
3,616,805
APPLICATOR TIP TREATMENT UNIT
Arnold Rex Marsee, Lima, Ohio, assignor to Artex Hobby Products, Inc., Lima, Ohio
Filed Jan. 3, 1969, Ser. No. 788,900
Int. Cl. B08b *3/04*
U.S. Cl. 134—85 **2 Claims**



A compact treatment unit for cleaning and otherwise treating tip applicators used with marking tubes and other applicator devices for dispensing and applying paints and other liquids. The unit includes a housing body and cover adapted to support and enclose bath means for bathing detached applicator tips and includes a tube stand and soaking pit for treating a tip applicator while attached to its tube. The tip bath means may include means for draining applicator tips as they are removed from the bath.

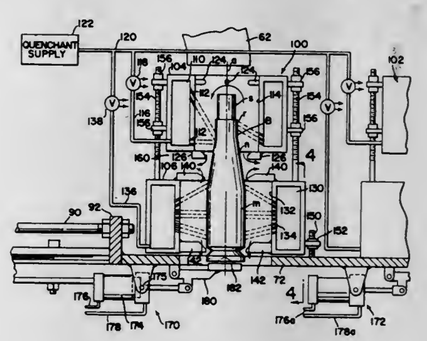
3,616,806
WASHING APPARATUS
Max Randall, 525 Longview Road, South Orange, N.J. 07079
Filed July 30, 1969, Ser. No. 846,195
Int. Cl. B08b *3/02, 9/08, 11/02*
U.S. Cl. 134—168 R **7 Claims**

A washing apparatus, intended primarily for the thorough washing and rinsing of the varied shapes of laboratory glassware, such as flasks, test tubes, bottles and the like. The glassware is mounted in inverted position on hollow, supporting spindles through which washing fluid is introduced against and is effective in cleaning the glassware interior surfaces. The mounted glassware is additionally positioned between opposing upper and lower sprays which clean all exterior surfaces, the lower spray being also effective to minimize any blockage, due to



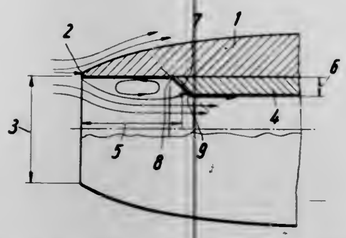
capillary action, of washing fluid within the glassware because of the turbulance it creates in entering the glassware in the reverse direction of drainage flow therefrom. The washing apparatus also is provided with a noteworthy hold-down means or covering, preferably fabricated of wire mesh, which is readily moved into draping position over the glassware to minimize movement of the glassware that might result in its breakage.

3,616,807
DEVICE FOR QUENCHING ELONGATED INDUCTIVELY HEATED WORKPIECES
Richard J. Collins, Cleveland, and John R. Laughlin, Brecksville, Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Aug. 4, 1969, Ser. No. 847,203
Int. Cl. B08b *3/00*
U.S. Cl. 134—199 **7 Claims**



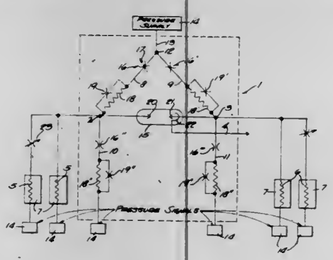
A device for quenching an inductively heated, elongated workpiece having at least two axially spaced portions of different cross-sections. The device includes two separate quench bodies having internal dimensions generally matching the two separate portions of the workpiece and a space between the bodies to allow quenchant to flow through this space for more uniform quenching of the two different dimensioned portions of the workpiece.

3,616,808
JET ENGINE
Jurgen Barche, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke G.m.b.H., Bremen, Germany
Filed Dec. 1, 1969, Ser. No. 881,148
Claims priority, application Germany, Dec. 10, 1968, P 18 13 761.6
Int. Cl. F02b *27/00*
U.S. Cl. 137—15.1 **7 Claims**



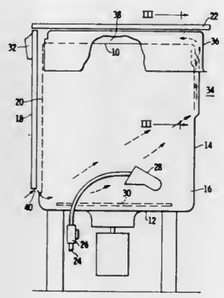
An aircraft jet engine air intake which is configured to provide smooth air flow under both low- and high-speed conditions. The leading edge is configured to allow for smooth air flow at high speed, there being a shoulder arranged interiorly of the air intake, which shoulder has a leading face that is spaced rearwardly, considered in the direction of the air flow, from the leading edge of the air intake so that the shoulder reduces the inside dimension of the air intake, beginning at a point spaced rearwardly from the leading edge, to a dimension smaller than at the leading edge. The leading face of the shoulder has a streamlined profile which allows the smooth flow of air.

3,616,809
FLUIDIC CONDITION SENSING APPARATUS
Richard N. Laakaniemi and Norbert T. Schmitz, Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Aug. 28, 1969, Ser. No. 853,730
Int. Cl. F15c *1/20, 4/00*
U.S. Cl. 137—81.5 **16 Claims**



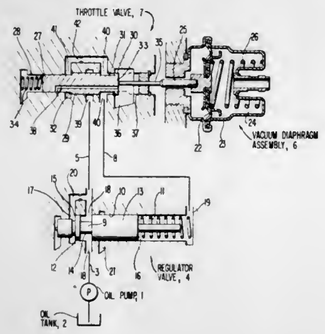
The disclosure includes a plurality of fluidic temperature sensing capillary tube resistors mounted within related enclosures to subject the tube resistors to the environmental temperature condition. The tube resistors are connected in a sensing network having a modified Wheatstone bridge of fluidic resistance, including linear and non-linear capillary tube resistors and non-linear orifice restrictors providing compensation for pressure, temperature and the like. A summing impact modulator is connected across the output terminals of the bridge. The one input side is connected to a fluid source and the adjacent legs include a variable restrictor or pressure regulator for adjusting of a desired set point. The opposite input side has the legs connected to pressure signal and/or reference sources. The temperature sensing capillary tube resistances are connected in parallel with the two branches connected to the latter input side. The output of the summing modulator is a pressure signal directly related to the temperatures of the capillary tube resistors, which is connected in an environmental control loop.

3,616,810
DOMESTIC DISHWASHER DRYING ARRANGEMENT
Charles F. Ter Bush, Elmhurst, Ill., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 24, 1969, Ser. No. 860,570
Int. Cl. A47l *15/48*
U.S. Cl. 134—94 **7 Claims**



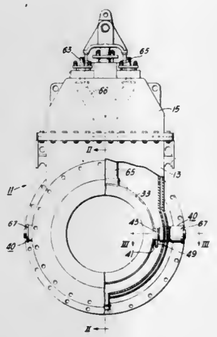
A front loading dishwasher drying arrangement in which air during the drying cycle is admitted into the dishwasher chamber adjacent the lower end of the front wall and exits carrying moisture through an opening in the upper portion of the rear wall, this rear wall opening being in communication with a plenum formed between the top wall of the dishwasher chamber and an overlying cap structure. The relatively cool cap structure serves as a condenser upon which the moisture in the air condenses, and from which it is subsequently evaporated and escapes from the plenum.

3,616,811
CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION OF AN AUTOMOBILE
Tetsuo Shimosaki, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Oct. 29, 1969, Ser. No. 872,324
Claims priority, application Japan, Oct. 29, 1968, 43/79,067
Int. Cl. G05d *16/00*
U.S. Cl. 137—117 **4 Claims**



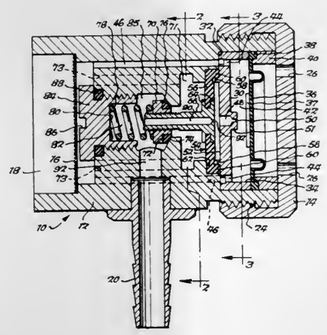
A control system for an automatic transmission of an automobile for controlling the line pressure in response to the increase of the torque transmitted from wheels and of engine torque having a throttle valve, a regulator valve for regulating the line pressure in response to the transmitting direction of the torque by detecting the intake manifold vacuum and applying the alternate throttle pressure to the regulator valve in accordance with the value of the intake manifold vacuum.

3,616,812
BACK-DRAFT VALVE
Joseph A. Vietorisz, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed July 23, 1969, Ser. No. 844,136
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 **2 Claims**



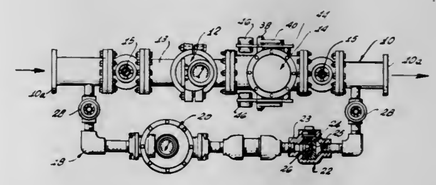
A back-draft valve for use with a blast furnace includes a water-cooled valve seat panel that is removable and replaceable and that has a locking mechanism to secure the valve seat in position. Also included is a frustoconical refractory lining on the fluid entrance passageway and a cylindrical refractory lining on the fluid exit passageway of the valve housing.

3,616,813
REGULATOR
James E. Nelson, Williamsville, N.Y., assignor to A-T-O Inc., Cleveland, Ohio
Filed June 23, 1969, Ser. No. 835,659
Int. Cl. G05d *16/06*
U.S. Cl. 137—491 **10 Claims**



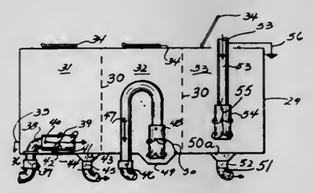
A regulator comprising a body having a breathing fluid inlet passage and an outlet passage connected to the mask of a user with a control valve interposed between the inlet and outlet passage. A plate is mounted in the body and is provided with an orifice. A first diaphragm is mounted in the body on one side of the plate and a second diaphragm, operatively connected to a control valve, is mounted in the body on the other side of the plate. Upon inhalation, the first diaphragm is flexed to close the orifice, causing a build-up of pressure which acts on the second diaphragm to flex the same and open the control valve thereby establishing communication between the inlet and outlet passage. Upon exhalation, the orifice is opened to return the second diaphragm to its normal position, the control valve being carried by the second diaphragm into closing position.

3,616,814
FLUID FLOW CONTROL VALVE
Edward L. Hendey, 558 W. Pendleton Road, Banning, Calif. 92220
Filed May 2, 1968, Ser. No. 725,990
Int. Cl. F16k *15/18*
U.S. Cl. 137—527.8 **2 Claims**



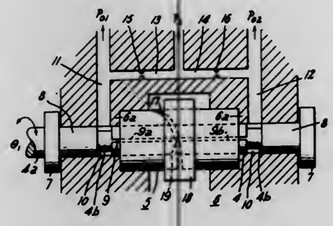
A fluid flow control valve that automatically responds to the flow rate by opening if the flow is beyond a given level and remains closed if below a predetermined value. The valve member is connected to a lever arm that is biased by an adjustable biasing arm. The biasing arm receives the lever arm in a detent notch when the valve member is in a closed position. The effect of the notch, lever and biasing arm arrangement is to cause the valve member to move quickly toward a fully open position, after fluid flow reaches and exceeds a predetermined value. The valve can be adjusted to respond to different flow rates.

3,616,815
FLOW SYSTEM HAVING ELECTROSTATIC CHARGE REDUCER
Charles D. Erickson and George A. Ciotti, Erie, Pa., assignors to A. O. Smith Corporation, Milwaukee, Wis.
Filed June 17, 1969, Ser. No. 834,023
Int. Cl. B65d *87/48*
U.S. Cl. 137—591 **6 Claims**



A flow system for petroleum products and the like. An unshrouded static charge reducer tube is connected in the storage means of the flow system for eliminating electrostatic charge resulting from liquid flow. The reducer is formed of a suitable plastic and a plurality of pins project inwardly into the internal flow passageway. A conductive member connects the pins to the storage means or some other element which defines a ground connection.

3,616,816
FLUIDIC FUNCTION GENERATOR
Thomas S. Honda, Scotia, N.Y., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 42,224
Int. Cl. F15c *3/02*; F16k *11/14*
U.S. Cl. 137—609 **10 Claims**

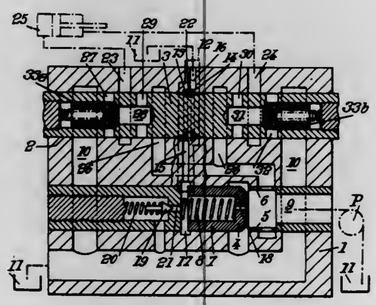


A fluidic bridge circuit consisting of a pair of fixed restrictors and a pair of variable restrictors generates a fluid signal whose pressure varies in a predetermined nonlinear manner. The variable restrictors are formed by an axial groove in a rotary shaft and a vented groove formed in accordance with a predetermined nonlinear mathematical function in a sleeve member surrounding the shaft. The vented point of overlap of the nonlinear groove with respect to the shaft axial groove divides the axial groove into the two variable restrictors. Pressurized fluid is supplied to the juncture of the fixed restrictors, and the fluid pressure at the juncture of each fixed and variable restrictor varies nonlinearly with change in shaft angular position in accordance with the predetermined nonlinear function.

ERRATUM

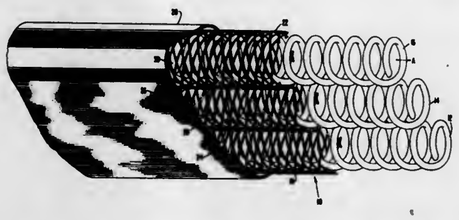
For Class 137—624 see:
Patent No. 3,616,820

3,616,817
HYDRAULIC DISTRIBUTORS
Louis Pignolet, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A.
Filed Aug. 4, 1969, Ser. No. 847,319
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.68 **10 Claims**



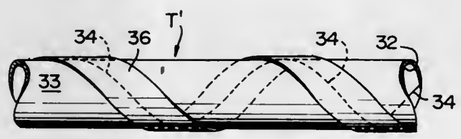
An improved hydraulic distributor having a body and a plunger positioned within a bore in said body to form a slide valve. The slide valve communicates with a pilot valve and a control circuit. The bore and/or the plunger have narrow longitudinal slots in their sliding surfaces to effect gradual opening and closing of the control circuit during said relative displacements. The distributor is especially useful in heavy earth-moving machines.

3,616,818
CRUSH RESISTANT CONDUIT
Melvin C. Case and George P. Durney, Dover, Del., assignors to ILC Industries, Inc., Dover, Del.
Filed Dec. 9, 1968, Ser. No. 782,283
Int. Cl. F16l *11/10*
U.S. Cl. 138—129 **13 Claims**



Disclosed is a conduit or duct for feeding life support gas, such as oxygen, to or from portions of a spacesuit. The conduit comprises a plurality of side-by-side helical coils, each surrounded by a flexible open mesh sleeve. The sleeves are joined by longitudinal stitching and are secured to the coils by means of an adhesive. Surrounding the coils and sleeves is a flexible gas impermeable cover. The conduit or duct, while quite flexible, is extremely resistant to being crushed.

3,616,819
SPIRALLY WOUND PAPER TUBE
Charles K. Dunlap, Jr., and James A. Fink, Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.
Original application Jan. 5, 1966, Ser. No. 519,819, now Patent No. 3,468,733. Divided and this application Mar. 25, 1969, Ser. No. 840,563
Int. Cl. F16l *9/16*; B31c *3/04, 9/00*
U.S. Cl. 138—144 **2 Claims**

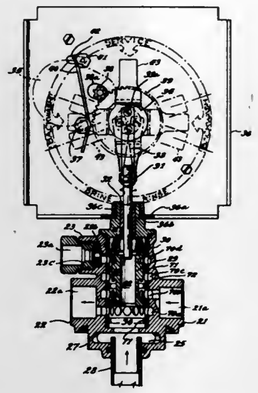


A spirally wound paper tube including a relatively narrow strip of paper spirally wound in underlying relationship with a relatively wide paper strip with adhesive therebetween and with the spiral seam of the relatively wide paper strip positioned approximately intermediate the side edges of the narrow strip.

3,616,820
SOFTENER VALVE
Andrew J. Fleckenstein, 2880 Santa Marin Drive, Brookfield, Wis. 53005
Continuation-in-part of application Ser. No. 764,178, Oct. 1, 1968. This application Feb. 13, 1970, Ser. No. 11,071
Claims priority, application Switzerland, Sept. 30, 1969, 14,721/69
Int. Cl. G05b *19/06*
U.S. Cl. 137—624.13 **27 Claims**

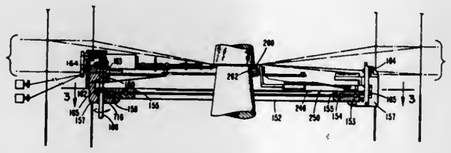
A water softening valve and timing mechanism which is formed to provide a short stroke of an operating piston

in the valve and formed so that once actuation of the valve is started, the piston moves continuously through



several positions for backwash, regeneration, etc., continuously until the entire conditioning cycle is completed.

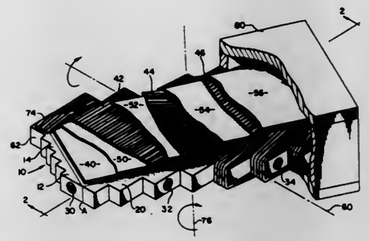
3,616,821
WEFT COMPACTOR FOR CIRCULAR WEAVING MACHINE
Paul D. Emerson, 4512 Pamlico, Raleigh, N.C. 27609; S. Jack Davis, 402 Clayton Road, Chapel Hill, N.C. 27514; John C. Oatfield, 213 E. Dowell Drive; and Fred H. Engelman, Pamlico Drive, both of Cary, N.C. 27511; and Charles E. Bartee, Alston Avenue Road, Durham, N.C. 27703
Original application Dec. 31, 1968, Ser. No. 793,921. Divided and this application Dec. 8, 1969, Ser. No. 882,386
Int. Cl. D03d *37/00*
U.S. Cl. 139—13 **3 Claims**



A fabric compactor for use in combination with a three-dimensional weaving machine is adaptable for packing filling yarns in a shed, the shed being annularly arranged about an axis.

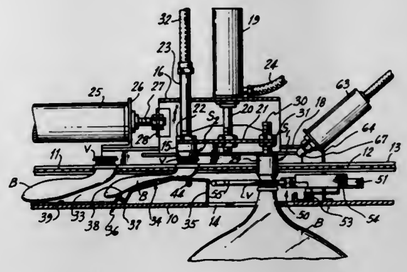
3,616,822
STRESS-ORIENTED FILAMENT WINDING IN COMPOSITE PANELS
David I. Sinizer, Playa del Rey, Albert Toy, Gardena, David G. Atteridge, Santa Monica, and Louis H. Fanelli, Los Angeles, Calif., assignors to North American Rockwell Corporation
Original application June 16, 1967, Ser. No. 646,582, now Patent No. 3,537,170, dated Nov. 3, 1970. Divided and this application Feb. 9, 1970, Ser. No. 14,703
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.2 **1 Claim**

Removable terraced peripheral edges on a rotating mandrel are adapted to receive successive windings of thin filament in a plurality of separate layers to form reinforced composite panels. The mandrel edges are reversed in position between each winding step to permit winding of filaments at stress-oriented cross-ply angles



with a minimum of filament wastage, after which the workpiece components are diffusion bonded together. Rare earth oxides are used in stop-off coatings to prevent bonding of workpiece materials to mandrel surfaces.

3,616,823
BALLOON VENDING MACHINE
John G. Dello Iacono, Camp Hill, Pa., assignor to Miner Industries, Inc.
Filed May 27, 1970, Ser. No. 40,865
Int. Cl. B65b *43/12*
U.S. Cl. 141—137 **10 Claims**

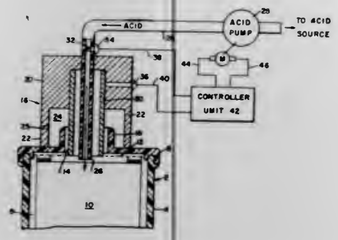


In a machine for vending inflated balloons from a flexible conveying belt having openings uniformly spaced apart along the belt to retain the necks of uninflated balloons each having a check valve in the respective neck, and in which indexing movements are imparted to the belt to successively bring the balloons to an inflating station where each balloon is inflated with gases supplied thereto through a nozzle engaged, from above, with the respective check valve, devices are provided to prevent tampering with the balloons or their removal from the belt prior to inflation and to ensure that each balloon, when being inflated, properly depends from the belt for avoiding bursting of the balloons during inflation.

3,616,824
LEVEL DETECTOR DEVICE FOR ADDING CONDUCTIVE LIQUID TO A CONTAINER
Daniel Orlando, Brookfield, Wis., assignor to Globe-Union, Inc., Milwaukee, Wis.
Filed Jan. 20, 1970, Ser. No. 4,283
Int. Cl. H01m *7/00*
U.S. Cl. 141—198 **6 Claims**

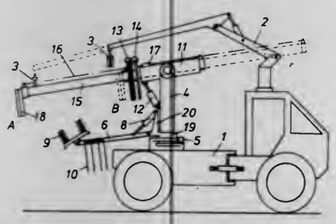
A liquid level detector for adding electrically conductive liquid to a container which comprises an electrically

non-conductive feed conduit for directing a stream of conductive liquid to the container, a first electrically conductive probe extending into the container to the desired level of conductive liquid therein, a second electrically conductive probe immersed in the stream of conductive liquid



within the feed conduit and control means electrically connected to the first and second probes and operatively associated with the feed conduit for stopping the addition of conductive liquid to the container when the desired level is reached in the container.

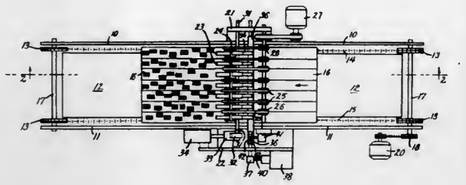
3,616,825
MACHINE FOR HANDLING TIMER
Mikko Kantola, Haukilahti 5, Finland
Filed May 12, 1970, Ser. No. 36,512
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D **5 Claims**



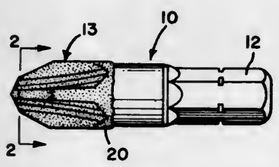
A machine for handling timber has a tree-hauling jib which is mounted on a tractor or similar vehicle and can be turned in vertical and horizontal planes. The jib has a gripping element for grasping the tree. The machine also includes a trimming device provided with timber-handling equipment which is also mounted on a suitable vehicle and can be turned in vertical and horizontal planes. The characteristic feature of this invention consists in that the machine also includes a feeding jib provided with a claw for gripping trees to be trimmed and adapted to be turned in vertical and horizontal planes. The machine operates in that the hauling jib presents the tree to the feeding jib and the tree can be moved into the gripping elements of the trimming device with the use of the feeding jib.

3,616,826
CONTROL MEANS FOR CUTTING FLAT SURFACES
Norman A. Murphey, Anderson, and Ronald W. Southworth, Redding, Calif., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed May 6, 1970, Ser. No. 35,011
Int. Cl. B27c *5/02*
U.S. Cl. 144—136 **10 Claims**

An electronic circuit control means for producing random spaced surface cuts on panels or boards to simulate a hand hewn product. A line of cutter wheels is positioned above the panel or board surface and controlled elements move toward the panel surface to remove a small portion of the surface. The cutter wheel motion is controlled by a combination of electronic oscillators, the frequencies of which vary with time to produce a random pattern of cut areas. The cutters are also moved transversely by a similar control means.



3,616,827
NON-MAGNETIC FASTENER PICK-UP AND DRIVING TOOL
George B. Stillwagon, Jr., Dayton, Ohio, assignor to Gardner-Denver Company, Dayton, Ohio
Filed Aug. 11, 1969, Ser. No. 848,876
Int. Cl. B25b *15/00, 23/08*
U.S. Cl. 145—50 D **6 Claims**

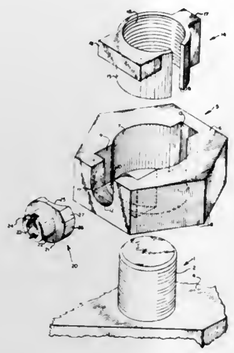


Screwdriver bits employ a thin coating of an elastomeric material whose outer exposed surface is non-tacky, e.g., a cured material, which does not interfere with or detract from the normal use of the bits but which form a slight interference fit when inserted into the recess of a threaded fastener for retaining the fastener on the end of the bit prior to driving. One embodiment shows the coating entirely covering the end of the bit and in another embodiment the coating is excluded from the radially outward faces of the driving wings so as not to interfere with the insertion of the bit in a recess.

3,616,828
FASTENER CONSTRUCTION
Floyd E. Jessmore, 1741 Sullivan Drive, Saginaw, Mich. 48603
Filed Sept. 15, 1969, Ser. No. 857,695
Int. Cl. F16b *37/00, 39/02*
U.S. Cl. 151—19 A **12 Claims**

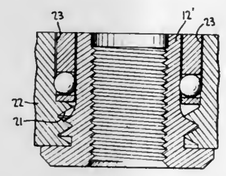
A fastener according to the invention comprises a threaded bolt loosely accommodated in an annular, nut-like retainer and a tubular, interiorly threaded, split sleeve interposed between the bolt and the retainer. The sleeve and the retainer have a key and keyway, respectively, to prevent relative rotation therebetween. The retainer has a recess and the sleeve has a flange which overlies the base of the recess. A clamping cam acts between the base

of the recess and the flange to contract the sleeve radially into snug engagement with the threads of the bolt and to



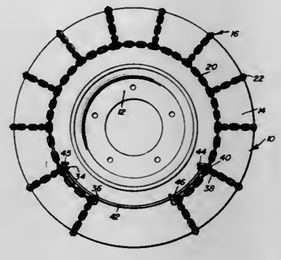
exert an axial force on the sleeve to prevent looseness between the latter and the retainer.

3,616,829
HARD METAL INSERT FOR SOFT METAL BODIES
Leslie A. Runton, Canton, Mass., assignor to Phillips Screw Company, Natick, Mass.
Filed Apr. 23, 1970, Ser. No. 43,297
Int. Cl. F16b *39/06*
U.S. Cl. 151—23 **9 Claims**



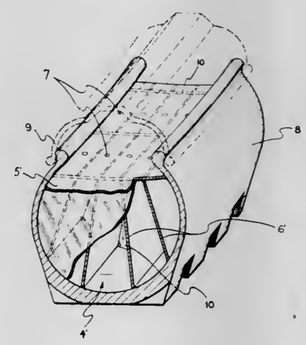
In a device comprising an internally and externally threaded tubular hard metal insert for anchoring threaded elements in soft metal parent bodies, the external thread being interrupted by at least one keyway extending axially through a plurality of turns of said thread, and a locking member having at least one tang dimensioned to fit tightly into said keyway, a corresponding keyway being broached through the thread of a threaded insert-receiving aperture in said parent body as said locking member is driven home, the improvement consisting in providing each tank with a radially extending circular aperture therethrough and securing a hard metal ball in said aperture so as to extend slightly beyond each circumferential surface of the tang whereby when the tang is driven home the said ball is under compression between the outer wall of the insert and the adjacent metal of the parent body, enhancing the locking effect as well as ensuring a tighter fit between the insert and the threaded element to be received therein. In a special embodiment the insert is formed with an outwardly directed annular flange at one end, for seating against the inner surface of a cylinder head, to eliminate leakage around the insert and also to prevent the latter from being dislodged by reason of the internal pressure when the insert is used for anchoring a spark plug in the cylinder head of an internal combustion engine.

3,616,830
TIRE CHAIN FASTENING DEVICE
Roy F. McGill, 538 W. Poplar St., Gastonia, N.C. 28052
Filed Oct. 29, 1969, Ser. No. 872,110
Int. Cl. B60c *27/10*
U.S. Cl. 152—213 A **3 Claims**



A fastening device for securing tire chains on the drive wheels of an automotive vehicle employing an elongated arcuate connecting member associated with the ends of the circumferential side chain for the circumferential chain at the inner side of the tire and wheel assembly together with an adjustable turnbuckle structure interconnecting the ends of the circumferential chain at the outer surface of the tire and wheel assembly.

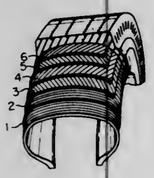
3,616,831
PUNCTURE PROOF OR UNDEFLATABLE TIRE
Jose Amestoy Lafuente and Juan Antonio Leon Melero, both of Avenida Reina Victoria, 40 Madrid, Spain
Filed Feb. 25, 1969, Ser. No. 802,069
Claims priority, application Spain, Feb. 29, 1968 (utility model), 136,679
Int. Cl. B60c *5/06*
U.S. Cl. 152—342 **5 Claims**



Puncture proof or undeflatable tire which may be of the tubed or tubeless variety but in either event provided with a plurality of substantially air-tight cells adjacent a manifold which is adapted to have a normal inlet from the exterior of the tire through a tire valve which may pass through the wheel rim and wherein the manifold is connected to each of the cells through a valve which permits air to pass through the manifold to a cell when the pressure of a particular cell has critically dropped due to a puncture or a rupture of a wall thereof. The tires in accordance with the instant invention may also include a special valve located between each cell

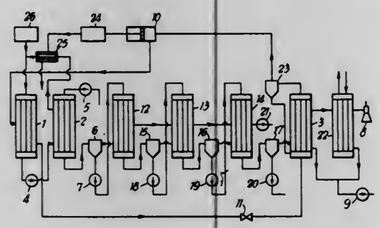
in the manifold of such a nature as will permit air from the manifold to be passed to a cell which has lost air and will also permit air to be passed from the cell back to the manifold when the manifold pressure has been relieved by opening its inlet valve.

3,616,832
RUBBER ARTICLES REINFORCED WITH FILAMENTS
Takeo Shima, Seiichi Yamashiro, Masao Yoshimura, and Takatoshi Kuratsuji, Iwakuni-shi, Iwao Fujimoto, Wakimachi, and Yukio Kato and Kenji Maeda, Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Dec. 22, 1969, Ser. No. 887,237
Claims priority, application Japan, Dec. 24, 1968, 43/95,173; Nov. 15, 1969, 44/91,686
Int. Cl. B60c *9/20;* **C08g** *17/06*
U.S. Cl. 152—361 **8 Claims**



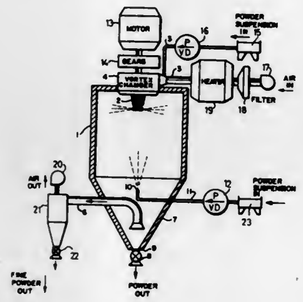
A rubber article, especially a tyre and a belt, reinforced with the filaments of a substantially linear polyester consisting essentially of ethylene naphthalene-2,6-dicarboxylate recurring units and having an intrinsic viscosity of at least 0.5 and a concentration of carboxyl groups of less than 60 equivalents per million grams of the polymer.

3,616,833
EVAPORATION OF LIQUOR
John Moseley Davies, Lavender Cottage, Weedon Lane, Amersham, Buckinghamshire, England
Filed Dec. 12, 1968, Ser. No. 783,275
Int. Cl. B01d *1/00, 1/26, 1/28*
U.S. Cl. 159—2 MS **10 Claims**



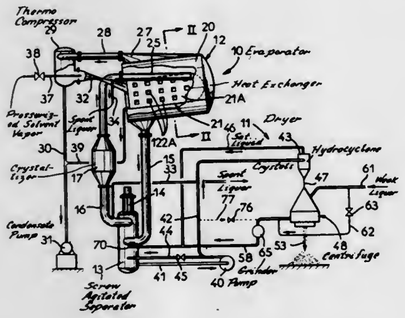
Part of a liquor is evaporated using a first heat-exchanger in which heat is transferred from a refrigerant to an intermediate fluid. A second heat-exchanger is provided to receive the heated intermediate fluid from the first heat-exchanger and a supply of the liquor to be processed. Heat is transferred from the intermediate fluid to the liquor and the liquor is partly vaporized in the second heat-exchanger. The vapor portion of the liquor is then supplied to a third heat-exchanger in which heat is transferred from the vapor to a refrigerant. A compressor is arranged to receive the vaporized refrigerant from the third heat-exchanger whereby it is liquified and returned to the first heat-exchanger.

3,616,834
SPRAY DRYING DEVICE AND METHOD FOR THE OPERATION OF SAME
Jorgen Christian Gorm Hansen, Charlottenlund, and Henning Jorgen Helsing, Rodovre, Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark
Filed July 7, 1969, Ser. No. 839,546
Claims priority, application Denmark, July 9, 1968, 3,357/68
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 E **5 Claims**



A spray drying device for the production of powders from a liquid suspension comprising a drying chamber with a rotatable atomizer wheel and a set of atomizing nozzles disposed at an appreciable distance from the wheel and atomizing in a direction against the wheel.

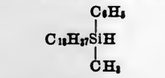
3,616,835
EVAPORATORS HAVING HOLLOW, PLATELIKE, VERTICAL HEAT TRANSFER ELEMENTS AND OVERHEAD NOZZLES
Francois Laurenty, Le Touquet, France, assignor of fractional part interest to C.O.C.E.I. S.A., Paris, France
Filed Feb. 11, 1969, Ser. No. 798,339
Claims priority, application France, Feb. 20, 1968, 140,468; Jan. 8, 1969, 6900106
Int. Cl. B01d *1/22*
U.S. Cl. 159—13 B **22 Claims**



An installation for the continuous evaporation of a solvent and the continuous concentration of at least one substance in solution in the said solvent, comprising a heat-exchanger which serves at the same time as a heater and as a concentration device, the heat-exchanger comprising a plurality of parallel exchange elements over which a distributor unit causes the solution to be treated to stream, said unit being provided for that purpose with as many nozzles as there are exchange elements.

3,616,836
ACCELERATING WATER EVAPORATION BY THE ADDITION OF AN ORGANO-SILICON COMPOUND
Richard W. Alsgaard, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,750
Int. Cl. B01d *1/00, 3/34*
U.S. Cl. 159—47 **25 Claims**

A method for accelerating water evaporation is disclosed in which an aqueous surface is treated with an organosilicon compound. An aqueous surface having an organosilicon compound on the surface is also disclosed. An example of the organosilicon compound is



the granulated boric acid on a diffusion device such as a porous plate and passing a hot air stream through the



device to form a fluidized bed. The hot air stream should have sufficient speed to insure an expansion of the fluidized bed to 150 percent of the volume of the bed at rest.

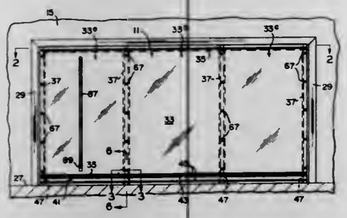
3,616,837
FLUIDIZED BED PROCESS FOR OBTAINING GRANULATED BORIC OXIDE
Paul Mollard, Ste-Foy les Lyon, France, assignor to Ugine Kuhlmann, Paris, France
Filed Oct. 16, 1969, Ser. No. 867,013
Claims priority, application France, Oct. 17, 1968, 170,199
Int. Cl. B01d *1/00;* **B01l; B01j; F26b** *7/00;* **C01b** *15/12*
U.S. Cl. 159—47 **3 Claims**

A process for obtaining granulated boric oxide by the dehydration of granulated boric acid comprising placing

3,616,838
WEATHER SHIELD MEANS FOR SLIDING DOORS

Samuel J. Barr, 1001 N. Washington Ave., Titusville, Fla.

Filed Nov. 12, 1969, Ser. No. 875,736
Int. Cl. E06b *3/30*
U.S. Cl. 160—90 13 Claims



A weather guard of sheet form plastic in a shield assembly adapted to be detachably secured over a building opening, such as that for patio-type sliding doors, and to be supported in draped relation along the margin to shield against wind driven water so that it does not gain entrance around the edges of a door or a window assembly in the opening. The shield assembly includes a main drape section which is adapted to closely cover the outer side of the sliding door structure and, along the lower edge, a skirt is provided which flares outwardly away from the plane of closure to divert the water away from the threshold of the opening.

3,616,839
GLASS-SILICONE RESIN-STRETCHED ACRYLIC RESIN LAMINATES

Nelson E. Burrin, Fullerton, and Ralph C. Shelton, Buena Park, both of Calif., assignors to Swedlow, Inc., Garden Grove, Calif.

Continuation-in-part of application Ser. No. 437,916, Mar. 8, 1965, now abandoned. This application June 30, 1967, Ser. No. 650,375
Int. Cl. B32b *17/06*
U.S. Cl. 161—193 5 Claims

Transparent laminates comprising at least one external glass sheet and at least one stretched acrylic plastic sheet which are bonded together by a nonrigid, deformable silicone resin interlayer to prevent the difference in the coefficient of thermal expansion between glass and stretched acrylic plastic from causing undesirable structural properties.

3,616,840
METHOD OF MAKING MULTILAYER SHELL MOLDS

Adam Dunlop, 23 Manse View Terrace, Douglas, Lanark, Scotland

Continuation-in-part of application Ser. No. 760,716, Sept. 18, 1968, now abandoned. This application Jan. 8, 1969, Ser. No. 789,918
Int. Cl. B22c *1/16*
U.S. Cl. 164—26 17 Claims

Shell molds are prepared by applying to a pattern a slurry containing sodium or potassium silicate, removing the pattern from the slurry and coating it with refractory material, and then applying a phosphorus-containing gelling agent. The cycle is then repeated until the desired number of layers are built up on the pattern.

3,616,841
METHOD OF MAKING AN INORGANIC RETICULATED FOAM STRUCTURE

Duane D. Walz, Rancho Cordova, Calif., assignor to Energy Research and Generation, Inc., Oakland, Calif.

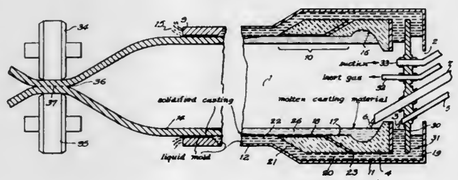
Filed Oct. 30, 1967, Ser. No. 679,204
Int. Cl. B22d *25/00*; C04b *35/60*
U.S. Cl. 164—34 10 Claims

The production of foam material, e.g., a reticulated ceramic, metal or cermet material, is carried out by using commercially available conventional foam, such as reticulated polyurethane, having the desired pattern for the end product. This foam serves as a pattern for the mold and is embedded in mold material of plaster of paris or the like, which sets to form a solid structure in and around the plastic foam. This investment structure is then heated to volatilize and expel the plastic foam, leaving voids in the mold corresponding to the original configuration of the foam. Molten metal or other substance is then cast through the voids or openings in the mold and permitted to cool and set. The mold structure is then washed away, leaving a reticulated structure of integrally formed ligaments of metal, ceramic, cermet or other desired substance.

3,616,842
CONTINUOUS CENTRIFUGAL CASTING OF TUBE USING LIQUID MOLD

George R. Leghorn, 1423 Washington Ave. Apt. 1, Santa Monica, Calif.

Continuation-in-part of application Ser. No. 538,506, Feb. 11, 1966, now Patent No. 3,445,922, dated May 27, 1969. This application Oct. 21, 1968, Ser. No. 768,983
Int. Cl. B22d *11/00, 13/02*
U.S. Cl. 164—84 21 Claims

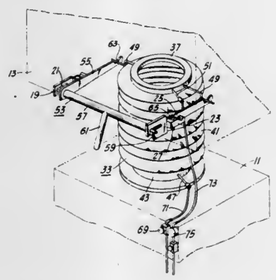


Continuous centrifugal casting of metal tube on a centrifuged lining of a heavier liquid metal mold, (as lead, tin, or lead-tin alloy). Both the liquid mold material and the molten metal, to be cast to tube, are continuously introduced into the starting end of the centrifuge and continuously exit from the opposite end where the still liquid mold material flows into a suitable catch-ring for recirculation and the semisolidified or solidified centrifugally cast tube exits axially from the centrifuge for subsequent use as tube or as a basic hollow cylinder for conversion to longitudinal structural items by the technique of collapse deformation.

3,616,843
APPARATUS FOR SHROUDING IN A CONTINUOUS CASTING MACHINE

Henry S. Newhall, Allison Park; Walter B. Thomas, Pittsburgh, and Emmanuel V. Gouye, Pittsburgh, all of Pa., assignors to Koppers Company, Inc.

Filed Nov. 25, 1969, Ser. No. 879,739
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 7 Claims

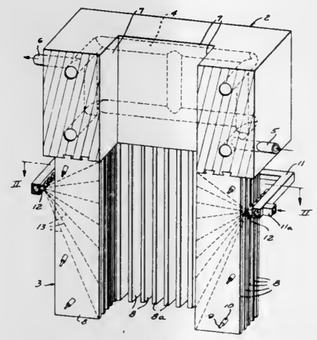


An expandible and retractable enclosure surrounds a molten metal stream of metal teeming from a tundish into a casting mold, and an inert gas under slight superatmospheric pressure is introduced into the enclosure. Method and apparatus are described to expand and retract the enclosure, and also to introduce the inert gas into and to hold the enclosure in an operative position against the tundish and the mold.

3,616,844
APPARATUS FOR CONTINUOUS CASTING OF METAL INGOTS

Klaus Bick, Paderborn; Wolfgang Weinreich, Wilhelmsboehe, and Lothar Harmse, Paderborn, all of Germany, assignors to Paderwerk Gebr. Benteler, Schloss Neuhaus, Kreis, Paderborn, Germany

Division of Ser. No. 661,503, Aug. 16, 1967, Pat. No. 3,515,202. Filed Feb. 24, 1970, Ser. No. 13,615
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 14 Claims

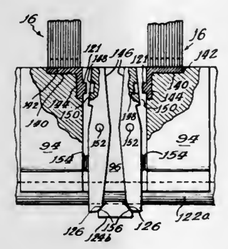


A mold is provided with a mold cavity having an inlet end adapted to receive a stream of molten metal, and an outlet end downstream from the inlet end. Cooling channels for circulation of cooling fluid are provided in the walls of the mold for indirectly cooling the molten metal and causing at least partial solidification thereof so that it will issue from the outlet end as a continuous ingot. A cooling system is arranged downstream of the outlet end and comprises a structure which defines a plurality of elongated slots extending in longitudinal direction away from the outlet end. Each of the slots exposes a longitudinally extending strip-shaped surface portion of the ingot. Means is provided for projecting into each slot against the respective surface portion which is exposed therein at least one jet of coolant fluid which impinges directly onto the surface portion over substantially the entire length of the associated slot.

3,616,845
CASTING STATION FOR BATTERY FABRICATING MACHINE

John E. Farmer, Farmer Mold and Machine Works, Inc., 12034 South Emerald, Chicago, Ill.

Filed July 10, 1968, Ser. No. 743,648
Int. Cl. B22d *17/24, 19/00*
U.S. Cl. 164—333 2 Claims

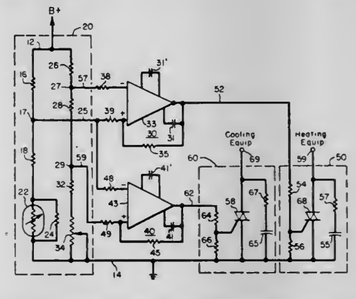


An improved molding station for a battery fabricating machine of the type having an element carrier for transferring battery elements composed of plates and separators between loading, fluxing, casting and unloading stations by means of vertical movement at the stations and rotational movement therebetween, the casting station having cavities therein for molding straps and posts to the lugs of the battery plates, the posts having studlike projections on the face thereof spaced from the straps, characterized in that the casting station has movable mold cavity walls to permit the axial withdrawal of the cast post and strap structure from the cavity as the element carrier is axially lifted at the casting station preparatory to moving to the unloading station.

3,616,846
CONTROL SYSTEM FOR HEATING AND/OR COOLING SYSTEM

Frank E. Wills, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1969, Ser. No. 877,318
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 11 Claims

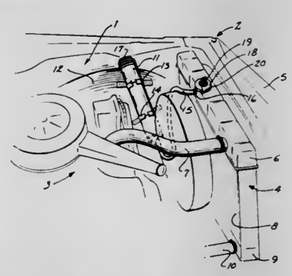


A control system for thermal (heating and/or cooling) equipment is disclosed in two embodiments both of which employ a thermistor to derive a temperature voltage signal and at least two Op-Amp comparator circuits driven by that signal and different reference signals to operate thermal equipment switching means. The first embodiment has only a single stage pair of Op-Amp comparators with the positive of one and the negative input of the other connected to the temperature signal to drive on either heat or cool switching means, but not both at the same time. The second embodiment has two stages of Op-Amps, a first delay and amplifying stage for the temperature signal and a second comparator stage made of a plurality of comparators coupled as in the first embodiment for driving either a heat switch or a cool switch.

3,616,847
VACUUM COMPENSATING DEVICE FOR ENGINE COOLING SYSTEM

Allie B. Holmes, Corpus Christi, Tex., assignor to Opti-Cap Inc., Corpus Christi, Tex.

Continuation-in-part of application Ser. No. 762,254, Sept. 16, 1968, now Patent No. 3,521,702, dated July 28, 1970. This application Jan. 22, 1970, Ser. No. 4,834
Int. Cl. F28b *3/00*
U.S. Cl. 165—51 16 Claims



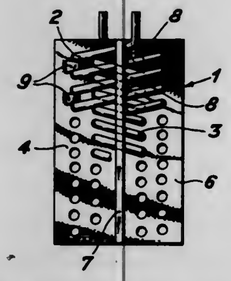
An engine cooling system including a vacuum compensating device in fluid communication with the system. The com-

pensating device maintains the cooling system full at all times and reduces stress on the system. A viewing device is substituted for the usual cap on the radiator filling neck to allow visual determination of the coolant level, and the viewing device seals the radiator. The invention also includes a unique vacuum compensating device including a rigid enclosure and a vacuum and pressure relief valve mounted on the enclosure to maintain pressure in the system within safe, predetermined limits. In the preferred embodiment, the enclosure is elongated, is of a relatively small diameter, and is mounted generally upright so only a small surface area of coolant is exposed to air when the coolant is cold and the vacuum relief valve opens.

ERRATUM

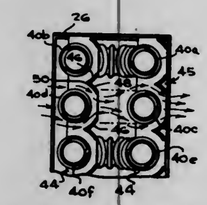
For Class 165—26 see:
Patent No. 3,616,846

3,616,848
SUPPORT MEANS FOR HEAT TRANSFER DEVICE
Werner Kaelin, La Jolla, Calif., assignor to Sulzer Brothers, Limited, Winterthur, Switzerland
Filed Mar. 28, 1967, Ser. No. 626,453
Claims priority, application Switzerland, Apr. 1, 1966, 4829/66
Int. Cl. F28f *9/00*
U.S. Cl. 165—67 **18 Claims**



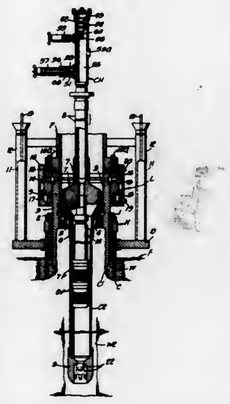
The heat transfer system includes a plurality of wound tube coils fixed within the holes of at least three plates disposed in a radiating axial manner from the axis of the system. The tube coils are wound helically or spirally and are fixed at three points about the holes through which they pass.

3,616,849
HEAT EXCHANGE MEANS
Johannes C. Dijt, 2720 Forsyth Lane, Montgomery, Ala.
Filed Feb. 24, 1970, Ser. No. 13,446
Int. Cl. F28d *7/00*
U.S. Cl. 165—159 **24 Claims**



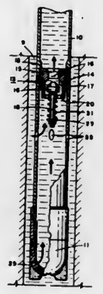
A heat exchanger is provided with horizontally and vertically aligned exchange tubes through which a heat exchange liquid or gas flows with the tubes being of thin-walled construction in the form of a through-the-wall spiral and with a plurality of elongated slats connecting the tube segments to maintain fixed relative spacing with baffle means extending between the slat members on the downstream side of the tubes with respect to a fluid flowing over the exterior of the tubes with the baffles being formed of two arcuately shaped wedge components for directing the fluid flow around the downstream side of the tubes to provide heat flow through substantially the entire tube body with the tubes being arranged in circular array and linear array in two embodiments; in another embodiment the tubes are supported in parallel vertical array so that the external fluid flows along the length of the tubes and a plurality of wave-shaped baffles are mounted between the tubes to direct the gas flow back and forth over the tubes as the flow moves generally along the length of the tubes.

3,616,850
CEMENTING PLUG LAUNCHING MANDREL
Lyle B. Scott, South Gate, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.
Filed Apr. 20, 1970, Ser. No. 29,973
Int. Cl. E21b *33/16, 33/14*
U.S. Cl. 166—155 **13 Claims**



A cementing plug launching mandrel which includes an annular piston chamber and a piston in the chamber operable by fluid pressure in the mandrel to provide a force to shear the pins which support the cementing plug on the mandrel when a closure carried in the fluid closes the opening through the cementing plug. In addition, the mandrel has a surge chamber to absorb the shock pressure wave caused by closure of the opening through the cementing plug.

3,616,851
SAFETY FILL FLOW CONTROL WELL APPARATUS
Juan A. Garcia, Corpus Christi, Tex., assignor to Esso Production Research Company
Filed Nov. 20, 1969, Ser. No. 878,508
Int. Cl. E21b *33/16*
U.S. Cl. 166—224 **1 Claim**



Apparatus for controlling the flow of fluid into a casing string as the string is being lowered in a well. A valve in the casing string permits the casing string to fill at an adjustable rate and shuts off flow at a predetermined high flow rate. Frangible means releasably connects the valve to the casing string. A two-plug cementing technique is usable with this apparatus.

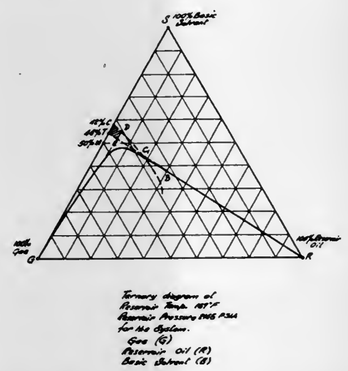
3,616,852
OIL RECOVERY PROCESS USING DILUTE ACID
Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,831
Int. Cl. E21b *43/22, 43/27*
U.S. Cl. 166—271 **2 Claims**

Recovery of hydrocarbons from a subterranean hydrocarbon-bearing calcareous formation is effected by injecting into the formation via an injection well a dilute aqueous solution of hydrochloric acid and displacing the acid through the formation by injecting an aqueous medium which may comprise dilute hydrochloric acid wherein the acid reacts with the calcareous constituents of the formation thereby generating carbon dioxide and improving the permeability and the porosity of the formation leading to the improved recovery of hydrocarbons therefrom.

3,616,853
OIL RECOVERY PROCESS USING TALL OIL ADDITIVE
Robert C. Ayers, Jr., Houston, Tex., assignor to Esso Production Research Company
Filed Mar. 2, 1970, Ser. No. 15,834
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **8 Claims**

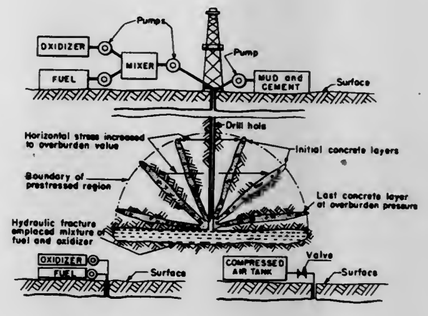
A method of recovering oil from a subterranean oil-bearing formation. An oil solvent mixture containing a polar organic solvent and a tall oil additive is injected into a well and the formation. The oil solvent mixture is displaced through the formation by a low-salinity aqueous solution which is substantially free of surface active agents. Oil which is displaced from the formation by the oil solvent mixture and low-salinity aqueous solution is recovered by means of a well penetrating the formation.

3,616,854
OIL RECOVERY PROCESS
William B. Braden, Jr., Houston, and Joseph C. Allen, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,625
Int. Cl. E21b *43/16, 43/18*
U.S. Cl. 166—274 **11 Claims**



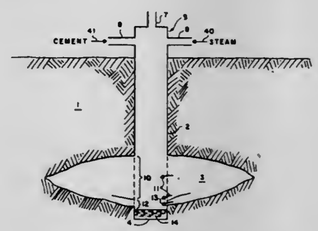
A miscible flooding process for the recovery of oil from an oil-bearing reservoir in which a gaseous hydrocarbon solvent which is gaseous at reservoir conditions and which is capable of forming a zone having no discernible phase change with the reservoir oil, is injected into the reservoir via an injection well and which is thereafter followed by the injection of a dry gas to move the previously injected gaseous hydrocarbon solvent through the reservoir thereby displacing the oil of the reservoir to a production well from which it is produced.

3,616,855
METHOD OF BULKING OR CAVING A VOLUME OF SUBSURFACE MATERIAL
Stirling A. Colgate, Socorro, N. Mex., assignor to New Mexico Tech. Research Foundation, Socorro, N. Mex.
Continuation-in-part of application Ser. No. 691,295, Dec. 18, 1967, now abandoned. This application July 23, 1970, Ser. No. 57,741
Int. Cl. E21b *43/26*
U.S. Cl. 166—283 **22 Claims**



A volume of subsurface material is bulked or caved by generating a gas pressure in the base of the volume in a time of from about 1 to about 10 seconds having an energy input sufficient to lift the overburden material to an extent such that material falls or caves and leaves a chamber having a generally hemispherical roof containing the caved material and providing an interconnected void space. The gas pressure to obtain what may be termed a quasi-static lifting of the overburden material may be generated by shock ignition of a volume-burning propellant, by flame front ignition of a volume-burning propellant, by combustion of an oxidizer and fuel delivered separately and mixed in place in the base of the volume, or by rapid delivery to the base of the volume of a previously stored gas under high pressure.

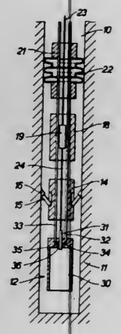
3,616,856
METHOD OF PLUGGING A WATER-PRODUCING FORMATION
Larry E. Knight, Bakersfield, Calif., and Clyde W. Perry, Kern City, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Aug. 7, 1970, Ser. No. 61,872
Int. Cl. E21b *33/138, 43/24*
U.S. Cl. 166—288 **10 Claims**



A method for selectively plugging a wellbore which produces both a hydrocarbonaceous material and water wherein a substantially gaseous material containing water vapor is injected into the wellbore and there is additionally injected a cementitious material which will not set up until reaching the producing formation or formations of the well-

bore, the cementitious material being injected in amounts sufficient to substantially plug the portion or portions of the wellbore by which the water enters.

3,616,857
GEOLOGICAL FORMATION HEATING
Robert Chalmers Pitkethly, Camberley; Denis Henry Desty, Weybridge, and Dennis Mervyn Grist, Twickenham, all of England, assignors to The British Petroleum Company Limited, London, England
Filed Aug. 26, 1969, Ser. No. 853,046
Claims priority, application Great Britain, Sept. 16, 1968, 43,936/68
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—299 3 Claims



A petroliferous geological formation in which or just below which a borehole terminates is heated by generating a series of explosion waves at the bottom of the borehole. In a preferred embodiment fuel and oxygen (air) are continuously passed into the borehole, the oxygen and fuel continuously mixed in the vicinity of the end of the borehole so as to form an explosive mixture, and the explosive mixture intermittently ignited so as to generate heat and shock waves which pass to the surrounding formation.

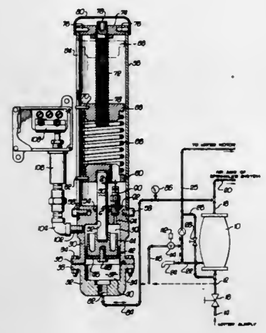
3,616,858
METHOD FOR PLUGGING GAS ZONES WITH SILICONE FOAMS
Syed H. Raza, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.
Filed Apr. 14, 1970, Ser. No. 28,943
Int. Cl. E21b *33/138*
U.S. Cl. 166—305 R 8 Claims

A special type of silicone is used as a foaming agent for plugging gas zones of oil-bearing formations. The agent is oil-soluble. It forms stable foams with light and heavy oils. It does not form stable emulsions between oil and water. The silicone is of the MQ type.

3,616,859
MAKING FOAM COMPOSITIONS FROM WATER-SOLUBLE SALTS OF UNDECYL SULFURIC ACID
Edward G. Shay, Belle Mead, and Robert W. Bender, Jersey City, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.
Filed Jan. 6, 1969, Ser. No. 789,370
Int. Cl. A62c *1/12*; A62d *1/00*
U.S. Cl. 169—1 A 5 Claims

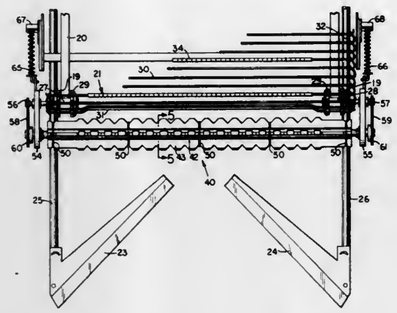
A foam-forming composition containing, as its principal active ingredient, a water-soluble salt of undecyl sulfuric acid, especially the ammonium or alkali-metal salt thereof.

3,616,860
QUICK OPENING DEVICE FOR DRY-PIPE VALVES OF AUTOMATIC SPRINKLER SYSTEMS
Charles F. Willms, Rutherford, N.J., assignor to Norris Industries, Inc., Los Angeles, Calif.
Filed Oct. 6, 1969, Ser. No. 863,985
Int. Cl. A62c *35/00*
U.S. Cl. 169—17 4 Claims



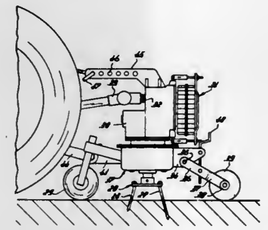
A component for automatic sprinkler systems employed for fire protection is provided which is useful in dry-pipe systems to cause rapid opening of the dry-pipe valve of such systems in response to a slight but rapid decrease of air pressure in the sprinkler piping network attendant upon opening of a sprinkler head. Slow decreases in such pressure in relation to atmospheric pressure are offset by an atmospheric bleed valve, a readily accessible adjustment for altering and visibly indicating the trip-off pressure is provided, and provision is made for either electrical or pneumatic operation.

3,616,861
PICKUP DEVICE FOR ROW-CROP HARVESTING
Thomas S. Bettencourt, Jr., Walnut Grove, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed June 30, 1969, Ser. No. 837,814
Int. Cl. A01d *17/00*
U.S. Cl. 171—101 11 Claims



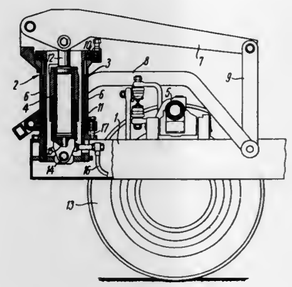
For use with a pickup device for harvesting row crops, such as tomatoes, having a below ground cutting blade followed by a continuous conveyor having a forward end lying rather close to the ground which picks up the harvested plants and carries them rearwardly and upwardly to a separation zone; an assist means lies above the forward end and has a lower surface moving rearwardly. In combination with these, the invention provides a spinner, a rotating bar with a plurality of radially extending flute-edged ridges mounted ahead of and below the forward end of the conveyor and driven at half the speed of the conveyor. Depending upon the soil conditions, the spinner may ride almost entirely above ground or with most of it below ground. After the knife severs the roots, the spinner lifts up the plant and carries it over and deposits it on top of the conveyor and beneath the assist means. In harvesting in wet soil, the spinner lifts only the plants, leaving detached fruit on the ground, picking up very little mud, and not passing mud on to the conveyor. In dry ground, the spinner may be used at a lower level to pick up the detached fruit from the ground and the fruit on the plants, as well as some loose dirt, and the spacing of the spinner relative to the conveyor is such that all dirt smaller than the fruit being harvested is returned to the soil, whereas the crop, the fruit that was loose, and dirt clods larger than fruit size are carried up the conveyor for later separation.

3,616,862
SOIL-CULTIVATING IMPLEMENTS
Ary Van Der Lely, 10, Weverskade, Maasland, Netherlands
Filed Oct. 23, 1968, Ser. No. 769,937
Claims priority, application Netherlands, Nov. 1, 1967, 6714826
Int. Cl. A01b *33/02, 29/02*
U.S. Cl. 172—47 7 Claims



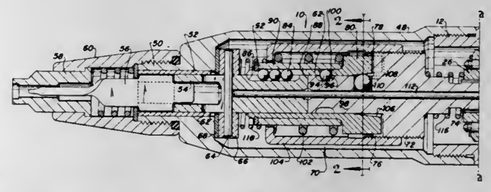
This invention relates to soil cultivating implements comprising a mobile frame and a plurality of soil-working members that are mounted in the frame so as to be rotatable about nonhorizontal axes. The soil-working members can be driven from a common shaft which extends generally transverse to the direction of travel.

3,616,863
SELF-PROPELLED CARRIER
Anatoly Karpovich Volosatov, Volgogradsky prospekt, 99, Korpus 3, kv. 39, Moscow; Georgy Viktorovich Lebedinsky, Kharkov, Sumskaya ulitsa, 9, kv. 6, Kharkov; Nikolai Sergeevich Kabakov, I Institutsky proezd, 4/2, kv. 18, Moscow; Gavriil Mikhailovich Buzenkov, Kutuzovsky prospekt, 30/32, kv. 579, Moscow; Igor Nikolaevich Serebryakov, Kharkov, Pushkinskaya ulitsa, 50/52, kv. 58, Kharkov, and Nikolai Andreevich Kitaev, ulitsa Uchinskaya, 1, kv. 47, Moscow, all of U.S.S.R.
Filed Sept. 9, 1968, Ser. No. 758,295
Int. Cl. A01b *51/00, 63/00*
U.S. Cl. 172—273 6 Claims



A carrier for moving an agricultural machine comprises a frame including front and rear portions respectively supported on wheels. A four-bar mechanism is provided for mounting and controlling the agricultural machine in working position. The four-bar mechanism includes a hollow cylindrical post which is rotatably supported on the frame. The post has an axis of rotation about which the four-bar mechanism is rotatable and the post is arranged at the front portion of the frame before the axle of the front wheels. One bar of the four-bar mechanism includes means for coupling the agricultural machine thereto and is arranged when in working position above the frame and between the axles of the front and rear wheels. The four-bar mechanism further includes bottom longitudinal bars which are pivotably connected to both the cylindrical post and to the bar coupled to the agricultural machine. There is also provided an upper longitudinal bar which is pivotably coupled to both the cylindrical post and to the bar coupled to the agricultural machine. A power cylinder is arranged inside of the hollow cylindrical post so as to be able to lift and control the mounted agricultural machine.

3,616,864
TORQUE-CONTROLLED MOTOR SHUTOFF FOR POWER TOOL
Clarence A. Sorensen, Fruitport, and Edwin J. Deremo, Spring Lake, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.
Filed Nov. 28, 1969, Ser. No. 880,663
Int. Cl. B23q *5/00*
U.S. Cl. 173—12 5 Claims

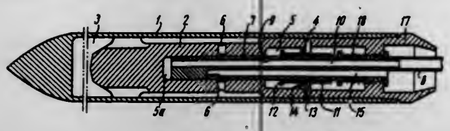


A torque-responsive shutoff mechanism for a torque-producing power tool having a valve operable to shut off the flow of motive pressure air to the tool motor. The shutoff valve includes an elongated actuating rod which is releasably held by a plurality of radially spaced balls which are operable to frictionally grip the rod diameter. The gripping ball members are forced into engagement with the rod by a driven member of a torque-sensing device interposed in the drive train of the tool. The driving and driven members of the torque-sensing device include interengaging sloped surfaces which force the members to move axially relative to each other upon reaching a predetermined resistance to rotation. The radially spaced balls contained within a conical recess in the driven member are relieved of their engaging force on the valve-actuating rod upon axial movement of the driven member whereby the shutoff valve is biased to the closed position. The driving and driven members of the torque-sensing device are biased into engagement by a variably compressible coil spring.

3,616,865
PNEUMATIC PERCUSSION DEVICE FOR MAKING HOLES IN THE GROUND BY PACKING THE LATTER
Boris Vasilievich Sudnishnikov, Krasny prospekt, 56, kv. 59; Alexandr Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 28; Konstantin Konstantinovich Tupitsyn, ulitsa Krgiova, 3, kv. 37; Vladimir Vasilievich Klimashko, ulitsa Novogodnaya, 44, kv. 23; Nikolai Prokhorovich Chepurnoi, prospekt Dzerzhinsho, 28a, kv. 53; Vladimir Maximovich Terin, Mochisechensky, spusk 38; Vladimir Dmitrievich Plavskikh, ulitsa Komenskaya, 84-v, kv. 33; Nikolai Grigorievich Nazarov, ulitsa Gogolya, 3, kv. 10, and Leonid Georgievich Rozhkov, ulitsa Sovetskaya 50, kv. 58, all of Novosibirsk, U.S.S.R.
Filed Feb. 19, 1970, Ser. No. 12,208
Claims priority, application U.S.S.R., Feb. 26, 1969, 1307966
Int. Cl. E21b *1/06*
U.S. Cl. 173—125 4 Claims

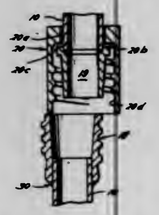
The invention consists in a pneumatic percussion device for making holes in the ground by packing the latter, com-

prising a striker accommodated in a tapered housing and adapted to deliver impacts upon the housing in the course of its reciprocation under the effect of compressed air intermittently supplied to working chambers of the device by a distributing mechanism formed by an air-supply pipe secured in



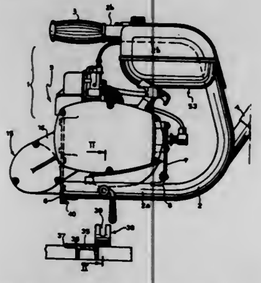
the shank portion of the housing, on which pipe there is set a movable sleeve adapted to overlap one of the inlet apertures of the pipe, and openings in the shank portion of the striker, said openings being overlapped by the pipe during the striker movement.

3,616,866
ARRANGEMENT FOR ALIGNING AND CONNECTING SECTION OF CYLINDRICAL MEMBERS
Kees M. Verheul, P. O. Box 9582, Houston, Tex., and Howard I. Lorenz, 518 Ripple Creek, Houston, Tex.
Filed July 18, 1969, Ser. No. 843,154
Int. Cl. E02d *5/28*
U.S. Cl. 173—131 **7 Claims**



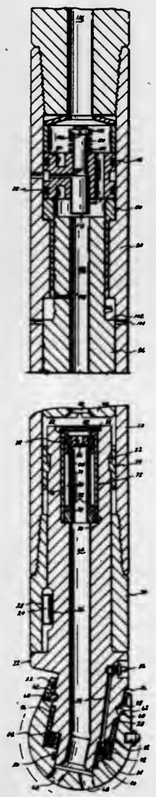
An arrangement including a connecting sleeve whereby adjacent sections of cylindrical members such as columns, casing, piling, cassions, and other cylindrical members may be readily connected together and then driven into the earth from a location on land or from a fixed structure in a water-covered area or floating structure such as a floating platform, barge, structure, or ship. The aligning and connecting sleeve enables adjacent cylindrical sections or members to be readily aligned and connected together for subsequent driving into the ground.

3,616,867
POWER UNIT FOR GARDEN APPLIANCES AND THE LIKE
Alfredo Celli, Via Senio, Forli, Italy
Filed May 14, 1970, Ser. No. 37,240
Claims priority, application Italy, May 16, 1969, Apr. 11, 1970, 51876 A/69 68229A/70
Int. Cl. B27c *3/08*
U.S. Cl. 173—163 **6 Claims**



A motor unit for driving a machine or tool such as a gardening tool has small stroke internal combustion engine mounted on a tubular frame which has provision for attachment of an extension handle—for example, when using the unit to power a lawnmower. The engine is coupled to an output shaft for power takeoff to the machine or tool by way of transmission means including a speed reducer which is selectively engageable. The tubular frame is provided with rapid attachment means for connection of the motor unit to the machine or tool to be driven.

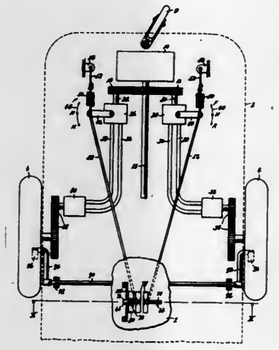
3,616,868
FLUID-ACTUATED IMPACT TOOL AND ANVIL DEVICE HAVING VARIABLE CHOKE
Grey Bassinger, Bedford, Pa., assignor to Rand Engineering Corp., San Antonio, Tex.
Filed Jan. 13, 1970, Ser. No. 2,527
Int. Cl. E21b *5/00*
U.S. Cl. 175—92 **30 Claims**



The specification discloses a fluid-operated impact-drilling device in which a hammer is reciprocally mounted in a casing and is adapted for impacting on the upper end of an anvil-bit device mounted in the end of the casing. A continuous supply of pressure medium is introduced into the casing on the opposite side of the hammer from the anvil-bit device and any valve arrangement is provided for cyclically varying the pressure acting on opposite ends of the hammer to cause the hammer to reciprocate in the casing. A particular feature of the valve arrangement is a variable choke valve mounted in the hammer end of the anvil-bit device and arranged to offer greater restriction to flow through the anvil-bit device during retracting movement of the hammer and a lesser restriction of flow during advancing movement of the hammer. The anvil-bit device may comprise a conventional bit on the outer end or it may comprise a ball-like bit

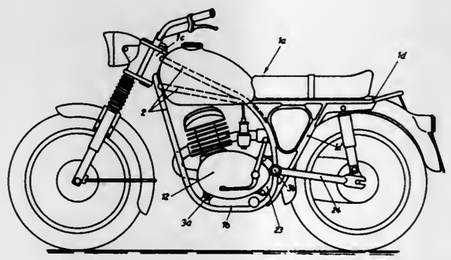
member rotatable on an inclined shaft connected to the anvil-bit device.

3,616,869
PROPULSION, STEERING, AND BRAKING SYSTEM FOR VEHICLES
Raymond J. Rilling, Moundridge, Kans., assignor to Excel Industries, Inc., Hesston, Kans.
Filed Oct. 13, 1969, Ser. No. 865,729
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **1 Claim**



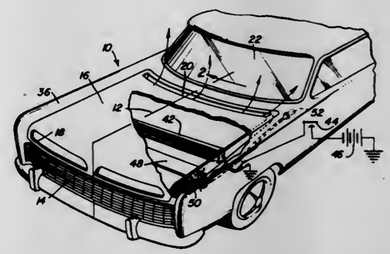
A propulsion, steering, and braking system for a vehicle having a pair of axially aligned ground-engaging wheels, said system including a prime mover, a pair of hydraulic pumps driven by said prime mover and each operable to drive a hydraulic motor to turn one of said wheels, each hydraulic pump having a control lever having a neutral position in which its delivery rate is zero and being movable selectively in opposite directions from said neutral position to cause operation of the associated motor in relatively opposite directions, manual means for moving said control levers, manually operable brake means for both of said wheels, and means operable by application of said brake means to return both of said control levers to their neutral positions.

3,616,870
SUSPENSION ARRANGEMENT FOR TWO-WHEELED MOTOR VEHICLE
Dieter Kramer, Egmating, Germany, assignor to Zundapp-Werke Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed Mar. 19, 1970, Ser. No. 21,145
Claims priority, application Germany, Apr. 24, 1969, P 19 20 750.2
Int. Cl. B60k *5/12*
U.S. Cl. 180—32 **2 Claims**



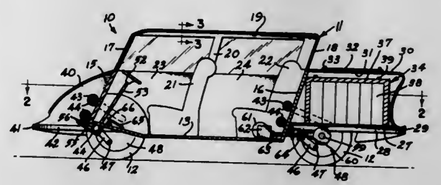
Two-wheeled motor vehicle with a motor and transmission block suspended at least at two different points of the vehicle frame, where the suspension at the rear and the points of connection of the swinging arm of the rear wheel are disposed at a common pivot axis and where a bearing pin extends through two axially spaced bearing sockets and the rearward suspension for the motor and transmission block is arranged centrally of the pin between the two sockets to the two sides of which the linking joints of the swinging arm of the rear wheel is rotatably and elastically journaled and the entire bearing means can be radially and axially stressed or tensioned.

3,616,871
VEHICLE BUG DEFLECTOR
Shannon V. West, Pensacola, Fla., assignor to J. B. Hopkins, Pensacola, Fla., a part interest
Filed Nov. 12, 1969, Ser. No. 875,666
Int. Cl. B60j *1/20;* **B60k** *11/06*
U.S. Cl. 180—54 A **4 Claims**



A flow-converging duct mounted on the underside of a vehicle hood extends completely across the top of the engine compartment to conduct an inflow of air through a screened opening located above the radiator and grill. Air at an increased velocity is discharged upwardly from the exhaust opening of the duct in front of the windshield to establish an air curtain deflecting debris and insects that would otherwise obstruct vision.

3,616,872
ELECTRIC AUTOMOBILE
Frank A. Taylor, 236 Australian Ave., Palm Beach, Fla.
Filed Aug. 11, 1969, Ser. No. 848,795
Int. Cl. B60l *11/18*
U.S. Cl. 180—65 R **3 Claims**

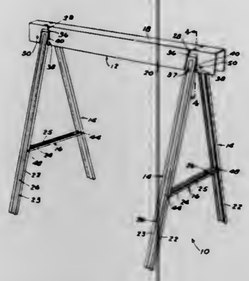


A motor vehicle driven by one or more electric motors supplied with power from a plurality of rechargeable energy cells which are permanently encased within the body structure. An auxiliary source of power is provided to recharge one of the energy cells while another energy cell is supplying power to the electric motor.

3,616,873
FOLDAWAY SAWHORSE
John Kehrig, 28151 Hall, Mount Clemens, Mich.
Filed Jan. 14, 1970, Ser. No. 2,811
Int. Cl. E04g *1/32;* **F16m** *11/00*
U.S. Cl. 182—155 **8 Claims**

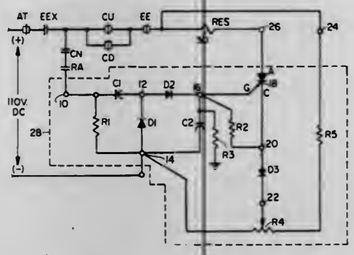
A sawhorse with an inverted U-shaped work support beam with two pairs of legs pivotally connected thereto to fold between the sides of the support beam. The legs can swing

outwardly from the collapsed or folded position to an extended position and be angularly displaced away from each other by a spreader bar between each pair of legs. Angular



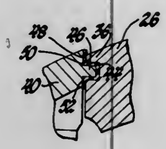
displacement of the legs urges them into firm engagement with stops which lock the legs to the beam to provide a rigid support structure.

3,616,874
CAR STOP COUNTER AND CAR RESET CIRCUIT
James H. Stichweh, Princeton, Ind., and Stephen A. Hornung, Neuilly-Sur-Seine, France, assignors to Armor Elevator Company, Inc., Milwaukee, Wis.
Filed Nov. 28, 1969, Ser. No. 880,601
Int. Cl. B66b *5/02*
U.S. Cl. 187—29 R **15 Claims**



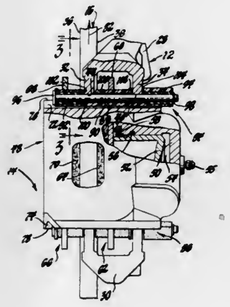
A circuit includes a charging means to sense the number of stops made by an elevator in response to car calls at which there are no passenger transfers made. After a predetermined number of such stops are made, the remaining car calls are automatically cancelled.

3,616,875
DISC BRAKE CALIPER MOUNTING ARRANGEMENT
Neil M. Lottridge, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 16, 1969, Ser. No. 866,908
Int. Cl. F16d *65/04, 55/10*
U.S. Cl. 188—73.3 **1 Claim**



A sliding brake caliper for a disc brake is mounted by means of a tongue-and-groove arrangement between the arcuately spaced ends of a nonrotatable mounting bracket so that the caliper is retained against movement radially and arcuately relative to the disc, while permitting sliding movement transversely of the disc to maintain caliper adjustment. An antirattle and antifriction plastic shim arrangement is provided between the caliper housing and the mounting bracket surfaces.

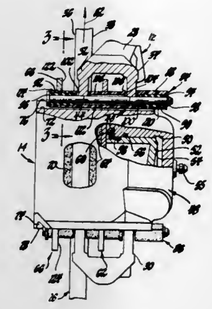
3,616,876
SLIDING CALIPER DISC BRAKE AND GUIDE AND RETENTION MEANS THEREFOR
Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 18, 1969, Ser. No. 886,217
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.3 **10 Claims**



A sliding caliper disc brake in which a stationary carrier and a caliper housing have registering grooves formed in their torque-carrying abutment faces. Guide and retention means received in the grooves act as retention keys which permit sliding movement of the caliper housing relative to the carrier member, sliding movement of the guide and retention means in relation to the carrier member and the caliper housing with abutments limiting the sliding movement relative to the carrier member, the guide and retention means also mounting the brake pad assemblies in the caliper housing for sliding movement. Each guide and retention means includes a sleeve member with a pin inserted axially through the sleeve to hold the brake assembly together. With only the sleeve member in place, the brake pad assemblies are held in the caliper housing and the caliper housing can be later installed in position on the carrier member with the brake pad assemblies in place. When the pin is inserted, the caliper housing, together with the brake pad assemblies, is retained against radial movement. The guide and retention means has a resilient shock load absorbing arrangement which permits the brake torque to be transmitted through the abutment faces while preventing radial movement and undamped torque transfer.

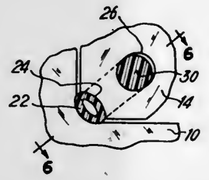
3,616,877
SLIDING CALIPER DISC BRAKE AND GUIDE AND RETENTION MEANS THEREFOR HAVING RESILIENT BUSHINGS
Richard L. Collins, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 18, 1969, Ser. No. 886,084
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.3 **4 Claims**

A sliding caliper disc brake in which a stationary carrier and a caliper housing have registering grooves formed in their torque-carrying abutment faces. Guide and retention means received in the grooves act as retention keys which permit sliding movement of the caliper housing relative to the carrier member, sliding movement of the guide and retention means in relation to the carrier member and the caliper housing with abutments limiting the sliding movement relative to the carrier member, the guide and retention means also mounting the brake pad assemblies in the caliper housing for sliding movement. Each guide and retention means includes a sleeve member with rubberlike bushings therein, and a pin inserted axially through the sleeve and the bushings to hold the brake assembly together. With only the sleeve member in place, the brake pad assemblies are held in the caliper housing and the caliper housing can be later installed in position on the carrier member with the brake pad assemblies in place. When the pin is inserted with the caliper assembly in place on the carrier, the caliper housing,



together with the brake pad assemblies, is retained against radial movement. The guide and retention means has a resilient shock load absorbing arrangement including the rubberlike-bushing means which permits the brake torque to be transmitted through the abutment faces while preventing radial movement and undamped torque transfer.

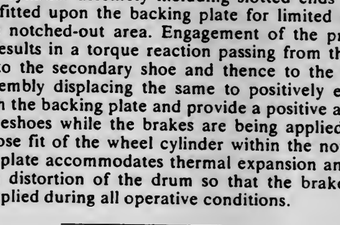
3,616,878
ANTIRATTLE SYSTEM FOR DISC BRAKE
Jean-Claude Girauldon, Ponthierry, France, assignor to Societe Anonyme D.B.A.
Filed Oct. 1, 1969, Ser. No. 862,755
Claims priority, application Frace, Oct. 3, 1968, Mar. 21, 1969, 168,641, 6908288
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.5 **3 Claims**



The following relates to an antirattle system for use in a caliper-type disc brake which restraint movement of the friction pad assemblies with respect to and in the plane of the brake disc to limit the vibrational freedom of the pads and thereby reduce or eliminate undesirable noises. The antirattel mechanism includes at least one radially resilient tubing squeezed between the fixed support and the respective pad and having at least one projection extending toward said pad parallel to the plane of the disc to affix said tubing on a bare of lining portion of the backing plate of the pads.

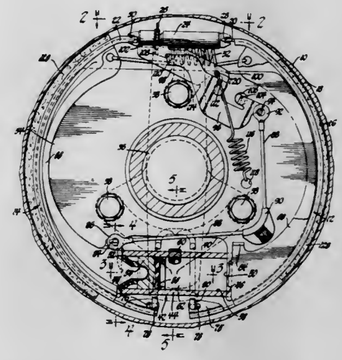
3,616,879
CALIPER HOUSING RETAINING SPRING KEY
Maurice P. Pauwels, South Bend, Ind., assignor to The Bendix Corporation
Filed Nov. 20, 1969, Ser. No. 878,475
Int. Cl. F16d *55/18, 65/00*
U.S. Cl. 188—73.6 **8 Claims**

A disc brake including a fixed support having a pair of circumferentially spaced arms defining a recess therebetween. Each of the arms has an axially extending groove formed therein which slidably receives a projecting ledge on a caliper which is slidably supported in the recess by the arms.



Removable keys are carried in the grooves that engage the caliper to retain the latter on the fixed support.

3,616,880
FLOATING ANCHOR-CYLINDER DRUM BRAKE WITH ADJUSTER
Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 20, 1970, Ser. No. 30,120
Int. Cl. F16d *51/52, 51/24*
U.S. Cl. 188—79.5 GC **4 Claims**



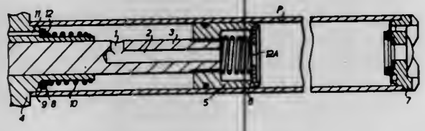
A vehicle drum brake assembly including stamped sheet metal brakeshoes comprising double web members straddling a backing plate and guided thereon during application of the brakes. The backing plate comprises a notch receiving a tubular wheel cylinder assembly including slotted ends which are loosely fitted upon the backing plate for limited movement in the notched-out area. Engagement of the primary brakeshoe results in a torque reaction passing from the primary shoe to the secondary shoe and thence to the wheel cylinder assembly displacing the same to positively engage the slots with the backing plate and provide a positive anchor for the brakeshoes while the brakes are being applied. The relatively loose fit of the wheel cylinder within the notch of the backing plate accommodates thermal expansion and any variations in distortion of the drum so that the brakes are uniformly applied during all operative conditions.

3,616,881
TRAILER TOW BAR DAMPERS
Lawrence G. Nicholls, Birmingham, England, assignor to Girling Limited
Filed Oct. 8, 1969, Ser. No. 864,802
Claims priority, application Great Britain, Oct. 14, 1968, Oct. 31, 1968, 48,603/68, 51,641/68
Int. Cl. F16f *9/49*
U.S. Cl. 188—282 **7 Claims**

The invention is an hydraulic, telescopic damper of the piston and cylinder type designed primarily for use in trailer

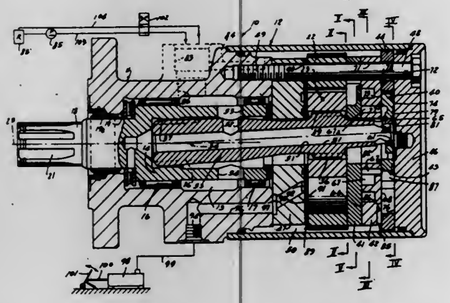
tow bar couplings of the type which includes means for applying the trailer brakes in response to trailer overrun.

Instead of the usual mechanical threshold device employed in such coupling to prevent undesired trailer brake applications, the damper itself has a purely hydraulic threshold arrangement built into it. More specifically, the piston has a one-way piston valve for permitting relatively free flow of liquid from the full bore end of the cylinder to the annulus end during damper contraction, and a piston rod port cooperating with a fixed shroud to check this flow during the



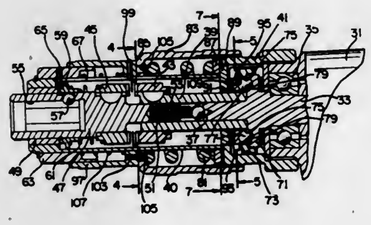
first stage of damper contraction from the fully extended (towing) condition. In this first phase, the only escape route for liquid is through a base valve at the full bore end of the cylinder. This base valve has a higher resistance to liquid flow than the piston valve, with the consequence that it creates a high threshold resistance to damper contraction. Once the piston port is uncovered, the resistance is reduced. Preferably, a permanently open control orifice is also provided to restrict the flow of liquid out of the annulus end during damper extension.

3,616,882
HYDRAULIC MOTOR-PUMP ASSEMBLY WITH BUILT-IN BRAKE
Harvey Clinton White, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio
Filed Feb. 5, 1970, Ser. No. 8,860
Int. Cl. F16d *55/12*
U.S. Cl. 192—3 R **4 Claims**



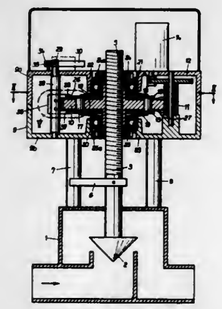
A hydraulic motor-pump assembly having an axial chamber formed therein, a pair of axially spaced stationary radial wall members within the chamber, a pair of relatively rotationally and orbitally movable gear members disposed within the chamber between the radial wall members to form expanding and contracting fluid pockets between the teeth thereof and various fluid ports and passages for directing fluid through the housing and to and from the respective fluid pockets in synchronism with the relative movement of the gear members. A work input-output shaft is connected for joint rotation to one of the gear members. A nonrotatable flexible disc-shaped braking plate is disposed within the chamber between the rotatable one of the gear members and one of said radial wall members. A fluid pressure chamber is formed behind the braking plate in said one radial wall member. A fluid passage is formed in the housing for connecting the pressure chamber to a source of pressurized fluid to selectively urge the braking plate into tight frictional gripping relation with the rotatable gear member thereby braking or locking the gear member against rotation.

3,616,883
ADJUSTABLE CLUTCH
William F. Sindelar, Towson, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed June 8, 1970, Ser. No. 44,049
Int. Cl. F16d *7/00, 43/20*
U.S. Cl. 192—56 R **14 Claims**



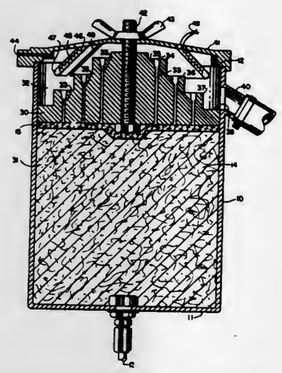
A portable-powered tool for driving screws and the like which includes a housing having a motor therein. An output rotary member is connected to the motor by a positive clutch (actuated when the tool is coupled to a workpiece) and a releasable clutch adapted to slip at a predetermined torque level. The releasable clutch adapted to slip at a predetermined torque level. The releasable clutch includes a novel construction to facilitate efficient operation and long life, and is readily adjustable by means disposed externally of the housing.

3,616,884
POWER-DRIVEN POSITIONING SYSTEM WITH INTERRUPT MEANS UPON APPLICATION OF A PREDETERMINED POSITIONING FORCE AT END POINTS OF TRAVEL, PARTICULARY FOR VALVES AND THE LIKE
Jurgen Balz, Heilbronn/Neckar, Germany, assignor to Firma Helmut Balz GmbH, Heilbronn Neckar, Germany
Filed Dec. 8, 1969, Ser. No. 882,975
Claims priority, application Germany, Sept. 11, 1969, P 19 46 043.6
Int. Cl. H01h *3/16;* **F16k** *31/04*
U.S. Cl. 192—141 **14 Claims**



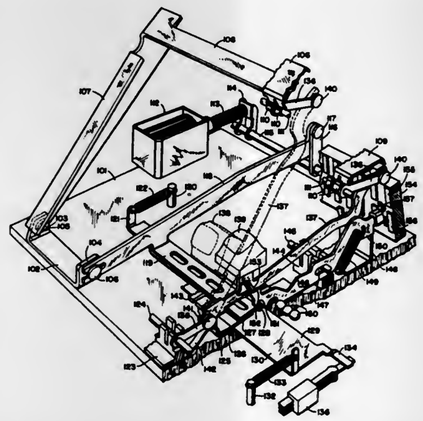
A rotatable positioning member driven, for example by a gear, from a motor, axially moves a threaded spindle. The positioning member is held between a pair of bowed disc springs, for limited axial excursion against the force of the disc springs. Wen an end position is reached, the positioning member will travel axially against one of the disc springs, thereby frictionally engaging a camming disc, concentric with the disc spring, the camming disc operating a projecting lever which moves a switch to cut power, so that terminal positions of the spindle (to which a valve stem can be connected) will be applied with force determined by bias on the spring discs.

3,616,885
OIL RECLAIMER
Glen R. Priest, 1802 Floyd, Lawton, Okla.
Filed Dec. 2, 1970, Ser. No. 94,459
Int. Cl. B01d *3/28;* **C10g** *7/00*
U.S. Cl. 196—128 **7 Claims**



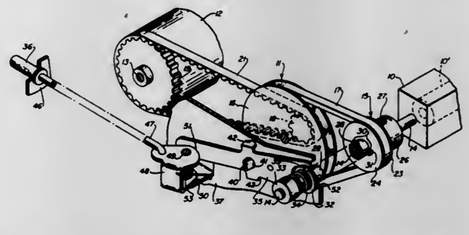
Disclosed is a device comprising a canister containing a filter and an evaporation plate. The evaporation plate is basically a truncated cone with a plurality of annular concentric flat horizontal surfaces. Oil is forced through the filter and the evaporation plate into an evaporation chamber where volatile contaminates are removed by vaporization.

3,616,886
COMPACT LOW SILHOUETTE KEYBOARD MECHANISM
Hugh St. Lawrence Dannatt, Rochester, N.Y., assignor to The Singer Company
Filed July 2, 1969, Ser. No. 838,539
Int. Cl. B41j *23/08, 7/02, 5/14*
U.S. Cl. 197—17 **26 Claims**



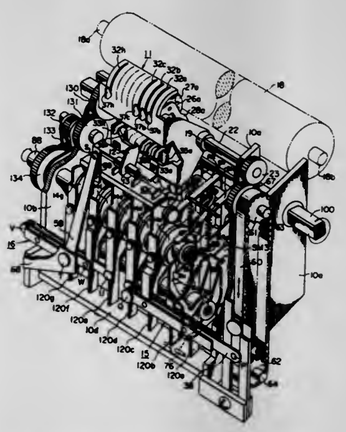
A plural key keyboard having a parallelogram four-bar linkage which provides equal key dip for all keys irrespective of row or distance from the operator. The mechanism is very compact and the components are densely packed giving minimum dimensions from front to rear and top to bottom. Access to inner components is provided by means of a swing away subassembly which includes the key buttons and immediately associated linkage. Antirepeat and interlock features are provided. Provision is made for a selective keyboard lock. All keys are locked against depression when power is disconnected.

3,616,887
MOTOR STALL OVERCOMING DEVICE IN A POWER TYPEWRITER
Larry H. Anderson, Portland, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,971
Int. Cl. B41J *23/08*
U.S. Cl. 197—17 **2 Claims**



In an electric typewriter wherein the motor is liable to become stalled if two or more mechanisms become inadvertently connected for concomitant power operation, a device is manually operable for effecting temporarily a mechanical disruption in the motor drive to allow the armature of the motor to regain full speed running momentum and torque and when said device is restored after a time interval, the said momentum and torque becomes effective on the connected mechanism for completing their started operations.

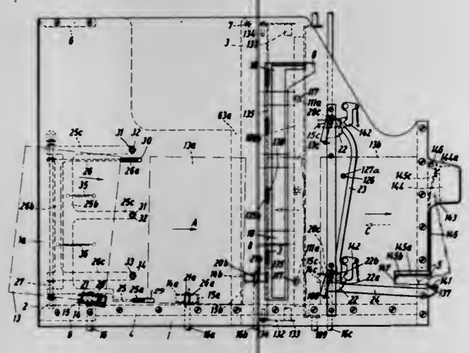
3,616,888
TYPEWRITING MECHANISM HAVING PLURAL TYPE WHEEL TYPE HEAD
Reijiro Kawano; Masatsugu Arakawa; Yoshinari Fujishima, and Yoshio Tanaka, all of Tokyo, Japan, assignors to Kurosawa Tele-communications Limited, Tokyo, Japan
Filed Sept. 3, 1968, Ser. No. 759,260
Claims priority, application Japan, Sept. 1, 1967, Sept. 1, 1967, Sept. 1, 1967, 42/56,296, 42/56,297, 42/56,298
Int. Cl. B41j *1/44*
U.S. Cl. 197—18 **2 Claims**



A typewriter mechanism which uses a plurality of type wheels with the characters thereon. The type wheels are posi-

tioned in a type wheel head which is actuated by an axial selector means and a rotation selector means. The selector means and the type wheel head are mounted on a movable carriage frame such that the type wheel heads and the selector means are positioned with respect to the typewriter platen. Each selector is operated by a separate lever mechanism which is in turn operated by electromagnet means through a connecting means. The electromagnet means are operated in accordance with a binary coded input signal.

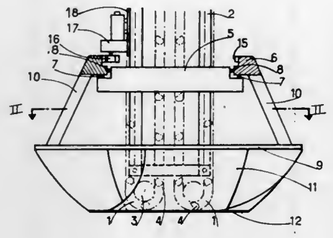
3,616,889
DEVICE FOR FEEDING VOUCHERS TO A PRINTING LOCATION IN A VOUCHER-PRINTING BOOKKEEPING MACHINE OR THE LIKE
Reinhard Kley, Ubbedissen, Germany, assignor to Anker-Werke AG, Bielefeld, Germany
Filed Dec. 1, 1967, Ser. No. 687,271
Claims priority, application Germany, Dec. 2, 1966, A 54251
Int. Cl. B41j *13/00*
U.S. Cl. 197—127 **7 Claims**



Apparatus for drawing in manually disoriented vouchers of varying dimensions to a bookkeeping machine and automatically positioning them so that they are imprintable at a location always having the same spacing from two edges thereof includes a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above a printing table, and a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher. A guide ledge is located adjacent the transfer rollers and extends in travel direction of the voucher, the transfer rollers and the pressure rollers cooperating with the guide ledge for feeding the voucher in the travel direction thereof. Also included are a device for blocking backward passing of the voucher at a location thereof above and in registry with the printing location, a sensing member sensing the presence of the voucher at the printing location, and a printing mechanism at that location. A cam-operated control mechanism is driven by a motor connected in an electric circuit having means controllable by the voucher per se for starting and stopping the motor.

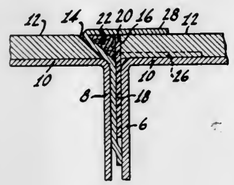
3,616,890
APPARATUS FOR ELEVATING BULK MATERIAL
Jacques Pradon, 19, Avenue de la Tourelle, Saint-Maur-Des Fosses, France
Filed Dec. 9, 1969, Ser. No. 883,446
Claims priority, application France, Dec. 13, 1968, Nov. 27, 1969, 178043, 6940871
Int. Cl. B65g *65/28*
U.S. Cl. 198—9 **4 Claims**

A bulk-material-elevating apparatus which includes an arm suspended from a lifting device, the arm at its lower end having a rotatable element carrying blades which in operation



will deliver material radially inwardly to the foot of an elevator carried by the arm.

3,616,891
SAFETY DEVICE FOR MOVING STAIRWAYS
Henry Leonard Earle, 18 Colgate Road, Maplewood, N.J.
Filed Aug. 6, 1970, Ser. No. 61,651
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 **3 Claims**

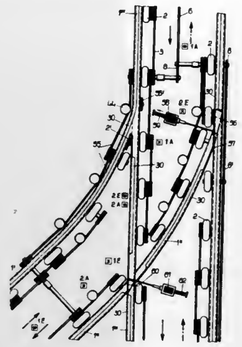


In a moving stairway of the type having steps with treads which are provided with relatively thick and wide longitudinally extending cleats with the front ends of the cleats being perpendicular to the plane of the tread and the rear ends of the cleats being disposed at acute angles to the plane of the tread, thus leaving a hazardous space shaped like a triangular prism between corresponding cleats on adjacent treads when the steps are at the same height, the improvement comprising nosepieces of compressible resilient material, having shapes like that of said spaces, affixed to the front ends of said cleats and means covering the nosepieces for preventing the nosepieces from being ripped away from the cleats when the stairway is in operation.

3,616,892
RAIL SWITCHES FOR PALLET CONVEYOR SYSTEMS
Wolfgang Koennecke, bad Homburg Vor-der Hohe, and Reinhold Strickler, Frankfurt am Main, both of Germany, assignors to Flughafen Frankfurt am Main Aktiengesellschaft, Flughafen, Frankfurt am Main, Germany
Filed July 25, 1969, Ser. No. 844,764
Claims priority, application Germany, Aug. 1, 1968, P 17 56 914.1
Int. Cl. B65g *37/00*
U.S. Cl. 198—78 **5 Claims**

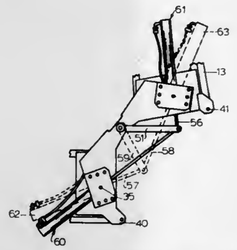
A switching mechanism for conveyors of the type wherein a pair of parallel rails guides a series of pallets supported and

moved on a series of fixed-axis wheels includes movable guide tongues for diverting a pallet on to a side track or vice



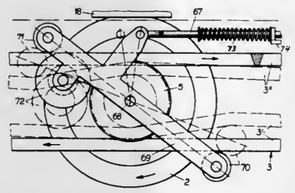
versa. The rails may also be slightly displaced at the switch to facilitate transfer from track to track.

3,616,893
MOBILE HYDRAULICALLY FOLDABLE CONVEYOR
Orlin L. Knadle, and August W. Ollerich, Jr., both of Sioux Falls, S. Dak., assignors to Athey Products Corporation, Raleigh, N.C.
Filed Apr. 3, 1969, Ser. No. 813,152
Int. Cl. B65g *21/12*
U.S. Cl. 198—115 **1 Claim**



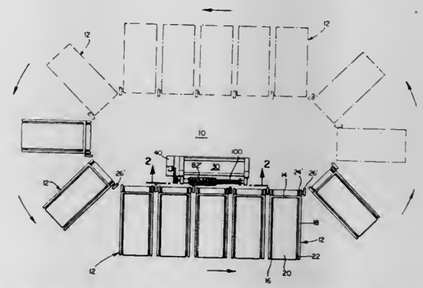
A mobile folding conveyor has a main central section and a pair of pivotally mounted, completely foldable, end sections each of which is positioned through independently movable cylinder rod and arm linkages by remotely controlled double acting hydraulic cylinders.

3,616,894
ACCUMULATION SECTION FOR A CONVEYOR
Wolfgang Koennecke, Bad Homburg Vor-der Hoke, and Reinhold Stricker, Frankfurt am Main, both of Germany, assignors to Flughafen Frankfurt am Main Aktiengesellschaft Flughafen, Frankfurt am Main, Germany
Filed July 25, 1969, Ser. No. 844,792
Claims priority, application Germany, Aug. 1, 1968, P 17 56 915.2
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **6 Claims**



The invention relates to a conveyor system in which a series of pallets are moved on rails by means of individual driving wheels spaced along the track for frictional engagement with the underside of the pallets; a lever system is used to engage the individual wheels with a common belt drive power source or to brake the individual wheels when not being driven.

3,616,895
CONVEYOR BELT INDEXING MECHANISM
Roy F. LoPresti, Chicago, Ill.; Milan Vojtek, Elmhurst, N.Y., and Edwin A. Peterson, Manhasset, N.Y., assignors to United Parcel Service General Services Co., New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,915
Int. Cl. B65g *15/00*
U.S. Cl. 198—185 **21 Claims**

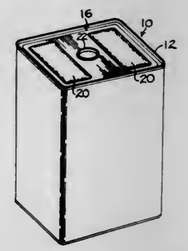


A mechanism for indexing conveyor belts in boxes of carousel-type cargo carriers, comprising a driven shaft slidably and rotatably mounting a resilient-surfaced drive member, which drive member is biased for sliding movement toward one end of the shaft. The drive member, in cross section, has a substantially circular segment of circumference, and at least one substantially flat such segment.

ERRATUM

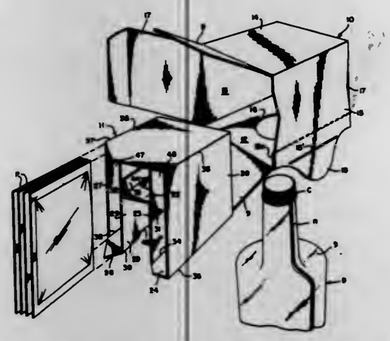
For Class 204—196 see:
Patent No. 3,617,101

3,616,896
COOLING SYSTEM PACKAGE
Frederic D. Barton, 47736 Ahuimanu Loop, Kaneohe, Hawaii
Filed July 15, 1969, Ser. No. 841,788
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 R **1 Claim**



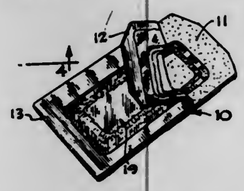
A cooling system package is disclosed comprising a first container of antifreeze liquid and a separate second container of stop leak material, said second container comprising a body of flexible sheet material having a center portion provided with a central aperture and two envelopes spaced apart on opposite sides of said aperture, said envelopes containing said stop leak material and in sufficient quantity for admixture with the amount of antifreeze liquid in said first container, and means for affixing said second container to the top of said first container to maintain them together during shipment and storage so that they may be admixed in a cooling system at the point of use.

3,616,897
BOTTLE MOUNTABLE POUCH CONTAINER
George Vrana, Flushing, N.Y., assignor to Riegel Paper Corporation, New York, N.Y.
Filed Sept. 24, 1969, Ser. No. 860,731
Int. Cl. B65d 79/00, 5/48
U.S. Cl. 206—47 R 5 Claims



The disclosed invention relates to the packaging of envelopes or pouches of premeasured portions of condiments, mixes, and the like in cartons mountable on the necks of bottles. Specifically, the completed container of the invention includes an outer paperboard carton and an inner divider structure. The carton and divider are arranged to accommodate the insertion of a narrow neck of a bottle into the carton through an aperture in its bottom wall. The divider includes discrete elements which grippingly engage the inserted bottle neck. Both the divider and the carton may be quickly erected from flat folded form for filling with pouches and mounting on bottles intended for open display.

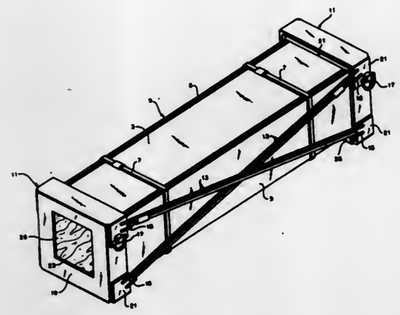
3,616,898
PEELABLE SEAL PACKAGE
Adrian B. Massie, Williamsville, N.Y., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Sept. 8, 1969, Ser. No. 855,890
Int. Cl. B65d 83/00, 85/70, 65/14
U.S. Cl. 206—56 AA 6 Claims



A package having a peelable seal and constructed of a pair of superimposed sheets or films heat-sealed to one another around their edges. In its preferred embodiment, the film comprises a composite formed of a polyolefin, such as a low-density polyethylene, laminated to an ionomer film which is in turn sealed to a paperboard. The invention includes a temperature-sensitive ink, printed in the heat seal area, the activation temperature of the ink being selected in the lower portion of the sealing temperature range so that upon sealing, the color change will indicate the integrity of the package heat seal. The invention is particularly useful for sterile pharmaceutical packages in order to visibly indicate effective seals.

3,616,899
PACKAGING STRUCTURE
Paul Blackman, 7252 Hanford St., Philadelphia, Pa.
Filed Sept. 9, 1969, Ser. No. 856,412
Int. Cl. B65d 85/46
U.S. Cl. 206—60 R 1 Claim

Subject disclosure relates to novel and improved apparatus for handling, shipping and storing elongated flat rectangular modular sections of an aircraft landing mat. The improved apparatus includes a pair of frame members that fit over opposite ends of a stacked bundle of aircraft mat sections and a plurality of high-carbon steel straps that extend between the

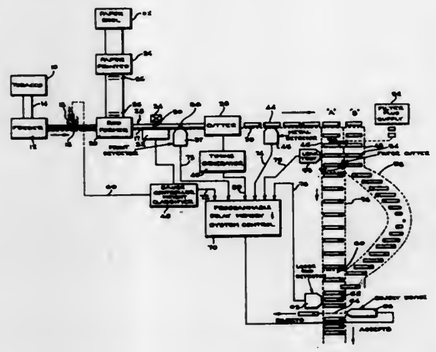


opposed frame members and maintain the frame members in place on the ends of the bundle. The frame members include unique integral receptacles for skids for the stacked mat sections.

3,616,900
METHOD FOR BLEACHING GRAY KAOLIN CLAY
Tom A. Cecil, Highland Park, N.J., and Daniel A. Jacobs, Macon, Ga., assignors to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.
Continuation-in-part of application Ser. No. 690,423, Dec. 14, 1967, now abandoned. This application July 9, 1969, Ser. No. 840,505
Int. Cl. B03b 7/00; C09c 1/42
U.S. Cl. 209—1 10 Claims

Sedimentary gray kaolin clay containing relatively large amounts of iron and organic impurities is bleached by dispersing finely divided bubbles of ozone gas into a fluid, aqueous slip of the clay. The slip is acidified, flocculated, filtered and washed.

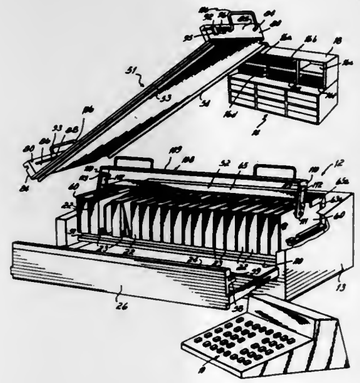
3,616,901
ARTICLE-CLASSIFYING SYSTEM AND METHOD
Charles Richard Groves, Worthington, Ohio, assignor to Industrial Nucleonics Corporation
Filed Mar. 23, 1970, Ser. No. 21,929
Int. Cl. B07c 5/02
U.S. Cl. 209—74 21 Claims



Articles, such as cigarettes, are moved successively down a prescribed path past sensing and operating stations. Each article is categorized and the category, such as reject, is recorded in a respective memory cell of an addressable

memory according to a memory-addressing signal formed as the difference between a counter signal and the address signal of the respective sensing station. When the article reaches the operating station, the recorded signal is read out from the respective memory cell by addressing it with a memory address signal formed as the difference between the counter signal and the address signal of the operating station. The readout signal is utilized to operate upon the article, as to reject a faulty cigarette from the path.

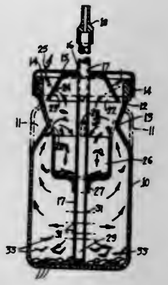
3,616,902
CARD STORAGE TRANSFER AND POSITIONING DEVICE FOR USE IN CONJUNCTION WITH CARD RETRIEVAL APPARATUS
Robert D. Parry, deceased, late of Cincinnati, Ohio (by Margaret G. Parry, executrix), assignor to O.K. Partnership, Cincinnati, Ohio
Filed May 16, 1969, Ser. No. 826,090
Int. Cl. B07c 1/20
U.S. Cl. 209—80.5 12 Claims



An accessory device for increasing the effective card storage capacity of retrieval systems in which edge-notched coded cards are randomly stored in face-to-face upstanding relation on a platen in a card selector apparatus. The accessory device includes a two-piece card tray having a substantially planar bottom panel against which the code-notched edges of the cards rest when stored face-to-face in a vertical disposition, and a retaining structure at least partially surrounding the upstanding cards. The retaining structure is positionable between engaged and disengaged positions relative to the bottom panel, thereby facilitating transfer of the cards between the tray and the selector. The retaining structure, when engaged with the bottom panel, cooperates therewith to store the cards in the tray. Alternatively, and when the retaining structure is in the course of being positioned between its engaged and disengaged positions relative to the panel, the retaining structure functions to transfer the cards between a position of support on the bottom panel and a position of support in the card selector.

3,616,903
BIRD SEED CLEANING DEVICE
Edward L. Cicero, 52-62 66th St., Maspeth, N.Y.
Filed May 12, 1969, Ser. No. 823,691
Int. Cl. B07b 7/00
U.S. Cl. 209—139 R 10 Claims

A portable apparatus for removing the expended husks from bird seed mixtures after the bird has shelled the seeds and left the husks among the seeds includes a receptacle, a perforate detachable cover having a perforate deflector extending downwardly into the receptacle, air supply means extending through the cover into the receptacle and a husk receiving chamber in the receptacle. The airstream agitates the mixture in the receptacle and floats the husks upwardly



for collection in the husk receiver while the air exhausts through the cover.

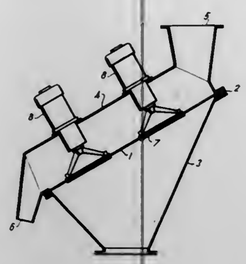
3,616,904
APPARATUS FOR TREATING DISCRETE MATERIALS
Toivo Ensio Aremaa, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Continuation-in-part of application Ser. No. 360,891, Apr. 20, 1964, now abandoned. This application June 11, 1968, Ser. No. 753,797
Int. Cl. B07b 1/28
U.S. Cl. 209—269 2 Claims

Apparatus for treating particulate material. Particles fed into a closed vessel are screened through a filter vibrating at a high frequency in a plane deviating substantially from the plane of the filter surface. Since the system is closed, a controlled overpressure can be maintained on the input side of the filter to drive particles through the filter. Different outlets are provided for material which passes through the filter and material which does not.

3,616,905
ARRANGEMENT FOR CLASSIFYING OF LIQUID SUSPENSIONS AND OF SOLID MATERIALS
Ladislav Kristek; Antonin Svizela, and Ivo Hampl, all of Prerov, Czechoslovakia, assignors to Prerovske strojirny, narodni podnik, Prerov, Czechoslovakia
Filed Feb. 26, 1969, Ser. No. 802,567
Claims priority, application Czechoslovakia, Feb. 26, 1968, 1445/68
Int. Cl. B07b 1/28
U.S. Cl. 209—310 5 Claims

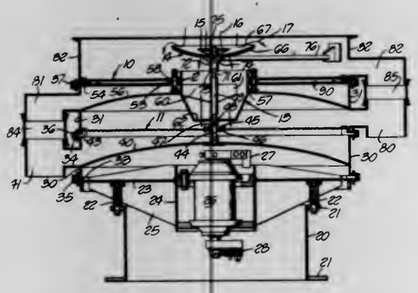
Liquid suspensions and solid material are classified by means of a vibrating screen, to which vibrations are transmitted by at least one vibration exciter, engaging and encom-

passing the screen within a part of its surface area. Damping of oscillations due to the treated material resting on the



screen is thus substantially reduced, resulting in an increased efficiency in classification.

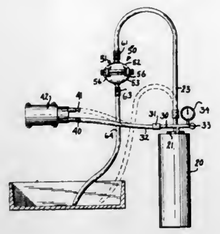
3,616,906
SCREEN SUPPORT
John P. Miller, Garden Grove, and Malcolm D. Maxsted, Torrance, both of Calif., assignors to Sweco, Inc., Los Angeles, Calif.
Filed July 11, 1969, Ser. No. 840,914
Int. Cl. B07b *1/36*
U.S. Cl. 209—403 **8 Claims**



There is disclosed herein a screen support for the screen of a vibratory separator. An embodiment is disclosed with respect to a typical screen used in vibratory separators and including an outer tension ring, an inner tension ring and screen cloth of a desired mesh stretched between these tension rings. The present screen support includes a plurality of radially disposed member, or radiating spokes, coupled between the inner and outer tension rings. These members may be made adjustable, and the ends thereof preferably are essentially hingeably mounted with respect to the tension rings rather than being rigidly coupled thereto. The screen support is particularly useful for fine mesh screens which normally are prone to breakage because of large unsupported areas thereof. Additionally, the support eliminates secondary vibrations in the screen.

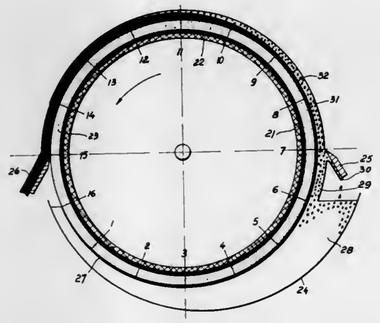
3,616,907
DEEP FRY OIL-FILTERING UNIT, METHOD AND APPARATUS
Robert D. Van Vleet, 931 Willsie, Rapid City, S. Dak.
Filed Mar. 9, 1970, Ser. No. 17,469
Int. Cl. B01d *37/00*
U.S. Cl. 210—65 **6 Claims**

A holding tank having one end of a length of flexible tubing connected to a hot oil port with the other end connected to the inlet of a filter housing or positionable in communication with the hot oil in a deep frying unit, and an air pump having an air inlet and an air outlet with a length of flexible conduit connected between one of said inlet and said outlet and an airport in the holding tank. The entire filtering unit



further being mounted in a wheeled housing for storage and easy access to any deep fryer.

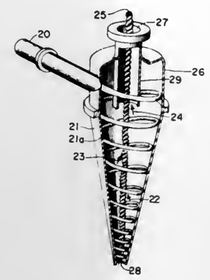
3,616,908
ROTARY FILTERING DEVICE AND PROCESS OF OPERATING SAME
Karl Rokitansky, and Guenther Solt, both of Vienna, Austria, assignors to Vogelbusch Gesellschaft mbH, Vienna, Austria
Filed Oct. 9, 1969, Ser. No. 865,016
Claims priority, application Austria, Oct. 16, 1968, A 10,119/68
Int. Cl. B01d *25/38*
U.S. Cl. 210—67 **16 Claims**



A rotary drum filter having a filter aid layer on its filter surface is provided with an adjustable scraper at the line of discharge of the filter cake and with an adjustable stripper adjacent the line of wet filter cake formation as the filter cake emerges from the slurry tank. The scraper is automatically advanced toward the drum to progressively remove the filter cake with portions of the filter aid layer as the drum rotates and the stripper also is either manually or automatically advanced toward the drum to maintain a substantially constant thickness of filter cake on the layer of filter aid as the thickness of that layer progressively decreases.

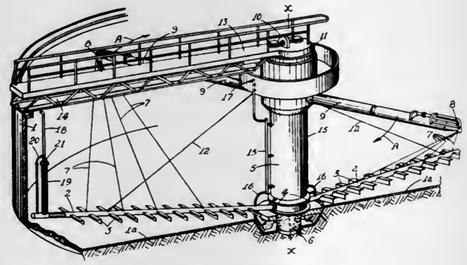
3,616,909
CONTINUOUS HIGH TEMPERATURE PROCESS FOR RECLAIMING REUSABLE FRYING FATS
Erlend R. Lowrey, Greenhills, and Robert O. Schmitt, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 14, 1969, Ser. No. 876,644
Int. Cl. B01d *21/26*
U.S. Cl. 210—73 **15 Claims**

A continuous process for reclaiming reusable frying fat, which prior to reclamation, is contaminated with solid particles of food material, said process comprising, tangentially introducing a flow of contaminated frying fat into a cylindroconical shaped separating zone wherein said fat is subjected to vortical forces and separated into an outer-con-



taminated portion and an inner contamination-free portion which is reclaimed and reused.

3,616,910
SETTLING APPARATUS AND METHOD OF CONTROLLING THE OUTPUT THEREOF
Michael R. Gericke, Berea, Republic of South Africa, assignor to Union Corporation Limited
Filed Nov. 20, 1969, Ser. No. 878,557
Claims priority, application Great Britain, Nov. 26, 1968, 55,991/68
Int. Cl. B01d *21/18*
U.S. Cl. 210—83 **4 Claims**

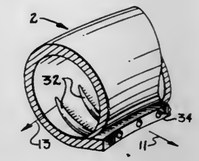


A method of controlling the output of settling apparatus of the type comprising a settling tank; and raking gear which is operable in the settling tank and whose vertical operating position in the tank is variable, which is characterized by the step of adjusting the buoyancy of at least part of the raking gear submerged in fluid in the settling tank, such as by varying the amount and/or kind of a flowable medium in a hollow and fluidtight tubular raking blade carrier arm.

Also settling apparatus of the type specified which is characterized by means for introducing fluid into and withdrawing fluid from a hollow, fluidtight chamber presented by the raking gear.

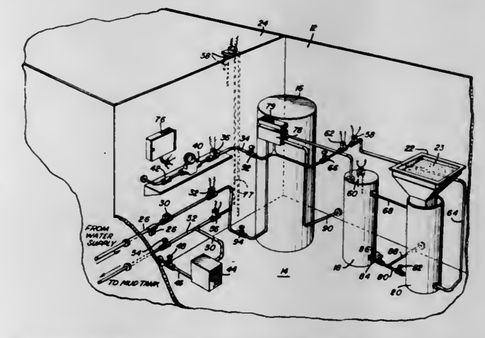
3,616,911
A PROCESS FOR REMOVING SOLID PARTICLES FROM A LIQUID
Sergio E. Rodriguez, Woodland Hills, and Walter Unterberg, Sherman Oaks, both of Calif., assignors to North American Rockwell Corporation
Continuation-in-part of application Ser. No. 750,797, Aug. 7, 1968, now abandoned. This application Jan. 19, 1970, Ser. No. 4,019
Int. Cl. B01d *21/00*
U.S. Cl. 210—84 **4 Claims**

A separating process for removing said particles dispersed in a liquid by moving said liquid through a curved conduit wherein said conduit has lateral outflow ports for effectively



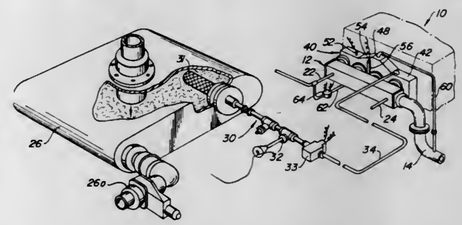
removing the dispersed particles from the liquid.

3,616,912
WATER-SOFTENING SYSTEM FOR WELL-DRILLING UNITS
Dexter E. Bruton, Oklahoma City, Okla., assignor to Southwest Factories, Inc.
Filed Jan. 31, 1969, Ser. No. 795,433
Int. Cl. B01d *29/38*
U.S. Cl. 210—89 **3 Claims**



A system for supplying a continuous flow of calcium-free water especially for use in oil-well-drilling operations that is portable in nature and is self-contained for automatic regeneration and structurally includes a storage tank for calcium-free water, a water softener unit, a brine storage tank for regenerating the water-softening materials, a brine maker tank, a bulk salt hopper, a piping system, pumps and controls for rendering the operation of the water softener automatic and also the regeneration of the water softener automatic to provide a continuous flow of calcium-free water for whatever purposes desired.

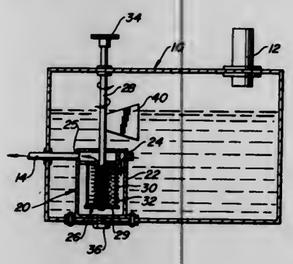
3,616,913
APPARATUS AND METHOD FOR WASTE DISPOSAL
James Sims Reid, Hudson, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 781,141, Dec. 4, 1968. This application June 17, 1970, Ser. No. 47,020
Int. Cl. B01d *21/24*
U.S. Cl. 210—104 **7 Claims**



An improved waste disposal apparatus and method in which a boiler unit is positioned between the block of an en-

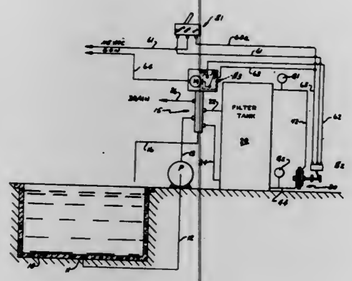
gine and the exhaust manifold, with passages in the boiler unit through which the hot gases pass, thereby heating and vaporizing liquid waste material in the boiler. Air is supplied to the boiler to provide excess free oxygen for burning and consuming organic solids. The air also sweeps the boiler free of ash.

3,616,914
SELF-CLEANING FILTER SYSTEM
James S. Reid, Hudson, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Filed Aug. 12, 1969, Ser. No. 849,356
Int. Cl. B01d *29/38*
U.S. Cl. 210—107 12 Claims



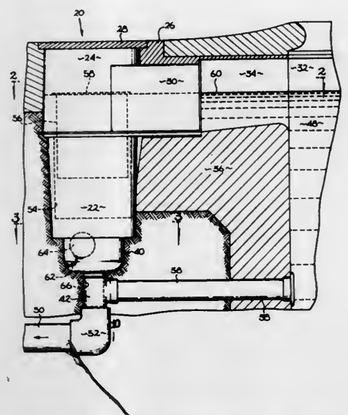
A self-cleaning filtering system for a mobile waste disposal system in which the filter has cleaning blades which are automatically actuated to clean accumulated solids from the surfaces of the filter. The cleaning action may be actuated either by the motion of the vehicle or by movement of the liquid into, out of or within the waste tank.

3,616,915
AUTOMATIC FILTER CONTROL
Robert A. Whitlock, Rockford, Ill., assignor to Aquamatic Inc., Rockford, Ill.
Filed May 15, 1969, Ser. No. 824,873
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 6 Claims



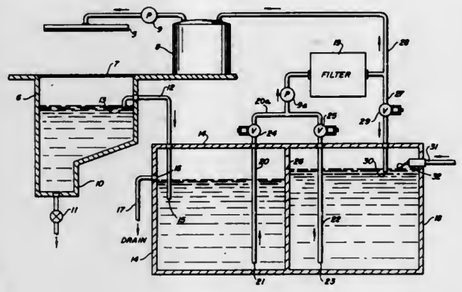
A filter tank is provided for filtering the water from a swimming pool which is circulated by a pump. A valve is movable between a filtering position and a backwash position in which the flow through the tank is reversed to clean the filter. An electric motor and a hydraulic actuator are disclosed as prime movers for the valve. A control senses the pressure on both sides of the filter and actuates the primer mover when a preselected pressure differential is reached. A hydraulic timing means is associated with the control to time the backwash. The valve is a multiport valve built up of two pair of individually molded plastic members. Each member is arranged to interfit with an adjacent member and provide a valve seat at the juncture.

3,616,916
ANTIAIRLOCK EQUALIZER DEVICE
Nat Greene, Los Angeles, Calif., assignor to American Concrete Products Co., Los Angeles, Calif.
Filed Oct. 13, 1969, Ser. No. 865,571
Int. Cl. B01d *35/28*
U.S. Cl. 210—121 7 Claims



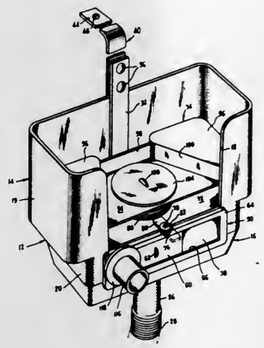
An automatic skimmer system for a swimming pool comprising an antiairlock equalizer valve capable of preventing airlock of a fluid pump, and of varying fluid flow from the recirculating pool drain, a trimmer valve formed of several adjustable vanes to vary volume of flow through the skimmer before encountering the equalizer valve, and a self-aligning float ball to close off the skimmer passage when and if the fluid level of the pool is below that of the throat of the skimmer.

3,616,917
LIQUID RECLAMATION SYSTEM
John A. Hellwege, 1088 Parkleigh Road, Columbus, Ohio
Filed May 15, 1969, Ser. No. 824,990
Int. Cl. B01d *35/02*
U.S. Cl. 210—167 2 Claims



A system for the reclamation of liquid used in various cleaning operations which comprises a plurality of settling and decanting tanks and a filter so arranged as to cause removal of contaminating solids by precipitation, or sedimentation and by filtration, and removal of relatively lighter weight solid and liquid contaminants of overflow decantation.

3,616,918
WALL-SUPPORTED SKIMMER FOR SWIMMING POOLS AND THE LIKE
Joseph Diemond, Simsbury; Melvin Y. Gershman, West Hartford, and Fred A. Ravreby, Framingham, all of Mass., assignors to Coleco Industries, Inc., Hartford, Conn.
Continuation-in-part of application Ser. No. 797,396, Feb. 7, 1969, now Patent No. 3,508,661. This application Apr. 30, 1970, Ser. No. 33,213 The portion of the term of the patent subsequent to April 28, 1987, has been disclaimed
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 10 Claims



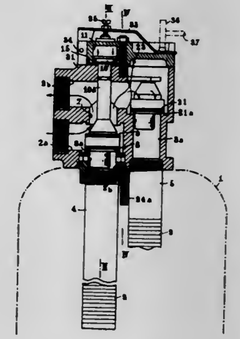
The housing of a skimmer for mounting on the sidewall of a swimming pool has a flow passage thereinto and a discharge flow outlet therefrom. A float member rises and falls with the water level and provides a conduit into the lower portion of the housing so that matter may be skimmed from near the surface and carried into the housing. A passageway bypassing the float member may be controlled to adjust the rate of waterflow therethrough, and appropriate means for supporting the skimmer on the pool sidewall is provided.

3,616,919
WATER PURIFIER
Henry A. Feddern, and John A. Sabol, both of Yonkers, N.Y., assignors to Precision Valve Corporation, Yonkers, N.Y.
Filed Mar. 26, 1969, Ser. No. 818,180
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 6 Claims



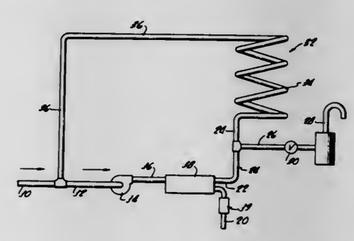
A device for treatment of aquarium water provides for water circulation and aeration and provides for removal of organic matter by capturing particles of organic matter on the surface of rising air bubbles. The bubbles form a foam which is discarded.

3,616,920
WATER SOFTENER VALVE DEVICE
Jean Cambot, Palaiseau(Essonne), France, assignor to Sapir S.A., Bienne, Switzerland
Filed July 16, 1969, Ser. No. 842,222
Claims priority, application Switzerland, July 26, 1968, 11263/68
Int. Cl. B01d *23/26*
U.S. Cl. 210—190 6 Claims



A valve device adapted to be associated with the reservoir of a water softener operating according to the ion exchange resin method, this device, comprising two ducts, namely an inlet duct for the water to be treated and a treated-water outlet duct interconnected by a bypass controlled by a reversing valve responsive to a control piston. The operation of this device is controlled by means of two valves adapted to be actuated by any suitable mechanism for simultaneously moving said valves either to their closed position or to their open position, said valves being inserted in two branch lines extending from said inlet duct respectively upstream and downstream of said reversing valve, and leading the first one to the chamber containing the piston controlling said reversing valve, and the other one to a drain duct. A third branch line is provided between said outlet duct and an orifice opening into said reservoir for delivering rinsing water thereto, and a product for regenerating the treatment resins when both control valves are in their closed position, whereby the direction of flow in said reservoir is reversed.

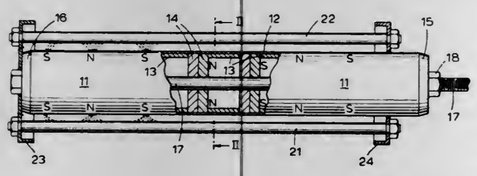
3,616,921
WATER PURIFICATION AND STORAGE APPARATUS
Donald T. Bray, 732 Elder Pl., Escondido, Calif.
Filed Oct. 8, 1969, Ser. No. 864,764
Int. Cl. B01d *31/00*
U.S. Cl. 210—195 8 Claims



A water purification system employs a reverse osmosis water purification unit whose purified water output is temporarily stored by introduction into one end of an elongated

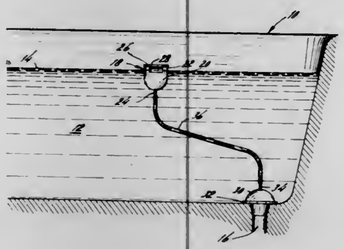
conduit, for example a long pipe. The other end of the elongated conduit is connected to a line supplying impure feed water under pressure to a pump which raises the feed water pressure for introduction into the reverse osmosis unit. The purified water stored in the elongated conduit is maintained under pressure by reason of its connection to the pressurized feed water supply line, and is available for use from a connection made to that end connected to the purification unit output. Mixing or intermingling of the feed water and purified water is restricted essentially to that resulting from diffusion, and is therefore small. Alternative conduits which can serve for product water storage container include a series of interconnected elongated tanks or pipes, a tank containing a separator to divide its interior into a number of flow channels and a tank containing packing, for example, raschig rings, broken tile, or inert powder or granules.

3,616,922
MAGNETIC FILTER
Arthur George Turnock, Hockley, England, assignor to Electromagnets Limited, Birmingham, England
Filed June 11, 1969, Ser. No. 832,245
Claims priority, application Great Britain, June 29, 1968, 31192/68
Int. Cl. B01d *35/06*
U.S. Cl. 210—222 **5 Claims**



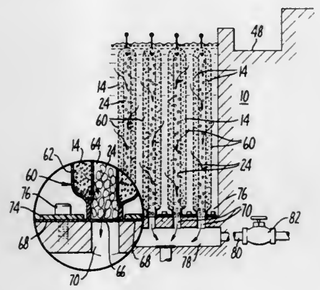
The invention provides a magnetic filter for removing magnetic particles from a fluid flowing past the filter. Regions of locally intensified magnetic field are formed by an elongated magnet member having a series of alternate North and South poles and at least one elongated intensification member of ferromagnetic material placed a short distance from the magnet member. The magnet member itself is removable from a support in such a way that collected magnetic particles remain on the unmagnetized support, to facilitate cleaning of the filter.

3,616,923
BATHTUB SKIMMER
Ernest K. Haley, 134 Northwestern Parkway, Louisville, Ky.
Filed June 25, 1970, Ser. No. 49,805
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **7 Claims**



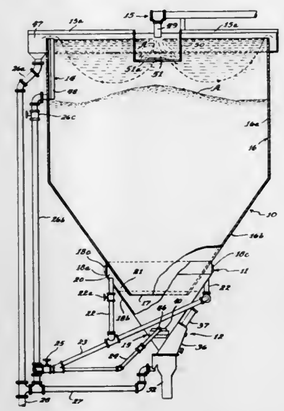
A bathtub skimmer to collect and remove floating material from the bath liquid surface, including a skimmer float balanced to ride in the liquid and having surface skimming openings partially submerged in the liquid and open to an interior float collecting chamber, a bathtub drain connection cup, and a flexible tube interconnecting the float and connection cup, operable to discharge collected material into the drain.

3,616,924
FILTER APPARATUS
Kenneth L. Sanborn, Walnut Creek, Calif., assignor to B. D. Bohna & Co., San Francisco, Calif.
Continuation of application Ser. No. 721,240, Apr. 15, 1968, now abandoned. This application July 30, 1970, Ser. No. 64,115
Int. Cl. B01d *23/12, 23/16*
U.S. Cl. 210—284 **2 Claims**



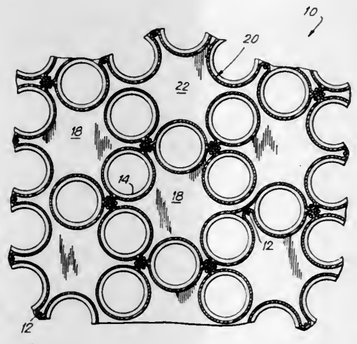
The filter employs a mass of finely divided particulate matter, such as sand, as the filtering medium. Longitudinally extending channels are formed in the filter bed so as to divide it into a plurality of relatively narrow segments and the liquid to be filtered enters into the filtering segments from the channels. In a modified form of the invention drainage channels are also provided intermediate the feed channels so that the liquid to be filtered passes from the feed channels, through filter segments of substantially uniform thickness and then out the drainage channels.

3,616,925
APPARATUS FOR DEWATERING GRANULAR MATERIAL
Edgar B. Tolman, Winnetka, Ill., assignor to United Conveyor Corporation
Filed Mar. 19, 1969, Ser. No. 808,427
Int. Cl. B01d *21/02*
U.S. Cl. 210—311 **16 Claims**



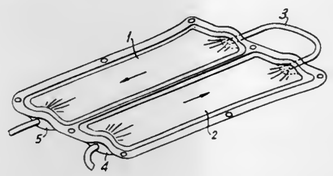
Apparatus for separating granular material from water in which it has been carried, as in a hydraulic conveyor or the like, said apparatus including a hopper to receive material laden water, said hopper having an open bottom of substantial area, dewatering means surrounding the lower end portion of the hopper which is so constructed that the hydrostatic pressure of water in the hopper causes water to flow around the bottom edge of the hopper, through material arresting screens, and through overflow water outlets in the dewatering means, and granular material discharge means below the hopper and the dewatering means for removing dewatered material from the hopper through an outlet opening. Auxiliary external dewatering units are located adjacent the outlet opening, and in the top of the hopper is means for discharging water from above the level of material in the hopper. The apparatus is especially constructed to handle bottom furnace ash from a high capacity coal fired steam boiler, but may also be used for gravel or the like.

3,616,926
TUBULAR DIALYSIS FILTRATION APPARATUS
Eric S. Lichtenstein, 24 East 93rd St., New York, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,967
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 **12 Claims**



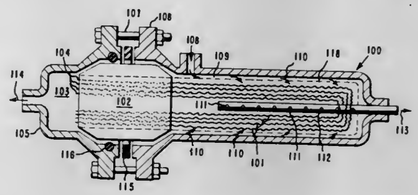
A dialysis apparatus to be used for a device such as an artificial kidney. The apparatus is primarily formed by a single semipermeable membrane supported, as by wires, in such a way that it has a configuration defining two groups of tubes which can only communicate with each other through the membrane itself. Thus, the single membrane is supported by the wires and suitable tubular extensions to define two groups of tubes separated from each other only by the membrane itself so that the fluids to be treated can be subjected to diffusion, or osmosis through the membrane from one of the groups of tubes to the other of the groups of tubes while permitting collection of separated components to take place.

3,616,927
SEMIPERMEABLE MEMBRANES
William McClements Muir, Rhu, Scotland, assignor to National Research Development Corporation, London, England
Filed Mar. 18, 1969, Ser. No. 808,236
Claims priority, application Great Britain, Mar. 20, 1968, 13,491/68
Int. Cl. B01d *39/16, 31/00*
U.S. Cl. 210—321 **6 Claims**



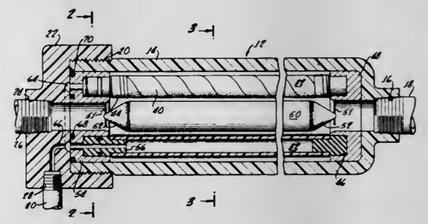
Membranes for extracorporeal haemodialysis are prepared from copolymers of n-butyl methacrylate (55 to 75 percent) and acrylic acid (45 to 25 percent) prepared by portionwise addition of reactants to a reactor. These have superior transfer properties for urea, creatinine, uric acid and other blood components as compared with cellulosic membranes, and are prepared as blood envelopes for use in Ross-Muir and other dialyzers.

3,616,928
PERMEATION SEPARATION DEVICE FOR SEPARATING FLUIDS
Naftali Walter Rosenblatt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 2, 1969, Ser. No. 863,216
Int. Cl. B01d *13/00*
U.S. Cl. 210—321 **3 Claims**



A permeation separation apparatus which comprises an enclosure containing therein a plurality of long, thin, hollow, selectively permeable crimped fibers, an inlet for introducing fluid to be separated into the enclosure, a collection chamber for removing fluid components that pass through the fiber walls into the hollow bores of the fibers, and an outlet on the enclosure for removing the rejected fluid.

3,616,929
REVERSE OSMOSIS MODULE
Serop Manjikian, Del Mar, Calif., assignor to Universal Water Corporation, Del Mar, Calif.
Continuation-in-part of application Ser. No. 818,514, Apr. 23, 1969. This application May 20, 1970, Ser. No. 39,104
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **12 Claims**



A module, useful in systems for treatment of liquids by reverse osmosis, comprises a pressure-resistant container in which are supported one or more membrane elements having helically wound membrane strips around their outer surfaces. A feed inlet, brine outlet and product water connection are provided for the module. A central dummy element or baffles may be employed to distribute feed liquid over the membrane element surfaces.

3,616,930
SEMIPERMEABLE MEMBRANES
William McClements Muir, Rhu, Scotland, assignor to National Research Development Corporation, London, England
Filed Mar. 18, 1969, Ser. No. 808,237
Claims priority, application Great Britain, Mar. 20, 1968, 13492/68
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 **12 Claims**

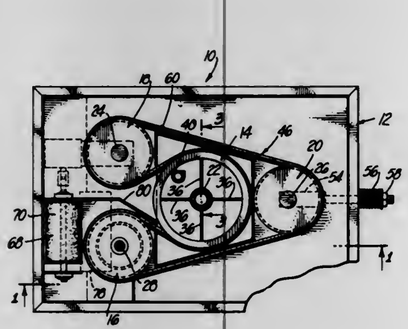
Membranes for extracorporeal haemodialysis are prepared from copolymers of acrylonitrile (80–90 percent) and dimethylaminoethyl methacrylate (20–10 percent) prepared

by portionwise addition of reactants to a reactor. These have superior transfer properties for urea, creatinine, uric acid,



and other blood components as compared with cellulosic membranes, and are prepared as blood envelopes for use in Ross-Muir and other dialyzers.

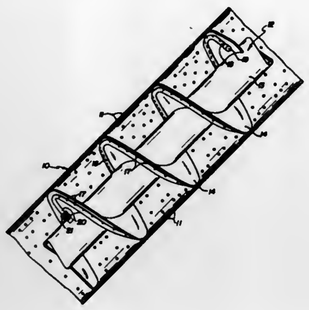
3,616,931
BELT-TYPE CENTRIFUGAL FILTER
Robert J. Zievers, 1535 Carnation Way, Upland, Calif.
Filed Mar. 19, 1970, Ser. No. 21,093
Int. Cl. B01d *33/04*
U.S. Cl. 210—370 **6 Claims**



A belt-type centrifugal filter comprising endless, foraminous filter belt means trained around inlet, outlet and guide pulleys rotatable about parallel axes, opposite sides of the belt means respectively engaging the inlet and outlet pulleys. The inlet pulley is hollow and is provided with a foraminous periphery, and the material to be filtered is delivered to the interior of the inlet pulley. The solids collect on the side of the belt means which is in engagement with the inlet pulley, and are centrifugally ejected from the belt means as it negotiates the outlet pulley. A conveyor receives the centrifugally ejected solids from the outlet pulley, and a scraper removes the solids from this conveyor.

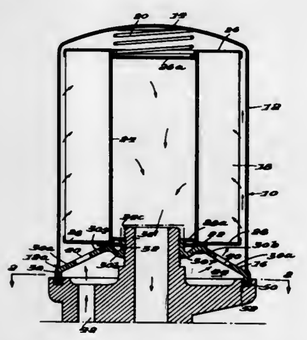
3,616,932
ROTARY SCREEN WASHER
Gilbert L. Bancroft, West Vancouver, British Columbia, Canada, assignor to S. W. Hooper & Co. Ltd., North Vancouver, British Columbia, Canada
Filed May 27, 1969, Ser. No. 828,285
Int. Cl. B01d *35/28*
U.S. Cl. 210—405 **10 Claims**

Equipment for separating liquids and solids and particularly for separating pulp stock and "water" in the paper industry of the kind having a perforate, inclined cylindrical basket and a screw conveyor moving the materials to be separated along the drum, in which there are sprays directed at the drainage surface of the drum and carried by and



rotatable with the screw-type conveyor to keep that drainage surface free.

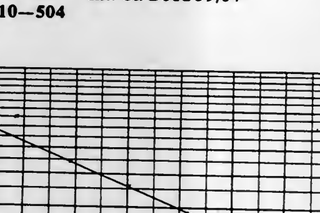
3,616,933
SPIN-ON THROWAWAY-TYPE OIL FILTERS
Jesse A. Baldwin, Kearney, Nebr., assignor to J. A. Baldwin Manufacturing Company, Kearney, Nebr.
Filed Oct. 8, 1969, Ser. No. 864,661
Int. Cl. B01d *27/08*
U.S. Cl. 210—440 **4 Claims**



A spin-on throwaway-type liquid (oil) filter using a one-piece, heavy-gauge baseplate whose sectional configuration is such as to provide a reversely coned, inwardly directed, annular formation intermediate its outer periphery and its central portion, and said central portion having the form of an inturned neck, said reversely coned annular formation defining an axially inward, circular line-form seat for the annular filter element of said filter, said centrally inturned neck comprising a cylindrical extension which projects axially inward and is formed integral with the smaller diameter circular line of said annular formation, and the bore of said neck being threaded for the reception of an engine-block nipple.

3,616,934
FILTER DEVICE WITH DISPOSABLE FILTER FOR MAKING COFFEE, TEA AND THE LIKE
Joseph C. Ehrlich, 2440 Sedgewick Ave, Bronx, N.Y.
Filed June 26, 1969, Ser. No. 836,813
Int. Cl. B01d *23/04*
U.S. Cl. 210—471 **16 Claims**

The combination of a disposable open-top filter bag and a holder member therefor for use with a coffee pot or the like. The filter bag has at the laterally opposite sides of the upper mouth portion thereof two transversely extending open-ended channels, the holder member having two arms extending through and slidably engageable with the respective channels, the arms having intermediate portions thereof bent laterally in opposite directions and adapted to spread open the mouth portion of the filter bag when the arms are inserted and slidably moved through the channels. The holder member is formed of a single smooth wire, and has forward



and rear portions protruding from the front and rear portions of the bag, the protruding portions being adapted to rest upon the rim (in one embodiment of this invention) of the container with the filter bag freely suspended from the holder member and disposed within the container out of engagement with the walls thereof.

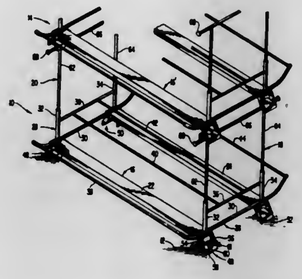
3,616,935
PREPARATION OF ANTITHROMBOGENIC SURFACES
Jim Love, Concord, and George W. Holmes, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.
Filed Feb. 5, 1970, Ser. No. 9,069
Int. Cl. B01d *39/00*
U.S. Cl. 210—500 **11 Claims**

Antithrombogenicity may be obtained by irreversibly adsorbing polyalkylenimine on the surface of a variety of materials such as cellulose, glass, silicon rubber and the like and after thoroughly washing to remove any unadsorbed polymer heparinizing the surface by treating it with a solution of sodium heparin.

3,616,936
SEPARATION MEDIUM FOR GEL FILTRATION AND A METHOD FOR ITS PREPARATION
Ingemar Haldor Johansson, and Marius Klaus Joustra, Uppsala, both of Sweden, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden
Filed Oct. 27, 1969, Ser. No. 869,811
Claims priority, application Sweden, Oct. 30, 1968, 14,667/68
Int. Cl. B01d *39/04*
U.S. Cl. 210—504 **4 Claims**

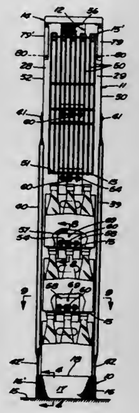
A separating medium for gel filtration in which grains of a water-insoluble copolymer of acrylamides or 1-vinyl-2-pyrrolidinone with N,N'-methylene-bis-acrylamide. The copolymer has an exclusion limit for globular proteins in the molecular weight range from 10,000 to 10,000,000 preferably 50,000–2,000,000. Said copolymer is reinforced by being copolymerized in the pores of a rigid, hydrophilic granular material comprising another copolymer of one or more acrylamides or 1-vinyl-2-pyrrolidinone with N,N'-methylene-bis-acrylamide wherein the bis-acrylamide content is 30 to 90 percent of the total weight of the two substances.

3,616,937
STACKABLE STORAGE RACKS
William L. Frame, Route 2, Box 412, Texarkana, Tex., and Robert D. Renfrow, Lockesburg, Ark.
Filed Oct. 27, 1969, Ser. No. 869,669
Int. Cl. A47f *7/04*
U.S. Cl. 211—24 **10 Claims**



Stackable storage racks in which each rack includes a base section and two detachable, cantilever-mounted upright sections. When disassembled from the upright sections, the base sections can be stacked upon one another for compact shipping. The upright sections are assembled with the base section by telescopically inserting columns of the upright sections into support tubes of the base section. The racks are stacked upon one another and interact to form a stable, tiered structure. When the racks are stacked, the base section of each rack provides a stiffening action between the upright sections of the subjacent rack.

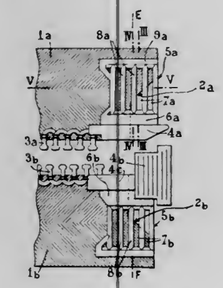
3,616,938
CENTER CHANNEL ADJUSTABLE DISPLAY AND VENDING RACK
Kenneth McAleenan, Larchmont; John B. Pendergrast, Jr., New York; Howard W. LaMorte, New York, N.Y.; Stanley Pitt, Closter, N.J., and William D. Woods, Garden Grove, Calif., assignors to Vita-Pakt Citrus Products Co., Covina, Calif.
Filed Sept. 16, 1969, Ser. No. 858,449
Int. Cl. A47f *5/10*
U.S. Cl. 211—150 **17 Claims**



A display rack for individual articles of merchandise consisting of a vertical rear support which rests on a supporting surface and which has a single central channel of dovetail shape. A series of trays are carried in the channel and are pivotally mounted on releasable fastening clamps for secur-

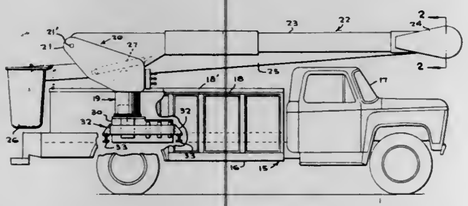
ing each tray in a selected vertically adjusted position in the channel. A spring acting between the tray and the clamp tilts the tray upward against the support after it has been emptied of merchandise. The support may be fastened to a base which extends forwardly beneath the trays, or may be fastened to a vertical wall, and an advertising panel is releasably mounted either at the top of the support or on a shelf at the top of the support.

3,616,939
SEPARABLE ZIP FASTENER
Marcel Potin, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France
Filed July 24, 1970, Ser. No. 58,104
Claims priority, application France, Aug. 6, 1969, 6,926,959
Int. Cl. A44b *19/38*
U.S. Cl. 24--205.11 F **1 Claim**



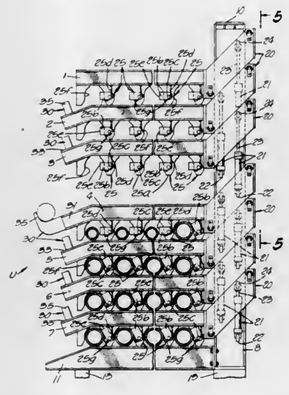
A zip fastener of the separable type wherein two rows of connecting members comprise at one of their ends a separable junction device consisting of two members, that is, a male member and a substantially box-shaped female member, formed by molding plastic material directly on the ends of said two ends. Before molding said members there is cut in each carrier tape of the zip fastener a notch which extends from the inner edge of said tape to at least the middle line thereof, whereafter during the making of the members of said junction device, there is formed in each plate solid therewith on the one hand a flat face of relatively great thickness which is adjacent to the corresponding junction member, and on the other hand, on the opposite side, area having a series of transverse grooves formed therein which extends over said tape proper.

3,616,940
BOOM STRUCTURE FOR UTILITY TRUCKS AND THE LIKE
Edwin Earl Milner, Jr., Williamsburg, Va., assignor to Baker Equipment Engineering Company, Richmond, Va.
Continuation-in-part of application Ser. No. 757,075, Sept. 3, 1968, now Patent No. 3,533,515. This application Mar. 30, 1970, Ser. No. 23,834
Int. Cl. B66c *23/06*
U.S. Cl. 212—59 **16 Claims**



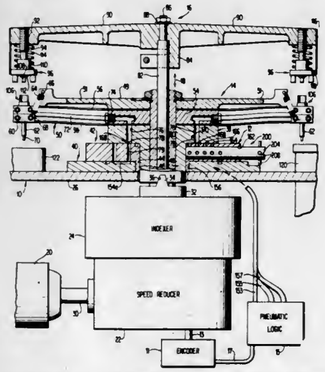
An articulated boom structure including a lower boom section and an upper boom section pivoted together at a pivot shaft extending along a horizontal axis through both sections. The shaft is keyed to one of the sections and rotatable in the other, and a pair of crank members coupled to the shaft and hydraulic cylinder units coupled to the crank members and to the other boom section drive the sections to different relative angular positions about the shaft axis.

3,616,941
DUAL HORIZONTAL RACK
James Bernard Walling, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.
Filed Oct. 22, 1969, Ser. No. 868,541
Int. Cl. B65g *1/10*
U.S. Cl. 214—1 PB **9 Claims**



A horizontal rack for the racking of stands of well pipe wherein a plurality of pairs of horizontally extended and laterally spaced rack beams are provided for supporting layers of pipe; and included in each pair of beams is a pipe loading beam and a pipe unloading beam, the pipe loading beam having a finger pivotally connected thereto for movement between an out-of-the-way position and a projected position adapted to receive a pipe and guide the same onto the beam, and the pipe unloading beam including a finger normally disposed in an out-of-the-way position and automatically movable to a pipe supporting position as a stand of pipe is moved from the beam.

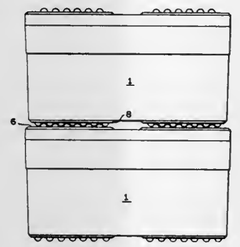
3,616,942
SELECTIVE CHIP PICKUP APPARATUS FOR MULTIPLE FEED BOWLS
Lothar W. Gruber, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,382
Int. Cl. B65g *29/00*
U.S. Cl. 214—1 BH **13 Claims**



A mechanical and pneumatic chip pickup apparatus employs a controllable vacuum manifold for selectively feeding

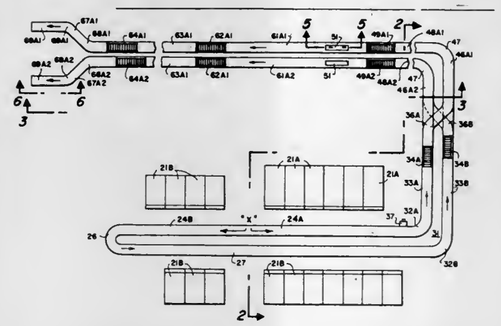
vacuum or positive fluid pressure to vacuum pencils carried by an indexed, rotatable eight-position flexing pencil arm spider assembly. An oscillating depressor spider is coaxially positioned above the rotatable pencil arm assembly and adjustable depressor elements cooperate with preset pencil selectors atop each pencil arm to force the rotating pencil arm assembly at each index position to deflect into only designated feed bowls.

3,616,943
STACKING SYSTEM
Delbert L. Brink, South Seattle, Wash., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Sept. 17, 1969, Ser. No. 858,746
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **9 Claims**



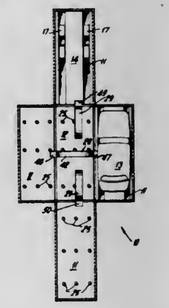
A body such as a box may be stacked with substantial rigidity and provided with the capability of spacing and staggering by providing single and/or multiple rows of protuberances such as beads on upper and lower surfaces arranged so that the beads nest or interlock upon stacking.

3,616,944
SYSTEM FOR FILLING ORDERS OF CUSTOMERS
Owen L. Field, Corona Del Mar, Calif., assignor to Glaser Bros., Los Angeles, Calif.
Filed Nov. 3, 1969, Ser. No. 873,185
Int. Cl. B65g *47/00*
U.S. Cl. 214—16 B **6 Claims**



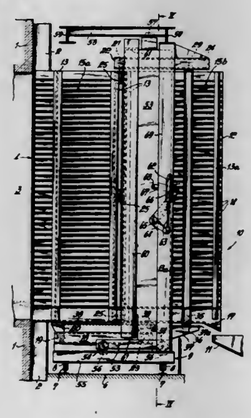
A conveyor system for efficiently filling, checking, loading and delivering a variety of items of merchandise to a large number of customers using a plurality of trucks. Salesmen's orders, each covering a large number of separate items, are written on two different forms (Form A for cigarettes, Form B for cigars, e.g.). The forms are then collated in accordance with preestablished route lists, listing for each truck delivery the customer stops in order. Orders are filled by warehousemen in reverse order of the route lists, Form A orders on conveyor A and Form B orders on conveyor B, the merchandise being moved along to a station, where the orders are packed up and taken to an invoice clerk for billing. Conveyor A has an elevator which places it immediately on top of conveyor B. Each conveyor has a switch making it possible to switch the merchandise to either of two parallel, double-deck storage conveyors of extended length leading to separate loading docks. All merchandise for a particular truck is stored on one of these storage conveyors while being invoiced and is then checked and loaded into the truck in inverse order of delivery, the Form A merchandise on a telescopic loading conveyor fitting into the front of the truck above the Form B merchandise.

3,616,945
CONSTRUCTION FOR STORAGE OF CARS
Nils A. S. Gynne, Valevagen 55, S-182, 64 Duursholm, Sweden
Filed Oct. 10, 1969, Ser. No. 865,401
Claims priority, application Sweden, Oct. 16, 1968, 13929/68
Int. Cl. B65g *67/00*
U.S. Cl. 214—16.1 CE **17 Claims**



Automatic automobile parking is enabled by a parking system including rotational conveyor belts with fingers to engage parking pallets and shift them from parking spaces or elevators, for multiple storage. With an elevator system, storage may be more than one story.

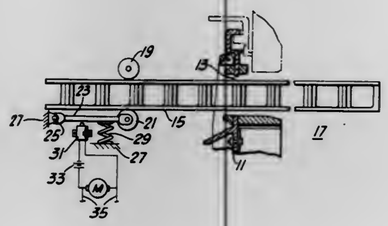
3,616,946
SLAG-GUIDE CAR
Wilhelm Linnerz, Buttgen near Neuss, and Martin Bender, Duesseldorf-Eller, both of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Duesseldorf, Germany
Filed Apr. 22, 1970, Ser. No. 30,756
Claims priority, application Germany, Apr. 23, 1969, P 19 20 603.2
Int. Cl. C10b *43/04, 25/14*
U.S. Cl. 214—18 R **10 Claims**



An elongated oven or furnace has a sidewall provided with at least one closable opening for the extraction of slag. A

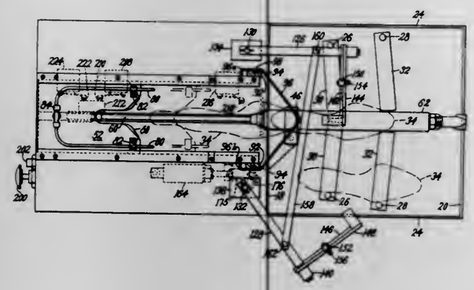
slag-removing carriage is movable along the sidewall and has a slag-guide chute having two-spaced parallel walls each composed of a section closer to and a section farther from the sidewall. The sections which are farther from the sidewall extend substantially normal to the latter, as do the other sections when the device is in operative condition, but the sections farther spaced from the sidewall are movable to a position of at least substantial parallelism with the sidewall when desired.

3,616,947
LOAD-SENSING DEVICE FOR A COKE OVEN LEVELING BAR
Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed June 30, 1969, Ser. No. 837,705
Int. Cl. C10b *37/02*
U.S. Cl. 214—23 **4 Claims**



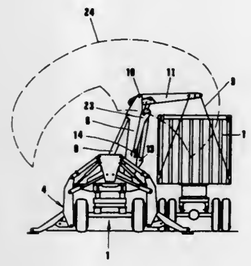
A leveling bar for a coke oven battery that deflects more than a preselected amount because of a deficiency of coal in a coking chamber, actuates a limit switch and the leveling bar retracts from the oven.

3,616,948
ARTICLE SEPARATING MACHINES
Herman A. Imhof, Hamilton, and Thomas G. Brophy, Gloucester, both of Mass., assignors to USM Corporation, Flemington, N.J.
Filed Apr. 30, 1970, Ser. No. 33,272
Int. Cl. B65g *57/10, 60/00*
U.S. Cl. 214—6 DK **6 Claims**



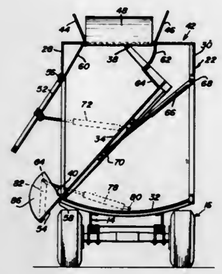
A machine for automatically taking articles from a single starting stack and depositing them on an alternate basis in two separate stacks. The machine includes means for advancing a single article from the starting stack cooperating with separating means, the latter constituting a pair of intercooperating, pivotable arms provided with article gripper heads and article stripping means located relative to separate stacking sites positioned effectively of the travel arc of each of the pivotable arms.

3,616,949
LOADING EQUIPMENT
Kaspar Klaus, 894 Memmingen, Illerstrasse 14, and Georg Felkel, 7951 Berkheim, both of Germany
Filed Mar. 17, 1970, Ser. No. 20,164
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 **8 Claims**



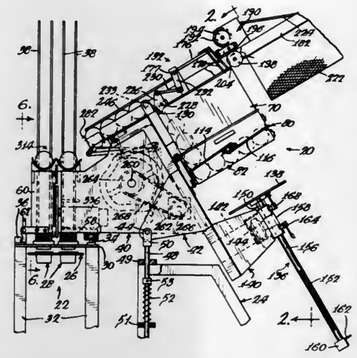
An operating agency, for instance, a piston-cylinder unit, is connected to the hoist arm of a loading appliance through a coupling system comprising at least two links which are pivotally connected to the hoist arm at positions spaced in the direction of hinging of the arm, and are pivotally connected to the connecting member, which itself is acted on by the operating agency, at positions offset in the opposite direction. This provides for a greater angular range of efficient operation by the hoist arm.

3,616,950
SIDE DUMPING AND LOAD COMPACTING VEHICLE
Alfred D. Coons, 668 Williams Ave., Seaside, Calif.
Filed Nov. 7, 1969, Ser. No. 874,886
Int. Cl. B60p *1/00*
U.S. Cl. 214—82 **8 Claims**



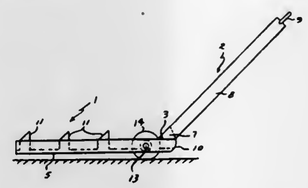
A trash receptacle including an open top through which trash may be downwardly admitted into the interior of the receptacle. A first sidewall portion of the receptacle is hingedly supported along its upper edge for inward swinging movement of the lower edge thereof toward the opposite sidewall of the receptacle for compacting trash between the first sidewall portion and the opposite sidewall of the receptacle. The opposite sidewall includes a second wall portion also hingedly supported along its upper and lower edge portion but for selective outward swinging movement of its lower edge portion upon inward swinging of the first wall portion for laterally ejecting compacted trash from the receptacle.

3,616,951
CARTON UNLOADING AND STACK TRANSFERRING APPARATUS
David L. St. Clari, Wilmette, and Martin Mueller, Glenview, both of Ill., assignors to Owens-Illinois, Inc.
Filed Sept. 30, 1969, Ser. No. 862,229
Int. Cl. B65b *21/02*
U.S. Cl. 214—310 **26 Claims**



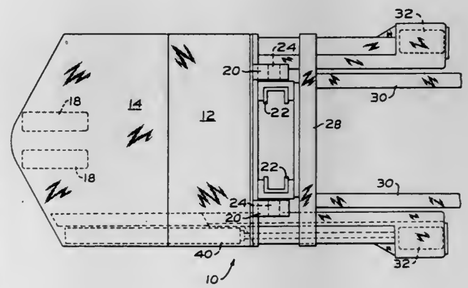
An apparatus for unloading stacks of containers from a carton and for transferring the stacks of containers to the sections of a hopper structure associated with a container filling machine. The apparatus includes a clamping structure for positively retaining the carton of containers and for placing the carton in slidable association on a frame above a stack elevator structure. The carton contains a plurality of layers of plural stacks with adjacent layers being separated by spacer sheets, and the apparatus includes means for removing the spacer sheets as the stacks of containers are lifted into position for movement down an inclined discharge ramp. The apparatus includes a transport mechanism for receiving stacks of containers from the discharge ramp and for transporting the stacks to a chute assembly. The transport means includes an inversion mechanism for dumping the stacks into the chute structure, and the chute structure is positioned to be moved into stack transferring relationship with respect to the sections of the hopper filling machine.

3,616,952
PALLET PULLER FOR HEAVY EQUIPMENT
Andres Aguilar, and Gerald E. Gerke, both of Boonville, Mo., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Mar. 4, 1970, Ser. No. 16,511
Int. Cl. B60p *1/04*
U.S. Cl. 214—372 **2 Claims**



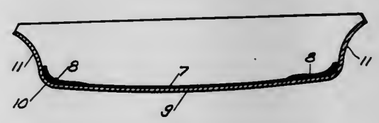
A structure is disclosed for quickly unloading trucks of heavy equipment and their support pallets. The structure comprises two composite beams formed of iron, integrally joined, and extending at about 135° with respect to one another. At the places where the beams meet, there is a relatively large roller which sets on the floor of the truck and permits the entire structure to move over the floor or platform. The horizontal beam is formed in two spaced arms or fork members formed of U-shaped iron and spanned by a metal plate, the members being adapted to be inserted into the usual slot in the sides or end of the pallet. Each horizontal arm is provided with three or more upstanding teeth portions secured within the legs of the U-shaped members and project a short distance above the upper edge of each member. When the equipment is loaded on top of the teeth by inserting the fork members into the pallet slots, a chain is connected to the uppermost end of the angularly extending beam and is attached to a simple and inexpensive pulling machine. A pull in the forward direction causes the angularly extending arm to move downwardly slightly as well as forwardly to cause the teeth to press into the bottom surface of the pallet at the slot and thus hold the equipment steady. The pallet and its load can then be pulled out of the truck by the machine mentioned and deposited at any desired position.

3,616,953
NARROW-AISLE TRUCK WITH RETRACTABLE ARMS
Walter M. Shaffer, Chesterland, and John T. Crawford, Lyndhurst, both of Ohio, assignors to Towmotor Corporation, Cleveland, Ohio
Filed Apr. 14, 1969, Ser. No. 822,843
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **7 Claims**



A narrow-aisle lift truck with a wheelbase which can be varied by hydraulic cylinders operable to extend and retract movable arms upon which are mounted nonsteerable wheels.

3,616,954
CONTAINER CLOSURES HAVING A THIN TRANSPARENT CENTRAL PORTION AND A CELLULAR ANNULAR PORTION
Robert Peck, Elmhurst, Ill., assignor to W. H. Hutchinson & Son, Inc., Chicago, Ill.
Division of Ser. No. 305,361, Aug. 29, 1963, Pat. No. 3,564,602.
Filed May 16, 1968, Ser. No. 729,671
Int. Cl. B65d *41/12, 41/22*
U.S. Cl. 215—40 **4 Claims**

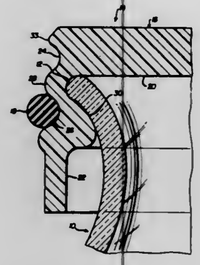


A sealing closure for a container comprising a closure member containing therein a plasticized, fused vinyl plastisol liner formed from a single homogeneous mass of material, the liner being bonded to the interior of the closure member. The liner has a central web portion and an outer ring portion, the central web portion containing a relatively thin, transparent area, and the outer ring portion being relatively thick, expanded, cellular, opaque, resilient and capable of being placed in sealing contact with the container.

3,616,955
CONTAINER CLOSURE WITH LOCKING RING

Vernon C. Heffran, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.

Filed Sept. 12, 1969, Ser. No. 857,463
Int. Cl. B65d 5/36
U.S. Cl. 215—41 1 Claim

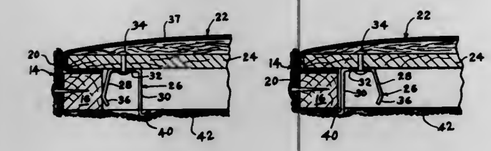


A reusable container closure utilizing a cap with an integral skirt. The skirt has an enlarged obstruction section separating upper and lower circumferential grooves, which are adapted to receive a retainer ring. With the retainer ring in the lower groove, an enlarged sealing section of the skirt engages the neck of the container to effect a seal. The cap is removed to the upper groove by pulling a tab on the skirt until the obstruction section is reduced in diameter sufficiently to permit the clamping ring to be forced out of the lower groove and into the upper groove.

3,616,956
MOUNTED PANEL ASSEMBLY

Joseph Cooper, Westport, Conn., assignor to Scovil Manufacturing Company, Waterbury, Conn.

Filed Mar. 2, 1970, Ser. No. 15,351
Int. Cl. B65d 43/00, 43/14, 43/02
U.S. Cl. 217—56 4 Claims



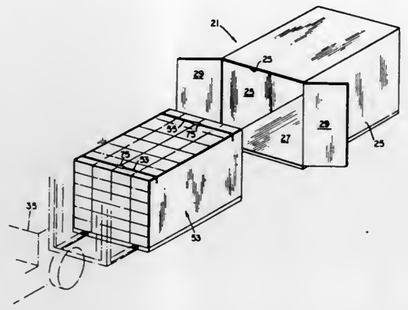
A panel has a number of clips which secure it to a base member. The clips, each fitting alongside an opening in the base member, comprises U-shaped elements swivelly attached to the panel. Depending on whether the panel is to be temporarily mounted or permanently mounted, the friction leg or the hook leg can be turned toward the base member for engagement.

3,616,957
CONTAINER STUFFING SLEEVE

Lawrence Alfred Patton, 1020 San Antonio Ave., Alameda, Calif.

Filed May 15, 1969, Ser. No. 825,007
Int. Cl. B65j 1/02; B65d 7/42
U.S. Cl. 220—1.5 1 Claim

A cargo container combines an outer box and an inner stuffing sleeve. The sleeve is of such a size as to fully utilize the inner volume of the container when it is loaded with cargo. The sleeve may be provided with means on the bottom to allow relatively easy motion along the floor of the container or any other surface. The sleeve may also include apparatus for allowing the lateral expansion of the floor when it is to be used in a dry container as opposed to a refrigerated container

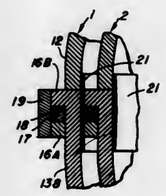


or in any other device wherein a slightly wider space is required.

3,616,958
SEPARABLE PRESSURE TANK APPARATUS

Orson L. Mitchell, 132 Ronada Ave., Piedmont, Calif.

Filed Apr. 16, 1969, Ser. No. 816,744
Int. Cl. B65d 7/00, 53/00, 1/22
U.S. Cl. 220—3 3 Claims

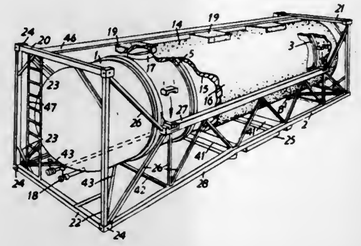


Pressure tank apparatus designed for pressure testing various samples must provide a quick and easy manner of mounting the specimen within the tank and of removing it subsequent to the testing procedure. Also, the pressure tanks should be as lightweight as possible consistent with the anticipated extreme pressures. Lightness and strength presently are provided by utilizing two-part tanks each formed with a special merlon-flange type permitting coupling of the two parts to form a sealed tank unit. A series of tanks are used, these tanks being concentrically spaced one from another to provide intervening chambers subjected to progressive pressure conditions permitting the tank walls to be subjected only to the pressure differential of adjacent chambers rather than the full pressure in any one chamber. Consequently, wall thickness and strength can be reduced. Each half of the two-part assembly has a closed end and a substantially cylindrical free end portion, the periphery of which is formed with merlon-type flanges spaced one from another by crenel-type notches. The spacing permits mating of the two parts by inserting the flanges of one part into the notches of the other and the flanges are provided with transverse recesses which, when the parts are mated, cumulatively form an outwardly facing, intermittent, circumferential channel adapted to receive a lock ring. If necessary, a clamping ring maintains the lock ring and an interior seal for the tank is provided by utilizing the interior pressure to press a sealing member tightly against the circumferential intermittent channel surface area.

3,616,959
CONTAINER

Francis Remesy, and Jean Vaillant, both of Route Nationale, St. Marcel, Marseille, France

Filed May 16, 1969, Ser. No. 825,219
Claims priority, application France, May 17, 1968, 22288
Int. Cl. B65d 57/00
U.S. Cl. 220—12 8 Claims

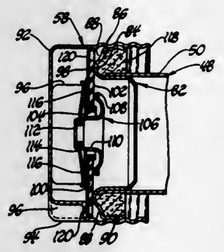


The invention provides a heat-insulated container for transcontinental transportation of liquids comprising a tank body and a rigid cradle to support the body, anchoring means being disposed at spaced points on the body and cradle to locate the body with respect to the cradle, the anchoring means including thermal insulation interposed between the tank body and the cradle, and some of the anchoring means being constructed to allow expansion and contraction of the tank body with respect to the cradle.

3,616,960
FILLER PIPE CLOSURE FOR PRESSURIZED FUEL TANK

Tom B. Miller, Grand Blanc, and Harold W. Noponen, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1970, Ser. No. 39,102
Int. Cl. B65d 41/04, 41/06
U.S. Cl. 220—39 3 Claims

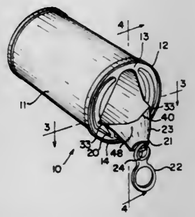


A pressurized fuel tank, disposed transversely over the rear axle of an automobile, is divided by baffles into three compartments. Large apertures in the baffles interconnect the upper portion of the compartments and a pipe extending through the baffles interconnects the lower portion of the compartments. A fuel pump inlet is located in the center compartment adjacent an opening in the pipe. A pressure relief valve discharges from the center compartment adjacent the vehicle centerline. A filler pipe extends through one of the end walls and one of the baffles to discharge adjacent the vehicle centerline. A cap on the filler pipe is provided with a vacuum relief valve. Pressure in the tank is also released during removal of the cap.

3,616,961
EASY-OPENING CONTAINER WITH POUR SPOUT

Salvador C. Mallorca, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,243
Int. Cl. B65d 17/24
U.S. Cl. 220—54 5 Claims

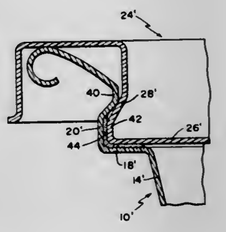


An easy-opening container including a panel having a tear strip defined by a score line terminating in spaced ends. Outwardly bulging projections are formed in the panel adjacent the terminal ends of the score line. The tear strip is foldable about the projections at the terminal ends of the score line to provide a pour spout of generally concave cross section along a major portion of the length of the tear strip.

3,616,962
SEALED CONTAINER OR CUP

Robert E. Phipps, West Campton, N.H., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Dec. 12, 1969, Ser. No. 884,647
Int. Cl. B65d 5/68, 43/10
U.S. Cl. 220—60 R 3 Claims



A plastic, disposable cup and lid including an easily broken seal consisting primarily of a narrow band of sealant such as paraffin which extends circumferentially about the mouth of the cup disposed between the mating regions of the cup and lip. The sealing band is applied in a thin film to the inner periphery of the cup or to the mating portion of the lid so that when they are assembled the paraffin band will be compressed slightly between and in intimate sealing contact with the mating surfaces of the cup and lid. This provides an effective seal, yet permits the lid to be removed with minimal effort.

3,616,963
POLYAMIDE EPOXY RESIN REACTION PRODUCT ADHESIVE

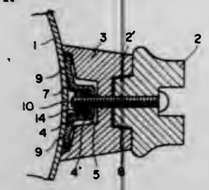
Kenneth M. Sinnott, Ellicott City, Md., assignor to W. R. Grace & Co., Hanover Square, New York, N.Y.

Continuation-in-part of application Ser. No. 553,658, May 31, 1966, now abandoned. This application Feb. 24, 1967, Ser. No. 618,344
Int. Cl. B65d 7/34; C08g 45/12
U.S. Cl. 220—81 4 Claims

This invention is directed to an adhesive consisting essentially of a transparent amorphous polyamide formed from terephthalic acid and an isomeric mixture of 2,2,4- and 2,4,4-

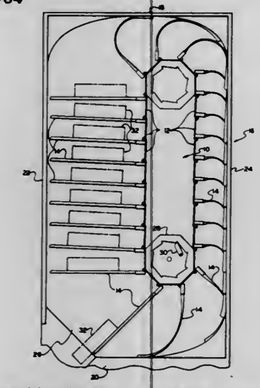
trimethylhexamethyenediamines in combination with an epoxy resin and laminates formed with such an adhesive.

3,616,964
MEANS FOR ATTACHING A HANDLE TO A PAN
Masaru Yamazaki, Hiroshima, Japan, assignor to Kansai Keikinzoku Kogyo Kabushiki Kaisha, Hiroshima Prefecture, Japan
Filed Nov. 28, 1969, Ser. No. 880,564
Claims priority, application Japan, Mar. 20, 1969, 44/20669
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **3 Claims**



Means for attaching a handle to a pan comprising a mounting plate having a central projection, which plate is spot-welded to the pan, a heat-insulating member nearly identical in shape to said mounting plate positioned between said pan and mounting plate, and means for attaching a handle to the projection on said mounting plate, which means comprises an adjustable screw. The purpose of this invention is to fasten the handle to the pan in such a way that it remains firmly attached to the pan despite repeated heating and cooling.

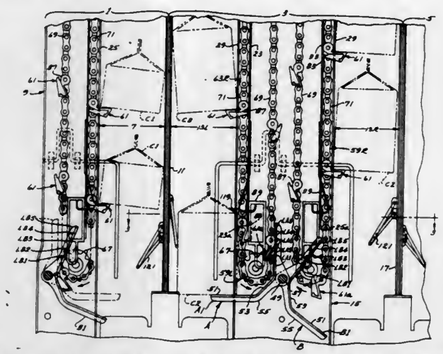
3,616,965
FLEXIBLE CONVEYOR BELT CARRIED CELLS FOR DISPENSING MACHINE
Leo S. Bendl, 274 Oradell Ave., Paramus, N.J.
Filed Aug. 11, 1969, Ser. No. 849,039
Int. Cl. G07f *11/00*
U.S. Cl. 221—84 **8 Claims**



A vending machine having an endless, vertical conveyor, formed of flat, separable links and a flexible, resilient product-carrying shelf; each of the conveyor links being associated with a product-carrying shelf and being adapted to be engaged by an adjacent link and shelf such that when there is no product on the shelf (on the return movement), the shelf bends or pivots to thereby require less space between the conveyor and the backwall of the machine than between the conveyor and the front wall of the machine.

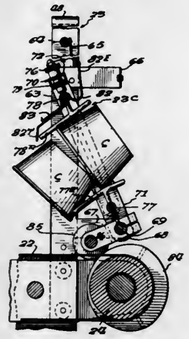
3,616,966
ARTICLE-DISPENSING APPARATUS
James T. Schuller, St. Louis County, and Leonard P. Falk, Florissant, both of Mo., assignors to UMC Industries, Inc., St. Louis, Mo.
Filed Sept. 10, 1969, Ser. No. 856,597
Int. Cl. G07f *11/64*
U.S. Cl. 221—84 **11 Claims**

Dispensing apparatus, for use in a vendor for cartons of milk, in which cartons are supported on pivoted drop shelves arranged in horizontal rows, the shelves in each row being controlled to swing downward one after another in sequence for dispensing successively from the shelves in the row, after which the shelves are returned to a raised position for hold-



ing cartons and then reloaded with cartons for the next dispensing sequence. Reloading of the drop shelves is by means of endless conveyors which carry rows of cartons for deposition on the drop shelves.

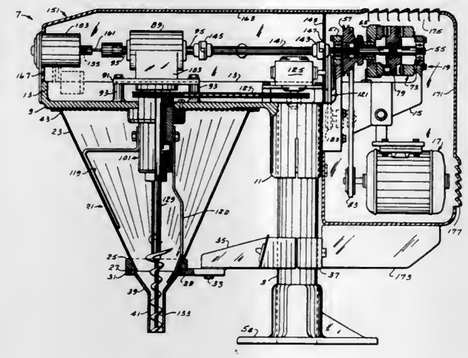
3,616,967
ARTICLE TRANSFER DEVICE
Martin Mueller, and Bernard Zurhoefer, both of Chicago, Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 677,698, Oct. 23, 1967, Pat. No. 3,526,075.
Filed Dec. 12, 1969, Ser. No. 889,783
Int. Cl. G07f *11/46*
U.S. Cl. 221—188 **7 Claims**



An apparatus for depositing side-by-side containers on a conveyor including a tilt mechanism journaled on a support frame and having side-by-side chutes for receiving articles therein. A gate normally blocks the article outlet ends of the chutes, and when the tilt mechanism is pivoted, the gates are moved to a clearance position so that the articles are free to move out of the chutes and on to the conveyor.

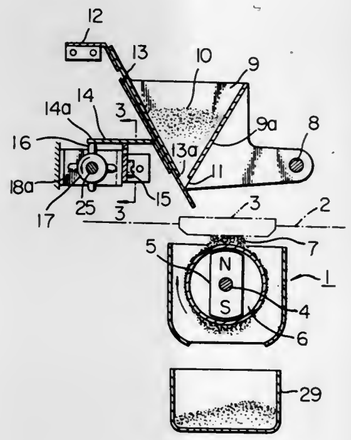
3,616,968
AUGER FILLER AND CONTROL THEREFOR
Robert C. James; Charles G. Hart, Sheboygan, Wis.; John E. Rogers, Suffolk, England, and Richard W. Safranski, Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.
Filed Apr. 10, 1969, Ser. No. 814,957
Int. Cl. B65g *33/10*; B65d *5/30*; F16d *67/06*
U.S. Cl. 222—70 **19 Claims**

An auger filler for rapid and accurate dispensing of metered quantities of fluent products in which an auger is operated via an electromagnetic clutch and brake unit with reduction gearing between the clutch output and the auger for driving the auger at a lower speed than the clutch output. The unit has a rated voltage and a rated torque, the rated torque being greater than that for driving the auger under load, and provision is made for energizing the clutch at the start of a fill cycle at overexcitation voltage and then dropping the voltage to a holding voltage substantially below the rated voltage, and for deenergizing the clutch at the termination of a fill cycle and energizing the brake at overexcitation voltage and then dropping the voltage to a



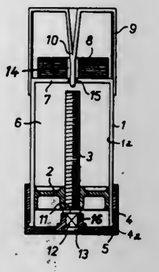
holding voltage substantially below the rated voltage. A timer effects disengagement of the clutch to stop the auger and means is provided for delaying initiation of the operation of the timer until the auger has rotated a predetermined amount less than the predetermined number of revolutions in a fill cycle.

3,616,969
DEVELOPER REPLENISHING MEANS FOR AN ELECTROSTATOGRAPHIC APPARATUS
Yutaka Koizumi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 16, 1968, Ser. No. 729,757
Claims priority, application Japan, May 25, 1967, 42/33304
Int. Cl. G01f *11/00*
U.S. Cl. 222—162 **7 Claims**



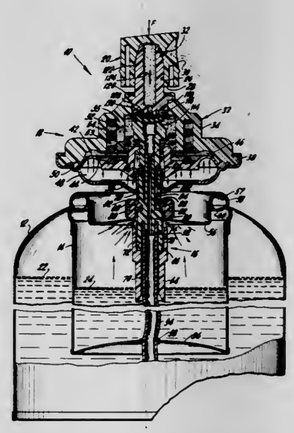
Apparatus is provided for replenishing developer in an electrostatographic device. The apparatus includes a hopper having discharge apertures and is caused to vibrate above a developing device to replenish same with developer. A pusher plate projects into the hopper to engage the developer and force same through the apertures as the hopper vibrates.

3,616,970
CONTAINER CONSTRUCTION FOR DISPENSING A PASTY MASS OR THE LIKE
Manfred Baumann, Heerbrugg, and Alois Stahl, Diepoldsau, both of Switzerland, assignors to Baumann AG, Diepoldsau, Switzerland
Filed Nov. 12, 1968, Ser. No. 774,834
Claims priority, application Switzerland, Feb. 13, 1968, 2094/68
Int. Cl. B67d *3/00*
U.S. Cl. 222—187 **1 Claim**



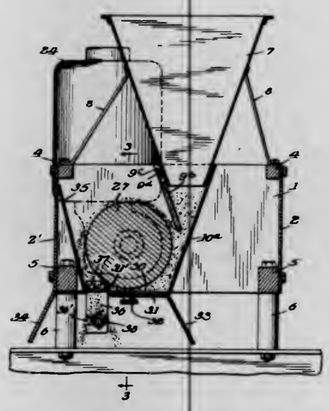
There is disclosed a container construction for storing and discharging a pasty mass which incorporates a sleeve member for the pasty mass and a piston mounted in the sleeve member. A threaded spindle serves to axially displace the piston. Such sleeve member possesses a cover member at the end thereof from which the pasty mass is discharged. An applicator element is situated at such discharge end of the sleeve member for distributing the pasty mass. The cover member is equipped with at least one discharge opening for the pasty mass and this discharge opening is narrow in relation to the diameter of the sleeve member.

3,616,971
DISPENSER AND METERING VALVE THEREFOR
Louis F. Kutik, Broward County, Fla., assignor to Precision Valve Corporation, Yonkers, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,578
Int. Cl. G01f *11/04*
U.S. Cl. 222—249 **14 Claims**



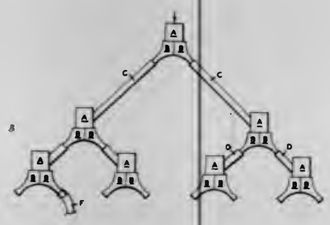
This invention comprises an improved dispenser including a propellant container having a positive displacement dispenser attached thereto, propellant flow being controlled by a manually operable valve and product metering, being controlled by a pressure differentiated valve. The propellant vapor acts upon a pistonlike member which forces a metered quantity of product from the dispenser.

3,616,972
MACHINE FOR DISPENSING AND DISTRIBUTING DRY FLOWABLE MATERIALS
Daniel Lamar Christy, R.F.D. 5, Fremont, Ohio
Division of Ser. No. 641,725, Apr. 26, 1967, abandoned.
Filed Sept. 18, 1969, Ser. No. 871,404
Int. Cl. G01f *11/00*
U.S. Cl. 222—317 9 Claims



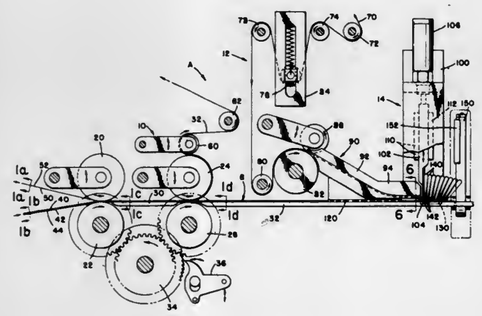
A machine for effecting the controlled dispersed or disseminated discharge of dry or substantially dry edible or nonedible products consisting of a walled body receiving and supporting a hopper having a dispensing roll rotatably mounted within the same laterally of its discharge way in communicative relation thereto, a pair of converging flow-directing and regulating cute plates on the hopper sidewalls communicating with its discharge way, one of which is fixed and the other vertically adjustable whereby to effect a variable discharge of material onto one side of the roll and its carriage thereover for free and disseminated downward discharge from its opposite side.

3,616,973
GRANULE DISTRIBUTOR
Gilbert Spencer Hartley, Saffron Walden, England, assignor to Fisons Limited, Felixstowe, Suffolk, England
Filed Sept. 12, 1969, Ser. No. 857,490
Claims priority, application Great Britain, Sept. 17, 1968, 44068/68
Int. Cl. G01f *11/00*
U.S. Cl. 222—330 20 Claims



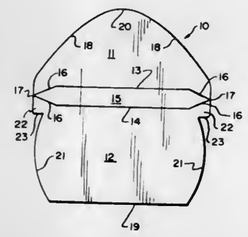
As apparatus for the distribution of granules or particles. The apparatus has a cascade of riffles with means for supplying granules to the first riffle. The first riffle divides the supply of granules into at least two streams, and means are connected between the first riffle and at least two subsidiary riffles of the cascade to pass the streams to the subsidiary riffles. Means can also be provided to pass streams from the subsidiary riffles to at least one further subsidiary of riffles. Means is also provided for passing the streams of granules or particles from the terminal riffles of the cascade to a distribution means.

3,616,974
METHOD AND MACHINE FOR MAKING DECORATIVE BOWS
Grant H. Jordan, Parma, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed May 14, 1970, Ser. No. 37,167
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 9 Claims



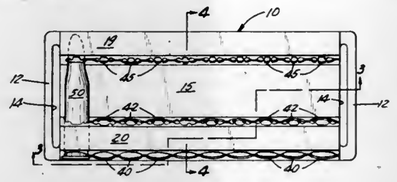
An apparatus and method for making a decorative bow including means for bringing together in converging paths a backing strip and a decorative ribbon. The ribbon is moved more rapidly than the backing strip, and by intermittently connecting the ribbon to the backing strip a plurality of ribbon loops are formed along the backing strip.

3,616,975
SUPPORT CARD FOR DISPOSABLE UNDERGARMENTS
Peter C. Collura, Stamford, Conn., and Philip W. Lewis, Greensboro, N.C., assignors to Container Corporation of America, Chicago, Ill.
Filed June 23, 1970, Ser. No. 49,128
Int. Cl. A41h *5/00*; A47f *8/00*
U.S. Cl. 223—71 5 Claims



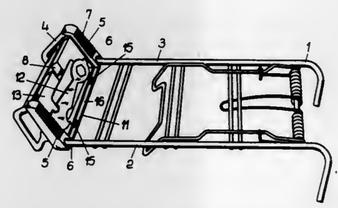
A support card for one or more disposable female undergarments known in the trade as "panties." The card is loaded with the garments while held in stiffened position in a jig which curves the card transversely of spaced laterally extending score lines. The card is folded upon itself after being loaded with a plurality of such garments, and the card is shaped in such a fashion that leg openings of the garment are retained at protuberances from the edges of the card.

3,616,976
GUN CARTRIDGE HOLDER
George J. Geretschlaeger, Stillwater, Minn., assignor to Federal Cartridge Corporation, Minneapolis, Minn.
Filed Jan. 26, 1970, Ser. No. 5,760
Int. Cl. F42b *39/08*
U.S. Cl. 224—21 7 Claims



A gun cartridge holder formed as an integral unit having a flat base and upstanding mounting structures along the edges thereof through which and between which cartridges are positioned to securely hold the same. The cartridges are positioned within the vertical projection of the base and below the top of the mounting structures to provide a cartridge holder which may be used as a packing structure for cartridges and which also may be used as a carrying holder for cartridges for usage. The individual holders serve as holders and spacers in packing and also as a means for positioning a belt therethrough to carry the cartridge holder.

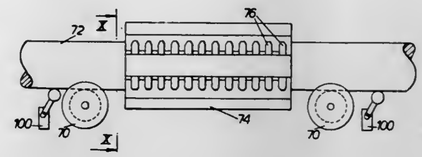
3,616,977
COMBINATION TOOL CARRIER AND CYCLE LUGGAGE RACK
Emil Zurmuhlen, Brackwede, Germany, assignor to Firma ESGE-Marby Gesellschaft mit beschrankter Haftung & Co., Brake Bielefeld, Germany
Filed July 25, 1969, Ser. No. 844,769
Claims priority, application Germany, July 26, 1968, P 17 80 044.1
Int. Cl. B62j *7/00*
U.S. Cl. 224—32 4 Claims



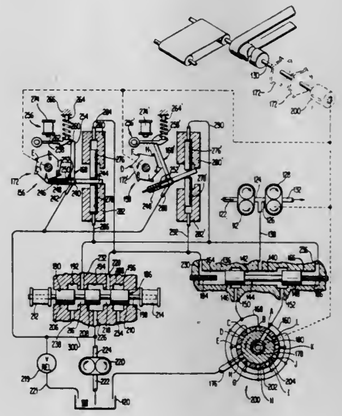
The carrier has a flat article support region and an article counterstop formed of a pair of inverted, U-shaped bends connected to the flat article support region; a tool carrier is located between the legs of the U-shaped bends, preferably formed as an integral molding of plastic material together with bumper and counterstrips snapped over the U-shaped legs of the carrier.

3,616,978
CONVEYORS
James F. Hasiam, Kettering, England, assignor to Stewarts and Lloyds Limited, Glasgow, Scotland
Filed July 18, 1968, Ser. No. 745,757
Claims priority, application Great Britain, July 26, 1967, May 5, 1968, 34,455/67; 20,970/68
Int. Cl. B65h *17/28*
U.S. Cl. 226—93 4 Claims

A conveyor has a linear motor for accelerating or decelerating objects by magnetic induction as the objects travel over rollers. The rollers are adapted to the shape of the objects and the motor may extend around the path of the objects. Control means actuated by the objects control the energization of the motor.



3,616,979
HYDRAULIC STEPPING MECHANISM FOR FORMS FEEDING
Stanley C. Titcomb, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,474
Int. Cl. B65h *17/22*
U.S. Cl. 226—157 12 Claims

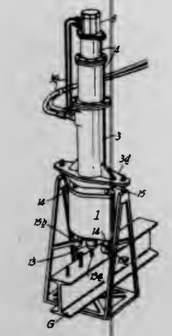


A two-position stepping valve automatically releases a first detent of a form feed drive shaft to allow a fluid motor to accelerate the shaft under control of a fluid commutator, and simultaneously drives a second detent toward shaft latching position to latch the same after a short angular rotation of the same. Fluid controlled deceleration of the shaft into full latched position follows under control of the shaft driven fluid commutator.

3,616,980
FRICTION WELDER
John Arthur Padilla, Cambridgeshire, England, assignor to The Cleveland Bridge and Engineering Company Limited, Darlington, England
Filed Dec. 2, 1968, Ser. No. 780,406
Claims priority, application Great Britain, Dec. 12, 1967, 56,510/67
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 4 Claims

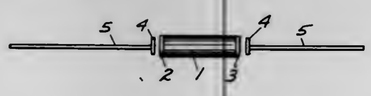
A friction welding apparatus includes a support, a headstock carrying a rotatable chuck for holding a first workpiece to be welded to a second static workpiece, the headstock being mounted on the support for movement axially of the chuck. Piston and cylinder type displacement means are con-

nected between the headstock and the support for producing axial movement of the headstock and the chuck is provided



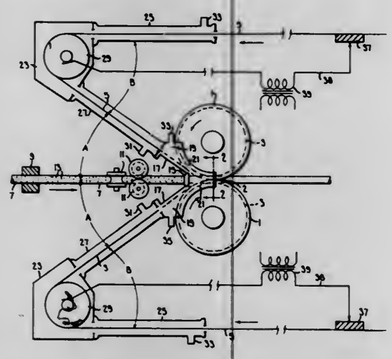
with rotary drive means incorporating a shaft passing coaxially through the cylinder of the piston and cylinder device.

3,616,981
LEAD AND SOLDER PREFORM ASSEMBLY AND METHOD OF MAKING THE SAME
Francis E. Dieteman, and Nello Coda, both of Erie, Pa., assignors to Erie Technological Products, Inc., Erie, Pa.
Filed Aug. 8, 1969, Ser. No. 848,456
Int. Cl. B23k *21/00*; **B23p** *31/02*
U.S. Cl. 228—3 **4 Claims**



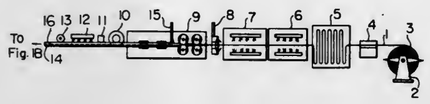
Leads for electronic components are provided with solder preforms by a method and apparatus which first cuts off a length of solder wire and then forms the wire into a preform and cold-welds it to the lead.

3,616,982
METAL CLADDING
Paul A. Dion, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 518,821, Jan. 5, 1966, Pat. No. 3,408,727.
Filed May 22, 1968, Ser. No. 748,885
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **11 Claims**



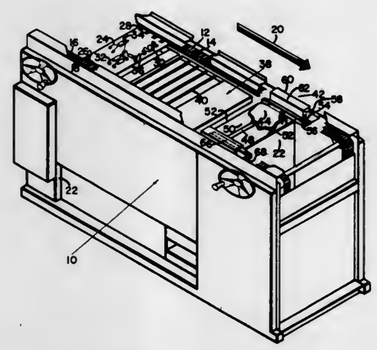
Apparatus for solid-phase metallurgically bonding metal cladding materials such as copper to a wirelike core of aluminum or the like is shown to include means such as an annular shaving die for cutting metal materials from the entire periphery of the wirelike core to expose a virgin metal surface therearound, means such as a manifold establishing a protective or oxide-reducing atmosphere around the virgin metal core surface for maintaining the virgin metal surface free of bond deterrents, means direction clean metal cladding materials around the virgin metal core surface, and means such as a pair of peripherally grooved rolls squeezing the cladding material against said virgin metal core surface with reduction in the composite thickness of the core and cladding material for bonding the cladding to the core entirely around the periphery of the core.

3,616,983
APPARATUS FOR CONTINUOUSLY FORMING PLASTIC-COATED METALLIC TUBINGS
Noboru Kamimura; Yasutaro Ohara; Hirasahi Okazaki; Toshiharu Koyama, and Kazuyuki Kamino, all of Kadomashi, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Dec. 11, 1968, Ser. No. 782,893
Claims priority, application Japan, Dec. 27, 1967, Dec. 27, 1967, 42/83859; 42/83860
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **1 Claim**



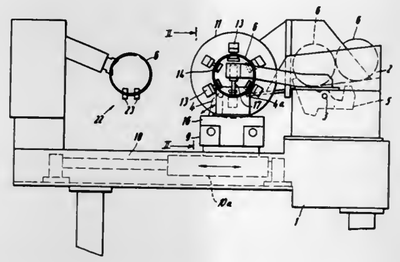
An apparatus for continuously manufacturing metallic tubings having a plastic coating thereon. The apparatus is adapted to form a long extending metallic tube initially from a metal strip and then, to apply the plastic coating to inner and outer surfaces of the long extending tube or either one of them as desired while the tube is transported to output side of the apparatus, where such tube already coated is sheared into a standard length of the tubings, all in a continuous manner. The apparatus contains all necessary treating means for respective operations as a unit assembly, so that the respective operations are successively carried out with respect to the long uninterrupted tube, and the coated tubings of standard length are continuously produced.

3,616,984
AUTOMATIC SOLDERING MACHINE HAVING CIRCUIT BOARD PROTECTION MEMBER
William Louis Voroba, Fairfield, Conn., assignor to The Bunker-Ramo Corporation, Stamford, Conn.
Filed Jan. 14, 1970, Ser. No. 2,744
Int. Cl. B23k *1/00*, *5/00*
U.S. Cl. 228—33 **10 Claims**



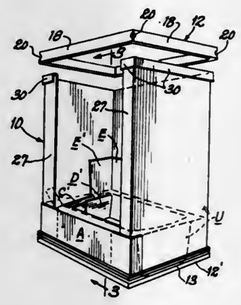
An automatic soldering machine having one or more strips positioned in the solder pool to prevent the application of solder to selected areas of a circuit board. The strip is of a material which has stable dimensions and is heat resistant to a temperature at least equal to melting temperature of the solder utilized, is resistant to the accumulation of solder, and is preferably of a low-friction material.

3,616,985
APPARATUS FOR ORIENTING RIMS OF WHEELS FOR AUTOMOTIVE VEHICLES
Ulrich Koch, Hamburg, Germany, assignor to Ottensener Eisenwerk GmbH, Hamburg, Germany
Filed Apr. 21, 1969, Ser. No. 817,742
Claims priority, application Germany, Apr. 20, 1968, P 17 52 208.6
Int. Cl. B23k *1/00*, *5/00*
U.S. Cl. 228—18 **18 Claims**



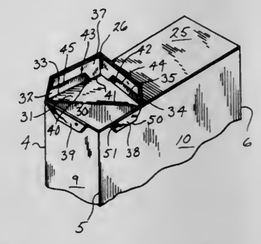
Apparatus for orienting semifinished automobile wheel rims which are formed with radially extending gaps comprises a chute which delivers successive rims into registry with a rotary disk and with a pusher which transfers successively delivered rims into the range of clamping members on the disk. A radially extending pin is thereupon rotated through 360° within the thus clamped rim to enter the gap and to rotate the rim and the disk until the gap is located in a predetermined angular position. The thus oriented rim is thereupon transferred into a welding machine while the angular position of its gap remains unchanged.

3,616,986
BATHTUB CONTAINER-PROTECTOR
Raymond E. Wolfe, Beaver Falls, and David H. Marshall, New Castle, both of Pa., assignors to Universal-Rundle Corporation, New Castle, Pa.
Filed Oct. 3, 1969, Ser. No. 864,298
Int. Cl. B65d *5/12*
U.S. Cl. 229—16 **3 Claims**



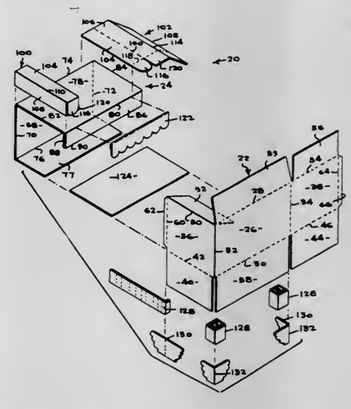
A container for a bathtub-shower unit which serves as a shipping carton and also to protect the unit from damage during installation. The container may be formed of heavy, stiff fiberboard or the like, of the character commonly employed for packing and shipping merchandise of a fragile character, and is in the form of a hollow parallelepiped or generally cubical form, with top and bottom caps and sidewalls forming a sleeve. The front wall may be separated from the side and backwall by unstapling or by cutting, and then may be bent along scored lines, whereupon it may be bent or folded backwardly into the unit, where it serves to protect the latter in the course of installation of the plumbing fixtures.

3,616,987
CARTON WITH RECLOSABLE CORNER PORTION
Robert A. Krzyzanowski, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis.
Filed Mar. 2, 1970, Ser. No. 15,331
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 R **3 Claims**



A carton, and a blank therefor, including a wraparound corner locking flap construction comprising a T-shaped first element joined to part of the carton and two other elements joined to another part of the carton. Reclosure after the initial opening of the carton is obtained by engagement of the T-shaped element with the other locking elements. The construction of the wraparound corner locking flap is of a particular configuration which will give especially effective reclosure of a carton having a wall panel with a corner portion which can be articulated about a diagonal fold line formed in such wall panel.

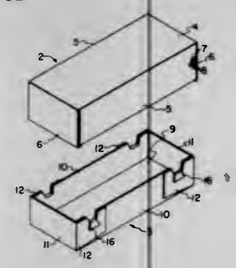
3,616,988
STORAGE CHEST
Graham H. Weant, 908 Taylor St., Tupelo, Miss.
Filed Apr. 2, 1970, Ser. No. 25,146
Int. Cl. B65d *13/04*
U.S. Cl. 229—23 A **12 Claims**



A storage chest constructed of corrugated board formed of a main panel member forming a front wall connected to two end walls by vertical fold lines with floor support panels ex-

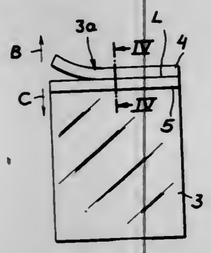
tending from the front and end walls along horizontal fold lines and a mating panel integrally defining a rear wall, a rear floor support panel and a lid with the rear wall connected to the rear edges of the sidewalls and a separate floor member inserted within the confines of the front, rear and sidewalls, the entire structure being supported by support legs in the form of squared convolutions of a strip of corrugated material and with each corner of the chest provided with cover plates embracing the lower portions of each corner and each leg.

3,616,989
TELESCOPING CARTON ASSEMBLY
Harold H. Martinek; George M. Wilmsen; Clifford L. Steffen, Danville, Ill., and Thomas W. Martinek, Covington, Ind., assignors to Tee-Pak, Inc., Chicago, Ill.
Filed Sept. 12, 1969, Ser. No. 857,511
Int. Cl. B65d *5/30*
U.S. Cl. 229—32 **10 Claims**



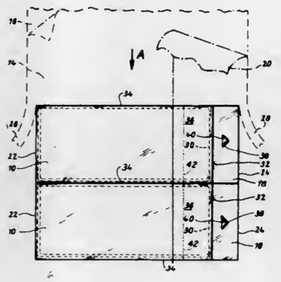
Carton assembly for sausage casings and the like formed of two rectangular boxes assembled to provide a closed receptacle consisting of a top box having a bottom box telescoping therefrom. The two boxes are formed of blanks respectively folded into locking or semilocking positions. Locking of the top box is through end tabs folded into the box interior. The bottom box is locked or semilocked by means of a positioning of locking tab flaps in slots on cooperatively engaging flaps of the bottom box blank. The top box can be provided with an openable side flap whereby the carton assembly has an easy open end or side.

3,616,990
EASY-TEAR ARRANGEMENT FOR STRETCHABLE PLASTIC FILM
Joseph J. Powell, 87-50 Kingston Place, Jamaica, N.Y.
Filed May 1, 1969, Ser. No. 820,928
Int. Cl. B65d *17/00, 11/00;* **B32b** *3/10*
U.S. Cl. 229—66 **9 Claims**



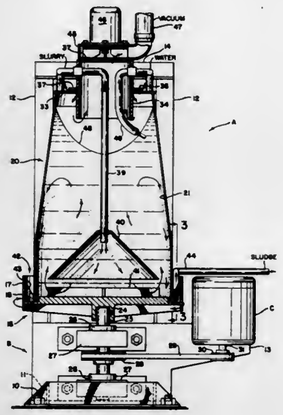
In order to make a plastic film easy to tear along a regular predetermined line, the film is laminated with a relatively nonstretchable strip. This strip can be of paper or textile and can be subdivided, scored or perforated to define the predetermined tear line. Furthermore, two strips of such nonstretchable material which lie next to each other with a maximum spacing much less than the width of the strip are used to provide a tear line between them.

3,616,991
PACKAGE FOR FLAT ARTICLES
Hans Beck, Urbanstrasse 27, 7440 Nurtingen, Germany
Filed Sept. 26, 1969, Ser. No. 861,290
Claims priority, application Germany, Oct. 2, 1968, G 68 00 417.1
Int. Cl. B65d *33/14*
U.S. Cl. 229—66 **1 Claim**



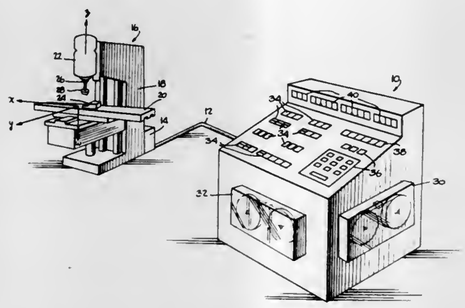
A package particularly adapted to contain a flat article and comprising two rectangular plastic sheet portions bonded firmly to one another by four seals extending immediately adjacent the four sides of said flat article; the plastic sheet portions, in a face-to-face relationship, extend beyond one of said seals away from said article to form a handling flap provided with an opening for suspension and bonded together at their edges spaced from, and parallel with said last-named seal.

3,616,992
PARTIAL VACUUM CENTRIFUGAL SEPARATOR
James S. Deacon, 4492 Camellia Lane, North Olmsted, Ohio
Filed June 6, 1969, Ser. No. 831,180
Int. Cl. B01d *21/26, 43/00, 45/12*
U.S. Cl. 233—1 A **9 Claims**



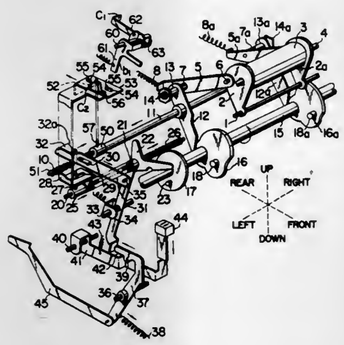
A centrifugal separator is provided for removing solid particles entrained in a liquid slurry. A column of liquid is maintained in a rotating open bottom drum by vacuum pressure and the lower end of the drum is received in a shallow basin of a coaxially rotating table. Entrained solid particles are moved by centrifugal action to an annular zone adjacent the wall of the drum where they gravitate and concentrate in a perimetric zone of the shallow basin outside of the drum wall, and are then removed in the form of sludge. Clarified liquid is removed from the top of the central core zone of the liquid in the drum.

3,616,993
NUMERICAL CONTROL SYSTEM
Richard McGuire, Smithtown, and John C. Maddock, Deer Park, both of N.Y., assignors to Logic Systems, Inc., Great Neck, N.Y.
Filed Dec. 4, 1968, Ser. No. 781,197
Int. Cl. G06k *1/02*
U.S. Cl. 234—17 **13 Claims**



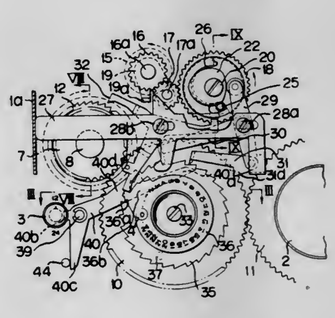
A programming arrangement for machine tools wherein address characters are presented sequentially and call sequentially for the insertion of data, the data being registered on a block-by-block basis and transferred so as registered into a machine control logic unit; and a machine control logic unit providing automatic direction sensing, speed control, backlash and tool compensation and accurate motor drive control.

3,616,994
PRINTING DEVICE IN A RECORDING CALCULATOR OR THE LIKE
Rii Watanabe, Tagata-gun, Shizuoka-ken; Takashi Murakami, Mishima-shi, and Kiyokazu Kobayashi, Tagata-gun, Shizuoka-ken, all of Japan, assignors to Tokyo Denki Kabushiki Kaisha, Tokyo-to, Japan
Filed June 7, 1968, Ser. No. 735,244
Int. Cl. G06c *29/00*
U.S. Cl. 235—58 P **5 Claims**



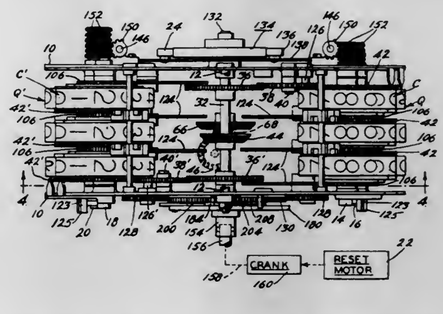
The platen of a printing device in a recording calculator can be moved into and out of printing position by engaging and disengaging an actuating linkage with and from a driving mechanism by means of a control device, whereby printing is selectively carried out or not carried out. This movement of the platen is utilized also to rotate the platen and advance the recording sheet through relatively large increments of advance to improve legibility of printed numerals and facilitate detection of errors.

3,616,995
FILM COUNTER DEVICE FOR USE WITH A CAMERA USING NONPERFORATED FILM
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 30, 1968, Ser. No. 771,779
Claims priority, application Japan, Nov. 7, 1967, 42/71560
Int. Cl. G06m *1/00*
U.S. Cl. 235—91 C **1 Claim**



A film counter device for use with a camera using nonperforated film provided with a cam in the form of a cardioid adapted to rotate in response to the rotation of a film winding spool. A pair of notched disks is disposed coaxially of said cam with each having only one notch with means for deviating or coinciding the notches in phase. A lever is provided whose one end is adapted to press against the cam while the other drives a film counter numeral indicating disk; and another lever is provided whose one arm is adapted to drop into both of the notches when the cam and the disks make substantially one rotation respectively so that the notches coincide in phase (in this case the numeral-indicating disk being rotated by one numeral) and whose other arm is provided with a lever adapted to prevent the rotation of the film winding spool.

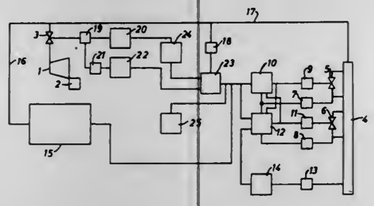
3,616,996
REGISTER RESETTING MECHANISM
Elnar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Aug. 18, 1969, Ser. No. 850,739
Int. Cl. G04f *1/06, 1/08*
U.S. Cl. 235—144 D **8 Claims**



A register has a plurality of groups of decimally related number wheels which are driven during a dispensing opera-

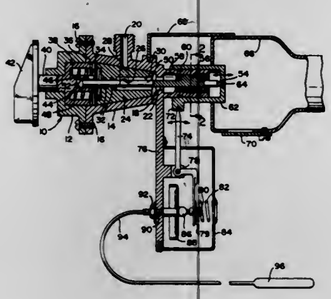
tion to indicate the quantity and cost of a commodity being dispensed. A resetting mechanism functions to un couple the wheels from the driving means, to reset the wheels to zero, and then to recouple the wheels to the driving means, in response to the rotation of a reset shaft in one direction through a portion of a revolution, followed by the rotation of this shaft in the reverse direction back to its original position. The reciprocatory rotation of the reset shaft is effected by means of a reset motor which typically also effects other resetting and adjustment or setting operations in a selective dispensing apparatus.

3,616,997
COMBUSTION REGULATOR
Jerk Gunnar Oldenburg, Genarp, Sweden, assignor to Kockums Mekaniska Verkstads AB, Malmo, Sweden
Filed May 19, 1969, Ser. No. 825,694
Claims priority, application Sweden, May 20, 1968, 6794/68
Int. Cl. F23n 1/08
U.S. Cl. 236—14 **14 Claims**



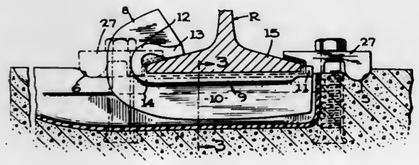
A combustion-regulating system for steam boilers including a stem pressure transducer and a steam pressure requirement signal connected to a proportional circuit and integrating circuit, whose output is connected to an input of an amplifier stage which is differentially connected and contained in a first control circuit, whose output is connected with a positioning unit contained in the first control circuit. Said amplifier stage is also connected to an input of a second differentially connected amplifier stage connected in a second control circuit, whose output is connected with a positioning unit contained in the second control circuit. The input of the amplifier stage of the first control circuit is connected to the fuel oil pressure transducer and the input of the amplifier stage of the second control circuit is connected to an air flow sensing device and a fuel oil pressure transducer.

3,616,998
THERMOSTATIC CONTROL DEVICE
Frank H. Schneider, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 7, 1969, Ser. No. 864,404
Int. Cl. G05d 23/12
U.S. Cl. 236—99 **13 Claims**



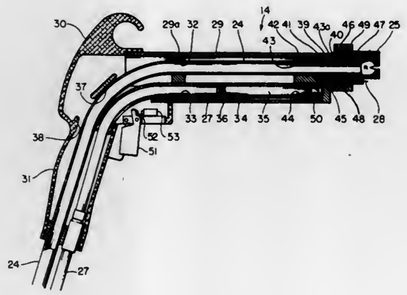
A thermostatic control device controlling the flow of fuel to a gas burner and including a pair of movable valve elements with temperature-setting means positioning one of the valve elements at a position corresponding to a desired temperature setting, and thermal-responsive means operatively connected to move the other valve element in response to temperature variations from the desired temperature setting.

3,616,999
RAIL FASTENER ASSEMBLY
Emerson J. Ruble, Hinsdale, Ill., assignor to Portec, Inc., Oak Brook, Ill.
Filed Nov. 7, 1969, Ser. No. 874,869
Int. Cl. E01b 13/00, 09/00
U.S. Cl. 238—315 **12 Claims**



A rail-mounting arrangement includes a crosstie provided with a rail-receiving platform including a longitudinal recess therein to accommodate a clip-type rail anchor thereby precluding rail creep in either direction. Rail gage clips are removably attached to the crosstie on both sides of the rail base to maintain the prescribed gage and include means to prevent displacement thereof during the inherent rail wave motion.

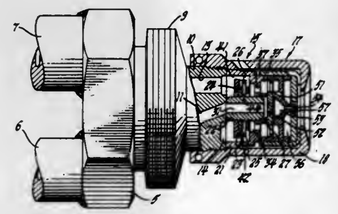
3,617,000
SPRAY GUN FOR APPLYING SOLID PARTICLES
Richard O. Probst, and Kenneth E. Pollard, both of Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed June 16, 1969, Ser. No. 833,352
Int. Cl. B05b 5/02
U.S. Cl. 239—15 **17 Claims**



A spray gun for applying solid particles to an article includes a handle and a barrel member. The passageway for conveying a suspension of solid particles in a carrier gas is an elongated flexible tube which extends from the spray nozzle through a bore in the barrel member, the handle and outwardly from the gun to the source of coating material particles. Such a gun can also include an elongated insulator forming a passageway for high-voltage circuit means within the gun and curved between the grip portion of the handle and another bore in the barrel. A closure means of insulating material at the front of the barrel can include a portion projecting into the barrel to provide electrical insulation for the connection between the high-voltage circuit means and an

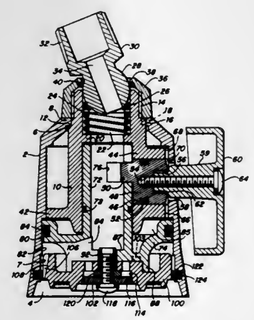
electrode mounted on the front of the spray gun. The closure means can also provide a means for attaching a spray nozzle at the front of the gun.

3,617,001
FUEL NOZZLE CONTAMINANT TRAP
Richard G. Grundman, Marne, Mich., and Cecil H. Sharpe, Brownsburg, Ind., assignors to General Motors Corporation, Detroit, Mich.
Continuation of application Ser. No. 617,164, Feb. 20, 1967, now abandoned. This application Nov. 14, 1968, Ser. No. 778,002
Int. Cl. F02m 55/00
U.S. Cl. 239—86 **14 Claims**



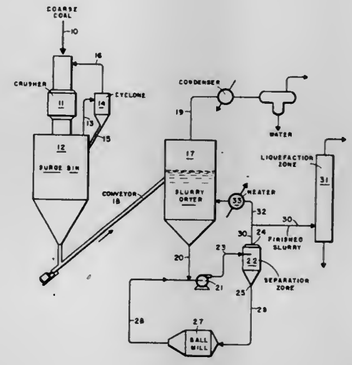
A fuel spray nozzle for use with contaminated fuels embodies a trap for particles such as sand grains and lint. One form is made up of disks with radial slots and rings or flanges defining circumferential bars, to provide plural tortuous restricted flow paths ahead of the nozzle swirl ports. The other form has radial passages joining concentric annular axial passages.

3,617,002
SHOWER HEAD
Paul C. Symmons, Newton, Mass., assignor to Symmons Engineering Company, Braintree, Mass.
Filed June 19, 1970, Ser. No. 47,709
Int. Cl. B05b 1/32
U.S. Cl. 239—460 **8 Claims**



In a shower head having a hollow body, a spray-adjusting assembly including a water-conducting member and a flow-obstructing unit mounted for reciprocal movement within the body, and manually operable means for moving said assembly within said body, the provision of means for facilitating movement of said assembly relative to said hollow body.

3,617,003
REGULATING COAL SLURRY SETTLING RATES
Edgar C. Winegartner, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed May 4, 1970, Ser. No. 34,233
Int. Cl. B02c 23/00
U.S. Cl. 241—16 **6 Claims**

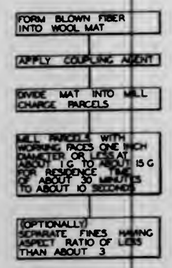


The sizes and specific gravities of coal solids in a slurry are limited on the basis of particle settling rates to prevent undesirable settling of the solids in a coal slurry handling system, especially in a liquefaction reactor for liquefying slurried coal solids. After makeup with crushed coal particles in a suitable liquid carrier, a coal slurry is charged in a continuous process to a settling rate separation zone, preferably embodied in a hydrocyclone, where the slurried coal solids are segregated according to whether they exceed a predetermined settling rate limit, one which preferably is within the range from about 0.5 to about 300 ft./min., coal solids settling faster than the limit rate being separated for constitution in an unfinished heavy slurry stream from the slurry particles which do not settle, at maximum settling velocity, in excess of the settling rate limit, such particles issuing in a finished slurry stream as product from the settling rate separation zone. The unfinished heavy slurry stream is passed to a comminution zone, preferably a ball mill, where the coal particles in the stream are milled to reduce their sizes, at least a portion of the particles being reduced to sizes, which for the specific gravities of such particles, will permit the particles to settle in the separation zone at a rate not greater than the predetermined limit. The comminuted heavy slurry stream is then mixed with new slurry feed and recycled to the settling rate separation zone where the comminuted coal particles and the new feed coal solids which do not settle at a maximum velocity in excess of the predetermined limit are constituted as finished slurry product, the particles exceeding the limiting rate being cycled to the comminution zone for further treatment.

3,617,004
SILICEOUS FIBER FOR REINFORCEMENT AND METHOD OF ITS MANUFACTURE
James Ward Hyland, Jr., Maumee, and Roger Hill Bengtson, Whitehouse, both of Ohio, assignors to Johns-Manville Corporation, New York, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,416
Int. Cl. B02c 15/00
U.S. Cl. 241—15 **15 Claims**

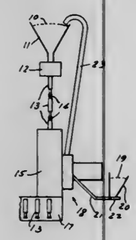
A plastic reinforcement of siliceous fibers, preferably glass of 4 to 5 microns diameter and 80 to 150 microns length, coated with a coupling agent. Short length siliceous fibers for reinforcing plastics are produced from blown wool by treating the wool with a coupling agent and mechanically separat-

ing the fibers by milling. When incorporated in plastic matrices, the fibers provide physical characteristics corresponding to or superior to more expensive drawn siliceous fibers having the same aspect ratio.



A method of an apparatus for conditioning thermoplastic material in the continuous making of articles in a machine to which the material is fed from a hopper in finely divided state and whereafter excess or scrap material trimmed from the articles and defective articles are comminuted for reuse in the machine. There is added to and commingling with the comminuted material finely divided virgin material to make up for the amount of plastic material remaining in the trimmed usable articles, and the mixture of material is delivered to said hopper.

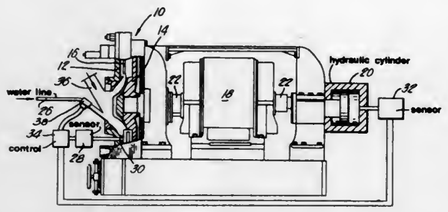
3,617,005
COMMINUTING METHOD OF AND MEANS FOR CONDITIONING THERMOPLASTIC MOLDING MATERIAL
William S. Pearson, Hampstead, Md., assignor to Cypro Incorporated, Hampstead, Md.
Filed Mar. 18, 1969, Ser. No. 808,250
Int. Cl. B02c *21/02, 18/44, 25/00*
U.S. Cl. 241—18 **8 Claims**



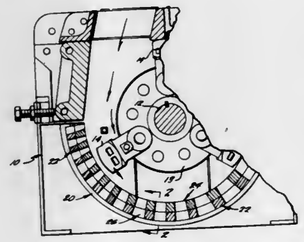
A method of an apparatus for conditioning thermoplastic material in the continuous making of articles in a machine to which the material is fed from a hopper in finely divided state and whereafter excess or scrap material trimmed from the articles and defective articles are comminuted for reuse in the machine. There is added to and commingling with the comminuted material finely divided virgin material to make up for the amount of plastic material remaining in the trimmed usable articles, and the mixture of material is delivered to said hopper.

3,617,006
REFINER CONTROL
Howard W. H. Jones, Grand'Mere, Quebec, Canada, assignor to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas
Filed Apr. 28, 1970, Ser. No. 32,606
Int. Cl. B02c *7/00*
U.S. Cl. 241—21 **9 Claims**

A refining system wherein the consistency of the raw material fed and the energy applied to a refining zone defined by a pair of relatively rotating discs are regulated to ensure that steam generated between the discs develops a counterthrust tending to balance the pressure applied to the refining zone and wherein the steam pressure in the zone is sensed and the dilution water added controlled in accordance with this pressure sensed, thereby to maintain a balancing counterthrust between the discs, whereby effective disc separation may be maintained together with substantially uniform stock quality while avoiding plate clashing.

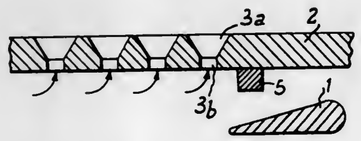


3,617,007
GRATE BAR ASSEMBLY FOR A ROCK CRUSHER
Joseph F. Bonarrigo, Jr., 2925 Manns Ave., Baltimore, Md.
Filed Oct. 3, 1969, Ser. No. 863,428
Int. Cl. B02c *13/13, 13/284*
U.S. Cl. 241—86 **3 Claims**



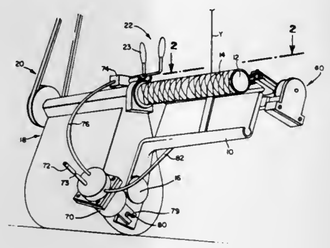
A rock or ore crusher is provided with a grate bar assembly through which falls comminuted material as it is triturated by the impact member moving within the crusher. Such grate bar assembly is fabricated of abrasive resistant metal and is relatively expensive. The grate assembly of the present invention is constructed of a lower grate section and an upper grate section which may be replaced when worn or abraded without the necessity of replacement of the lower grate section. Interlocking means secures the sections together.

3,617,008
REFINING APPARATUS, CHIEFLY FOR SCREENING PAPER PULP
Pierre Lamort, Vitry-le-Francois, France, assignor to Etablissements E & M Lamort Fils, Vitry-le-Francois, Marne, France
Filed July 25, 1968, Ser. No. 747,503
Claims priority, application France, Aug. 2, 1967, 116,590
Int. Cl. B02c *13/13, 13/14*; **B07b** *1/00*
U.S. Cl. 241—88 **9 Claims**



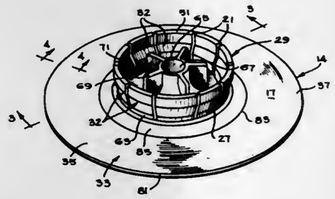
A perforated screen associated with the conventional blades the movement of which over the screen removes the impurities collecting on the perforations. To reduce the component of the speed of the fluid in parallel with the surface of the screen, hindrances constituted by parallel recesses or by parallel blades are provided in substantial parallelism with the blades across the screen surface facing the blades; said hindrances may be continuous or arranged in staggered formation.

3,617,009
YARN PACKAGE PRESSURE CONTROLLER FOR YARN WINDING APPARATUS
John B. Lawson, Barrington, R.I., and Stephen C. Dangel, Westwood, Mass., assignors to Robison Rayon Company, Inc., Providence, R.I.
Filed Sept. 2, 1969, Ser. No. 854,519
Int. Cl. B65h *54/00*
U.S. Cl. 242—18 R **7 Claims**



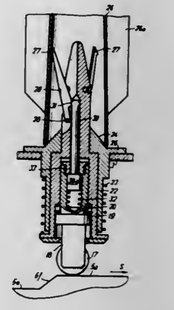
A closed-loop servosystem for a yarn winder to maintain a controlled preselected transverse force on the surface of the yarn package. The preselected force is maintained by a spring-loaded damped roller or button guide. The small perturbations in the position of this same roller or button guide are simultaneously used to control the pneumatic positioning of the roller with respect to the winding spindle during the package build.

3,617,010
SPOOL FOR ENDLESS TAPE CARTRIDGE
Don R. Coy, Palatine, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Jan. 15, 1970, Ser. No. 3,070
Int. Cl. B65h *17/48, 75/18*
U.S. Cl. 242—55.19 A **5 Claims**



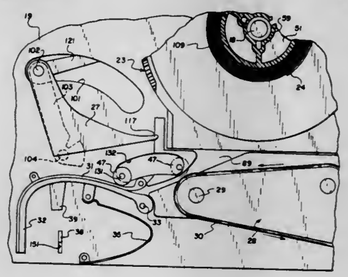
A molded plastic spool having a tape platform for an endless array of magnetic tape and a hub with an upper hub extension thereon is formed in one piece to replace presently used two-piece spools. The hub extension, which has a larger diameter than the diameter of the lower portion of the hub joined to the platform, is formed to allow inward deflection to permit stripping of the spool from a mold. Preferably, the hub extension is segmented to provide individual segments which are deflected radially inwardly during stripping and then allowed to return outwardly when free of the mold.

3,617,011
DEVICE FOR THE AUTOMATIC FASTENING OF SUPPLY YARN TUBES OF VARIOUS DIAMETERS AND FOR THEIR CHANGING IN TEXTILE MACHINES
Premysl Kostelecky, Liberec; Vladislav Hlavaty, Liberec; Jiri Havlas, Liberec, and Jaromir Rydlo, Vesec u Liberec, all of Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstri, Liberec, Czechoslovakia
Filed Jan. 23, 1970, Ser. No. 5,247
Claims priority, application Czechoslovakia, Feb. 13, 1969, 959/69
Int. Cl. B65h *49/02*; **D03j** *5/08*
U.S. Cl. 242—130 **7 Claims**



A device for the automatic fastening of yarn supply tubes of various diameters and their changing in textile machines, particularly in automatic high-speed winding machines; the device permits the fastening of tubes of various diameters, and the simple refilling of the supply of separate winding units either manually or from a central magazine. Tube-fastening mandrels, which are mounted symmetrically on a rotatable disc above a cam, are made such that a body with a cone at its free end is mounted for axial traverse. Said body has a fastening mechanism mounted in its upper part for centering and fastening the supply tubes, said mechanism being controlled by a pin mounted axially traversably in a sleeve and provided with a cam follower at its end, said follower being resiliently pressed against the cam and cooperating with both the sleeve and the fastening means.

3,617,012
INTERLOCK MECHANISM FOR CARTRIDGE-LOADING MOTION PICTURE PROJECTOR OR THE LIKE
Daniel J. Stark, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,076
Int. Cl. G03b *1/04*; **G11b** *15/32*
U.S. Cl. 242—192 **4 Claims**



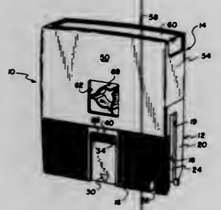
A cartridge-loading motion picture projector has a film supply spindle mounted on an arm that is movable to each of a plurality of positions wherein the spindle is engageable with a core of a film reel positioned within a cartridge on the projector, and the arm and spindle are movable to at least one

additional position wherein the spindle is adapted to support an unenclosed reel of film or the like. The projector comprises a film-feeding mechanism that is at least partially movable into each of several sizes of cartridges that may be mounted on the projector for engaging a roll of film within the cartridge and for feeding said film from the cartridge to automatic threading devices of the projector. An interlock mechanism is provided for blocking normal operation of the film-feeding mechanism when the spindle and arm supporting it are moved to the reel-supporting position.

3,617,013
CARTRIDGE

Dianne B. Ainslie, and Arthur H. Crapsey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 27, 1969, Ser. No. 837,279
Int. Cl. G11b *23/10*
U.S. Cl. 242—197 **9 Claims**

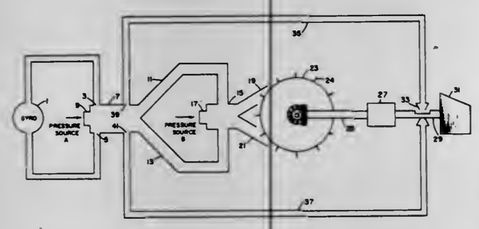


A cartridge has two separate parts with recesses therein jointly defining a chamber for a reel of film or other web material when the cartridge parts are assembled together. Cooperating latch structure on the cartridge parts includes at least one opening in a wide wall of one cartridge part which is adapted to receive a latch portion projecting from a wide wall of the other cartridge part. In assembling the cartridge the latch portion on the second cartridge part is deflected into the recess in the first cartridge part and then snaps into the latch opening in the first cartridge part. In a preferred embodiment of the invention two separate latch members project from a second wide wall of the second cartridge part and enter two spaced latch openings in a corresponding wide wall of the first cartridge part. Provision may be made for vertical stacking of horizontally positioned cartridges as well as for side-by-side positioning of the cartridges in adjacent vertical planes.

3,617,014
FLUIDIC VANE ACTUATION DEVICE

Carl H. Warren, New Hope, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 3, 1969, Ser. No. 854,842
Int. Cl. F41g *7/12*; **F42b** *13/30, 15/02*
U.S. Cl. 244—3.1 **4 Claims**

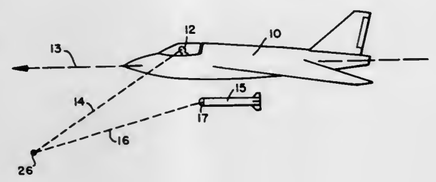


A fluidic control device for positioning missile directional vanes wherein an error signal from the missile gyro controls the output of a two-stage fluid amplifier. The output of the amplifier is used to drive a high-response power source which in turn rotates the directional vanes. A fluid feedback control is utilized in conjunction with the vanes for controlling the amplifier in response to the position of the vanes.

3,617,015
HEAD-COUPLED MISSILE-AIMING DEVICE

Floyd A. Kinder, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 4, 1968, Ser. No. 765,117
Int. Cl. F41g *7/10, 9/00, 11/00*
U.S. Cl. 244—3.14 **1 Claim**

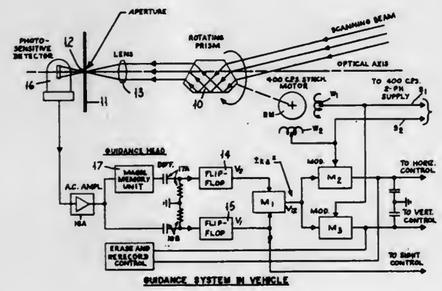


A device having multiple sensors which provide a voltage, responsive to the movement of the head of an aircraft pilot, proportional to an angle from the axis of the aircraft to align the tracking unit of a missile with a target to permit firing of the missile when the aircraft cannot be aligned with the target.

3,617,016
IMAGE MOTION AND CHANGE TRANSDUCERS AND SYSTEMS CONTROLLED THEREBY

Emil J. Bolsey, 160 Concord Ave., White Plains, N.Y.

Continuation-in-part of application Ser. No. 118,194, June 19, 1961, now abandoned. This application May 27, 1968, Ser. No. 778,870
Int. Cl. F41g *9/00*; **F42b** *15/02*; **F41g** *11/00*
U.S. Cl. 244—3.16 **24 Claims**

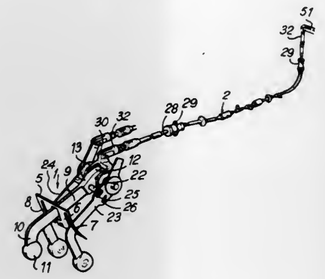


A system for generating signals indicative of changes in multiple scanned images. The same subject may be scanned at successive intervals or multiple subjects may be scanned simultaneously. In the former situation, signals representative of the scanned image are stored and then compared with signals from a subsequent scanning. Where simultaneous scanning of subjects occurs, signal comparison is immediate. In both cases, output signals are generated in response to changes in the scanned images, the signals being used for positional correction or data readout.

3,617,017
POWER-TRANSMITTING MECHANISMS, AND APPLICATIONS THEREOF, NOTABLY TO HELICOPTERS

Gerard Alain Lafortune, Marignane, and Rene Marcel Leonard, Clas-Cabries, both of France, assignors to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, Seine, France

Filed Oct. 7, 1969, Ser. No. 864,973
Claims priority, application France, Oct. 7, 1968, Oct. 8, 1968, 168,928; 169098
Int. Cl. B64c *27/04*
U.S. Cl. 244—17.11 **15 Claims**

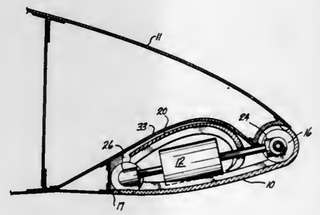


A cross-connection device between a lever for coupling a powerplant with, or decoupling it from, at least one helicopter rotor, said powerplant continuously driving ancillary generators, and at least one throttle lever associated to the powerplant, the cross-connection being effected mechanically by engagement between the powerplant coupling lever and the throttle lever, said powerplant coupling lever describing to that end a motion directed by a grid for guiding said levers.

3,617,018
FOLDING FLAP

Russell E. Baetke, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 26, 1970, Ser. No. 5,685
Int. Cl. B64c *3/50, 9/26*
U.S. Cl. 244—42 D **4 Claims**



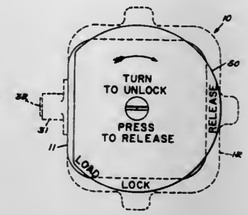
A flap connected to a wing by a geared hinge. Extension or retraction of the flap is accomplished by an actuating and drive mechanism arranged on the flap. Upon command of an associated remotely positioned control means the actuating mechanism will via the drive mechanism drive the geared hinge connection for moving the flap into a predetermined position in reference to the wing surface.

3,617,019
LOCKING DEVICE FOR PARACHUTE HARNESS QUICK RELEASE

Joseph E. Femia, 277 Fountain St., Framingham, Mass.

Filed Apr. 3, 1970, Ser. No. 25,486
Int. Cl. B64d *17/32*
U.S. Cl. 244—151 **4 Claims**

A locking device for a parachute harness quick release comprises a positive locking means which prevents premature retraction of pins which retain the parachute harness straps. The pins are simultaneously depressed by pressing a

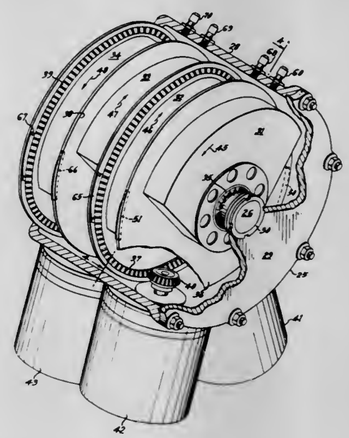


button to release a plurality of parachute straps from the pins after unlocking of the pins by the locking means.

3,617,020
VIBRATION CONTROL SYSTEM

Milton I. Gerstine, Ardentown, Del., and John E. Burkam, Media, Pa., assignors to The Boeing Company, Seattle, Wash.

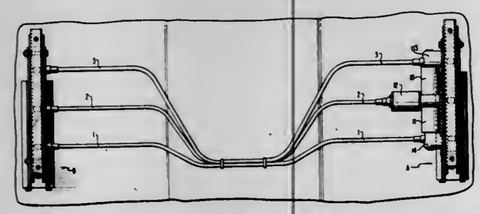
Division of Ser. No. 695,251, Jan. 2, 1968, Pat. No. 3,509,971.
Filed Apr. 27, 1970, Ser. No. 43,271
Int. Cl. B64c *27/00*
U.S. Cl. 244—17.27 **16 Claims**



A vibration control system for balancing out fuselage vibrations in one or two directions in one plane, which vibrations are caused by the rotating wing of an aircraft; the vibration control system having a force-producing mechanism of at least two pairs of counterrotating weights driven by at least two AC asynchronous motors, with the motors being synchronously operated to revolve the weights at three times the angular velocity of the rotating wing by electronic motor control systems therefor. Each motor control system utilizes a common speed reference generator producing pulses having a given repetition rate and includes an electromagnetic pickoff for sensing the speed of the motor and producing pulses having a repetition rate which is a predetermined function of motor speed and equal to the given repetition rate of the speed reference generator when the weights are being rotated at three times the angular velocity of the rotating wing. Both pulse trains are fed to series-connected tunnel diodes forming a reversible register responsive to a difference in the number of the pulses received, the register having different operating potentials or states representative thereof for actuation of blocking oscillators when the register is in certain operative states. The oscillators then cause SCR switches to become actuated to couple the power supply to the motor for increasing the speed of the motor. When the register is in one of its inoperative states, the switches are not

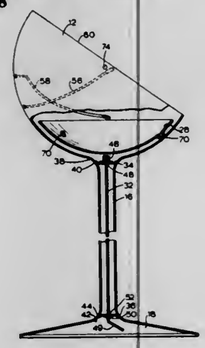
in their actuated condition and the motor is decoupled from the power supply, which causes the speed of the motor to decrease, the speed being further decreased by use of an eddy current brake. Another electromagnetic pickoff senses the position of the weight which gates a command signal from a vibration-sensing accelerometer, such signal being supplied to the register which responds thereto by shifting the state thereof to one or another operative state or to one or another inoperative state. Such a command signal either delays or speeds up the time when the switches would normally either couple or decouple the motor and power supply so as to either advance or retard the phase of the motor and ultimately cause a change in the angular position of the weight to appropriately oppose the vibrations on the fuselage.

3,617,021
VEHICLE SEAT SUPPORTING AND ADJUSTING MECHANISM
Joseph C. Littmann, Temperance, Mich., assignor to Dura Corporation, Toledo, Ohio
Filed Aug. 11, 1969, Ser. No. 849,024
Int. Cl. B60n *1/02*
U.S. Cl. 248—393 **1 Claim**



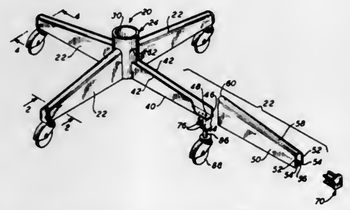
Vehicle seat supporting and adjusting mechanism in which three reversible electric motors are employed for effecting horizontal to-and-fro movements, and tilting movements respectively, the motors being arranged with two in axial alignment and the third between the other two and at right angles thereto. The drive from each motor to a helical screw shaft is through a worm which meshes with a spiral gear carried by a tiltable annulus. The annulus has internal threads coaxial with the spiral gear for reception of the threads of the screw shaft. The worm is driven by a flexible cable, which is secured in position by a plastic clip provided with spring fingers which snap into engagement with a housing shoulder.

3,617,022
COOKING DEVICE
William H. Wiggins, c/o Embryon Company, 50A Soudan Avenue, Toronto 7, Ontario, Canada
Filed Apr. 21, 1969, Ser. No. 817,864
Claims priority, application Canada, Mar. 25, 1969, 046,627
Int. Cl. F16m *13/00*
U.S. Cl. 248—158 **3 Claims**



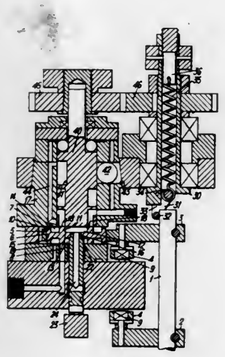
A cooking device comprising upper and lower hemispheres wherein the peripheral rim of the lower hemisphere is tilted at an angle to the axis of a pedestal support to which it is rigidly secured. The upper hemisphere is rotatably mounted on the lower hemisphere so as to rotate about a common axis of each, and is dimensioned so as to rotate without interference over at least a portion of the outer surface of the lower hemisphere. Stop means are provided to preclude rotation of the upper hemisphere in the other direction over the lower hemisphere so that the upper hemisphere forms a hood for the lower hemisphere. Pedestal means are provided comprising a tension-compression structure wherein a tube having flared ends is subjected to compression forces by tightening a threaded tension rod within the tube.

3,617,023
SUPPORT
Alvin R. Schneiderman, West Nyack, N.Y., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,874
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.7 **38 Claims**



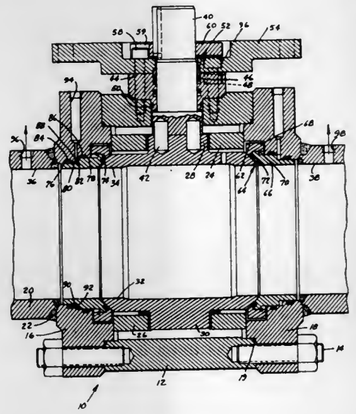
A pedestal is formed by providing a centrally disposed hub with a plurality of radially extending members of channel configuration opening upwardly. A sleeve of leglike configuration is slid onto each channel member until a lip formed at one end of the sleeve seats in a notch formed in the hub. A plug is then set into the open end of the sleeve and channel member. The plug and sleeve may be positioned by insertion of the pintle portion of a caster or glide through a hole formed in the bottom of the channel member and the journaling of said pintle in an aperture appropriately formed in the plug, or by screws or both.

3,617,024
COPY MILLING DEVICE
Patrick William Agnew, Kilsyth Glasgow, Scotland, assignor to Precision Hydraulics Limited, Glasgow, Scotland
Filed Mar. 21, 1969, Ser. No. 809,083
Claims priority, application Great Britain, Mar. 21, 1968, 13,689/68
Int. Cl. B23q *35/16*
U.S. Cl. 251—3 **14 Claims**



Apparatus for tracing the contour of a shaped member including a platform adapted to mount a shaped member and a feeler mounted on a carrying head and adapted to engage the shaped member, means tending to maintain the feeler in engagement with the shaped member, and servomotor devices coupled to the platform for movement of the platform respectively in directions at right angles to each other to trace the contour of said shaped member, the velocity of said devices being controlled by velocity control means, for example, valves or other movement-sensing means actuated by the aforesaid movement of said feeler and the feeler being rigidly mounted on a first arm which, in turn, is pivotally mounted intermediate its ends on a second arm for movement about an axis parallel to the longitudinal axis of the feeler, the second arm being pivotally mounted on the carrying head for movement about a second axis parallel to and spaced from the first axis, the end of the first arm remote from the feeler actuating the velocity control means.

3,617,025
BALL VALVE WITH RETRACTABLE SEAT RINGS
Charles C. Gerbic, San Anselmo, and Terrence V. Molloy, Pinole, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.
Filed July 6, 1970, Ser. No. 52,445
Int. Cl. F16k *25/00*
U.S. Cl. 251—172 **8 Claims**

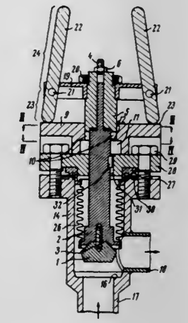


A valve seat ring seals against a valve closure on a main sealing diameter. A trailing seal ring and an intermediate seal ring seal between the seat ring and the body on diameters respectively smaller than and larger than the main seal diameter. The annular area between these seal diameters is opposed, at least in part, at the front of the seat ring by body space pressure at a level intermediate the upstream and downstream pressure. This provides a force differential that biases the seat ring forward to seal or rearward to retract, depending upon whether upstream or downstream pressure is introduced between the seal rings.

3,617,026
VALVE FOR VACUUM INSTALLATION
Georgy Filippovich Polyakov, ulitsa Akademicheskaya, 23, kv. 8; Boris Nikolaevich Petrov, ulitsa Ilicha, 11, kv. 29; Vladimir Lvovich Vanin, ulitsa Gogolya, 31, kv. 35, and Vladimir Alexandrovich Kamardin, ulitsa Dachnaya, 25, kv. 71, all of Novosibirsk, U.S.S.R.
Filed Dec. 23, 1969, Ser. No. 887,647
Claims priority, application U.S.S.R., Feb. 20, 1969, 1300959
Int. Cl. F16k *31/00, 31/524*
U.S. Cl. 251—296 **3 Claims**

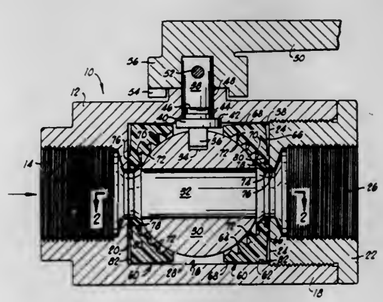
The invention relates to valves for vacuum installations wherein the closing element is connected with the movable part of the drive which can be fixed in the "open" and "closed" positions and can move freely between these positions.

The claimed drive comprises a bushing having side projections and installed with their aid in linear guides of the valve body for moving in them without turning towards a seat 16 and away from it with the aid of at least one two-arm lever connected with said bushing and bearing with one end against the body of said valve when the latter is opened. The length of the linear guides is approximately equal to the length of the free travel of said bushing, and the side projections of said bushing and said body of said valve have flats



slanted at one and the same acute angle to the longitudinal axis of said valve for pressing forcibly said closing element against said seat when said flats on said side projections of said bushing interact with said flats on said body said interaction being effected by means of said two-arm lever turned around the longitudinal axis of said valve after said bushing has completed its free travel towards said seat.

3,617,027
ROCKING SEAT VALVE
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Continuation-in-part of application Ser. No. 587,002, Oct. 17, 1966, now abandoned. This application July 1, 1970, Ser. No. 51,630
Int. Cl. F16k *27/06*
U.S. Cl. 251—315 **6 Claims**

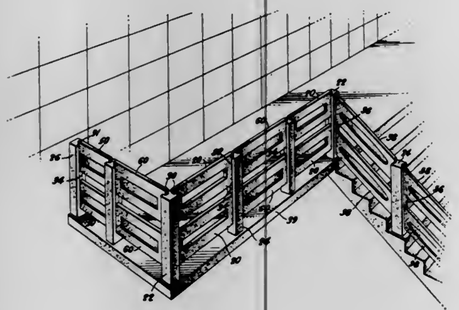


A ball valve having upstream and downstream seats sealed to the body at the inner peripheries of the seats. The seats twist or rock upon upstream and downstream movements of the ball. The upstream seat is forced away from the ball upon closing of the valve to prevent damage to the seat by the nose of the ball, and the outer peripheral portion of the seat is out of the path of the nose of the ball on opening of the valve. Various designs of seating surfaces for the seats are disclosed.

3,617,028
PRECAST REINFORCED CONCRETE POST AND RAIL ASSEMBLY

David Bach, 2601 N.E. 55th Court; Walter Rothman, 2801 N.E. 51st St., Fort Lauderdale, Fla., and Carlos Manuel Pascual, 571 N.W. 49th Ave., Plantation, Fla.

Continuation-in-part of application Ser. No. 807,043, Mar. 13, 1969, now Patent No. 3,554,495, dated Jan. 12, 1971.
This application Apr. 28, 1970, Ser. No. 32,554
Int. Cl. E04h 17/16
U.S. Cl. 256—19 7 Claims

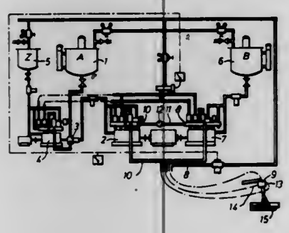


A precast reinforced concrete post and railing assembly of panels for balconies, walkways and stairways, the posts having vertical grooves to hold the panels between them after the panels have been slid into place when the posts have been erected on the flat surfaces. The panels are inserted in pairs which may abut each other or concrete spacers may be used to provide vertical spacing between panels supported by the same pair of posts.

3,617,029
PROCESS AND APPARATUS FOR THE PRODUCTION OF FOAM PLASTICS MATERIALS IN PARTICULAR POLYURETHANE FOAMS

Karl Breer, Koeln-Flittard, and Claus Nadolski, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 13, 1969, Ser. No. 799,022
Claims priority, application Germany, Mar. 23, 1968, P 17 78 061.9
Int. Cl. B01f 5/06
U.S. Cl. 259—18 3 Claims

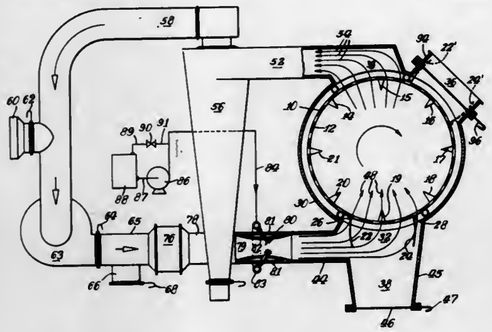


In the production of foam plastic, changes in the specific volume of the materials mixed together for the reaction which forms the foam, may adversely affect the quality of the product. To compensate for such changes, the feed conduits conveying the materials to the mixing chamber are interconnected by a conduit in which a distensible member sealing the feed conduits from each other, is mounted.

3,617,030
MIXING EQUIPMENT FOR DRY VEGETABLES

Pelopida Tironi, Legnago, Italy, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed July 15, 1969, Ser. No. 842,834
Int. Cl. B01f 9/00
U.S. Cl. 259—81 R 7 Claims



Covers a method and apparatus for mixing dry vegetables without breakage. The vegetables are placed within a cylindrical drum that is rotatable about a horizontal axis. This drum is closed at both of its ends, and its cylindrical wall is formed with many openings or perforations. A stream of air is passed upwardly through the bore of the drum, as it is rotated. The air enters the drum bore through an exposed lower section of the surface of the drum wall, and discharges through an upper section of the drum wall. The air has a sufficient velocity to fluidize the vegetables. A plurality of mixing blades are mounted on the interior surface of the drum wall, and extend radially inwardly and axially (longitudinally) of the drum. These blades coact with the airstream, upon rotation of the drum, to cause a gentle mixing action.

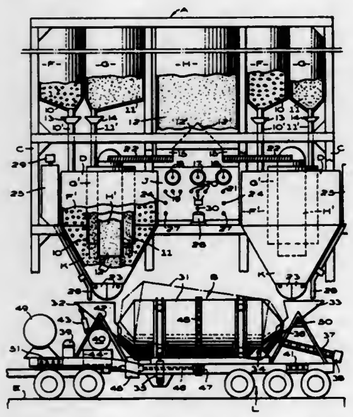
Treating material may be added to the airflow prior to its entry into the mixing drum. The openings in the drum wall permit dust and small broken pieces, that become entrained in the airflow, to be removed from the mixer.

Air flowing out of the drum is passed through a cyclone separator to permit settling of entrained material, and the air is then recirculated.

3,617,031
CONCRETE BATCHOR PLANT AND DOUBLE-END LOADING TRANSIT MIXER

Hugh P. Paris, 3101 Middlefield Road, Palo Alto, Calif.

Filed July 10, 1970, Ser. No. 53,943
Int. Cl. B28c 7/04
U.S. Cl. 259—165 5 Claims



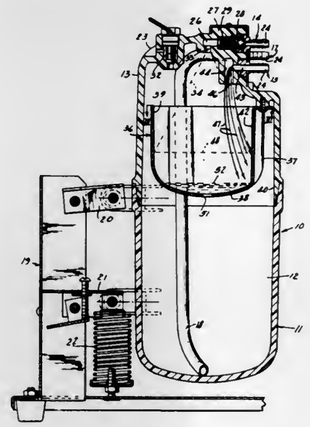
A concrete batchor plant and double-end loading transit mixer wherein a pair of containers for concrete components

are supported in spaced longitudinal relation with respect to one another so that a transit mixer may be driven into a loading position beneath the containers. A plurality of hoppers are provided for separate storage of gravel, sand and cement, and weighted amounts of these components are delivered to the containers. Moreover, a transit mixer has a rotatable drum with chutes disposed at its front and rear ends for conveying charges of the gravel, sand and cement to the interior of the drum, whereby the charges may be delivered simultaneously into both ends of the drum.

3,617,032
CARBONATOR AND METHOD OF CARBONATION

Gene A. Tracy, Hugo, Minn., assignor to The Cornelius Company

Filed Sept. 3, 1968, Ser. No. 756,959
Int. Cl. B01f 3/04
U.S. Cl. 261—18 R 8 Claims



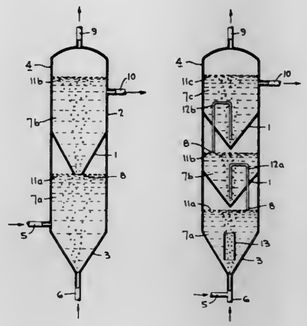
A carbonator or carbonator-blender for producing and storing carbonated water or an admixture of carbonated water and syrup. An open-top bowl is disposed within a cylindrical CO_2-pressurized chamber formed within a pressure tank. A nozzle is provided within the chamber for directing a conical stream of pressurized water into the bowl and another nozzle directs a stream of syrup against the side of the water stream. The bowl is provided with an abutment to produce a swirling action of the water and syrup therewithin and an aperture is formed in the bottom of the bowl for draining the admixture of water and syrup into the lower portion of the chamber.

3,617,033
APPARATUS FOR CONTINUOUS GAS-LIQUID CONTACT

Yataro Ichikawa; Michiyuki Tokashiki, and Tadashi Ono, all of Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 1, 1968, Ser. No. 772,733
Int. Cl. B01f 3/04; B01j 1/00; C07c 51/42
U.S. Cl. 261—21 13 Claims

A gas-liquid contacting apparatus including a vertical vessel divided in the vertical direction into at least two sections by at least one tapered partition wall; each of the sections is constructed such that the material contained in one section may be conducted successively to the bottom or lower portion of the other section by an opening provided at the bottom of the partition wall or by a conduit which extends through two sections and has an end downstream of a fluid which opens into the lower portion of the other section; the first section comprises a supply pipe for supplying liquid or suspension and a pipe for feeding a desired gas into the lower part of the section: and the last section includes at least one exhaust opening for withdrawing the treated liquid or suspension and gas. The apparatus is particularly useful for refining

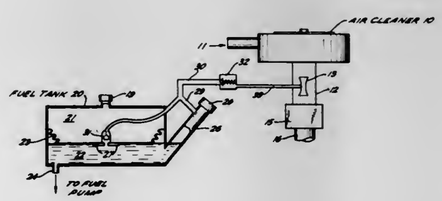


of crude terephthalic acid by contacting a suspension thereof with molecular oxygen.

3,617,034
INTERNAL COMBUSTION ENGINE FUEL SYSTEM MINIMIZING EVAPORATIVE FUEL LOSSES

Davis A. Skinner, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 25, 1970, Ser. No. 14,103
Int. Cl. B65d 25/38
U.S. Cl. 261—22 6 Claims



Fuel losses and accompanying air pollution are lessened by equipping an internal combustion engine with a fuel tank having a collapsible liquid fuel compartment and means for withdrawing any fuel vapors which form and combusting them in the engine.

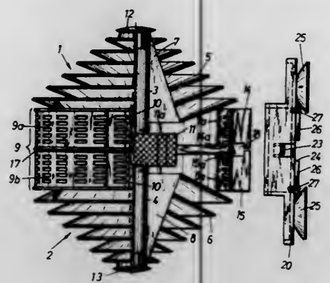
3,617,035
EVAPORATION APPARATUS FOR IMPROVING THE AIR

Kurt Albert Hoeher, Schwarzach, Austria, assignor to Noli Aktiengesellschaft, Glarus, Switzerland

Filed Dec. 11, 1969, Ser. No. 884,062
Claims priority, application Germany, Apr. 1, 1969, P 19 16 649.5
Int. Cl. B01f 3/04
U.S. Cl. 261—99 4 Claims

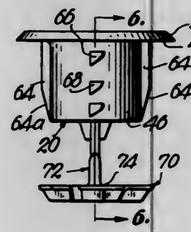
An evaporation apparatus for improving the air in industrial plants, restrooms, and the like, which includes a felt plate containing liquid to be evaporated and also comprises two groups of conical guiding fins on opposite sides of said felt plate while a two-sectional holding ring having its sections

respectively firmly connected to said two groups and detachably connected to each other is provided with prong



means for selective detachable connection to socket means in a holding plate.

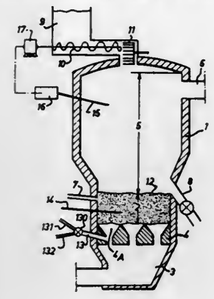
3,617,036
NOZZLE
Thomas L. Brown, Mission, Kans., assignor to The Marley Company, Kansas City, Mo.
Filed Aug. 1, 1969, Ser. No. 846,757
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **13 Claims**



Liquid-stream control and diffusion structure for each of the apertures in the hot-liquid distributor which overlies the fill assembly of a liquid-cooling tower. Each structure structure is provided with a tubular liquid-metering component adapted to be received in a corresponding aperture and a target below the metering component defined by a generally planar section provided with a series of slots therein partitioning the section into a series of outwardly projecting, individual segments located to divide the stream of hot liquid gravitating onto the target section from the metering component thereabove into an umbrella-shaped liquid pattern with spoke defining interior liquid sheets to thereby break up the column of water discharged from the metering component and assure relatively uniform distribution of the liquid over the plan area of the fill assembly therebelow served by that control and diffusion structure.

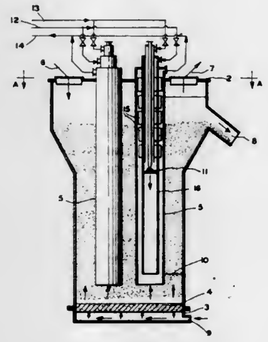
3,617,037
HEAT TREATMENT OF SLUDGES
Pierre Foch, Forbach, France, assignor to Charbonnages De France, Paris, France
Division of Ser. No. 557,414, June 14, 1966, Pat. No. 3,315,381.
Filed July 2, 1969, Ser. No. 853,580
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 **2 Claims**

Apparatus for the heat treatment of partially combustible products in the form of a liquid or pasty sludge including a fluidization reactor having a lower fluidization zone and an upper treatment zone, a distributor grid below the fluidization zone, means for introducing an oxidizing fluidizing agent beneath said distributor grid at a constant flow rate and through said distributor grid to said fluidization zone, means for feeding said combustible products to be treated into the upper portion of said treatment zone from the top, means for introducing into said fluidization zone an inert material of larger granular size than the size of said combustible products, means for introducing a separate fluid over said



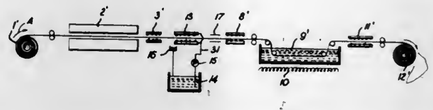
fluidizing reactor and immediately beneath said fluidization zone, which separate fluid is adapted to maintain the temperature of the fluidized layer of inert material at a valve to insure calcination of at least part of said combustible products, means for regulating the flow rate of the combustible products, and means for removing combusted material from the upper portion of said fluidization reactor.

3,617,038
APPARATUS FOR THE CONTINUOUS DEHYDRATION OF ALUMINUM FLUORIDE HYDRATES
Alfred Schmidt; Ferdinand Weinrotter; Roland Glotzl, and Rudolf Staudigl, all of Linz, Danube, Austria, assignors to Oesterreichische Stickstoffwerke Aktiengesellschaft, Linz, Danube, Austria
Filed Nov. 18, 1969, Ser. No. 877,772
Claims priority, application Austria, Nov. 18, 1968, 11,173/68
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 A **6 Claims**



Apparatus for the continuous dehydration of aluminum fluoride hydrates consisting of a fluidized-bed furnace with a cylindrical furnace jacket and a perforated plate just above the base, a lid to which gas-heated jacket radiant tubes are fixed reaching vertically almost to the said plate each of the tubes being closed at one end and having a concentric inner tube with a burner in the interior and being of almost the same length as the jacket radiant tube as well as open at the bottom so that combustion gas issuing from said burner in the interior of said inner tube flows upward in the tip of the outer tube after a change of direction of 180°. Thus both the fluidized bed outside the jacket radiant tube and, via a recuperator, the air passed to the burner are warmed.

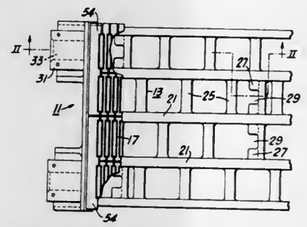
3,617,039
DESCALING APPARATUS FOR STEEL
Saburo Fukui, Hiroshima; Tsunehiro Yamazaki, Hiroshima; Masato Yamamoto, Asa-gun; Masuichi Miyake, Saeki-gun, and Masanori Okumoto, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of application Ser. No. 818,110, Apr. 21, 1969, now abandoned. This application July 3, 1969, Ser. No. 838,904
Claims priority, application Japan, Apr. 26, 1968, Aug. 17, 1968, 43/28067; 43/58798
Int. Cl. C21d *9/62*
U.S. Cl. 266—3 R **3 Claims**



Steel is descaled by applying a thin layer of alkali metal hydroxide to the surface to be descaled and subsequently heating the coated steel to a temperature above the melting point of the alkali metal hydroxide in an oxygen-containing atmosphere.

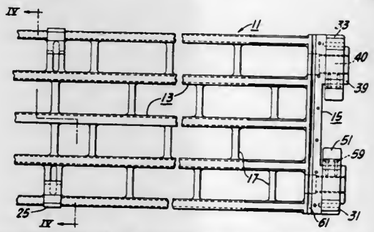
According to an alternative embodiment, an alkali metal salt solution is sprayed onto hot steel emanating from an annealing zone, whereby the water of the solution evaporates substantially immediately and the alkali metal salt melts. Apparatus for the alternative embodiment is also disclosed.

3,617,040
PALLET FOR SINTERING MACHINES
Kurt Reinfeld, and Dilip N. Assar, both of Pittsburgh, Pa., assignors to Koppers Company
Filed Oct. 1, 1969, Ser. No. 862,883
Int. Cl. B60g *11/22*
U.S. Cl. 266—21 **5 Claims**



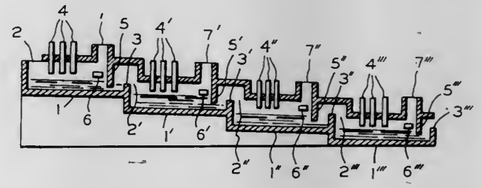
A sintering machine pallet assembly includes a main pallet frame and one or more intermediate sectional frames interposed between the main pallet frame and conventional grate bars.

3,617,041
REVERSIBLE SINTERING PALLET
Kurt Reinfeld, and Leo Silverblatt, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.
Filed Oct. 1, 1969, Ser. No. 862,884
Int. Cl. B60g *11/22*
U.S. Cl. 266—21 **4 Claims**



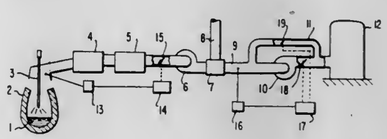
A reversible pallet for a sintering machine comprises a unitary structure that has fittings on the ends for mounting shafts with wheels, and that has detachable walls of a tooth pocket that cooperate with the teeth of a pallet-driving sprocket.

3,617,042
APPARATUS FOR CONTINUOUS REFINING OF MOLTEN METALS
Ryuichi Nakagawa, Tokyo, Japan, assignor to Director of National Research Institute for Metals, Tokyo, Japan
Filed Aug. 12, 1968, Ser. No. 752,015
Claims priority, application Japan, Aug. 14, 1967, 42/51777
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 R **6 Claims**



Apparatus for refining metals comprising two or more trough type furnaces. Each furnace includes a blowing zone having lances for feeding oxygen and slag forming materials and a flow zone wherein metal and slag flow concurrently or countercurrently. Pig iron is refined continuously by passing it through the furnaces. Residence time in each furnace is 1 to 15 minutes. CaO added to the first blowing zone is one-sixtieth to one-fifteenth of the metal. Temperatures of the metal leaving the first and second furnaces are controlled to below 1,550° C. and within 1,550° to 1,700° C. respectively.

3,617,043
GAS RECOVERY SYSTEM FOR OXYGEN BLAST CONVERTERS
Motoaki Hirao, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
Filed Feb. 27, 1970, Ser. No. 14,906
Int. Cl. C21c *5/42*
U.S. Cl. 266—35 **5 Claims**



A feedback pipe is connected to the outlet and inlet sides of a storage blower directing unburned gas from an oxygen blast converter to a storage tank. Alternatively, the unburned gas is discharged to the atmosphere. Control valves moving in contrary directions are coupled to a single controller for maintaining the pressure in the storage delivery pipe constant regardless of whether unburned gas is discharged to the atmosphere or directed to the storage tank.

3,617,044
ELECTRICAL OUTLET BOX INSTALLATION TOOL
Edward A. Strange, Florence, Oreg., assignor to Frank V. Suniga, Oakridge, Oreg., a part interest
Filed Sept. 25, 1969, Ser. No. 860,891
Int. Cl. B25b *1/00*
U.S. Cl. 269—6 **1 Claim**

A handtool with opposed movable jaws adapted to grip an electrical outlet box and position same in forwardly offset relationship to a wall stud for subsequent attachment thereto. A plate member carried by one of the jaws carries an adjustable guide bar to position the outlet box on the tool to accomplish the desired forward offset from the wall stud. The offset

distance is to accommodate the thickness of wallboard to be applied to the wall stud. A portion of the plate member abuts the front surface of the wall stud for positioning in one verti-



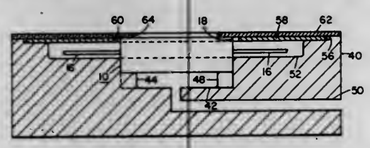
cal plane while the outlet box itself, securely held in the tool, abuts a side surface of the wall stud during attachment of the box to the stud.

3,617,045
VACUUM-ACTUATED CHUCK
Harry Da Costa, Scottsdale, and Charles G. Thornton, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 14, 1970, Ser. No. 2,881
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **4 Claims**

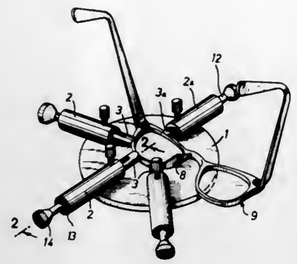


A vacuum-actuated chuck is disclosed for a delicate ceramic package, such as those used for an integrated circuit, in which the package is held firmly in position while the package leads are electrically connected to the bonding pads on the integrated circuit or chip, without, however, distorting the leads extending from the package and without injuring or damaging the package. The chuck comprises a base member having a cavity including support pads for positioning the package and a space for receiving the package leads as well as an additional space for holding a support plate in position. A resilient mat which is impervious to air and which has a hole through the middle portion thereof, fits over the plate and the edge portions of the base member and the edge portions of the package. The hole in the mat exposes the inner ends of the package leads and the bonding pads on the chip so that work may be done thereon.

3,617,046
DEVICE FOR THE GRIPPING OF AN EYEGLASS FRAME, IN PARTICULAR IN DEVICES FOR MAKING LENS TEMPLATES
Thomas Sotonyi, Wuppertall-Barmen, Germany, assignor to Firma Wenicke & Co., Dusseldorf-Eller, Germany
Filed Aug. 19, 1969, Ser. No. 851,255
Claims priority, application Germany, Aug. 21, 1968, P 17 97 139.0
Int. Cl. B25b *5/14*
U.S. Cl. 269—156 **10 Claims**

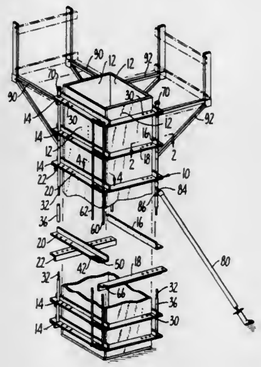


This invention relates to a device for the gripping of an eyeglass frame, in particular in devices for making lens templates, comprising a ram plunger or the like pressing one lens



amount of the frame against an adjustable abutment edge or against two counterholders.

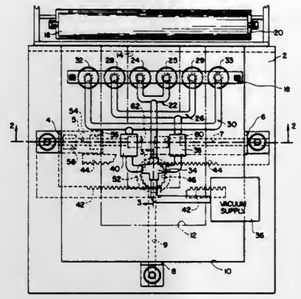
3,617,047
CONCRETE COLUMN FORM CLAMP AND METHOD
Jack A. Holt, San Bruno, and John D. Kay, Menlo Park, both of Calif., assignors to Burke Concrete Accessories, Inc., Burlingame, Calif.
Filed June 8, 1970, Ser. No. 44,412
Int. Cl. B23q *3/18;* **B25b** *5/14, 7/10*
U.S. Cl. 269—121 **12 Claims**



A concrete column form clamp and method. The clamp includes a plurality of frame members adapted to have form panels secured thereto, each of said frame members comprising a plurality of frame sections, and a plurality of elongated rod members, each of said rod members having hingedly mounted thereon adjacent frame sections of each of said frame members and extending between all of said frame members whereby corresponding sections of said frame members are ganged for articulated movement and said form clamp may be handled as a unit. The form clamp includes spacer means for maintaining adjacent frame members in spaced relationship to one another. Locking means is provided whereby the frame members may be selectively locked into a substantially rigid polygonal configuration.

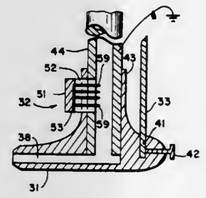
3,617,048
VACUUM PAPER FEEDER
Donald J. Albert, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,403
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 **8 Claims**

A series of sets of vacuum fingers are provided for feeding sheets seriatim from a stack. The stack is positioned on a paper support with movable side guides for positioning sheets of one of several preselected widths to be picked up by the vacuum fingers. Solenoid valves interconnect the vacuum fingers with a source of vacuum and are operated in response to



the position of the side guides so that only those sets of fingers which are operative to engage sheets of the width of the paper on the support have a vacuum applied thereto.

3,617,049
SHEET FEEDING APPARATUS
Anthony Q. Testone, Lansdale, Pa., assignor to Testone Electrostatics Corporation, West Point, Pa.
Filed Oct. 14, 1969, Ser. No. 866,206
Int. Cl. B65h *3/03, 3/18*
U.S. Cl. 271—26 **6 Claims**

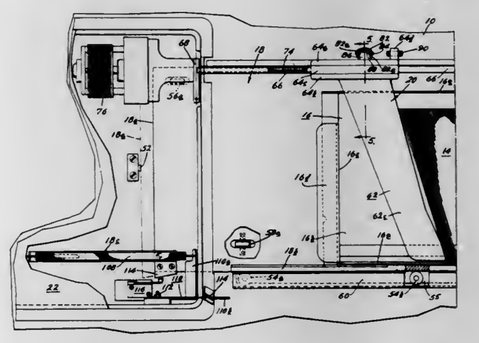


Sheet-feeding apparatus including suction cups for lifting a portion of a top sheet of a stack, and moving it laterally, and a presser foot for pressing on the remaining stack, and for blowing ionized air into the space between the top sheet and the next sheet. The presser foot has air passages through it, and an ion generator including concentric arcuate elements of insulating material with a conductive foil between them, and ionizing points extending into the presser foot from the foil.

3,617,050
MAGAZINE CONSTRUCTION FOR PACKING CASE ERECTING MACHINE
Daniel McIntyre, Portland, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Division of Ser. No. 722,943, Apr. 22, 1968, Pat. No. 3,580,143.
Filed Oct. 2, 1969, Ser. No. 863,147
Int. Cl. B65h *3/24*
U.S. Cl. 271—43 A **4 Claims**

A secondary case magazine is provided above and to one side of an upwardly open primary case magazine from which the lowermost case is cyclically withdrawn for erection. The secondary magazine is disposed generally horizontally, and holds a large number of cases in generally vertical edgewise relation. Escapement means at the exit end of the secondary magazine successively ejects each case for downward movement onto the stack of cases in the primary magazine. Means in the secondary magazine urges all of the cases therein toward said exit end, and said means operates in timed relationship with said escapement means and said means for withdrawing the lowermost case from the primary magazine.

3,617,051
CARD- AND PAPER-HANDLING APPARATUS
George P. McInerny, Cornwell Heights, Pa., assignor to Optical Scanning Corporation, Newtown, Pa.
Filed Apr. 24, 1969, Ser. No. 818,993
Int. Cl. B65h *1/24*
U.S. Cl. 271—62 B **8 Claims**

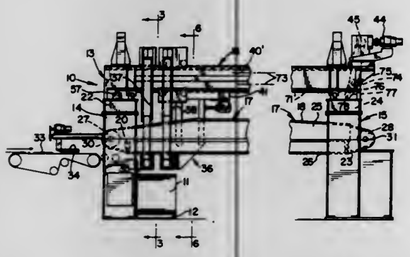


A card feed mechanism employs a carriage on which is supported a tray from which may be picked off one-by-one from a stack by pickoff means at one end of the tray. The carriage itself is urged with constant force by spring means toward the pickoff means. Feed means movably supported on the carriage moves toward the pickoff means to hold pressure on the stack at all times as the stack grows smaller. As this feed means moves forward the spring means allows the carriage to move backward to keep the pressure constant at the pickoff means. When the carriage reaches a certain position on the frame a switch in the circuit of the motor driving the feed means is opened until the carriage, under the urging of the spring moves forward again to a predetermined position.

3,617,052
SHEET PILER HAVING MOVABLE SIDE GUIDES
Dario Buccicone, Gary, Ind., assignor to Buccicone Engineering Co., Inc., Gary, Ind.
Filed Oct. 2, 1969, Ser. No. 863,297
Int. Cl. B65h *29/30*
U.S. Cl. 271—63 A **15 Claims**

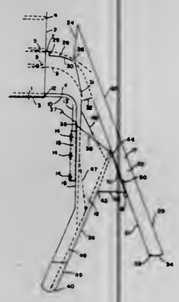
A machine for piling metal sheets which comprises an overhead conveyor for advancing sheets for deposit on a lift,

or the like, at a piling area, end stop and backstop mechanisms and side edge guide mechanisms, for cooperation with the end stop and backstop mechanisms, which side guide mechanisms are arranged in pairs, adjustable laterally of the path of travel of the sheets with one pair of the side guide mechanisms in a fixed position at the entrance end of the machine and another pair thereof mounted for longitu-



dinal adjustment with the end stop mechanism. The side guide members are reciprocated as the sheets are dropped, so as to facilitate the piling of sheets delivered off center, and each of said members is suspended on a linkage system to prevent damage in the event the lift is raised sufficiently to strike the guide member, with the assemblies being strengthened and held against undue deflection by means of a special chain arrangement.

3,617,053
COPY-RECEIVING TRAY
Wilfrid Menard, 2660 Champfleury Avenue, Quebec City 3, Quebec, Canada
Filed June 8, 1970, Ser. No. 44,523
Int. Cl. B65h *31/24*
U.S. Cl. 271—64 **6 Claims**

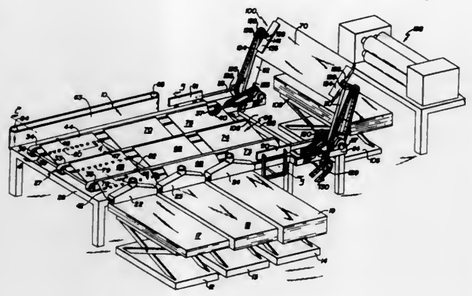


An attachment to a copying machine separates issuing copies from processed original sheets and ensures that both copies and originals are in the same order and the correct way up even though on issuing from the machine outlets, the copy sheets are back to front.

This is done by allowing the originals to fall in the order in which they issue but deflecting the copies through an angle greater than a right angle as they fall and then collecting them; the result is to return the front to the front.

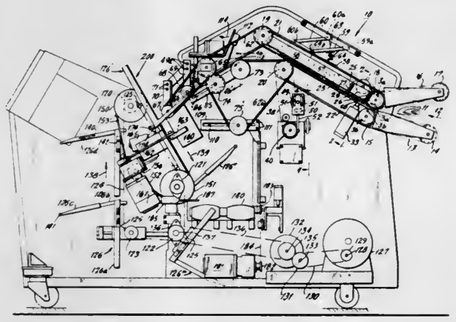
3,617,054
SHEET DELIVERY APPARATUS
Water W. Schilling, Ladner, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed Mar. 21, 1969, Ser. No. 809,295
Int. Cl. B65h *29/32, 29/40*
U.S. Cl. 271—69 **7 Claims**

There is described apparatus for delivering sheets to be laid up in multisheet panels. The apparatus includes means for gripping sheets, and particularly sheets that are strong in a longitudinal direction but relatively weak in a transverse direction, along opposite edges thereof and substantially



throughout the length of said edges, and swinging said sheets over a layup table where they are released. The apparatus preferably includes conveyor means for delivering sheets to the gripping means.

3,617,055
CONVEYOR FOR SIGNATURES
Sture Walter Stal, Solna, Sweden, assignor to AB Bonnierforetagen, Stockholm, Sweden
Filed May 27, 1968, Ser. No. 732,243
Claims priority, application Sweden, May 30, 1967, 7553/67
Int. Cl. B65h *33/00*
U.S. Cl. 271—88 **8 Claims**

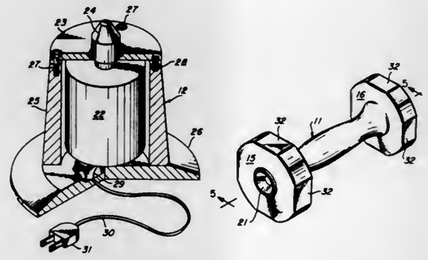


A conveyor for newspapers and like signatures capable of accepting signatures delivered to the conveyor in a continuous stream and being arranged in overlapping fashion. The infeed conveyor section of the assembly is tilted at a point intermediate its upstream and downstream ends forming a bend which, together with a squeeze roller arrangement, acts to remove air captured between the pages of the signatures as well as between adjacent signatures. The downstream portion of the infeed conveyor is inclined at an angle which greatly facilitates stacking of the signatures upon buckets provided therefor, even though the rate of flow of signatures through the infeed conveyor is greatly reduced. The lower conveyor provided in the downstream portion thereof is made adjustable so that a portion thereof is positioned substantially parallel to and in close proximity to signatures being stacked upon each bucket to promote the formation of neat stacks upon the bucket. The adjustability feature permits the parallel portion to be moved closer toward or further away from the buckets, in accordance with signatures of smaller or larger dimensions, respectively. The tines of the bucket are made adjustable to permit their forward ends to be positioned in substantially the same spaced relationship relative to the parallel section of the above-mentioned lower

conveyor to facilitate the formation of signature stacks of the exact count desired. The forward end of the bucket tines, when in the intercept position, is slightly above and in very close proximity to the incoming signature stream to enable rapid intercept of the stream immediately upon receipt of an intercept signal. The upper and lower conveyors provided in the downstream section of the infeed conveyor are movably mounted relative to one another. However, the roller of the upper conveyor closest to the forward tines of the bucket is mounted in a stationary fashion, while the roller of the lower conveyor closest to the forward end of the bucket tines is resiliently loaded by spring loading means to assure the application of firm squeezing pressure upon the signature stream passing therebetween. The stationary mount of the roller in the upper conveyor closest to the forward end of the bucket tines enables very close positioning of the forward end of the bucket tines to the incoming stream, even though the two above-mentioned rollers are free to move relative to one another as the signature stream passes therebetween.

Sensing means is provided in the downstream section of the infeed conveyor for preventing operation of the stacker in the absence of signatures passing through the infeed conveyor downstream section. Additional means are provided for stopping operation of the stacker in the case where a signature becomes intertwined with the bucket tines as the bucket passes through the outfeed conveyor section.

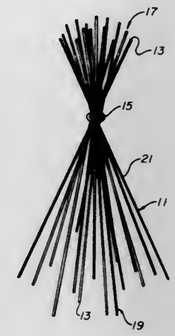
3,617,056
INERTIA STARTER DUMBBELL EXERCISING SYSTEM
Robert J. Herbold, Scottsdale, Ariz., assignor to Southwestern Research Corporation
Filed Feb. 18, 1970, Ser. No. 12,273
Int. Cl. A63b *11/06, 11/04*
U.S. Cl. 272—84 **4 Claims**



An exercising device provided which utilizes the precession effect exhibited by masses rotating at a relatively high angular velocity to resist changes in orientation of the axis of rotation. The device contains only the inertial elements which utilize a separate electric motor unit to accelerate the mass, the inertia of which provides the desired effect for several minutes after which it may again easily be accelerated for further use. The acceleration of the mass is accomplished by a clutch on the end of the electric motor shaft which is removably engageable with a rotatably mounted shaft which has the masses mounted thereon. Once the shaft and the mass has been caused to rotate at the required speed the clutch is disengaged from the rotating shaft. The shaft and the masses are rotatably mounted in a housing with a handgrip portion.

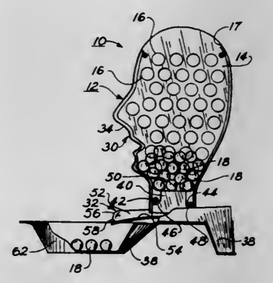
3,617,057
REMOVABLE STICK GAME
Adolph Eddy Goldfarb, 19434 Londelius St., Northridge, Calif., and Rene Soriano, Los Angeles, Calif.
Filed Mar. 17, 1970, Ser. No. 20,299
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **4 Claims**

A game and method of playing same which comprises a plurality of elongated sticks, preferably in groups of different indicia, and a ring through which the sticks are initially placed such that they can become freestanding in a generally



conical configuration. Cards are provided for indicating a stick of a given indicia to be removed from the freestanding sticks by pulling the same through the ring.

3,617,058
PLAY DEVICE
Adolph Eddy Goldfarb, 19434 Londelius St., Northridge, Calif., and Rene Soriano, Los Angeles, Calif.
Filed July 14, 1969, Ser. No. 841,473
Int. Cl. A63f *7/02*
U.S. Cl. 273—1 R **12 Claims**

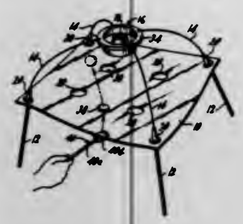


A play device comprising an upright receptacle having a pair of large, opposite and closely spaced sidewalls which are perforated and may be in the shape of a figure or an object. A plurality of small play pieces such as balls small enough to pass through the perforations are packed into the receptacle. The balls are interengaged with each other and the walls of the receptacle and supported in an unstable but equilibrium condition. By altering the support for the balls as by inserting a finger into a perforation to move one or more of the balls, the equilibrium is disturbed, which may cause one or a large number of the balls to be discharged and fall from the receptacle.

3,617,059
FLEXIBLE SHEET STRUCK FROM BELOW TO PROJECT GAME PIECES INTO TARGET
Perry J. Grant, Pacific Palisades, Calif., assignor to Reuben Klamer, Beverly Hills, Calif.
Filed Dec. 5, 1969, Ser. No. 882,651
Int. Cl. A63b *67/00*
U.S. Cl. 273—95 G **1 Claim**

A game of skill for children is played with a stretched sheet of flexible material supported in an elevated position beneath a target cup and a plurality of playing pieces adapted to be

placed on the sheet at selected marked locations. Each player is provided with means for striking the underside of



the sheet adjacent his playing pieces with the object of getting his pieces in the target cup.

3,617,060
PNEUMOTHOROX-INDUCING HUNTING ARROW
Warren Iezzi, 117 East Main St., Millville, N.J.
Filed Apr. 10, 1967, Ser. No. 629,644
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 **1 Claim**



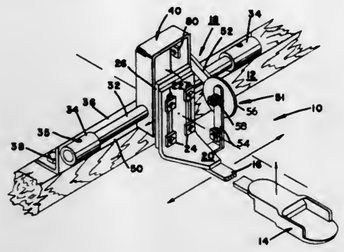
A hunting arrow is provided with a hollow shaft perforated along its length. An adapter is connected to the forward end of the shaft and has a longitudinal passage in communication with the hollow shaft, and transverse passages communicating to the atmosphere. An arrowhead is fitted over the adapter with the transverse passages of the adapter being disposed between the ends of the blades of the arrowhead. Where the ferrule overlies the transverse passages, it is formed with openings.

3,617,061
MANIPULATIVE DEVICE FOR COMPETITIVE PLAY
Adolph E. Goldfarb, 19434 Londelius St., Northridge, Calif., and Rene Soriano, Los Angeles, Calif.
Filed Oct. 31, 1969, Ser. No. 872,874
Int. Cl. A63b *67/00*
U.S. Cl. 273—110 **1 Claim**



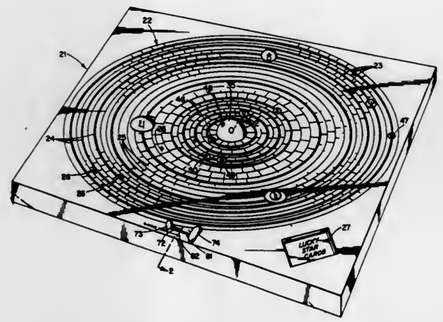
A manipulative device for competitive play by two or more participants comprising a platform having an upper playing surface. The surface has a central discharge opening and supports one or more mobile play pieces such as marbles for movement over the surface. The platform is connected at its edge to two or more individual handle means which are spaced apart around the platform and are grasped firmly by the participants who struggle or wrestle against one another to attempt to manipulate the platform to cause or prevent the marble from falling into the opening. The device also includes means connected to the underside of the platform below the opening to receive discharged marbles, and adapted to support the platform in a position elevated above a support surface such as a table while affording ready manipulation of the platform.

3,617,062
CURLING HACK ASSEMBLY
Ernest W. McPherson, R.R. #2, Calgary, Alberta, Canada
Filed Jan. 15, 1969, Ser. No. 791,249
Claims priority, application Canada, June 25, 1968, 023,428
Int. Cl. A63b *71/00*
U.S. Cl. 273—126 R **6 Claims**



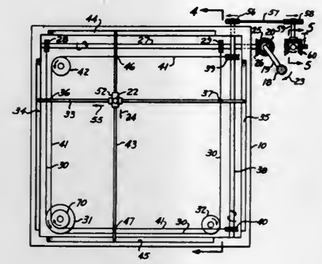
A curling hack assembly adapted for connection to an end portion on the ice rink having a footrest connected to an elongated rigid member. Said elongated member is connected to the end of the rink by a specially constructed bracket which permits the elongated member and the attached footrest to be pivoted upwardly away from the ice surface and which also permits the elongated member and the footrest to be adjusted laterally in a direction transverse to the longitudinal center line of the rink.

3,617,063
APPARATUS FOR PLAYING A SOLAR SYSTEM EXPLORATION GAME
Glenn L. Dyer, and Rosemary M. Dyer, both of 4 Fox Run Road, Bedford, Mass.
Filed May 25, 1970, Ser. No. 40,291
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 AE **12 Claims**



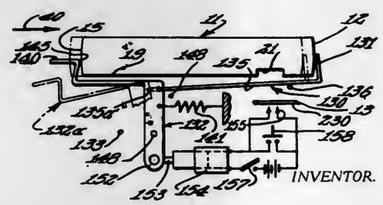
A space exploration game apparatus comprising a board having rotatably mounted at its center an object representing the sun. Surrounding said object are a series of circles concentric therewith, the annular bands between said circles being divided into segments by lines radiating from the center of the board. Between said circles are slots in which are movable objects representing planets which orbit the sun. The sun and planet representing objects are moved by a gear system comprising a drive shaft having an operating knob. The apparatus further comprises game pieces, dice, cards and play money.

3,617,064
GOLF GAME
Robert G. Collup, 675 Edgeview Drive, Sierra Madre, Calif.
Filed Apr. 29, 1970, Ser. No. 33,006
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 R **12 Claims**



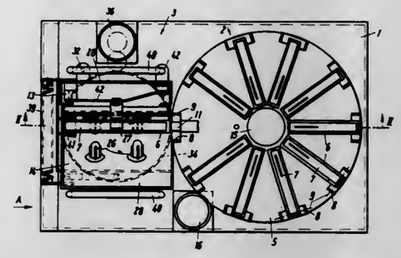
A device which indicates the distance and direction of flight of a struck golf ball includes a translucent disc rotatably mounted to a translucent cover plate on a housing. The disc includes indicia which portrays a representation of golf course fairways and greens. When viewed through the disc, a movable buttonlike member supported within the housing, below the plate, provides an indication of the position of a golf ball on the golf course fairway. The buttonlike member is adapted to be moved both along and laterally of the fairway representation in response to a tethered golf ball and teelike member being struck by a golf club. A system of gears, pulleys and carried rods connected the buttonlike member to the tethered golf ball and teelike member. The movement of the teelike member controls the lateral movement of the buttonlike member.

3,617,065
CARTRIDGE TRANSDUCER MACHINE AND CARTRIDGE THEREFOR
Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.
Filed Jan. 23, 1969, Ser. No. 793,352
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **5 Claims**



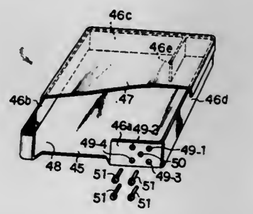
A tape cartridge transducer machine compatible with existing tape cartridges but provided with a cartridge ejection leverage mechanism which is actuated manually or by a solenoid to overcome the cartridge-biasing spring and shift the cartridge to an inactive standby position in the cartridge receiving space of the machine, after which the cartridge is manually removable with minimum effort. The machine preferably provides a balanced cartridge-biasing means to safeguard the cartridge against binding.

3,617,066
AUTOMATIC APPARATUS FOR SELECTIVELY PLAYING A PLURALITY OF TAPE CASSETTES
Wilhelm P. Foelkel, and Georg F. Seidel, both of Donlandwig, Germany, assignors to The Wurlitzer Company, Chicago, Ill.
Filed Jan. 30, 1969, Ser. No. 795,318
Claims priority, application Germany, Feb. 3, 1968, P 16 22 051.2
Int. Cl. G11b *15/12, 31/00*
U.S. Cl. 274—4 F **6 Claims**



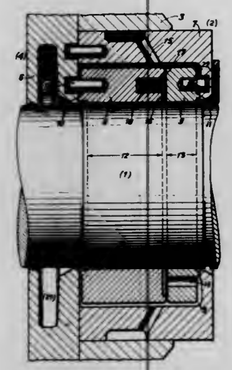
Apparatus for playing tape recordings on a small reel-to-reel cartridges of the type commonly known as cassettes. A rotary magazine turnable about a vertical axis is provided, and the cassettes are held by holders on this magazine with their planes disposed radially of the magazine and their longer dimensions disposed vertically. The magazine is turned to bring a selected cassette to a tape-playing station, and the cassette and its holder are tipped substantially 90° out from storage position, extending radially out from the magazine. Either of two duplicate playing mechanisms then is shifted generally normal to the faces of the cassette into driving and playing engagement with the cassette, whereby to play either of the two bands of information recorded on the tape.

3,617,067
ENDLESS MAGNETIC TAPE CARTRIDGE CASE
Itsuki Ban, 829, Higashi-Oizuminachi, Nerima-ku, Tokyo-to, Japan
Filed Apr. 21, 1969, Ser. No. 817,957
Claims priority, application Japan, Apr. 27, 1968, Oct. 2, 1968; 43/27989, 43/71141
Int. Cl. G11b *21/08, 1/00*
U.S. Cl. 274—4 A **5 Claims**



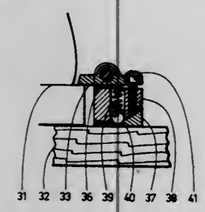
A case storing an endless magnetic tape cartridge having a tape providing a plurality of playing tracks and received in a tape cartridge player including a track-changing device having a track selection control member, said case comprising a base portion, a wall portion consisting of a front wall, two sidewalls and rear wall each of which extends upwardly from the base portion, a cover member resting atop the wall portion, and a partition wall extending upwardly from the base portion. A cartridge receptacle is formed by being encased by the partition wall, the front wall, one of the sidewalls and the rear wall, and an opening is provided in the front wall opposite to the leading edge of the tape cartridge, and a plurality of track selection members is provided in the front wall to correspond to each of the playing tracks on the tape for selectively operating the track selection device.

3,617,068
FLOATING RING SEAL FOR ROTATING SHAFTS
Walter Sprenger, Wiesendangen, Switzerland, assignor to Brown-Boveri-Sulzer, Turbomachinery Ltd., Zurich, Switzerland
Filed Feb. 27, 1970, Ser. No. 15,122
Claims priority, application Switzerland, Feb. 28, 1969, 3015/69
Int. Cl. F16j *9/00, 15/40*
U.S. Cl. 277—62 **8 Claims**



The two sealing rings are arranged so that substantially all the sealant and coolant medium flows first through the sealing ring on the high-pressure side to dissipate heat therein. The medium then flows into the space between the sealing rings and is distributed into the sealing gaps between the sealing rings and shaft.

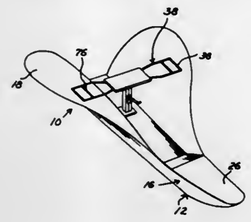
3,617,069
RESILIENT ATTACHMENT FOR SKIS
Georges P. J. Salomon, 34, Avenue de Loverchy, Annecy, Haute-Savoir, France
Filed Jan. 2, 1968, Ser. No. 695,153
Claims priority, application France, Jan. 4, 1967, 89,992
Int. Cl. A63c *9/084*
U.S. Cl. 280—11.35 **3 Claims**



A resilient attachment for skis in which the resilient function of the attachment is obtained by means of a resilient assembly including a spring that ensures safety locking of the attachment. One of the ends of the spring receives, either directly or not, the mechanical action that ensures resiliency and the other end acts on the locking device of the attachment.

3,617,070
AMPHIBIOUS, STEERABLE, GLIDING VEHICLE
Arthur C. Roberts, 4274 Griffin Creek Road, Medford, Oreg.
Filed Mar. 2, 1970, Ser. No. 5,361
Int. Cl. B62b *13/04*
U.S. Cl. 280—21 **10 Claims**

A single-rider gliding vehicle is provided, operable by gravity on snow-covered slopes, and by a towrope on the water, and steerable in either case by tilting and/or jerking of the vehicle body to the right or left. All surface portions of the vehicle are desirably composed of a hard, smooth, abrasion-proof material such as fiber-glass-reinforced polyester, but a body of flotation material such s styrofoam is enclosed in the floor portion in sufficient quantity to assure that the vehicle will float when separated in the water from the rider. Parallel, projecting, longitudinally extending runners are provided on the bottom of the vehicle for snow-steering control.



The vehicle includes a seat assembly which comprises a tow latch, maintained effective by the weight of a rider on the seat, but automatically rendered ineffective when the rider relieves the seat of a critical portion, at least, of his weight. A cross brace or reinforcing unit extends across the body and provides handholds at opposite sides of the seat which are useful for steering, for detaching a towrope for carrying the vehicle, for giving the rider a firm hold on the vehicle, and for braking.

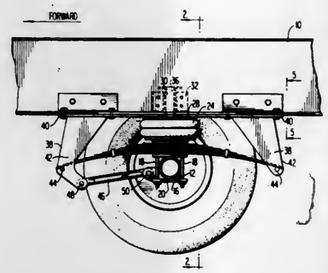
3,617,071
STEERING MECHANISM FOR AUTOMOBILES
Davor Ivancic, Via Ticino, San Donato Milanese(Province of Milan), Italy
Filed Apr. 2, 1970, Ser. No. 29,349
Claims priority, application Italy, Mar. 5, 1969, Apr. 5, 1969; 16388/69, 15171/69
Int. Cl. B62d *7/08*
U.S. Cl. 280—96 **5 Claims**



Steering mechanism for the front wheels of an automobile comprising a crank gear transmission controlled by the steering wheel and transmitting a reciprocating and angular motion to a connecting rod supported in an intermediate point thereof by a link bracket support. The connected rod is articulated to the free end of an arm rigid with the supporting hub or drum of the wheel, and pivotally supported in an intermediate point thereof, and allowing the front wheel to swivel through an angle of more than 90°.

3,617,072
DROP-AXLE SUSPENSION SYSTEM
Stephen Turner, Jr., Berlin Center, Ohio, assignor to Charles E. Wern, Jr.; David S. Dennison, Jr. and Stephen Turner, Jr., Warren, Ohio
Filed Feb. 17, 1970, Ser. No. 12,050
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 **12 Claims**

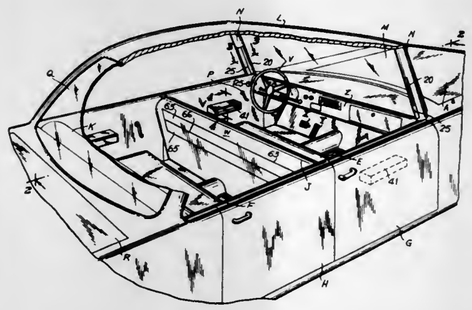
There is provided in an auxiliary axle suspension system for wheeled vehicles an improvement for insuring the safety of said suspension when under heavy load, particularly about 6,000 lbs. per axle or greater, which comprises an axle having mounted at its outer extremities two wheels on either side thereof for carrying such a heavy load along the path of travel of the vehicle. Inwardly of each pair of wheels and immediately adjacent to each respective pair of wheels there is provided a leaf spring of a plurality of leaves and means for connecting the leaf spring at about its respective ends to the longitudinal I-beam frame members of the vehicle and extending longitudinally on either side thereof. Each leaf spring has its intermediate portion overlying and being secured by bolt means to the axle such that the leaf springs are normally biased upwardly to raise the axle and the wheels mounted thereon above the surface along which the vehicle travels. Juxtapositioned between each leaf spring and its respective frame member is at least one vertically flexible pneumatic chamber which may be expanded or contracted vertically by applying pneumatic pressure thereto to thereby bias the axle downwardly against the force exerted by the springs to lower the wheels mounted thereon into contact with the vehicle travel surface. Torque arms are provided which extend in the forward direction of the vehicle and are connected between the bolt means for connecting the axle to the frame member



and the means for connecting each respective leaf spring at about their ends to the vehicle. In addition, the leaf springs are not secured to the means which connect them at about their ends to the frame member of the vehicle, but rather, are connected in a manner which allows them to slide longitudinally therewithin. Upon braking under heavy load, the leaf springs are protected from undue torque forces by the torque arms and the slidable nature of the leaf spring connection.

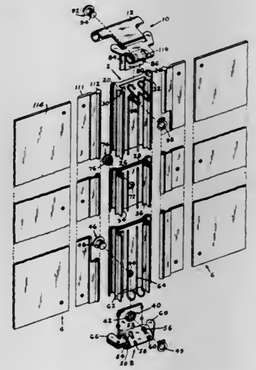
In addition to the above, there is also provided a means for connecting the leaf spring connecting means to the frame member of the vehicle which comprises a bracket and two angle irons in combination such that bolts are provided through the longitudinal member of the I-beam frame member but not through the lateral flange thereof, thus protecting the frame member from its tendency to crack if its flanges are violated by bolts.

3,617,073
AUTOMOBILE SAFETY SYSTEM
Irving Landsman, and Emanuel Landsman, both of 365 Central Park Ave., New York, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,592
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **10 Claims**



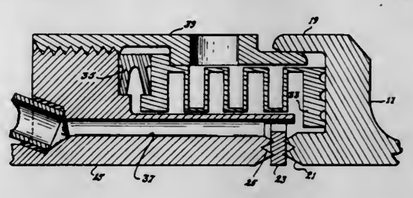
The present disclosure relates to an automobile safety system which provides that inflated members shall be ejected across the body of the driver and passengers without obstructing their vision and also across the lower windshield to prevent physical injury. The inflated members are supplied by a tank of compressed air or other fluid positioned in the interior of the automotive vehicle under the hood or in the rear baggage compartment and the inflation and release of the inflated members takes place as the result of extra pressure on the foot or pedal brake. The inflatable members, when not in use, are desirably collapsed into receivers on the side posts along the windshield and also in receptacles along the interior of the doors. The rear compartment may be provided with an inflatable member positioned in the back of the front seat.

3,617,074
TELEPHONE DIRECTORY COVER
Venerio J. Rigolini, Brooklyn, and William L. Lawson, Forest Hills, both of N.Y., assignors to Whitehouse Products, Inc., Brooklyn, N.Y.
Filed July 1, 1969, Ser. No. 838,064
Int. Cl. B42d *17/00*
U.S. Cl. 281—34 **9 Claims**



A telephone directory binder cover having a backer plate, top and bottom plates removably attached to the backer plate and front and back covers, the backer plate having C-shaped recesses extending longitudinally of the backer plate along the marginal edges thereof, the covers having cylindrical edges in said C-shaped recesses, the recesses and cylindrical edges forming a hinge mounting between the backer plate and the cover, the assembled binder cover being adaptable for hinge, cable, or chain mounting.

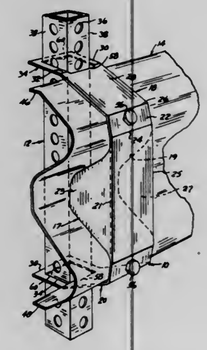
3,617,075
QUICK DISCONNECT COUPLING SEAL
Paul W. Van Horn, and Glen F. Doel, both of Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of The United States Air Force
Continuation-in-part of application Ser. No. 774,271, Nov. 8, 1968, now abandoned. This application June 10, 1970, Ser. No. 45,214
Int. Cl. F16l *55/00*
U.S. Cl. 285—13 **3 Claims**



Quick disconnect coupling means for connecting and sealing two matching conduits having interengaging flanges with

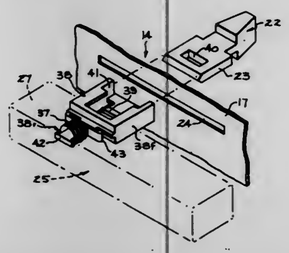
dual sealing assemblies disposed therebetween. Pivotal latching means are clamped against both flanges by axially directed pressure from a spring-loaded piston and cylinder arrangement carried by the engaged flange of one of the matching conduits.

3,617,076
FASTENING CLAMP
Warren R. Attwood, Wayne, and Herbert J. Henry, Dearborn Heights, both of Mich., assignors to Unistrut Corporation, Wayne, Mich.
Continuation-in-part of application Ser. No. 678,692, Oct. 27, 1967, now abandoned. This application Aug. 27, 1969, Ser. No. 853,412
Int. Cl. F16b *7/00*
U.S. Cl. 287—51 **6 Claims**



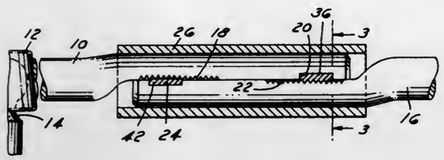
A clamp used with a metal framing system for adjustably supporting an upright member on a structural member. The clamp is of the type having a generally C-shaped configuration and is formed with registering apertures therein for the reception of the upright member therethrough to be retained by pressure-exerting means.

3,617,077
KNOB MEANS FOR ELECTRONIC DEVICE SLIDEABLE CONTROL
Gerald J. Cavanaugh, Sr., Chesapeake, Va., assignor to General Electric Company
Filed Oct. 3, 1969, Ser. No. 863,546
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 H **2 Claims**



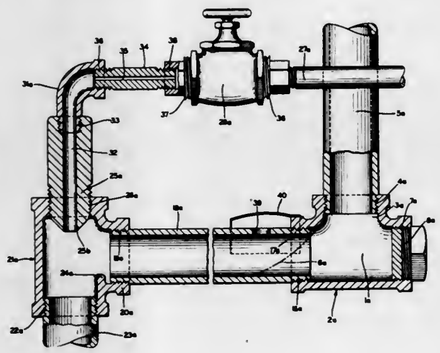
An improvement in an electronic device of the type including a cabinet housing a slideably adjustable control means and having an opening for passing means for operating the control means. The improvement comprises providing knob means having a portion which can be passed through a narrow, elongate opening in the cabinet and snap connected to complementary means provided on the control means such that no additional fastener means other than the complementary means are required to maintain connection of the knob means to the control means.

3,617,078
ADJUSTABLE TIE ROD LINKAGE
Jonas Valukonis, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 7, 1969, Ser. No. 864,441
Int. Cl. F16b *7/00*
U.S. Cl. 287—104 **11 Claims**



An adjustable tie rod assembly for a vehicle steering linkage system is constructed by forming transverse serrations near the ends of each of two rod sections or elements. Each rod section has a lock-receiving notch spaced from its serrated portion. The rod sections are placed together with the serrations of one in alignment with the lock-receiving notch of the other. A cylindrical retainer surrounds the rods and a pair of soft metal locking inserts are driven through openings in the retainer. An insert is received in each locking notch and is deformed into engagement with the adjacent serrations. The ends of the inserts are upset to prevent their displacement.

3,617,079
FLUIDIZED SAND TRAP EJECTOR
Waldama Bente, 314 Miller Ave., Dennison, Ohio
Continuation-in-part of application Ser. No. 841,397, July 14, 1969, now abandoned. This application Dec. 10, 1969, Ser. No. 883,832
Int. Cl. B60b *39/08*, **B61c** *15/10* **and B65g** *53/54*
U.S. Cl. 291—3 **5 Claims**

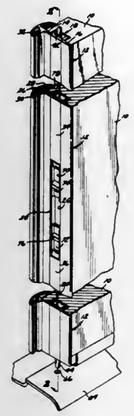


An ejector for a sand trap for sanding track rails by fluid eduction. A nozzle connected to an air pressure supply is located downstream from the sand chamber. An atmospheric air inlet communicates with the sand outlet from the sand chamber. The air jet from the nozzle creates a vacuum which draws sand from the sand chamber and ejects through a sand delivery pipe to the track rail.

3,617,080
DOOR LATCH
Wesley E. Miller, 13411 Sioux Road, Westminster, Calif.
Filed July 24, 1968, Ser. No. 747,293
Int. Cl. E05c *1/12*, *9/04*
U.S. Cl. 292—38 **8 Claims**

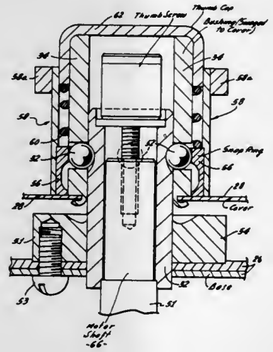
This invention relates to improvements in door locking and latching apparatus suitable for use with double or swinging doors and with sliding doors. The embodiment illustrated and described in the specification includes a plate which overlies

the free edge of one door. The vertical central section of that plate is recessed for the full height of the door and latching apparatus including an upper and lower bolt, means to bias those bolts upward and downwardly respectively, and means



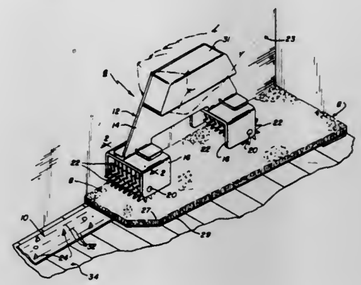
for retracting the bolts are all disposed within the recess. The upper bolt is adapted to cooperate with a catch in the door frame above the door and the lower bolt is adapted to cooperate with a catch opening in the threshold.

3,617,081
LATCHING MECHANISM
Kenneth G. Drucker, Astoria, Oreg., assignor to Bio-Consultants Inc., South Gate, Calif.
Filed Feb. 27, 1970, Ser. No. 14,961
Int. Cl. E05c *19/04*; **A47j** *27/08*, *36/10*
U.S. Cl. 292—252 **7 Claims**



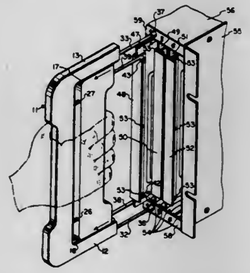
A latching mechanism is provided which, for example, may be used to mount a cover over the rotor head of a microhematocrit-type centrifuge, and which permits the cover conveniently to be placed and latched onto the head, and just as conveniently to be unlatched and removed. The centrifuge rotor head, for example, may be of the type which supports a plurality of capillary tubes in general radial positions, the tubes containing solutions to be subjected to centrifugal separation of their constituents, and the cover serves to hold the tubes in place in radial slots on the base.

3,617,082
CARPET ROLLER
Robert A. Sparks, Clearwater, Fla., assignor to S & S Tool Company, Clearwater, Fla.
Filed Mar. 5, 1969, Ser. No. 804,618
Int. Cl. A47g *27/04*
U.S. Cl. 294—8.6 **1 Claim**



A carpet roller for quickly tacking a carpet to a tack strip. The carpet roller has toothed wheels which are adapted to ride over and between the tacks of a tack strip without damaging the tacks while depressing the mat of a carpet between the tacks.

3,617,083
TOOL FOR EXTRACTING PRINTED CIRCUIT CARDS FROM CARD FILES
James V. Koppensteiner, Chicago, and Joseph J. Bakalik, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 18, 1969, Ser. No. 886,134
Int. Cl. B65g *7/02*
U.S. Cl. 294—15 **6 Claims**



A tool, for extracting printed circuit cards from a card file, having an inner grip section interlocked and slidably mounted within a U-shaped outer grip section, and held in this mounting by a slide-limiting screw having its threaded end secured in the outer grip and its head end slidably engaged by the inner grip. The inner grip is normally biased away from the outer grip and into engagement with the limiting screw by compression springs engaging both grips. Card extractor arms are permanently installed in the outer side edge of each end of the inner grip, and a pushoff rod is permanently installed in the end of each U-leg of the outer grip, with each rod extending in a plane parallel with the adjacent associated extractor arm.

3,617,084
HAND-OPERATED SHOVEL FOR PICKING UP REFUSE
Jerry Mares, 5611 S. Parkside, Chicago, Ill.
Filed May 7, 1969, Ser. No. 822,483
Int. Cl. A01b *1/16*
U.S. Cl. 294—50.6 **2 Claims**

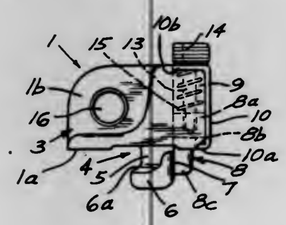
The shovel, which is especially well adapted for picking up pet manure or other similar refuse, comprises a pair of

clamshell scoops pivotally mounted on supporting arms at the lower end of an outer tubular shaft. The scoops are biased toward their closed position by means of springs. An inner shaft is rotatably mounted within the outer shaft. First and second handles extend radially from the upper end por-



tions of the inner and outer shafts so that the shovel can be held in both hands for easy operation. Lever arms extend radially from the lower end of the inner shaft and are connected to the scoops by means of links, so that the scoops can be opened and closed by turning the inner shaft.

3,617,085
QUICK-RELEASE LOAD COUPLER
Henry J. Modrey, 158 Eagle Drive, Stamford, Conn.
Filed Oct. 24, 1969, Ser. No. 869,294
Int. Cl. B66c *1/36*
U.S. Cl. 294—83 **5 Claims**

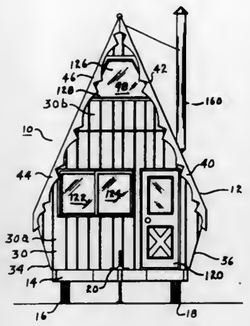


A quick-release load coupler for releasably coupling a load to a load carrier has an engaging coupling member including a housing to which the load is coupled.

The engaging coupling member locks itself automatically to the receiving coupling member when applied thereto and can be released from said member by withdrawing a locking slide relative to a clamping rod which is axially stationary relative to the housing. Release of the coupler can be effected irrespective whether the coupler is under load or not. Both the locking and the releasing motions are in axial direction.

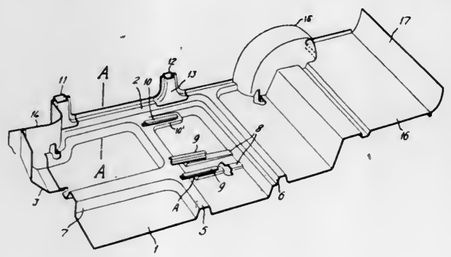
3,617,086
FOLDABLE AND TRANSPORTABLE HOME
Roger A. King, and Keith O. Burton, both of Elkhart, Ind., assignors to Bur Kln Homes Corporation, Whitepigeon, Mich.
Filed Oct. 10, 1969, Ser. No. 865,290
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **14 Claims**

A foldable and transportable home having two sidewalls and end walls forming a body, with the two end walls having an upper and lower portion. The upper portion is hinged to the lower portion and is triangular in shape and folds inwardly and downwardly. The roof includes two lower and two upper roof sections forming a gable configuration, with one of the two upper sections hinged on one side to one lower roof section, the two upper sections being hinged together to fold downwardly over the other lower roof sec-



tion. The body is removably mounted on a frame and undercarriage for transporting the home and forming a temporary base for the unit.

3,617,087
FLOOR PLATE FOR A FRAMELESS VEHICLE
Takefumi Hiramatsu, Kitaadachi-gun, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 25, 1969, Ser. No. 861,081
Claims priority, application Japan, Sept. 26, 1968, 43/83947
Int. Cl. B62d *21/10*
U.S. Cl. 296—28 F **4 Claims**

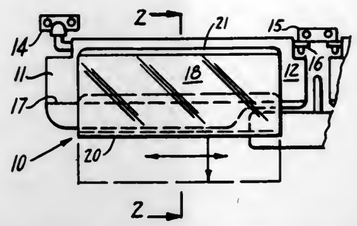


A floor plate is provided for a frameless vehicle. This floor plate consists of a plate having two laterally disposed inverted U-shaped channels constituting ribs. From the front of the foremost lateral rib extends a longitudinally disposed rib which is also an inverted U-shaped channel. Two further longitudinally disposed ribs extend from the rear of the first said lateral ribs, these two further ribs extending longitudinally towards the front lateral rib but short of the same. Reinforcing elements extend from the tops of said two further ribs and are connected to the front laterally disposed rib. Pillars extend upwardly from the edge of the plate and a rearward extending trunk space is also provided. Two reinforcing elements forming the base for a seat along with the aforesaid reinforcing elements are also incorporated into the floor plate.

3,617,088
SUNVISOR EXTENDER
Virgil E. Graham, Box 47, Hershey, Nebr.
Filed Jan. 27, 1970, Ser. No. 6,139
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 C **4 Claims**

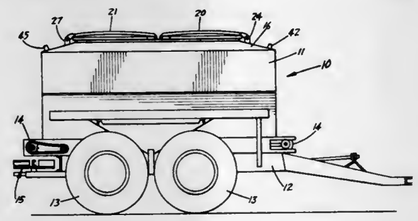
An extender for motor vehicle sunvisors which in one form of the invention has a form of a sleeve which encompasses

the sunvisor and can be moved downwardly and sideways thereon to cover additional areas not normally covered by the sunvisor. In another form of the invention a metal clip attached to the sunvisor supports the extender which is posi-



tioned on one side of the sunvisor. Still another form of the invention has a metal clip secured to the extender with metal clip engaging the opposite side of the sunvisor from the extender.

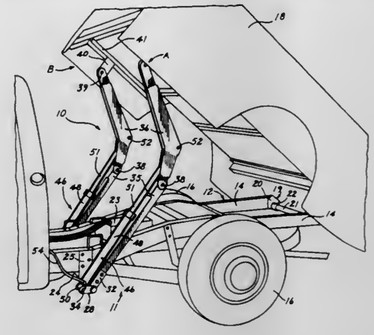
3,617,089
COVER MEANS FOR AGRICULTURAL TRANSPORT DEVICES
Loren E. Tyler, Wayzata, Minn., assignor to Letco, Inc., Long Lake, Minn.
Filed Sept. 29, 1969, Ser. No. 861,822
Int. Cl. B62d *25/00*
U.S. Cl. 296—137 B **12 Claims**



An agricultural transport device such as a fertilizer spreader having a relatively large hopper with a top with a large rectangular opening therein and a pair of cooperating door members hinged to the hopper and closable to cover the opening in the hopper. The doors are formed of a lightweight material such as molded fiber glass and have a plurality of spaced, longitudinally extending, stiffening ribs extending in a direction generally normal to the hinged edges thereof. Cooperating shock absorbing bumpers are mounted on the hopper and positioned to be engaged by the door when it is opened and these bumpers are disposed so as to be engaged by the ribs of the door which constitutes the portions of greatest strength thereof. The doors are arched so that the greatest height thereof is substantially at the center of each door and one of the ribs extends therethrough with the remainder of the ribs spaced on either side thereof. The bumpers are disposed for cooperation with these ribs and the bumper cooperable with the center rib has a height somewhat less than the height of the bumpers cooperating with other ribs so that the bumpers define a contour substantially equal to the contour defined by the ribs of the door to substantially equally distribute the shock when the door is thrown open against the bumpers.

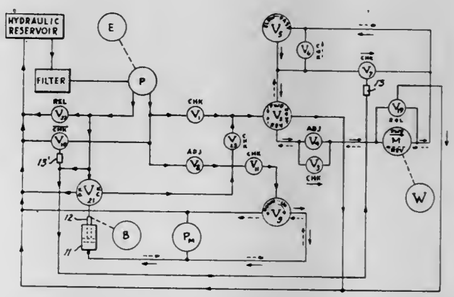
3,617,090
HOIST FOR VEHICLE MOUNTED BOX
Samuel Edgar Huffman, Eaton, and Kenneth R. Davisson, Severence, both of Colo., assignors to Hydraulics Unlimited Mfg. Co., Eaton, Colo.
Filed Sept. 15, 1969, Ser. No. 857,924
Int. Cl. B60p *1/16*
U.S. Cl. 298—22 J **6 Claims**

The hoist for a vehicle mounted box or bed is a jackknife or scissors-type hoist powered by a pressure fluid motor, and includes two parallel lifting mechanisms mounted outboard of the vehicle chassis, on the extending ends of a torsion bar journaled transversely on the chassis, and with the free ends



of the hoist mechanism secured to the underside of the vehicle box. The box is hinged at the rear end of the vehicle for tilting movement.

3,617,091
SAW CONTROL SYSTEM
William D. Mooney, Warminster, and Albert S. Polis, Philadelphia, both of Pa., assignors to Cardinal Engineering Corporation, Conshohocken, Pa.
Filed May 26, 1970, Ser. No. 40,529
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **18 Claims**

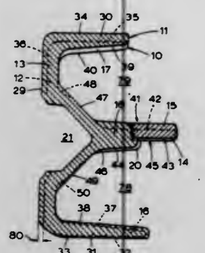


A self-propelled saw machine having a vertically adjustable rotary blade for cutting or grooving concrete or similarly durable flooring or paving material is provided with hydraulic control of the blade height and of the rate of machine travel, both forward and reverse, including a creep speed when the blade is in lowered cutting position and a faster over-the-road speed when the blade is in raised noncutting position.

3,617,092
SCRAPER-CHAIN CONVEYORS
Oskar Kohler, Lunen-Sud, and Wulff Rosler, Westfalia, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany
Continuation-in-part of application Ser. No. 666,575, Sept. 11, 1967, now abandoned. This application Oct. 15, 1969, Ser. No. 866,657
Int. Cl. E21c *29/02;* **B65g** *19/28*
U.S. Cl. 299—43 **8 Claims**

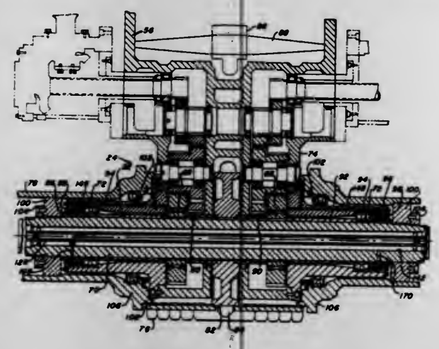
A scraper-chain conveyor for use in mineral mining installations, and composed of individual channel sections joined end to end. Each channel section is composed of sigma-shaped side members adjoined by a conveyor bottom wall

and defines upper and lower guide paths for the working and return chains runs of the conveyor. Some of the channel sections are superstandard and of selective reinforced construc-



tion in relation to the remaining standard sections. Such reinforcement is such that the guide paths of the standard and superstandard sections are substantially in alignment with one another to provide unhindered travel for the chain runs.

3,617,093
MINING MACHINE DRUM CUTTER EXTENSION MEANS
Glenn A. Daily, R.D. 1, Utica, Pa.
Continuation of application Ser. No. 786,648, Dec. 24, 1968, now abandoned. This application Sept. 14, 1970, Ser. No. 72,239
Int. Cl. E21c *27/24, 35/20*
U.S. Cl. 299—80 **13 Claims**

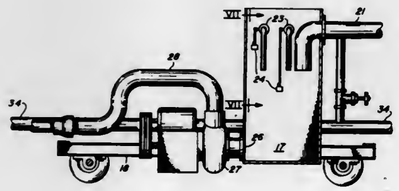


A mining and loading apparatus and more particularly a continuous-mining apparatus having improved drum cutter extension means for dislodging mineral from a solid mine vein. This drum cutter incorporates a double passageway head shaft for activating hydraulic cylinders to extend and retract extensible drum portions of the drum cutter.

3,617,094
METHOD AND APPARATUS FOR HANDLING MATERIAL
Harold O. Kester, Loveland, Colo., assignor to The Eagle Construction Corporation, Loveland, Colo.
Filed Mar. 11, 1970, Ser. No. 18,581
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **1 Claim**

A method of handling solid-containing fluid comprising introducing solid-containing fluid into a chamber, also introducing into the chamber liquid which admixes with and becomes part of the solid-containing fluid, pumping out the solid-containing fluid at substantially constant rate through an outlet at the lower portion of the chamber and controlling the quantity of said liquid introduced into the chamber so that the level of fluid in the chamber is maintained above the outlet despite fluctuation in the rate of introduction of solid-containing fluid into the chamber. Preferably the quantity of said liquid introduced into the chamber is controlled so that the level of fluid in the chamber is maintained substantially constant despite fluctuation in the rate of introduction of solid-containing fluid into the chamber. Also a method of handling material comprising delivering solid material such as material mined from the earth into a container and there admixing it with liquid, by hydraulic injection introducing the admixture of solid material and liquid into a chamber as solid-containing fluid and handling the solid-containing fluid as just described.

Further, apparatus for handling solid-containing fluid comprising a chamber having an outlet at its lower portion, means for introducing solid-containing fluid into the chamber, means for also introducing into the chamber liquid which admixes with and becomes part of the solid-containing fluid, pump means for pumping out the solid-containing fluid at substantially constant rate through the outlet at the lower portion of the chamber and means for controlling the quantity of said liquid introduced into the chamber so that the level of fluid in the chamber is maintained above the outlet despite fluctuation in the rate of introduction of solid-containing



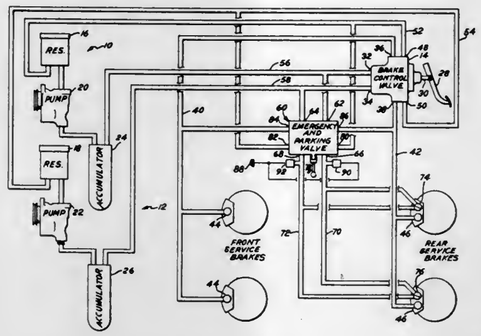
fluid into the chamber. Preferably the last-mentioned means are constructed and arranged to control the quantity of said liquid introduced into the chamber so that the level of fluid in the chamber is maintained substantially constant despite fluctuation in the rate of introduction of solid-containing fluid into the chamber. The last-mentioned means may comprise float-controlled valve means, preferably two float-controlled valves with the floats at different elevations.

Also, apparatus for handling material comprising a container, means for delivering solid material such as material mined from the earth into the container for admixture with the solid material, a chamber having an outlet at its lower portion, hydraulic injection means introducing the admixture of solid material and liquid into the chamber as solid-containing fluid, means for also introducing into the chamber liquid which admixes with and becomes part of the solid-containing fluid, pump means for pumping out the solid-containing fluid at substantially constant rate through the outlet at the lower portion of the chamber and means for controlling the quantity of said liquid introduced into the chamber so that the level of fluid in the chamber is maintained above the outlet despite fluctuation in the rate of introduction of solid-containing fluid into the chamber.

3,617,095
METHOD OF TRANSPORTING BULK SOLIDS
Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.
Filed Oct. 18, 1967, Ser. No. 676,047
Int. Cl. B65g *53/04*
U.S. Cl. 302—66 **7 Claims**

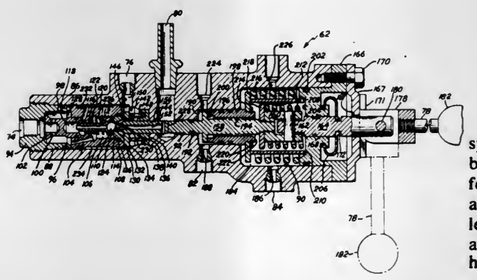
A process of transporting bulk solids such as bulk chemicals, grains, coal, ores, etc. through enclosed channels or ducts, such as pipes or pipelines, which is characterized by moving, such as by pumping, insoluble bulk solids suspended in a pseudo-plastic fluid exhibiting non-Newtonian viscosity properties, as exemplified by thixotropic emulsions, through such enclosed channels.

3,617,096
AUXILIARY HYDRAULIC BRAKING SYSTEMS
Frederick G. Grabb; Keith H. Fulmer, and Harold B. Schultz, all of South Bend, Ind., assignors to The Bendix Corporation
Filed Apr. 27, 1970, Ser. No. 32,018
Int. Cl. B60t *13/04*
U.S. Cl. 303—9 **11 Claims**



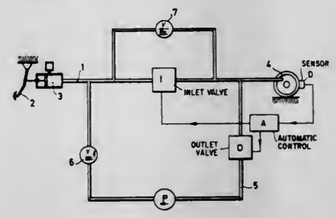
A emergency and parking valve used in a dual full-power system that provides two means to hold off a spring brake. The emergency and parking valve, which contains two independent valves, may be actuated by one of two means. The first means is the parking brake lever and the second means is a pressure differential between each half of the dual full-power system. Because the spring brake is modulated, it may be used to give smooth emergency stops when the pressure differential is sensed. Pressurized fluid to hold off the spring brake is received from each half of the split system so that loss of pressure in one spring brake conduit will not cause an application of the spring brake unless pressure is lost in both spring brake conduits.

3,617,097
PARKING AND EMERGENCY BRAKING SYSTEM
Frederick G. Grabb, South Bend, Ind., assignor to The Bendix Corporation
Filed Apr. 15, 1970, Ser. No. 28,843
Int. Cl. B60t *13/22*
U.S. Cl. 303—13 **4 Claims**



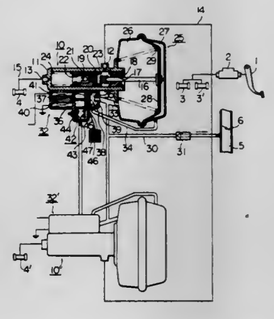
A spring brake used in a dual full-power braking system to provide parking and emergency braking. The modulated spring brake is controlled by an inversion valve that has an override system whereby the emergency braking is not applied unless the front brakes have a pressure differential greater than a predetermined amount in the rear brakes. From this pressure differential, the spring brakes are applied simultaneously with the front brakes to provide the necessary emergency stopping. The amount of application of the spring brakes is proportional to the amount of pressure differential in excess of the predetermined amount. The parking brake is an externally connected cam and lever mechanism for operating the inversion valve.

3,617,098
INLET VALVE FOR ANTILOCKING BRAKE CONTROL SYSTEM
Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany
Filed July 31, 1969, Ser. No. 846,443
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **8 Claims**



The inlet valve of an antilocking control system for vehicle brakes is constructed to possess low-response time and a check valve in parallel with the inlet valve is provided to prevent undesirable check valve action by the inlet valve.

3,617,099
ANTISPIN DEVICE FOR MOTOR VEHICLES
Hiroshi Sugiyama, Hiratsuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan
Filed Nov. 10, 1969, Ser. No. 875,160
Claims priority, application Japan, Nov. 12, 1968, Dec. 10, 1968; 43/82,245, 43/89,907
Int. Cl. B60t *8/02, 13/68*
U.S. Cl. 303—21 EB **13 Claims**

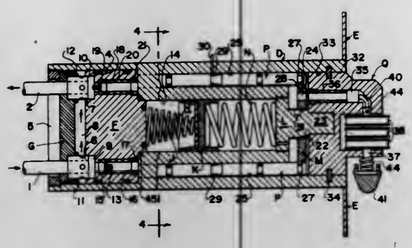


An antispin device for use in combination with a braking system of a motor vehicle, having a spin detector unit and brake-actuating unit. The spin detecting unit detects the difference between the right and left driving wheels and delivers a voltage as soon as the difference exceeds a predetermined level and the brake-actuating unit responds to the voltage to actuate the wheel cylinder of the driving wheel rotating at a higher speed than the other.

3,617,100
ANTI-THEFT BRAKE MONITORING DEVICE FOR VEHICLES
John G. Wrigley, San Leandro, Calif., and Dennis Portch, 2495 Prosperity Way, Hayward, Calif.
Filed May 18, 1970, Ser. No. 38,159
Int. Cl. B60r *25/08*
U.S. Cl. 303—89 **8 Claims**

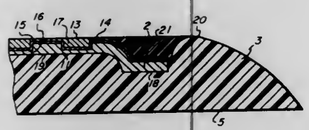
An antitheft brake monitoring device for vehicles which is mounted in the instrument panel of a vehicle and is con-

nected into the brake fluid line that extends from the master cylinder, or power brake booster, to the brake wheel cylinders. The device can be controlled by a combination locking device for holding an applied brake action on all of the vehi-



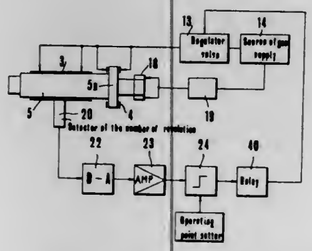
cle wheels indefinitely during the absence of an authorized vehicle operator. The device can automatically compensate for volume contraction of the fluid in the brake lines due to temperature change or loss of fluid.

3,617,101
REFERENCE ELECTRODE FOR CATHODIC PROTECTION SYSTEMS
Edward P. Anderson, Livingston, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.
Filed June 13, 1969, Ser. No. 833,097
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **3 Claims**



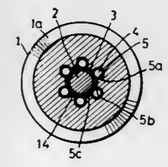
A reference electrode for cathodic protection systems on ships and boats comprising a metal base consisting of titanium, tantalum or niobium having a surface coated with silver, the silver-coated surface being a roughened surface in the form of ridges and depressions, e.g. an embossed surface, and the roughened surface being coated with silver chloride.

3,617,102
HIGH SPEED GAS BEARING STRUCTURES
Ryuji Wada, and Masuo Nakato, both of Kariya-shi, Aichi-ken, Japan, assignors to Toyda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Sept. 8, 1969, Ser. No. 856,060
Claims priority, application Japan, Sept. 17, 1968, 43/67057
Int. Cl. F16c *1/24*
U.S. Cl. 308—122 **6 Claims**



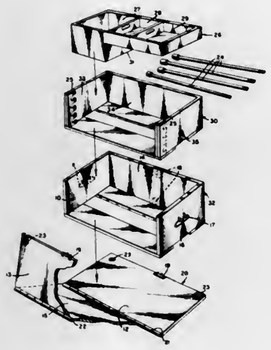
In a high-speed gas bearing structure wherein a rotary shaft is rotatably journaled by a high-pressure thin gas film, there are provided means to detect the number of revolutions of the rotary shaft, a control circuit connected to the detecting means to produce an output signal when the number of revolutions of the rotary shaft reaches a substable region beyond the first resonance point and a control valve energized by the output from the control circuit to reduce the pressure of high-pressure gas supplied to the gas bearing.

3,617,103
ROLLER
Yoshitaka Nakanishi, 12-9, 5-chome, Yawate, Ichikawa-shi, Chiba-ken, Japan
Filed Dec. 9, 1969, Ser. No. 883,380
Claims priority, application Japan, Dec. 11, 1968, Sept. 27, 1969; 43/90229, 44/76698
Int. Cl. F16c *19/26*
U.S. Cl. 308—208 **11 Claims**



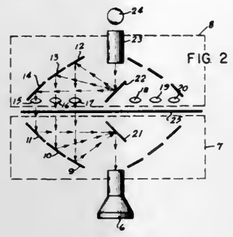
A roller has a circular disk body having means defining a center aperture disposed in the center thereof and means defining a plurality of retaining groove opening into the circumference of the center aperture and extending parallel to the axis of said center aperture to define bearing roller races, each the retaining groove having a nearly major arc in section effective to retain bearing rollers in the retaining grooves; a plurality of bearing rollers disposed in said retaining grooves; and a shaft inserted through the center aperture in contact with the bearing rollers.

3,617,104
CONVERTIBLE PICNIC BOX
George W. Stadig, 331 W. Main St., Tilton, N.H.
Filed June 24, 1969, Ser. No. 835,954
Int. Cl. A47b *83/00, 85/00*
U.S. Cl. 312—241 **1 Claim**



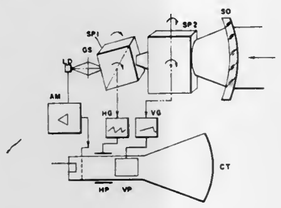
A picnic kit made up of a tabletop, which, along with the outer of two benches forms a case containing an inner bench with a rack on the bottom where table legs are stored as well as a tray for storing cooking utensils, dishes, silverware and food or the like.

3,617,105
MICROGRAPHIC PROJECTION SYSTEM
Alex Konrad, Ridgefield, N.J., assignor to Tech Laboratories, Inc., Palisades Park, N.J.
Filed Sept. 2, 1970, Ser. No. 69,020
Int. Cl. G02b *27/18*
U.S. Cl. 350—6 **3 Claims**



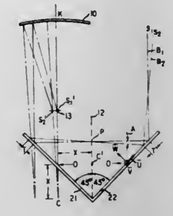
A system for projecting images from microfilm of various widths, making it possible to have two or more, or as many as 10 to 12, or even more, pictures in parallel on a strip of film. The image is then selected by electronic means whereby the location of the same will be on a coordinate electronic system that can be selected by a simple keyboard and arranged so that both the longitudinal and the transverse motions are carried on at the same time, thereby reducing the time required. The system consists of two movable scanning mirrors and a multiple set of fixed mirrors which may be lined up with the scanning mirrors, two for each of the number of pictures in transverse on the film. The scanning mirrors are automatically, and by electronic means, through appropriate coding, set for the picture desired on the transverse position, while the longitudinal picture is simultaneously selected by another set of appropriate or suitable coding.

3,617,106
HIGH-EFFICIENCY SCANNING DEVICE FOR SCANNING A FIELD IN TWO DIRECTIONS
Nils Arvid Norman Bjork, Enebyberg, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden
Filed Dec. 26, 1968, Ser. No. 786,969
Claims priority, application Sweden, Dec. 28, 1967, 17889/1967
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **2 Claims**



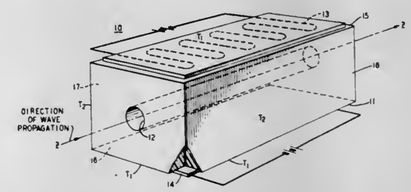
In a large-aperture scanning system for infrared light, the incoming light passes from the objective through a pair of scanning prisms rotating on axes that intersect the optical axis and are mutually perpendicular. After passage through the prisms, the light is focused by an optical system onto a pickup device. To provide good scanning efficiency, the image of the pickup device is placed inside the inner prism and the image of the scanned field formed by the objective is made to fall just outside the outer prism, the two images being substantially equally spaced from the path described by the edge of the respective prisms upon rotation.

3,617,107
THREE-MIRROR SCHMIDT TELESCOPE
Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed July 28, 1969, Ser. No. 845,428
Int. Cl. G02b *17/60*
U.S. Cl. 350—55 **4 Claims**



A Schmidt telescope is made using a pair of reflecting correction plates to correct for spherical aberrations and achieve wide angle, high-resolution performance without the use of refracting lenses. The all-mirror telescope is particularly advantageous for use in microwave and infrared receiving apparatus because of the expense of refractive lenses for use at these frequencies.

3,617,108
THERMAL LENS HAVING A FLUID-FILLED CYLINDRICAL APERTURE THROUGH THE CENTER OF A SQUARE-SHAPED BLOCK
Charles Fritsch, Mendham, and David J. Prager, East Hanover, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 7, 1969, Ser. No. 822,358
Int. Cl. G02b *3/12, 5/14*
U.S. Cl. 350—96 **6 Claims**

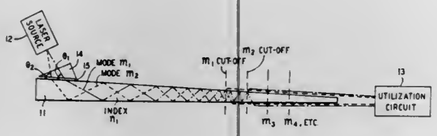


A gas lens comprising a square block of low-thermal conductivity material having a gas-filled circular cylindrical hole extending longitudinally through its center. A cos θ temperature distribution about the periphery of the hole is obtained by establishing a temperature differential between the two pairs of opposite sides of the block. An alternating gradient focusing waveguide is obtained by cascading a plurality of such lenses such that hot and cool surfaces of adjacent units are displaced 90° with respect to each other. It is an advantage of the invention that there is no gas flow through the lens and, hence, through the waveguide. Accordingly, there is no need for flow control apparatus normally associated with gas lenses and gas waveguides.

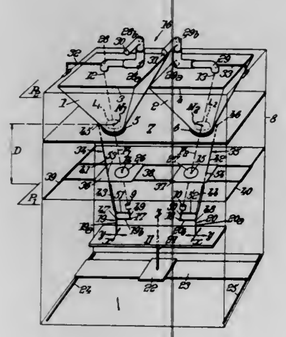
3,617,109
LIGHT GUIDE COUPLING AND SCANNING ARRANGEMENT
Ping K. Tien, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 23, 1969, Ser. No. 860,383
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **14 Claims**

There is disclosed an optical guiding apparatus of the type in which a dielectric body is bounded by other dielectric

materials or free space and has only one dimension sufficiently small to produce guiding of the light. The apparatus includes means for supplying a coherent light beam in a desired mode or modes to the body and means for receiving one or more light beams from the body. The apparatus is characterized by a taper of the body to vary the one dimension sufficiently to provide light coupling between the body and at least one of the supplying or receiving means at a cutoff line for the guiding action. Electro-optic light deflection is provided within the body in some embodiments. Since different modes can be coupled out at different cutoff lines, this property is used in one embodiment to provide a two-coordinate light deflector which is useful in scanning applications.



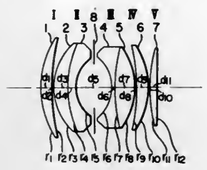
3,617,110
SPACE SIMULATORS
Bernard Louis Yves Dubuisson, Paris, France, assignor to Societe Francaise D'Optique Et De Mecanique S.F.O.M., a part interest
Filed July 8, 1969, Ser. No. 840,066
Claims priority, application Great Britain, July 8, 1968, 158,378/68
Int. Cl. G01c *11/12*
U.S. Cl. 350—136 **4 Claims**



Space simulator comprising two chambers carrying a stereoscopic photopair, two light sources carried by a stand and emitting two beams projecting on the two photographs of the photopair the images of the marks, and a stereoscoping viewing device for viewing the two beams. The marks are arranged so that they can be moved exclusively in a stationary plane P_1 conjugated relatively to the lenses of the chambers with a plane P_2 corresponding to the mean position of the photopair.

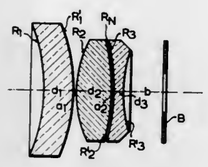
3,617,111
LARGE-APERTURE PHOTOGRAPHIC LENS WITH SEVEN ELEMENTS IN FIVE GROUPS
Motoaki Kawazu, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1970, Ser. No. 68,411
Claims priority, application Japan, Aug. 28, 1969, 44/67584
Int. Cl. G02b *9/60*
U.S. Cl. 350—217 **1 Claim**

A large-aperture photographic lens adapted for use as the standard lens with single-lens reflex cameras. The lens consists of seven elements in five groups and has a back focal length greater than 0.68 times the focal length of 1.0 a picture angle of 44° and an *f*-number of 1.1. The image errors,



especially the spherical aberration of the higher order, are well corrected.

3,617,112
PHOTOGRAPHIC OBJECTIVE HAVING A REAR DIAPHRAGM
Joachim Eggert, Braunschweig, and Karl-Heinrich Behrens, Ufingen, both of Germany, assignors to Voigtlander, A.G.
Filed June 11, 1969, Ser. No. 832,243
Claims priority, application Switzerland, June 14, 1968, 8893/68
Int. Cl. G02b *9/12*
U.S. Cl. 350—225 **2 Claims**

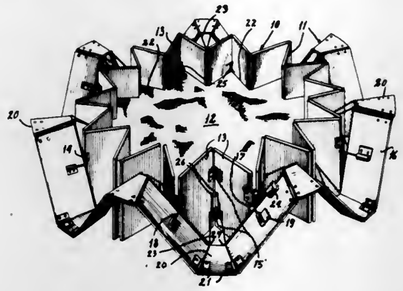


A photographic objective having a rear diaphragm. In front of the rear diaphragm there are a pair of meniscus-shaped components respectively having convex surfaces directed toward each other with one of these components being made up of a pair of individual lenses while the other is composed of a single lens. The three lenses provide the objective with a biconcave configuration. The concave front surface of the front meniscus and the opposite surface thereof have radii provided with an arithmetic sum the absolute value of which is smaller than 1.0 but no less than 0.6 times the focal length of the entire objective, while the absolute value of the difference between these radii is no smaller than o without exceeding a limiting value of 0.15 times the focal length of the entire objective. The radius of the concave front objective surface divided by the radius of the following convex forwardly directed surface has an absolute value greater than 1.10 without exceeding a limiting value of 2.10.

3,617,113
DEPLOYABLE REFLECTOR ASSEMBLY
Sigurd Hoyer, Rockville, Md., assignor to Fairchild Hiller Corporation, Montgomery County, Md.
Filed May 15, 1969, Ser. No. 824,947
Int. Cl. G02b *5/08*
U.S. Cl. 350—299 **10 Claims**

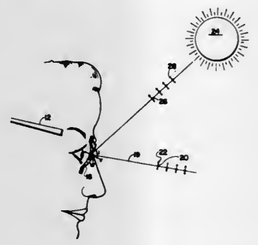
A deployable reflector assembly for electromagnetic radiation having a deployable circular T-shaped reflector ring structure attached to and surrounding a deployable reflector. The deployable circular T-shaped reflector ring has hinged folding panels, rotatable panels rotatably connected to the folding panels and wedge-shaped members that are hinged to the rotatable panels. Upon deployment, the hinged folding panels form a substantially cylindrical ring and the wedge-shaped members and rotatable panels form a substantially flat disk that is perpendicular to the central axis of the cylinder that is formed by the fully deployed folding members. The resulting deployed circular reflector ring structure has a rigid T-shaped section. As the circular reflector ring

structure is deployed, it pulls the reflector into its operational configuration. Means such as a wire connected to an electric



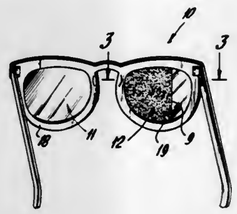
motor or torsion springs are provided for deploying the reflector.

3,617,114
PLEOCHROIC SPECTACLES
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Feb. 24, 1970, Ser. No. 13,607
Int. Cl. G02c *7/12*
U.S. Cl. 351—49 **7 Claims**



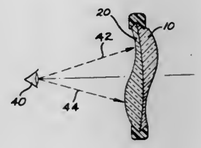
Polarized prescription spectacles are furnished with lenses ground and polished from pleochroic crystals. Pleochroic crystals are readily polished to the contours required on ophthalmic lenses. The crystal is oriented with its principal absorption axis horizontal and at right angles to the lens axis. Sunglasses can be fitted with certain pleochroic crystals to reduce solar intensity for the wearer as well as glare from terrestrial sources.

3,617,115
EYEGLASSES HAVING A CORRECTED RETROVISION CAPABILITY
Lawrence S. Pratt, 56 W. 11th St., New York, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,441
Int. Cl. G02c *7/14*; **G02b** *7/18*
U.S. Cl. 351—50 **1 Claim**



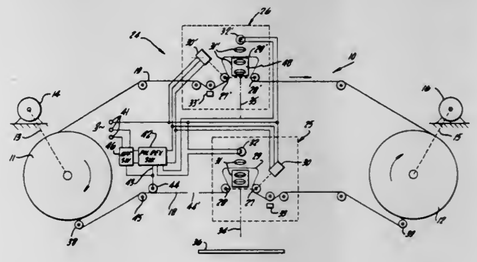
A new form of eyeglass construction is disclosed having a retrovision capability including a corrective effect. One of the eyeglass lenses is mirrored on at least part of its substantially flat forward surface so that light rays emanating from behind the wearer's head pass through the lens twice before reaching his eye. The lens may be designed to correct any defect in the vision of that eye to the greatest extent possible. Opaque material can be applied to portions of the lens to screen out extraneous images.

3,617,116
METHOD FOR PRODUCING A UNITARY COMPOSITE OPHTHALMIC LENS
Donald C. Jones, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Jan. 29, 1969, Ser. No. 794,869
Int. Cl. G02c *7/02*
U.S. Cl. 351—177 **1 Claim**



A method of producing a unitary composite ophthalmic lens, in which the lens includes two thin lens elements having a pair of outer lens surfaces, each of controlled related compound curvature, and a pair of inner adjacent flat or spherically curved surfaces in mutually adjustable engagement for providing any sphere or cylinder prescription desired within a relatively wide predetermined prescription range, and then fixedly secured.

3,617,117
MOTION PICTURE PROJECTION SYSTEM
Patrick Michael Powers, Arcadia, Calif., assignor to Bell & Howell Company, Pasadena, Calif.
Filed Feb. 3, 1969, Ser. No. 795,846
Int. Cl. G03b *23/06*, *1/00*
U.S. Cl. 352—27 **61 Claims**

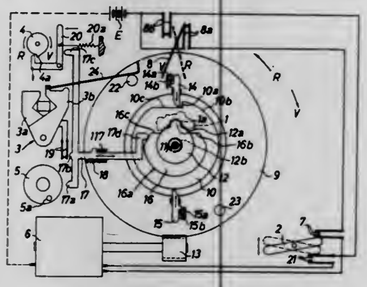


A continuously rewinding motion picture projection system in which a pair of lengths of motion picture film, which define first and second halves of a film program, are arranged in reciprocal head-to-tail relation and are transferred simultaneously back-and-forth between a pair of reels upon which the film lengths are wound in bifilar fashion. Between the reels the film lengths each pass through a projection station which includes a projection lens system directed to a display screen common to both film lengths. The projection station is operable to project upon the display screen film information carried by the film length which, at that time, moves in a forward mode through the projection station. The film lengths are in the same state at the completion of display of the program as they were when the program display was commenced.

3,617,118
MOTION-PICTURE CAMERA WITH FADING MECHANISM

Hermann Muller, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 12, 1970, Ser. No. 45,824
Claims priority, application Germany, June 21, 1969, G 69 24 794
Int. Cl. G03b 21/36
U.S. Cl. 352—91 18 Claims

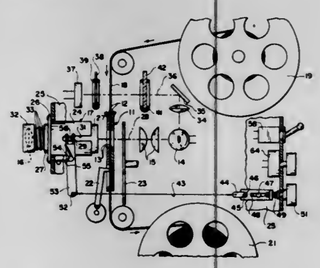


A motion-picture camera wherein exposures with fadeout and fade-in effect are produced by gradually closing and opening the diaphragm. The length of that portion of motion-picture film which is exposed with fadeout effect and thereupon with fade-in effect is determined by a first disk which can be driven by the reversible motor of the film-transporting mechanism to rotate forwardly during fadeout, thereupon rearwardly during rewinding of film which was exposed with fadeout effect, and again forwardly during fade-in. The first disk rotates a second disk during rotation in the forward direction whereby the second disk initiates the making of exposures with fadeout effect in response to first rotation of the first disk in the forward direction and the making of exposures with fade-in effect during the second rotation of the first disk in such forward direction. The second disk is automatically disengaged from the first disk or both disks are automatically disengaged from the motor upon completion of exposures with fade-in effect.

3,617,119
METHOD AND APPARATUS FOR AUTOMATICALLY FOCUSING FILM PROJECTORS

Armin B. Pagel, Janesville, Wis., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,709
Int. Cl. G03b 3/00
U.S. Cl. 352—140 9 Claims

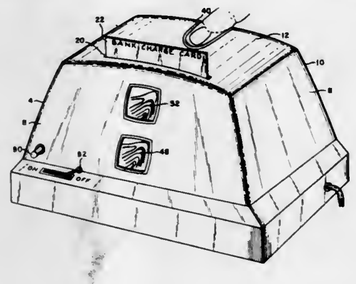


A device for automatically adjusting the focus of a film projector to compensate for film distortion caused by the sudden heating experienced by the film frame located in the projection gate as a result of absorption of radiant energy from the projection lamp. The distortion that each successive film frame will experience in the gate is predicted by measuring density characteristics of that frame before it arrives at the gate and the focus of the projector is adjusted accordingly in substantial synchronism with the movement of that frame into the gate.

3,617,120
FINGERPRINT COMPARISON APPARATUS

Stephen Roka, 30 Goshen Court, Gaithersburg, Md.

Filed June 2, 1969, Ser. No. 829,262
Int. Cl. G03b 21/26
U.S. Cl. 353—28 3 Claims

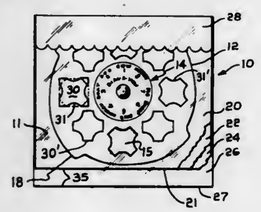


A device for verifying the identity of a person presenting a credit card or other document bearing a fingerprint, comprising a means for presenting in juxtaposed relation a view of the printed fingerprint and a view of the corresponding finger of the person, thereby permitting quick comparison. Photographic means may be optionally provided for recording each fingerprint or actual finger or both.

3,617,121
SELECTIVE IMAGE PRODUCING APPARATUS FOR USE WITH A PROJECTOR

Marilyn M. Culp, P. O. Box 5455, Midland, Tex.

Filed Oct. 14, 1969, Ser. No. 866,184
Int. Cl. G03b 21/00, 23/10
U.S. Cl. 353—120 4 Claims



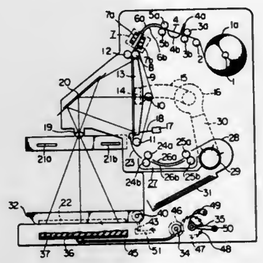
Apparatus for use in combination with a projector for selectively projecting the image of one of a plurality of small transparencies from the projector to an image-receiving surface. The apparatus is in the form of a file folder having spaced-apart light-passing passageways therein, and having a disk rotatably supported by the file folder, with the disk having a plurality of circumferentially disposed windows therein. Rotation of the disk enables any one of the windows to be superimposed upon the aligned light-passing passageways. Each window removably receives and supports a transparency therein by means of inwardly directed tabs.

3,617,122
COPYING APPARATUS

Akira Saito, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1969, Ser. No. 800,861
Claims priority, application Japan, Feb. 24, 1968, 43/13,431
Int. Cl. G03g 15/00
U.S. Cl. 355—11 3 Claims

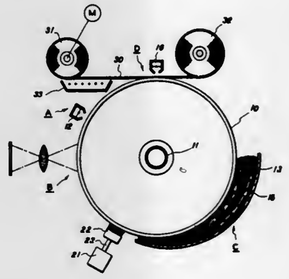
Disclosed herein is an improved copying apparatus provided with an improved holding device. A typical device for holding the original, according to the invention, comprises a rectangular frame and a transparent glass plate disposed at a bottom portion of the frame, and an original supporting plate movably disposed under the transparent glass plate in such a way that the original supporting plate can be pressed upwards. A cushion may be secured to an upper surface of the supporting plate. An optical means for projecting an image upon a copy paper, which is held in a stational condition during the copying operation, is disposed above the glass plate so that the original can be placed on the supporting plate in a condition wherein it faces upward. Thus, when a certain number of copies are required to be made from a series of originals in a book form, the pages can be turned by lowering the supporting plate without taking off the originals from the supporting plate.



3,617,123
XEROGRAPHIC CLEANING APPARATUS

William C. Emerson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 6, 1969, Ser. No. 796,960
Int. Cl. G03g 15/08, 15/22
U.S. Cl. 355—15 3 Claims



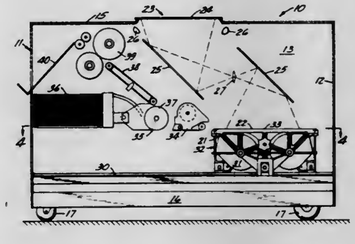
Method and apparatus for cleaning residual toner material from a photoconductive surface in automatic xerographic processing apparatus in which the photoconductive surface is developed and cleaned simultaneously at a single processing station. A brush mounted at the entrance to the development-cleaning station which is vibrated to uniformly distribute residual toner over the entire area of the photoconductive surface to effect efficient cleaning.

3,617,124
ELECTROGRAPHIC COPYING MACHINE

Orville C. Haugen, Bloomington, and Emil J. Kvaal, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 20, 1969, Ser. No. 867,496
Int. Cl. G03g 15/00
U.S. Cl. 355—16 7 Claims

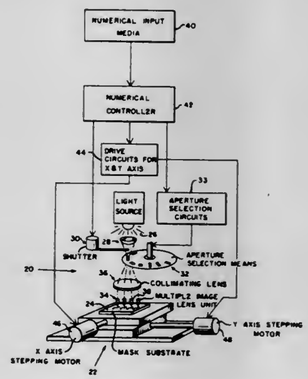
A system for handling and transporting the intermediate web in an electrographic copying machine which utilizes an intermediate web to produce copies of graphic intelligence. The system comprises a cartridge formed of two molded shells which contain a supply of intermediate web wound between two rollers. The rollers extend beyond the sides of the cartridge and a section of the web between the rollers is disposed externally to the cartridge. The cartridge is removably mounted on a movable carriage having a flat conductive peripheral support area supporting said external web section. Means is provided to transport the carriage thus moving the supported section of web in proper sequence from an imaging system or exposure station to a development and a transfer station on the copying machine and to then return the carriage to the imaging station in order to produce the desired copies. Drive means is provided on the machine to change the section of web disposed externally to the cartridge as is needed in producing subsequent copies. The web change is accomplished by winding the web from one roller onto the other.



3,617,125
AUTOMATIC GENERATION OF MICROSCOPIC PATTERNS IN MULTIPLICITY AT FINAL SIZE

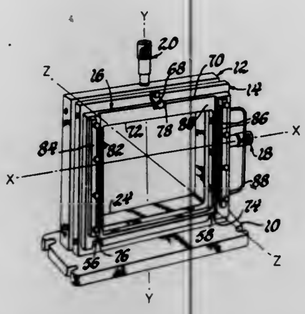
Mark D. Sobottke, and Clifford W. Kruer, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Apr. 24, 1969, Ser. No. 818,997
Int. Cl. G03b 27/44
U.S. Cl. 355—46 8 Claims



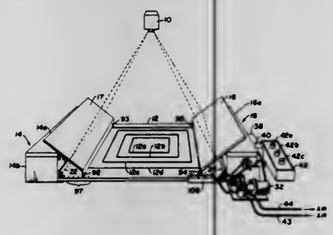
An apparatus for automatically generating geometric patterns (like microcircuit photomasks) in multiplicity at final size. The apparatus includes an indexing table for supporting photosensitive media and for indexing the media along coordinate directions at right angles to each other. The apparatus also includes an optical imaging system for directing a shaped pattern image onto said media. The imaging system includes an aperture plate for shaping the image; a multiple lens unit for producing a plurality of images corresponding to said pattern image on said media; and a collimator lens positioned between the aperture plate and the multiple-lens unit. The pattern image is simultaneously repeated on the media with a high degree of accuracy. A numerical controller, which is tape fed, is used to control the operation of the apparatus.

3,617,126
REPOSITIONING APPARATUS FOR PHOTOGRAPHIC PLATES
Donald E. Gillespie, Ann Arbor, Mich., assignor to Jodon Engineering Associates, Ann Arbor, Mich.
Filed Nov. 10, 1969, Ser. No. 875,274
Int. Cl. G03b 27/58; G04d 7/00
U.S. Cl. 355—72 8 Claims



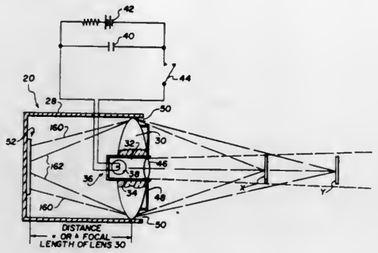
A photographic plate holder for use in holography is disclosed. The plate holder includes apparatus for precise repositioning of the photographic plate after it has been removed for processing of a hologram recorded thereon. The photographic plate is retained in a plate carriage which in turn is removably supported in a kinematically stable mount on an adjustable member. The adjustable member is disposed upon a support member by a spring suspension system and is adjustable along X and Y-axes by means of a micrometer screw-spring displacement system which affords a high ratio of displacement reduction for positional adjustment in a reference plane parallel to the X and -axes.

3,617,127
PHOTOGRAPHIC MATERIAL TRANSPORT WITH VACUUM PLATEN
Rubert J. McDuff, Arlington, Tex., assignor to Mobil Oil Corporation
Filed Feb. 20, 1969, Ser. No. 801,072
Int. Cl. G03b 27/60
U.S. Cl. 355—73 15 Claims



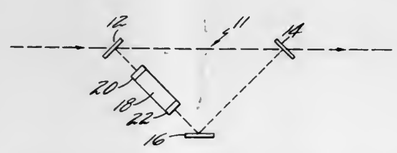
The specification discloses an automatic machine for handling bulk roll form photographic material during manufacture of photographic enlargements. The machine dispenses the photographic material in the objective plane of an enlarger, holds the material flat for an exposure, and then transports the material to the position for the next exposure. A novel platen and pneumatic system provides for vacuum holddown of the photographic material for an exposure and then provides an air cushion on which the photographic material rides as it is being advanced to the position for the next exposure. Adjustment of the length of material dispensed for each exposure is easily made by means of an electronic timer unit.

3,617,128
AUTOMATIC RANGEFINDER MEANS
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 28, 1968, Ser. No. 771,209
Int. Cl. G01c 3/08
U.S. Cl. 356—4 12 Claims



This disclosure relates to an automatic rangefinder utilizing refracted light from a subject to ascertain range distance. Light is transmitted toward the subject, and the refracted light is received by an optical system suitably masked so as to admit the refracted light only around peripheral portions. Photosensitive materials are arranged at the image plane of the optical system, the photosensitive materials having a predetermined geometrical configuration wherein predetermined loci are functions of range distance. The discrete locus delineated by the refracted light at the image plane is then identified to determine range distance.

3,617,129
INTERFEROMETRIC OPTICAL ISOLATOR
Michael L. Skolnick, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 10, 1969, Ser. No. 875,238
Int. Cl. G01b 9/02; G02f 1/22
U.S. Cl. 356—100 9 Claims

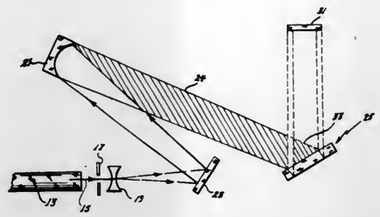


A ring interferometer is provided with a directional anisotropic element, such as a Faraday rotator, to separate the frequencies of the clockwise and counterclockwise travelling waves therein, one of which is chosen as the resonant frequency. The result is that light entering at the resonant frequency through one of the entrance ports of the resulting four-port optical circulator will have to be readily transmitted through the device, while light entering the opposite entrance port at the same frequency will be rejected significantly; the device therefore acts as an optical isolator having high transmission of a forwardly travelling wave and high rejection of a backwardly travelling wave.

3,617,130
SIMPLIFIED SCHLIEREN SYSTEM
Joseph G. Kelley, Wayland, Mass., and Robert A. Hargreaves, Nashua, Md., assignors to The United States of America as represented by the Air Force
Filed Dec. 10, 1969, Ser. No. 883,710
Int. Cl. G01b 9/02; G01n 21/46
U.S. Cl. 356—107 4 Claims

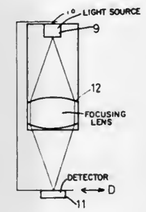
A beam of coherent light is expanded and reparallelized by a single lens and a parabolic mirror. The beam then passes

through the test region, which may be of any convenient size and impinges on a back surface mirror at 45 degrees. About 10 percent of the light is reflected from the front surface of the glass. This is slightly offset from the image reflected from



the rear surface. Any refractive index gradients perpendicular to the direction of propagation then create fringes in the overlapping reflected images which may be visually observed or recorded directly on film.

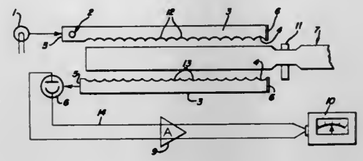
3,617,131
SYSTEM FOR DETECTION OF MINUTE INCLINATION
Hiromi Taguchi, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd.
Filed July 24, 1969, Ser. No. 844,398
Claims priority, application Japan, July 24, 1968, Dec. 25, 1968; 43/51820, 43/94483
Int. Cl. G01b 11/26; G01c 9/06
U.S. Cl. 356—152 5 Claims



A system for detecting a minute inclination of an object surface with respect to the horizontal is provided, which comprises a light source and a photoelectric transducer arranged in a predetermined relationship so that a spotlike or slitlike light beam impinges upon different areas of varying sensitivity of the transducer when the object surface on which these elements are mounted includes an inclination with respect to the horizontal. A pendulum is used to provide a vertical reference to the system.

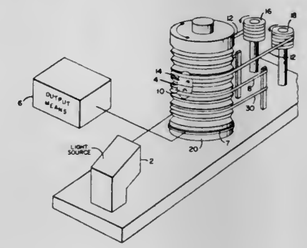
3,617,132
APPARATUS UTILIZING LIGHT-CONDUCTING RODS WITH LENSES FOR PROVIDING A REMOTE INDICATION OF THE AMOUNT OF MAGNETIC RECORDING TAPE ON A REEL
Robert C. Bell, East Setauket, N.Y., assignor to Beltronix System, Inc.
Filed Aug. 5, 1969, Ser. No. 849,282
Int. Cl. G01b 11/00, 11/04, 11/10
U.S. Cl. 356—156 2 Claims

Measuring device including a pair of spaced-apart, normally light-transmitting rods or bars, each having a light-reflecting coating at one end and throughout a major portion of their respective longitudinal surface areas, thereby defining relatively narrow longitudinal light-transmitting areas in each rod or bar facing the like area in the other rod or bar; means for producing and transmitting light into the uncoated end of the first rod or bar; and means sensing the relative amount of light reflected and transmitted out of the uncoated end of the second rod or bar. The device is especially adaptable for use as a remote indicating footage meter for reels of magnetic recording tape, magnetic data-processing tape or the like located between the two rods or bars, by electrically connecting the light sensing means, preferably through an amplifier, to a remote meter or the like which gives a visual



indication of the relative amount of light sensed by the sensing means as the tape is wound or unwound in the space between the rods or bars.

3,617,133
MICROINCH-MEASURING INSTRUMENTATION SYSTEM
Carman H. Gibson, Rte. 4, Fayetteville, Tenn.
Filed May 20, 1970, Ser. No. 39,600
Int. Cl. G01b 11/08, 11/10
U.S. Cl. 356—159 3 Claims

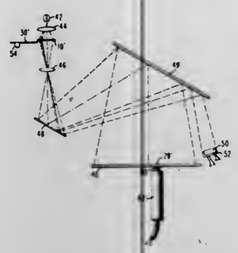


Device for microinch measurement of the diameter of a continuous length of wire wherein the diameter of the test wire is compared against the diameter of a standard wire by utilizing a light and a dual-element light-sensitive detector. The test wire is placed between the light and the first light-sensitive detector while the standard wire is placed between the light and the second light-sensitive detector. The light-sensitive detectors are connected in a balanced bridge such that a deviation in wire size of the test wire causes the unbalanced bridge to provide an output indicative of the difference between the size of the test wire and the standard wire. The amount of imbalance is correlated to the dimension of the wire and may be visually displayed or recorded.

3,617,134
OPTICAL IMAGE FRAME COORDINATE DATA DETERMINING SYSTEM
Donald Irwin Frush, Los Gatos, and Albert Daniel Rizzi, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 30, 1970, Ser. No. 59,409
Int. Cl. G01g 11/00
U.S. Cl. 356—162 10 Claims

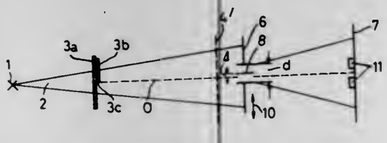
The use of film projection and like optical display devices in conjunction with digital computer and data-processing systems is enhanced by a rectangular, or X–Y, coordinate determining system providing a completely unobstructed view of the display by means of a mask element moved across the film frame bearing the information virtually in the plane of the frame. A pair of photoresponsive elements are arranged in the display device for receiving light from a pair of light-transmitting spots correspondingly arranged parallel to an edge of each film frame. The mask element is shaped to interrupt the light passing between the spots and the photoresponsive cells and a photosensitive probe placed on the display at a point at which the data coordinates are to be determined. The mask element has one portion interrupting

the light periodically for advancing X- and Y-counter as the mask element is moved across the frame up to the probe



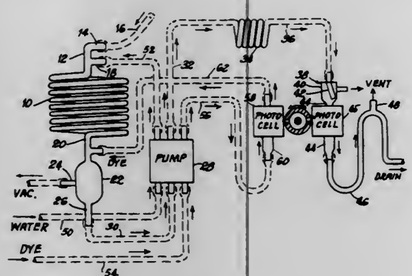
under control of circuitry comprising conventional electronic gating circuits and latches. Cartesian coordinates are derived directly from the X- and Y-coordinate data counters.

3,617,135
OPTICAL ALIGNMENT METHOD AND ARRANGEMENT FOR PRACTICING THE METHOD
Hans Dieter Betz, Mannheim, Germany, assignor to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Wurttemberg, Germany
Filed May 10, 1968, Ser. No. 728,208
Claims priority, application Germany, Feb. 20, 1968, B 96728
Int. Cl. G01b *11/26*
U.S. Cl. 356—172 **4 Claims**



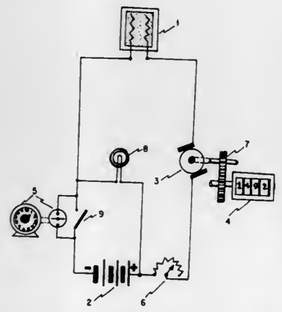
A method and arrangement for optical alignment of spatially separated objects in which a laser beam of substantially coherent radiation has disposed therein a phase plate producing a minimum of intensity, a diffraction diaphragm representing the object to be aligned and an observation screen on which appear the characteristics of the diffraction pattern produced by the diaphragm. Photoelectric scanning elements may be arranged in the plane of said observation screen for detecting said diffraction pattern.

3,617,136
COLORIMETER AND ELEMENTS THEREFOR
Norman A. Lyshkow, Chicago, Ill., assignor to Pollution Monitors, Inc., Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,308
Int. Cl. G01j *3/46*; **G01n** *31/00*
U.S. Cl. 356—180 **4 Claims**



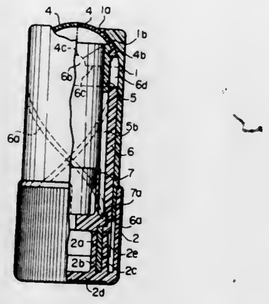
This invention is addressed to a new and improved colorimeter for determining the concentration of gaseous pollutants in air and to improved scrubber and photocell assemblies for use with such colorimeters, wherein the scrubber includes a helical coil into which an air sample is drawn and admixed with a liquid absorbent whereby the liquid flows gravitationally through the coil in the form of wave fronts to provide complete contact between the air sample and the liquid absorbent with minimum agitation, and the photocell assembly includes a pair of spaced photoresistors and light source spaced therebetween, with the light source having a lamp housing enclosing the light source and defining a pair of spaced openings whereby the light source projects optical spots to the photoresistors to illuminate the photoresistors with light, the relative intensity of which is dependent upon the color developed in solutions passed in front of the photoresistors as an indication of the pollutant gas concentration in the air sample.

3,617,137
LUMEN-HOUR INTEGRATION METERS
Siegfried S. Meyers, Harrisonburg, Va., assignor to Madison College Foundation, Inc., Harrisonburg, Va.
Filed May 16, 1969, Ser. No. 825,286
Int. Cl. G01j *1/46*
U.S. Cl. 356—215 **4 Claims**



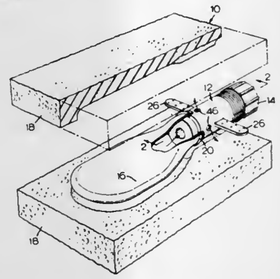
A lumen-hour integration meter circuit for registering intensity of illumination in lumens, which includes a miniature direct current motor, a zero-adjusting rheostat, and either self-generating photovoltaic solar cell means or a switch and photoconductive cell, all connected in a series loop, together with a digital readout counter coupled to the motor to be driven by the motor, whereby the counter will register in units of lumen hours.

3,617,138
COSMETIC APPLICATOR
Kiyoshi Fukui, Saitama-ken, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan
Filed May 21, 1970, Ser. No. 39,295
Int. Cl. A45d *40/06*
U.S. Cl. 401—59 **5 Claims**



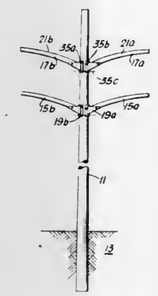
A capless cosmetic applicator provided with a cylindrical casing and a knob turnably and telescopically engaged with the cylindrical casing. The tip portion of the cylindrical casing is opened and provided with a pair of shutter pieces swingably engaged with an inside wall thereof so that the shutter pieces are opened when a solid cosmetic contained is used or alternately closed when the applicator is not used. The opening or closing motion of the shutter pieces is operated by an actuating means disposed within the applicator when the knob is relatively pulled from or pushed in the cylindrical casing.

3,617,139
APPLICATOR FOR LIQUIDS
John C. Ross, Apt. 610, 52 Thorncliffe Park Drive, Toronto 17, Ontario, Canada
Filed Mar. 16, 1970, Ser. No. 19,919
Claims priority, application Canada, Mar. 20, 1969, 46,249
Int. Cl. A47l *13/17*
U.S. Cl. 401—206 **4 Claims**



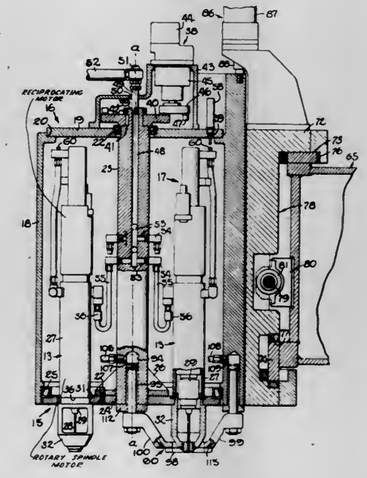
A flexible impervious gland is connected to a cylindrical body and both the gland and body are sandwiched between two halves of a sponge. A passage is formed within the body and a valve is mounted within the passage. An aperture communicates the passage with the gland and a second aperture communicates the passage with the outside wall of the body. The gland serves as a reservoir for liquid such as soapy water. In one embodiment, a manually rotatable cap or head is connected to the valve. Upon rotation of the cap, the valve moves into and out of a blocking relationship with the aperture which communicates the passage with the outside wall of the body. When the valve is not blocking the aperture, the gland may be squeezed to force liquid from the gland, through the passage and out through the aperture to the sponge. In a second embodiment, the valve is spring loaded and normally blocks the aperture which communicates the passage with the gland. A cap is connected to the valve and when the cap is pressed in a direction opposed to the bias of the spring, the valve is opened. The gland may be squeezed to force the liquid from the gland out onto the sponge.

3,617,140
METHOD AND APPARATUS FOR PIERCING A POLE TO ACCOMMODATE HARDWARE-MOLDING FASTENERS
Richard L. Gates, Bethel Park, Pa., assignor to Koppers Company, Inc.
Filed June 30, 1969, Ser. No. 837,412
Int. Cl. B23b *49/02*
U.S. Cl. 408—1 **11 Claims**



A method and apparatus for piercing poles including a perforated template used to locate the centers of the mounting holes; an auger-guiding jig that is positionable on the pole and is alignable with the hole markings includes adjustable auger-guiding blocks which are releasably securable to the jig so as to align with an axis connecting hole markings on opposite sides of the pole.

3,617,141
TOOL TURRET
Robert W. Sullivan, Rockton, Ill., assignor to Ekstrom Carlson & Co., Rockford, Ill.
Filed Apr. 23, 1969, Ser. No. 818,646
Int. Cl. B23b *39/20*
U.S. Cl. 408—35 **4 Claims**

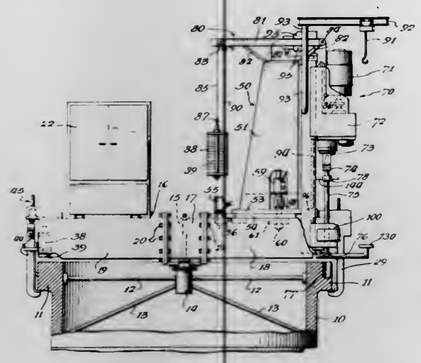


A toolholder including a tool turret mounted to rotate about its central vertical axis and the turret mounts a number of self-contained tool units for rotation with it. The tool units are spaced angularly around the central axis, nd each tool unit is spaced the same predetermined radial distance from the central axis. Positioned nonrotatably on the toolholder is an actuator which creates an active tool position in which a tool unit can be activated, and the solenoid is positioned so that the active tool position is created at a distance from the central axis equal to the predetermined radial distance. To be activated, a selected tool unit rotates with the turret and into the active tool position. The toolholder can be mounted in a gantry-type machine tool base over a bed on which a workpiece is supported and, with this arrangement, the active tool position can be moved relative to the workpiece from location to location. A pneumatically operated holddown located adjacent the active tool position performs the double function of holding the workpiece steady so that it can be acted on in an accurate manner by the selected tool unit and of directing jets of air at the top surface of the workpiece to clean it off prior to action by the selected tool unit.

3,617,142
PORTABLE MACHINE TOOL FOR VERTICAL DRILLING, THREADING AND THE LIKE
Gerald De Wane, Chicago; Chester A. Harris, Jr., Western Springs, and Harold L. Gebhard, Chicago, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Oct. 3, 1968, Ser. No. 764,824
Int. Cl. B23b *45/14*
U.S. Cl. 408—103 **15 Claims**

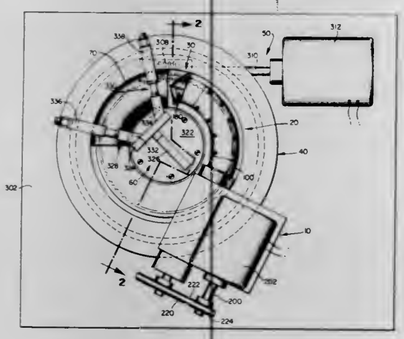
Disclosed is a portable machine tool for drilling, reaming, tapping and chamfering, spot facing and grinding large diameter deep vertical holes in metal with means for removing the heat and chips generated from drilling, reaming or

tapping the holes as they are produced. The machine has means for aligning or levelling it relative to the workpiece



and for clamping it to the workpiece to prevent lifting or shifting in use.

3,617,143
ARCUATE HOLE-CUTTING TOOL
Harold K. McKee, Chalfont, Pa., assignor to Custom Alloy Corporation, Califon, N.J.
Filed Apr. 29, 1969, Ser. No. 820,212
Int. Cl. B23b *41/00*
U.S. Cl. 408—127 **1 Claim**



A cutting tool for cutting along an annular path comprises a cutting head, a drive motor and speed reducer unit including an output shaft, and a fixed-angle rotating joint transmission means mounted in an arcuate member and connected to one end to the output shaft and at the other end to the cutting head for transmitting power thereto about a severe arc. The tool and power source are mounted on a rotatable table so that the tool can be fed into a stationary workpiece.

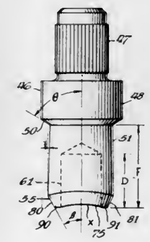
3,617,144
ADJUSTABLE BORING BAR
Eldo K. Koppelmann, and William S. Holloway, both of Cumberland, R.I., assignors to Madison Industries, Inc.
Filed July 24, 1969, Ser. No. 844,346
Int. Cl. B23b *29/034*
U.S. Cl. 408—187 **2 Claims**

A two-part adjustable boring bar assembly consisting of a shank and an adjustable head, the adjustable head being received in an end slot of the boring bar and having keyway engagement with the slot to maintain the proper attitude of the adjustable head with the bar. An adjusting screw is provided and captured in one of the parts, the threads of which



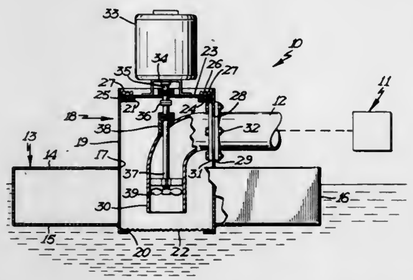
engage the other of the parts to traverse the head transverse of the boring bar.

3,617,145
COUPON-RETAINING PIPE TAPPING PUNCHES
Blase G. Celmer, and Michael J. Rafalski, Jr., both of South Bend, Ind., assignors to M. B. Skinner Company, Division of Textron Inc., Providence, R.I.
Filed Mar. 26, 1969, Ser. No. 810,660
Int. Cl. B23b *41/08*
U.S. Cl. 408—204 **10 Claims**



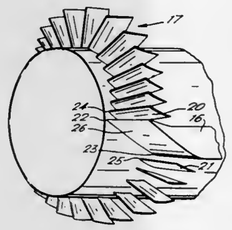
A substantially cylindrical or tubular, longitudinally extending, coupon-retaining, pipe-tapping punch having the characteristics described below, and having among other things, a coupon-retaining bore and a tapping portion having tapping edges for forming and enlarging an opening in a metal pipe.

3,617,146
FLOATATION PUMP DEVICE
Theodore F. Garland, Fargo, N. Dak., assignor to Garland Manufacturing Company, Crosby, Minn.
Filed Oct. 20, 1969, Ser. No. 867,812
Int. Cl. F01d *25/28*
U.S. Cl. 415—7 **2 Claims**



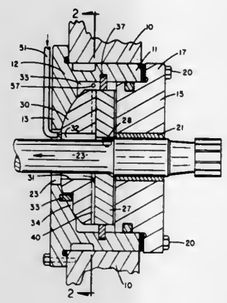
A shallow flotation pump device includes a hollow flotation tank which is adapted to be floated in a source of water such as a pond or the like and which has a centrally located opening therein in which is mounted a chamber structure. The chamber structure has an inlet opening therein which is located below the water surface and an outlet opening which is connected to the conduit of a primary suction pump. The floating pump device permits water to be pumped from adjacent the water surface into the conduit without the creation of whirlpools or without the danger of air entering the suction line.

3,617,147
FLUID FLOW MACHINE
Stephen Lawrence Bragg, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Oct. 1, 1969, Ser. No. 862,779
Claims priority, application Great Britain, Oct. 2, 1968, 46740/68
Int. Cl. F01d *1/04*
U.S. Cl. 415—77 **8 Claims**



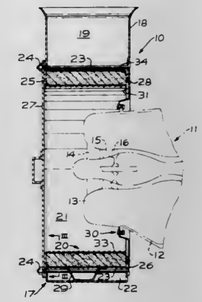
The invention concerns a fluid flow machine provided with an annular duct having at least one aerofoil-shaped strut which extends across the duct, the said strut being axially staggered with respect to and, having on angularly opposite sides thereof axially staggered angularly spaced-apart stator vanes which, reduce the static pressure field set up by the strut.

3,617,148
THRUST BEARING FOR REFRIGERATION COMPRESSOR
James W. Endress, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 18, 1970, Ser. No. 38,424
Int. Cl. F01d *1/18*; F03b *1/00, 3/00*
U.S. Cl. 415—90 **10 Claims**



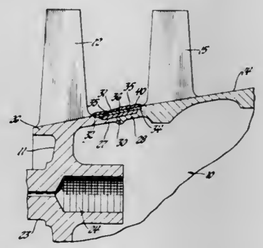
The thrust bearing disc is formed in the face side engaging the thrust collar with grooves extending outwardly from the shaft to an annular enclosed space. An oil and refrigerant mixture is supplied to the inner ends of the grooves. The grooved bearing disc in cooperation with the rotating thrust collar serves as a pump, pressurizing the mixture to provide forced lubrication between the collar and the thrust bearing disc and to prevent flashing of the refrigerant from the oil.

3,617,149
AIR INLET FILTER ASSEMBLY
Myron R. Gibson, Edelstein, Ill., assignor to Caterpiller Tractor Co., Peoria, Ill.
Filed Oct. 6, 1969, Ser. No. 863,909
Int. Cl. F04b *39/16*
U.S. Cl. 415—121 **5 Claims**



An air inlet filter assembly comprises a housing attached adjacent to the air intake of a gas turbine, for example. A cylindrical air cleaner is mounted in the housing to define an annular outer chamber thereabout which communicates directly with an inlet cowl. Ambient air exhibiting nonuniform pressure characteristics is circulated through the outer chamber and directed radially inwardly through the filter whereby the pressure characteristics of such airflows are rendered substantially uniform when communicated to the air intake of the gas turbine.

3,617,150
ROTOR DRUM
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 1, 1970, Ser. No. 42,350
Int. Cl. F01d *5/06*
U.S. Cl. 416—198 **2 Claims**

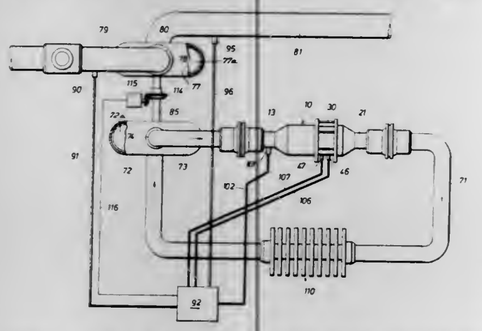


A drum-type rotor for an axial flow compressor comprises a number of abutting annular sections (wheels and rings) bearing the rotor blades of the compressor. The sections are piloted together by overlapping interfitted flanges and are secured together by a polymer adhesive composition which is cured in place between the annular members and a containing ring spaced from them to define a cavity for the adhesive.

3,617,151
FLUID FLOW CONTROLLING VALVE AND SYSTEM
Elva J. Scroggins, Lafayette, La., assignor to Drilling Well Control, Inc., Houston, Tex.
Filed Aug. 18, 1969, Ser. No. 850,895
Int. Cl. F04b *49/00*
U.S. Cl. 417—18 **3 Claims**

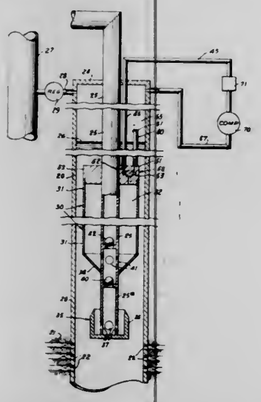
A fluid-actuated throttling valve and system for controlling fluid flow through a conduit by operation of the valve. The

valve is characterized by having a housing with an inlet and outlet arranged for fluid to flow therethrough and having a valve seat therein for controlling fluid flow therethrough. A mandrel is mounted in the housing and a valve closure assembly is mounted on the mandrel for axial movement thereon, with the mandrel extending through both ends of the valve closure assembly. The mandrel has an enlarged annular portion forming a fixed piston whereby an upstream and a downstream chamber is formed between the closure assembly and the mandrel. The valve closure assembly also supports a ram portion arranged for seating with the valve seat and means are also provided for flowing another fluid to and from the aforesaid chambers to axially move the valve closure means relative to the valve seat for controlling fluid



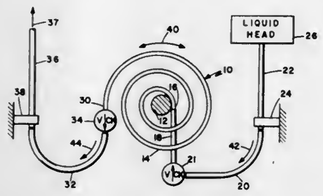
passage through the housing. The system of this invention includes a pair of rotary housings, each of which has an inlet and outlet arranged for flowing fluid therethrough. A rotary impeller wheel is mounted for rotation in each of the housings, with the rate of rotation being related to the flow of fluid through the housings. Coupling means are provided between the rotors for transmitting rotational forces therebetween. Means are included for connecting the inlet and outlet of one of the rotor housings in a first conduit, and a closed loop conduit is connected with the inlet and outlet of the other of said rotor housings. A valve such as that described above is interposed in the closed loop conduit for controlling the flow of the controlled fluid therethrough, thereby controlling the rate of speed of rotation of the impeller wheels and the flow of fluid through the first conduit.

3,617,152
WELL PUMPS
Leslie L. Cummings, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed May 19, 1969, Ser. No. 825,538
Int. Cl. F04f *1/06, 3/00*
U.S. Cl. 417—54 **55 Claims**



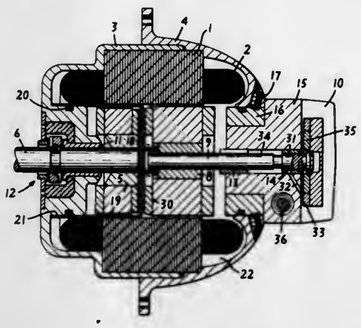
Methods of and means for the artificial lifting of well fluids; and, more particularly an automatic well pump utilizing compressed power air or gas to displace well production fluids from the well bore to the earth's surface, and systems and methods utilizing such pumps wherein the power gas exhausted from the pump is collected in a chamber at a desired predetermined superatmospheric pressure to reduce the energy required to compress the same for reuse in the pump.

3,617,153
HYDRAULIC CYCLE PUMP
Robert C. Mowry, 3672 Princeton Ave., San Diego, Calif.
Filed Feb. 2, 1970, Ser. No. 7,527
Int. Cl. F04f *7/00*
U.S. Cl. 417—241 **8 Claims**



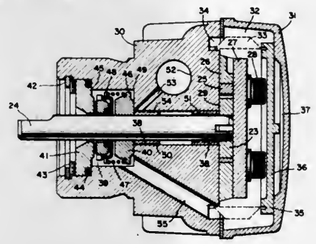
A kinetic acceleration, hydraulic pump having a spiral tube connected between a liquid head and a liquid discharge line with a one-way intake valve at one end of the tube and a one-way output valve at the other end of the tube, which spiral tube is rotated circumferentially with a reciprocating, accelerating movement, the acceleration of which moves the fluid through the tube from the liquid head to the discharge line by inertial displacement of liquid in the tube.

3,617,154
OIL BURNER SYSTEM WITH MOTOR-DRIVEN PUMP CONTROLLING BYPASS VALVE
Kyrre Guttorm Sjotun, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed May 9, 1968, Ser. No. 727,836
Claims priority, application Germany, May 9, 1967, D 53036
Int. Cl. F04b *13/09;* **B05b** *9/00*
U.S. Cl. 417—299 **1 Claim**



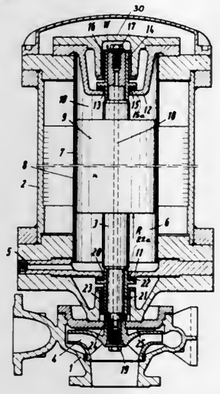
An oil burner system in which a fuel oil pump and the air blower are independently driven by a common motor having a single stator and two independently driven rotors. One rotor is connected to the pump and the other to the air blower so that the inertia of the pump drive is reduced and it comes to a stop quicker. The rotor for driving the pump is disposed in an oil-filled compartment so that it is damped. The system is provided with a bypass valve connecting the discharge side of the pump with its suction controlled by the motor shaft which is biased to open the bypass valve when the motor is in a deenergized condition. When the motor is energized the shaft is attracted axially electromagnetically and it closes the bypass valve. When the motor is deenergized it opens the bypass valve, the pump stops relatively quickly and the blower continues to blow air to ensure burning of all oil supplied from the burner and avoid coking on the burner and elsewhere.

3,617,155
OIL-PUMP WITH A PRESSURE-REGULATING VALVE CONNECTED ON THE OUTLET SIDE
Gunnar Lyshoj Hansen, and Jorgen Hartvig Petersen, both of Nordborg, Denmark, assignors to Damfoss A/S, Nordborg, Denmark
Filed Aug. 5, 1969, Ser. No. 847,582
Claims priority, application Germany, Sept. 17, 1968, P 17 28 245.0
Int. Cl. F04b *49/08*
U.S. Cl. 417—310 **3 Claims**



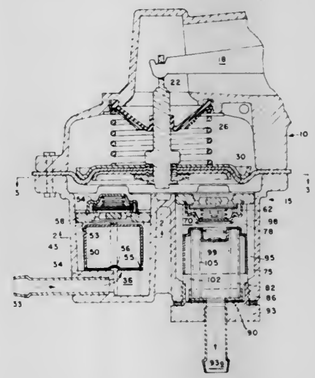
The invention relates to an oil-pump assembly which includes a pressure-regulating valve. The object of the invention is to remove air and oil from the spring chamber of the pressure-regulating valve. The shaft seal chamber has a slide-ring seal attached to the pump shaft which operates as a check valve. The pump casing is formed so that the shaft seal chamber has fluid communication with the shaft bore, the suction inlet of the pump and the spring chamber of the regulating valve. The shaft seal functions as a check valve which opens when pressurized oil from the pump discharge flows outwardly through the shaft bore. The mouth of the passage leading to the spring chamber of the pressure-regulating valve is opened or closed depending on the axial position of the shaft seal and when the mouth is open, air and oil is drawn from the regulating valve spring chamber to the suction inlet of the pump through the shaft seal chamber.

3,617,156
COUNTERBALANCED HYDRAULIC MOTOR AND PUMP UNIT
Otto Schiele, Neustadt; Adolf Kratzer, Nurnberg, and Helmut Zilling, Nurnberg, all of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal Pfalz, Germany
Filed Dec. 17, 1969, Ser. No. 885,730
Claims priority, application Germany, Dec. 17, 1968, P 18 15 088.4
Int. Cl. F04b *35/00;* **F01d** *3/00;* **F04b** *17/00*
U.S. Cl. 417—365 **11 Claims**



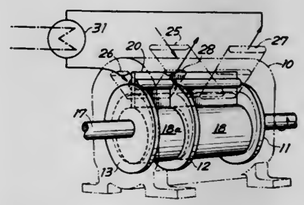
A motor and pump unit has a motor rotor and a pump rotor connected by a shaft whose end portions pass through openings in the end walls of a casing. OUtside of the end walls, the shaft has flanges forming axial gaps with the end walls so that pressure fluid flowing through the gaps counterbalances the motor rotor.

3,617,157
FUEL PUMPS WITH REVERSIBLE AIR DOME AND FILTER
Claude F. Phillips, Fairfield, Ill., assignor to Airtex Products Division of United Industrial Syndicate, Inc., New York, N.Y.
Filed June 24, 1970, Ser. No. 49,306
Int. Cl. F04b *11/00, 39/10, 21/02*
U.S. Cl. 417—542 **8 Claims**



A diaphragm type fuel pump is provided made of body castings with sheet metal stamped airdomes insertable in one of the cast bodies in such a position as to provide airdomes for inlet and outlet passages. One such airdome has incorporated therein a cylindrical filter element to effect a unitary airdome and filter cartridge or assembly. Airdomes and filters may be inserted in pumps of the invention positioned as determined by the mode of mounting of any such pump, i.e., whether the inlet and outlet conduits are above or below the pumping diaphragm when the pump is mounted on an engine.

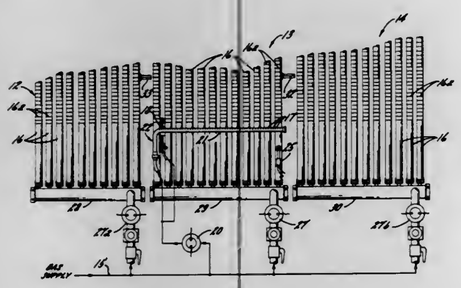
3,617,158
MULTISTAGE ROTARY COMPRESSOR
Masakazu Yamamoto, Tokyo, and Kenji Inaba, Koube, both of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Chuoku, Tokyo, Japan
Filed Jan. 28, 1970, Ser. No. 6,382
Claim priority, application Japan, Feb. 8, 1969, 44/9674
Int. Cl. F01c *1/30, 11/00, 1/00*
U.S. Cl. 418—11 **3 Claims**



A multistage rotary compressor having longitudinally aligned cylindrical chambers in which cylindrical rotary pistons are eccentrically mounted on a shaft. A longitudinal partition plate is slidably mounted in the casing to project into the chambers and engage against the pistons as they rotate, the position of the partition plate being determined by cams eccentrically mounted on the shaft. Gas suction and

discharge ports are provided in the cylindrical wall of each chamber on opposite sides of the partition and the low-pressure discharge is directed into the high-pressure suction port by way of an intermediate cooler which operates to cool the partially compressed gas.

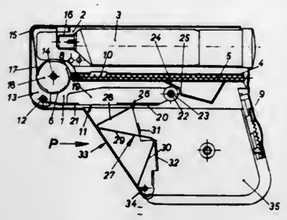
3,617,159
GAS-BOILER IGNITING SYSTEM
William C. Arndt, Michigan City, Ind., assignor to Weil-McLain Company, Inc., Michigan City, Ind.
Filed Aug. 15, 1969, Ser. No. 855,070
Int. Cl. F23n *5/20*
U.S. Cl. 431—6 **5 Claims**



An ignition system for a gas-fired boiler is provided in which electrical circuitry is utilized in a novel matter to consecutively initiate and terminate several stages in the ignition of the boiler burners. Fuel is initially supplied to a multiport pilot burner, is ignited, and the existence of the flame across the entire length of the multiport pilot burner is positively assured by an ultraviolet flame-sensing means. Next, the flow of fuel to the main burner is initiated, and after a predetermined time, the fuel flow to the multiport pilot burner is halted, thereby extinguishing the multiport pilot burner flame. The above-discussed sensing means is then used to supervise and insure that main burner flame is present. Fuel supply to the main burner is cut off in response to an indication by the sensing means that main burner flame is not present.

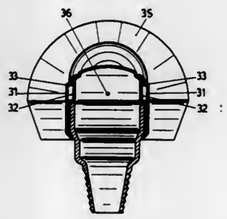
3,617,160
DEVICE FOR ACTUATING THE FRICTION WHEEL OF A PYROPHORIC LIGHTER
Alfred Racek, A 1170 Zwerngasse 59, Vienna, XVII, Austria
Filed Oct. 22, 1969, Ser. No. 868,403
Claims priority, application Austria, Oct. 22, 1968, A 10297/68
Int. Cl. F23q *2/06*
U.S. Cl. 431—275 **10 Claims**

An actuating device is disclosed for actuating a rotatable friction wheel of a pyrophoric lighter in which the friction wheel is rotatable by a driving member, which in turn is displaceable by an actuating member and a one-way coupling member connected to the driving member. A pronounced resistance is disposed in the path of travel of the driving member to oppose the movement thereof and the driving member is urged against the resistance by a single spring



serving also as a restoring means for the driving member. In one embodiment the resistance is formed by a hump on a cam surface on which travels a roller carried by the driving member. In a second embodiment, the resistance is formed by a roller carried on a pivotal arm whose movement is opposed by the spring.

3,617,161
GAS BURNERS
Aldo Polidoro, Via Rosmini, 10, Schio, Vicenza, Italy
Filed Sept. 3, 1969, Ser. No. 854,952
Claims priority, application Italy, Sept. 7, 1968, 61625 A/68
Int. Cl. F23d *13/36*
U.S. Cl. 431—349 **1 Claim**



A gas burner has a hollow cylindrical body and a cap having holes or a slit. The burner is fed with combustible gas through an intake. The holes or slit form nozzles for jets of this gas which produce a flame disposed as a fan. Guard plates may be used to protect the flame from the sides. The flame is fed only with secondary combustion air.

CHEMICAL

3,617,162
METHOD FOR DYEING GLASS FIBERS AND PRODUCT THEREOF
Siegfried K. June, Newark, and William A. Neely, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 5, 1968, Ser. No. 702,801
Int. Cl. C03c *17/00*; **D06p** *3/80*
U.S. Cl. 8—8 **11 Claims**

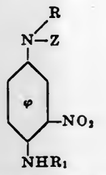
Glass fibers are coronized and then contacted with aqueous chromic acid. The chromic acid treatment increases the surface area of the fibers and deposits chromate ions on their surface. The treated fibers are washed to remove excess chromate ions, dyed with a cationic or mordant dye and then overcoated with a suitable material, e.g., a plastic or elastomeric film or a chrome complex.

3,617,163
BASIC DYES FOR USE IN COLORING HAIR
Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, both of France, assignors to L'Oreal, Paris, France
Filed Jan. 9, 1967, Ser. No. 607,898
Claims priority, application Luxembourg, Jan. 10, 1966, 50,233
Int. Cl. A61k *7/12*
U.S. Cl. 8—10 **4 Claims**

A hair dyeing composition comprises an aqueous solution of a hair coloring amount of a dye compound having the formula $A\text{–}NR\text{–}(CH_2)_n\text{–}NHR'$ wherein R and R' each independently are selected from the group consisting of hydrogen, lower alkyl and lower alkoxy, *n* is an integer of 2–6 and A is selected from the group consisting of anthroquinone, azo and benzene. The composition contains 0.01 to 3 percent of said dye compound and has a pH of about 4–10.

3,617,164
PROCESS FOR DYEING HAIR AND COMPOSITION THEREFOR
Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-Sur-Seine, and Vahan Zorayan, Enghien-les-Bains, all of France, assignors to L'Oreal, Paris, France
Filed May 13, 1968, Ser. No. 728,750
Claims priority, application Luxembourg, May 16, 1967, 33,676
Int. Cl. D06p *3/04*
U.S. Cl. 8—10 **4 Claims**

A keratin fiber dye composition which comprises a solvent and a dyeing amount of a dye compound having the formula:

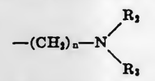


in which R is selected from the group consisting of lower alkyl, hydroxy alkyl, carboxyalkyl, carbethoxyalkyl, carbamylalkyl, haloalkyl, aminoalkyl, aminodialkyl, alkylaminodialkyl, alkyl morpholino, alkyl piperidino, having one–six carbon atoms on each mentioned alkyl portion, Z is selected from the group consisting of



Ain which R' is selected from the group consisting of methyl and NO_2, and R'' is selected from the group consisting of hydrogen and lower alkyl having one–six carbon atoms,

and R_1 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl, and



in which *n* is a whole number between two and six inclusive, and R_2 and R_3, which may be identical or different, are selected from the group consisting of hydrogen, lower alkyl, lower hydroxyalkyl, and with the nitrogen atom adjacent R_2 and R_3 may form morpholino and piperidino, each R_1, R_2, R_3 having one–six carbon atoms on their alkyl portion,

and the process of dyeing keratin fibers.

3,617,165
POLYMERIC HAIR COLORING COMPOSITIONS
Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France
Filed Sept. 2, 1966, Ser. No. 576,839
Continuation-in-part of Ser. No. 523,525, Jan. 28, 1966, continuation-in-part of Ser. No. 225,542, Oct. 1, 1962, abandoned
Claims priority, application France, Apr. 20, 1966, 58,324 Luxembourg, Jan. 1, 1966, June 14, 1966, June 16, 1966, 50,228, 51,325, 51,345
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **6 Claims**

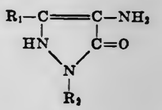
Soluble colored polymers that are suitable for use as hair dyes.

3,617,166
DYEING KERATINOUS FIBERS WITH N-ALKYL-N-CARBAMYLALKYL-ISOPIERAMIC ACID COMPOUNDS
Jerzy Josef Bartoszewicz, Twickenham, assignor to Lever Brothers Company, New York, N.Y.
Division of Ser. No. 413,986, Nov. 11, 1964, Pat. No. 3,420,883. Filed May 23, 1968, Ser. No. 751,632
Claims priority, application Great Britain, Nov. 26, 1963, 46699/63
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **6 Claims**

This disclosure is concerned with dyeing compositions containing certain N-alkyl-N-carbamylalkyl-isopicramic acid compounds and to methods of dyeing keratinous fibers with these compositions.

3,617,167
METHODS AND COMPOSITIONS CONTAINING 4-AMINOPYRAZOLONES FOR THE DYEING OF HUMAN HAIR
Peter Berth, Dusseldorf-Benrath, and Karl-Josef Boosen, Dusseldorf-Holthausen, both of Germany, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany
Filed July 29, 1966, Ser. No. 568,750
Claims priority, application Germany, Aug. 5, 1965, T 29157
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.2 **4 Claims**

In the process of dyeing the living human hair which comprises treating the hair at a temperature of from 15° C. to 40° C. with an aqueous composition for dyeing human hair comprising an oxidation dyestuff and customary dyestuff adjuvants in the presence of an oxidizing agent, and thereafter rinsing the hair, the improvement which comprises utilizing as said oxidation dyestuff, from 0.1 percent to 5 percent by weight of an oxidation dyestuff combination of (a) a developer component compound having the formula



R_1 is a member selected from the group consisting of hydrogen, $-CONH_2$, -COOH, -COOR', alkyl having 1 to 10 carbon atoms, phenyl and nicotinoyl; R' represents an alkyl having 1 to 4 carbon atoms consisting of hydrogen, alkyl having 1 to 10 carbon atoms, phenyl and p-sulfonamidophenyl; and (b) a coupling component, said developer component compound being present in substantially equimolar to a slight excess with respect to said coupling component compound.

3,617,168
DYEING PROCESS FOR BLENDS OF CELLULOSIC AND POLYESTER FIBRES
Rolf Mack, Binningen Baselland, Switzerland, assignor to Sandoz Ltd., also known as Sandoz A.G., Basel, Switzerland
Filed Mar. 25, 1968, Ser. No. 715,517
Claims priority, application Switzerland, Apr. 7, 1967, 4994/67
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C **14 Claims**

A process for dyeing blends of natural or regenerated cellulosic fibers and polyester fibers with reactive and disperse dyes, wherein the cellulosic component of the blend is dyed first with reactive dyes at temperatures in the range of 40° to 100° C. and in the pH range of 8.5 to 13, after which the pH is adjusted to 4–7, the disperse dye added and the polyester component of the blend dyed.

3,617,169
PROCESS FOR THE DYEING OF MIXTURES OF CELLULOSE AND POLYESTER FIBERS
Wolfgang Schulz, Pfullingen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt Main, Germany
Filed Feb. 27, 1968, Ser. No. 708,510
Claims priority, application Germany, Mar. 3, 1967, F 51703
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C **5 Claims**

Process for the dyeing of mixtures of cellulose fibers and fibrous materials of linear polyesters in a single bath with reactive dyestuffs and dispersion dyestuffs by treating the said fibrous materials at temperatures in the range of about 20° to 80° C. with dyebaths which contain alkaline agents in addition to the said dyestuffs, then adjusting the pH of the bath to a value in the range of 3.5 to 6 by adding free acids, and completing the dyeing at temperatures in the range of from about 95° C. to 140° C.

3,617,170
PROCESS FOR DYEING AND PRINTING POLYESTER TEXTILE MATERIALS WITH ARLACTONE DYES AND MIXTURES OF AZLACTONE DYES
Guenter Hansen, Ludwigshafen, and Hans-Richard Mueller, Fussgoenheim, both of Germany, assignors to Badische Anilin - & Soda-Fabrik Aktiengesellschaft Ludwigshafen & Rhine, Ludwigshafen, Rhineland-Pfalz, Germany
Filed Nov. 10, 1969, Ser. No. 875,506
Claims priority, application Germany, Nov. 20, 1968, P 18 09 949.5
Int. Cl. D06p *3/52*
U.S. Cl. 8—25 3 Claims

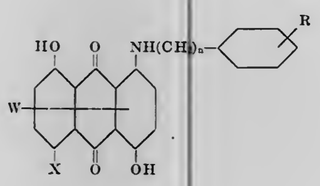
Process for dyeing synthetic polyester textile material with dyes of the azlactone series in fast and brilliant yellow shades.

3,617,171
DYESTUFF MIXTURES OF WATER-INSOLUBLE DISAZO DYESTUFFS AND PROCESS FOR THEIR PREPARATION
Joachim Ribka, Offenbach, am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany
Filed Dec. 4, 1969, Ser. No. 882,323
Claims priority, application Germany, Dec. 9, 1968, P 18 13 522.3
Int. Cl. D06p *1/00*
U.S. Cl. 8—26 4 Claims

Dyestuff mixtures of water-insoluble disazo dyestuffs consisting of two symmetrical disazo dyestuffs and one asymmetrical disazo dyestuff and process for preparing them by coupling in a molar ratio of 1:2 tetrazotized 4,4'-diamino-3,3'-dichlorodiphenyl with a mixture of 1-phenyl-3-methyl-pyrazolone-(5) and 1-p-tolyl-3-methyl-pyrazolone-(5). Said mixture can be used for the preparation of printing inks and for dyeing and printing plastic masses, synthetic or natural resins, paper, textiles, and spinning solutions. The dyeings and printings obtained with said mixtures are above all distinguished by a very good fastness to light.

3,617,172
METHOD OF DYEING ALUMINUM-MODIFIED POLYPROPYLENE FIBERS WITH ANTHRAQUINONE DYES
Yutaka Hosoda, Tokyo, Japan, assignor to Mitsui Kagaku Kogyo Kabushiki Kaisha (Mitsui Chemical Industry Co., Ltd.), Chuo-ku, Tokyo, Japan
Filed June 28, 1968, Ser. No. 741,224
Int. Cl. D06p *1/24*; C09b *1/28*
U.S. Cl. 8—39 1 Claim

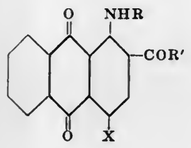
Method of dyeing polyolefin fibers which comprises applying anthraquinone dyes of a general formula



(in which X is nitro or amino group, W is hydrogen, chlorine or bromine atom, R is hydrogen atom or a lower alkyl group, and *n* is an integer of 1–4) to metal-modified polyolefin fibers.

3,617,173
2-BENZOYLANTHRAQUINONE DYES FOR POLYESTER FIBERS
John David Hildreth, Bramhall, England, and Philip Wehner, Cranmoor Manor, N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.
Continuation-in-part of application Ser. No. 386,735, July 31, 1964, now abandoned. This application June 24, 1968, Ser. No. 739,146
Int. Cl. D06p *1/20*
U.S. Cl. 8—39 3 Claims

Dyeings and printings are produced on fibrous materials of aromatic polyesters, especially polyethylene terephthalate, by using as dyestuff a 2-benzoylanthraquinone of the formula:



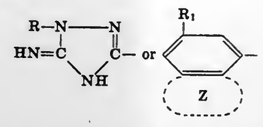
in which R is hydrogen, alkyl, particularly lower alkyl, and sulfonyl, particularly arylsulfonyl, including substituted arylsulfonyl, R' is phenyl, naphthyl, diphenyl and phenyl, naphthyl or diphenyl containing as substituents, halogen, i.e. chlorine, bromine or fluorine, lower alkyl or alkoxy substituents, and X is anilino, toluidino, acylamino, alkylsulfonamido, or benzenesulfonamide where the benzene nucleus is devoid of a water solubilizing group.

3,617,174
PROCESS FOR DYEING AND PRINTING SYNTHETIC FIBERS WITH TETRA-α-SUBSTITUTED ANTHRAQUINONE
Walter Hohmann, Leverkusen; Heinrich Vollman, Leverkusen; Hans-Samuel Bien, Burscheld, and Gunter Gehrke, Koeln-Flittard, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 777,466, Nov. 20, 1966, Pat. No. 3,558,670 continuation of Ser. No. 527,502, Feb. 15, 1966, abandoned.
Filed July 22, 1969, Ser. No. 871,385
Claims priority, application Germany, application Feb. 19, 1965, F 42295
Int. Cl. C09b *5/00*
U.S. Cl. 8—39 6 Claims

An improved process for dyeing linear polyesters wherein quinizarin dyestuffs having anilino, substituted anilino or benzylamino substituents in the 5-position and the 8-position or, alternatively, having phenyl mercapto or substituted phenyl mercapto substituents in the 8-position.

3,617,175
DYEING NICKEL-MODIFIED POLYOLEFIN WITH BENZAMIDAZOLEAZO, BENZTRIAZOLEAZO, OR QUINOXALINEAZO DYES MODIFIED BY CHLORINE, LOWER ALKYL OR LOWER ALKOXY GROUPS OR 5-LIMINO-4,5-DIHYDRO-1,2,4-TRIAZOLEAZO
Reinhard Mohr, Offenbach am Main, and Fritz Osterloh, Bad Soden Taunus, both of Germany, assignors to Farbwerke Hoechst vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Feb. 10, 1965, Ser. No. 431,719
Claims priority, application Germany, Feb. 14, 1964, F 42001
Int. Cl. D06p *1/10*
U.S. Cl. 8—42 6 Claims

Textile materials of nickel-containing polypropylene are dyed and printed deep shades having excellent fastness properties with azo dyestuffs of the formula
Y—N=N—A,
wherein Y is



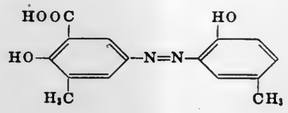
wherein R is phenyl or substituted phenyl, R_1 is halogen, alkyl or alkoxy, Z is the members required for the completion of an imidazole, triazole or 1,4-diazine ring, and A is the radical of a 1-hydroxy-4-halogenbenzene, 1-hydroxy-4-alkoxybenzene, 1-hydroxy-4-alkylbenzene, 3-hydroxy-diphenylamine, 2,4-dihydroxy-1-acylbenzene, 2-hydroxynaphthalene, 2-hydroxynaphthalene-3-carboxylic acid, 2-hydroxynaphthalene-3-carboxylic acid methylester, 2-hydroxycarbazole, 3-hydroxy-diphenylene oxide or 1-phenyl-3-methyl-5 pyrazolone.

3,617,176
AZO DYESTUFF PREPARATIONS WITH AN ALKALI METAL PHOSPHATE
Heinz Machatzke, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 15, 1968, Ser. No. 705,599
Int. Cl. D06p *1/10*, *1/68*
U.S. Cl. 8—42 3 Claims

Cold water-soluble dyestuff compositions containing 1:2 chromium or cobalt complex azo dyestuff free of reactive groups and containing at least one unsubstituted or substituted-sulfonamide group and 10 to 200 parts by weight based on 100 parts of said dyestuff of a solubilizing agent comprising trisodium phosphate or tripotassium phosphate, are disclosed. Optionally, 5 to 300 parts by weight of an anionic dispersing agent, e.g. naphthalene sulfonic acids, can be included. The compositions are especially suitable for dyeing N-containing materials e.g. silk, wool and polyamides.

3,617,177
METHOD OF DYEING ALUMINUM-MODIFIED POLPROPYLENE FIBERS WITH MONOAZODYE
Yutaka Hosoda, Tokyo, Japan, assignor to Mitsui Kagaku Kogyo Kabushiki Kaisha (Mitsui Chemical Industry Co., Ltd.), Chuo-ku, Tokyo, Japan
Filed June 28, 1968, Ser. No. 741,227
Int. Cl. D06p *1/10*; C09b *45/46*
U.S. Cl. 8—42 2 Claims

Method of dyeing metal-modified polyolefin fibers, which comprises applying a monoazo dye of the formula



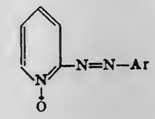
to metal-modified polyolefin fibers.

3,617,178
SENSITIZATION OF BACTERIAL SPORES TO THE LETHAL EFFECTS OF CERTAIN TREATMENTS
John Gannon Clouston, Carss Park, New South Wales, Australia, assignor to Australian Atomic Energy Commission, New South Wales, Australia
Filed Nov. 19, 1970, Ser. No. 91,199
Int. Cl. A61l *1/00*
U.S. Cl. 21—2 12 Claims

A method for sterilizing, disinfecting or preserving substances, whether fluid or solid, by subjecting them to hydrostatic pressure for a duration sufficient to germinate bacterial spores present in the substances either before or during the usual treatments such as radiation, heating or chemical treatment.

3,617,179
AMINOARYLAZOPYRIDINE OXIDE DYEING NICKEL MODIFIED POLYPROPYLENE FIBERS AND FIBERS SO DYED
Charles Edward Lewis, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Dec. 29, 1969, Ser. No. 888,921
Int. Cl. D06p *3/00*
U.S. Cl. 8—42 D 8 Claims

Nickel-containing polypropylene fibers and fabrics are dyed with azo dyes conforming to the formula:



wherein Ar is an aryl radical containing a hydroxy group positioned ortho to the point of azo attachment and which may be further substituted with an amino, alkyl, alkylamino or dialkylamino group. A preferred dye is 2-hydroxy-1-naphthylazopyridine-1-oxide.

3,617,180
AZOIC DYE COMPOSITION CONTAINING OXYGEN-CONTAINING PRIMARY AMINES AND PROCESS OF USING SAME
Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Aug. 19, 1968, Ser. No. 753,744
Int. Cl. D06p *1/02*
U.S. Cl. 8—45 16 Claims

A process for the neutral developing of azoic colors and a dye composition which employs said process, which process comprises the use of an oxygen-containing primary amine in combination with coupling components and diazo amino compounds.

3,617,181
PROCESS FOR FINISHING CELLULOSIC TEXTILE MATERIALS WITH ETHERIFIED MELAMINES
Michael Thomas Beachem, Somerset, and Frederic Houghton Megson, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Apr. 6, 1970, Ser. No. 31,055
Int. Cl. D06p *5/06*; D06m *13/38*
U.S. Cl. 8—74 5 Claims

This invention relates to new and etherified methylolated melamines and their use on cellulosic textile materials dyed with direct dyes. The new etherified melamines impart crease-resistance to such materials and the light-fastness of the direct dyes is improved.

3,617,182
PROCESS FOR FINISHING CELLULOSIC TEXTILE MATERIALS WITH ETHERIFIED MELAMINES
Michael Thomas Beachem, Somerset, and Frederic Houghton Megson, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Apr. 6, 1970, Ser. No. 31,054
Int. Cl. D06m *13/38*; D06p *5/06*
U.S. Cl. 8—74 5 Claims

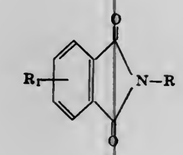
This invention relates to new amino-methylolated melamines and to their use on cellulosic textile materials that have been dyed with direct dyes. The new amino-methylolated melamines impart crease-resistance to such materials and dyed materials so finished have improved light-fastness.

3,617,183
ETHYL AURAMINE SOLUTION
Rill Lewis Groskios, Williamstown, W. Va.; Ralph Eustace Hutcheson, Marietta, Ohio, and Earl Robert Whiston, Williamstown, W. Va., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sept. 27, 1967, Ser. No. 671,142
Int. Cl. C09b *67/00*
U.S. Cl. 8—93 6 Claims

Stable ethyl auramine dye solutions containing from 25 to 40 weight percent real dye are provided by the use of ethylene glycol, diethylene glycol, the monomethyl ether of ethylene glycol or the monoethyl ether of ethylene glycol as the solvent vehicle.

3,617,184
N-ALKYL OR N-ALKOXYLALKYL PHTHALIMIDES MIXED WITH AMINO-IMINO PYRROLENINES AND DYEING THEREWITH
Johannes Eibl, Burscheid, Kaltenherberg; Walther Wolf, Leverkusen, and Gunther Boehmke, Leverkusen, Grossendriesch, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 16, 1969, Ser. No. 867,080
Claims priority, application Germany, Oct. 23, 1968, P 18 04 527.7
Int. Cl. D06p *1/68*
U.S. Cl. 8—85 5 Claims

Porphyrazine dye forming amino-imino-pyrrolenine, such as the phthalocyanine forming amino-imino-isoindolenine, is mixed with an N-substituted phthalimide of the following formula:



where R is a haloalkyl-, acyloxyalkyl-, carboxyalkyl-, hydroxyalkyl-, alkoxycarbonylalkyl- or alkyl- group, the chains of which contain one to eight carbon atoms and can be interrupted by oxygen atoms to form alkoxyalkyl chains; R_1 is a hydrogen, halogen, short chain alkoxy, short chain alkyl carboxylic acid ester, phenyl or nitro-group. Hydrotropic agents, such as hydroxyalkyl ureas can be mixed with the phthalimide.

3,617,185
STABLE HIGHLY CONCENTRATED SOLUTIONS OF BASIC DYES
Walter G. Drautz, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Aug. 19, 1968, Ser. No. 753,751
Int. Cl. C09b *67/00*
U.S. Cl. 8—93 2 Claims

A composition which is employed in the preparation of solutions of basic dyes to maintain their stability during extended periods of storage which comprises in admixture methyl alcohol, 2,2'-thiodiethanol, and a basic dye stock.

3,617,186
TANNING WITH TRIS(HYDROXYMETHYL)NITROMETHANE AND A POLYHYDRIC PHENOL
Wallace Windus, Meadowbrook; Muriel L. Happich, Jenkintown, Pa., and John S. Showell, Washington, D.C., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Jan. 8, 1970, Ser. No. 1,565
Int. Cl. C14c *3/18*
U.S. Cl. 8—94.24 11 Claims

A process for tanning skins in which skins are first impregnated and drummed at a pH range of 4.5 to 4.7 in a buffered aqueous solution containing tris(hydroxymethyl)nitromethane and a polyhydric phenol such as resorcinol, catechol, hydroquinone, pyrogallol and phloroglucinol. During the operation the pH of the tanning solution is adjusted to the range of 8.0 to 8.5 and the skins drummed until tanned. Skins tanned by the above process can be retanned with any other tanning material.

3,617,187
PROCESS FOR PREPARATION OF SILICONE GRAFT COPOLYMERIZED FIBER OR CLOTH
Toshizo Chitani, Shikanosuke Yokoyama, and Shinko Nishide, all of Tokyo, Japan, assignors to Hakuyosha Co., Ltd. and Toshizo Chitani, part interest to each
Filed July 10, 1967, Ser. No. 656,305
Claims priority, application Japan, July 18, 1966, 41/46559, 41/46560, Nov. 2, 1966, 41/71954
Int. Cl. D06m *11/00*; D06p *5/02*
U.S. Cl. 8—115.5 5 Claims

A silicone graft copolymerized fiber or cloth is prepared by first dyeing the cloth with a dyestuff containing metal in the form of a complex salt, and then applying a silicone having a general formula of



wherein R and R^1 are hydrogen or alkyl radicals up to five carbon atoms and R and R^1 can be the same or different, and n is an integer, to the dyed cloth and subjecting said silicone coated dyed cloth to an ionizing radiation wherein the dosage of said ionizing radiation is within a range of from 10^4 rad. to 10^7 rad.

3,617,188
SOIL RELEASE FABRICS AND METHOD FOR PRODUCING SAME
Duane W. Snyder, Waynesboro, Va., assignor to Crompton-Shenandoah Co., Waynesboro, Va.
Filed Nov. 26, 1968, Ser. No. 779,250
Int. Cl. D06m *13/02*, *13/54*
U.S. Cl. 8—115.5 16 Claims

A process for treating textile materials to impart soil-release and stain-release characteristics thereto and the products produced thereby are described which comprises treating textile materials, preferably fabrics containing cellulosic fibers or a blend of cellulosic fibers and synthetic fibers such as polyesters, with an oil, preferably refined mineral oil, to substantially saturate the fabric fibers with the oil thereby attaining a textile material having improved soil and stain release characteristics. The mineral oil composition may be used alone or in conjunction with other compositions such as those which impart permanent-press and water-repellency characteristics to a textile material.

3,617,189
COMPOSITION AND PROCESS FOR TREATING CELLULOSIC MATERIALS
George M. Wagner, Lewiston, and William J. Vullo, North Towanda, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Division of Ser. No. 510,083, Nov. 16, 1965, abandoned.
Filed July 30, 1969, Ser. No. 846,283
Int. Cl. D06m *13/42*
U.S. Cl. 8—116.2 5 Claims

A composition useful in treating cellulosic materials to make them durably water repellent which comprises an aqueous emulsion of a soap, a surface active agent, water and a polyaryl polyisocyanate containing at least three aryl groups and an average of at least three isocyanate groups, a portion of which isocyanate groups may be modified by reaction with an alcohol, thioalcohol, organic acid, amine or amide. This composition is applied to the cellulosic material and is, thereafter, cured with water.

3,617,190
METHYLOLATED SULFONAMIDES AND CROSSLINKING OF POLYMERS THEREWITH
Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co. Inc., New York, N.Y.
Filed Nov. 16, 1965, Ser. No. 508,149
Int. Cl. D06m *13/40*, *13/38*; C07c *143/74*
U.S. Cl. 8—115.6 12 Claims

Dimethylol sulfonamides, alkyl ethers thereof and polymers therefrom are produced and said materials are used to react with cellulosic materials and to bind polyhydroxylated polymers to cellulosic materials through coreaction.

3,617,191
TREATMENT OF TEXTILE MATERIAL WITH BORIC ACID
William Wade Caldwell, Abbeville, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Sept. 23, 1968, Ser. No. 761,796
Int. Cl. D06m *9/00*
U.S. Cl. 8—115.7 11 Claims

A process for improving the resistance to discoloration during irradiation of a blended textile material of polyamide and cellulosic fibers which comprises applying to said textile material a metal salt or an amino salt catalyst, boric acid and a monomer containing ethylenic unsaturation and a group capable of reacting with hydroxyl groups and irradiating the treated textile material to polymerize said monomer.

3,617,192
CROSSLINKING OF CELLULOSIC MATERIALS WITH PRODUCTS PRODUCED BY THE REACTION OF ALKYL SULFONAMIDES AND FORMALDEHYDE UNDER ALKALINE CONDITIONS
Ronald Swidler, Pasadena, and Clifford M. Moran, San Gabriel, both of Calif., assignors to Cotton Producers Institute, Memphis, Tenn.
Filed Nov. 22, 1965, Ser. No. 509,167
Int. Cl. D06m *13/38*, *13/14*; C07c *13/74*
U.S. Cl. 8—116.3 3 Claims

Formaldehyde is reacted with alkyl sulfonamides under alkaline conditions. The resulting products are useful modification agents for cellulosic fibers.

3,617,193
FLAME-RETARDANT BIS(EPOXYALKYL) METHYLPHOSPHONATE TREATED SUBSTRATE AND PROCESS THEREFOR
Giuliana C. Tesoro, Dobbs Ferry, N.Y.; Donald R. Moore, Rutherford, and Wing-Kai Lee, Hackensack, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Sept. 12, 1967, Ser. No. 667,070
Int. Cl. D06m *13/28*, *13/38*; C09k *3/28*
U.S. Cl. 8—116.2 17 Claims

A flammable substrate, especially a cellulosic substrate such as cotton, is rendered flame-retardant by treatment with (1) a bis(epoxyalkyl) methylphosphonate such as bis(2,3-epoxypropyl) methylphosphonate or bis(2,3-epoxypropyl) chloromethylphosphonate, and (2) an organic nitrogen-containing compound, such as urea or N^2, N^4, N^6-tris(hydroxymethyl)melamine. A treatment which is resistant to laundering is obtained when at least the phosphonate is insolubilized by polymerization on the surface of the substrate and/or reaction with the substrate. When a halomethylphosphonate is employed, the phosphorus content of the treated substrate can be increased by further treatment with a tris(haloalkyl) phosphite and/or a trialkyl phosphite.

3,617,194
TEXTILE FINISHING PROCESS USING CHLORINATED HYDROCARBON SOLVENTS AND SULFOHALIDE REACTION CATALYSTS
Michael Bannister; James Albert Moyse; Alexander Parkinson; James William Roberts, Manchester, and Brian Crosbie Fielding, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 24, 1968, Ser. No. 739,209
Claims priority, application Great Britain, May 10, 1968, 22,326/68
Int. Cl. D06m *13/08*, *13/14*; C08g *51/30*
U.S. Cl. 8—116.3 13 Claims

Crease-resistance and easy-care properties of textile materials containing at least 20 percent by weight of cellulosic material are improved by impregnating the textile material with a solution or dispersion in a halogenated hydrocarbon solvent of a resin precondensate and an acid catalyst therefor, then subjecting the impregnated material to the action of hot water or steam and finally heating.

3,617,195
TEXTILE FINISHING PROCESS USING A CHLORINATED HYDROCARBON AS THE REACTANT SOLVENT
James Albert Moyse, Manchester; Alexander Parkinson, Manchester; James William Roberts, Manchester, and Brian Crosbie Fielding, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 24, 1968, Ser. No. 739,212
Claims priority, application Great Britain, June 26, 1967, 29424/67
Int. Cl. D06m *13/08*, *13/40*; C08g *51/30*
U.S. Cl. 8—116.3 13 Claims

Crease-resistance and easy-care properties of textile materials containing at least 20 percent by weight of cellulosic material are improved by impregnating the textile material with a solution or dispersion in a halogenated hydrocarbon solvent of a resin precondensate and an acid catalyst therefor, then subjecting the impregnated material to the action of hot water or steam and finally heating.

3,617,196
TWO-STEP CELLULOSIC FABRIC MODIFICATION UNDER DIFFERENT REACTION CONDITIONS
Donald J. Gale, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of application Ser. No. 691,650, Dec. 18, 1967, now abandoned. This application Oct. 29, 1969, Ser. No. 871,641
Int. Cl. D06m *13/54*, *13/40*, *13/12*
U.S. Cl. 8—116.3 6 Claims

Cellulosic fabrics are reacted in two steps with creaseproofing compounds having two or more functional

groups which are activatable under different reaction conditions. The fabric may be formed into a garment between the reaction steps.

3,617,197
IMPROVING THE WRINKLE RESISTANCE OF CELLULOSIC TEXTILES
Herbert M. Ulrich, Vienna, Austria, assignor to Vereinigte Farbereien Gesellschaft m.b.H., Vienna, Austria
Filed Aug. 15, 1967, Ser. No. 660,612
Claims priority, application Austria, Aug. 19, 1966, A7926/66
Int. Cl. D06m *13/22*, *13/14*, *13/38*
U.S. Cl. 8—116.3 8 Claims

A process for finishing cellulosic textile materials with N-methylol compounds and chlorinated or brominated ethylene carbonates.

3,617,198
METHOD OF REDUCING THE AMOUNT OF FREE FORMALDEHYDE IN SENSITIZED FABRIC FOR POSTCURE DURABLE PRESS PROCESSING
John D. Reid, New Orleans; Robert M. Reinhardt, New Orleans, and Russell M. H. Kullman, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Dec. 12, 1969, Ser. No. 884,706
Int. Cl. D06m *13/12*, *13/34*
U.S. Cl. 8—116.3 3 Claims

Sensitized cotton fabrics, intended for postcure durable press processing, were subjected to aeration with moist air (10 percent to 100 percent relative humidity) or with steam for periods of time varying from about 15 seconds to 24 hours to reduce free formaldehyde content and to reduce the release of formaldehyde from the sensitized fabrics. This method does not adversely affect the use of the sensitized fabric in postcure durable press processing nor does it impair the utility, esthetics, value, or durability of the resulting durable press products.

3,617,199
ALKALI METAL CHLORIDES AND NITRATES USED TO INHIBIT CELLULOSE DEGRADATION IN ACID CATALYZED CROSS-LINKING PROCESSES
William M. Russell, Belchertown, Mass., assignor to Johnson & Johnson
Continuation-in-part of application Ser. No. 407,865, Oct. 30, 1964, now abandoned. This application May 12, 1969, Ser. No. 823,956
Int. Cl. D06m *11/04*, *13/14*, *13/12*
U.S. Cl. 8—116.4 10 Claims

A process for treating a cellulose-containing textile material which comprises impregnating said material with a member selected from the group consisting of aldehydes, polymeric condensation products of diethylene glycol and formaldehyde, and mixtures of hydroxy-containing hemiacetals, in the presence of from about 0.1 percent to about 10 percent by weight of a metal sulfate selected from the group consisting of magnesium sulfate and zinc sulfate, and from about 0.05 percent to about 6 percent by weight of a chloride or nitrate anion donor selected from the group consisting of sodium chloride, potassium chloride, and sodium nitrate, and drying and curing said treated material to provide improved shrink and wrinkle resistance with minimized loss in tensile strength.

3,617,200
CONTROLING THE WASH LIQUID TEMPERATURE WHILE PREPARING PARCHMENTISED WEBS
Peter John Gilder, Ewell, Epsom, England, assignor to Wiggins Teape Research & Development Limited, London, England
Filed Sept. 19, 1968, Ser. No. 760,760
Claims priority, application Great Britain, Oct. 12, 1967, 46,678
Int. Cl. D21h *5/08*; D06m *1/14*
U.S. Cl. 8—118 3 Claims

A fibrous web is parchmentized by drawing the web from a parchmentizing bath and passing it through successive washing positions and the feature of the invention resides in maintaining at a substantially constant level the temperature of the washing liquid at the first washing position.

3,617,201
ESTERIFICATION OF CELLULOSIC TEXTILES WITH SORBIC ACID IN THE PRESENCE OF TRIFLUOROACETIC ANHYDRIDE USING CONTROLLED CELLULOSE-ACID-ANHYDRIDE RATIOS
Ralph J. Berni, Metairie; Ruth B. Benerito, New Orleans, and John B. McKelvey, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Continuation of application Ser. No. 643,300, May 26, 1967, now Patent No. 3,493,319. This application Nov. 19, 1969, Ser. No. 878,204
Int. Cl. D06m *13/20*; C08b *3/10*
U.S. Cl. 8—120 1 Claim

This invention relates to the production of partial cellulose esters with improved crease recovery through esterification of cellulose with unsaturated fatty acids in the presence of trifluoroacetic anhydride (TFAA) in benzene solution.

3,617,202
WOOL STABILIZATION PROCESS
Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Apr. 24, 1968, Ser. No. 723,930
Int. Cl. D06m *3/02*, *13/00*
U.S. Cl. 8—127.6 11 Claims

Wool is rendered resistant to shrinking by contact with a solution of [(mono-trichloro,) tetra-(monopotassium dichloro,)] penta-isocyanurate or (trichloro), (monopotassium dichloro,) di-isocyanurate.

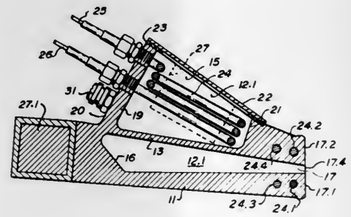
3,617,203
MODIFICATION OF WOOL WITH BIS-(CHLOROMETHYL)-β-PROPIOLACTONE
William Gordon Rose, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Feb. 27, 1970, Ser. No. 15,303
Int. Cl. D06m *13/12*, *13/10*
U.S. Cl. 8—128 3 Claims

Wool is reacted with α,α-bis-(chloromethyl)-β-propiolactone, yielding a modified wool which exhibits an enhanced resistance to shrinking. Also the product is less inflammable than the untreated wool.

3,617,204
HOT GLYCOL PLASTICIZING REMOVAL OF HALOGENATED HYDROCARBON SOLVENT SCOURING LIQUOR ON POLYESTER TEXTILES
Harold Pirie, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 27, 1968, Ser. No. 755,741
Claims priority, application Great Britain, Sept. 6, 1967, 40,758/67
Int. Cl. D06m
U.S. Cl. 8—130.1 5 Claims

Polyester-containing textile materials are scoured with an organic solvent and the solvent is removed by passing the scoured textile into a liquid maintained at elevated temperatures. The liquid is a substantially anhydrous, inert organic liquid which is a swelling agent for the polyester fibers of the textile material. The swelling agent allows an effective incorporation of a finishing material, such as a dye, into the textile material.

3,617,205
METHOD FOR CLEANING CARPETS AND LIKE MATERIALS
William H. Wisdom, 9806 Van Dyke Drive, Dallas, Tex.
Division of Ser. No. 712,123, Mar. 11, 1968, Pat. No. 3,439,374.
Filed Dec. 20, 1968, Ser. No. 798,553
Int. Cl. A47l *7/00*
U.S. Cl. 8—137 3 Claims



A carpet and rug cleaning method involving successive rolling, spraying, and nearly simultaneous exposure to vacuum and to heat. Method achieves faster drying than heretofor was common, with minimal wicking. Prerolling, spraying under pressure with the spray impinging the carpet at an acute angle so as to loosen rather than to imbed soil together with application of the vacuum and heat, used to achieve the foregoing.

3,617,206
PROCESSES FOR SCOURING TEXTILES
Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 27, 1969, Ser. No. 854,358
Int. Cl. B08b *3/00*; D06f
U.S. Cl. 8—137 3 Claims

Textile fibers which have been desized and are about to be bleached are scoured with a boiling alkaline caustic solution containing a surfactant and a solubilizing agent such as amino tri(methylene phosphonic acid). This process provides fibers with a substantially reduced impurity level and an end product which is substantially more conducive to a subsequent dyeing process.

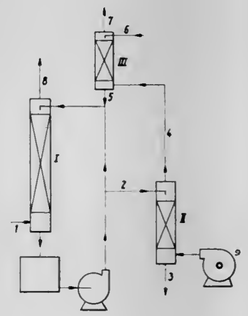
3,617,207
ALKALINE SOLUTIONS CONTAINING CERTAIN ALKYLBENZENE SULFONATE WETTING AGENTS
Albert Benson, Fairlawn, and Gerhart Karg, Pompton Lakes, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.
Filed June 18, 1968, Ser. No. 737,829
Int. Cl. D06m
U.S. Cl. 8—139 6 Claims

Aqueous alkaline solutions having a pH of at least 10 containing at least about 0.01 percent by weight of certain water-soluble alkylbenzene sulfonates which have been found to have unusually effective wetting properties in such alkaline solutions, said alkylbenzene sulfonates being characterized by the alkyl radical thereof containing from six to nine carbon atoms.

3,617,208
METHODS AND APPARATUS FOR CLEANING TEXTILES
Manfred Rolf Burger, Munich, Germany, assignor to Daniel Stephen Delany, London, England, a part interest
Continuation-in-part of application Ser. No. 725,293, Apr. 30, 1968, now abandoned. This application Nov. 18, 1969, Ser. No. 877,762
Int. Cl. D06l *1/02*
U.S. Cl. 8—142 7 Claims

Low-boiling solvent is circulated in a dry cleaning apparatus during cleaning from a cleaning tank through a filter to a storage tank and back to the cleaning tank. Mechanical refrigeration units control the temperature and pressure in the apparatus by drawing solvent vapors from the tanks and returning cold liquid solvent to the storage tank. One of the units also condenses the solvent vapors driven out of the cleaned objects by heating after the cleaning step, and makes a vent unnecessary.

3,617,209
PROCESS FOR THE REMOVAL OF HALOGEN-CONTAINING METHANE OR ETHANE DERIVATIVES FROM HYDROCHLORIC ACID
Joachim Massonne, Hannover; Heinrich Paucksch, Langenhagen, and Heinz Wiele, Hannover, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany
Filed Sept. 5, 1969, Ser. No. 855,628
Claims priority, application Germany, Sept. 5, 1968, P 17 92 465.1
Int. Cl. C01b *7/08*
U.S. Cl. 23—154 1 Claim



A process for the removal of small quantities of fluorine and/or chlorine-containing methane or ethane derivatives from hydrochloric acid by passing air through said acid at a temperature between about 0° and 50° C.; preferably the hydrochloric acid and air are contacted countercurrently in a packed column.

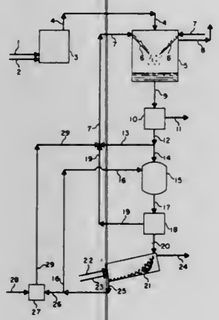
3,617,210
PROCESS FOR DYEING POLYAMIDES WITH DYES CONTAINING SULFONIC ACID GROUPS
Johannes Dehnert, Ludwigshafen, and Gerhard Grau, Limburgerhof, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Oct. 6, 1969, Ser. No. 864,187
Claims priority, application Germany, Oct. 12, 1968, P 18 02 863.2
Int. Cl. D06p *3/24*
U.S. Cl. 8—178 2 Claims

A process for dyeing polyamide textile material with acid dyes of the 3-imidazolyl-7-aminocoumarin series.

3,617,211
PHENYL GLYCOL AND SHORT-CHAIN HALOGENATED HYDROCARBON DYE COMPOSITION
Ross R. Dawson, Buffalo, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 8, 1969, Ser. No. 840,019
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 **22 Claims**

Dyes are dispersed or dissolved in a volatile liquid halogenated short-chain aliphatic hydrocarbon and phenoxy, short-chain alkylphenoxy- or halophenoxy-glycol or -diglycol to make an organic solvent dyeing bath or stock dye solution.

3,617,212
RECOVERY OF SULFUR DIOXIDE FROM WASTE GASES
Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.
Filed June 14, 1968, Ser. No. 737,186
Int. Cl. C01b *17/56, 17/72*
U.S. Cl. 23—167 **6 Claims**



A process is provided to efficiently and economically absorb and recover sulfur dioxide gas, and thus eliminate air pollution and produce a useful sulfur-containing product. Sulfur dioxide is recovered from a waste gas stream, such as the flue gas from a power boiler which burns sulfur-containing coal or other fuel, by scrubbing the waste gas stream with an aqueous solution of magnesium bisulfite-magnesium sulfite, Sulfur dioxide is absorbed into the aqueous scrubbing solution by reacting with magnesium sulfite to form magnesium bisulfite in solution. The resulting solution is divided into two portions. Magnesium hydroxide is added to the first portion at a controlled rate, to convert magnesium bisulfite to magnesium sulfite. The first portion is then recycled for further waste gas scrubbing. The magnesium sulfite and magnesium bisulfite content of the second solution portion are processed at elevated temperature to produce magnesium oxide and a gas stream of high sulfur dioxide content, usually about 10 percent by volume. The magnesium oxide is slaked with water to form magnesium hydroxide which is added to the first solution portion, and the gas stream of high sulfur dioxide content is utilized to produce a sulfur-containing product.

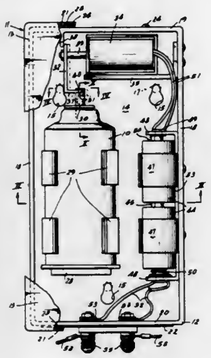
3,617,213
COAL TAR METHYL NAPHTHALENE FRACTION AND DIPHENYL CARRIER AND DYEING THEREWITH
Robert Curtis Britt, 2215 Haven Crest Drive, Chattanooga, Tenn., and Frank Arthur Hirsch, 506 E. Brow Road, Lookout Mountain, Tenn.
Filed Dec. 2, 1968, Ser. No. 780,560
Int. Cl. D06p *5/00*
U.S. Cl. 8—175 **10 Claims**

This invention is concerned with a dye carrier and a dyeing process which utilizes said dye carrier. The dye carrier and process are particularly suitable for use in the dyeing of synthetic organic fibers. More specifically this invention is concerned with a dye carrier and process for the dyeing of synthetic organic fibers of the hydrophobic type by the use of a dye carrier which generally comprises biphenyl, methylnaphthalene and an emulsifying agent.

ERRATUM

For Class 21—2 see:
Patent No. 3,617,178

3,617,214
DOOR-OPERATED AIR FRESHENER
Raymond E. Dolac, 5756 W. Higgins Road, Chicago, Ill.
Filed Aug. 18, 1969, Ser. No. 850,769
Int. Cl. A61l *9/04*
U.S. Cl. 21—77 **12 Claims**



A door-operated air freshener assembly has a bracket for supporting a pressurized fluent freshening material container having a normally closed supply nozzle and valve structure responsive to operating in response to a thrust supplied thereto through the action of a solenoid momentarily energized by closing of a door-actuated switch.

ERRATUM

For Class 23—154 see:
Patent No. 3,617,209

3,617,215
DRY ACID TREATMENT PROCESS OF ALUMINA-SILICA-TYPE CLAY
Yujiro Sugahara, Tokyo; Masahiro Maeno, Nakajomachi; Shiro Eguchi, Nakajomachi, and Hideaki Kurosaki, Shibata-shi, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Higashi-ku, Osaka, Japan
Filed Dec. 5, 1967, Ser. No. 688,025
Claims priority, application Japan, Dec. 10, 1966, 41/80962
Int. Cl. C01b *33/18;* **B01j** *11/58*
U.S. Cl. 23—182 **9 Claims**

Process for producing active clay or finely divided silica by intimately admixing an alumina-silica-type clay with 1.0 to 1.5 equivalents of an acid or an aqueous solution thereof, based on the basic metal constituents to be removed, the admixture of said acid or aqueous solution thereof with said clay being in a proportion of 0.3 to 2.5 parts by weight of the former to one part by weight of the latter, based on the dried product of said clay, thereby to form a nonfluid solid reaction product, and thereafter treating said reaction product with an aqueous medium having a pH of not more than 1 to remove by extraction the basic metal constituents contained in said product.

3,617,216
IMPROVED OXIDATION PROCESS FOR THE PRODUCTION OF PIGMENTARY WHITE METAL OXIDES
Kenneth Arkless, Durham; Denis Cleaver, Saltburn, and Alan Lawrence Hare, Durham, all of England, assignors to British Titan Products Company Limited, Durham, England
Filed Dec. 18, 1964, Ser. No. 419,597
Claims priority, application Great Britain, Dec. 24, 1963, 50,954/63
Int. Cl. C01g *1/02, 23/04;* **C09c** *1/36*
U.S. Cl. 23—202 **18 Claims**

There are various methods for the production of white metal oxides such as titanium dioxide in which one or more gas or vapor are heated by passage through an electric arc or electric discharge device. The electrodes have been found to introduce significant impurities into the final product. It has now been found, however, that the discoloring impurities can be very substantially reduced by having at least one of the electrodes and preferably all of the electrodes constructed from a metal such as aluminum, titanium, zirconium, or the alloys thereof or from the electrically conducting nitrides or carbides thereof. Since the impurity results from the oxidation of the electrode, it is essential that the oxides be essentially white or colorless.

3,617,217
PREPARATION OF ANATASE TITANIUM DIOXIDE PIGMENT
Kenneth W. Heywood, Overland, and Charles R. Trampier, Jr., Webster Groves, both of Mo., assignors to National Lead Company, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 860,016
Int. Cl. C01g *23/04, 23/06, 23/08*
U.S. Cl. 23—202 **4 Claims**

This invention relates in general to a process for preparing a high quality titanium dioxide pigment in which the titanium dioxide is in the anatase crystal form. The process comprises hydrolyzing in a particular manner the titanium values from a titanium sulfate-ferrous sulfate solution in which the concentration of titanium is from 80 to 180 g.p.l. calculated as TiO_2 and treating and calcining the hydrate so formed to produce a high grade anatase TiO_2 pigment. Using the hydrolysis process of the instant invention, a high grade anatase titanium dioxide pigment may be produced from a titanium sulfate-ferrous sulfate solution without utilizing the conventional crystallization step for removing most of the iron values nor the concentration step for increasing the titanium content in the liquor to at least 200 g.p.l. TiO_2.

3,617,218
CATALYTIC SYNTHESIS OF METALLIC HYDRIDES
Eugene E. Van Tamelen, Los Altos Hills, and Robert B. Fechter, Mountain View, both of Calif., assignors to The United States of America as represented by the Secretary of the Department of Health Education and Welfare
Filed Nov. 13, 1968, Ser. No. 775,547
Int. Cl. C01b *6/04*
U.S. Cl. 23—204 **3 Claims**

This invention relates to the catalytic, low temperature (e.g., room temperature) production of sodium hydride and other metallic hydrides from the metal and molecular hydrogen using as catalysts an electron acceptor such as naphthalene and a suitable compound of a transition metal such as titanium tetraisopropoxide.

3,617,219
PURIFICATION OF HYDROGEN PEROXIDE
James A. Cook, Jr., Barberton, and Henry C. Stevens, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 3, 1969, Ser. No. 830,126
Int. Cl. C01b *15/02;* **C07c** *49/68*
U.S. Cl. 23—207 **13 Claims**

Aqueous hydrogen peroxide solutions containing organic impurities, particularly organic esters, are purified by treatment with acid, e.g., phosphoric acid, followed by fractional distillation.

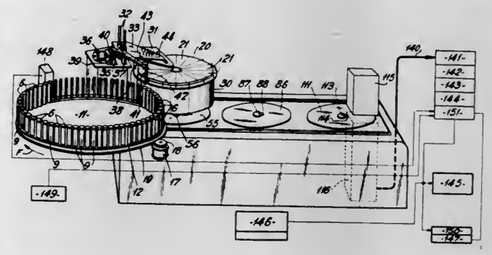
3,617,220
PROCESS FOR CARBONIZING CELLULOSIC FIBROUS SUBSTRATES
Donald R. Moore, Rutherford; Stanley E. Ross, Passaic, and Giuliana C. Tesoro, Dobbs Ferry, all of N.J., assignors to J.P. Stevens & Co., Inc., New York, N.Y.
Division of Ser. No. 721,145, Apr. 15, 1968, Pat. No. 3,527,564.
Filed Mar. 13, 1970, Ser. No. 19,488
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.5 **3 Claims**

A process for improving the thermal carbonization of cellulosic substrates comprising treating said substrates prior to carbonization with a catalytic amount of at least one compound selected from esters of phosphoric acid, esters of phosphorothioic acid, phosphoramidic acids, alkylphosphoramidic acids, alkylphosphonic acids, alkylphosphonothionic acids, and phosphonitrile amide derivatives and heating said treated substrates until a carbonized product having a carbon content of at least 50 percent weight carbon is produced.

3,617,221
PROCEDURE FOR COOLING DOWN SULFUR PLANT FOR INSPECTION
Jimmy D. Egan, Tyler; Homer H. Woodall, Jr., Tyler, Tex., and Lorenz V. Kunkel, Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.
Filed Nov. 12, 1969, Ser. No. 875,847
Int. Cl. C01b *17/04*
U.S. Cl. 23—225 P **10 Claims**

A method is provided by which the procedure for cooling down a refractory lined furnace used in a sulfur recovery plant can be substantially accelerated by using an inert gas such as nitrogen, carbon dioxide, steam, etc., to moderate the burner flame temperature to a level of not more than about 2,600° to 2,700° F. while the furnace is fired on fuel gas–the acid gas flow being shut off. In this way, free sulfur that has accumulated on the refractory and fire brick during operation of the furnace is volatilized and removed therefrom. Thereafter the furnace may be cooled with air at a rate such that the cooling is not more than about 100° per hour until the interior of the furnace is cool enough for inspection.

3,617,222
METHOD AND APPARATUS FOR ANALYZING LIQUID SUBSTANCES LIKELY TO FORM AGGLUTINATES
Claude Matte, Paris, France, assignor to Centre National de la Recherche Scientifique and Centre National de Transfusion Sanguine, Paris, France
Filed May 9, 1968, Ser. No. 728,189
Claims priority, application France, May 11, 1967, 106,180
Int. Cl. G01n *33/16, 31/00*
U.S. Cl. 23—230 R **38 Claims**



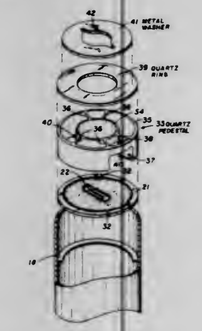
An apparatus and method of testing and classifying materials which contain agglutinates includes mixing samples of the material with one or more reagents, and subjecting the resulting mixtures to at least two agitation operations in a cup-shaped container. One such operation is carried out at high speed to disperse macroagglutinates and the other at low

speed to settle the agglutinates in the center of the cup-shaped container. By inspection of the containers after the agitation operations, and by inspection of comparison samples of the materials in question, properties of the materials under test may be deduced. The principal use of the method is in blood type and group determination. Apparatus is also provided for automatically carrying out the above method.

3,617,223
APPARATUS FOR FORMING MONOCRYSTALLINE RIBBONS OF SILICON

James Claude Boatman, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 21, 1968, Ser. No. 730,793
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **19 Claims**

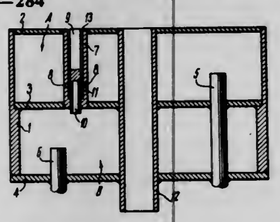


An apparatus for pulling monocrystalline ribbons of silicon from a melt of silicon, which includes a shaping guide, through which the ribbon is pulled, having a heat retentive coating of a material, such as platinum, on the top surface of the guide. The shaping guide preferably includes 45° converging beveled lips on the bottom side thereof oriented toward the melt from which the ribbon is drawn for directing the melt into a rectangular slot formed in the shaping guide near the top surface. The rectangular slot serves to form the silicon in shape of a ribbon. The apparatus also preferably includes a heat reflective member supported above the shaping guide by a quartz pedestal. The heat reflective member serves to assist the coating on the top surface of the shaping guide in maintaining a low temperature differential between the top and bottom surfaces of the shaping guide.

3,617,224
GAS DISTRIBUTION GRID

Avgust Rafaelevich Brun-Tsekhovoi, Ulitsa Garibaldi 21, Korpus 3. kv. 32, Moscow; Valery Fedorovich Varnavsky, Ulitsa Zhigulevskaya, 16, Dnepropetrovsk; Anatoly Markovich Glukhomanjuk, Ulitsa Zhelyabova, 10, kv. 88, Kiev, and Vasily Gavrilovich Kulbachny, Ulitsa Kirova, 9, ku. 55, Kiev, all of U.S.S.R.

Filed Mar. 13, 1969, Ser. No. 806,943
Claims priority, application U.S.S.R., Mar. 18, 1968, 1225841
Int. Cl. B01j *9/14*
U.S. Cl. 23—284 **7 Claims**



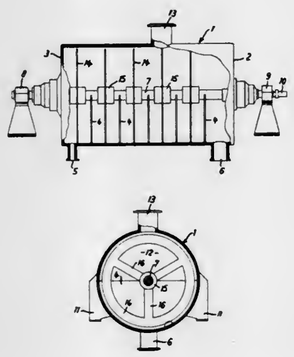
A gas distribution grid for feeding a mixture of combustible and oxidizing gas into a layer of solid granular material, both under atmospheric and elevated pressure, comprising a housing, partitions with mixing pipes built therein, and tubes for the supply of combustible and oxidizing gas to spaces of the grid insulated from each other and defined by said partitions and the grid housing.

The mixing pipes are provided with inserts whereby a linear velocity of the gaseous mixture flow exceeding that of the flame propagation in the mixture is attained in the channels of the mixing pipes feeding the gaseous mixture to the layer of material. This helps preclude the combustion of the mixture in the mixing pipes and in said grip spaces. The gas distribution grid according to the present invention can be used both in the presence of a continuous movement of the solid granular material through the apparatus in which the grid is incorporated and in the absence of such movement.

3,617,225
POLYCONDENSATION APPARATUS

Heinz Kuehne, Oberhoechstadt, Taunus; Manfred Dietze, Offenbach, Taunus, and Franz Hauer, Frankfurt am Main, all of Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen

Division of Ser. No. 731,754, May 24, 1968, Pat. No. 3,499,873.
Filed Mar. 21, 1969, Ser. No. 832,874
Claims priority, application Germany, June 22, 1967, 33924
Int. Cl. B01j *1/00*; C08f *1/98*
U.S. Cl. 23—285 **13 Claims**



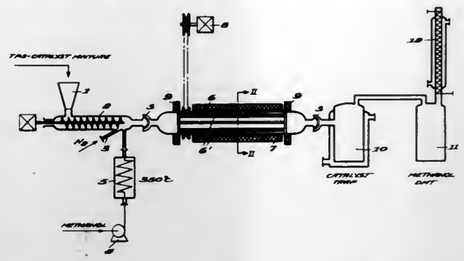
A reactor for condensation of precondensates in the manufacture of polyester resins and similar high viscosity materials characterized by rotating annular discs within a cylindrical vessel. The discs in cross section are of thin rectangular configuration, and as they rotate, resin picked up on the disc falls from the lower edge of the annulus in a cohesive freely falling film, exposed on both sides to the vapor chamber. Such action greatly accelerates the condensation reaction.

3,617,226
APPARATUS FOR THE CONTINUOUS PREPARATION OF ESTERS

Ferdinand List; Rudolf Strobele, and Gunther Strauss, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Division of Ser. No. 304,622, Aug. 26, 1963, abandoned.
Filed Apr. 26, 1968, Ser. No. 724,503
Int. Cl. B01j *9/16*; C07c *69/76*
U.S. Cl. 23—288 E **2 Claims**

Apparatus for esterifying terephthalic acid and similar normally solid organic acids, using a rotary tunnel oven

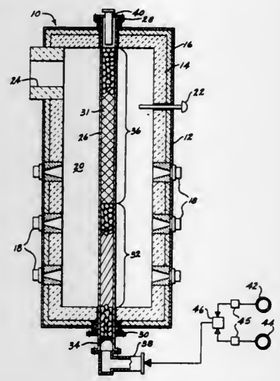


equipped with means for continuously contacting particulate solids with gases.

3,617,227
APPARATUS FOR CATALYTIC REFORMING

Donald Beggs, Toledo, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio

Filed May 5, 1969, Ser. No. 821,582
Int. Cl. B01j *9/04*; C01b *2/16*
U.S. Cl. 23—288 M **2 Claims**



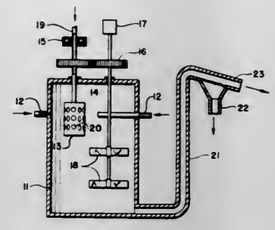
This disclosure relates to an apparatus for the catalytic reforming of gaseous hydrocarbon that may use steam and/or carbon dioxide as the reforming oxidant. The reforming is accomplished by passing the hydrocarbon and oxidant through a tube which is substantially uniformly heated its entire length and contains refractory preheater particles adjacent the inlet opening and catalytic particles intermediate the preheater particles and the tube outlet. Stoichiometric reforming is achieved without carbon deposition and degradation of the catalyst by employing preheater refractory and catalytic lump particles that are large relative to the size of the tube diameter and the particles have a bulk density of approximately 100 pounds per cubic foot.

3,617,228
PROCESS FOR MAKING AGGLOMERATES FROM SUSPENSIONS

Jacobus A. J. Smit, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed July 19, 1968, Ser. No. 746,196
Claims priority, application Great Britain, July 20, 1967, 33,335/67
Int. Cl. B01j *1/02*
U.S. Cl. 23—313 **2 Claims**

An apparatus for preparing agglomerates from aqueous suspensions of carbon or coal, or the like, including a vessel with an inlet for suspension and an inlet for auxiliary liquid which is capable of agglomerating the solids in the suspension, and a particle and liquid outlet, the vessel containing a stirrer and a rotating cylindrical chamber having perforations in its curved surface and being adapted to receive suspension feed in the interior of the cylindrical chamber while auxiliary liquid is fed within the vessel, outside of the cylindrical



chamber and near its rotating curved surface. Also disclosed is the process for forming agglomerates by introducing suspension and auxiliary liquid while the cylindrical chamber is rotating and the stirrer is agitating the liquid in the vessel.

3,617,229
PREPARATION OF ALKALI METAL ALUMINUM HYDRIDES

Gunner E. Nelson; Warren E. Becker, and Paul Kobetz, all of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

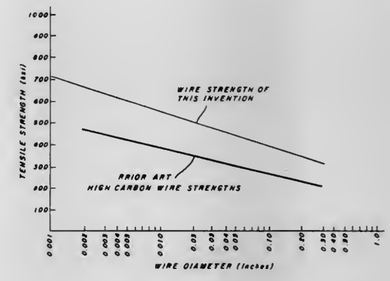
Filed Nov. 16, 1967, Ser. No. 683,462
Int. Cl. C01b *6/24*
U.S. Cl. 23—365 **9 Claims**

A process for preparing alkali metal aluminum hydride comprising reacting together an alkali metal, or the hydride thereof, with aluminum having alloyed therewith either Ti or Zr, under hydrogen pressure in the presence of a tertiary amine. Preferably, the catalyst comprises a tertiary amine and a hydrocarbon compound which is capable of being metallized under the reaction conditions, such as triphenylmethane, indene, thiophene, fluorene, and alpha-picoline. Reaction times are reduced to about one-third normal and provides for recycling the catalysts and reaction media in which the reaction is conducted. Sodium aluminum hydride prepared by this method is a good source of high-purity hydrogen for use in fuel cells and the like. Reaction temperatures range from 50° C. to 200° C. under pressures of from 500 to 10,000 pounds per square in (p.s.i.).

3,617,230
HIGH-STRENGTH STEEL WIRE

John H. Richards, Pittsburgh, Pa., and Gordon T. Spare, Chardon, Ohio, assignors to United States Steel Corporation

Continuation-in-part of application Ser. No. 584,659, Oct. 6, 1966, now abandoned. This application Apr. 9, 1969, Ser. No. 814,765
Int. Cl. B21c *37/04*; C22c *39/44*, *39/54*
U.S. Cl. 29—193 **5 Claims**



A steel wire consisting essentially of 0.9 to 1.10% carbon, 0.3 to 0.6% manganese, not more than 0.01% sulfur, not

more than 0.005% phosphorus, not more than 0.1% silicon, and not more than 0.002% nitrogen, cold drawn to a diameter of from 0.25 to 0.001 inch to provide a high tensile strength within the range 350 to 700 K.s.i. and yet exhibiting sufficient ductility as to be characterized by a ductile mode fracture.

3,617,231
METHOD OF CONTROLLING THE SOFTENING POINT AND WORKING TEMPERATURE OF SODA-LIME GLASS BY REGULATING THE WATER CONTENT OF THE GLASS MELT

James E. Fenstermacher, Du Bois, and John R. Le Blanc, Brockway, both of Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

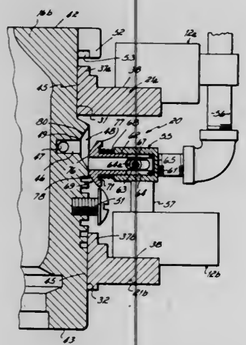
Filed June 10, 1968, Ser. No. 735,580
Int. Cl. C03b 5/04; C03c 3/04
U.S. Cl. 65—134 **8 Claims**

In the continuous melting of batch ingredients to form soda-lime glass, the water content of the molten glass is regulated to control the softening point of the resultant glass and consequently the optimum working temperature. Usually this consists in increasing the water content of the molten glass in an amount sufficient to increase the water content of the resultant glass by at least approximately fifty percent to lower the softening point although, particularly in holding the water content to a predetermined weight percent, the method may involve reducing the water content. The water may be added to molten glass by bubbling steam through the melt, by maintaining the partial pressure of water over the molten glass at a predetermined level, or by varying the batch ingredients so that ingredients having increased available water are present in the batch.

3,617,232
SELF-ACTING CONNECTOR FOR APPLYING COOLANT AIR TO GLASS MOLDS

Robert C. Goodwin, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Aug. 31, 1970, Ser. No. 68,329
Int. Cl. C03b 9/14, 9/38
U.S. Cl. 65—267 **5 Claims**

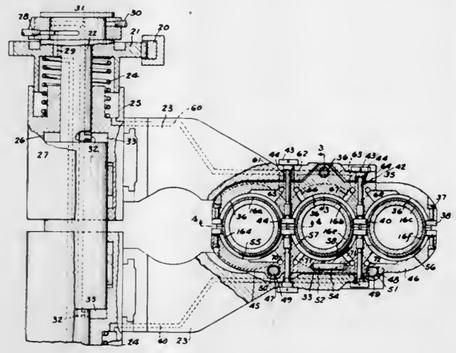


A connector for coupling a compressed air source with an internally cooled mold half for use on a multiple gob individual section glassmaking machine. The connector permits the compressed air source to be automatically and quickly connected to a mold half as the mold is hung in place on the hanger arm of an IS machine. It also permits the compressed air source to be automatically and quickly disconnected from a mold half as the mold is lifted off the hanger arm. The connector is automatic or self-acting in the sense that the connection is made or broken simply by lifting the mold half onto or off the hanger arm; no manual attention to the connection is required.

3,617,233
GLASS-FORMING MACHINE

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc.

Filed May 8, 1969, Ser. No. 823,042The portion of the term of the patent subsequent to Oct. 14, 1986, has been disclaimed.
Int. Cl. C03b 11/00, 9/00
U.S. Cl. 65—307 **4 Claims**

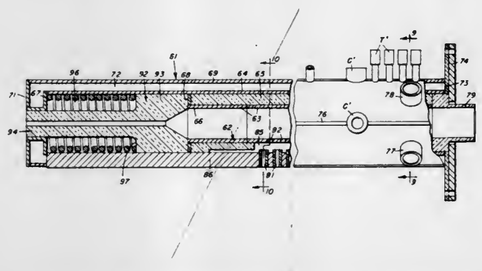


A glass-forming machine wherein a plurality of charges of glass are delivered to parison molds at a parison-molding station, formed into parisons at said station and thereafter transferred by neck rings to a blow mold station wherein the parisons are blown to desired shape.

3,617,234
APPARATUS FOR CONDITIONING GLASS

Charles T. Hawkins, Verona, and Eugene W. Starr, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 16, 1969, Ser. No. 858,403
Int. Cl. C03b 5/22, 5/16
U.S. Cl. 65—337 **38 Claims**



An improved gas impingement manifold for homogenizing a viscous liquid such as molten glass comprises a first inner tube, a second intermediate tube and a third outer tube which are concentrically arranged and mounted such that the first tube serves as a header or conduit for the gas, while the second and third tubes define a cooling jacket. The inner tube is provided with a gas bleed, while a plurality of water-cooled impingement nozzles are fixedly mounted between the second and third tubes.

In a preferred embodiment, the inner tube is composed of at least two axially aligned tube sections whose butt ends are continuously urged into pressing engagement.

3,617,235
PROCESS BY SPRAYING MELTS OR SUSPENSIONS WITH LOW WATER COMPRISING FERTILIZERS CONTAINING THE PLANT NUTRIENTS NITROGEN AND PHOSPHORUS

Isak Andreas Friestad, and Oyvind Skauli, both of Flattenlia, Porsgrunn, Norway, assignors to Norsk Hydro-Elektrisk Kvaelstofaktie-selskab, Oslo, Norway

Filed Feb. 16, 1968, Ser. No. 705,942
Claims priority, application Norway, Feb. 18, 1967, 166,917
Int. Cl. C05c 1/00
U.S. Cl. 71—1 **9 Claims**

A process is provided for the preparation of fertilizer compositions, which comprises spraying melts or suspensions with low water content, said melts or suspensions comprising fertilizers containing the plant nutrients nitrogen and phosphorous, especially containing ammonium phosphates and ammonium nitrate, the melts or suspensions being mixed with solid potassium salts and possibly with other solid substances before the melt is sprayed through a perforated wall of a centrifuge, whereby the sprayed material is transformed into droplets which are caused to solidify into prills. According to the invention the melt or suspension has a water content less than 5 percent by weight, and the solid substances added to the melt or suspension are grain graded so that more than 7 percent by weight has a grain size exceeding 0.1 mm.

3,617,236
METHOD OF MAKING ORGANIC COMPOST MATERIAL

Elmer E. Elias, 2022 Thibodo Road, Vista, Calif.

Filed Aug. 30, 1968, Ser. No. 756,421
Int. Cl. C05f 11/08
U.S. Cl. 71—9 **2 Claims**

Organic composts are prepared by mixing finely ground organic material such as grass, manure and bones with raw animal blood from slaughter houses, the resultant mixture ground to a certain moisture content and thereafter mixed and aerated for at least 4 days at a temperature of at least 90 F. to provide a final compost product having a moisture content of about 4 to 12 percent by weight.

3,617,237
PROCESS FOR PRODUCING GRANULAR COMPOUND FERTILIZER

Shigeru Nagasawa; Tsuneaki Nakano, and Kunio Sakashita, all of Sunagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,770
Claims priority, application Japan, Jan. 21, 1969, 44/3770
Int. Cl. C05f 11/02
U.S. Cl. 71—24 **10 Claims**

Improved process for producing granular compound fertilizer comprising mixing humic substance separated from peat with a mixture of starting fertilizer materials, and granulating by tumbling, kneading or extruding the resulting mixture to form the granular compound fertilizer. The humic substance is obtained by disintegrating peat in water to suspend said humic substance and fibrous substance in the water and separating said humic substance from the suspension.

3,617,238
FERTILIZER COMPOSITIONS CONTAINING TETRAISOPROPYLNAPHTHALENE

Seymour W. Ferris, deceased, late of Vincentown, N.J. (by Lucretia G. Ferris, executrix); Ernest P. Black, West Chester, and Andrew J. Bozzelli, Springfield, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Nov. 24, 1967, Ser. No. 685,712
Int. Cl. C05c 9/00
U.S. Cl. 71—28 **18 Claims**

This invention relates to novel compositions having improved resistance to liquid water. Specifically the invention relates to slow release fertilizer compositions containing one or more isomers of tetraisopropylnaphthalene.

3,617,239
METHOD FOR PRODUCING MICRONUTRIENT COATED UREA PRILLS AND PRODUCTS

Andrew J. Klanica, Cheshire, and Henry W. Schiessl, Northford, both of Conn., assignors to Olin Mathieson Chemical Corporation

Filed Mar. 3, 1969, Ser. No. 803,997
Int. Cl. C05c 9/00
U.S. Cl. 71—28 **5 Claims**

Urea prills are reacted with finely divided minor amounts of water-soluble inorganic hydrated salts of micronutrient fertilizer elements and dried to produce a chemically integral coating of urea-micronutrient salt complex which provides micronutrients and anticaking properties to the urea prills.

3,617,240
INHIBITION OF CORROSIVE ACTION OF AQUEOUS AMMONIUM NITRATE-UREA ON FERROUS METALS

Herbert Fleming Scott, Jr., Prince George, Va., assignor to Allied Chemical Corporation, New York, N.Y.

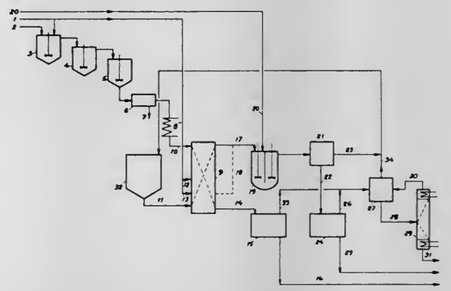
Filed May 21, 1968, Ser. No. 730,897
Int. Cl. C05c 9/00
U.S. Cl. 71—29 **1 Claim**

Ferrous metal corrosion by an aqueous solution of ammonium nitrate and urea is inhibited by incorporating at least 0.02 percent P_2O_5, at least 30 percent of which is polymeric phosphate. Ammoniated superphosphoric acid is a source of the polymeric phosphates. The aqueous solution, which is useful as a soil fertilizer, has a pH of 6–7, contains at least 20 percent of each nitrogen ingredient, at least 15 percent water and up to 1 percent free ammonia.

3,617,241
METHOD FOR PREPARING NITROPHOSPHATE FERTILIZER

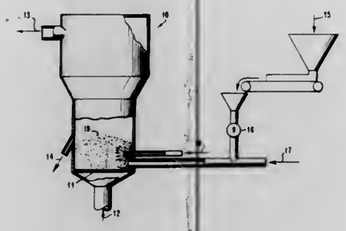
Vaino Eemil Veijola, Sammaltie 57, Oulu, Finland

Continuation-in-part of application Ser. No. 524,479, Feb. 2, 1966, now abandoned. This application Nov. 25, 1968, Ser. No. 778,442
Int. Cl. C05b 11/06
U.S. Cl. 71—35 **2 Claims**



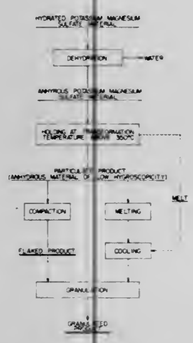
Fertilizers are prepared by dissolving a phosphate mineral in nitric acid, extracting the resulting solution with an organic solvent, neutralizing the solvent or extract phase with ammonia, and using the aqueous salt phase so obtained, which contains mainly ammonium salts of nitric acid and phosphoric acid, as the raw material for nitrophosphate fertilizer. The solvent used in the extraction is recovered by a combination of mechanical separation by settling of azeotropic distillation.

3,617,242
FLUIDIZED BED DEFLUORINATION OF PHOSPHATE ROCK
Clinton Allen Hollingsworth, Lakeland, Fla., assignor to Borden, Inc., New York, N.Y.
Filed Sept. 4, 1968, Ser. No. 757,413
Int. Cl. C05b *13/02*
U.S. Cl. 71—41 5 Claims



This invention relates to the defluorination of phosphate rock and similar natural phosphatic materials in a fluidized reactor in which there is no reaction between the rock and the defluorinating reagents prior to their addition to the fluidized reactor.

3,617,243
PROCESS FOR THE PRODUCTION OF ANHYDROUS POTASSIUM MAGNESIUM SULFATE MATERIAL WITH LOW HYGROSCOPICITY FROM HYDRATED POTASSIUM MAGNESIUM SULFATE MATERIAL
Ulrich E. G. Neitzel, Ogden, Utah, assignor to Great Salt Lake Minerals & Chemicals Corporation, Ogden, Utah
Filed Mar. 23, 1970, Ser. No. 21,684
Int. Cl. C05d *1/00*
U.S. Cl. 71—63 12 Claims



Hydrated potassium magnesium sulfate mineral material, notably schoenite and/or leonite, is heated sufficiently to drive off substantially all of its crystal water. The dehydrated mineral material is then held at a temperature above about 350° C. for a sufficient duration, usually at least 15 minutes, to substantially decreases the rate of moisture absorption from the atmosphere under storage conditions. Potassium magnesium sulfate which is heat treated in this fashion may be compacted or granulated without substantially increasing its hygroscopicity.

3,617,244
MICROBIOCIDAL COMPOSITIONS
Philip Penry Jones, and Alexander William Davidson, both of London, England, assignors to BDH Chemicals Limited
Filed Mar. 19, 1969, Ser. No. 808,668
Int. Cl. A01n *9/00*
U.S. Cl. 71—67 1 Claim
Microbiocidal compositions comprising solid dichlorophen, sodium carbonate and a sodium silicate, and their use in aqueous systems.

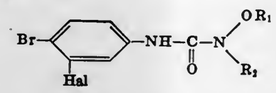
3,617,245
COMPOSITIONS AND METHODS FOR CONTROLLING PLANT GROWTH
Seiichi Ishida, Saitama; Yasuo Kamuro, Saitama; Tadayoshi Takano, Hirakata, and Takashi Iwata, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka-fu, Japan and Nissan Chemical Industries Co., Ltd., Tokyo-to, Japan
Filed Mar. 27, 1967, Ser. No. 625,983
Claims priority, application Japan, Apr. 7, 1966, 41/21454
Int. Cl. A01n *9/24*, A01n
U.S. Cl. 71—76 4 Claims
Compositions and methods for controlling the growth in height of Gramineae plants selectively without producing any metamorphosis in the leaves which employ as the active ingredient m-trifluoromethylphenoxyacetic acid or its salt or ester.

3,617,246
PESTICIDE GRANULES AND METHOD OF PREPARING SUCH GRANULES
Werner Duyfjes, Amsterdam; Willem De Lange, Amsterdam, and Johan Thomas Minnigh, Rotterdam, all of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed June 27, 1967, Ser. No. 649,148
Claims priority, application Netherlands, June 28, 1966, June 6, 1967; 6608931, 6707830
Int. Cl. A01n *9/00*
U.S. Cl. 71—79 3 Claims
Pesticidal granules containing a volatile pesticide and a carrier containing a mineral which absorbs water only very slowly.

3,617,247
SEEDS AND TREATMENT THEREOF
James W. Chiles, Jr., P.O. Box 186, Clarksdale, Miss.
Filed Sept. 12, 1967, Ser. No. 667,085
Int. Cl. A01n *21/02*
U.S. Cl. 71—77 6 Claims
Treatment of seeds with materials which not only protect the seeds and seedlings from insect attack but which have been found to accelerate the growth of the seedling and increase the yield of harvestable crop.

3,617,248
SELECTIVE WEED CONTROL WITH HERBICIDAL DIPHENYL-N-(CHLOROPHENOXY-ACETYL)-THIAZONE IMINES
Elmer F. Litzinger, Louisville, Ky., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 19, 1969, Ser. No. 808,659
Int. Cl. A01n *9/12*
U.S. Cl. 71—90 2 Claims
2,3-Diphenyl-N-(chlorophenoxyacetyl)-thiazone imines are prepared by reacting S-cyanomethylisothio-benzanilide with a di- or tri- chlorophenoxyacetyl chloride, preferably in an inert solvent, to form the hydrochlorides of these N-acyl derivatives. Neutralization of the hydrochlorides gives the free bases. The compounds are useful as herbicides.

3,617,249
METHOD FOR COMBATING WEEDS IN CROP CULTURES
Henry Martin, Basel; Hans Aebi, Reinen, and Ludwig Ebner, Stein, Aargau, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Division of Ser. No. 543,541, Apr. 19, 1966, Patent No. 3,497,541, which is a continuation-in-part of Ser. No. 191,442, May 1, 1962, Patent No. 3,288,851.
Filed Oct. 2, 1969, Ser. No. 870,916
Int. Cl. A01n *9/24*
U.S. Cl. 71—120 23 Claims
This invention relates to the use as herbicides of compounds having the formula



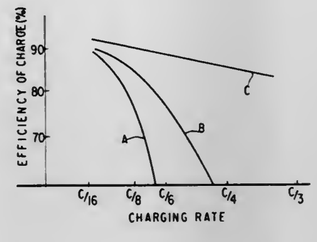
wherein Hal represents bromine or chlorine and R_1 and R_2 each represents a lower alkyl.

3,617,250
HERBICIDAL TRIFLUOROMETHYL-1,3-PHENYLENEDIAMINE COMPOUNDS
William G. Woods, Fullerton; Don L. Hunter, Anaheim; James D. Stone, Whittier, and Cecil W. Le Fevre, Anaheim, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.
Filed Apr. 1, 1969, Ser. No. 812,357
Int. Cl. A01n *9/22*; Aoln *13/00*
U.S. Cl. 71—121 15 Claims
N,N'-Substituted-1,3-phenylenediamine compounds having a trifluoromethyl and a nitro group on the aromatic ring. The compounds are useful as herbicides.

3,617,251
HERBICIDAL HALODINITRO-1,3-PHENYLENEDIAMINE COMPOUNDS
Don L. Hunter, Anaheim; William G. Woods, Fullerton; James D. Stone, Whittier, and Cecil W. LeFevre, Anaheim, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.
Filed Nov. 10, 1969, Ser. No. 875,507
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 16 Claims
2,4-Dinitro-6-halo-1,3-phenylenediamine compounds having at least one N-substituent are useful as herbicides.

3,617,252
HERBICIDAL DINITRO-1,3-PHENYLENEDIAMINE COMPOUNDS
Don L. Hunter, Anaheim; William G. Woods, Fullerton; James D. Stone, Whittier, and Cecil W. LeFevre, Anaheim, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 812,307, Apr. 1, 1969. This application Nov. 10, 1969, Ser. No. 875,508
Int. Cl. A01n *13/00*, *9/22*, *9/20*
U.S. Cl. 71—121 19 Claims
2,4-Dinitro-1,3-phenylenediamine compounds having a trifluoromethyl group on the aromatic ring. The compounds are useful as herbicides.

3,617,253
PRODUCTION OF METAL POWDERS, PARTICULARLY FOR USE IN ELECTRODES AND PRODUCTION OF ELECTRODES FROM THESE PRODUCTS
Bernard Paul Louis Amiet, Bordeaux, France, assignor to Societe Des Accumulateurs Fixes et de Fraction (Societe Anonyme), Seine-Saint-Denis, France
Filed Dec. 13, 1968, Ser. No. 783,505
Claims priority, application France, Dec. 18, 1967, 132,741
Int. Cl. B22f *9/00*, *3/12*, *5/00*
U.S. Cl. 75—0.5 A 10 Claims
Process for manufacturing a metal powder having a predetermined structure consisting in chemically reducing to metallic state a solution of a salt of the metal intended to constitute the electrode by the addition thereto of an appropriate reducing agent, while the "solution-reducing agent" mixture is submitted to a perturbed whirling agitation, so that the concentration of salt and reducing agent are made uniform and so that a great number of metal germs are produced, the agitation being maintained in order to promote



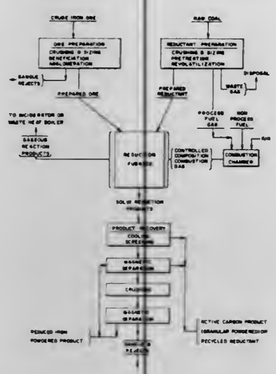
an agglomeration in successive concentric layers of particles until the predetermined size of conglomerates is obtained, then separating the conglomerates from the mother-liquid when the required size is reached and finally washing and drying the powder so prepared. The powder so prepared is then formed into electrodes of desired dimensions by compression and, if necessary, followed by subsequent sintering at moderate sintering temperature.

3,617,254
METHOD OF MAKING ORE AGGLOMERATES
Louis George Imperato, Jr., Tenafly, N.J., assignor to Blocked Iron Corporation
Continuation-in-part of Ser. No. 672,003, Oct. 2, 1967, which is a continuation-in-part of Ser. No. 374,191, June 10, 1964, Patent No. 3,382,063.
Filed Mar. 12, 1969, Ser. No. 806,672The portion of the term of the patent subsequent to May 7, 1985, has been disclaimed.
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 3 Claims
A method is provided for producing lump metal ores by admixing the finely divided ore with an alkaline earth oxide or hydroxide and a carbonaceous material, forming the mixture into lumps and reacting it with carbon dioxide in the presence of moisture to form alkaline earth carbonates in situ in the lumps.

3,617,255
PROCESS FOR REPRESSING SULFUR TRIOXIDE FORMATION IN IRON SULFIDE ROASTING
Johan Elof Wiklund, Halsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden
Filed Apr. 25, 1968, Ser. No. 724,263
Int. Cl. C21b *1/02*; C22b *1/10*
U.S. Cl. 75—9 1 Claim
A process for magnetite-yielding roasting of sulfide-containing materials for repressing the formation of SO_3 in the resulting roaster gas; the process comprising the step of introducing an oxygen-containing gas into the roaster gas for combustion of elementary sulfur at a gas temperature of below 420° C. but not below the temperature at which the sulfur content of the roaster gas begins to condensate.

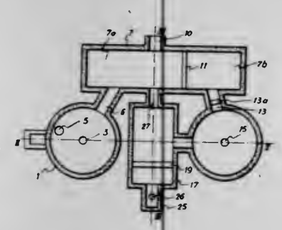
3,617,256
PROCESS FOR SIMULTANEOUSLY PRODUCING POWDERED IRON AND ACTIVE CARBON
Robert T. Joseph, Richboro, Pa.; Jack Trechock, Woodbury Heights, N.J.; Erik Sailer, Stamford, Conn., and Josiah Work, Harlingen, Tex., assignors to FMC Corporation, New York, N.Y.
Filed Feb. 28, 1968, Ser. No. 708,872
Int. Cl. C21b *13/00*
U.S. Cl. 75—36 9 Claims
Iron, in the form of iron powder or a soft readily powdered agglomerate thereof, is prepared simultaneously with powdered active carbon, by heating an iron oxide, in the form of powder or a soft readily powdered agglomerate thereof with

a stoichiometric excess of a powdered coal char which will react with carbon dioxide at the temperature employed at a rate above 10 percent per hour, at a temperature controlled so that the charge is maintained throughout the reaction at between 1,775° F. and 1,875° F. The temperature is most



readily maintained in production units by passing the gases used to supply the necessary extraneous heat across the path of travel of the charge, rather than along the path of travel.

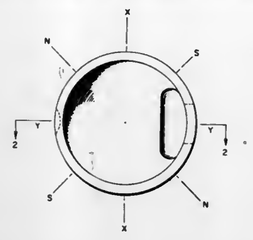
3,617,257
PROCESS FOR CONTINUOUSLY REFINING METAL
Jean Rouanet, Metz, France, assignor to Institut DeRecherches De LaSiderurgie Francaise, Saint Germain-en-Laye (Yvelines), France
Filed Mar. 11, 1968, Ser. No. 712,005
Claims priority, application France, Mar. 13, 1967, 98,464
Int. Cl. C21b *13/14*; C21c *5/36*
U.S. Cl. 75—46 **4 Claims**



A process for continuously refining metal in at least two stages in which partly refined metal and slag formed in a first refining vessel is passed into a first decanting vessel adjacent thereto in which the slag is separated from the partly refined metal and the latter fed into a second refining vessel and the further refined metal and slag produced therein is fed into a second decanting vessel from which the metal is discharged while the slag is passed back into the first decanting vessel to react with the partly refined metal and slag therein, and an apparatus for performing the above process.

3,617,258
HEAT RESISTANT ALLOY STEEL
Hideki Terada, Aki-gun, Horoshima-ken, Japan, assignor to Toyo Kogyo Company Limited, Aki-gun, Hiroshima-ken, Japan
Filed Oct. 18, 1967, Ser. No. 676,172
Claims priority, application Japan, Oct. 21, 1966, 41/69550
Int. Cl. C22c *39/20*
U.S. Cl. 75—126 C **1 Claim**

A heat-resistant alloy steel composed of 0.05 to 0.40 percent by weight of carbon, 0.5 to 1.0 percent by weight of silicon, 0.2 to 1.0 percent by weight of manganese, 20.0 to 23.0 percent by weight of chromium, 0.5 to 2.5 percent by weight of molybdenum, 0.5 to 3.5 percent by weight of tungsten, 0.5 to 3.5 percent by weight of niobium, and the balance iron



and unavoidable impurities, the tantalum content in the niobium being not more than about 10 percent by weight.

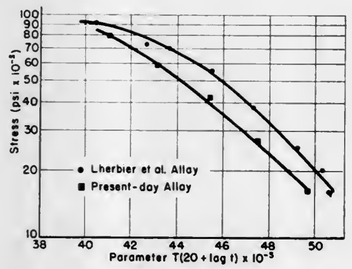
3,617,259
PROCESS OF MAKING CAST IRON OF IMPROVED STRENGTH AND MACHINING PROPERTIES
Heinz-Ulrich Doliwa, Friedberg, Hessin, Germany, assignor to Deutsche Gold-Und Silber Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Mar. 18, 1969, Ser. No. 808,301
Claims priority, application Germany, Mar. 20, 1968, P 17 58 004.0
Int. Cl. C22c *33/00*
U.S. Cl. 75—130 R **10 Claims**

For making cast iron, a nucleating agent is added to the superheated melt consisting of highly dispersed silica or an alumina-silica or titaniumdioxide-silica mixed oxide containing at least 90 percent silica. A cast iron of improved strength and machining properties is obtained.

3,617,260
MAGNETIC ALLOY
Klaus Detert, Niederrod, Germany, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 584,368, Oct. 5, 1966, now abandoned. This application Apr. 30, 1969, Ser. No. 820,655
Int. Cl. C22c *19/00*; H01f *1/04, 1/14*
U.S. Cl. 75—170 **10 Claims**

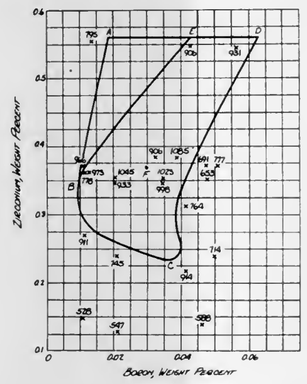
A cobalt base alloy is described having highly desirable mechanical and magnetic properties which alloy is suited for use at temperatures of up to 750° C. The cobalt base alloy contains nickel, iron, aluminum, tantalum, zirconium and boron, and optionally may contain titanium, niobium and beryllium.

3,617,261
WROUGHT NICKEL BASE SUPERALLOYS
Louis W. Lherbier, Cuddy, and Frank J. Rizzo, Pittsburgh, both of Pa., assignors to Cyclops Corporation Specialty Steel Division, Bridgeville, Pa.
Filed Feb. 8, 1968, Ser. No. 703,978
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **5 Claims**



A wrought nickel base superalloy having an exacting combination of tungsten, tantalum, aluminum, nickel, boron, zirconium, carbon, manganese, silicon, chromium, cobalt, molybdenum, and titanium for minimization of deleterious phase formations and a resultant alloy capable of being hot worked and having good strength properties at high temperatures.

3,617,262
NICKEL-CHROMIUM-TANTALUM ALLOYS
Stuart Walter Ker Shaw, Wylde Green, Sutton Coldfield, and Peter John Penrice, Hollywood, Birmingham, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Dec. 4, 1968, Ser. No. 781,043
Claims priority, application Great Britain, Dec. 6, 1967, 55,449/67
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **8 Claims**



An alloy having in the cast form, high-stress-rupture strength together with good impact resistance, contains, for example, about 0.1 percent carbon, about 3 percent chromium, about 19 percent tungsten, about 3 percent tantalum (replaceable in part by columbium), about 5.7 percent aluminum about 12 percent cobalt, about 0.03 percent boron, and about 0.37 percent zirconium, the balance being essentially nickel.

3,617,263
CORROSION-RESISTANT NICKEL-CHROMIUM BASE ALLOY
Paul Isidore Fontaine, Shirley, Solihull; Michael John Fleetwood, Berkhamsted, and Harry Lewis, Northfield, Birmingham, all of England, assignors to The International Nickel Company, Inc., New York, N.Y.
Filed June 5, 1969, Ser. No. 830,848
Claims priority, application Great Britain, June 11, 1968, 27,671/68
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **11 Claims**

A nickel-chromium base alloy adapted for turbine blade manufacture contains, in addition to nickel and chromium, cobalt and correlated amounts of niobium, titanium and aluminum, as well as carbon and boron. Other elements such as zirconium, rare earth metal and yttrium can be present.

3,617,264
HIGH-TEMPERATURE OXIDATION-RESISTANT COBALT BASE ALLOYS
Adrian M. Beltran, and Chester T. Sims, both of Ballston Lake, N.Y., assignors to General Electric Company
Filed Dec. 30, 1969, Ser. No. 889,344
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **3 Claims**

Cobalt base alloys having improved high-temperature strength, ductility, and oxidation resistance consist essentially of, in percent by weight, chromium 20–35, carbon 0.05–1.5, tungsten 2–12, tantalum an effective amount of about 1 up to 7, iron 3–17, boron an effective amount of about 0.005 up to 0.1, yttrium 0.05–0.4, titanium an effective amount of about 0.1 up to 3, zirconium an effective amount of about 0.1 up to 3, with the remainder essentially cobalt except for impurities.

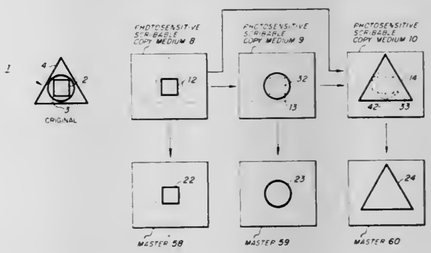
3,617,265
METHOD FOR PREPARING A RESIN OVERCOATED ELECTROPHOTOGRAPHIC PLATE
Nicholas L. Petruzzella, Columbus, Ohio, assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 29, 1966, Ser. No. 575,636
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 **7 Claims**

A method of preparing an electrophotographic plate which comprises coating a resin upon the surface of an amorphous selenium layer while permitting the selenium to devitrify, curing said resin, heating the selenium layer to about its softening temperature, and quenching said layer is disclosed. Electrophotographic processes employing said plate are also disclosed.

3,617,266
PROCESS FOR PREPARING A PLANOGRAPHIC PRINTING FORM
Jozef Frans Willems, Wilrijk; Jozef Leonard Van Engeland, St. Katelijne-Waver, and Noel Jozef De Volder, Edegem, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Mar. 6, 1968, Ser. No. 710,723
Claims priority, application Great Britain, Mar. 6, 1967, 10476/67
Int. Cl. G03g *13/22*; G03f *7/02*
U.S. Cl. 96—1 **9 Claims**

A planographic printing plate prepared by electrostatic exposure and development and carrying a hydrophobic deposit from such development in the image areas thereof is hydrophilized by treatment with an aqueous solution containing a polymeric compound having in the recurring units thereof an amino salt and/or quaternary salt group the polymer compound being free of long chain hydrocarbon groups. Preferred hydrophilizing compounds are polyamines having aliphatic linkages between the amino groups and polyvinyl compounds having hydrogen-containing heterocyclic side groups.

3,617,267
PROCESS FOR FORMING A SERIES OF MASTERS IN REGISTER
William C. Kinney, Littleton, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 24, 1969, Ser. No. 819,075
Int. Cl. G03g *5/00*; G03c *5/04*
U.S. Cl. 96—1 **16 Claims**



A process is disclosed for forming a series of masters which reproduce in register selected portions of an original by using a plurality of photosensitive scribable copy media which can be updated. A visible image of the original is formed on each piece of photosensitive scribable copy medium and then an area of the scribable coating is scribed on one of the media corresponding to a selected portion of the original for which a separate master is to be formed. A visible image of the

previously scribed area is then formed on another copy medium thereby updating said copy medium. If more than two masters are to be formed, the scribing and updating steps are repeated for each additional portion of the original for which a separate master is to be formed, except for the last of these portions. For the last portion, only the scribing step is repeated.

3,617,268
ELECTROPHOTOGRAPHIC MATERIALS

Yoshinobu Murakami, and Kazuhisa Morimoto, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Jan. 20, 1970, Ser. No. 4,200
Claims priority, application Japan, Jan. 30, 1969, 44/7501
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **7 Claims**

A photosensitive material for electrophotography comprising an organic photoconductive compound and a sensitizer consisting of reaction products of a benzopyrylium salt and a benzopyrane.

3,617,269
SPECTRALLY SENSITIZED PHOTOCONDUCTIVE RECORDING MATERIAL

Karel Eugeen Verhille, Mortsel; Robert Joseph Noe, Mortsel; Luciaan Frans Voet, St. Katelijne-Waver, and Henri De Poorter, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Apr. 26, 1968, Ser. No. 724,586
Claims priority, application Great Britain, Apr. 26, 1967, 19187/67
Int. Cl. G03c *5/02, 5/04*
U.S. Cl. 96—1.7 **4 Claims**

Photoconductive zinc oxide for electrophotographic purposes is spectrally sensitized with methine dyes wherein the methine linkage connects two oxazole nuclei as such or forming part of a fused benzo-, naphto-, or furo-ring. The nuclei may be substituted with certain designated substituents. The photoconductive zinc oxide so sensitized is preferably applied from an aqueous coating medium to which the sensitizing agent was incorporated in the form of a solution thereof in an organic solvent which has a very low vapor pressure and is miscible with water in substantial proportions, a particularly preferred solvent being 4-hydroxy-4-methyl-2-pentanone.

3,617,270
SENSITIZATION OF AN INORGANIC PHOTOCONDUCTIVE LAYER WITH 1, 3- AND 1, 2-SQUARIC ACID METHINE DYES

Helmut Kampfer, Cologne-Stammheim, Germany, and Karel Eugeen Verhille, Mortsel, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 16, 1969, Ser. No. 833,668
Claims priority, application Germany, June 20, 1968, P 17 72 688.4
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.7 **2 Claims**

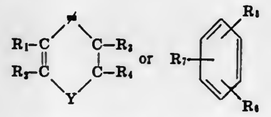
Electrophotographic material comprising a support layer and a photoconductive layer, the latter comprising an inorganic photoconductor in a film-forming binder. The photoconductor is sensitized by 1, 3- or 1, 2-quadratic acid methine dyes.

3,617,271
SENSITIZERS HAVING ONE OR MORE ELECTRON-WITHDRAWING GROUPS FOR ORGANIC PHOTOCONDUCTORS

Albert Lucien Poot, Kontich; Walter August Van den Heuvel, Berchem; Johannes Josephus Vanheertum, Hallezandhoven, and Karel Eugeen Verhille, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed June 10, 1969, Ser. No. 831,994
Claims priority, application Great Britain, June 10, 1968, 27,525/68
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **7 Claims**

An electrophotographic material comprising an organic photoconductor and as a sensitizer, a compound of the following formulas:



wherein: R_1, R_2, R_3 and R_4 are hydrogen, halogen, nitro, cyano, carboxyl, carbamoyl, aryl, or fused aromatic nuclei; Y is CH_2 or CN_2, and z is a chemical bond or $-SO_2-$; R_5 is azidosulfonyl or azidocarbonyl, R_6 is carboxyl, sulfo, azidocarbonyl, azidosulfonyl or a substituted fused arylene nucleus, and R_7 is hydrogen, fused arylene nucleus or other substituent.

3,617,272
MULTICOLOR DYE DEVELOPER SYSTEMS

Paul H. Stewart, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1969, Ser. No. 797,283
Int. Cl. G03c *5/54, 1/40*
U.S. Cl. 96—3 **16 Claims**

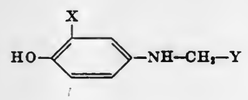
Photographic elements wherein at least two adjacent image-forming units (each comprising silver halide and dye developer) are separated by an alkali-permeable, water-insoluble stratum of a polyvalent metal salt and a film-forming, alkali-permeable, water-soluble polymer having free carboxylic acid groups, are processed in the presence of a material that is a chelating agent for the polyvalent metal, the chelating function of said material being destroyed imagewise in just exposed areas as a function of development.

3,617,273
COMPETING COLOR DEVELOPER PROCESS AND COMPOSITION

Atsuaki Arai; Mitsugu Tanaka; Haruhiko Iwano, and Isao Shimamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 20, 1969, Ser. No. 835,224
Claims priority, application Japan, June 20, 1968, 43/42841
Int. Cl. G03c *7/16, 7/00, 5/50*
U.S. Cl. 96—22 **11 Claims**

A novel competing color-developing agent having the formula:



wherein X is hydrogen, alkyl, hydroxylalkyl, phenyl or halogen, and Y is a substituted or unsubstituted N, S or O containing heterocyclic ring, and process for the use thereof.

3,617,274
HARDENED GELATIN HOLOGRAPHIC RECORDING MEDIUM

Lawrence H. Lin, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

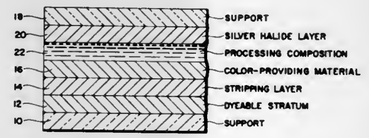
Filed Mar. 29, 1968, Ser. No. 717,207
Int. Cl. G03c *5/04, 9/00*
U.S. Cl. 96—27 H **5 Claims**

A holographic recording medium comprising a hardened gelatin film sensitized with a chromate or dichromate. Exposure effects a change in the index of refraction in the exposed areas of the film, which can then be used without further processing, or washed to remove the sensitizer to make a permanent record.

3,617,275
DIFFERENTIAL COLOR MOIETY MOBILITY IN MONOCHROMATIC DIFFUSION-TRANSFER ELEMENTS AND PROCESSES

Stanley M. Bloom, Waban; Joel M. Peisach, Hudson, and Robert K. Stephens, Burlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 20, 1970, Ser. No. 12,944
Int. Cl. G03c *7/00, 5/54*
U.S. Cl. 96—29 D **15 Claims**



Novel systems for preparing dye images utilizing novel elements including a dyeable stratum and a layer containing a color-providing material which is nondiffusible but upon oxidation can release a diffusible color-providing moiety for transfer to the dyeable stratum to impart thereto a color transfer image.

3,617,276
SILVER COMPLEX DIFFUSION TRANSFER PROCESS SEPARATING DEVELOPMENT NUCLEI AND ALKALINE LIQUID

Louis Maria De Haes, Edegem, Belgium, assignor to Gevaert-AGFA, N.V., Mortsel, Belgium

Filed Jan. 11, 1968, Ser. No. 697,005
Claims priority, application Great Britain, Jan. 11, 1967, Nov. 8, 1967, 57,642/67, 50899/67
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **5 Claims**

Silver complex diffusion transfer reproduction process in which a liquid containing development nuclei and an aqueous alkaline liquid for diffusion transfer image formation are applied separately and in sequential order to a light-sensitive material carrying a silver halide emulsion layer after which the latter material is contacted while still moist with an image-receiving material. The photographic developing agent for the silver halide emulsion is provided via one or both of the light-sensitive and image-receiving materials so that the alkaline liquid can be free of such agent. The light-sensitive material carries a water-permeable hydrophilic colloid layer superimposed upon the emulsion layer. The development nuclei are dispersed in the carried liquid therefor which contains only an amount of hydrophilic colloid sufficient for maintaining the nuclei in dispersion.

3,617,277
DYE DEVELOPER DIFFUSION TRANSFER SYSTEMS

Paul H. Stewart, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 676,603, Oct. 19, 1967, now abandoned. This application Feb. 6, 1969, Ser. No. 797,282
Int. Cl. G03c *5/54, 1/40*
U.S. Cl. 96—29 D **20 Claims**

In dye developer diffusion transfer systems in which chelatable metal ions are present during processing, the processing is conducted in the presence of a catechol silver halide developing agent and a compound which is a more effective chelating agent for the chelatable metal ions than catechol.

3,617,278
AZIDE SENSITIZERS AND PHOTOGRAPHIC ELEMENTS

Colin Holstead, Abbotts Langley, England, and Wojciech Maria Przezdziecki, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1968, Ser. No. 714,431
Claims priority, application Great Britain, Mar. 31, 1967, 14,955/67
Int. Cl. G03f *7/08*; **G03c** *1/52*
U.S. Cl. 96—33 **15 Claims**

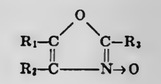
A light-sensitive azido substituted trihalomethane compound is employed in photographic elements with a polymer wherein both positive or negative images are obtained with utility in photomechanical reproduction and photoresist applications.

3,617,279
PHOTOPOLYMERIZATION OF ETHYLENICALLY UNSATURATED ORGANIC COMPOUNDS EMPLOYING AN OXIDO-OXAZOLE, PHOTOPOLYMERIZABLE COATED ELEMENT AND METHOD OF USING

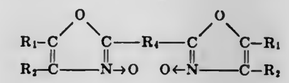
Urbain Leopold Laridon, Wilrijk, and Gerard Albert Delzenne, 'S-Gravenwezel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Nov. 13, 1968, Ser. No. 775,494
Claims priority, application Great Britain, Dec. 4, 1967, 55085/67
Int. Cl. G03c *5/00, 1/68*
U.S. Cl. 96—35.1 **7 Claims**

A photopolymerization process comprising irradiating with light of wave lengths ranging from 2,500 to 4,000 Angstroms, a composition comprising a photopolymerizable ethylenically unsaturated organic compound, and an oxido-oxazole photopolymerization initiator having a structural formula:



and



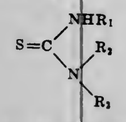
wherein each of R_1, R_2 and R_3 is selected from the group consisting of alkyl groups of one to three carbon atoms, and an aryl group, and R_4 is selected from an alkyl group of two to three carbon atoms, and an aryl group, these oxido-oxazoles being present in the form of the free bases or in the form of their hydrochlorides; and photopolymerizable elements comprising a support, an ethylenically unsaturated organic compound, and an oxido-oxazole as set forth, are described. The oxido-oxazole initiators provide fast and effective polymerization.

3,617,280
SILVER BROMIDE EMULSION SENSITIZED WITH 1,4, TRIAZINES
Harald Huckstadt, Cologne, Stammheim, Germany; Wilhelm Saleck, Schildgen, Germany; August Randolph, Leverkusen, Germany; and Erwin Ranz, Leverkusen, Germany, assignors to AGFA–Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed, Apr. 22, 1969, Ser. No. 818,381
Claims priority, application Germany, May 6, 1968, P 17 72 375.0
Int. Cl. G03c *5/30, 1/28*
U.S. Cl. 96–66.3 **10 Claims**
The present invention relates to a process for increasing the sensitivity of photographic silver bromide emulsions by developing the emulsions in the presence of thiomorpholine compounds.

3,617,281
PRINTING OF LENTICULAR FILMS
Gregory E. Lindin, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 547,251, May 3, 1966, now Patent No. 3,504,970. This application Jan. 30, 1970, Ser. No. 6,991
Int. Cl. G03c *9/00*
U.S. Cl. 96–40 **3 Claims**
A selected portion of a photosensitive element comprising a lenticular surface may be exposed by forming said element into an arc while said element is moving through an exposure area and exposing said photosensitive element to a source of radiation actinic thereto, said source being so placed as to be incident only upon a preselected portion of said photosensitive material.

3,617,282
NUCLEATING AGENTS FOR PHOTOGRAPHIC REVERSAL PROCESSES
Charleton C. Bard; Arthur D. Kuh, and Richard J. Malloy, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 803,941, Mar. 3, 1969, now abandoned. This application May 18, 1970, Ser. No. 38,492
Int. Cl. G03c *5/50*
U.S. Cl. 96–59 **12 Claims**
Chelated stannous ion silver halide nucleating agents are used in photographic reversal processes. The nucleating agents are useful in reversal developer solutions or in prebaths employed prior to reversal development. The nucleating agents are especially useful for processing multilayer color products where the emulsion layers contain color couplers or for selective reversal processing of multilayer color products where the couplers are present in the color developing solutions.

3,617,283
SIMULTANEOUS BLEACH-FIXING METHOD IN COLOR PHOTOGRAPHY
Reiichi Ohi; Hiroyuki Amano; Haruhiko Iwano, and Kazuo Shirasu, all of Ashigara-kamigun, Kanagawa, Japan, assignors to Fuji Photo Film G., Ltd., Kanagawa, Japan
Filed May 8, 1967, Ser. No. 636,669
Claims priority, application Japan, May 6, 1966, 41/28377
Int. Cl. G03c *5/30, 5/32*
U.S. Cl. 96–60 BF **4 Claims**
In processing photographic light-sensitive color material, bleaching can be promoted without the occurrence of color stains by incorporating, in a bleach-fixing solution containing a water-soluble iron complex salt or a processing solution, between color development and bleach-fixing a compound shown by the general formula



where R_1 and R_2 are an alkyl group, an hydroxyalkyl group, an aryl group, or an allyl group, or R_1 and R_2 can form together a hetrocyclic ring, and R_3 is an alkyl group, an hydroxyalkyl group or an allyl group when R_1 and R_2 do not form a heterocyclic ring and is hydrogen, an alkyl group or an hydroxyalkyl group when R_1 and R_2 form a heterocyclic ring.

3,617,284
DEVELOPMENT PROCESS FOR LITH-TYPE EMULSION WITH N-VINYL 2-PYRROLIDONE POLYMER
Joseph Louis De Munck, Kalmthout, and Raymond Leopold Florens, Edegem, both of Belgium, assignors to Gevaert-AGFA, N.V., Mortsel, Belgium
Filed Sept. 18, 1967, Ser. No. 668,686
Claims priority, application Great Britain, Nov. 19, 1966, 41,638/66
Int. Cl. G03c *5/30*
U.S. Cl. 96—66 **9 Claims**
A process for developing a light-sensitive silver halide photographic material containing a negative silver halide emulsion layer of the lith-type comprising the steps of developing the material in the presence of an N-vinyl-2-pyrrolidone polymer with an aliphatic aldehyde or ketone-bisulfite/hydroquinone developer containing alkylene oxide units is described. The process results in a steeper gradation and consequently improved dot sharpness of the screen image. Additionally, a broader development time interval wherein reproducible dot screen images is obtained.

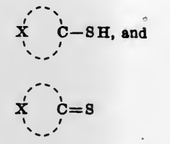
3,617,285
LIGHT INTENSIFYING SCREENS
William Joseph Staudenmayer, c/o Kodak Park Division, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 21, 1969, Ser. No. 868,225
Int. Cl. G03c *1/92;* **H01j** *1/64*
U.S. Cl. 96—82 **18 Claims**
Improved inorganic phosphor screens comprising a support bearing a layer comprising a binder comprising a mixture of macromolecular bisphenol polycarbonates and copolymers comprising said bisphenol polycarbonates and poly(alkylene oxides) are described for radiographic use. Radiographic film-screen combinations are also disclosed.

3,617,286
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING A BACK LAYER
Koji Kameyama, and Ikuo Fuutagawa, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
Filed July 7, 1967, Ser. No. 651,716
Claims priority, application Japan, July 11, 1966, 41/45260
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 **4 Claims**
In a photographic material having a backing layer for antihalation, the sticking of the back layer to other emulsion layers can be prevented when the material is rolled and stored at a high temperature and high humidity, by incorporating in the backing layer a surface active agent such as 2-ethylhexyl sodium sulfate, sodium N-stearoyltaurine, sodium stearate, sorbitan monostearate, sorbitan tristearate, polyoxyethylene sorbitan tristearate, polyoxyethylene sorbitan monolaurate and behenic acid amide. The surface active agent has the property of forming aggregates which prevent sticking of the backing layer to other layers with which it comes in contact.

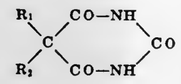
3,617,287
PHOTOPOLYMERIZABLE ELEMENTS CONTAINING A YELLOW DYE
William Jeffers, Fair Haven, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 30, 1967, Ser. No. 664,280
Int. Cl. G03c *1/68*
U.S. Cl. 96—84 R **7 Claims**
An improved photopolymer image reproduction element having in a photopolymerizable layer containing an initiator that absorbs light in the ultraviolet and visible region of the spectrum a yellow, light-absorbing dye from the group consisting of oxazoline styryl salts; symmetrical thiazoline carbocyanine salts, and pyrazolinone styryl dyes, said dyes absorbing light in the ultraviolet and/or visible regions of the spectrum.

3,617,288
PROPENONE SENSITIZERS FOR THE PHOTOLYSIS OF ORGANIC HALOGEN COMPOUNDS
Richard B. Hartman, White Bear Lake, and George H. Smith, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Sept. 12, 1969, Ser. No. 857,552
Int. Cl. G03c *1/60, 1/72*
U.S. Cl. 96—90 **8 Claims**
Photosensitive compositions containing non-basic propenone compounds as sensitizers for photolyzable organic halogen compounds, and image recording elements in which at least one layer contains such photosensitive compositions.

3,617,289
STABILIZATION PROCESS FOR THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENTS
Kinji Ohkubo, and Takao Masuda, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
Filed Dec. 7, 1967, Ser. No. 688,695
Claims priority, application Japan, Dec. 10, 1966, 41/80935
Int. Cl. G03c *1/06*
U.S. Cl. 96—95 **1 Claim**
A stabilized, thermally developed, light-sensitive element having been stabilized after development with a solution containing at least one organic compound of the group represented by the general formulas:



3,617,290
BARBITURIC ACID DERIVATIVES STABILIZERS FOR EMULSIONS SENSITIZED WITH ETHYLENE OXIDE CONDENSATE
Henry Walter Wood, Ilford, England, assignor to Ilford Limited, Ilford, England
Filed Feb. 2, 1968, Ser. No. 702,543
Claims priority, application Great Britain, Feb. 13, 1967, 6,830/67
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **6 Claims**
This application describes a process for the production of a gelatino silver halide emulsion which comprises forming the emulsion by a technique including a step wherein the emulsion is sulfur sensitized, and adding to the emulsion (1) an ethylene oxide condensate in quantity sufficient to increase the speed of the emulsion and the contrast of images developed therein, and (2) at least 1 g. per gram mole of silver halide present, of a compound of the general formula:

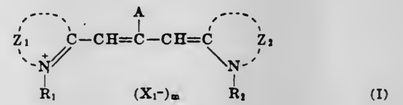


wherein R_1 is an aryl group and R_2 is a lower alkyl group.

3,617,291
TWO-EQUIVALENT COUPLERS FOR PHOTOGRAPHY
George W. Sawdey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 10, 1967, Ser. No. 674,090
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **10 Claims**
Two-equivalent development inhibitor releasing couplers derived from four-equivalent couplers by replacing a single hydrogen atom on the carbon atom in the reactive coupling position with a benzotriazolyl radical are valuable couplers for use in photographic materials and processes. The immediate couplers including the 2,6-biscoupler benzo[1,2-d:4,5-d′]bistriazoles absorb ultraviolet light, fluoresce and have good stability to exposure to light, heat, humidity and aldehyde hardening agents, and couple actively to produce good dyes having excellent stability to heat and light.

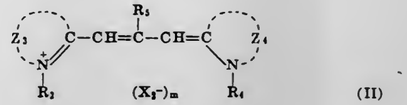
3,617,292
COATING COMPOSITIONS COMPRISING A COLLOID AND A POLYOXYALKYLENE ETHER OF A MONOHYDRIC ALCOHOL CONTAINING MORE THAN TWO ALKYL SIDE CHAINS
George M. Gantz, Upper Saddle River, N.J.; E. Scudder Mackey, Binghamton, N.Y., and Raymond L. Mayhew, Summit, N.J., assignors to GAF Corporation, New York, N.Y.
Filed Mar. 22, 1967, Ser. No. 625,035
Int. Cl. G03c *1/38*
U.S. Cl. 96—114.5 **10 Claims**
A coating composition and a photographic support coated therewith, said coating composition comprising a water-permeable colloid and a coating aid comprising a polyoxyalkylene ether of a primary monohydric saturated aliphatic alcohol containing more than two alkyl side chains, said alcohol having the molecular configuration of an alcohol produced by the oxo process, said ether containing from 2 to 20 oxyalkylene groups per mole.

3,617,293
PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSIONS
Keisuke Shiba, and Akira Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed July 26, 1968, Ser. No. 747,879
Claims priority, application Japan, July 26, 1967, 42/48056
Int. Cl. G03c *1/28*
U.S. Cl. 96—124 **6 Claims**
A photographic silver halide emulsion containing at least one carbocyanine dye represented by the following general formula (I):



(I)

and at least one carbocyanine dye represented by the general formula (II):



(II)

The representative moieties set out above are specifically defined in the specification.

3,617,294
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba; Masanao Hinata, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 9, 1969, Ser. No. 856,487
Claims priority, application Japan, Sept. 9, 1968, 43/64854
Int. Cl. G03c *1/28, 1/40*
U.S. Cl. 96—124 10 Claims

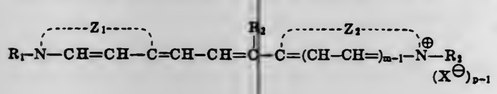
Photographic silver halide emulsions and color photographic light-sensitive materials containing same, which emulsions comprise at least one benzimidazolocarbocyanine dye combined with at least one pseudocyanine dye containing either a benzothiazole or benzoselenazole nucleus and hydroxy-substituted at the 5-position thereof. The emulsions may optionally contain, in addition a compound containing a benzimidazole nucleus. The emulsions resulting from the above combination of ingredients are green-sensitive emulsions possessing a uniformly high spectrally sensitized sensitivity over a region from 480 to 580 μ and are not affected adversely by the presence of a color coupler in the emulsion. Further, the above combination of additives do not produce color stain upon development.

3,617,295
PHOTOGRAPHIC SILVER HALIDE EMULSION

Keisuke Shiba; Masanao Hinata; Hiroshi Misu, and Masao Sawahara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

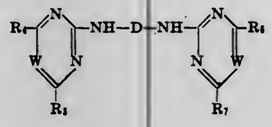
Filed Feb. 23, 1968, Ser. No. 707,478
Claims priority, application Japan, Feb. 23, 1967, 42/11669
Int. Cl. G03c *1/28*
U.S. Cl. 96—126 8 Claims

A photographic silver halide emulsion containing at least one sensitizing dye represented by the general formula I



wherein Z_1 represents a nonmetallic atomic group forming a 4-quinoline nucleus, Z_2 represents a nonmetallic atomic group necessary to complete a member selected from the group consisting of a 5-membered heterocyclic ring and a 6-membered heterocyclic ring, R_1 and R_2 each represents a member selected from the group consisting of a nonsubstituted alkyl group and a substituted alkyl group, R_3 represents a member selected from the group consisting of a hydrogen atom and an alkylene group condensed with R_2, X represents an acid anionic group, and p and m each represents 1 or 2, said X forming an intramolecular salt when p is 1, and

at least one compound represented by the general formula II



wherein D represents a divalent aromatic residual group, R_4 and R_6 each represents a member selected from the group consisting of a hydrogen atom, a hydroxyl group, a halogen atom, an alkoxyl group, an aryloxyl group, and arylthio group, R_5 represents a member selected from the group consisting of an aryloxyl group and an arylthio group, and W represents a member selected from the group consisting of CH and N.

3,617,296
OPTICALLY SENSITIZED LIGHT-SENSITIVE SILVER HALIDE MATERIAL

Hans Ohlschlager, Cologne-Stammheim; Oskar Riester, Leverkusen; Helmut Kampfer, Cologne-Stammheim; Karl Lohmer, Leverkusen, and Karl Kuffner, Unterhaching near Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 8, 1968, Ser. No. 727,696
Claims priority, application Germany, May 22, 1967, A 55 772
Int. Cl. G03c *1/08*
U.S. Cl. 96—140 7 Claims

This invention relates to light-sensitive layers, in particular to silver halide emulsion layers, spectrally sensitized with sensitizing dyes which contain a thiocarbamoyl or selenocarbamoyl group.

3,617,297
PROCESS FOR THE PRODUCTION OF DL-METHIONINE COMPOSITION

Yoshitsugu Sawaki; Masao Sada; Bonji Osaki; Zenichi Yamamoto, and Shigeki Nakata, all of, Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

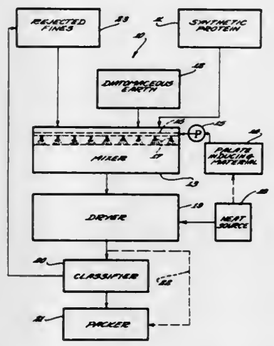
Continuation-in-part of application Ser. No. 658,658, Aug. 7, 1967, now abandoned. This application June 4, 1968, Ser. No. 734,259
Int. Cl. A23k *1/00*
U.S. Cl. 99—2 R 7 Claims

A process for the production of a composition consisting of DL-methionine and calcium salts of phosphoric acid, which comprises forming calcium salt of DL-methionine during synthesis or refining of DL-methionine and reacting said calcium salt of DL-methionine with phosphoric acid, and which not only enables the composition useful for animal feeds to be obtained concurrently with the synthesis of refining of DL-methionine but also enables DL-methionine to be synthesized or refined at high yield.

3,617,298
ANIMAL FEED

Otto A. Kohl, 2222 1st. Ave., Cedar Rapids, Iowa

Continuation-in-part of application Ser. No. 636,661, May 8, 1967, now abandoned. This application May 22, 1969, Ser. No. 826,822
Int. Cl. A23k *1/00, 1/02*
U.S. Cl. 99—2 12 Claims



A method of producing an animal feed supplement comprising, mixing moisture-free nitrogeneous source material particles (i.e., urea) with moisture-free fine sized diatomaceous earth particles until each protein material particle is coated with diatomaceous earth particles and then mixing a liquified palate-inducing material (i.e., molasses) with these particles until a three-layered particle is produced and then drying such three-layered particles until they have a

glazed spheroidal surface that is nonhydroscopic and anticaking. The finished product is then either classified with the rejects being recycled and the other portions being packaged or it may be packaged directly. Included are the finished feed supplement particles per se and a method of retarding release of nitrogen in ruminants by feeding them the instant feed supplement.

3,617,299
ANIMAL FEED PREMIX RESISTANT TO STATIC CHARGE AND METHOD OF MAKING SAME

Richard W. Mattoon, Lake Forest, and Lowell R. Macy, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 15, 1969, Ser. No. 859,243
Int. Cl. A23k *1/17*
U.S. Cl. 99—2 R 13 Claims

A nonagglomerating, nonsegregating premix for animal feeds comprising an intimate mixture of an active ingredient and a carrier. The active ingredient has dispersed upon the particles thereof a quantity of a first emulsifier equivalent to 0.1 to 1.0 percent by weight of the active ingredient, the emulsifier having an HLB value of at least 12. The carrier has dispersed upon the particles thereof a quantity of a second emulsifier equivalent to 0.1 to 1.0 percent by weight of the carrier and having an HLB value of 8 or less. The ratio of active ingredient to carrier in the premix can vary from 1 to 9 parts by weight to 4 to 1 parts by weight. Such premixes when blended with feed produce little if any electrostatic charge.

3,617,300
IN SITU CONVERSION OF STARCH

Eugene H. Borochoff, Saint Louis Park; Theodore W. Craig, Minneapolis, and Herbert N. Dunning, Minnetonka, all of Minn., assignors to General Mills, Inc.

Filed Dec. 28, 1967, Ser. No. 694,113
Int. Cl. A23k *1/00*
U.S. Cl. 99—9 3 Claims

A process for the enzymatic conversion of starch to glucose in a pet food comprising the addition of alpha-amylase and amyloglucosidase to a solid amylaceous system.

3,617,301
STABILIZATION OF BEER

Donald Barby, Great Barrow, Chester, and James P. Quinn, Warrington, both of England, assignors to Joseph Crosfield and Sons Limited, Warrington, England

Filed Apr. 23, 1968, Ser. No. 723,576
Claims priority, application Great Britain, Apr. 28, 1967, 19783/67
Int. Cl. C12h *1/04*
U.S. Cl. 99—48 6 Claims

A process for the treatment of beer to reduce its tendency to form haze on storage and to maintain or improve its head or foam retention characteristics in which the beer is treated with a silica hydrogel having a surface area of at least 700 $m.^2/g.$ and a mean pore diameter from 30–120A.

3,617,302
PREPARATION OF A FLOWABLE PARTICULATE COMPOSITION

Thomas W. Collins, Elgin, Ill., assignor to Kraftco Corporation

Continuation-in-part of application Ser. No. 670,778, Sept. 26, 1967, now abandoned. This application July 8, 1968, Ser. No. 743,044
Int. Cl. A23c *9/00, 1/00*
U.S. Cl. 99—56 4 Claims

A process is provided whereby a liquid material may be added to a substantially dry carrier by mechanical mixing, and whereby the resultant mixture remains particulate and flowable. The carrier is treated to provide an expanded, substantially spherical structure capable of holding the desired level of liquid. Any liquid may be used so long as it does not dissolve the solid carrier. The liquid may be normally liquid at room temperature or may be a material that may be liquid at room temperature or may be a material that may be liquefied by mild heating.

3,617,303
PROCESS FOR INCREASING THE AMINO-ACID CONTENT IN CEREALS

Gerardus A. Geurts, Geleen, Netherlands, assignor to Stamicarbon N. V. Heelen, Netherlands

Filed Dec. 6, 1968, Ser. No. 781,988
Claims priority, application Netherlands, Dec. 7, 1967, 6716679
Int. Cl. A23l *1/30*
U.S. Cl. 99—83 5 Claims

There is provided an improvement in the process for increasing the amino acid content of cereals by contacting with an aqueous solution of at least one amino acid to cause absorption of the amino acid into the cereal. The improvement resides in first increasing the water content of the cereal prior to contacting the cereal with the solution of at least one amino acid, whereby an increased absorption of the amino acid is obtained.

3,617,304
METHOD FOR MANUFACTURING BISCUITS INTENDED TO BE BROUGHT INTO CONTACT WITH ICE CREAM

Josse Rahm, 454, Ave. Dolez, Uccle, Belgium

Filed Aug. 29, 1968, Ser. No. 756,191
Claims priority, application Luxembourg, Sept. 12, 9167, 54,457
Int. Cl. A21d *2/36, 8/08*
U.S. Cl. 99—86 6 Claims

This invention relates to a method for producing baked wafer biscuits, particularly cone-shaped biscuits intended to be used with ice cream. The biscuit is molded in a mold made of two separable pieces from an unleavened paste containing fat in a minimum proportion of about 10 percent of the weight of farinaceous material, a proportion of buckwheat flour lying between 1.8 and 5.5 percent of the weight of farinaceous material, and wherein the two pieces of the mold are separated several times, each time permitting a partial escape of the steam formed during the baking, the biscuit being cooled by a jet of gas before being removed from the mold.

3,617,305
FLOUR-BASED DRY MIXES FOR HOME BAKING

Jacques R. Rolland, Longueil, Quebec, and John Holme, Preville, Quebec, both of Canada, assignors to The Ogilve Flour Mills Company, Limited, Montreal, Quebec, Canada

Filed Nov. 26, 1969, Ser. No. 880,123
Claims priority, application Canada, Nov. 28, 1968, 036423
Int. Cl. A21d *2/28, 2/22, 2/04*
U.S. Cl. 99—91 13 Claims

Flour-based, dry mixes for use in the home preparation of yeast-raised products include an additive composition containing defined amounts of an ascorbate compound, an edible oxidizing agent, and an edible sulfhydryl-containing reducing agent. The additive composition inclusion permits a substantial reduction in the time usually required for the kneading and fermentation steps, and, in certain instances, either one of these two steps may be eliminated. The flour-based, dry mixes facilitate the home preparation of yeast-raised products within much shorter periods of time and more conveniently than hitherto.

3,617,306
PROPAGATION OF YEAST

Seymour Pomper, Stamford, Conn., and Emanuel Akerman, Bronx, N.Y., assignors to Standard Brands Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 579,218, Sept. 14, 1966, now abandoned. This application Jan. 20, 1970, Ser. No.4,419
Int. Cl. A23j *1/18*
U.S. Cl. 99—96 8 Claims

Yeast is propagated in the presence of an effective amount of a nonnutritive ionizable salt sufficient to impart to the yeast superior leavening activity in sweet dough. Examples of

nonnutritive salts are NaCl, Na_2So_4, NaBr, Na_2Co_3, Na acetate, and $SrCl_2$.

3,617,307
METHOD OF MANUFACTURING IMPROVED MEAT PRODUCTS OF THE SAUSAGE TYPE AND COMPOSITION THEREFOR
Petrus Adam Inklaar, Diepenveen, Netherlands, assignor to Vasco Industries, New York, N.Y.
Continuation of application Ser. No. 527,063, Feb. 14, 1966, now Patent No. 3,552,978. This application Apr. 10, 1968, Ser. No. 720,374
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 **12 Claims**

Ground meat products (sausages, etc.) are given added protein contents yet deleterious jelly (aqueous) and fat deposits are avoided by incorporating into the meat composition finely divided water soluble protein, e.g., soy bean, milk or egg protein, alpha-amino acid of stated nature and acid-buffering power, e.g., a mixture of sodium glycinate and glycine or lysine-HCl, histidine or methiomine or a slat thereof, or other such acid. The additions are made during cuttering. They may be in a finely divided preparation of the protein with 1 to 10 percent of its weight of the amino acid.

3,617,308
MARGARINE FAT AND PROCESS FOR PREPARING A SPREAD
Hendrik Albertus Graffelman, Papendrecht, Netherlands, assignor to Lever Brothers Company, New York, N.Y.
Filed June 27, 1967, Ser. No. 649,099
Claims priority, application Great Britain, June 28, 1966, 28,917/66
Int. Cl. A23d *3/10*
U.S. Cl. 99—118 **4 Claims**

This invention provides edible fat products, especially margarines and spreads comprising a blend of a hard fat with a higher proportion of liquid vegetable oil, wherein the hard fat amounts to 8 to 15 percent, preferably 8 to 12 percent, by weight of the total composition and is composed of the random interesterification product of a mixture of hardened vegetable oil with a slip melting point not less than 50° C. and free from significant proportions of combined fatty acid having less than 16 carbon atoms, with fully hardened palm kernel oil in the ratio of 25–75:75–25, preferably about 40:60, parts by weight, and the liquid vegetable oil is one containing at least 40 percent of linoleic acid and in which the proportion of saturated to unsaturated acids is not greater than 1:2. The invention also includes processes for preparing such products.

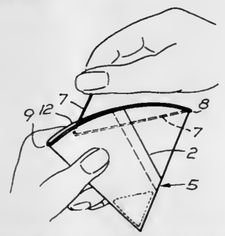
3,617,309
PUFFED FOOD PRODUCT AND METHOD OF PRODUCING
Arnold Rebane, Villa Park, Ill., assignor to The Wander Company, Lincoln, Nebr.
Filed May 7, 1969, Ser. No. 822,718
Int. Cl. A23g *3/00*; **A23b** *7/16*
U.S. Cl. 99—138 R **8 Claims**

A puffed food product, such as popcorn, having a thin protective outer glaze coating which encloses the puffed food product and protects the product against atmospheric moisture while preventing the loss of flavor from the product. One embodiment comprises an improved acid-fruit-flavored popcorn product which is prepared by applying a water-free oil base flavor solution to the popcorn, distributing a layer of powdered edible organic acid, such as citric, malic, tartaric, adipic, or succinic acid over the oil-base flavor coating, and applying a thin syrup glaze coating over the layer of organic acid to protect the popcorn against loss of crispness and flavor.

3,617,310
ALKYLTHIAZOLIDINES AS CHOCOLATELIKE FLAVORS
George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 25, 1969, Ser. No. 836,607
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R **7 Claims**

Novel alkylthiazolidines are useful as chocolatelike or cocoalike flavors. Examples of the novel compounds are 2-isopropylthiazolidine and 2-isobutylthiazolidine.

3,617,311
SEALED BEVERAGE DRINKING CUP
Robert Beitle, Waiblingen; Hans Paal, Grossheppach, and Wolfgang Schiller, Gartenberg, all of Germany, assignors to Frigeo-Werk Bettle & Co., Geradstetten, Germany
Filed Nov. 6, 1968, Ser. No. 773,846
Claims priority, application Germany, Nov. 18, 1967, P 15 86 641.8
Int. Cl. B65d *5/02*, *31/18*
U.S. Cl. 99—171 M **6 Claims**



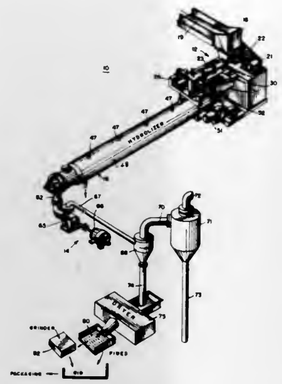
A sealed drinking cup containing a small quantity of a dry pulverized or granulated substance which, after the cup is opened, may be dissolved by the addition of a liquid to form a beverage which may be drunk from this cup. The cup is first folded from its original open condition into the shape of a flat bag into which the substance is filled and which, when the cup is to be used, may be easily unfolded to its original shape after its sealing element in the form of a string or tape which is coated with a thermoplastic adhesive is pulled out of the bag.

3,617,312
ANTIMYCOTIC OVERCOATING TREATMENT OF CELLULOSE SAUSAGE CASING
Henry J. Rose, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.
Filed July 18, 1968, Ser. No. 745,670
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **2 Claims**

Cellulose sausage casings are protected against fungus growth by overcoating with a partially water-swellable, water-insoluble, water- and gas-permeable coating composition containing an antimycotic agent which will leach slowly from the coating under conditions of use. Preferred coating compositions comprise a long-chain polyester and a polyacrylic acid emulsion, and an antimycotic agent such as potassium, sodium, or calcium sorbate or propionate, or sorbic or propionic acid, or the lower alkyl esters of parahydroxybenzoic acid, and form a water-insoluble, partially water-swellable, water- and gas-permeable coating upon curing.

3,617,313
HYDROLYZING APPARATUS
Bert S. Harrington, Jr., Chamblee, Ga., and Joseph Vojacek, Jr., Brookfield, Ill., assignors to Chemetron Corporation, Chicago, Ill.
Filed Dec. 8, 1967, Ser. No. 689,186
Int. Cl. A23k *1/10*
U.S. Cl. 99—235 R **12 Claims**

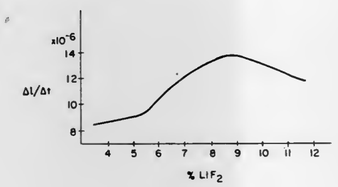
There is provided a method and apparatus for the continuous process hydrolyzing under pressure of fibrous material such as the byproducts of poultry—feathers, blood, offal, hair, and the like. The hydrolyzing takes place within a pressure vessel and inlet means are provided for continuously introducing the untreated material into the vessel while the vessel is maintained under pressure. This is accomplished by compressing the untreated material into a substantially pressure-impervious plug which moves through the inlet passageway continuously into the pressure vessel. Discharge means are also provided for releasing the treated material continuously from the pressure vessel while the pressure vessel is maintained under pressure.



3,617,314
WOOD TREATMENT
Robert E. Hill, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed July 23, 1968, Ser. No. 746,738
Int. Cl. C09k *3/18*
U.S. Cl. 106—2 **14 Claims**

A wood treatment composition which imparts water repellency to kiln-dried lumber.

3,617,315
CASTABLE REFRACTORY DIE AND MODEL COMPOSITIONS
Ronald C. Vickery, Northport, N.Y., assignor to Ceramco Equipment Corporation, Long Island City, N.Y.
Continuation-in-part of application Ser. No. 583,087, Sept. 29, 1966, now abandoned. This application Nov. 24, 1969, Ser. No. 879,345
Int. Cl. B28b *7/28*, *7/36*
U.S. Cl. 106—38.3 **9 Claims**



A dimensionally accurate, thermally stable, castable refractory composition having a controllable coefficient of thermal expansion, setting expansion and firing shrinkage which consists essentially of an admixture of magnesium oxide, calcium aluminate, ammonium dihydrogen phosphate, an alkali metal or alkaline earth fluoride compound and a colloidal silica solution. The refractory composition may be adjusted in its thermal expansion properties by variation in the fluoride content of the composition. The adjustment in coefficient of thermal expansion would coincide with that coefficient of porcelain employed in the coating of dental prosthetic restorations. The invention also includes a separating coating composition for the cast-fired composition above mentioned, which enables it to maintain separation between the refractory cast composition and an applied porcelain slurry which is spread over the cast and separating medium to construct the dental prosthesis. The separating coating is made up of a composition of potassium fluoride, stearic acid and a volatile organic solvent such as carbon tetrachloride.

3,617,316
PHOTOTROPIC GLASS
Joji Suzuki, Itami, and Makoto Kume, Takarazuka, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 606,530, Jan. 3, 1967, now Patent No. 3,548,060. This application July 31, 1970, Ser. No. 60,105
Int. Cl. C03c *3/26*, *3/14*
U.S. Cl. 106—47 **2 Claims**

A phototropic glass comprising a borate glass body containing therein mycrocrystals of silver chloride or silver bromide, and copper oxide, and method of producing the phototropic glass which comprises melting a bath for the said glass body, forming and cooling the molten glass, heat treating said glass to cause the silver halide to crystallize, and cooling the glass.

3,617,317
GLASS BATCHES FOR THE PRODUCTION OF TRANSPARENT GLASS CERAMICS CONTAINING SOLID SOLUTIONS OF β-EUCRYPTITE
Werner Sack, Mainz-Gonsenheim, and Herwig Scheidler, Mainz-Mombach, both of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Germany
Filed June 26, 1968, Ser. No. 740,317
Claims priority, application Germany, June 29, 1967, P 15 96 858.8
Int. Cl. C03c *3/22*
U.S. Cl. 106—52 **5 Claims**

Glass having the following composition:

SiO_2	67.7–69.6
Al_2O_3	18.7–19.2
Li_2O	2.8–2.9
Na_2O	0.7
CaO	0.8–2.2
MgO	0.0–2.5
ZnO	0.0–5.2
TiO_2	1.5
ZrO_2	1.8
Sb_2O_3	1.0

the sum of CaO+MgO+ZnO being 3.3–5.8 percent by weight and the weight ratio of MgO+ZnO/CaO being between 1.4 and 6.6. Heattreating of objects formed of such glass at about 650° to 850° C. whereby to form transparent glass ceramics containing solid solutions of β-eucryptite having a coefficient of thermal expansion of about −7 to +14 $\times 10^{17°}$ C. within the temperature range of about 20° to 300° C.

3,617,318
MAGNESIA-CONTAINING REFRACTORY PRODUCTS AND METHODS OF MAKING SAME
Leonard John Minnick, Cheltenham, Pa., assignor to G. & W. H. Corson, Inc., Plymouth Meeting, Pa.
Filed Jan. 10, 1969, Ser. No. 790,425
Int. Cl. C04b *35/06*
U.S. Cl. 106—58 **20 Claims**

A refractory batch mix in which the refractory grain consists essentially of an intimate mixture of (1) selectively calcined dolomite in which the calcium exists substantially as calcium carbonate and the magnesium exists substantially as magnesium oxide, and (2) at least one magnesia-containing grain selected from the group consisting of periclase and dead-burned dolomite.

3,617,319
HIGHLY REFRACTORY ALUMINOUS CEMENT AND PROCESS FOR ITS MANUFACTURE
Gerard Henri Sadran, Paris, and Louise Marie Assaud, Montellmar, both of France, assignors to Societe Anonyme: Ciments Lafarge, Paris, France
Filed July 24, 1968, Ser. No. 747,099
Claims priority, application France, July 31, 1967, 116,376
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 **2 Claims**

A highly refractory aluminous cement which comprises about 60% clinker, about 40% Al_2O_3, about 2% $AlNa_3F_6$ and about 0.18% to 2.5% sodium citrate and has a grain size distribution in which about 90% of the particles are under 30 microns. The clinker is formed by burning Al_2O_3 (98% purity) and $CaCO_3$ (99% purity). It contains a mixture of $CaO{\cdot}Al_2O_3$ and $CaO{\cdot}2Al_2O_3$ in the ratio of approximately 1:1. The clinker is crushed, and the required amounts of Al_2O_3, $AlNa_3F_6$ and sodium citrate are added. Final crushing reduces the size of the desired dimensions.

3,617,320
METALLIZING SUBSTRATES
Sung Ki Lee, Niagara, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Aug. 6, 1968, Ser. No. 750,487
Int. Cl. C08b *21/04*
U.S. Cl. 106—162 **10 Claims**

There is provided a two-phase bath for metallizing substrates which comprises a first phase comprising phosphorus in a solvent, and multipurpose agent, and a second phase comprising a metal salt or complex thereof and multipurpose agent, wherein said multipurpose agent is selected from the group consisting of cellulose derivatives, vinyl polymers and copolymers, acrylic polymers, novolacs, oxyalkylated novolacs, oxyalkylated aniline novolacs, oxyalkylated polyols, glycols, polyglycols, siloxanes, natural rosins and gums, and mixtures thereof. The multipurpose agent serves as viscosity modifier, surface and interfacial tension controller, film former and surfactant.

3,617,321
SPRAY-ON COATING COMPOSITION
Raymond C. Kent, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Aug. 28, 1969, Ser. No. 853,962
Int. Cl. C08b *27/10*
U.S. Cl. 106—186 **3 Claims**

Spray-on coating composition adapted for forming monolithic white ceiling structures having, on a dry weight basis, 5 to 35 percent by weight expanded perlite; 10 to 40 percent by weight fibrous talc; 15 to 80 percent by weight inorganic filler; 1 to 4 percent by weight organic binder; 0 to 1 percent by weight cross-linking agent and 1 to 5 percent by weight fine fibrous asbestos. The dry ingredients are mixed with sufficient water to provide a spray-on coating composition having a viscosity in the range of from 10 to 30 poises at a shear rate of 60 seconds $^{-1}$.

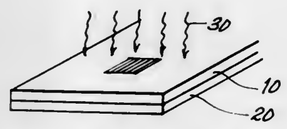
3,617,322
DEXTRIN ADHESIVE INCORPORATING PICRIC ACID FOR DECREASING VISCOSITY AND IMPROVING SEALABILITY
Finn Clement, deceased, late of Cincinnati, Ohio (by Gordon E. Iliff, administrator), assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 24, 1970, Ser. No. 13,778
Int. Cl. C08b *25/02*
U.S. Cl. 106—213 **6 Claims**

Improved dextrin adhesive composition for carton sealing adhesives incorporating picric acid in small amounts, the advantages of which are, inter alia, a decrease in the viscosity for a given solids content of the adhesive, and an improvement in the initial tack and the sealability.

3,617,323
PIGMENT PREPARATIONS
Albert Riegler, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland
Filed Nov. 19, 1968, Ser. No. 777,147
Claims priority, application Switzerland, Dec. 5, 1967; Oct. 25, 1968, 17104/67; 14835/68
Int. Cl. C09c , *1/00, 3/00*
U.S. Cl. 106—308 F **7 Claims**

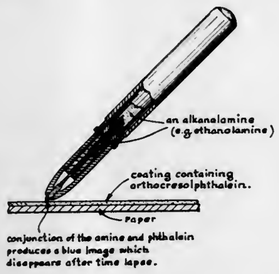
Preparations which contain a pigment and/or an optical brightener and a salt of an aliphatic carboxylic acid containing at least six carbon atoms and a metal of Group 2 or 3 of the Periodic Table and no more than 10 percent (referred to the weight of the metal salt) of an amide or ester of a lower alkanolamine with a fatty acid containing a lipophilic residue of at least 10 carbon atoms, are useful for pigmenting high-melting thermoplastic compositions.

3,617,324
METHOD FOR FORMING A CONCEALED IMAGE BY SUBLIMINATION
Richard E. Thomas, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.
Filed Oct. 17, 1968, Ser. No. 768,372The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed.
Int. Cl. B41m *5/12*
U.S. Cl. 117—1.7 **4 Claims**



A teaching process which makes use of a copy sheet having a visible image, a master sheet having a visible image keyed to the visible image on the copy sheet and a coating associated with the imaged master containing an invisible heat volatilizable material capable of reaction with a developer component for development of color which includes positioning the copy sheet with its printed side in surface contact with the coating and radiating the master sheet to develop a corresponding heat pattern to cause volatilization of the material in the corresponding areas of the coating for transfer to provide a latent image on the corresponding areas of the copy sheet, and in which the latent image is developed by wetting with the development material.

3,617,325
WRITING
Raymond E. Spokes; John William Edwards, Jr., and Daniel Ward Edwards, all of Ann Arbor, Mich., assignors to Chem-Rite Associates, Ann Arbor, Mich.
Continuation-in-part of application Ser. No. 784,091, Dec. 16, 1968, now abandoned. This application June 17, 1969, Ser. No. 833,959
Int. Cl. B44f *1/10*
U.S. Cl. 117—1.7 **4 Claims**

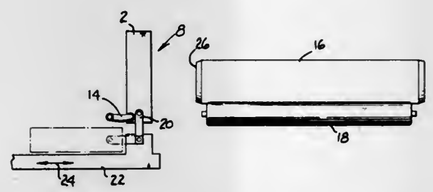


Impermanent marks, they may disappear in a day or less, are created by "writing," with a stylus presenting an alkanolamine, on a sheet of paper coated with a material which changes to a distinctive color upon exposure to the amine. The marks disappear in a short period of time so that exercise books used at the elementary school level can be reused in the following semester or term without additional cost as would be entailed in the purchase of new books.

3,617,326
METHOD OF BRANDING SILICON PLASTIC SURFACE
John R. Zuber, Piscataway, and Herbert Foxman, Raritan, both of N.J., assignors to RCA Corporation
Filed Feb. 26, 1969, Ser. No. 802,675
Int. Cl. B41m *1/30*; **B44d** *1/092*
U.S. Cl. 117—12 **3 Claims**

A method of branding the surface of a silicone plastic body so as to improve the adherence of printed trademark and type number indicia on said surface is described. The method comprises treating the surface of the silicone plastic body with a solution consisting of 1,1,3,3, tetramethylguanidine and a surfactant dissolved in an organic solvent. Conveniently, a bibulous material is saturated with the solution, and a silicone plastic body is positioned thereon so that the surface of the body to be branded is in contact therewith. After a few minutes, the silicone plastic body is removed, any excess solution remaining on the body surface is wiped off, and the desired indicia are then printed on the treated surface.

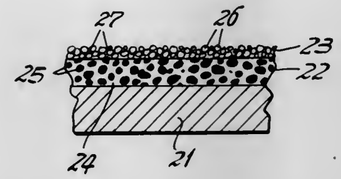
3,617,327
METHOD AND APPARATUS FOR APPLYING A COATING MATERIAL
Leonard Irving Daniel, Flagtown, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Dec. 29, 1966, Ser. No. 605,892
Int. Cl. B44d *1/094*
U.S. Cl. 117—18 **5 Claims**



A vertically orientated preheated article such as a fibrocement pipe is coated by contact with powdered resinous material. The powder is placed on top of a horizontal screen, vacuum is applied to the back side to hold the powder to the screen and then the screen is tilted vertically and moved into contact with the vertical article to deposit the coating.

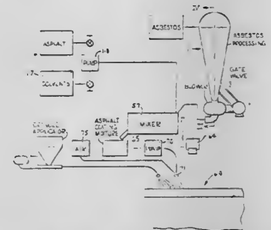
3,617,328
TRANSFER ELEMENTS AND METHOD OF MAKING SAME
Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.
Filed Sept. 25, 1967, Ser. No. 670,283
Int. Cl. B41m *5/10*
U.S. Cl. 117—21 **10 Claims**

Pressure-sensitive transfer elements of the squeezeout type which are rendered cleaner to the touch and resistant to producing typewriter roller marks on the copy sheet by covering the ink-releasing surface of such transfer elements with a very thin porous layer of thermoplastic resin particles



which are fused to each other and to the ink layer to provide an ink-permeable protective layer over the ink layer.

3,617,329
METHOD FOR SPRAY-COATING A ROOF WITH A COMPOSITION CONTAINING LIQUID ASPHALT AND FLUFFED ASBESTOS FIBER
Myron F. Goff, 6404 Thelma Rte. 4, Paw Paw, Mich.
Filed July 3, 1967, Ser. No. 650,794
Int. Cl. B44d *1/08, 1/14*
U.S. Cl. 117—27 **10 Claims**



A method of covering a surface such as a roof of a building with a coating including a liquid asphalt, diluents for controlling the hardening of the asphalt and granules which are applied to the asphalt while it is in the liquid state. The method is carried out by means of apparatus including a machine for fluffing fibrous material, a machine for mixing the fibrous material with the liquid asphalt and the diluents, and mechanism for moving the asphalt mixture to the surface and applying same evenly thereon. The apparatus also includes a device for moving the granules from a supply thereof to a point near the surface and then spreading said granules evenly over a coating of the liquid asphalt applied to the surface.

3,617,330
MOULDINGS OF POLYCARBONATES WITH IMPROVED SURFACES AND PROCESS FOR THEIR PRODUCTION
Gunter Peilstocker, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of application Ser. No. 711,175, Mar. 7, 1968, now abandoned. This application Sept. 3, 1969, Ser. No. 855,015
Claims priority, application Germany, Mar. 9, 1967; Oct. 1, 1968 P16 97 137.0; P18 00 277.2
Int. Cl. C08g *51/58, 51/60*
U.S. Cl. 117—33.3 **4 Claims**

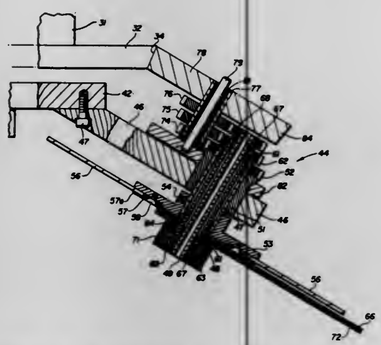
Shaped articles of high molecular weight thermoplastic polycarbonates having improved ultraviolet resistance have an ultraviolet absorber in an amount of from about 3 to about 30 grams per square meter dispersed to a depth of 5 to about 30μ from the surface, which is sealed, may be prepared, for example, by applying to the surface about 150 to about 300 cc./sq./m. of a solution containing from about

2.5 to about 10 percent by weight of an ultraviolet absorber in a mixture of one part by weight of 1,2-dichloropropane and about 1 to about 25 parts by weight of benzene or in a mixture of about 80 to about 20 percent by weight 1,2-dichloroethane or 1,2-dichloropropane and about 20 to about 80 percent by weight 1,1,2-trifluoro-1,2,2-trichloroethane or 1,1,2,2-tetrachloro-difluoroethane and then removing the solvent.

3,617,331
METHOD FOR MANUFACTURE OF ROTATABLE VARIABLE FILTER

Rolf F. Illsley; Alfred J. Thelen, and Joseph H. Apfel, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 391,928, Aug. 25, 1964, Pat. No. 3,442,572.
Filed Nov. 12, 1968, Ser. No. 774,610
Int. Cl. C03c *17/00*
U.S. Cl. 117—33.3 **3 Claims**



Method for manufacture of a rotatable variable filter by controlling the deposition of a coating material on a substrate by the use of first and second masks in which the first and second masks and the substrate form three elements and in which at least two of the elements are rotated with respect to each other and the third element to cause the material to be deposited upon the substrate so that the optical thickness of the coating material varies with angle through a predetermined angle on the substrate.

3,617,332
METHOD FOR STABILIZING ALKALINE-EARTH METAL SULFIDE PHOSPHORS

Willi Lehmann, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1969, Ser. No. 835,952
Int. Cl. H01j *33/20*
U.S. Cl. 117—33.5 C **10 Claims**

Method for stabilizing finely divided phosphors which have an alkaline-earth metal sulfide matrix wherein the phosphor is exposed to a solution of fluoride compound which reacts with the surface portion of the phosphor. Thereafter, the residual solution is separated from the phosphor. The resulting stabilized phosphor has particular utility for cathodoluminescent application such as cathode-ray tubes, and it can also be used in photoluminescent applications, such as lamps.

3,617,333
PROCESS FOR FLOTATION TREATMENT OF GLASS BEADS

Pervis Brown, St. Louis, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

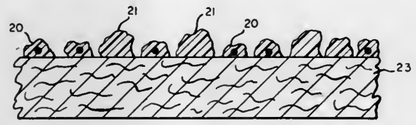
Filed Oct. 30, 1968, Ser. No. 771,978
Int. Cl. C03c *17/28, 17/22*
U.S. Cl. 117—35 R **10 Claims**

A process for surface treating or sizing glass beads and similar discrete particles such as silicon carbide, sand and the like, with a chemical adhesion promoter to provide the glass beads with water repellent and organic solvent repellent properties. The surface treatment improves adhesion of the bead to the substrate in which it is embedded, which may be paint or various types of organic binders. Because of the hydrophobic and oleophobic properties provided through repellent surface treatment, the beads do not sink through the binder but rather are floated thereon, and the top surfaces are exposed to provide for reflex-reflective properties. The surface treating or sizing agent is an organo-titanium derivative, including alkyl-titanates, titanium-acylates, and titanium-chelates, in which between two and four of the coordination positions of the titanium are occupied by alkyl or aromatic groups.

3,617,334
PRESSURE-SENSITIVE SHEET MATERIAL

Bruce W. Brockett, Dayton; John W. Stutz, Dayton, and Frederick D. Weaver, Trotwood, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Nov. 8, 1968, Ser. No. 774,260
Int. Cl. B41m *5/10, 5/22*
U.S. Cl. 117—36.1 **9 Claims**



This invention relates to paper, or like sheet material, sensitized with a coating of liquid-containing pressure-rupturable capsules of both minute and a little larger dimensions arranged in interspersion and in close juxtaposition. In the preferred embodiment, the larger capsules contain a nonsignificant diluent, and the smaller capsules contain a concentrated liquid marking substance or other significant material. The capsules, large and small, are rupturable individually, are interspersed as to size, and are closely spaced on the sheet, so that an intentional impact directed on a small area of the coating will smash all of the capsules in the area and result in the expression of diluted liquid marking or other significant material, whereas a hit-or-miss applied pressure will rupture only a few of the larger capsules of the area, releasing a small amount of harmless diluent. Each capsule is a unit containing a cluster of droplets and, when the cluster is encapsulated, forms an irregular botryoid minute mass. The larger and protruding bosses of the diluent capsules represent outside droplets acting to guard the smaller capsule units beside them. The marking or other significant material may be an inherently colored dye, a colorless chromogenic color reactant, or an odorous, obscurant, or active material, and the capsules on a sheet may be associated with other materials on the sheet or be used to express their contents onto another sheet in contact therewith.

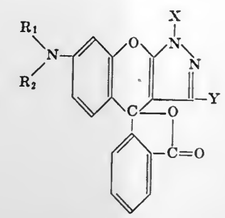
3,617,335
PRESSURE-SENSITIVE COPYING PAPER

Shiro Kimura; Teruo Kobayashi, and Sadao Ishige, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 15, 1969, Ser. No. 842,008
Claims priority, application Japan, July 15, 1968, 43/49817
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **5 Claims**

A pressure-sensitive copying paper comprising a support having coated thereon microcapsules containing an organic solvent solution of a compound which, when in contact with

an electron acceptable solid acid, forms a color dye and is represented by the following formula:



wherein R_1 and R_2 each represents a member selected from the group consisting of an alkyl group having from one to five carbon atoms and a benzyl group; X represents a member selected from the group consisting of an alkyl group having from one to five carbon atoms and an aryl group, and Y represents a member selected from the group consisting of an alkyl group having from one to 17 carbon atoms, an aryl group, an amino group, an acylamino group and an alkoxy group having from one to five carbon atoms.

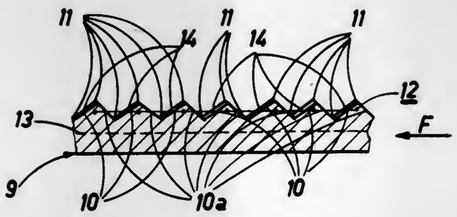
ERRATUM

For Class 117—36.2 see:
Patent No. 3,617,410

3,617,336
DECORATIVE SURFACE RELIEF PATTERN

Pierre Gilard, Mont sur Marchienne, and Maurice Galanti, Ransart, both of Belgium, assignors to Institut National Du Verre A.S.B.L., Charlerol, Belgium

Filed June 3, 1968, Ser. No. 733,929
Claims priority, application Luxembourg, June 28, 1967, 53973
Int. Cl. B44d *1/10;* **C03c** *17/10*
U.S. Cl. 117—37 **8 Claims**

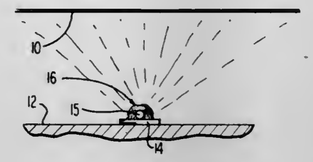


A surface relief pattern to produce a decorative effect on an article wherein the surface is provided with a plurality of tapered protrusions with the protrusions having sloping surfaces. Corresponding sloping surfaces or portions thereof are provided with surface coatings which may be of different colors, different materials, different thicknesses or uncoated so as to produce dissimilar appearances between the sloping surfaces or portions thereof. In the method of forming this decorative effect the surface with the protrusions is passed through a free-falling film of surface coloring material so that heavier coatings of the material are formed on the sloping surfaces facing the direction of movement of the surface.

3,617,337
METHOD OF FORMING A DECORATIVE ARTICLE

Robert W. Presley, R.F.D. 1, Makanda, Ill.

Filed Mar. 11, 1969, Ser. No. 806,127
Int. Cl. B44d *1/12, 1/02*
U.S. Cl. 117—37 R **3 Claims**



A method of making a decorative article which includes subjecting a flowable coating material to the force of an explosion (e.g., firecracker), which force projects the coating material onto a substrate in a random decorative pattern.

3,617,338
METHOD FOR PRODUCING A LATENT STRIATED EFFECT ON PLASTIC FILMS

Robert J. Caiola, Fort Wayne, Ind., and Carl E. Dewald, Findlay, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

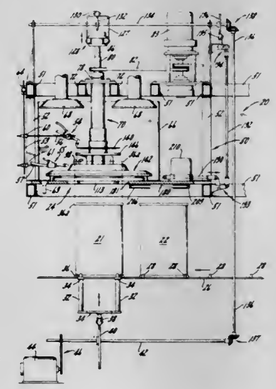
Filed Oct. 20, 1969, Ser. No. 867,809
Int. Cl. B05c *1/16;* **B29c** *25/00*
U.S. Cl. 117—37 R **9 Claims**

A process and apparatus for the rapid vapor phase sulfonation of plastic films wherein the film is treated with a jet of a gas containing sulfur trioxide to achieve a latent striated effect. Subsequent dyeing of the treated film with water soluble dyes produces an attractively decorated, distinctive film useful as a wrapping material for edible and nonedible consumer goods.

3,617,339
SPRAY COATING METHODS

Johannes Kiwiet, Riverside, Ill., assignor to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 587,333, Oct. 17, 1966, Pat. No. 3,532,072.
Filed Sept. 18, 1969, Ser. No. 869,435
Int. Cl. B44d *1/52;* **B05b** *13/02*
U.S. Cl. 117—38 **3 Claims**



A method of externally coating select portions of a cylindrical surface with spray material wherein the surface is positioned adjacent to the spray nozzle and at least one mask which is shifted in close proximity to the surface in the vicinity of the nozzle and the surface and mask are rotated while material is applied from the nozzle.

3,617,340
METHOD AND COMPOSITION FOR COPPERIZING ALUMINUM OFFSET PLATES COATED WITH AN EXPOSED AND DEVELOPED WATER-SOLUBLE RESIST
Lawrence E. Thielen, Villa Park, Ill., assignor to R. R. Donnelley & Sons Company
Filed Oct. 22, 1968, Ser. No. 769,753
Int. Cl. C23c 3/00
U.S. Cl. 117—38 4 Claims

A copperizing solution for aluminum surfaces comprising a water miscible organic solvent for cuprous chloride which will not dissolve gum arabic; a cuprous salt such as the chloride; hydrochloric acid; an aminoborane; and a trialkylphosphine.

3,617,341
METHOD OF DEPOSITING IN SITU A CERAMIC OR GLASS FILM ON THE SURFACES OF A SUBSTRATE
Gerald B. Fefferman, Parsippany, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Sept. 30, 1969, Ser. No. 862,480
Int. Cl. B44d 1/46; C03c 5/00
U.S. Cl. 117—46 CA 4 Claims

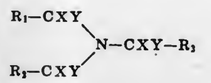
An inorganic film in either the crystalline or vitreous state is formed in situ on a suitable substrate by the decomposition of metal and/or metalloidal resinates. A plurality of metallic and/or metalloidal resinates, which form inorganic oxides upon decomposition in air or an oxidizing atmosphere, are physically admixed to form a resinate mixture. The resinate mixture is applied to the substrate and the substrate is fired in air to a temperature sufficient to (1) decompose the resinate mixture to form the inorganic oxides and (2) combine the resultant inorganic oxides to form a film either in the crystalline or amorphous state on the surfaces of the substrate.

3,617,342
NUCLEAR REACTOR FUEL ELEMENTS
John Vincent Shennan, Preston, and Lionel Houston Ford, St. Annes-on-Sea, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Mar. 15, 1968, Ser. No. 713,287
Claims priority, application Great Britain, Mar. 22, 1967, 13,593/67
Int. Cl. G21c 21/00
U.S. Cl. 117—46 5 Claims

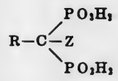
A method of producing coated particles of uranium dicarbide wherein a layer of pyrolytic carbon is deposited on uranium carbide particles of composition from $UC_{1.0}$ to $UC_{1.6}$ at a temperature (e.g., 1000° C. to 1400° C.) such that little reaction occurs between the particles and the applied carbon coating followed by application of an outer coating of high density fission product retaining material on the carbon coated particles at a temperature (e.g., above 1450° C.) such that reaction takes place between the initial coating of pyrolytic carbon and the uranium carbide particles to form uranium dicarbide ($UC_{1.85}$). A gap is produced between the particles and the coating on the particles.

3,617,343
PROCESS FOR THE CHEMICAL NICKEL-PLATING OF NONMETALLIC ARTICLES
Joachim Kandler, Lechenich; Gerhard Mietens, Walberberg, and Michael Ahlgrim, Bliesheim, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany
Filed Oct. 29, 1968, Ser. No. 771,643
Claims priority, application Germany, Dec. 9, 1967, P 16 21 275.2 P 16 21 276.3; Jan. 17, 1968, P 16 96 113.0
Int. Cl. B44d 1/092; C23c 3/02
U.S. Cl. 117—47 R 2 Claims

Chemical nickel-plating of nonmetallic articles, which are (a) cleaned by mechanical and/or chemical treatment, (b) activated later by means of an aqueous palladium slat solution, of which the palladium salt is reduced to palladium, and (c) immersed in a nickel-plating bath, which is preheated to a temperature between about 30° and 70° C., contains nickel and hypophosphite ions, one or more buffer substances, and is maintained at a pH-value between 3 and 9, comprising carrying out the nickel-plating with the use of a nickel-plating bath containing one or more phosphonic acid compounds corresponding to either the following general formula



or the general formula



3,617,344
NONTHROMBOGENIC PLASTIC SURFACES AND PREPARATION THEREOF
Robert I. Leininger, and Richard D. Falb, both of Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health Education and Welfare
Filed Aug. 5, 1966, Ser. No. 570,411
Int. Cl. A61k 17/18; B44d 5/12
U.S. Cl. 117—47 16 Claims

A plastic polymer surface rendered substantially nonthrombogenic by heparin chemically combined with quaternary ammonium groups which are chemically bonded to the plastic polymer surface, which is preferably flexible or elastomeric; also several methods of producing same.

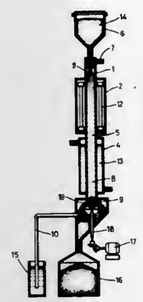
3,617,345
METHOD OF MANUFACTURING ALUMINUM COATED FERROUS BASE ARTICLES
Melvin H. Brown, Leechburg, and Maurice W. Wei, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 30, 1969, Ser. No. 872,768
Int. Cl. C23c 1/08; C23f 17/00
U.S. Cl. 117—51 6 Claims

A process for coating a ferrous metal article with aluminum including cleaning the ferrous article, applying to the surface of the ferrous article a flux of about 0.125 to 4% aqueous solution of an organic aromatic carboxylic acid having one carboxyl group and a phenolic hydroxyl group, drying the ferrous article and subsequently applying molten aluminum to the ferrous article. The coating process wherein the acid is salicylic acid or 5-chlorosalicylic acid employed in concentrations of about 1 to 4%. Applying the flux to the ferrous metal article surface by immersion of the article in a flux bath having a temperature of about 100 to 212° F. for a period of about 1 to 2 minutes.

3,617,346
AZIRIDINE ADDUCTS OF α,β-UNSATURATED NITRILES AND POLYMERS THEREOF
Leon H. Chance, New Orleans, and George L. Drake, Jr., Metairie, both of La.
Filed Mar. 25, 1969, Ser. No. 810,371
Int. Cl. B44d 1/092; D06p 3/60
U.S. Cl. 117—56 1 Claim

This invention relates to a process for pretreating cellulosic fabrics with acid catalysts, and then impregnating said fabrics with aziridine adducts of α,β-unsaturated nitriles.

3,617,347
PROCESS FOR THE PRODUCTION OF A SILICON-COATED DIAMOND POWER
Tatsuo Kuratomi, 4-2-18, Hamatake, Chigasaki, Kanagawa Prefecture, Japan
Filed Nov. 12, 1969, Ser. No. 875,912
Claims priority, application Japan, Nov. 19, 1968, 43/84170
Int. Cl. C09c 1/68
U.S. Cl. 117—69 1 Claim

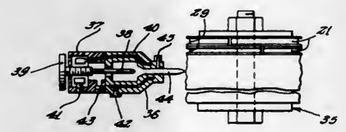


The feature of the present invention consists in forming silicon in nascent state on the surface of diamond powder, heating so as to form a thin film of silicon carbide on the bond surface of diamond with the silicon through covalent bonds and then forming silicon in nascent state on said thin film of silicon carbide whereby to form a film of silicon.

3,617,348
METHOD AND APPARATUS FOR THE EVAPORATION OF CHROMIUM-SILVER
Dale T. Kelley, Phoenix; Billy E. Smith, Phoenix, and Richard W. Wilson, Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 15, 1969, Ser. No. 866,483
Int. Cl. C23c 13/02, 13/12
U.S. Cl. 117—71 7 Claims

Disclosed is a method and apparatus for the vacuum evaporation of chromium-silver metallization on a silicon substrate by which the chromium adherence is improved and by which very large quantities of silver may be deposited in a short time. The evaporative system described will form a chromium-silver multilayer which adheres tightly to a substrate such as silicon. This system is feasible for the fast large-scale production formation of chromium-silver layers on silicon. The fast evaporative rate of the silver is accomplished by the use of a silver wettable insert in a silver nonwettable crucible.

3,617,349
METHOD OF MAKING ANTI-FRICTION PISTON RINGS
Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Filed Oct. 20, 1969, Ser. No. 867,632
Int. Cl. B05b 7/20; F02f 3/10
U.S. Cl. 117—71 M 13 Claims



Covers a piston ring having a bearing face coated with a hard porous metal or metal alloy having its pores impregnated therein with a solid antifriction agent. The ring is produced by first coating its bearing face with a hard porous metal or metal alloy and then heating the coated ring to drive the air from the pores of the coating. Thereafter, the ring is contacted while still hot with an antifriction agent dissolved or dispersed in a liquid carrier. The antifriction agent is drawn into the pores of the coating and remains therein as an impregnant of said coating, while the liquid carrier upon contacting the heated piston ring is evaporated therefrom.

3,617,350
METHOD OF COATING MAGNESIUM AND MAGNESIUM ALLOY ARTICLES
Henry A. Kuchek, Auburn, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 3, 1968, Ser. No. 733,810
Int. Cl. B44c 3/02, 3/00
U.S. Cl. 117—71 M 6 Claims

A method of coating a fine particulate material on magnesium or magnesium alloy articles employing discrete carrier particles to apply a filming liquid and the fine particulate coating material to the article surface in separate steps.

3,617,351
PROCESS OF COATING WITH AN OLEFIN POLYMER
Wendell P. Long, Wilmington, Del., and Bert H. Mahlman, West Chester, Pa., assignors to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of application Ser. No. 606,047, Dec. 30, 1966. This application Oct. 17, 1969, Ser. No. 867,389
Int. Cl. B44d 1/14; B32b 15/08
U.S. Cl. 117—75 15 Claims

A method of applying a coating to a metallic, cellulosic, or other type of substrate which comprises applying to the substrate a colloidal dispersion of particles of an α-olefin polymer or copolymer and thereafter heating the coated substrate to a temperature above the softening point of the polymer to evaporate the diluent and fuse the polymer into a continuous coating. The polymer particles are substantially all within the size range between about 0.02 and 0.5 micron, dispersed in an inert diluent.

3,617,352
PROCESS, AGENT AND ARTICLE RELATING TO IMPROVED ADHESION BETWEEN A SHAPED ARTICLE OF A CRYSTALLINE POLYESTER AND RUBBER
Takeo Shima, 1, 3-chome, Yamate-cho; Yukiharu Asami, 1, 3-chome, Yamate-cho; Shunzo Ishizaki, 11, 4-chome, Nishimi; Shoji Kawase, 9, 2-chome, Yamate-cho, and Masao Yoshimura, 9, 2-chome, Yamate-cho, all of Iwakuni-shi, Yamaguchi-ken, Japan
Continuation-in-part of application Ser. No. 612,335, Jan. 30, 1967. This application Jan. 15, 1968, Ser. No. 697,586
Claims priority, application Japan, Feb. 2, 1966, May 16, 1966, Nov. 9, 1966; 41/6057, 41/31310, 41/73672
Int. Cl. B32b 27/08, 25/08
U.S. Cl. 117—76 F 7 Claims

Improvement in adhesion of articles, e.g. tire cord of ethylene terephthalate or 2,6-naphthalate polyester to rubbers. The article is coated with a polyester polyurethane polymer containing segments derived from an ethylene terephthalate or 2,6-naphthalate polyester. Ratio of said segments to the balance in the polyurethane is 1:6 to 6:1. The article is then baked. Preferred coating agents for articles of an ethylene terephthalate polyester contain ethylenical unsaturations unsaturations and/or segments derived from an ethylene terephthalate polyester modified by a chain branching agent, e.g. pentaerythritol, and having a reduced viscosity of 0.1 to 0.3. Introduction of alkali metal sulfonate groups to the polyurethane is advantageous.

3,617,353
SOIL RELEASE CHEMICALS AND METHOD OF APPLICATION TO GLASS FABRIC OR FIBER
William J. Cooney, North Providence, R.I., assignor to Chas. S. Tanner Co., Warwick, R.I.
Filed June 3, 1968, Ser. No. 733,794
Int. Cl. C03c 25/02; B32b 17/04
U.S. Cl. 117—76 T 5 Claims

Soil release for application to glass fibers and fabrics which have been treated with acrylic resin, or acrylic resins, and

dyes to give the fibers a base coat, which soil release comprises an aqueous emulsion of copolymers of acrylic or methacrylic acids with ester of acrylic or methacrylic acid, wherein the proportion of acid is high, ranging from about 25 to 80 percent acid, by weight, in combination with an aqueous solution of a nonyl or octyl phenol, reacted with from 9 to about 50 moles of ethylene oxide, and aqueous solution of a fatty alcohol or acid, which also has been reacted with 5 to 50 percent of ethylene oxide, the composition thus prepared being used as a finish bath treatment for glass fibers which have already been dyed or had a base color coating applied thereto, thereby to apply over the base color layer on a glass fiber or fabric a second molecular or semimolecular layer of this resinous material, which functions as a soil release and, also, by controlling the base dye system and amount of soil release obtain a fabric which is flame retardant.

3,617,354
PHOTOGRAPHIC PRINTS COATED WITH ANTIREFLECTION LAYER

Walter H. Carnahan; Donald R. Morey, and Robert G. Spahn, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 8, 1969, Ser. No. 848,698
Int. Cl. B44d *1/14*; G03c *1/08*
U.S. Cl. 117—76 P **5 Claims**

An antireflection coating consisting of a thin transparent layer of a polymerized perfluorinated olefin is applied over the image-bearing photographic emulsion layer of a photographic print to reduce surface reflection of light and provide increased density and enhanced contrast. The antireflection layer also serves as a protective coating for the print.

3,617,355
METHOD OF APPLYING WATER AND OIL REPELLENT FINISH FOR SYNTHETIC FIBROUS MATERIALS

Wilhelm Loffler, Kelkheim, Taunus, and Martin Rieber, Schonberg, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt Main, Germany

Filed Dec. 30, 1969, Ser. No. 889,351
Claims priority, application Germany, Jan. 3, 1969, P 19 00 234.7
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **8 Claims**

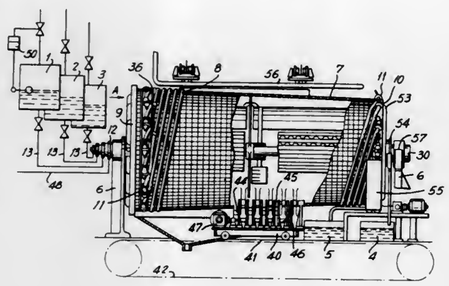
Process for rendering foils and fibrous materials water and oil repellent by grafting onto these substrates a perfluoro n-alkyl-vinyl ether under simultaneous use of trifluoroacetic acid and/or methylene chloride under the action of a grafting initiator.

3,617,356
A METHOD FOR APPLYING LATEX COATINGS TO THE INNER SURFACES OF TUBULAR ARTICLES OF WOVEN CLOTH

Alexandr Nikolaevich Demin, Moscow; Valentina Sergeevna Varfolomeeva, Serpukhov, Moskovskol Oblasti, and Alevtina Alexandrovna Demina, Moscow, all of U.S.S.R., assignors to Tsentralnoe Proektno-Konstruktorskoe I Tekhnologicheskoe Bjuro Legkol, Moscow, U.S.S.R.

Filed Apr. 25, 1968, Ser. No. 724,163
Int. Cl. B44d *1/09*
U.S. Cl. 117—95 **5 Claims**

A latex coating is formed on the inner surface of a tubular article by winding the article in the form of a helix on a rotatable drum and successively feeding the article with chemical components which are to form the coating. The chemical components are admitted to the tubular article via a valve means and controlled by a distributor and the spent chemical components are discharged from the outlet of the tubular article and fed to receiving containers. The chemical

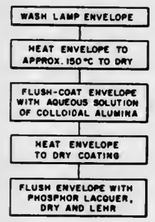


components are advanced inside the tubular article by rotation thereof caused by the rotation of the drum.

3,617,357
LAMP ENVELOPE WITH A THIN TRANSPARENT BUFFER FILM ON ITS INNER SURFACE

Rudolph Nagy, Lake Elsie, Wis., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 776,624, Nov. 18, 1968, Pat. No. 3,541,377.
Filed Mar. 25, 1970, Ser. No. 22,478
Int. Cl. C03c *17/22*, *17/02*
U.S. Cl. 117—97 **6 Claims**



The inner surface of a soda-lime-silicate glass envelope for a fluorescent lamp or similar mercury-discharge device is coated with a thin film of submicroscopic fibrous crystals of boehmite (A10(OH)) prior to the phosphor coating operation. The envelope is subsequently heated to thermally decompose the boehmite crystals in situ and transform them into fibrils and rodlike particles of gamma alumina (Al_2O_3) that are bonded to the glass surface. The heating is advantageously achieved during the bulb-lehring operation after the bulb is coated with phosphor. The gamma alumina particles chemically react with the sodium and other alkali constituents of the glass to form inert compounds and thus provide a transparent "buffer" film which, in the finished lamp, inhibits the formation of black alkali-mercury deposits on the inner surface of the envelope during lamp operation. The lumen maintenance of the lamp is accordingly enhanced.

Deposition of the boehmite crystals is achieved by coating the envelope interior with a 0.5 percent to 5 percent aqueous solution of a colloidal boehmite complex that consists of 85 percent by weight crystalline boehmite, having 13 percent by weight of acetic acid and 2 percent by weight of water attached to the boehmite fibrils. Transformation of the boehmite into rod-shaped gamma alumina is achieved by heating the envelope to a temperature of at least 400° C. percent by weight of acetic acid and 2 percent by weight of water attached to the boehmite fibrils. Transformation of the boehmite into rod-shaped gamma alumina is achieved by heating the envelope to a temperature of at least 400° C.

3,617,358
FLAME SPRAY POWDER AND PROCESS

Ferdinand J. Dittrich, Bellmore, L.I., N.Y., assignor to Metco Inc., Westbury, L.I., N.Y.

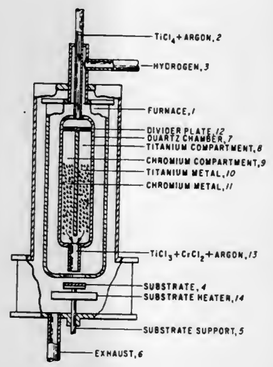
Filed Sept. 29, 1967, Ser. No. 671,880
Int. Cl. B44d *1/097*
U.S. Cl. 117—105.2 **35 Claims**

The flame spraying of the flame spray powder which has been formed by spray drying of a slip or slurry of fine particles of a flame spray material. This flame spray powder has individual particles which are of substantially spheroid shape, of a size between about 20 mesh and 1 micron, and are formed of multiple subparticles bound together without fusion by a spray-dried binder and having a crush resistance of at least 0.7 grams. For the spray drying, fine particles of any known or conventional flame spray material or combination thereof, such as metals, ceramics, carbides, etc., suspended in a slip or slurry of a liquid, preferably water, with a suitable binder and preferable auxiliary agents, is atomized into a hot drying gas stream forming the spheroid larger composite particles.

3,617,359
PROCESS FOR THE VAPOR DEPOSITION OF METALS

Gene F. Wakefield, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 579,963, Sept. 16, 1966, Pat. No. 3,428,607.
Filed Jan. 13, 1969, Ser. No. 817,591
Int. Cl. C23c *11/02*
U.S. Cl. 117—107.2 R **6 Claims**



A method of vapor depositing metal on a substrate by reducing titanium and chromium halides with hydrogen under controlled conditions to chemically vapor deposit titanium and chromium alloys on the substrate. Best results are obtained when the halides are introduced into the deposition chamber as a gaseous mixture with an inert gas carrier.

3,617,360
HIGH TEMPERATURE METALLIC DIFFUSION COATING AND METHOD

David J. Levine, Cincinnati, Ohio, assignor to General Electric Company

Filed Nov. 29, 1968, Ser. No. 780,177
Int. Cl. C23c *9/02*
U.S. Cl. 117—107.2 P **4 Claims**

Improved oxidation and sulfidation resistance can be imparted to a high-temperature metallic diffusion coating diffusion bonded with metallic surface, such as a nickel, cobalt or iron base alloy surface, by embedding in a coating outer portion between about 5 and 50 volume percent of oxide particles of up to about 20 microns in size and thermally stable to at least about 2000° F.

3,617,361
MANUFACTURE OF PRESSURE-SENSITIVE ADHESIVE ARTICLES

Hans Reinhard, Limburgerhof; Klaus Gulbins, Limburgerhof, and Bernhard Dotzauer, Maxdorf, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

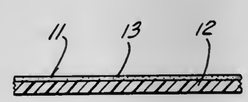
Filed Jan. 26, 1970, Ser. No. 5,947
Claims priority, application Germany, Jan. 31, 1969, P 19 04 743.9
Int. Cl. C09j *7/04*
U.S. Cl. 117—122 PA **8 Claims**

Manufacture of pressure-sensitive adhesive coatings on flat substrates by coating the substrates with dispersions of copolymers (A) comprising 30 to 99.5 percent by weight of acrylic and/or methacrylic acid esters of C_1 to C_3 alkanols, 0.5 to 20 percent by weight of monoesters of C_3 to C_5 α,β-olefinically unsaturated mono- or dicarboxylic acids and C_2 to C_6 polyhydric alcohols and/or N-alkoxy-methyl amides of C_3 to C_5 α,β-olefinically unsaturated carboxylic acids, 0 to 50 percent by weight of vinyl esters of C_2 to C_{18} monocarboxylic acids, styrene, acrylonitrile and/or methycrylonitrile and 0 to 15 percent by weight of α,β-olefinically unsaturated C_3 to C_5 carboxylic acids and/or their amides, in liquid hydrocarbons containing, as protective colloids, 25 to 150 percent by weight of the dispersed copolymer (A) of a dissolved copolymer (B) comprising 80 to 99.5 percent by weight of acrylic and/or methacrylic acid esters of C_4 to C_{18} alkanols and 0.5 to 20 percent by weight of monoesters of C_3 to C_5 α,β-olefinically unsaturated mono- or dicarboxylic acids and C_2 to C_6 polyhydric alcohols and/or N-alkoxy-methyl amides of C_3 to C_5 α,β-olefinically unsaturated carboxylic acids, and also optionally up to two molar proportions of a polyvalent isocyanate, based on the sum of the proportions of free hydroxyl and carboxyl groups in the copolymers (A) and (B), and drying the coated substrates.

3,617,362
ACRYLATE ADHESIVE TAPE AND COMPOSITION

Cyrus W. Bemmels, North Brunswick, and Donald F. Doehnert, Millington, both of N.J., assignors to Johnson & Johnson

Filed July 11, 1968, Ser. No. 744,173
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 **8 Claims**



A self cross-linking pressure-sensitive acrylate adhesive and tape based on an adhesive copolymer of monomers comprising a major amount of a medium chain length alkyl acrylate monomer and preferably a minor amount of a cohesion inducing short chain monomer, plus a very small amount of an alkoxy silyl polymerizable cross-linking monomer and a relatively small amount, i.e., about 2–6 parts by weight of the total monomer solids, of a catalytic acid monomer selected from the group consisting of acrylic acid, methacrylic acid, and itaconic acid. The catalytic acid monomer acts as a built-in or internal catalyst which causes the adhesive copolymer to be self cross-linking. A stabilization system for this self cross-linking system also is disclosed.

3,617,363
PROCESS FOR ELECTROLESS METALLIZING INCORPORATING WEAR-RESISTING PARTICLES

Willy Metzger; Rudi Ott; Gunter Pappe, and Helmut Schmidt, all of Solingen-Merscheid, Germany, assignors to General American Transportation Corporation, Chicago, Ill.

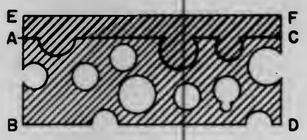
Filed Jan. 16, 1968, Ser. No. 698,129
Claims priority, application Germany, Jan. 18, 1967, B 90776
Int. Cl. C23c *3/02*
U.S. Cl. 117—130 **37 Claims**

There are disclosed processes for electroless metallizing workpieces to provide thereon a metal coating incorporating therein nonmetallic wear-resisting particles and the coated workpieces produced by such processes, the processes comprising contacting the workpieces with an electroless metallizing bath consisting of an aqueous solution of a metal salt and an electroless reducing agent therefor and a quantity of nonmetallic wear-resisting particles, wherein the particles are essentially insoluble in the plating bath and are noncatalytic and inert with respect thereto, the particles being present in the bath in an amount by weight no greater than about four times the weight of the metal in the bath expressed as free metal, and maintaining the particles in suspension throughout the bath during the metallizing of the workpiece; the electroless coating with the wear-resisting particles therein may be heat treated by heating to an elevated temperature in the range 100° C. to 600° C. for one hour or more further to harden the coating.

3,617,364
PLASTIC-COATED METALLIC FOAMS

Chester P. Jarema, Detroit, and Leonard M. Niebylski, Birmingham, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 12, 1968, Ser. No. 774,756
Int. Cl. B32b *15/08*
U.S. Cl. 117—132 B **10 Claims**



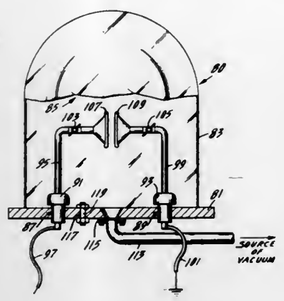
The properties of articles fabricated from foamed metals (such as foamed aluminum) are enhanced by coating surfaces thereof with plastic materials, e.g. acrylonitrile-butadiene-styrene polymers. For example, the plastic coating improves the physical properties, and enables the article to be joined to another foamed metal article, or to a metal sheet, wire, glass, rock or other material. The organic coat gives improved strength to such joint.

3,617,365
COMPOSITE COATED WITH ACETYLENE-OXYGEN POLYMERS

Charles Donald Fisher, Princeton, N.J., assignor to American Can Company, New York, N.Y.

Division of Ser. No. 587,827, Oct. 19, 1966, Pat. No. 3,457,156.
Filed Mar. 25, 1969, Ser. No. 855,786
Int. Cl. B32b *15/08*
U.S. Cl. 117—132 **4 Claims**

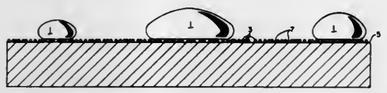
A composition and composite article are disclosed, including process for their production, involving the provision on a conductive or dielectric substrate of a coating made up primarily of polyacetylene, deposited with use of an electrical discharge from an atmosphere of acetylene and then oxygenated, the oxygenated polymer being chemically inert and having a high decomposition temperature.



3,617,366
METAL WARE HAVING WATERPROOF SURFACE AND PROCESS FOR MAKING

Paul R. Tully, Lowell; William J. Fletcher, Saugus, and Hector Cochrane, Groveland, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Feb. 7, 1969, Ser. No. 797,467
Int. Cl. B44d *1/34*
U.S. Cl. 117—135.1 **9 Claims**



A method is disclosed for waterproofing metallic surfaces by applying thereto the hydrophobic reaction product of a particulate metal oxide or metalloid oxide and an organosilicon compound.

3,617,367
POLYISOCYANATE-POLYAMINE COATING COMPOSITION

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

Continuation-in-part of application Ser. No. 586,381, Oct. 13, 1966, now abandoned. This application Jan. 11, 1968, Ser. No. 696,988
Int. Cl. C08g *22/02*
U.S. Cl. 117—161 LN **4 Claims**

A cured coating comprising the reaction of the product between a polyamine and certain polyisocyanates, including polyester polyisocyanates and aromatic and aliphatic isocyanates, with the ratio of amine groups to polyisocyanate groups lying to the range of 3:1 to 1:3. Also a two-system spray system for forming rapid cure coatings of that type.

3,617,368
PROCESS FOR PREPARING INHERENTLY COLLOIDALLY STABLE INTERPOLYMERS IN AQUEOUS DISPERSION AND PRODUCTS COATED THEREWITH

Dale S. Gibbs, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1968, Ser. No. 774,480
Int. Cl. B32h *27/06;* **B32b** *27/30*
U.S. Cl. 117—161 UT **2 Claims**

This invention is directed to improved coated products comprising essentially a substrate having a dried, continuous adherent coating of certain colloidally stable polymer latexes thereon which latexes are essentially devoid of conventional wetting agents or surfactants. More particularly, the invention concerns the use as coating materials of polymer latexes containing as the essential ingredient therein, an interpolymer prepared by the essentially continuous addition polymerization in aqueous dispersion of major proportions of an essentially hydrophobic monomer, specified minor proportions of a second relatively hydrophilic ethylenically unsaturated "go-between" comonomer and specified minor proportions of certain copolymerizable ionic water-soluble materials. These latexes are particularly useful for preparing coated products comprising a substrate having a continuous, adherent, dried coating of the latex thereon, which coating has excellent barrier, flexiblity, heat-seal and binding capacity properties.

3,617,369
WATER-SOLUBLE POLYVINYL ALCOHOL-COATED WAX SHEET

Mariano D. Lombardo, 7 Lodge Lane, Parsippany, N.J.

Filed Jan. 8, 1969, Ser. No. 789,851
Int. Cl. B28b *7/36;* **B32b** *27/06*
U.S. Cl. 117—161 UE **1 Claim**

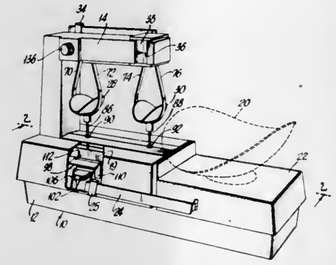
Disclosed is a wax sheet coated with a water-soluble polyvinyl alcohol, said sheet being uniformly perforated. The coated perforated sheet is used to form the integral thermal chamber of a mold or structural part.

A method of making the structural part is also provided.

3,617,370
APPARATUS FOR REGULATING THE OPERATION OF A SCALE

Earl D. Myers, Westfield, N.J., assignor to Ohaus Scale Corporation, Florham Park, N.J.

Filed Nov. 17, 1970, Ser. No. 90,350
Int. Cl. G01g *23/10, 21/22*
U.S. Cl. 177—185 **13 Claims**



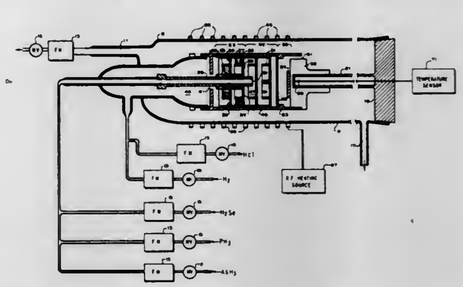
A compound lever scale having a ratio lever beam in an upper housing, operatively connected to a load beam assembly contained in a lower section of the scale. Ratio pans are suspended from the ratio lever beam by knife edges extending perpendicularly from the ratio lever beam to restrain movement of the ratio pans in the plane perpendicular to the length of the ratio lever beam. Magnetic damping means operatively connected to the ratio pans suppress swinging of the ratio pans and oscillations of the entire lever system of the scale. A spring device connecting the ratio lever beam with its housing allows adjustment of torque exerted on the ratio lever beam to enable a rapid zero-adjustment for the entire scale.

3,617,371
METHOD AND MEANS FOR PRODUCING SEMICONDUCTOR MATERIAL

Robert A. Burmeister, Jr., Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1968, Ser. No. 775,396
Int. Cl. H01l *7/36;* **B44d** *1/02, 1/18*
U.S. Cl. 117—201 **7 Claims**

A vertical vapor-phase reactor for growing semiconductor materials such as Group III–V compounds on suitable substrates includes at least three spaced chambers disposed within a susceptor which is inductively heated. Gases of selected composition flow downwardly through the reactor in separate streams. One or more gas streams flow through regions containing sources of elements which react with the gases, and another gas stream flows through the reactor in a manner which bypasses the source region. The gas streams are combined in a mixing region downstream of the source region and the mixture of gases is then passed over a heated substrate in a growing region downstream of the mixing region.

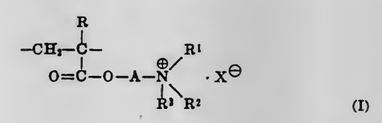


3,617,372
ELECTROCONDUCTIVE PAPER

Raymond W. McNamee, Jr., Horsham; Norman Shachat, Levittown, and Frank J. Glavis, Rydal, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 20, 1969, Ser. No. 851,744
Int. Cl. G03g *7/00;* **B44d** *1/00*
U.S. Cl. 117—201 **8 Claims**

An electroconductive paper useful in electrostatic image reproduction techniques containing a polymer comprising units of the formula:



(I)

wherein

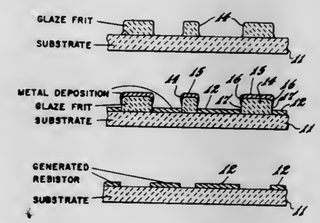
R is H or CH_3, R^1 is hydroxyethyl or hydroxypropyl group, R^2 is a (C_1-C_4) alkyl group

R^3 is a (C_1-C_4) alkyl group, and X is an anion.

3,617,373
METHODS OF MAKING THIN FILM PATTERNS

James H. Mott, Bath, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 24, 1968, Ser. No. 731,899
Int. Cl. B44d *1/18;* **C23c** *15/00, 13/02*
U.S. Cl. 117—212 **3 Claims**



Deposition of patterned thin-films of metal or metal compounds on a substrate is accomplished using a dissolvable

glaze-frit mask. The frit, in pasty form, is applied to the substrate in a negative pattern. After the frit is hardened by heating, the film is deposited over the surface, including the substrate and frit pattern. The frit is then removed with a selective solvent. The layer of film overlying the frit is removed with the frit to leave the desired film pattern on the substrate.

3,617,374
DISPLAY DEVICE

Theodore L. Hodson, Bellbrook; John G. Whitaker, Englewood, and Joe W. Jones, Dayton, all of Ohio, assignors to The National Cash Register Company, DAyton, Ohio

Filed Apr. 14, 1969, Ser. No. 815,966
Int. Cl. G01k *11/16, 11/20;* **B44d** *11/8*
U.S. Cl. 117—212 **10 Claims**

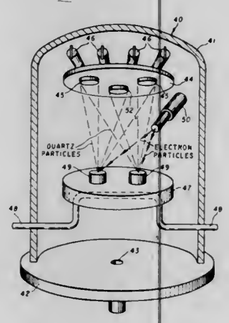


The present disclosure is directed to articles of manufacture, e.g., display devices, having self-contained controlled resistor means for generation of heat upon electrical activation, which means can be formed in any desired configuration and thickness, and an encapsulated liquid crystal layer responsive to variations in heat to present a display, which can be polychromatic. The resistor is comprised of conductive ink deposited on one major surface (usually the lower surface) of an opaque, substantially electrically nonconductive layer having a layer of encapsulated cholesteric liquid crystals in direct contact with at least a portion of the other major (e.g., upper) surface of the opaque layer. Heating due to the resistor produces reversible color changes in the encapsulated liquid crystals resulting in the display.

3,617,375
ELECTRON BEAM EVAPORATED QUARTZ INSULATING MATERIAL PROCESS

Daniel A. Marek, Irving; Kurt W. Kreiselmaier, Dallas, and James H. Van Tassel, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 492,339, Oct. 1, 1965, now abandoned. This application Aug. 11, 1969, Ser. No. 863,408
Int. Cl. B41m *3/08*
U.S. Cl. 117—217 **3 Claims**



Disclosed is a method of forming multilevel electrically conductive interconnections for microminiature devices by electron beam evaporation of a layer of quartz over the first level of interconnections. A second level of interconnections are formed on the quartz layer and make ohmic contact to the first level of interconnections through openings in the quartz layer.

3,617,376
ANTISUBLIMATION COATING AND METHOD FOR THERMOELECTRIC MATERIALS

Norman C. Miller, Woodland Hills, Calif., assignor to North American Rockwell Corporation

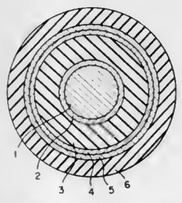
Filed Mar. 16, 1967, Ser. No. 623,531
Int. Cl. B44d *1/097;* **C23c** *13/00;* **H01v** *1/00*
U.S. Cl. 117—221 **10 Claims**

A protective ceramic composition and method for protecting thermoelectric elements, particularly those which are tellurium-containing, from sublimation. A thin coating of a metal oxide having the formula M_2XO_3 is applied to the thermoelectric material, wherein M is an alkali metal and X is a Group IVB metal (Ti, Zr, Hf). Further electrical connection of copper straps may be made to the thermoelectric element contact caps by brazing in a reducing atmosphere thereby reducing at least a portion of the M_2XO_3 to M_2XO_2.

3,617,377
INSULATION CONSISTING OF ETHYLENE-PROPYLENE RUBBER COMPOSITION FOR ELECTRIC WIRE AND CABLE

Setsuya Isshiki, Funabashi-shi; Kaoru Saito, Tokyo, and Hideo Sunazuka, Tokyo, all of Japan, assignors to The Fujikura Cable Works Limited, Tokyo, Japan

Filed June 6, 1967, Ser. No. 643,931
Claims priority, application Japan, June 10, 1966, 41/37403
Int. Cl. H01b *3/30*
U.S. Cl. 117—224 **2 Claims**

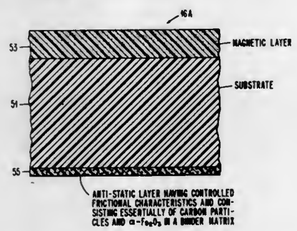


Insulation material for electric wire and electric cable consisting of composition containing (a) ethylene-propylene rubber, (b) finely divided calcium carbonate surface-treated with hydrophobic fatty acid or its salt in amount of 10–80% by weight based on the ethylene-propylene rubber, and (c) heavy calcium carbonate in amount of 10–150% by weight based on the ethylene-propylene rubber and/or carbon black having particle size of at least 100 μ in amount of 1–80% by weight based on the ethylene-propylene rubber.

3,617,378
MAGNETIC RECORDING MEDIA

Charles K. Beck, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,773
Int. Cl. H01f *10/00*
U.S. Cl. 117—226 **5 Claims**



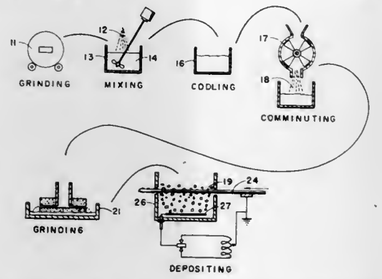
This invention discloses a magnetic recording medium in the form of a nonconductive substrate having two surfaces,

one surface being coated with a magnetic recording material and the other surface being coated with a composition exhibiting selected properties as to its resistivity and as to its coefficient of friction with regard to its use in a media handling system. Also, a media handling system, including such a magnetic recording media, is disclosed.

3,617,379
ELECTRICAL INSULATION COATING CONTAINING PARTICLES OF INORGANIC SUBSTANCE OF DIELECTRIC CONSTANT NO LESS THAN 1500

William W. Ulmer, and Wesley W. Pendleton, both of Muskegon, Mich., assignors to Annaconda Wire and Cable Company

Continuation-in-part of application Ser. No. 681,198, Nov. 7, 1967. This application Aug. 5, 1968, Ser. No. 750,240
Int. Cl. H01b *3/30*
U.S. Cl. 117—224 **4 Claims**



Very fine particles of ferrite or other high-dielectric-constant substances are dispersed in a coating resin before it is solidified and powdered for electrostatic deposition.

3,617,380
POLYVINYL CHLORIDE SUPPORTS FOR USE AS THE BASE OF MAGNETIC RECORDING MATERIALS

Hirosi Usui, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Apr. 16, 1968, Ser. No. 721,762
Int. Cl. B32b *5/16;* **G11b** *5/70*
U.S. Cl. 117—235 **3 Claims**

A sheet-, card- or tape-form support for use as the base of a magnetic recording material, comprising a polyvinyl chloride base containing, dispersed therein, an acrylonitrile-butadiene-styrene copolymer or an acrylonitrile-butadiene copolymer in an amount ranging from 3 to 30 percent by weight of said polyvinyl chloride.

3,617,381
METHOD OF EPITAXIALLY GROWING SINGLE CRYSTAL FILMS OF METAL OXIDES

Joseph John Hanak, Trenton, N.J., assignor to RCA Corporation

Filed July 30, 1968, Ser. No. 748,757
Int. Cl. C01g *49/00*
U.S. Cl. 117—235 **7 Claims**

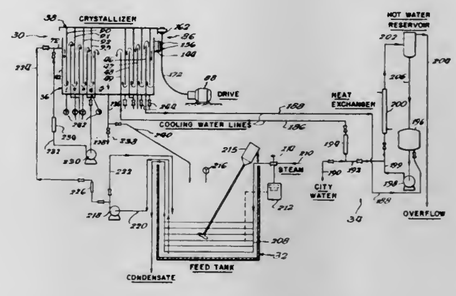
A method of epitaxially growing single crystal ferrite films by vapor transport comprises forming gaseous metal halides from metal oxides and decomposing these metal halides to form a single crystal film of a desired ferrite composition upon a single crystal substrate.

3,617,382
MIXING APPARATUS AS USED IN MASS AND HEAT TRANSFER PROCESSES

Christos B. Natsis, Lisle, and John T. Horton, Chicago, both of Ill., assignors to Christos B. Natsis, Wilmette and John T. Horton, Hinsdale, Ill.

Filed July 17, 1968, Ser. No. 745,423
Int. Cl. C13k *1/10;* **B01d** *9/00;* **B01f** *7/12*
U.S. Cl. 127—15 **21 Claims**

Mixing apparatus includes a bank of spaced parallel baffles, extending horizontally, vertically or at an angle, closure means providing with the baffles a tortuous flow path through the bank, and means mounting the baffles for relative rotation between adjacent baffles, the baffles including rib means projecting laterally from opposite sides thereof and extending transversely of the direction of relative rotation, and the rib means preferably projecting into close proximity to rib means of adjacent baffles, whereby relative rotation produces alternate shearing and mixing of portions of a fluid contained between adjacent baffles. The horizontally extending baffles comprise alternate disc members and annular members. The vertically extending baffles comprise vertically coaxial cylindrical ring members. The baffles at an angle can comprise a series of vertical coaxial ring members positioned



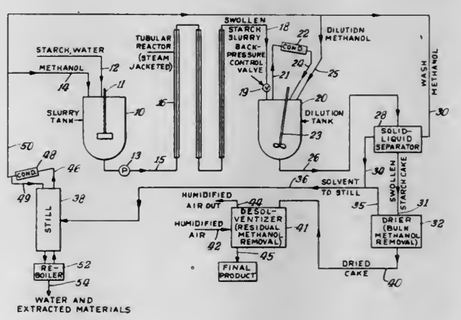
conically, or they can be curved configurations. The rib means may comprise conduit means for circulating a heat transfer fluid through the baffles. The apparatus may be adapted as a crystallizer by providing fluid inlet and outlet means at opposite ends of the flow path, and recycle conduit means interconnecting the inlet and outlet means.

A continuous process for crystallizing a substance from a viscous solution comprises conducting the solution in a tortuous flow path through the mixing apparatus, producing relative rotation between adjacent baffles, cooling the solution in the flow path, and cycling a product crystal slurry from a downstream location to an upstream location in the flow path. The crystallization process may be employed for crystallizing dextrose from aqueous solution.

3,617,383
PROCESS FOR PREPARING GRANULAR COLD-WATER-SWELLING STARCHES AND THE STARCHES RESULTING THEREFROM

Richard A. Thurston, Danville, and Richard E. McConiga, La Grange Park, both of Ill., assignors to CPC International Inc., New York, N.Y.

Filed Aug. 11, 1967, Ser. No. 659,916
Int. Cl. C13l *1/08*
U.S. Cl. 127—71 **19 Claims**



Starches, the granules of which are substantially completely intact and which have lost from about 40 percent to 100

percent birefringence, which will rapidly hydrate in cold water to form smooth, viscous pastes, are prepared as follows. Nongelatinized starch is slurried with (1) a solvent for starch (preferably water), and (2) an organic liquid which is miscible with the solvent for starch (e.g., methanol); the slurry is continuously passed through a confined zone wherein it is subjected to gelatinizing conditions. The process conditions are so selected as to produce the desired end product.

3,617,384
ZINC ALKALINE SECONDARY CELL

Toshiso Kamai, and Sumio Uchida, both of Ibaraki, Japan, assignors to Hitachi Makuseru Kabushiki Kaisha, also known as Hitachi Maxell, Ltd., Osaka Prefecture, Japan

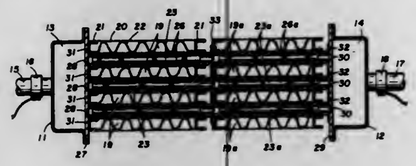
Continuation-in-part of application Ser. No. 571,907, Aug. 11, 1966, now abandoned. This application Nov. 7, 1969, Ser. No. 874,994
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **6 Claims**

Improved zinc-alkaline secondary cells are provided by distributing throughout a zinc amalgam anodic body a substance selected from the group consisting of gold, silver, tin, alloys thereof, gold and silver oxides and hydroxides and mixtures of said substances.

3,617,385
FUEL CELL

Foster L. Gray, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 13, 1969, Ser. No. 806,838
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 **8 Claims**

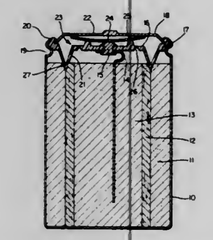


A fuel cell electrode subassembly for a multicell power package having at least a pair of thin, porous, elongated electrodes, e.g. cathodes, which are operatively spaced to receive an anode carrying a molded matrix and are connected in series to a third thin, porous electrode, e.g. an anode, which is aligned with the space between the first two electrodes hermetically sealed with an electrically conductive material. Each subassembly can be interfitted with other subassemblies to yield several series connected fuel cell arrays.

3,617,386
SEALED CELL CONSTRUCTION

Robert J. Bosben, Madison; Ralph H. Feldhake, Verona, and Patrick J. Spellman, Middleton, all of Wis., assignors to ESB Incorporated

Filed Apr. 30, 1970, Ser. No. 33,306
Int. Cl. H01m *1/06*
U.S. Cl. 136—107 **5 Claims**

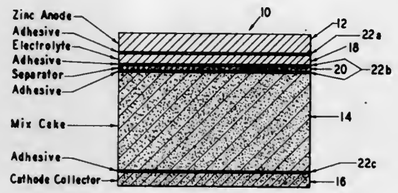


A sealed electric battery cell having a single plastic member which seals the cell, insulates the cell terminal, provides a hydrogen gas permeable diaphragm, a circuit opening actuator and a pressure frangible safety device.

3,617,387
BATTERY CONSTRUCTION HAVING CELL COMPONENTS COMPLETELY INTERNALLY BONDED WITH ADHESIVE

Carle Albert Grulke, Berea, and Thomas Arthur Reilly, Bay Village, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,854
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 **12 Claims**



An electric current producing cell which is completely internally bonded and requires the use of no external supports is obtained by bonding individual cell components to each other with a polymeric adhesive which maintains physical and electrical contact between the components.

3,617,388
METHOD OF ACTIVATING FUEL CELL ANODES

Seigo Matsuda, Wayland; John J. O'Connell, Waltham, Mass., and Marshall C. Freerks, Kirkwood, Mo., assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed July 25, 1966, Ser. No. 567,394
Int. Cl. H01m *13/00, 27/00*
U.S. Cl. 136—120 FC **2 Claims**

A novel fuel cell comprising a cathode, means to introduce an oxidizing agent to said cathode, an electrolyte separating said cathode from an anode comprising a conductive base material and a metal chelate as a catalytic component thereof and means to introduce a fuel to said anode.

3,617,389
PREPARATION OF RANEY CATALYST FUEL CELL ELECTRODES

Wolfgang Kuhn, Frankfurt am Main; Werner Lindner, Niederhochstadt, Taunus, and Gerd Sandstede, Frankfurt am Main, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 29, 1968, Ser. No. 732,819
Int. Cl. H01m *13/04*; B22f *3/24*
U.S. Cl. 136—120 FC **6 Claims**

In the preparation of Raney alloy fuel cell electrodes using polytetrafluoroethylene as a binder, harmful reaction of the binder with the aluminum or other reactive metal of the Raney alloy is prevented by the presence of finely powdered silver salts which envelop and protect the Raney alloy particles and develop a protecting gas at the sintering temperature of the polytetrafluoroethylene.

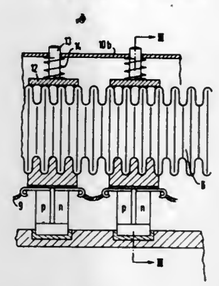
3,617,390
THERMOGENERATOR HAVING HEAT EXCHANGE ELONGATED FLEXIBLE METALLIC TUBE OF WAVY CORRUGATED CONSTRUCTION

Eugen Szabo De Bucs, Erlangen, and Josef Winkler, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of application Ser. No. 640,544, May 23, 1967, now abandoned. This application Oct. 1, 1969, Ser. No. 864,282
Int. Cl. F25b *21/02*; F28f *7/00*; H01v *1/30*
U.S. Cl. 136—211 **8 Claims**

A thermogenerator wherein a plurality of thermocouples are arranged with their high-temperature junctions situated

in one row and with their opposed low-temperature junctions situated in a second row. A pair of elongated heat-exchangers respectively extend along these rows and engage the thermocouples at the junctions thereof. At least one of these heat-exchangers is in the form of an elongated hollow tubular structure for conveying along its interior a liquid heat-



exchanging medium, and this one heat-exchanging structure has a plurality of rigid portions engaging the thermocouples and a plurality of intermediate flexible portions situated respectively between and operatively connected with the rigid portions. A spring means coacts with both of the heat-exchangers for urging them toward each other so as to maintain them pressing against the thermocouples.

3,617,391
METHOD FOR PRODUCING PASSIVATED PN-JUNCTIONS BY ION BEAM IMPLANTATION

Martin P. Lepselter, New Providence, N.J., and Herbert A. Waggener, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

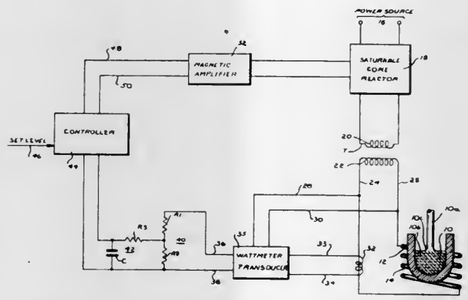
Filed Sept. 15, 1969, Ser. No. 857,859
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **9 Claims**

A method for producing tucked under, passivated PN-junctions in semiconductor devices by ion implantation through a layered mask. Apertures in the upper layers of the mask are formed somewhat larger than the corresponding apertures in a first layer (contiguous with the surface of the semiconductor) so that an annulus of uncovered first layer remains around each exposed portion of semiconductor surface. Then the structure is subjected to a beam of dopant ions of sufficient energy to pass through the exposed annulus of uncovered first layer but of insufficient energy to pass through the area covered by the multiple layers; and a tucked under, passivated junction thereby is formed.

3,617,392
POWER CONTROL FOR CRYSTAL GROWING

Richard Locke, Jr., New York, N.Y., assignor to Semimetals, Inc., Westbury, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,491
Int. Cl. B01j *17/18*
U.S. Cl. 148—1.6 **14 Claims**



Apparatus and process for crystal growing by the Czochralski or similar processes in which the operator determines the amount of power to be furnished to the heating element for the crystal material, and in which the system automatically maintains said furnished power at said determined amount. In this way short-range disturbances in the heating process are compensated for, while long-range changes are taken care of by manual or automatic changes, from time to time, in the power level to be furnished. As a result, crystal diameter control is markedly improved on a production basis.

3,617,393
PRETREATMENT BEFORE ELECTROPHORETIC PAINTING

Tadamitsu Nakazawa, Kawasaki-shi; Makishima: Hiroshi, Yokohama-shi; Toshio Shinohara, Yokahama-shi, and Yukio Kawahara, Yokohama-shi, all of Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1969, Ser. No. 864,874
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 Z **4 Claims**

When a metal surface treating agent consisting of a zinc phosphate comprising given amounts of water-soluble aluminum, arsenic and fluorine compounds added thereto is employed as pretreatment before electrophoretic painting, the dissolving quantity of the phosphating coating is reduced, and it results in formation of a uniform electrodeposition-coated film which has excellent corrosion resistance and is free from rough surface; moreover, as the paint is not contaminated, the paint can be stable for a long time. Finish of the electrodeposition coating can be also improved by using pretreatment prepared by adding further a small amount of Te and/or Bi.

3,617,394
KILN PASSIVATION OF REDUCED ORES

Ivan Mayer, Summit, N.J., assignor to Esso Research and Engineering Company

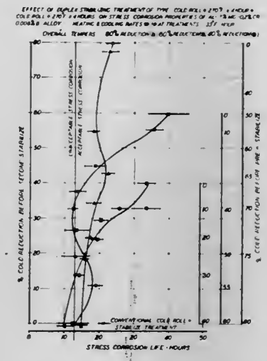
Filed Nov. 22, 1968, Ser. No. 778,308
Int. Cl. C23f *7/04*; C21b *1/00*
U.S. Cl. 148—6.35 **7 Claims**

A process is described for passivating active forms of finely divided metal particles by mildly oxidizing their surfaces at high temperatures in a rotating kiln.

3,617,395
METHOD OF WORKING ALUMINUM-MAGNESIUM ALLOYS TO CONFER SATISFACTORY STRESS CORROSION PROPERTIES

Francis P. Ford, Hamden, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Apr. 9, 1969, Ser. No. 814,631
Int. Cl. C22f *1/04*
U.S. Cl. 148—11.5 A **5 Claims**



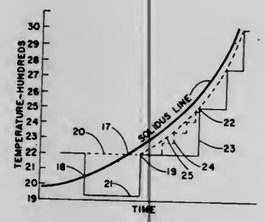
Providing an aluminum-magnesium alloy containing from 5.0 to 10.0 percent magnesium, heating said alloy to a temperature range of 650° to 800° F. for 1 to 16 hrs., cooling said alloy. heating said alloy to a temperature range from 225° to 375° F. for 15 mins. to 24 hrs., cooling said alloy to

ambient temperature, cold reducing said alloy to 5.0 to 95.0 percent reduction, heating said alloy to a temperature range to 225° to 375° F. for 15 mins. to 24 hrs., and cooling said alloy.

3,617,396
BRAZING MIXTURE FOR JOINING PARTS

Dan P. Duff, Grand Prairie, Tex., and Joseph A. Van Velzor, Columbus, Ohio, assignors to LTV Aerospace Corporation, Dallas, Tex.

Division of Ser. No. 551,824, Apr. 25, 1966, Pat. No. 3,496,630.
Filed Apr. 22, 1969, Ser. No. 842,041
Int. Cl. B22f 7/08; C22c 1/04, 5/00
U.S. Cl. 148—24 5 Claims

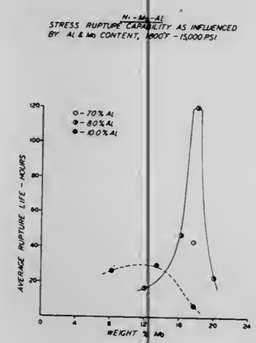


A brazing mixture which contains first and second types of metallic particles. The melting temperature of the first type of metallic particle in the mixture is lower than that of both the other type of metallic particle and the parts to be joined by the mixture. When the brazing mixture is heated to melt the first type of metallic particles, metallic particles of the second type diffuse into particles of the first type to form an alloy having a melting temperature higher than the melting temperature of the particles of the first type.

3,617,397
CAST NICKEL-BASE ALLOY

Douglas H. Maxwell, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 19, 1969, Ser. No. 800,591
Int. Cl. C22c 19/00
U.S. Cl. 148—32.5 2 Claims

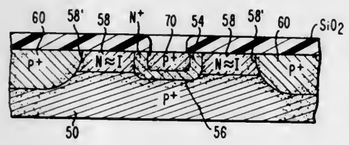


There is disclosed herein a cast nickel-base alloy having outstanding utility in gas turbine engine applications, particularly as directionally solidified, at a composition consisting essentially of, by weight, 17.5–18.5% molybdenum, 7.75–8.25% aluminum, up to 0.05% carbon, balance nickel.

3,617,398
A PROCESS FOR FABRICATING SEMICONDUCTOR DEVICES HAVING COMPENSATED BARRIER ZONES BETWEEN NP-JUNCTIONS

Orest Bilous, Beacon; Darrell R. Meulemans, Jerico; Raymond P. Pecorado, Wappingers Falls, N.Y., and Michael C. Selby, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 480,553, July 18, 1965, Pat. No. 3,473,093.
Filed Oct. 22, 1968, Ser. No. 798,511
Int. Cl. H01l 7/36, 5/00; C23c 13/00
U.S. Cl. 148—175 56 Claims

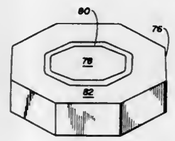


A process for forming semiconductor devices by forming in a semiconductor substrate of one conductivity type a diffused region of a second conductivity type circumscribed by an adjacent gold compensated intrinsic region.

3,617,399
METHOD OF FABRICATING SEMICONDUCTOR POWER DEVICES WITHIN HIGH RESISTIVITY ISOLATION RINGS

William L. Fowler, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1968, Ser. No. 772,154
Int. Cl. H01l 7/36
U.S. Cl. 148—175 9 Claims



Improved performance characteristics are possible for semiconductor power devices by encircling the active elements with a high-resistivity isolation ring. Power devices encircled by a high-resistivity isolation ring may be fabricated by a method that includes the step of growing a bar of single-crystal semiconductor material having a radial resistivity varying in a controlled manner from the center thereof. This single crystal bar is then sliced perpendicularly transverse to the longitudinal axis into plane surface wafers of a desired thickness. After various surface preparation techniques, the active regions of the semiconductor power device may be formed in one of the plane surfaces at a desired resistivity section of the slice by photomask and etch techniques. By forming a center section of uniform resistivity encircled by a ring of high-resistivity material, which in turn is encircled by another uniform resistivity area, an integrated circuit may be fabricated on one slice of a single-crystal bar. In these circuits, the power devices would be isolated within the center region by means of the high-resistivity ring.

3,617,400
NITROCELLULOSE-BASED SOLID ROCKET PROPELLANT CONTAINING A CARBAMATE PLASTICIZER

Bernard B. Lampert, Carmichael, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of application Ser. No. 693,690, Dec. 14, 1967, now Patent No. 3,429,755. This application May 21, 1968, Ser. No. 731,691
Int. Cl. C06b 19/00
U.S. Cl. 149—2 9 Claims

This patent describes novel nitrocellulose-containing propellants containing at least one carbamate plasticizer selected from the group consisting of 2-nitratoethyl-N-methyl-N-nitrocarbamate, and 2-nitratoethyl-N-nitratoethyl-N-nitrocarbamate to provide propellant curing at ambient or slightly elevated temperatures.

3,617,401
COLUMN OF BLASTING AGENT OF CONTROLLED DENSITY

Kay S. Mortensen, and Lex L. Udy, both of Salt Lake City, Utah, assignors to Intermountain Research and Engineering Company

Filed Oct. 1, 1968, Ser. No. 764,195
Int. Cl. C06b 19/00
U.S. Cl. 149—2 9 Claims

In order to control slurry density in deep holes, varying amounts of aerating or gasifying agent, preferably a generated essentially insoluble gas, are added. Hydrogen peroxide may be decomposed to produce oxygen, using catalyst such as potassium iodide or manganese dioxide, etc. Gas generating material and catalyst may be added variably, e.g. to produce gas in progressively decreasing proportions as slurry is pumped, starting at the bottom and rising in a borehole, to offset the compressive effect of the column weight thus keeping the whole slurry column at density low enough for reliable detonation.

3,617,402
AQUEOUS SLURRY BLASTING COMPOSITION CONTAINING AN ALIPHATIC AMINE SALT AND A WATER SOLUBLE INORGANIC PERCHLORATE

Herbert G. Knight, Jr., Flanders, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 24, 1968, Ser. No. 786,686
Int. Cl. C06b 19/00
U.S. Cl. 149—2 20 Claims

The invention provides inorganic oxidizer salt blasting compositions of the aqueous slurry type containing a combination of an aliphatic amine salt and a water-soluble inorganic perchlorate as a sensitizer component. Preferably, each of said amine salt and perchlorate is present in the sensitizer combination in a proportion at least stoichiometrically equivalent to that required for reaction with the other to form a corresponding amine perchlorate as at lest 3 weight percent of the composition. Often, the proportion of each ingredient of the sensitizer combination is at least 2, and generally up to 25, weight percent of the composition.

3,617,403
IGNITION TRANSFER COMPOSITION COMPRISING FUEL, OXIDIZER AND FLUOROELASTOMER

Duane M. Johnson, Bicknell, Ind.

Filed Apr. 24, 1969, Ser. No. 819,523
Int. Cl. C06d 5/00
U.S. Cl. 149—19 2 Claims

A transfer composition for igniting a pyrotechnic composition comprised of a fuel such as boron, an oxidizer, such as lead dioxide, and a fluoroelastomer which serves as a binder and desensitizer.

3,617,404
SLURRYXPLOSIVES CONTAINING THE COMBINATION OF NITROGEN-BASE SALT AND HARD SOLID PARTICLES AS SENSITIZER

William M. Lyerly, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1969, Ser. No. 836,676
Int. Cl. C06c 19/04
U.S. Cl. 149—29 15 Claims

A water-bearing slurry explosive containing inorganic oxidizing salt, fuel, water and thickener together with nitrogen-base salt and solid particles having a hardness of at least 4 on the Mohs scale and that have an acoustic impedance at least two times that of the matrix of the slurry explosive.

3,617,405
INCENDIARY COMPOSITION CONTAINING A METAL, METAL ALLOY, OXIDIZER SALT, AND NITRATED ORGANIC COMPOUND

Thomas Stevenson, Huntingdon Valley, Pa., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 736,932, May 21, 1958, now Patent No. 2,951,752. This application Feb. 3, 1960, Ser. No. 6,573
Int. Cl. C06b 9/00
U.S. Cl. 149—39 3 Claims

In an incendiary composition consisting essentially of about 50 percent by weight of metal powder from the class consisting of zirconium, titanium, and uranium in a particle size of 20 to 60 mesh, about 22½ percent by weight of 50–50 alloy of magnesium and aluminum, and about 22½ percent by weight of an oxidizer from the class consisting of barium nitrate and potassium perchlorate, the combination therewith of the improvement enabling said composition to retain impact sensitivity under elevated temperature storage for a longer period of time, and to process a longer duration of burning, said improvement consisting essentially of about 5 percent by weight of an explosive from the class consisting of trinitrotoluene (TNT), pentaerythritol tetranitrate (PETN), and cyclotrimethylene trinitramine (RDX), whereby such composition is adapted for embodiment in small caliber projectiles containing no fuze to retain its impact sensitivity against a thin aluminum sheet.

3,617,406
HYDROCARBON OIL-CONTAINING GELLED AQUEOUS INORGANIC OXIDIZER SALT EXPLOSIVES HAVING IMPROVED STABILITY TO SYNERESIS

Herbert L. Young, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 22, 1969, Ser. No. 843,805
Int. Cl. C06b 11/00
U.S. Cl. 149—41 16 Claims

Process is provided for manufacture of a gelled aqueous hydrocarbon oil-containing inorganic oxidizer salt explosive having unexpectedly high stability to syneresis, which comprises admixing the hydrocarbon oil with the remaining ingredients of the explosive, as a separate oil-in-water emulsion, maintained by a defined emulsifying agent of the polyoxyethylene type, when the gelation agent is a cross-linkable galactomannan gum and is present in an amount of 1 to 3 weight percent of the finished explosive in a weight ratio to a cross linking agent therefor, preferably potassium pyroantimonate, of 30:1 to 70:1.

It is a combination of (1) use of the defined emulsifier, (2) the specific range of cross linking density (by proportions of the galactomannan gum and cross linking agent) and (3) the separate addition of the "preformed" emulsion, that provides the unexpected stability property.

Product by process is also provided.

3,617,407
AQUEOUS SLURRY EXPLOSIVE CONTAINING A THICKENER OF CROSS-LINKED GALACTOMANNAN WITH PSYLLIUM FLOUR

Joseph Francis McLean Craig, Beoceil, Quebec, and Errol Linton Falconer, Monta-Saint-Hilaire, Quebec, both of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Sept. 15, 1969, Ser. No. 858,143
Claims priority, application Canada, Oct. 7, 1968, 031883
Int. Cl. C06b *15/00*
U.S. Cl. 149—44 7 Claims

A thickening agent for an aqueous slurry explosive composition comprises the combination of a cross-linked galactomannan with psyllium flour in specific proportions, which thickener provides good fluidity and reduced tackiness.

3,617,408
ZIRCONIUM SALT ANTICAKING INGREDIENT FOR NITRATES

Roger D. Hunter, and William L. Ripley, both of Bedford, Ind.

Filed Aug. 1, 1969, Ser. No. 846,944
Int. Cl. C06b *1/04*
U.S. Cl. 149—46 3 Claims

Quadrivalent zirconium is added in small proportions to nitrates, such as sodium nitrate and ammonium nitrate, to prevent caking. A solution of a soluble quadrivalent zirconium salt is added to a nitrate and the quadrivalent zirconium modifies the resultant crystal lattice of the nitrate upon drying to prevent caking of the nitrate during storage.

3,617,409
NITROCELLULOSE-NITROGLYCERINE EXPLOSIVE WITH ETHYLENE OXIDE

Gwyn Harries, Ripponlea, Victoria, Australia, assignor to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed Aug. 15, 1969, Ser. No. 850,652
Claims priority, application Australia, Sept. 6, 1968, 43045
Int. Cl. C06b *1/04*
U.S. Cl. 149—48 8 Claims

Gelatinized explosive compositions comprising at least one liquid explosive nitric ester; nitrocellulose; at least one inorganic oxidizing agent; at least one carbonaceous combustible material; at least one condensation product of a lower alkylene oxide with a compound selected from the group consisting of alkyl phenols, long chain alcohols, long chain carboxylic acids, long chain amines, amides of long chain carboxylic acids and alkylolamides of long chain carboxylic acids, and optionally water.

3,617,410
PRESSURE-SENSITIVE RECORDING SHEET AND METHOD OF MAKING

Kenneth H. Clark, Waverly, Ohio, assignor to The Mead Corporation, Dayton, Ohio

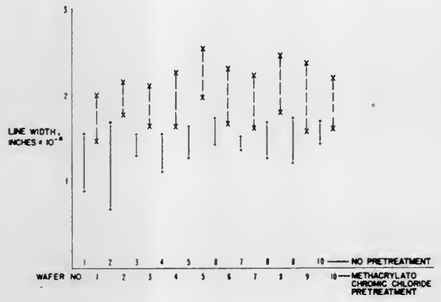
Filed May 1, 1969, Ser. No. 821,086
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 11 Claims

Record sheets having improved resistance to smudging and calender intensity for use with transfer sheets containing microscopic rupturable capsules of a colorless marking fluid are produced by coating a base sheet with a composition comprising a finely powdered oil-soluble acid-reactant polymeric material, a substantially nonreactant pigment having a relative sediment volume (RSV) in excess of 2 and a binder for said polymeric material and pigment.

3,617,411
PROCESS FOR ETCHING A PATTERN OF CLOSELY SPACED CONDUCTING LINES IN AN INTEGRATED CIRCUIT

Roger A. Couture, Richmond; John J. Lajza, Jr., Williston, and William E. Wright, Shelburne, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1969, Ser. No. 791,043
Int. Cl. C23b *3/00*; C23f *1/02, 7/26*
U.S. Cl. 156—8 8 Claims

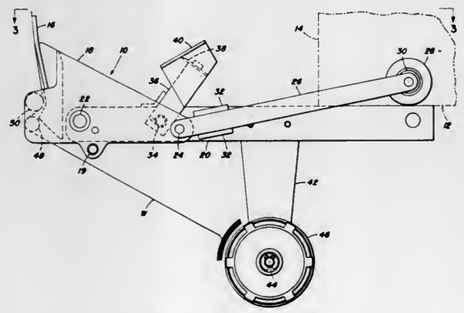


Very small patterns may be etched in aluminum or other metal surfaces using photoresist to mask areas of the surfaces where etching is not desired by applying a Werner complex of chromium with a carboxylic acid to the metal surface. The process is particularly useful for etching conducting lines in microminiature semiconductor device fabrication because the chromium complex increases the adhesion of the photoresist to the aluminum sufficiently to improve line resolution in subsequent etching, and does not increase bridging between adjacent conducting lines.

3,617,412
FLAT CURL-FREE U-SEALING ADHESIVE TAPE APPLYING MACHINE

Dick W. Schenderling, Maassluis, and Dingeman Bijl, Rotterdam, both of Netherlands, assignors to GAF Corporation, New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,843
Int. Cl. B32b *31/18*
U.S. Cl. 156—461 5 Claims



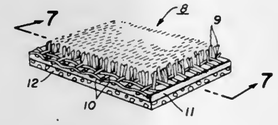
This invention relates to a tape-applying machine and, in particular, to an improved U-sealer for cuboid objects or cartons. The apparatus or U-sealer includes a tape-applying member and a presser roller adapted to apply pressure-sensitive adhesive tape to a carton conveyed along a linear path. The tape-applying member is retractably interposed in the travel path of the carton and includes an upstanding end portion of the adhesive tape in an unsupported condition. This

physical characteristic is imparted to the tape by cooperative grooving rollers which provide a longitudinal stiffening ridge or groove in the tape prior to application to the carton.

3,617,413
PRODUCTION OF SIMULATED GRASSLIKE PRODUCTS

Donald L. Elbert, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 700,096, Jan. 24, 1968, Pat. No. 3,573,147.
Filed June 26, 1970, Ser. No. 50,275
Int. Cl. B44c *5/06*
U.S. Cl. 156—61 4 Claims

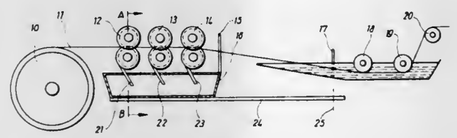


Random discontinuous slits cut in monofilament ribbons before weaving, knitting, tufting, or otherwise binding provide in a finished synthetic turf product, random variable blade widths with physical characteristics and appearance similar to that of natural grass.

3,617,414
PROCESS AND APPARATUS FOR THE MANUFACTURE OF FIBER GLASS REINFORCED PLASTIC TUBES AND SIMILAR BODIES ACCORDING TO THE FILAMENT WINDING PROCESS

Ludwig Wesch, Heidelberg, Germany, assignor to Mancar-Trust, Vaduz, Liechtenstein

Filed Aug. 9, 1966, Ser. No. 571,293
Claims priority, application Germany, Aug. 10, 1965, W 39 707
Int. Cl. B31c *13/00*; B65h *81/08*
U.S. Cl. 156—169 4 Claims

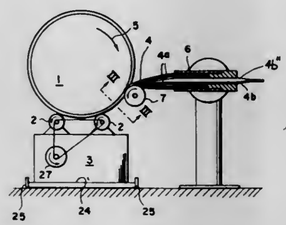


A process and apparatus for manufacturing tubes from coils of fiber glass which have been impregnated in a suitable resin. The fiber glass initially is in the form of roving strands which are guided through a suitable impregnating bath. Suitable combs guide the rovings between pressure rollers which have a configuration imparting to the rovings a flat band shape, giving the rovings a rectangular cross section. Not only are the rovings thus provided with a rectangular cross section and a flat tapelike configuration, but in addition the pressure rollers serve to maintain the rovings at a distance from each other which is substantially less than their width, the distance between the flat rovings being much less than one-half of their width and in some cases as small as one-tenth their width. In this condition the rovings are angularly fed onto a rotary mandrel on which the coils are formed so as to provide the desired tube. Because of the small distance between the flat rovings an exceedingly strong tube with a high burst strength is achieved.

3,617,415
METHOD OF MAKING HOLLOW REINFORCED BODIES

Manfred Hawerkamp, Altenrather Str. 47, Troisdorf, Germany

Continuation-in-part of application Ser. No. 516,945, Dec. 28, 1965, now abandoned. This application Apr. 23, 1969, Ser. No. 818,521
Int. Cl. B31c *13/00*
U.S. Cl. 156—172 8 Claims

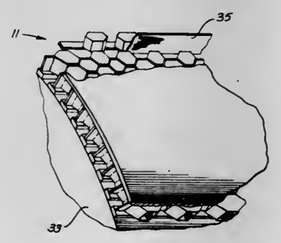


Method of making a hollow reinforced body comprising a plurality of helically wound generally flattened turns of a continuous thermoplastic band with each turn overlying a preceding turn by about one-half the width of the band and being overlapped by the next succeeding turn by about one-half the width of the band, the turns being bonded together under heat and pressure. The band includes a transversely stepped continuous metal reinforcing strip embedded therein and underlying the overlapping portion of the next succeeding turn and the strip thereof while overlying the strip of the next turn.

3,617,416
HONEYCOMB STRUCTURES

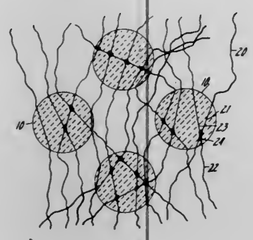
Robert V. Kromrey, Placerville, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed June 23, 1967, Ser. No. 648,447
Int. Cl. B31c *13/00*
U.S. Cl. 156—173 17 Claims



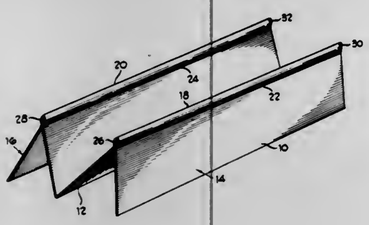
A method and resultant structure consisting of fiber-reinforced honeycomb that is integrally molded to a substrate material wherein the honeycomb is formed of fibers wrapped about dies having the configuration of the desired cells. The fibers utilized may form the actual substrate for the honeycomb in one embodiment, while in another embodiment of the invention a separate substrate is bonded to macerated fibers comprising the cellular walls. The molds are left in the formed structure during the solidification thereof, and can be permanently left in the cells when so desired or removed after formation of the final integrated item.

3,617,417
PROCESS FOR FORMING A BONDED NONWOVEN FABRIC
Arthur R. Olson, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.
Division of Ser. No. 476,870, Aug. 3, 1965.
Filed Apr. 25, 1969, Ser. No. 839,116
Int. Cl. D04h 3/03
U.S. Cl. 156—181 2 Claims



A spot-bonded nonwoven fabric is made by supporting a web of textile-length fibers composed at least in part of thermoretractile fibers on a porous surface such as a screen. On the other surface of the web there is applied a screening member bearing a pattern of apertures, and a stream of heated gas is directed through the screening member and the web, to produce a spot-bonded nonwoven fabric wherein the fibers lying underneath the apertures are bonded to each other and are in a tensioned rectilinear configuration.

3,617,418
METHOD OF MAKING A HYDROTHERAPY TANK LINER
Robert C. Miller, Elgin, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 18, 1970, Ser. No. 12,311
Int. Cl. B31f 7/00
U.S. Cl. 156—227 1 Claim

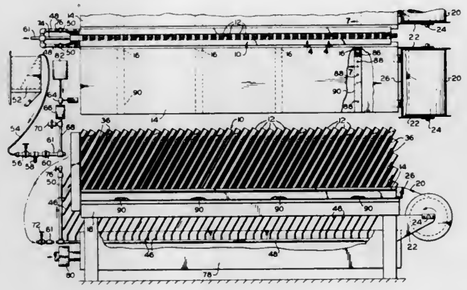


A plastic film hydrotherapy tank liner having conduits therein adapted to be apertured and connected to a source of pressurized gas so that hydrotherapy liquid contained therein is agitated by the gas passing through. The conduits are made by folding a sheet of plastic film so that it resembles, in section, an M-shaped article, then heat sealing the two spaced folds of the folded sheet to provide the conduits, one terminal end of each being then closed by heat sealing.

3,617,419
ADHESIVE AND METHOD FOR BONDING CROSS LINKED POLYOLEFINS AND OTHER POLYMERIC MATERIAL
Joseph Fischer, Urbana, and Thomas E. Haddock, Atwood, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 797,266
Int. Cl. B32b 27/08; C09j 3/14
U.S. Cl. 156—332 4 Claims

An adhesive comprising an ethylene-vinyl acetate copolymer, an organic solvent and a cross-linking agent and a method of bonding comprising coating at least one surface to be bonded, contacting the surfaces under pressure and heating.

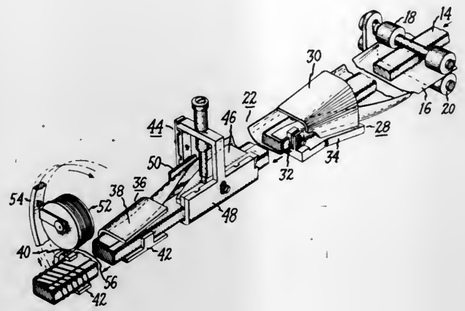
3,617,420
APPARATUS FOR MAKING MULTIPLE CHANNEL LIQUID TREATING UNIT
Curtis E. McCann, Corvallis, Oreg., assignor to Neptune Microfloc, Incorporated, Corvallis, Oreg.
Filed Nov. 18, 1968, Ser. No. 776,648
Int. Cl. B32b 31/20; B30b 15/34
U.S. Cl. 156—382 20 Claims



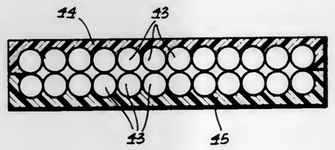
Apparatus is described for manufacturing a liquid treating unit including a plurality of rows of parallel channel members secured between sidewall members with successive rows inclined in opposite directions and separated by a sidewall member. The apparatus includes a jig for supporting the channel members of one row and a pair of support plates pivotally mounted on opposite sides of the jig for supporting a pair of sidewall members to enable attachment thereof to the side edges of such channel members and formation of a channel module. Air pressure instead may be employed for supporting the sidewall members in engagement with the channel members. The members may be of plastic material and are attached together by a solvent sprayed from nozzles attached to the jig or by thermal fusion with electrical heating strips. However it is also possible to use members of cardboard or treated paper and attached by a suitable glue. A plurality of channel modules are connected together by additional rows of channel members to form the complete unit in several steps with the same apparatus. However, in one embodiment, all of the modules forming the unit are made simultaneously by employing a plurality of jigs, successive ones of which hold rows of channel members inclined in opposite directions and are mounted on two jig supports that are moved relative to each other to enable removal of the completed unit.

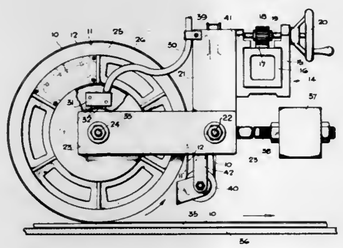
3,617,421
DEVICE FOR FOLDING INSULATING TAPE ABOUT ELECTRICAL CONDUCTORS
Willard F. M. Gray, Hancock, and George C. Lovejoy, Pittsfield, both of Mass., assignors to General Electric Company
Filed Nov. 14, 1966, Ser. No. 594,097
Int. Cl. H01b 13/26
U.S. Cl. 156—438 2 Claims

A device for wrapping insulating tape longitudinally on electrical wire. The electrical wire and insulating tape will lead together with the wire on top of the tape into a first folding shoe. The first folding shoe folds one side of the tape about one side of the wire. A creasing member creases the tape tightly to the one side of the wire. A second folding shoe is provided beyond the first folding shoe, such second folding shoe folding the other side of the tape about the other side of the wire. A second creasing member creases the tape tightly to such other side of the wire. A strand of yarn is wrapped about the folded and creased tape holding such tape securely to the wire.



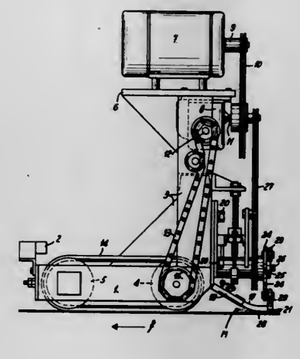
3,617,422
TAPE APPLICATOR
John Rene Paulson, Lachute, Quebec, Canada, assignor to Sesame Industries Limited, Montreal, Quebec, Canada
Filed Dec. 4, 1968, Ser. No. 782,792
Claims priority, application Canada, May 10, 1968, 19,687
Int. Cl. B32b 31/00
U.S. Cl. 156—552 3 Claims





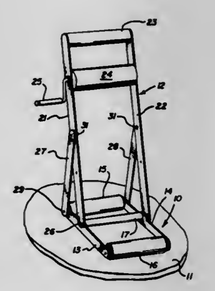
The invention relates to a tape applicator for a tape of the type having one side of adhesive material and the other side of heat stable material. The applicator comprises a roller, heating means in the roller for heating the roller surface, and means for applying the heat stable surface of the tape upon the surface of the roller. The roller is mounted on an arm pivotally mounted in a frame which is slidably mounted. The roller rests upon a sheet supporting surface and a counterweight is connected to the arm for adjusting the pressure of the roller upon the sheet.

3,617,423
APPARATUS FOR LAYING COATING OF RESINOUS MATERIAL
Ralph Agthe, Nyon, Vaud, and Charles Merminod, Meyrin, Geneva, both of Switzerland, assignors to Societe Anonyme Conrad Zschokke, Geneva, Switzerland
Filed May 17, 1967, Ser. No. 643,788
Claims priority, application Switzerland, June 2, 1966, 8001/66
Int. Cl. B05c 11/02; E01c 19/40
U.S. Cl. 156—575 6 Claims



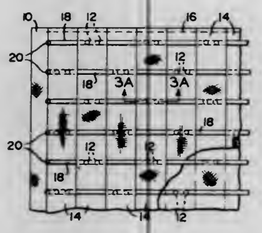
A driven frame carries a spreading arrangement between portions of which viscous synthetic resin-containing material is placed onto a surface over which the frame travels. A spring steel sheet resiliently bears upon the upper side of the material and smoothes the same onto the surface. A vibrating arrangement vibrates the sheet for compacting the material.

3,617,424
TAPE APPLICATOR AND REMOVAL APPARATUS
Robert C. Smith, 823 Clay St., Wray, Colo.
Filed Jan. 7, 1969, Ser. No. 789,590
Int. Cl. B32b 31/10, 31/20
U.S. Cl. 156—577 9 Claims



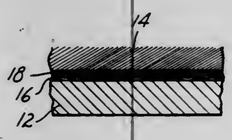
A tape apparatus has two operating positions, one for applying and one for removing a heavy-duty, relatively wide pressure-sensitive adhesive tape. This apparatus has a base section having rollers for rolling movement over a surface and an upright tape support section hinged at its lower end on the base section and held at one of two inclined positions to automatically unwind a tape roll and apply it to the surface when moved in one direction and to remove and roll the tape on a tape mandrel for reapplication when required when moved in the opposite direction.

3,617,425
LACED PATTERN
Marna White, 2529 Siesta Court, Tampa, Fla.
Filed Oct. 27, 1969, Ser. No. 869,522
Int. Cl. B32b *3/10, 3/16*
U.S. Cl. 161—38 **6 Claims**



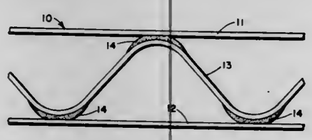
A laced pattern formed of a base sheet into which holes are punched in a prearranged sequence. Flexible strips fixed by lacing interwoven into the holes and transversely arranged with respect to the strips completes the pattern. The individual elements may be used in a kit for handicraft and the finished laced pattern has utility as wearing apparel or any decorative panel.

3,617,426
TORQUE-TRANSMITTING MEMBER
Roger V. Grundman, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 10, 1969, Ser. No. 805,422
Int. Cl. F16d *3/00*
U.S. Cl. 161—42 **6 Claims**



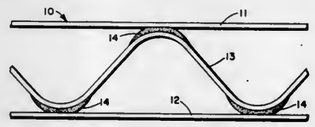
A torque-transmitting member in which a plurality of short stiff normally straight fibers are secured to and randomly spaced on a planar surface of a flexible backing. Each fiber has one end secured to the planar surface and extends therefrom at an acute angle less than about 45° and generally perpendicular to a radial line on the planar surface intersecting the secured end of the fiber.

3,617,427
CORRUGATED FIBERBOARD
John R. Le Blanc, Wilbraham, Mass., assignor to Alton Box Board Company, Alton, Ill. and Monsanto Company, St. Louis, Mo.
Filed Aug. 22, 1969, Ser. No. 852,396
Int. Cl. B32b *3/38, 9/06, 29/06*
U.S. Cl. 161—133 **5 Claims**



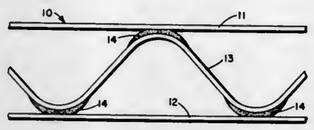
Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and intermediate resin treated medium and liner sheet members useful in the manufacture thereof. Such board is made by treating medium and, optionally, liner members with an aminoplast modified phenol aldehyde resole resin composition and thereafter bonding corrugated medium to liner members with a thermosetting waterproof adhesive system.

3,617,428
CORRUGATED FIBERBOARD
Robert P. Carlson, Springfield, Mass., assignor to Alton Box Board Company, Alton, Ill. and Monsanto Company, St. Louis, Mo.
Filed Sept. 5, 1969, Ser. No. 855,666
Int. Cl. B32b *3/28;* **B32b** *27/42;* **C08g** *37/18*
U.S. Cl. 161—133 **7 Claims**



Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water. Such board is made by treating medium and, optionally, liner members with an aminoplast containing phenol-aldehyde resole resin composition and thereafter bonding corrugated medium to liner members with a thermoplastic waterproof adhesive system containing substantially fully hydrolyzed polyvinyl alcohol.

3,617,429
CORRUGATED FIBERBOARD
John R. Le Blanc, Wilbraham, Mass., assignor to Alton Box Board Company, Alton, Ill. and Monsanto Company, St. Louis, Mo.
Filed Sept. 26, 1969, Ser. No. 861,272
Int. Cl. B32b *3/28, 27/42;* **C08g** *37/18*
U.S. Cl. 161—133 **10 Claims**



Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and which has improved folding endurance. Such board is made by preliminarily treating medium and, optionally, liner members with a mixture of aminoplast containing phenol-aldehyde resole resin with polyvinyl alcohol (and/or with polyvinyl acetate and/or partially hydrolyzed such mixtures) and thereafter fabricating corrugated fiberboard from the so-treated members using a waterproof adhesive system containing polyvinyl alcohol, polyvinyl acetate, urea-formaldehyde, and/or phenol-aldehyde.

3,617,430
BITUMINOUS SHEET FOR USE AS WATER AND DAMPNESS-INSULATING REINFORCEMENT MATERIAL
Eiichi Tajima, 15, 4-Chome, Komagome, Toshima-ku, and Kaname Yamamoto, 3-5, 6-Chome, Nishiogu, Arakawa-ku, both of Japan
Continuation-in-part of application Ser. No. 558,121, June 16, 1966, now Patent No. 3,403,425. This application June 21, 1968, Ser. No. 738,806 Claim priority, application Japan, Dec. 26, 1967, 42/83827
Int. Cl. B32b *5/06, 11/00*
U.S. Cl. 161—151 **3 Claims**

A bituminous sheet for use as a water- and dampness-insulating reinforcement material for various types of construc-

tions. The sheet is comprised of a nonwoven web of randomly arranged irregularly overlying straight synthetic staple fibers having an average length of at least 50 mm. and having a fineness measurement ranging from one-half to 20 denier. A binder material fixes the fibers with respect to one another so as to make the web into a matlike, nonwoven fabric. A bituminous material is interspersed between and around the fibers and/or fills substantially all of the voids of the fabric.

3,617,431
PROCESS FOR PREPARING CELLULOSE PULP BY ALKALINE DIGESTION WHILE INHIBITING EXTRACTION OF HEMICELLULOSE
Ingemar Liss-Albin Croon, Ornskoldsvik; Sten Dillen, Alfredshem, and Sture Noreus, Sundasen, all of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Continuation-in-part of application Ser. No. 618,360, Feb. 24, 1967, now abandoned. This application Apr. 15, 1970, Ser. No. 28,790
Int. Cl. D21c *3/26*
U.S. Cl. 162—17 **16 Claims**

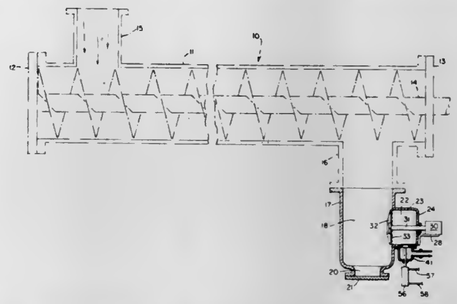
A process is provided for preparing cellulose pulp by the alkaline digestion of lignocellulosic material while inhibiting extraction of hemicellulose by employing an alkaline cooking liquor having a high concentration of substantially non-degraded hemicellulose having a degree of polymerization of at least 80. The cellulose pulp product thus contains within its fibers much or substantially all of the hemicellulose present in the natural lignocellulosic material.

3,617,432
DELIGNIFYING LIGNOCELLULOSE WITH AN INCOMPLETE SODA COOK FOLLOWED BY GASEOUS BLEACHING
David W. Clayton, Hudson; Raimbault M. A. T. De Montigny, Baie D'Urfe, and Norman Liebergott, Laval, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada
Filed Oct. 15, 1968, Ser. No. 767,829
Claims priority, application Canada, Dec. 15, 1967, 007,696
Int. Cl. D21c *3/02, 3/18*
U.S. Cl. 162—19 **18 Claims**

A process is provided for the preparation of pulp from lignocellulosic material. It involves two essential steps, namely: firstly, carrying out a modified conventional soda-cooking step in which the cooking conditions are deliberately selected to be such that the yield is significantly higher than that normally corresponding to a bleachable pulp and in which the material is simultaneously at least partially defiberized; and secondly, either partially or completely delignifying the pulp by subjecting the pulp so produced to a gaseous bleaching treatment while it is in defiberized form.

3,617,433
DEFIBERING DISCHARGER FOR CONTINUOUS DIGESTERS
Douglas G. Sutherland, 1512 N. Briel Blvd., Middletown, Ohio
Filed May 15, 1968, Ser. No. 729,334
Int. Cl. D21b *1/36;* **D21c** *7/08*
U.S. Cl. 162—21 **7 Claims**

Fibrous material is discharged from a digester into a discharger tank which has a perforated plate in one of its walls for discharging the fibrous material into a first exit chamber. From the first exit chamber, the fibrous material passes through a restricted passageway defined by a frustoconical shaped bore and a selectively movable frustoconical shaped plug into a second exit chamber. A rotor, located in the discharger tank adjacent the perforated plate, wipes oversized chips and fibrous bundles from the perforated plate. The holes of the perforated plate are tapered outwardly towards the first exit chamber to prevent clogging thereof. The fibrous material is simultaneously



defibered by steam pressure differentials existing between the tank and exit chambers.

3,617,434
REGENERATION OF COOKING CHEMICALS FROM SPENT ALKALINE COOKING LIQUOR
Tadashi Nakafuri, Hiroshima-ken; Saburo Fukui, Hiroshima-ken; Masao Ono, Hiroshima-ken; Kyoichi Oku, Tokyo; Hiroshi Matsuura, Tokyo, and Hitoshi Sotobayashi, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Jujo Paper Co., Ltd., Tokyo, Japan
Filed May 28, 1968, Ser. No. 732,657
Claims priority, application Japan, May 31, 1967, 42/34754
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 **4 Claims**

A process for recovering useful chemicals from spent alkaline cooking liquor of high sulfide content produced in the course of wood pulp manufacture. The spent cooking liquor is concentrated and the concentrate burned in a recovery furnace to produce a smelt comprising mainly Na_2CO_3 and Na_2S. Part or all of the Na_2CO_3 is separated from the smelt and reacted with SO_2 from the recovery furnace flue gases and, if desired, SO_2 from another source to produce Na_2SO_3. The Na_2SO_3 is burned in the recovery furnace with the concentrated cooking liquor where said Na_2SO_3 is converted to Na_2S. The resultant smelt has a high sulfide content and, when it is dissolved in water, an alkaline cooking liquor of high-sulfide content is regenerated.

3,617,435
TREATMENT OF WOODPULP WITH AN ALKALINE SOLUTION CONTAINING FORMALDEHYDE PRIOR TO A BISULFITE COOKING THEREOF
John H. Kalisch, Hawkesbury, Ontario, Canada, assignor to Canadian International Paper Company, Montreal, Ontario, Canada
Continuation-in-part of application Ser. No. 539,683, Apr. 4, 1966, now Patent No. 3,479,249. This application June 3, 1968, Ser. No. 734,044
Int. Cl. D21c *3/20*
U.S. Cl. 162—72 **8 Claims**

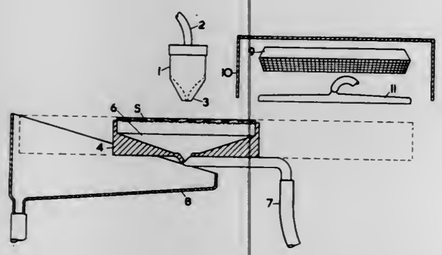
A bisulfite wood-pulping process in which not more than about 2 percent by weight, based on the wood, of formaldehyde in an alkaline solution is used to pretreat the wood prior to the bisulfite cooking.

3,617,436
PROCESS FOR CONTROLLING CHRYSOSPORIUM LIGNORUM IN LIGNOCELLULOSIC MATERIAL
Anders Assarsson, Sundasen, and Thomas Nilsson, Skarhoimen, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden
Filed July 11, 1968, Ser. No. 743,964
Claims priority, application Sweden, July 18, 1967, 10,067/1967
Int. Cl. D21c *3/20*
U.S. Cl. 162—72 **18 Claims**

A process is provided for the selective control of Chrysosporium lignorum in wood chip piles that are stored in

the open for long periods of time, by means of a nickel compound, without deleterious effect on the microbiological activity of other nonharmful organisms.

3,617,437
PROCESS FOR THE MANUFACTURE OF A COMPOSITE MATERIAL HAVING ALIGNED REINFORCING FIBERS
Greville Euan Gordon Bagg, Waltham Abbey; Leslie Ernest Dingle, Waltham Abbey; Ronald Hayden Jones, London, and Alexander William Harrower Pryde, Waltham Abbey, all of England, assignors to National Research Development Corporation, London, England
Filed Mar. 28, 1968, Ser. No. 716,938
Claims priority, application Great Britain, Mar. 29, 1967, 14,201/67
Int. Cl. B29d *3/02*; D21h *5/18, 5/26*
U.S. Cl. 162—102 12 Claims



A process for the manufacture of a composite material comprising a matrix containing aligned reinforcing fibers includes the steps of dispersing the fibers in a viscous liquid, passing the dispersion through an orifice so that the fibers are at least partially aligned, and laying the dispersion containing aligned fibers upon a permeable surface moving relative to the orifice at a velocity at least that at which the fiber dispersion leaves the orifice and withdrawing the viscous liquid through the permeable surface by suction sufficiently rapidly for the alignment of the fibers thereon to be maintained.

3,617,438
ELECTRIC INSULATING PAPER AND ITS PRODUCTION PROCESS
Osakazu Nakao; Juichi Hirose; Toshio Nakamura; Hiroyuki Yamamoto; Shinji Matsuda, and Hidetaro Suzuki, all of Shizuoka, Japan, assignors to Tomoegawa Paper Manufacturing Co., Ltd., Tokyo, Japan
Filed Feb. 12, 1970, Ser. No. 11,019
Claims priority, application Japan, Feb. 12, 1969, 10246/1969
Int. Cl. D21h *3/02, 5/12*
U.S. Cl. 162—138 14 Claims

A process for the production of an electric insulating paper and the insulating paper thus produced, having superior characteristics such as a low dielectric constant, a low dielectric loss tangent, and a high dielectric strength, is disclosed. The process comprises the steps of preparing a graft-cellulose solution, or a mixed solution or suspension consisting of a synthetic polymer mixed into a cellulose solution or a graft-cellulose solution, solidifying the solution, mixed solution, or suspension into a regenerating substance such as air or a precipitant, forming the regenerated substance thus solidified into a pulplike substance adapted to be fabricated into a paper, and forming the pulplike substance only or the pulplike substance mixed with the ordinary beaten pulp into an insulating paper.

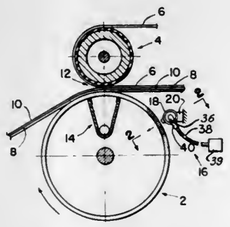
3,617,439
PROCESS FOR IMPROVING COMMINUTION PULP SHEETS AND RESULTING AIR-LAID ABSORBENT PRODUCTS
Benjamin E. Chapman, Jr., Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio
Filed Jan. 2, 1969, Ser. No. 789,084
Int. Cl. D21d *3/00*
U.S. Cl. 162—158 9 Claims

A method for producing comminution pulp sheets from cellulosic fibers and the products resulting therefrom as pulp sheets and air-laid absorbent batts, which method comprises impregnating the fibers of the comminution pulp sheets with about 0.1 to 2 percent of a selected zwitterionic surfactant, such as N-octadecyl -N, N- dimethylammonio-12-dodecanoate either in slurry prior to or during comminution pulp sheet formation and prior to pulp sheet drying. The resulting comminution pulp sheet is easily and effectively fiberized or comminuted to yield fibers from which air-laid absorbent products are prepared, and the air-laid absorbent products are characterized by improved bulk, resiliency and absorbency characteristics.

3,617,440
PROCESS FOR PROMOTING THE DRAINAGE FROM A WATER-PULP MEDIUM USING THE REACTION PRODUCT OF A POLYETHYLENIMINE HAVING A MOLECULAR WEIGHT OF AT LEAST 300 WITH A UREA
Greene W. Strother, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 17, 1968, Ser. No. 737,394
Int. Cl. D21h *3/48*
U.S. Cl. 162—168 10 Claims

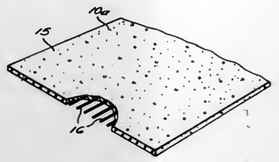
Accelerated drainage of the aqueous medium from pulp during paper manufacture is achieved by the addition of a small amount of the reaction product of polyethylenimine having a molecular weight of at least 300 and a urea. Addition of this product also imparts wet and dry strength to the paper.

3,617,441
SPRAY NOZZLE DEVICE FOR CLEANING ACCUMULATIONS IN SUCTION ROLL OPENINGS
James T. Farrell, Schuylerville, N.Y., assignor to United Board & Carton Corporation, Ridgefield Park, N.J.
Filed Aug. 22, 1968, Ser. No. 754,704
Int. Cl. D21f *1/34*; B08b *3/02, 9/00*
U.S. Cl. 162—199 13 Claims



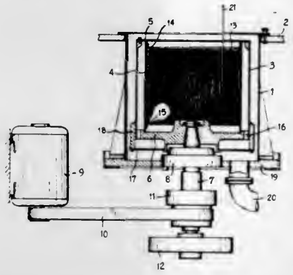
Method and apparatus for removing accumulations of fibers, rosin, clays, etc., from the openings in suction rolls used in the production of paperboard. Jets of water from nozzle openings impact the accumulations in a radially inward direction and unplug the suction roll openings. The ratio of diameters of the suction roll openings to the diameter of the nozzle jet openings is approximately 5.35 to 1. The water is supplied to the nozzle at a pressure of the order of 150 to 200 p.s.i., and each nozzle opening projects a jet of water such that each of the suction openings is independently subjected to the entire impact of the jet.

3,617,442
PAPER-MAKING MEANS AND METHOD
Alfred A. Hurschman, 169 Streetsboro St., Hudson, Ohio
Filed Sept. 30, 1968, Ser. No. 763,512
Int. Cl. D21f *1/00*
U.S. Cl. 162—212 6 Claims



For use in a fourdrinier section of a paper machine and/or the felt section of such a machine, a replacement for the fourdrinier wire and/or the felt which comprises a sheet of synthetic, open-celled, flexible foam such as polyurethane foam. According to one aspect of this invention, the foam may be reticulated to provide greater porosity. If the foam is employed as a fourdrinier "wire," the foam is provided with a reinforcing backing means which provides longitudinal strength but does not interfere with the porosity of the foam.

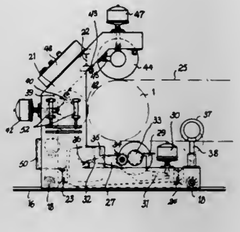
3,617,443
GRAVITY DRAINAGE FROM A ROTOR IN A CENTRIFUGAL FIBROUS SHEET FORMER
Jean-Pierre Chleq, Seyssins, and Gaston Marie Lefebvre, Grenoble, both of France, assignors to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses, Isere, France
Filed Nov. 26, 1969, Ser. No. 880,242
Claims priority, application France, Nov. 29, 1968, 176,066
Int. Cl. D21j *7/00*
U.S. Cl. 162—218 6 Claims



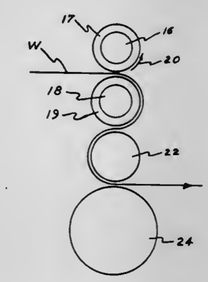
Method and apparatus for forming a fibrous sheet in a centrifugal former and draining liquid from the rotor element. Rotation of the rotor produces centrifugal force which facilitates sheet formation on the inside of a cylindrical filter means and forces liquid against an outer cylindrical envelope. Slowing down of the rotation weakens the centrifugal force and allows liquid drainage by gravity through suitable means provided in the lower part of the rotor. A method for removing the filter means with the formed sheet thereon is provided wherein the screen is cut and deformed to allow removal from an opening in the cover of the apparatus.

3,617,444
APPARATUS FOR TREATING A WIRE OR FELT IN A PAPERMAKING MACHINE
Narve Hundseid, Baerum, Norway, assignor to Aktieselskabet Thunes Mekaniske Vaerksted, Oslo, Norway
Filed June 2, 1969, Ser. No. 829,680
Claims priority, application Norway, Apr. 24, 1969, 1688/69
Int. Cl. D21f *1/32*
U.S. Cl. 162—275 12 Claims

Apparatus for treating an endless wire or felt in a paper making machine which includes C-shaped support frame mounted on tracks for movement of the frame into and out of encompassing relationship with a support roll around which the wire or felt is wrapped. Mounted transversely of the frame is a liquid applicator roll which dips into a transversely mounted liquid trough for application of liquid to the wire or felt. A press-nip roll, a press roll, and a spray tube are also mounted on the frame for wire or felt treatment. The support roll is also moveably mounted on tracks and compressed air cylinders operate to secure the frame with respect to the support roll.



3,617,445
ROLL COMPOSITION
Donald A. Brafford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Continuation-in-part of application Ser. No. 784,606, Dec. 18, 1968. This application June 11, 1969, Ser. No. 832,055
Int. Cl. D21f *3/00*
U.S. Cl. 162—358 2 Claims



An apparatus for use in combination with a traveling web, comprising a pair of rolls defining a nip between which said web passes, at least one of said rolls having an outer shell consisting of a nonwoven mat wrapping said roll and bonded with a thermosetting resin. Preferred nonwoven mats for the present invention are acrylic mats, while thermosetting resins most preferred are epoxy resins.

3,617,446
PREPARATION OF 6-AZAURIDINE
Kiyoshi Nakayama, Sagamihara-shi, and Haruo Tanaka, Machida-shi, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 26, 1968, Ser. No. 762,994
Claims priority, application Japan, Sept. 27, 1967, 42/61678
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 3 Claims

The present invention relates to a process for preparing 6-azauridine by the dephosphorilation of 6-azauridylic acid by means of micro-organisms.

3,617,447
PRODUCTION OF MEVALONIC ACID BY ENDOMYCOPSIS FIBULIGER

Kei Arima, and Gakuzo Tamura, both of Bunkyo-ku, Tokyo, Japan, assignors to The United States of America as represented by the Secretary of Agriculture

Filed Jan. 9, 1969, Ser. No. 790,162
Int. Cl. C12d *13/00*
U.S. Cl. 195—37 1 Claim

Four- to 5-day fermentations of the unrestrictedly available yeast *Endomycopsis fibuliger* NRRL Y-7069 (catalogued by the Institute of Applied Microbiology, Tokyo, as IAM-4347) provides the production of about 1,000 micrograms of mevalonic acid per milliliter of fermented medium.

A nonexclusive, irrevocable, royalty-free license in the invention herein described, throughout the world for all purposes of the United States Government, with the power to grant sublicenses for such purposes, is hereby granted to the Government of the United States of America.

3,617,448
ANTIBIOTIC AND METHODS OF PRODUCING AND USING IT

Elton W. Mann, Portales, N. Mex., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 334,907, Dec. 31, 1963, now abandoned. This application Oct. 3, 1967, Ser. No. 672,462
Int. Cl. C12d *9/20*; A61n *9/00*; A61k *21/00*
U.S. Cl. 424—115 4 Claims

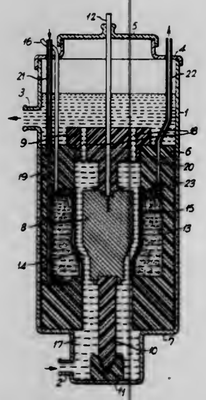
An antibiotic substance is produced by growing *Bacillus uniflagellatus*, sp. n., (ATCC 15134) in a sterile liquid nutrient medium containing sources of assimilable carbon and nitrogen.

A water-soluble antibiotic substance having antifungal, antiviral, antinematodal and antibacterial properties is elaborated by the organism *Bacillus uniflagellatus*, sp. n., (ATCC 15134).

3,617,449
ELECTROLYTIC DEPOSITION

Maurice Eric Giles, Cottenham, and John George Waller, Sutton, both of England, assignors to National Research Development Corporation, London, S.W. 1, England

Filed May 15, 1968, Ser. No. 729,173
Claims priority, application Great Britain, May 19, 1967, 23,476/67
Int. Cl. C23b *7/00, 5/02, 5/68*
U.S. Cl. 204—3 3 Claims

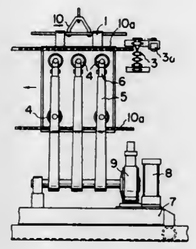


An electrolytic deposition process suitable for use where high deposition rates are required. A metallic powder which reacts with discharged anions is dispersed in the electrolyte adjacent the anode but is prevented from occurring in appreciable concentration in the electrolyte adjacent the cathode. The electrolyte may be arranged to flow continuously over the cathode surface. Specific conditions are disclosed for carrying out the process when depositing nickel, and an apparatus is described for utilizing the process in the electroforming of metallic articles.

3,617,450
AUTOMATIC STRIPPING OF ELECTRODEPOSITED STARTING SHEETS

Ryuzo Kawaguchi, Akita-shi; Kizo Nara, Osaka-shi, and Izumi Sukekawa, Musashino-shi, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo-to, Japan

Filed Aug. 7, 1968, Ser. No. 750,947
Int. Cl. C23b *7/02*; B01k *1/00*
U.S. Cl. 204—12 5 Claims



Starting sheets (copper sheets electrolytically deposited on cathode base sheets) can be readily stripped from their base sheets by pulling with suction disk when a layer of air is formed in the interface between each starting sheet and its base sheet by a simple physical process such as rolling or vibration applied to one part of the sheet. Stripping is further facilitated and the starting and base sheets are protected by the application on the base sheets before electrolysis of at least one coating agent containing an organic compound of an acid such as phosphoric acid, xanthic acid, thiocarbonic acid, or thiocarbamic acid or an organic ester such as organic phosphorous ester.

3,617,451
THIOSULFATE COPPER PLATING

Leo J. Slominski, Bristol, and Adela Landau, Watertown, both of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed June 10, 1969, Ser. No. 831,983
Int. Cl. C23b *5/18, 1/00*
U.S. Cl. 204—34 18 Claims

A novel electroplating bath suitable for electrodepositing copper on steel which comprises an aqueous solution of soluble copper, an alkali metal thiosulfate, an alkali metal sulfite or bisulfite, and a heterocyclic nitrogen compound such as nicotine, 3-amino-1,2,4-triazole, etc. During the electroplating process, the bath is subjected to aeration. The steel is cleaned and cathodically activated prior to plating.

3,617,452
GOLD PLATING

Carl D. Keith, Summit; Alfred J. Haley, Jr., Florham Park, and Kenneth D. Baker, Bridgewater, Somerville, all of N.J., assignors to Engelhard Minerals & Chemical Corporation, Newark, N.J.

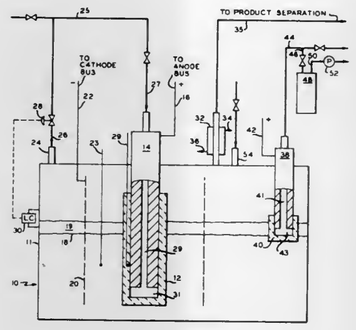
Filed July 3, 1969, Ser. No. 838,944
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 6 Claims

Process for electrodeposition of gold from aqueous gold-plating baths which are substantially free from alkali metal ions and which are comprised of ammonium gold cyanide as the source of gold.

3,617,453
TEMPERATURE CONTROL IN ELECTROCHEMICAL CONVERSION PROCESS

William V. Childs, Austin, Tex., assignor to Phillips Petroleum Company

Filed Sept. 17, 1969, Ser. No. 858,734
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 8 Claims

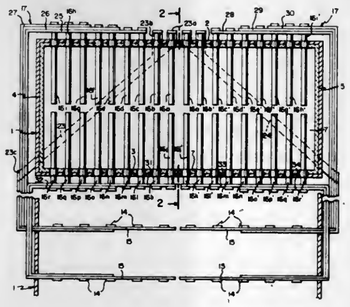


Temperature control in an electrochemical conversion process is effected by maintaining a layer of feedstock on the surface of the electrolyte in an electrolytic cell provided with a porous electrode. A portion of said feedstock layer enters the pores of said porous electrode and is at least partially converted therein. A cell effluent stream is withdrawn through a reflux condenser, is partially condensed, condensate is returned as reflux to cool said cell, and conversion products are recovered from the uncondensed portion of said cell effluent stream.

3,617,454
BUS STRUCTURE FROM ALUMINUM REDUCTION CELLS

Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J.

Filed Nov. 12, 1969, Ser. No. 876,128
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 17 Claims

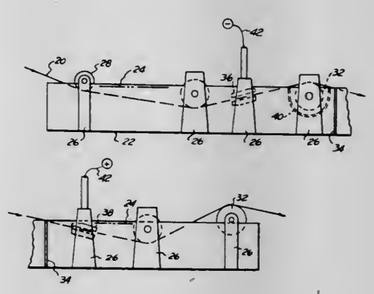


The improvement in electrolytic cells for the reduction of aluminum in which a plurality of cells are electrically connected in a line, the improvement comprising diagonal bus structure for connecting to the cathode collector elements at the upstream side of the cell for directing current therefrom exteriorly of the cell diagonally to the opposite ends.

3,617,455
PROCESS FOR MOLTEN SALT BATH ELECTROLYTIC DESCALING OF FERROUS METAL STRIP

Robert H. Shoemaker, Royal Oak, and John A. Faler, Livonia, both of Mich., assignors to Kolene Corporation, Detroit, Mich.

Filed Feb. 5, 1969, Ser. No. 796,722
Int. Cl. C23b *1/06, 5/68*
U.S. Cl. 204—145 1 Claim



Molten salt bath electrolytic descaling apparatus and process employing an electrical shield of aluminum around an immersed cast iron roll and electrically charged oppositely from the electrical charge on the strip to prevent current flow from the strip to the electrolyte through the roll.

3,617,456
BATH FOR THE ELECTROLYTIC STRIPPING OF GALVANIC COATINGS MADE OF NICKEL, CHROMIUM OR GOLD FROM BASE BODIES MADE OF COPPER, COPPER ALLOYS, SILVER, ZINC OR TITANIUM

Horst Dillenberg, Koniggratzer Strasse 25, Haan, Germany

Filed Oct. 28, 1968, Ser. No. 771,349
Int. Cl. B01r *1/00, 3/00*
U.S. Cl. 204—146 10 Claims

An aqueous electrolytic-stripping bath to remove nickel, chromium, or gold coatings from copper, copper alloy, silver, zinc, or titanium metal articles comprising ammonium thiocyanate as the stripping component and a phenol to accelerate the stripping and to reduce corrosion of the base metal.

3,617,457
PROCESS FOR THE RADIATION GRAFTING OF 4-VINYL PYRIDINE ONTO POLYESTERS IN THE PRESENCE OF A NONPOLYMERIZABLE ORGANIC ACID

Ichiro Sakurada, Kyoto-shi, Kyoto-fu, and Toshio Okada, Moriguchi-shi, Osaka-fu, both of Japan, assignors to Japan Atomic Energy Research Institute, Minato-ku, Tokyo, Japan

Filed Oct. 7, 1968, Ser. No. 765,413
Claims priority, application Japan, Oct. 16, 1967, 42/66093
Int. Cl. B01j *1/00*; G08d *9/10*
U.S. Cl. 204—159.15 8 Claims

Polyester fiber material which can be easily dyed with acidic, basic, direct and dispersed dyes was obtained by graft-polymerizing 4-vinyl pyridine onto a polyester fiber material in an aqueous emulsion containing a nonpolymerizable organic or inorganic acid at least in an amount sufficient to neutralize said 4-vinyl pyridine by means of irradiation with a high-energy ionizing radiation.

3,617,458
CATIONIC ELECTRODEPOSITION SYSTEM

Francis Joseph Brockman, Mont-Saint-Hilaire, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

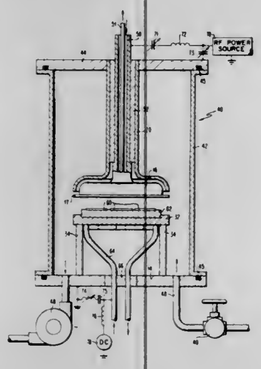
Filed Dec. 4, 1968, Ser. No. 781,257
Claims priority, application Great Britain, Dec. 12, 1967, 56,426/67
Int. Cl. B01k *5/00*; **C23b** *13/00*
U.S. Cl. 204—181 **10 Claims**

A cross-linkable coating composition derived from an unsaturated compound containing a carboxylic acid group, an epoxidized material and a compound which contains a pendant amine group is dispersed in water by means of an acid such as phosphoric acid. The composition may be a blend of an epoxidized material with a copolymer having free carboxylic acid and amine groups, or a partially reacted precondensate thereof, or a condensate of a drying oil carboxylic acid, an epoxidized material and an amino acid. An article immersed in the dispersion as cathode is coated by electrodeposition and thereafter the coating cross linked by heating. The dispersion is replenished by a concentrate of coating composition.

3,617,459
RF SPUTTERING METHOD AND APPARATUS FOR PRODUCING INSULATING FILMS OF VARIED PHYSICAL PROPERTIES

Joseph S. Logan, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 15, 1967, Ser. No. 668,114
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **12 Claims**



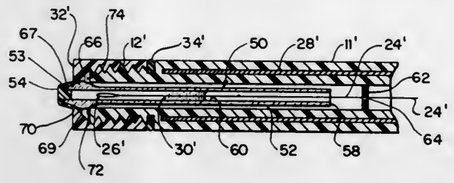
An RF sputtering method wherein the potential of the workpiece relative to the plasma is the sputtering chamber is adjusted to provide a control over the physical characteristics of the resulting sputtered films. The apparatus has an insulated target electrode, an insulated workpiece holder electrode, and a conductive surface in contact with the plasma generated by impressing an RF voltage across the target electrode and workpiece holder electrode. An impedance is provided between the workpiece holder electrode and the conductive surface. The impedance provides a control of the workpiece holder voltage.

3,617,460
ELECTRODE ASSEMBLY

Irwin H. Krull, and Charles A. Mask, both of Garden Grove, Calif., assignors to Beckman Instruments, Inc.

Filed Dec. 17, 1969, Ser. No. 885,904
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **12 Claims**

An electrochemical electrode assembly for making ion concentration measurements in which a capillary tube open at its rear end and closed by an ion-sensitive barrier at its forward end is removably mounted in a tubular electrode body. A conductor fixedly mounted at the rear end of the tubular body extends through the open rear end of the capillary tube for connection to an internal half cell immersed in electrolyte in the tube. Due to the surface tension of the electrolyte on the wall of the capillary tube, the electrolyte will not escape through the open end of the tube during normal handling of

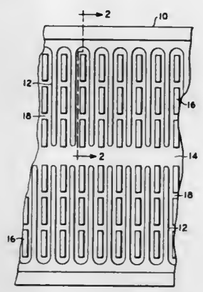


the electrode assembly. In one embodiment, an organic ion exchanger liquid is provided in the capillary tube between an ion-permeable membrane at the forward end of the tube and the electrolyte in which the half cell is immersed. The surface tension of the two liquids on the wall of the capillary tube ensures that the ion-exchanger liquid will not be displaced by the electrolyte and, therefore, the ion exchanger will remain in contact with the membrane.

3,617,461
SPACED ANODE ASSEMBLY FOR DIAPHRAGM CELLS

John E. Currey, Lewiston, and Walter W. Ruthel, Niagara Falls, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed June 3, 1968, Ser. No. 733,988
Int. Cl. C01d *1/06*
U.S. Cl. 204—252 **4 Claims**



Anolyte circulation in electrolytic cells equipped with anode blades which expose more than 18 inches of active surface height is improved by providing a circulation space between each anode blade in a bank of anodes. The distance between anode blades varies with the type of cathode construction, to provide between ¾ inch to 3 inches distance in cells employing cathodes which provide for a center circulation aisle and between ¼ inch to 3 inches distance in cells employing cathodes which extend across the cell.

3,617,462
PLATINUM TITANIUM HYDRIDE BIPOLAR ELECTRODES

Bernard DeWitt, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 6, 1968, Ser. No. 726,865
Int. Cl. B01k *3/04*
U.S. Cl. 204—290 F **4 Claims**

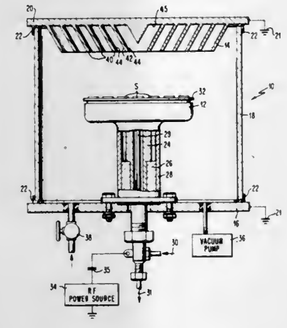
Titanium hydride electrodes are disclosed for use in alkali metal chlorine and chlorate cells. The electrodes disclosed

are noble metal coated for use as cell anodes in chlorine and chlorate cells or as bipolar electrode elements in chlorine and chlorate cells. The use of titanium hydride electrodes as cathodes in chlorine and chlorate cells is also shown. The noble metal surfaces disclosed are gold, silver, platinum, palladium, iridium and ruthenium. Platinum is disclosed as the preferred noble metal surface.

3,617,463
APPARATUS AND METHOD FOR SPUTTER ETCHING

Lawrence V. Gregor, Hopewell Junction; Leon I. Maissel, Poughkeepsie, and Charles L. Standley, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1969, Ser. No. 834,444
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **7 Claims**

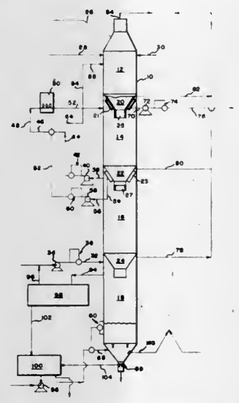


The object to be sputter etched is excited in a reduced atmosphere of inert gas by the application of an RF potential across a pair of electrodes, one of which supports the object and is capacitively coupled to the RF source. The improvement is a means to catch and retain material removed by the sputtering operation.

3,617,464
COAL EXTRACTION METHOD AND APPARATUS

Cecil J. Johnson, Columbia City, Ind., assignor to Total Energy Corporation, Columbia City, Ind.

Continuation of application Ser. No. 810,135, Mar. 25, 1969, now abandoned. This application May 20, 1970, Ser. No. 37,490
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **10 Claims**

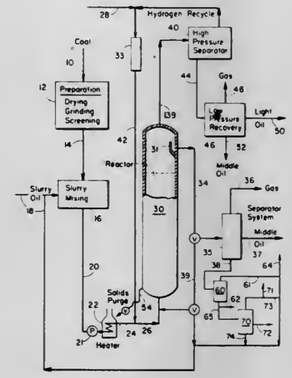


Method for extracting coil liquids from a continuously moving bed of coal solids comprising the steps of moving the coal solids through extractor and stripper zones in a stream of sand which serves as a conveyor for the coal solids. The sand also serves as a cleaning means for filter screens used in the process. Further, the sand stream permits the coal liquids to swell freely.

3,617,465
COAL HYDROGENATION

Ronald H. Wolk, Lawrence Township, Mercer Co.; Edwin S. Johanson, Princeton, and Seymour B. Alpert, Princeton, all of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Nov. 20, 1969, Ser. No. 878,268
Int. Cl. C10g *1/14, 1/06*
U.S. Cl. 208—8 **9 Claims**

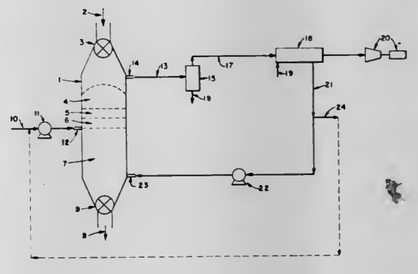


A coal hydrogenation process employing an expanded particulate solids bed wherein the solids are derived from the coal which is placed in random motion by the upflow of a slurry of coal, hydrocarbon liquid and hydrogen to produce better than 80 percent conversion of coal to gas and liquid synthetic petroleum products. The particulate solids bed is derived from the coal being fed to the reaction zone.

3,617,466
GAS COMBUSTION RETORT PROCESS

John C. Todd, Tulsa, Okla., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,766
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **8 Claims**



An improved method for obtaining oil from oil shale by the gas combustion retort process. The offgas from the retort containing oil, fuel and other combustion products is treated first to remove the oil and second, to burn the fuel components. The resulting gas is recycled into the retort to pass countercurrently to the shale travel. Temperatures in the combustion zone of the retort are moderated and clinker formation is eliminated. The heat from the fuel burning can be used as a power source.

3,617,467
PROCESSES FOR RETORTING OIL SHALE

Alan K. Reyburn, and Rex T. Ellington, Jr., both of Tulsa, Okla., assignors to Atlantic Richfield Company, New York, N.Y.

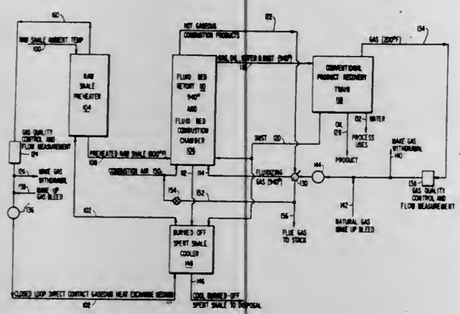
Filed Dec. 6, 1968, Ser. No. 781,901
Int. Cl. C10g *1/02*
U.S. Cl. 208—11 **7 Claims**

An improvement in the processes for the recovery of volatile material from solid carbonaceous material, such as oil shale, tar sands, coal, lignite, and the like, which comprises controlling the atmosphere surrounding the carbonaceous material during retorting. The atmosphere is controlled to contain natural gas or a gas of similar composition or mixtures of natural gas and up to 20 percent carbon dioxide. Improved yields are achieved in various retorting processes.

3,617,468
PROCESS FOR REMOVING THE HYDROCARBON CONTENT OF CARBONACEOUS MATERIALS

Alan K. Reyburn, and Rex T. Ellington, both of Tulsa, Okla., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,754
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **20 Claims**



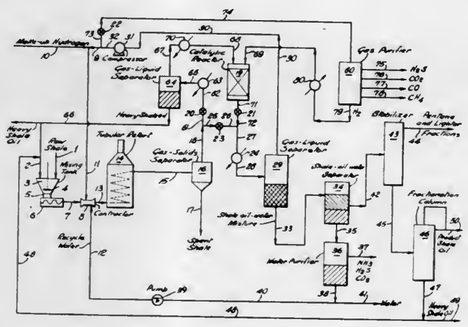
A process for the recovery of volatile material from solid carbonaceous material, such as oil shale, tar sands, coal, lignite and the like, which comprises introducing the solid carbonaceous material into a retorting zone and fluidizing the solid carbonaceous material within the retorting zone. The fluidized solid carbonaceous material in the retorting zone is heated and volatile material is retorted therefrom and withdrawn from the retorting zone. The spent solid carbonaceous material is withdrawn from the retorting zone and transferred to a burnoff zone. The spent solid carbonaceous material is fluidized in the burnoff zone and carbon is burned off the fluidized spent solid carbonaceous material therein. The burned-off spent solid carbonaceous material and combustion products are then withdrawn from the burnoff zone.

3,617,469
HYDROTORTING OF SHALE TO PRODUCE SHALE OIL

Warren G. Schlinger, Pasadena; Dale R. Jesse, Hacienda Heights, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1968, Ser. No. 786,955
Int. Cl. C01b *53/06*
U.S. Cl. 208—11 **2 Claims**

Continuous process for recovering shale oil from a slurry of raw oil shale in shale oil. Water and hydrogen gas are injected under pressure into the raw oil shale—shale oil slurry, and the mixture is immediately introduced into an externally heated noncatalytic tubular retort maintained at an outlet temperature in the range of about 850° to 950° F. and at a pressure in the range of about 300 to 1,000 p.s.i.g., and preferably at 500 p.s.i.g. for maximum yields of shale oil having a minimum nitrogen content. In the tubular retort under conditions of turbulent flow, the raw shale is completely stripped of kerogen in about ¼ to 3 minutes (preferably less than a minute), and by simultaneous pyrolysis and hydrogenation without added catalyst, the kerogen is converted to a gaseous effluent from which shale oil is separated having a substantially reduced nitrogen and sulfur content. Further, essentially all of the spent shale is removed from the gaseous stream by means of a unique centrifugal separator and recovered without the loss of hydrogen or the reduction in line pressure, as spent shale containing essentially no carbonaceous residue. Yields of such shale oil from for example Colorado shale are about 116 percent of the Fischer Assay; however, if desired,

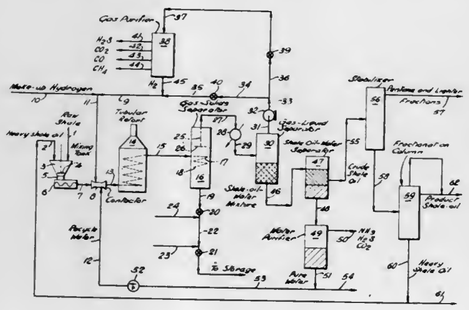


still higher yields of shale oil (about 125 percent of the Fischer Assay) containing a greater amount of material in the middle distillate boiling range may be obtained by submitting the prehydrogenated gaseous effluent from the tubular reaction zone to catalytic hydrogenation, after first removing essentially all of the spent shale. Water is also produced by the system in quantities which are in excess of process requirements.

3,617,470
HYDROTORTING OF SHALE TO PRODUCE SHALE OIL

Warren C. Schlinger, Pasadena; Dale R. Jesse, Hacienda Heights, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1968, Ser. No. 786,952
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **11 Claims**



Continuous process for recovering shale oil from a slurry of raw oil shale in shale oil. In a contacting zone, water and hydrogen gas are injected under pressure into the raw oil shale-shale oil slurry and the mixture is immediately introduced into a tubular retort maintained at a temperature in the range of about 850° to 950° F. and at a pressure in the range of about 300 to 1,000 p.s.i.g. and preferably at 500 p.s.i.g. for maximum yields of shale oil having a minimum nitrogen content. Under conditions of turbulent flow, in the tubular retort the raw shale is completely stripped of kerogen in about one-fourth to 3 minutes (preferably less than a minute), and by simultaneous pyrolysis and hydrogenation the kerogen is converted to a gaseous effluent from which

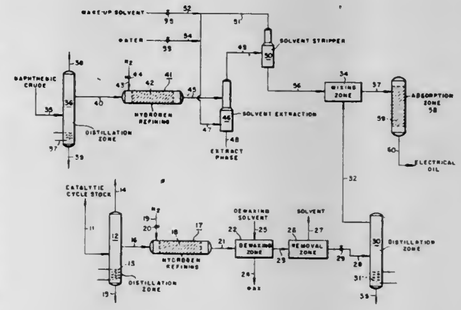
shale oil is separated having a substantially reduced nitrogen and sulfur content. Further, essentially all of the spent shale is removed from the gaseous stream by means of a unique centrifugal separator and recovered without the loss of hydrogen or the reduction in line pressure, as spent shale containing essentially no carbonaceous residue. Yields of such shale oil from for example Colorado shale are about 116 percent of the Fischer Assay and contain less than 0.50 weight percent of spent shale. Water is also produced by the system in quantities which are in excess of process requirements.

3,617,471
HYDROTORTING OF SHALE TO PRODUCE SHALE OIL

Warren G. Schlinger, Pasadena; Dale R. Jesse, Hacienda Heights, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1968, Ser. No. 787,207
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **8 Claims**

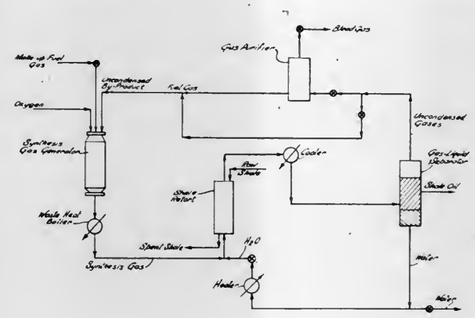
Hydrogen-rich gas, e.g., synthesis gas, and H_2O are injected into oil shale at a comparatively moderate pressure in the range of about 300 to 1,000 p.s.i.g. and at a temperature in the range of about 850° to 950° F., for producing high-quality shale oil in yields that exceed the Fischer Assay. The addition of H_2O reduces the hydrogen consumption and heat load required for a given yield of shale oil. The process can be self-sustaining in that the shale oil and water produced may be used for making the synthesis gas used in the hydrogenation and denitrification of the shale oil.



3,617,472
PRODUCTION OF SHALE OIL

Warren G. Schlinger, Pasadena; Dale R. Jesse, Hacienda, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,449
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **7 Claims**



Process for recovering shale oil from oil shale by retorting with synthesis gas, i.e., a mixture of carbon monoxide and hydrogen, generated by partial combustion of byproduct gas with oxygen, wherein part of the heat required for retorting is provided by the hot synthesis gas, and additional hydrogen is produced in the oil shale retort by the water-gas shift reaction, the shale acting as a catalyst; and the process being self-sufficient in requiring no external source of water.

3,617,473
ELECTRICAL INSULATING OIL CONTAINING A HYDROTREATED CATALYTICALLY CRACKED CYCLE OIL

Thomas G. Lipscomb, II, Baytown, Tex., assignor to Esso Research and Engineering Company

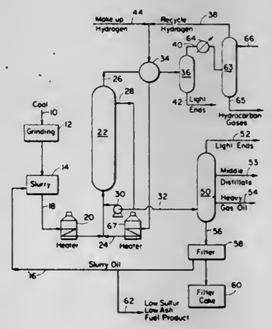
Filed Feb. 27, 1970, Ser. No. 14,986
Int. Cl. C10g *23/00*; H01b *3/22*
U.S. Cl. 208—14 **21 Claims**

The oxidative resistance of a mineral base oil useful as an electrical insulating oil but deficient in oxidative resistance is improved while the impulse strength of the oil is retained at an acceptable level, at least about 140 kv., by combining from about 80 to about 97 parts of the mineral base oil with from about 20 to about 3 parts of a hydrogen-refined light catalytic cycle stock fraction which boils above about 450° F. and below about 690° F., preferably below about 660° F., and has a 50 percent distillation point of at least about 550° F. This fraction of light catalytic cycle stock contains no more than about 1.0 weight percent of aromatic hydrocarbon compounds of at least four condensed rings. The blend of mineral base oil and catalytic cycle stock fraction contains no more than about 22 weight percent of all aromatic compounds and has no more than about 0.10 weight percent of aromatic hydrocarbon compounds of at least four condensed rings. The catalytic cycle stock fraction may be dewaxed before addition to the mineral base oil, and the resultant blend may be treated with activated earth for additional color and oxidation stability improvement.

3,617,474
LOW SULFUR FUEL OIL FROM COAL

Harold H. Stotler, Westfield, N.J.; Michael Calderon, Flushing, N.Y., and Clarence A. Johnson, Princeton, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed June 10, 1970, Ser. No. 45,081
Int. Cl. C01g *1/06*
U.S. Cl. 208—10 **9 Claims**



The economic production of a low sulfur residual fuel oil by the hydroconversion of coal is accomplished in an "ebullated" bed system in the absence of downstream processing and the use of a minimum of hydrogen to produce a fuel of high B.t.u. value and low sulfur content.

3,617,475
PROCESS FOR PRODUCING LUBRICATING OILS WITH GOOD LOW TEMPERATURE HAZING PROPERTIES

William C. Offutt, Pittsburgh; Richard G. Goldthwait, Pittsburgh; James R. Murphy, Springdale, and Harry C. Stauffer, Cheswick, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 533,456, Mar. 11, 1966, now abandoned, Continuation of application Ser. No. 754,475, Aug. 21, 1968, now abandoned. This application Jan. 15, 1970, Ser. No. 4,172
Int. Cl. C10g 23/02
U.S. Cl. 208—33 8 Claims

A process for producing a finished lubricating oil with good low-temperature hazing properties from lubricating oil base stocks comprised substantially of components boiling above 800° F. and containing more than about 0.75 percent by weight sulfur by subjecting such base stock to hydrofinishing and then dewaxing the hydrofinished base stock.

3,617,476
LUBRICATING OIL PROCESSING

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,233
Int. Cl. C10g 43/08
U.S. Cl. 208—36 10 Claims

Lubricating oils of high-viscosity index are produced in good yield by a sequence involving mild hydrogenation, solvent refining and dewaxing. The process is particularly effective for the treatment of lube oil fractions containing at least 1 percent Conradson Carbon Residue using N-methyl pyrrolidone as the solvent.

3,617,477
PROCESS FOR PRODUCING A PITCH AND TARRY SUBSTANCE

Shimpei Gomi, and Takuji Hosoi, both of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1969, Ser. No. 869,914
Claims priority, application Japan, Nov. 6, 1968, 43/80593
Int. Cl. C10c 3/00; C10g 9/36, 9/40
U.S. Cl. 208—40 3 Claims

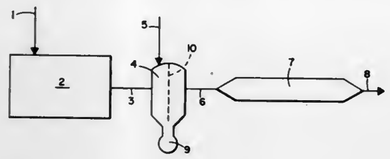
A process for producing pitch and tar characterizing by introducing the raw oil, whose aromatic content is more than 80 percent, into such heat medium as inert gases such as steam heated up to 1,300° to 2,500° C. or complete combustion flame of the same temperature range produced by using fuel and air or oxygen, thus allowing it to react for 0.001 to 0.1 seconds at a temperature of 900° to 1,500° C. under a pressure 300 mm./Hg. absolute to 20 kg./cm.² gauge.

3,617,478
SUPPRESSION OF COKE FORMATION IN A THERMAL HYDROCARBON CRACKING UNIT

James Ely King, Jr., Groves, and Sidney Theodore Jones, Port Neches, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation-in-part of application Ser. No. 872,220, Oct. 29, 1969, now abandoned. This application July 20, 1970, Ser. No. 56,264
Int. Cl. C10g 9/16; C07c 5/18, 11/06
U.S. Cl. 208—48 AA 9 Claims

Coke formation and deposits in the inline heat exchanger of a thermal hydrocarbon cracking unit comprised of a thermal-cracking zone, a quenching apparatus and the heat exchanger are removed and prevented by introducing an aqueous solution of an alkali metal salt or hydroxide into the

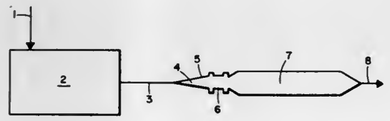


hydrocarbon flow at a point downstream of the cracking zone of the unit.

3,617,479
SUPPRESSION OF COKE AND HEAVY HYDROCARBON FORMATION IN HYDROCARBON UNITS

James Ely King, Jr., Groves, and Sidney Theodore Jones, Port Neches, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation-in-part of application Ser. No. 872,220, Oct. 29, 1969, now abandoned. This application July 20, 1970, Ser. No. 56,486
Int. Cl. C10g 9/16; C07c 11/06, 5/18
U.S. Cl. 208—48 AA 9 Claims

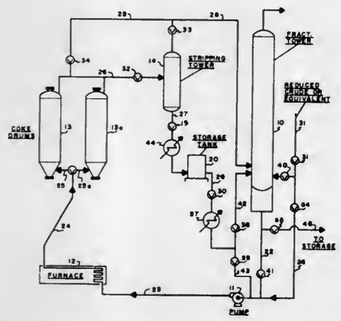


Coke formation and deposits in thermal and catalytic hydrocarbon cracking units and catalytic dehydrogenation units are suppressed by introducing an aqueous solution of an alkali metal salt or hydroxide into the hydrocarbon flow at a point downstream of the furnace zone of the unit.

3,617,480
TWO STAGES OF COKING TO MAKE A HIGH QUALITY COKE

Harvey E. Keel, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed May 29, 1969, Ser. No. 829,082
Int. Cl. C10b 55/00; C10g 37/00
U.S. Cl. 208—50 3 Claims

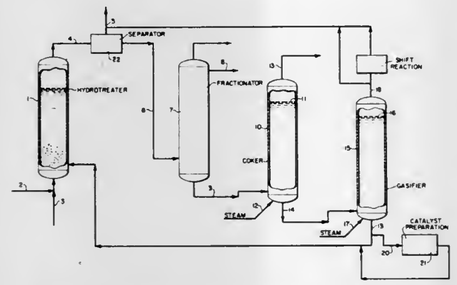


The coking process disclosed herein provides a method for producing high quality petroleum coke which is particularly suitable for use in manufacturing electrothermic graphite electrodes. A high-boiling gas oil fraction is obtained from the overhead products produced during the coking of a petroleum oil residuum. This high-boiling gas oil fraction is segregated during the manufacture of regular or average quality petroleum coke and is subsequently coked in a separate coking operation under delayed coking conditions of time, temperature and pressure to produce a superior quality petroleum coke.

3,617,481
COMBINATION DEASPHALTING-COKING-HYDROTREATING PROCESS

Alexis Voorhies, Jr., and Glen P. Hamner, both of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Dec. 11, 1969, Ser. No. 884,181
Int. Cl. C10g 31/14, 37/00
U.S. Cl. 208—50 16 Claims



A heavy hydrocarbon residuum is hydrotreated or deasphalted to form a heavy bottoms fraction in which the metals are concentrated. The high-metals fraction is coked to form coke containing the metals and the coke is activated by gasification to form water gas. The activated coke containing the metals, with or without fortification by additional catalytic elements is used as catalyst in a hydrotreating step which may be the hydrotreating step used to concentrate the metals or may be a separate step in which the raffinate with or without the coker gas oil is used as feed. The deasphalting step may be preceded by a vacuum distillation step in which additional gas oil may be formed which can be used as at least part of the feed to the hydrotreating step.

3,617,482
PROCESS FOR THE PRODUCTION OF LUBRICATING OILS

Clark J. Egan, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 748,979, July 31, 1968, now abandoned. This application Nov. 10, 1969, Ser. No. 875,496
Int. Cl. C10g 13/02, 37/02
U.S. Cl. 208—59 8 Claims

Lubricating oil production process comprising hydrocracking in a first zone a hydrocarbon oil feed in the presence of a hydrocracking catalyst comprising silica and alumina and containing more alumina then silica, hydrocracking in a second zone a second hydrocarbon oil feed, together with a wax-containing hydrocarbon fraction from said first zone, in the presence of a hydrocracking catalyst comprising silica and alumina and containing more alumina than silica, and recovering from the effluent of said second zone at least one light neutral oil having a VI above 100.

3,617,483
HYDROCRACKING PROCESS

Edward T. Child, Fishkill; Reese A. Peck, Fishkill, and Donald A. Messing, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 25, 1968, Ser. No. 724,286
Int. Cl. C10g 37/02; B01j 11/22
U.S. Cl. 208—59 8 Claims

A two-stage hydrocracking process for the conversion of heavy hydrocarbon fractions containing at least 50 p.p.m. nitrogen into lighter products using in both stages a catalyst containing a hydrogenating component supported on a mixture of a modified crystalline zeolite and at least one amorphous inorganic oxide.

3,617,484
INCREASING THE V.I. OF HYDROCRACKED LIGHT LUBES

Sheldon L. Thompson, Glen Mills; Albert T. Olenzak; Rene F. Kress, Media, Pa., and Ib Steinmetz, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.

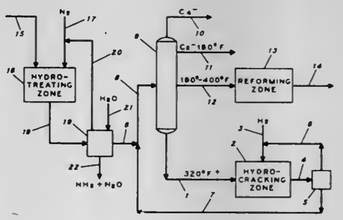
Filed Nov. 29, 1968, Ser. No. 780,241
Int. Cl. C10g 37/02
U.S. Cl. 208—59 5 Claims

A process for increasing the V.I. of a light lube fraction approximating the viscosity range of a 100 Neutral oil which has been hydrocracked as part of a relatively wide-range lube fraction wherein the light lube fraction is isolated and rehydrocracked in the absence of heavier fractions.

3,617,485
HYDROCRACKING CATALYST COMPRISING AN AMORPHOUS ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND RHENIUM, AND PROCESS USING SAID CATALYST

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 20, 1969, Ser. No. 801,007
Int. Cl. C10g 13/10; B01j 11/08
U.S. Cl. 208—59 17 Claims



A hydrocracking catalyst comprising an amorphous aluminosilicate cracking component having a silica-to-alumina weight ratio from 30:70 to 95:5, 0.005 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, and iridium and compounds thereof, 0.005 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from rhenium and compounds thereof, and 0.0 to 5.0 weight percent, based on said cracking component and calculated as fluorine, of fluorine or a compound thereof, and processes using said catalyst.

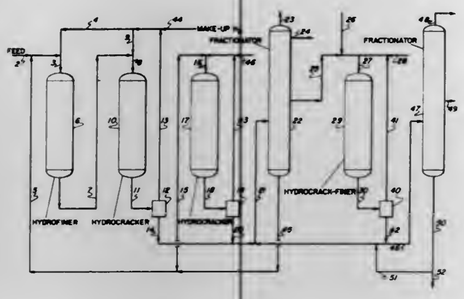
3,617,486
HYDROCRACKFINING OF HYDROCARBON FRACTIONS OVER MIXED METAL CATALYSTS

William R. Lewis, Baton Rouge; Ralph B. Mason, Denham Springs, and Glen P. Hamner, Baton Rouge, all of La., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 640,588, May 23, 1967, now abandoned, Continuation-in-part of application Ser. No. 785,115, Dec. 19, 1968, now abandoned. This application Nov. 25, 1969, Ser. No. 879,941
Int. Cl. C01b 33/28; C10g 13/04, 37/00
U.S. Cl. 208—59 26 Claims

A process for upgrading low octane heavy naphtha, such as a 350°–430° F. cut from a conventional hydrocracking operation, or normally virgin crude fractions used to prepare premium jet fuel and middle distillate, as well as mixtures of the cracked and virgin fractions. By treating such hydrocarbons, e.g., the 350°–430° F. cut, alone or in admixture with

other hydrocarbons, with a dual functional catalyst composition comprising a metal hydrogenation component composited with a crystalline aluminosilicate zeolite cracking component, product quality is upgraded. The conditions utilized in the process are less severe than that normally utilized in a hydrocracking operation but more severe than generally employed in hydrocracking operations so as to result in the



conversion of the 350°–430° F. hydrockackate fraction into a high-octane number C_5–350° F. naphtha. This C_5–350° F. naphtha product is amenable to further improvement by powerforming and/or special recycle. Catalysts which are of special interest in the practice of the "hydrockackfining process" comprise the mixed nonnoble metal catalysts supported on crystalline aluminosilicate zeolites having a silica-to-alumina mole ratio greater than 3.

3,617,487
JET FUEL PRODUCTION
Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 749,836, Aug. 2, 1968, now abandoned. This application Dec. 9, 1969, Ser. No. 883,590
Int. Cl. C10g *37/02;* **B01j** *11/22;* **C10l** *1/04*
U.S. Cl. 208—59 **7 Claims**

The disclosure relates to a process for producing jet fuel from a hydrocarbon feedstock boiling at least partly above the jet fuel range, which comprises:

a. Contacting the feedstock in a first zone, at elevated temperature and pressure and in the presence of hydrogen, with a catalyst comprising a crystalline zeolitic molecular sieve dispersed in a nonzeolitic hydrocracking catalyst matrix;

b. Operating the first zone at conditions to obtain between 10 and 35 percent conversion of the feedstock to material boiling in the jet fuel range and withdrawing a first zone effluent comprising partially converted feedstock;

c. Passing at least a portion of the first zone effluent from the first zone to a second zone;

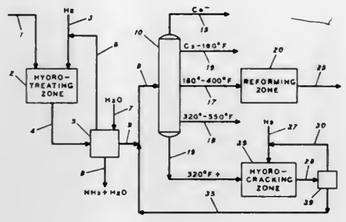
d. Contacting said portion of the first zone effluent in the second zone, at elevated temperature and pressure and in the presence of hydrogen, with an amorphous catalyst comprising metals or compounds of metals selected from Group VI or VIII or both of these groups, and a siliceous cracking component; and

e. Operating the second zone at conditions to obtain between 10 and 45 percent conversion of said portion of the first zone effluent to material boiling in the jet fuel range.

Preferably, the first and second zones are contained in one common reactor vessel.

3,617,488
HYDROTREATING CATALYST COMPRISING CLAY-TYPE ALUMINOSILICATE COMPONENT AND A CRYSTALLINE ZEOLITIC MOLECULAR SIEVE COMPONENT, AND PROCESS USING SAID CATALYST
Sigmund M. Csicsery, 1145 Garden Lane, Lafayette, Calif.
Filed Dec. 19, 1969, Ser. No. 886,710
Int. Cl. C01b *33/28;* **C10g** *13/04, 37/00*
U.S. Cl. 208—59 **20 Claims**

A catalyst comprising an interstratified synthetic crystalline aluminosilicate cracking component and a crystalline zeolitic molecular sieve component, which may be dispersed in a matrix comprising a siliceous gel, if desired one or both of said components being substantially in the ammonium or hydrogen form and substantially free of any catalytic metal or metals when dispersed in a matrix, and if desired one of said components being substantially in the ammonium or



hydrogen form and substantially free of any catalytic metal or metals when not dispersed in substantially matrix, a hydrogenating component selected from platinum and compounds thereof and palladium and compounds thereof, a component selected from chromium and compounds thereof, and processes using said catalyst.

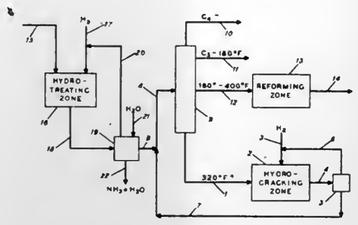
3,617,489
HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND GOLD, PROCESS USING SAID CATALYST
Sigmund M. Csicsery, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed June 25, 1969, Ser. No. 836,302The portion of the term of the patent subsequent to Dec. 15, 1978, has been disclaimed.
Int. Cl. C10g *13/02*
U.S. Cl. 208—60 **21 Claims**

A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, iridium and compounds thereof, and nickel and compounds thereof, and 0.01 to 5.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from the group consisting of gold and compounds thereof, and processes using said catalyst.

3,617,490
HYDROCRACKING CATALYST COMPRISING A LAYERED CLAYsTYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT, AND A CHROMIUM OR TUNGSTEN COMPONENT, AND PROCESS USING SAID CATALYST
Sigmund M. Csicsery, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed July 8, 1969, Ser. No. 839,999 The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed.
Int. Cl. C01b *33/28;* **C10g** *13/04, 37/00*
U.S. Cl. 208—60 **19 Claims**

A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, and iridium and compounds thereof, and 0.01 to 5.0 weight percent, based on said cracking com-

ponent and calculated as the metal, of a hydrogenating component selected from the group consisting of chromium and



compounds thereof and tungsten and compounds thereof, and processes using said catalyst.

3,617,491
HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND A THORIUM OR URANIUM COMPONENT, AND PROCESS USING SAID CATALYST
Sigmund M. Csicsery, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Oct. 6, 1969, Ser. No. 863,976The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed.
Int. Cl. C10g *13/02*
U.S. Cl. 208—60 **19 Claims**

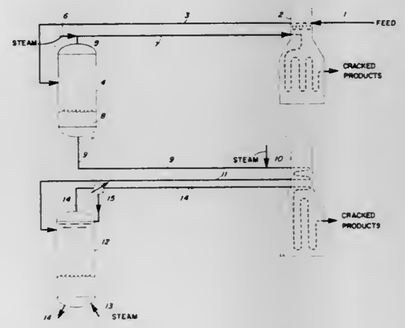
A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, and iridium and compounds thereof, and 0.01 to 5.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from the group consisting of thorium and compounds thereof and uranium and compounds thereof, and processes using said catalyst.

3,617,492
PROCESS FOR CATALYTIC REFORMING WITH HIGH PROPANE YIELD
Maurice G. Lorenz, Baton Rouge, La., and Charles Kirk Brown, Florham Park, N.J., assignors to Esso Research and Engineering Company
Filed Jan. 15, 1969, Ser. No. 791,487
Int. Cl. C10g *35/04, 39/00*
U.S. Cl. 208—66 **5 Claims**

An improved hydroforming process wherein the n-paraffins in the hydroformer feed are converted to normally gaseous hydrocarbons, particularly propane. The improvement is accomplished by placing a selective hydrocracking catalyst comprising hydrogen-erionite in the bottom of the lead reactor of a multiple-stage, fixed-bed hydroforming process. The normally gaseous hydrocarbons are separated from the lead reactor effluent. The propane yield can be maximized, and the octane rating of the hydroformer product is improved.

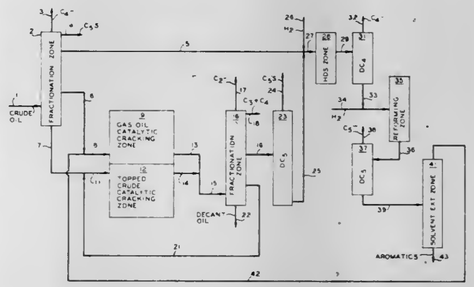
3,617,493
PROCESS FOR STEAM CRACKING CRUDE OIL
Guy B. Wirth, Florham Park, and Charles E. Jahnig, Rumson, both of N.J., assignors to Esso Research and Engineering Company
Filed Jan. 12, 1970, Ser. No. 2,258
Int. Cl. C10g *9/36*
U.S. Cl. 208—80 **17 Claims**

An improved process for steam cracking a crude oil feed to produce products useful as chemical raw materials or fuels characterized by the steps wherein the crude oil feed is first passed through the convection section of a steam cracking furnace to vaporize the materials in the feed boiling below about 450° F., i.e., a naphtha fraction. The vaporized portion of the crude oil feed is then separated from the liquid portion of the feed by passing the liquid and vapor fractions into a separation zone, i.e., a flash drum separator wherein the vaporized portion of the feed passes overhead and is then fed, with steam, into the steam cracking furnace and subjected to short residence time, high-temperature cracking conditions. The liquid portion of the feed i.e., nonvaporized portion which settles to the bottom of the flash drum separa-



tor is withdrawn therefrom and passed through the convection section of a second steam cracking furnace and thereafter into a second separation zone. By introducing steam into the second zone, i.e., flash drum separator, materials boiling above about 450° F. and below about 1,100° F., i.e., the gas oil fraction of the crude, pass overhead from the separator and are then introduced into a second steam cracking furnace, without the need to further add substantial amounts of diluent steam, to be cracked under optimum gas oil fraction cracking conditions.

3,617,494
PRODUCTION OF NAPHTHA FEEDSTOCK FROM CRUDE OIL
Dean P. Montgomery, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 22, 1970, Ser. No. 4,990
Int. Cl. C10g *39/00*
U.S. Cl. 208—80 **7 Claims**

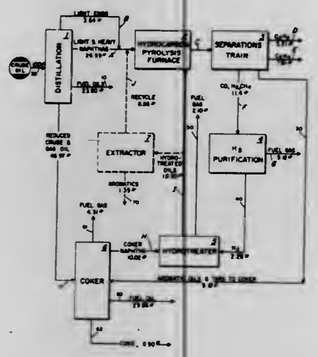


A process for improved production of aromatics-rich naphtha from crude oils: crude oil is fractionated to produce a virgin naphtha, gas oil is combined with paraffinic raffinate and cracked, and bottoms which is combined with fractionator cycle oil and cracked. Products of cracking are combined and fractionated into cracked naphtha, cycle oil, and decant oil. The naphtha cuts are combined, hydrodesulfurized, reformed, and separated into paraffinic raffinate and the aromatics-rich extract naphtha as product.

3,617,495
PROCESS FOR PRODUCTION OF OLEFINS AND ACETYLENE

Carle C. Zimmerman, Jr., Littleton, Colo., and Joe T. Kelly, deceased, late of Littleton, Colo. (by La Verne S. Kelly, executrix), assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 25, 1969, Ser. No. 821,164
Int. Cl. C10g *31/00*
U.S. Cl. 208—80 **10 Claims**

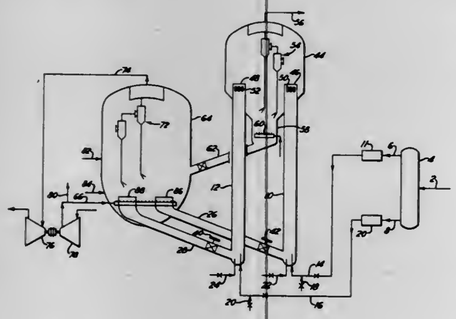


Ethylene, acetylene, and petroleum coke are manufactured by distilling a crude oil to produce a more volatile straight run naphtha and a less-volatile reduced crude oil; feeding the straight run naphtha to a hydrocarbon pyrolysis furnace to produce products comprising acetylene, ethylene, and hydrogen; coking the reduced crude to produce petroleum coke and a coker naphtha; separating a portion of the hydrogen from the hydrocarbon pyrolysis furnace effluent; using a portion of the hydrogen to hydrotreat the coker naphtha so as to produce hydrotreated oils having a substantially lower aromatic and olefin content than the coker naphtha; and feeding a portion of the hydrotreated oils into the hydrocarbon pyrolysis furnace.

3,617,496
FLUID CATALYTIC CRACKING PROCESS WITH A SEGREGATED FEED CHARGED TO SEPARATE REACTORS

Millard C. Bryson, Conway, Pa., and James R. Murphy, Huntington Station, N.Y., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 25, 1969, Ser. No. 836,382
Int. Cl. C01b *33/28*; **C10g** *11/18, 11/20*
U.S. Cl. 208—80 **11 Claims**

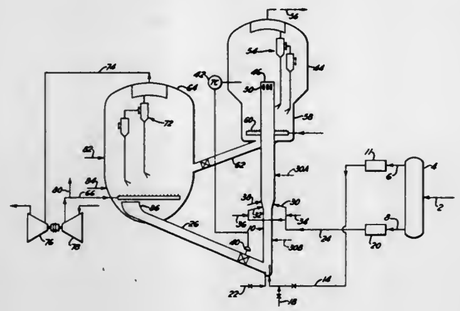


A total hydrocarbon feed is segregated into relatively low and high molecular weight fractions and the fractions are charged to separate reactors. The fraction in each reactor is cracked in the presence of a fluid zeolite catalyst or a catalyst of comparable activity and/or selectivity which produces a transient maximum gasoline yield at a residence time of 5 seconds or less and in the presence of a diluent vapor or vapors which lower the partial pressure of the hydrocarbon feed and increase gasoline selectivity. Residence time in each reactor is established by controlling the total charge rate of hydrocarbon and diluent vapor to the reactor. The ratio of diluent vapor or vapors to hydrocarbon feed in each reactor is also controlled so that a greater yield of gasoline is recovered from each reactor than could be recovered in the absence of the diluent vapor.

3,617,497
FLUID CATALYTIC CRACKING PROCESS WITH A SEGREGATED FEED CHARGED TO THE REACTOR

Millard C. Bryson, Conway, Pa., and James R. Murphy, Huntington Station, N.Y., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 25, 1969, Ser. No. 836,404
Int. Cl. C01b *33/28*; **C10g** *11/18*; **C10q** *11/20*
U.S. Cl. 208—80 **11 Claims**



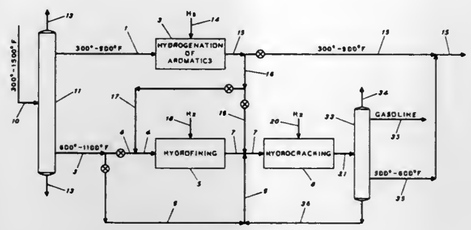
A hydrocarbon is cracked in the presence of a fluid zeolite catalyst or a catalyst of comparable activity which produces a transient maximum gasoline yield at a residence time of 5 seconds or less and in the presence of a diluent vapor or vapors which lower the partial pressure of the hydrocarbon feed or feeds and increase gasoline selectivity. Residence time is established by controlling the total charge rate of hydrocarbons and diluent vapors. The ratio of diluent vapors to hydrocarbon feed is also controlled so that a greater yield of gasoline is recovered from the process than could be recovered in the absence of the diluent vapor or Vapors. Gasoline yield is further enhanced by segregating the hydrocarbon feed and charging the relatively lower molecular weight feed fraction or fractions near the bottom of an elongated riser or transfer line rector and the relatively higher molecular weight feed fraction or fractions progressively further up the riser or transfer line.

3,617,498
CATALYTIC HYDROCRACKING PROCESS

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 2, 1969, Ser. No. 829,174
Int. Cl. C10g *13/02, 23/00, 37/06*
U.S. Cl. 208—80 **1 Claim**

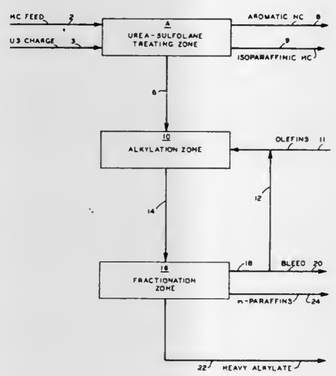
In a process wherein jet fuels and gasoline are produced from hydrocarbons boiling in the range 300° to 1,500° F., including substantial quantities of hydrocarbons boiling in the range 300° to 650° F. and substantial quantities of heavier hydrocarbons boiling in the range 550° to 1,100° F., by process steps including catalytic hydrocracking, the improvement which comprises catalytically hydrocracking said hydrocarbons boiling in the range 550° to 1,100° F., and catalytically hydrogenating said hydrocarbons boiling in the range 300° to 650° F. prior to making use of said hydrocarbons boiling in the range 300° F. to 650° F. for jet fuel or for hydrocracking feedstock.



3,617,499
PROCESS FOR THE MANUFACTURE OF HIGH-PURITY N-PARAFFINS

Donald M. Little, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 18, 1969, Ser. No. 886,299
Int. Cl. C10g *29/22*; **C07c** *9/14*
U.S. Cl. 208—85 **3 Claims**



A process for the manufacture of high-purity n-paraffins from mixed straight and branched chain hydrocarbons achieved through a primary adduction step followed by alkylation.

3,617,500
HYDROCONVERSION PROCESS UTILIZING A WATER-WASHED ASPHALT FEEDSTOCK

Stanley C. Haney, Homewood, and Edward W. Remus, Buffalo Grove, both of Ill., assignors to Atlantic Richfield Company

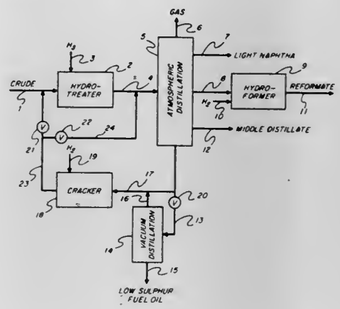
Filed Jan. 15, 1969, Ser. No. 791,498
Int. Cl. C10g *31/08*
U.S. Cl. 208—88 **12 Claims**

A process for removing water-soluble salts from asphalt by first blending the asphalt with a hydrocarbon solvent, preferably predominantly aromatic, and then washing the diluted asphalt with water. Hydroconversion, e.g. hydrocracking or desulfurization, of such desalted asphalts over a catalyst, preferably disposed as a fixed bed, results in increased maintenance of catalyst activity which eventually lines out at a higher level than catalysts employed in hydroconverting unwashed asphalts.

3,617,501
INTEGRATED PROCESS FOR REFINING WHOLE CRUDE OIL

Jackson Eng, Sarnia, and John L. Tiedje, Sarnia Township, Canada, assignors to Esso Research and Engineering Company

Filed Sept. 6, 1968, Ser. No. 757,939
Int. Cl. C10g *23/02*
U.S. Cl. 208—89 **8 Claims**

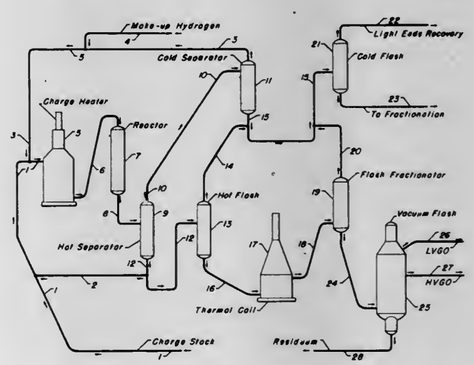


The disclosure relates to a process for the refining of whole crude oil to produce a maximum quantity of gasoline and distillate products and a minimum quantity of industrial fuel oil. The process features hydrotreating of whole crude oil as the first major processing step.

3,617,502
DESULFURIZATION AND CONVERSION OF HYDROCARBONACEOUS BLACK OILS

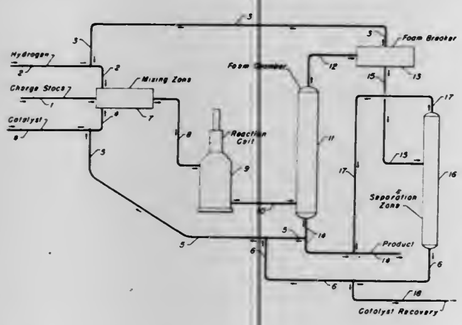
Frank Stolfa, Park Ridge, and Laurence O. Stine, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 28, 1968, Ser. No. 771,250
Int. Cl. C10g *37/04*
U.S. Cl. 208—89 **8 Claims**



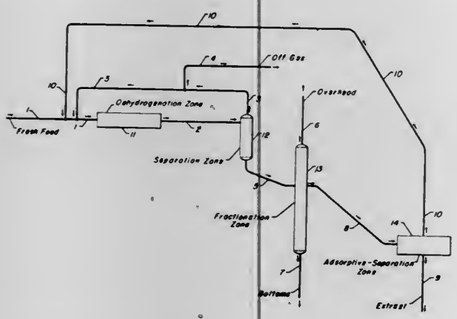
A process for converting asphaltene-containing hydrocarbonaceous black oils into lower boiling, normally liquid hydrocarbon products. The process involves the integration of a thermal cracking coil and fixed-bed catalytic hydrogenation and desulfurization, and is especially applicable to sulfurous charge stocks containing less than 150 p.p.m. of metallic contaminants, and more than about 10.0 percent by volume of nondistillables. The charge stock is initially subjected to fixed-bed catalytic desulfurization and hydrogenation, and a series of separation steps to concentrate that portion of the reaction zone product boiling at temperatures above the normal gasoline boiling range. This high-boiling concentrate is then subjected to a noncatalytic, thermal cracking reaction zone or coil.

3,617,503
SLURRY PROCESSING FOR BLACK OIL CONVERSION
Edward S. Rogers, Hinsdale, and Edward Horvath, Hickory Hills, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 17, 1969, Ser. No. 885,857
Int. Cl. C10g *13/00*
U.S. Cl. 208—97 **6 Claims**



A catalytic slurry process for converting a hydrocarbonaceous charge stock containing hydrocarbon-insoluble asphaltenes. The slurry consists of the fresh feed charge stock, hydrogen, a recycled diluent boiling above about 950° F. and from 1.0 percent to about 25.0 percent by weight of finely divided catalyst particles. Separation of the catalyst, from the total reaction product, is effected through the use of a foam chamber and foam breaker. Preferred catalysts are the unsupported sulfides of the metals from Groups V–B, VI–B and VIII, with vanadium sulfide being particularly preferred.

3,617,504
PRODUCTION AND RECOVERY OF OLEFINIC HYDROCARBONS
Roy C. Berg, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 22, 1969, Ser. No. 859,737
Int. Cl. C07c *5/18*
U.S. Cl. 208—100 **27 Claims**



A process for the production and recovery of monoolefinic hydrocarbons. A paraffinic hydrocarbon feed stream is contacted with a dehydrogenation catalyst to produce olefinic hydrocarbons with minor side-reaction product comprising primarily aromatic type hydrocarbons. The effluent material from the dehydrogenation catalyst is passed into a separation zone wherein the olefinic and aromatic hydrocarbons are separated from the unreacted paraffinic hydrocarbons. The unreacted paraffinic hydrocarbons are recycled to the dehydrogenation reactor for further production of olefinic hydrocarbons while the olefinic hydrocarbons are recovered as a relatively pure hydrocarbon extract stream.

3,617,505
HYDROCONVERSION OF ASPHALTENES WITH A COKE PROMOTER
Edward L. Cole, Fishkill, and Edwin C. Knowles, Poughkeepsie, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed May 6, 1969, Ser. No. 822,317
Int. Cl. C10g *13/02, 13/04*
U.S. Cl. 208—108 **10 Claims**

An asphaltene hydroconversion process for the conversion of asphaltenes to lower boiling hydrocarbons by contacting said asphaltenes with hydrogen in the presence of a selectively oxidized coke, an ammonia-treated coke and mixtures thereof.

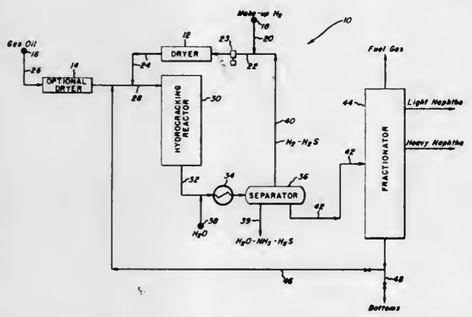
3,617,506
HYDROCONVERSION PROCESS
Edward L. Cole, Fishkill, and Irving G. Schwager, Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed May 21, 1969, Ser. No. 826,729
Int. Cl. C10g *11/02;* **B01j** *11/82*
U.S. Cl. 208—108 **10 Claims**

An asphaltenes hydroconversion process for the conversion of asphaltenes to lower boiling hydrocarbons by contacting said asphaltenes with hydrogen in the presence of a pyrolyzed polyacrylonitrile polymer or mixtures thereof.

3,617,507
PROCESS FOR HYDROCRACKING HEAVY HYDROCARBONS
Willi Oettinger; Walter Saum, and Rolf Seubert, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany
Filed Feb. 11, 1969, Ser. No. 798,453
Claims priority, application Germany, Feb. 17, 1968, Feb. 17, 1968; P 16 42 952.0, P 16 45 711.7
Int. Cl. C10g *13/04;* **C01b** *33/28;* **B01j** *11/54*
U.S. Cl. 208—111 **5 Claims**

A hydrocarbon conversion catalyst consisting essentially of nickel and/or molybdenum and a carrier comprising a crystalline zeolite and a mixture or compound of alumina and magnesia, and the hydrocracking process using this catalyst and heavy hydrocarbon feedstocks in the form of crude oils, shale oils, residual oils and distillates thereof.

3,617,508
HYDROCRACKING PROCESS WITH DRYING OF HYDROGEN GAS RECYCLE
Joseph P. Gurawitz, Münster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed Apr. 2, 1969, Ser. No. 812,695
Int. Cl. C10g *13/02, 13/04, 13/06*
U.S. Cl. 208—111 **5 Claims**



Low-boiling hydrocarbons from a hydrocracking reactor are treated with water to wash out ammonia and some

hydrogen sulfide. Hydrogen gas is separated from the low-boiling hydrocarbons and dried before mixing with the feed to remove any water swept up with the separated hydrogen gas. The feed may also be passed through a dryer to remove water therefrom. Catalyst deactivation is minimized with a feed-hydrogen mixture containing less than 5 p.p.m. water by weight.

3,617,509
CATALYTIC COMPOSITION, METHOD OF PREPARING SAME, AND HYDROCARBON-CONVERSION PROCESS EMPLOYING SAME
Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 649,847, June 29, 1967, now abandoned. This application July 7, 1969, Ser. No. 839,692
Int. Cl. B01j *11/40;* **C10g** *13/02*
U.S. Cl. 208—111 **22 Claims**

A catalytic composition consisting essentially of an amorphous silica-alumina support having dispersed therein ultrastable, large-pore, substantially metal cation free, crystalline aluminosilicate material, a metal of Group VIA, and at least one metal of Group VIII of the Periodic Table of elements. A method of preparing this catalytic composition which comprises adding ions of the metals to a silica-alumina sol, adjusting the p^H of the composition, precipitating the sulfides of the metals, adding finely divided aluminosilicate material, drying, and calcining the resultant mixture. A hydrocarbon-conversion process employing this catalytic composition, particularly a process for hydrocracking nitrogen-contaminated hydrocarbon fluids.

3,617,510
HYDROPROCESSING WITH A GERMANIUM-RHENIUM-GROUP VIII NOBLE METAL CATALYST
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 839,086, July 3, 1969. This application Sept. 5, 1969, Ser. No. 855,725
Int. Cl. C10g *11/02*
U.S. Cl. 208—111 **11 Claims**

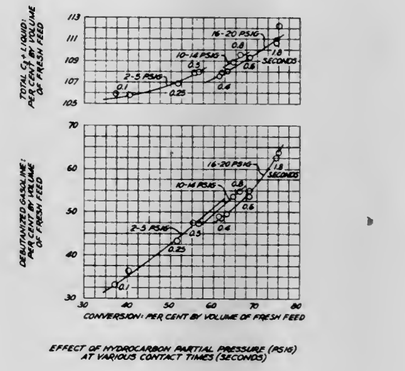
A process for hydrotreating (hydroprocessing) hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a rhenium component, a germanium component and a Group VIII noble metal component, in which process the chemical consumption of hydrogen is effected. A specific example of one such catalyst is a composite of a crystalline aluminosilicate, particularly faujasite, a rhenium component, a germanium component and a platinum component. Specific hydroprocesses are directed toward the hydrogenation of aromatic nuclei, hydrocracking, the ring-opening of cyclic hydrocarbons for producing jet fuel components, desulfurization, denitrification and hydrogenation.

3,617,511
RING-OPENING PROCESS
John W. Jenkins, Seabrook, and Charles T. Adams, Houston, both of Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,521
Int. Cl. C10g *13/02;* **C07c** *5/16;* **B01j** *11/08*
U.S. Cl. 208—112 **8 Claims**

A process for conversion of cyclic hydrocarbons to paraffins wherein cyclic hydrocarbons are contacted in the presence of hydrogen with a catalyst comprising rhodium or ruthenium on a halogen promoted refractory oxide.

3,617,512
FLUID CATALYTIC CRACKING PROCESS
Millard C. Bryson, Conway, Pa., assignor to James R. Murphy, Huntington Station, N.Y. and Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 25, 1969, Ser. No. 836,383
Int. Cl. C01b *33/28;* **C10g** *11/18, 11/20*
U.S. Cl. 208—120 **10 Claims**

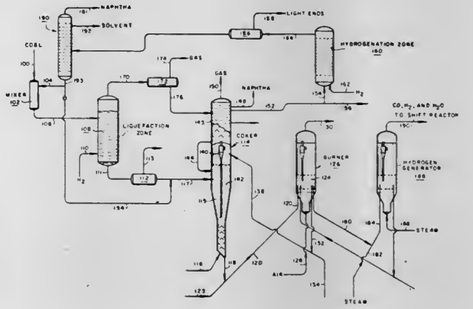
A hydrocarbon feed is cracked in the presence of a fluid zeolite catalyst or a catalyst of comparable activity and/or selectivity which produces a transient maximum gasoline yield at a residence time of 5 seconds or less and in the presence of a diluent vapor or vapors which lower the partial pressure of the hydrocarbon feed and increase gasoline selectivity. Residence time is established by controlling the total



EFFECT OF HYDROCARBON PARTIAL PRESSURE (PSIG) AT VARIOUS CONTACT TIMES (SECONDS)

charge rate of hydrocarbon and diluent vapor. The ratio of diluent vapor or vapors to hydrocarbon feed is also controlled so that a greater yield of gasoline is recovered from the process than could be recovered in the absence of the diluent vapor.

3,617,513
COKING OF HEAVY FEEDSTOCKS
Edward L. Wilson, Jr., Baytown, and Jacob B. Angelo, Houston, both of Tex., assignors to Esso Research and Engineering Company
Filed Jan. 3, 1969, Ser. No. 788,830
Int. Cl. C10g *9/32*
U.S. Cl. 208—127 **10 Claims**



The formation of char in fluid coking is inhibited by the presence of hydrogen-donor compounds in the fluid coking zone, increasing the yield of desirable liquid products. A hydrogen-donor solvent is admixed with a heavy fluid coker feedstock in amounts sufficient to provide at least 10 weight percent of hydrogen-donor compounds, based on total feed to the fluid coker. Preferable compounds for use as hydrogen donors are the partially saturated hydroaromatic compounds such as indane, C_{10}–C_{12} tetralins, C_{12} and C_{13} acenaphthenes, di-, tetra-, and octahydroanthracene, and tetrahydroacenaphthene.

The process is particularly useful in the production of liquid hydrocarbon products from solid coal wherein the coal is subjected to solvent liquefaction and the resulting liquid slurry is fed into a fluid-coking zone. Where hydrogen-donor solvent is used for the liquefaction step, and it does not become completely hydrogen-depleted, no additional solvent need be added prior to fluid coking. However, additional

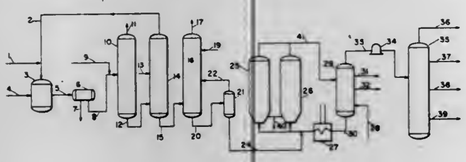
hydrogen-donor solvent may be added (and if not nondonor solvent was used in liquefaction, must be added) prior to such coking. The use of additional hydrogen-donor solvent further enhances the yield of liquid products and inhibits char yield.

Preferably, the fluid-coking step will be used in conjunction with an external burner, and a portion of the product coke will be removed for use in generating hydrogen by contact with steam, with such hydrogen being used to satisfy at least in part the demands for hydrogen in the hydrogenation of the recycle solvent.

3,617,514
USE OF STYRENE REACTOR BOTTOMS IN DELAYED COKING

Clifford H. Marlar, Corpus Christi, Tex., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Dec. 8, 1969, Ser. No. 882,867
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 **5 Claims**

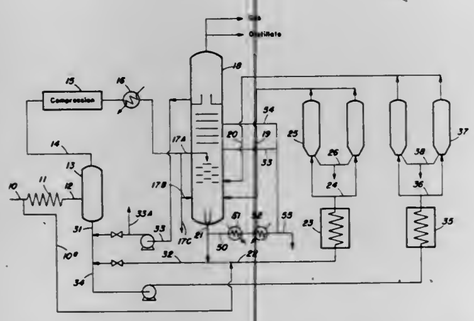


The use of heavy bottoms or styrene tar (containing sulfur and tertiary butyl catechol) from a dehydrogenation reactor for producing styrene from ethylbenzene, as part of the make up feed in a delayed petroleum coking operation. The styrene tar as obtained from the dehydrogenation reactor is mixed with a diluent such as light cycle oil, and fed to a coker along with preheated petroleum coking stock.

3,617,515
PRODUCTION OF NEEDLE COKE FROM COAL FOR PITCH

Ward J. Bloomer, Westfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed May 26, 1969, Ser. No. 827,603
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 **13 Claims**

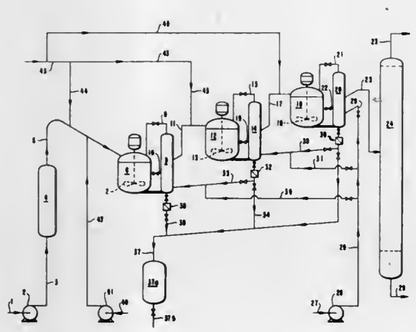


Process for producing graphitizable needle coke be delayed coking of a nonpetroleum fraction having a high content of condensed ring aromatic compounds and lower and upper cut points within the range from about 600° F. to about 1,200° F. In a preferred embodiment, the hereinabove noted fraction is separated from coal tar pitch having components boiling above 1,000° F. and the fraction boiling above 1,000° F. coked to carbon electrode grade coke.

3,617,516
PROCESS FOR THE ISOMERIZATION OF ALIPHATIC HYDROCARBONS

Gerrit Van Gooswilligen, and Heinz Voetter, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 27, 1969, Ser. No. 802,978
Claims priority, application Great Britain, Mar. 29, 1968, 15225/68
Int. Cl. C10g *35/06*
U.S. Cl. 208—134 **26 Claims**



A process for isomerizing aliphatic hydrocarbons containing at least five carbon atoms per molecule and employing a hexafluoroantimonic acid catalyst wherein the catalyst deactivates slowly, which is performed by employing a partially deactivated catalyst and a small amount of benzene in the feed, and carrying out the reaction in the presence of a small amount of hydrogen.

3,617,517
HYDROFORMING CATALYST

Jay A. Rashkin, Piscataway, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed June 23, 1969, Ser. No. 835,794
Int. Cl. C10g *35/06*
U.S. Cl. 208—136 **9 Claims**

A hydroforming catalyst comprising oxides of copper, nickel and molybdenum and a process for hydroforming hydrocarbon oils using such catalysts. The catalyst may also contain oxides of thorium or zirconium and is on a gamma alumina base.

3,617,518
INHIBITION OF HYDROGENOLYSIS

John H. Sinfelt, Berkeley Heights; Allan E. Barnett, Westfield, and James L. Carter, Chatham, all of N.J., assignors to Esso Research and Engineering Company

Filed June 20, 1969, Ser. No. 835,239
Int. Cl. C10g *35/06, 35/08*
U.S. Cl. 208—138 **10 Claims**

The incorporation of a Group IB metal with a Group VIII nonnoble metal or Group VIII, noble metal (Ru or Os) as a bimetallic catalyst, and possibly an alloy, results in the formation of a catalyst which, when used in a hydrocarbon conversion process, minimizes the hydrogenolysis activity of the Group VIII metal while maintaining or enhancing the catalytic activity of the Group VIII metal for conversion processes such as hydrogenation, dehydrogenation, or aromatization.

3,617,519
CONTROLLED SULFUR CONTENT IN PLATINUM-RHENIUM REFORMING

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 29, 1969, Ser. No. 795,082
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **10 Claims**

A process for reforming a gasoline fraction, wherein a mixture of the gasoline fraction, hydrogen, sulfur or a sulfur-containing compound, is continuously contacted in a substantially water-free zone, with a reforming catalyst at conditions selected to produce a high-octane reformate and wherein the reforming catalyst comprises a combination of a platinum group component, a rhenium component, a halogen component, and a sulfur component with an alumina carrier material is improved by selecting the amount of sulfur or sulfur-containing compound continuously entering the reforming zone as a direct function of the atomic ratio of the platinum group metal to the rhenium metal contained in the catalyst. Key feature of the improved process involves the continuous use of sulfur in a range which is determined primary by reference to the atomic ratio of the platinum group metal to rhenium contained in the catalyst.

3,617,520
SULFIDING OF LOW PLATINUM CONTENT CATALYST

Harris E. Kluksdahl, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

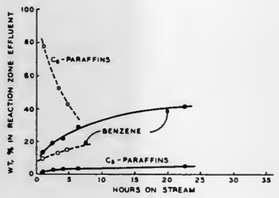
Continuation-in-part of application Ser. No. 729,079, May 14, 1968. This application June 25, 1969, Ser. No. 836,590
Int. Cl. C10g *35/08*
U.S. Cl. 208—138 **6 Claims**

The fouling rate of a reforming catalyst comprising less than about 0.3 weight percent platinum and 0.01 to 5 weight percent rhenium in association with a porous solid carrier is significantly decreased by sulfiding the catalyst prior to reforming.

3,617,521
REFORMING PROCESS WITH A CATALYST MIXTURE

Robert J. Houston, San Rafael, and Sigmund M. Csicsery, Lafayette, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 11, 1969, Ser. No. 840,917
Int. Cl. C10g *35/08*
U.S. Cl. 208—138 **17 Claims**



A naphtha feed is reformed in the presence of hydrogen at reforming conditions with a catalyst comprising a mixture of (1) a layered crystalline clay-type aluminosilicate and (2) a platinum group component in association with a porous solid carrier.

3,617,522
CATALYTIC REFORMING OF A RELATIVELY LEAN CHARGE STOCK

Michael W. Schrepfer, Buffalo Groves, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 24, 1969, Ser. No. 860,826
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **12 Claims**

A relatively lean hydrocarbon charge stock boiling in the gasoline range is catalytically reformed by contacting the charge stock, hydrogen and a halogen or a halogen-containing compound, in an essentially water-free reforming zone, with a reforming catalyst containing a platinum group component and a rhenium component at reforming conditions selected to produce a high octane C_5+ reformate for a first period extending until the C_5+ volume yield decreases to an unacceptable value, and, thereafter by continuously adding water or a water-producing compound to the reforming zone in an amount corresponding to about 5 to 50 weight parts per million of the hydrocarbon charge stock while continuing the contacting operation. Key feature of the subject process involves a two-step operation with this platinum-rhenium catalyst wherein the first step is operated at essentially water-free conditions with halogen inclusion and wherein the second step utilizes a carefully selected amount of water to effect a substantial improvement in the operation of the process.

3,617,523
REGENERATION PROCEDURE FOR SULFUR-CONTAMINATED HYDROCONVERSION UNIT

Burwell Spurlock, Lafeyette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

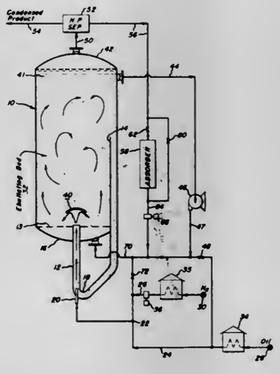
Filed Oct. 16, 1969, Ser. No. 867,068
Int. Cl. B01j *11/04*
U.S. Cl. 208—140 **9 Claims**

A platinum group component catalyst, used in a hydroconversion unit comprising a plurality of reactors in series, is regenerated to remove carbonaceous matter from the catalyst without contaminating the catalyst with sulfur compounds by purging the hydroconversion unit of hydrocarbons, circulating an inert gas through the hydroconversion unit at a pressure of from 50 to 1000 p.s.i.g., controlling the inlet temperature in all but the terminal reactor to below about 500° F. while controlling the inlet temperature in the terminal reactor at from 500° to 700° F., then introducing an oxygen-containing gas into the terminal reactor to remove carbonaceous matter from the catalyst but insuring that the oxygen is discontinued when the exit stream from the terminal reactor contains more than about 0.1 volume percent oxygen.

3,617,524
EBULLATED BED HYDROCRACKING

Arthur L. Conn, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed June 25, 1969, Ser. No. 836,409
Int. Cl. C10g *13/02*
U.S. Cl. 208—157 **4 Claims**

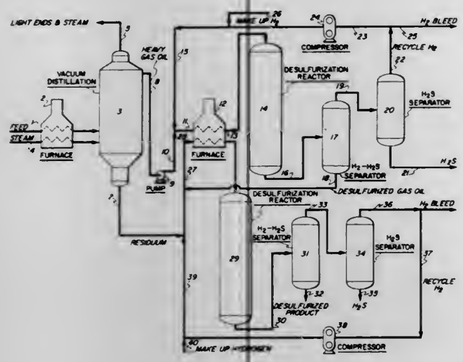


Disclosed is an improved H-oil process for hydrocracking a reduced crude oil or the like. The hydrocracking is conducted in a reactor containing an ebullating bed of oil, hydrogen, and hydrocracking catalyst, and a relatively high velocity oil-gas stream is injected into the reactor. Simultaneously a portion of the reacting mass within the reactor is withdrawn and reintroduced into the reactor by mixing with the stream.

3,617,525
RESIDUUM HYDRODESULFURIZATION

Karsten H. Moritz, and Robert C. W. Welch, both of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Apr. 3, 1969, Ser. No. 813,223
Int. Cl. C10g *23/00*
U.S. Cl. 208—211 5 Claims



An atmospheric residuum is desulfurized by first separating it into a gas oil fraction and a heavy residual fraction, desulfurizing the gas oil in the presence of hydrogen, combining the desulfurized gas oil with the heavy residual fraction and hydrodesulfurizing the mixture.

3,617,526
HYDRODESULFURIZATION OF A VACUUM GAS OIL AND VACUUM RESIDUUM

William R. Coons, Jr., Groves; Gerald V. Nelson, Nederland, Tex., and Glenn C. Wray, Dyersburg, Tenn., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 689,825, Dec. 12, 1967. This application Sept. 5, 1969, Ser. No. 855,756
Int. Cl. C10g *23/00, 23/02*
U.S. Cl. 208—211 4 Claims

Hydrodesulfurization of an atmospheric residuum is effected by separating it into a vacuum gas oil and vacuum residuum and desulfurizing the gas oil fraction under less severe conditions than the heavy fraction. The vacuum residuum is contacted initially with a catalyst containing a Group VI metal and Group VIII metal or their sulfides on an alumina support containing 2–4 weight percent silica, a surface area of at least 250 m^2/g. and a pore volume of at least 0.6 cc./g.; the effluent from the first zone is mixed with the gas oil fraction and the resulting mixture is then contacted with the catalyst at a lower temperature than the effluent temperature from said first zone.

3,617,527
DESULFURIZATION PROCESS AND CATALYST

Lee Hilfman, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 16, 1969, Ser. No. 867,084
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 6 Claims

A desulfurization catalyst of an alumina-containing carrier material, a nickel component and a tin component. Nickel constitutes from 1.0 percent to about 10.0 percent by weight of the composite and tin from about 0.7 percent to 7.0 percent, and preferred catalysts also contain from 4.0 percent to about 30.0 percent by weight of a Group VI–B metal component. The catalyst is prepared in a manner which inhibits the formation of nickel aluminate.

3,617,528
HYDROTREATING PROCESS AND CATALYST

Lee Hilfman, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Palines, Ill.

Filed Oct. 16, 1969, Ser. No. 867,085
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 7 Claims

A hydrotreating (or hydrorefining) catalyst of an alumina-containing porous carrier material, a nickel component and a phosphorous component. The catalyst contains from about 1.0 to about 10.0 percent by weight of a nickel component and from about 5.0 to about 40.0 percent by weight of a phosphorous component; preferred catalysts also contain from 4.0 to about 30.0 percent by weight of a Group VI–B metal component. The catalyst is prepared in a manner which inhibits the formation of nickel aluminate to the extent that not more than 0.1 percent by weight thereof is present in the final catalytic composite.

3,617,529
REMOVAL OF ELEMENTAL SULFUR CONTAMINANTS FROM PETROLEUM OILS

William H. Thompson, St. Louis, Mo., and Eldred E. Young, Concord, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Mar. 17, 1969, Ser. No. 808,002
Int. Cl. C10g *19/02*
U.S. Cl. 208—230 2 Claims

Elemental sulfur is separated from oil containing 0.3–5 percent elemental sulfur, the oil being used as the carrier vehicle for pipeline transportation of sulfur-oil slurries. The contaminated oil is contacted with an aqueous solution containing a mixture of sodium hydrosulfide and ammonium hydroxide; the oil phase is separated from the aqueous phase; the aqueous phase is heated at about 240° F. to form elemental sulfur and the aqueous phase is filtered after cooling to recover sulfur.

3,617,530
METALS REMOVAL FROM HEAVY HYDROCARBON FRACTIONS

Robert W. Rieve, Springfield; Harold Shalit, Drexel Hill, and John J. Rothrock, Ambler, all of Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 12, 1969, Ser. No. 876,052
Int. Cl. C10g *17/00, 29/00*
U.S. Cl. 208—253 19 Claims

The use of alkali or alkaline earth metals with amines or ammonia to reduce the level of metal contamination of heavy hydrocarbon fractions boiling above about 900° F. such as, tars, residua, and asphaltenes.

3,617,531
SELECTIVE ADSORPTION OF PHENOLS FROM SOLUTION IN HYDROCARBONS

Raymond C. Schlicht, Fishkill, and Frederic C. McCoy, Beacon, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 29, 1970, Ser. No. 59,345
Int. Cl. C10g *17/00*
U.S. Cl. 208—263 8 Claims

Extraction of phenolic materials from hydrocarbon solutions by means of polyurethane foam.

3,617,532
HYDROTREATING PROCESS

Robert A. Plundo, Greensburg, Pa., and Bruce K. Schmid, Prarie Village, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 23, 1968, Ser. No. 770,058
Int. Cl. C10g *23/02*
U.S. Cl. 208—264 5 Claims

Hydrotreating catalysts promoted with boria increase the viscosity index and decrease the iodine number of lube oil charge stocks.

3,617,533
REFINING OF HYDROCARBON WITH BORON TRIFLUORIDE

Jacobus J. Smit, Vijfhuizen, Haarlemmermeer, Netherlands, assignor to N. V. Nederlandse Raffinadery van Petroleumproducten Sparndamseweg, Haarlem, Netherlands

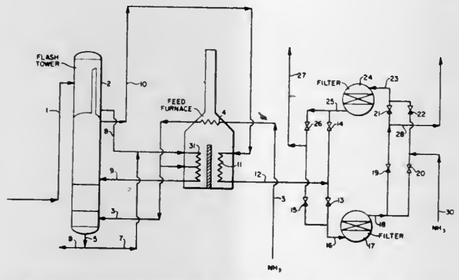
Filed Oct. 25, 1968, Ser. No. 770,843
Int. Cl. C10g *29/02*
U.S. Cl. 208—292 7 Claims

Hydrocarbon stocks containing undesirable impurities are refined by admixing between about 0.1 percent and 5 percent by weight of water with said hydrocarbon stocks and then treating said admixture with an amount of gaseous boron trifluoride in excess of that necessary for complex formation with the water. An insoluble precipitate is formed of said undesirable impurities that is readily separated from the hydrocarbon.

3,617,534
HYDROCARBON SEPARATION PROCESS

George J. Bacsik, Fanwood, N.J., assignor to Esso Research & Engineering Co.

Filed Jan. 29, 1970, Ser. No. 6,676
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 4 Claims

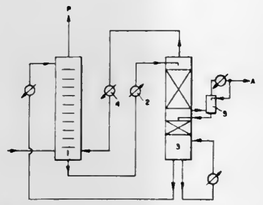


The high temperatures encountered in heating gas oil fractions containing C_{15}–C_{23} hydrocarbons for subsequent separation of the normal paraffins therefrom in a molecular sieve separation process are avoided by separating the C_{20}–C_{23} hydrocarbons as bottoms in the presence of 0.4 to 0.8 moles of ammonia per mole of feed as a stripping agent and heating the C_{19} and lower hydrocarbons in the presence of the ammonia whereby the residence time can be reduced and a maximum flashing temperature of 675° F. under 65 p.s.i.g. can be maintained to avoid cracking.

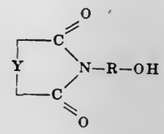
3,617,535
RECOVERY OF AROMATIC HYDROCARBONS FROM HYDROCARBON MIXTURES BY SELECTIVE EXTRACTION AND/OR EXTRACTIVE DISTILLATION

Hans-Martin Weitz, Frankenthal, and Ernst Fuerst, Neustadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen Rhineland, Pfalz, Germany

Filed Jan. 16, 1970, Ser. No. 3,338
Claims priority, application Germany, Jan. 18, 1969, P 19 02 461.4
Int. Cl. C10g *21/02, 2/20*
U.S. Cl. 208—323 4 Claims



Recovery of aromatic hydrocarbons by selective extraction of hydrocarbon mixtures containing olefins and naphthenes in addition to aromatic and paraffinic hydrocarbons. The extractant is a mixture of an N-alkylpyrrolidone and a compound of the formula

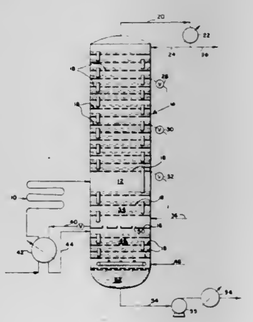


where Y is alkylene or alkenylene having two or three carbon atoms or o-phenylene which may be partially hydrogenated and R is alkylene having two to 12 carbon atoms.

3,617,536
PROCESS FOR THE DISTILLATION OF PETROLEUM CRUDE

Lonnie S. Saylor, Parsippany, N.J., and Arthur R. Campbell, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Mar. 11, 1969, Ser. No. 806,089
Int. Cl. B01d *3/06*; C10g *7/00*
U.S. Cl. 208—352 3 Claims

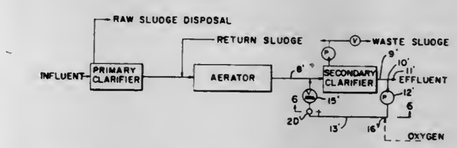


An improved process for the distillation of petroleum crude is provided in which hot bottoms liquid, remaining after flash distillation of crude in a fractionating tower, is withdrawn from the tower and passed to a cooling zone to cool the liquid to a temperature below its cracking temperature before it is returned to the stripping zone of the tower. Stripping the hot bottoms liquid at this reduced temperature, prevents cracking of the liquid in the stripping zone and avoids the formation of light ends thereby permitting bottoms product specifications to be more readily achieved.

3,617,537
BIOCHEMICAL SEWAGE TREATMENT VIA HIGH PURITY MOLECULAR OXYGEN

Floyd L. Vermette, Jackson, Mich., assignor to George E. Snyder Associates, Inc., Jackson, Mich.

Filed Mar. 12, 1969, Ser. No. 806,577
Int. Cl. C02c *1/08*
U.S. Cl. 210—8 9 Claims



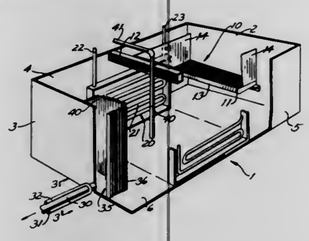
A process for improving aerobic biochemical purification of organic liquid wastes which includes dissolving high-purity

oxygen under pressure into water, and mixing the oxygen-charged water with the organic liquid wastes in one stage of treatment to increase dissolved oxygen concentration in the mixture above what it was in the organic liquid wastes before mixing. The process can be used with a lagoon method of aerobic biological sewage treatment as well as with an activated sludge sewage treatment. Apparatus is disclosed for carrying out the process.

3,617,538
GREASE DIGESTING METHOD

Ivan L. Bogert, c/o Clinton Boget Ave. 2038 Center Ave., Fort Lee, N.J.

Continuation-in-part of application Ser. No. 612,522, Jan. 30, 1967, now abandoned. This application Mar. 4, 1970, Ser. No. 16,295
Int. Cl. C02c *1/14*
U.S. Cl. 210—12 **2 Claims**

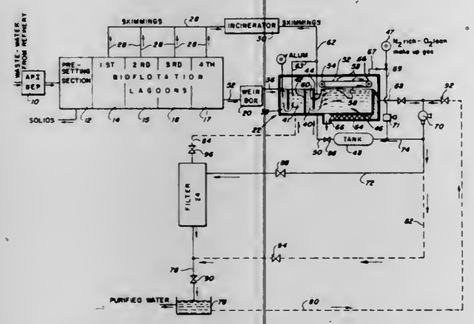


The present invention relates to a mechanism and method for conditioning grease before it is deposited into a digester. The grease is heated by heating coils in order to melt it so that when the grease is deposited into the digester, the digester enzymes will digest all of the grease. Preferably the grease solids are separated from nongrease solids prior to the melting step and are maintained in a separated condition until such time as the grease is ready to be digested. The grease is maintained in the liquified condition while it is transported from the heating tank to the digesters. Agitating means comprising injection of compressed air into the heating tank is used to prevent the grease from insulating the heating coils during melting.

3,617,539
PROCESS FOR REMOVING CONTAMINANTS FROM WASTE-WATER

James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed May 15, 1969, Ser. No. 824,780
Int. Cl. C02c *5/06*
U.S. Cl. 210—13 **11 Claims**

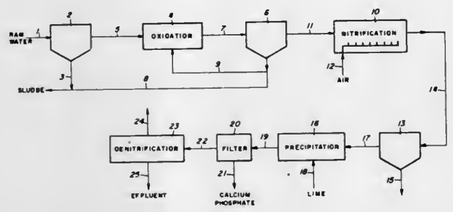


Contaminants in waste-water are removed by passing the waste-water through a biological treating zone, adding a coagulating agent to the effluent from this treating zone to coagulate into solids contaminants remaining in said effluent, and then separating the solids from the water. Separation can be achieved by either air flotation and/or filtration. Preferably, the effluent from the biological treating zone contains unflocculated biological solids which reinforce the effect of the coagulating agent.

3,617,540
REMOVAL OF NITROGEN AND PHOSPHORUS FROM WASTE WATERS

Dolloff F. Bishop, Camp Springs, and John B. Stamberg, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Interior

Filed May 13, 1970, Ser. No. 36,726
Int. Cl. C02c *1/02*
U.S. Cl. 210—16 **9 Claims**

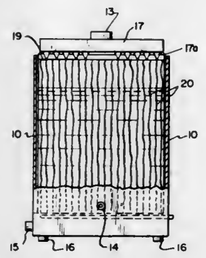


Nitrogen and phosphorus are removed from waste waters by a process including the steps of biological nitrification, chemical precipitation of phosphorus and biological dentrification. Buffering capacity of the water is substantially reduced and in some cases nearly eliminated by reaction of acid, produced in the nitrification step, with bicarbonate ion contained in the waste water. A precipitate containing phosphate in high concentration is recovered at low chemical cost.

3,617,541
BIOGRID UNIT AND METHOD

Pei Tai Pan, Beloit, Wis., assignor to Fairbanks Morse Inc., New York, N.Y.

Filed July 29, 1969, Ser. No. 845,693
Int. Cl. C02c *1/04*
U.S. Cl. 210—17 **9 Claims**



A sewage treatment unit comprising an open-ended tank including therein a series of spaced substantially vertically disposed permeable fabric members supported in the tank for oscillating movement, the surfaces of each of the members providing such growth areas for biological masses and aeration means for supplying oxygen to the biological masses to facilitate biological oxidation of the sewage in the tank.

3,617,542
REMOVAL OF PHOSPHATES FROM SEWAGE EFFLUENT

Robert A. Boehler, and Matthew R. Purvis, Jr, both of Downers Grove, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

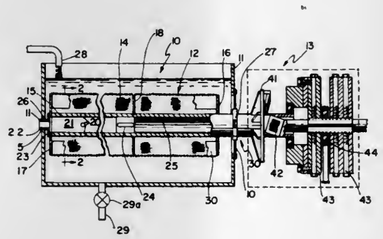
Filed Feb. 11, 1969, Ser. No. 798,449
Int. Cl. C02b *1/20*
U.S. Cl. 210—18 **9 Claims**

In sewage treatment wherein raw sewage containing phosphate is passed into a primary clarifier to remove the heavy solids and the effluent from the primary clarifier is subsequently discharged to a stream or subjected to biological secondary treatment, phosphates are removed by intimately mixing with the effluent from either primary or secondary treatment a high molecular weight, water soluble, linear, anionic polymer having a weight average molecular weight in excess of 100,000 in an amount sufficient to cause suspended solid particles, including said phosphate, to settle and increase the rate of settling, settling said solids, adding an aluminum compound to the supernatant liquid in sufficient amount to precipitate dissolved orthophosphate, and separating the settled precipitated solids along with bacteria.

3,617,543
FILTERING AND CONCENTRATING MEANS AND METHOD

Edward W. Smith, P.O. Box 21, Milton, N.H.

Filed Sept. 24, 1969, Ser. No. 860,675
Int. Cl. B01d *33/06, 35/20*
U.S. Cl. 210—19 **9 Claims**



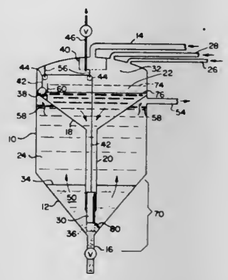
An apparatus for filtering and concentrating liquid slurries and the like is provided comprising a container having encircling filter screen mounted about an axis in a container for torsional oscillation about the axis. Means are provided for torsionally oscillating the screen with respect to the container whereby liquid is removed from a liquid particle mass in the container after it passes through the screen and the particles remain in the mass with little or no tendencies to clog the screen. The method of this invention comprises establishing a shearing action between the screen and the liquid particle mass, setting up a first liquid flow into the screen and a second pulsating liquid flow out of the screen with the second flow having predetermined peak magnitudes greater than the first flow whereby particles in the liquid mass remain in the mass and the liquid passes through the screen and is filtered.

3,617,544
HOT PROCESS SETTLING TANK HAVING ADJUSTABLE DOWNCOMER

Norbert Arthur Voss, Ridgewood, N.J., and Durando Miller, Mount Kisco, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 11, 1970, Ser. No. 36,356
Int. Cl. C02b *1/22*
U.S. Cl. 210—20 **12 Claims**

A hot process eater softener is provided with an adjustable member to provide means for extending or shortening the downcomer pipe. The adjustable member controls the point of discharge of treated water passing from the downcomer pipe into the lower settling compartment surrounding the

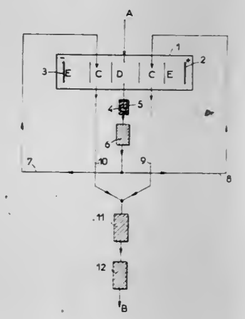


downcomer and can be made responsive to the water level in the upper reaction compartment.

3,617,545
REMOVING UREA FROM SALINE WATER SOLUTIONS PARTICULARLY IN AN ARTIFICIAL KIDNEY

Jean-Claude Dubois, and Claude Duchesne, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 12, 1970, Ser. No. 19,018
Claims priority, application France, Mar. 13, 1969, 7130
Int. Cl. B01d *71/00, 13/00*
U.S. Cl. 210—22 **12 Claims**



Urea is removed from ultrafiltrate or dialysate by demineralizing the saline solution thereof, hydrolyzing the urea to ammonium carbonate, removing the carbonate with a cationic exchange resin and then remineralizing the resulting solution. An electrodialyzer for employing this method is described.

3,617,546
REMOVAL OF ORGANIC COMPOUNDS BY LIQUID MEMBRANE

Norman N. Li, Edison; Robert P. Cahn, Millburn, and Adam L. Shrier, Upper Montclair, all of N.J., assignors to Esso Research and Engineering Company

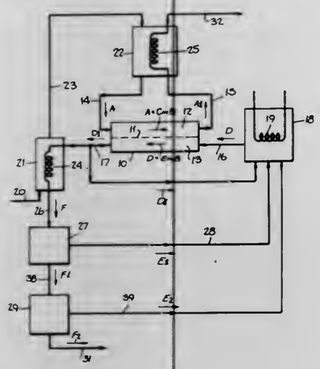
Filed Apr. 13, 1970, Ser. No. 28,094
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 **13 Claims**

Organic compounds are removed from waste water streams by treatment with an emulsion of aqueous droplets containing a reagent coated by an organic liquid membrane containing surfactants through which the organic compounds in waste water will permeate and react in the aqueous droplets to form new chemical compounds and from which they can be recovered eventually by flashing off or emulsion breakup. The formation of new chemical compounds in the aqueous droplets prevents the organic compounds from permeating out of the emulsion. In a preferred embodiment of the invention phenol is removed from waste water streams.

3,617,547
PROCESS FOR OSMOTICALLY DECREASING THE CONCENTRATION OF A SOLUTE

Albert H. Halff, 3574 Rock Creek Drive, Dallas, Tex., and Allen F. Reid, 258 Mill Spring Road, Manhasset, N.Y.

Filed Mar. 19, 1968, Ser. No. 714,179
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 16 Claims

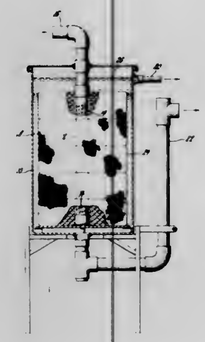


The process comprises the transfer of a common solvent through a permeable membrane from a donor solution with a difficult to separate solute to a recipient solution having an osmolality provided by a solute which is readily separated from the common solvent. The solubility of the solute of the recipient solution is a high solubility below the vaporization temperature of the common solvent and a low solubility above the solidifying temperature of the common solvent.

3,617,548
METHOD AND APPARATUS FOR THE CONTINUOUS SEPARATION AND REMOVAL OF OIL FROM WATER

Robert A. Willihnganz, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 17, 1969, Ser. No. 834,026
Int. Cl. B01d *17/02*
U.S. Cl. 210—23 5 Claims

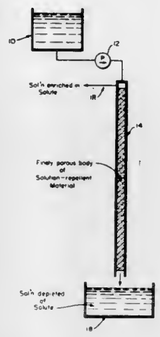


A method and apparatus for continuously separating and removing oil from a liquid of higher specific gravity. In the separation process, an immiscible mixture of oil in a liquid of higher specific gravity, such as water, is continuously passed through a knitted polyethylene, polypropylene or polyvinyl chloride packing which has an affinity for oil whereby the oil coalesces on the surface of the knitted polymer packing. The oil having a lower specific gravity than the water phase continuously rises along the surfaces of the knitted polymer packing and is released on the surface of the water phase as a layer which can be easily and continuously drawn off.

3,617,549
SEPARATION OF DISSOLVED SUBSTANCES FROM SOLUTIONS THEREOF

Edward Robbart, 321 Fairmount Ave., Milton, Mass.

Continuation of application Ser. No. 621,083, Dec. 12, 1966, now abandoned, Continuation-in-part of application Ser. No. 310,537, Sept. 23, 1963, now abandoned. This application June 27, 1969, Ser. No. 838,054
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 5 Claims

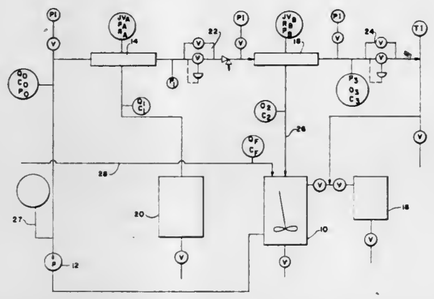


Apparatus for removing dissolved substances from solution consists of a porous body having a solution-repellent surface of e.g., a silicone of fluorocarbon, through which the solution is forced under pressure. A characteristic of the porous body is that it is more resistant to flow through it of the solution than to the flow through it of the pure solvent. Processes effecting the separation of salt and D_2O from their aqueous solutions are described.

3,617,550
METHOD AND APPARATUS FOR THE CONCENTRATION OF SOLUTIONS

Chaim Elata, Savion, and Jonatan Ben-Dror, Rehovot, both of Israel, assignors to Hydronautics-Israel Ltd., Rehovot, Israel

Filed Oct. 7, 1969, Ser. No. 864,309
Claims priority, application Israel, Apr. 4, 1969, 31963
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 7 Claims

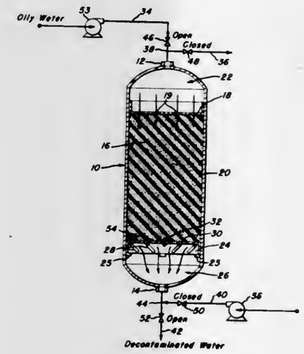


A feed solution containing a solute and a solvent is concentrated by reverse osmosis. The feed solution is subjected to a given working pressure and is first forced through a series of high rejection membranes. The diluted solution which permeates the high rejection membranes is discarded and the product solution leaving the high rejection membranes is then passed as a feed solution through a series of low rejection membranes. The dilute solution which permeates through the low rejection membranes is preferably recycled to the starting feed solution, but can be discarded, if desired. The product comprises the concentrated solution which does not permeate the low rejection membranes. The working pressure of the solution fed to both the high rejection membrane and the low rejection membranes should exceed $R^2\pi'$ where: R is the rejection ratio of the membrane and π' is the osmotic pressure of the solution being fed to the membrane.

3,617,551
APPARATUS AND PROCESS FOR PURIFYING OIL-CONTAMINATED WATER

Walker F. Johnston, Flossmoor, Ill., and Robert G. Will, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Mar. 18, 1970, Ser. No. 20,509
Int. Cl. B01d *23/24, 29/14*
U.S. Cl. 210—23 3 Claims

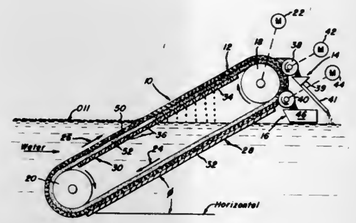


Disclosed is a "cartridge-type" apparatus useful for purifying oil-contaminated water. This apparatus includes a flow-through chamber containing polyurethane foam and a piston-like member which responds to hydraulic pressure to squeeze the foam. As oil-contaminated water flows through the chamber, oil is absorbed by the foam. Periodically, a hydraulic pressure head is established within the chamber which forces the pistonlike member to compress the foam and squeeze the oil therefrom.

3,617,552
OIL-WATER SEPARATING PROCESS

Robert G. Will, Munster, and James F. Grutsch, Hammond, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Mar. 18, 1970, Ser. No. 20,510
Int. Cl. E02b *15/04*; B01d *23/24*
U.S. Cl. 210—23 5 Claims

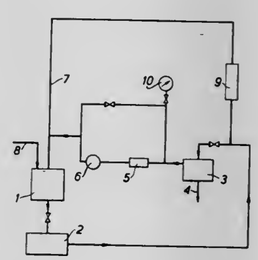


Oil-contaminated water is purified using apparatus having a revolving polyurethane foam belt which is mounted on an incline relative to the horizontal. The contaminated water moves past and through the revolving belt or the belt is mounted on a boat which moves the belt through the water. In either case, as the belt and water move relative to each other, the oil-contaminated water filters through the belt and is purified. The belt is then squeezed twice. First gently to remove water, and then vigorously to remove oil. The belt may include inner and outer abutting sections which are reinforced by a network of threads. The outer section which first contacts the contaminated water has a larger pore structure than the inner section.

3,617,553
CATALYST ULTRAFILTRATION PROCESS

Michael Thomas Westaway, Ashford, Middlesex, and Geoffrey Walker, Woking, Surrey, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 7, 1969, Ser. No. 805,336
Claims priority, application Great Britain, Mar. 13, 1968, 12173/68
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 25 Claims



Transition metal complexes are separated from mixtures containing organic components of lower molecular weight by contacting the mixture with one side of a cellulosic membrane. The applied pressure is greater than the pressure on the opposite side of the membrane and the pressure differential is greater than the osmotic pressure of the system. The permeate has a reduced concentration of complex. The membrane is preferably a cellulose acetate membrane. Applied pressures are from 500 to 2,500 p.s.i.g. and complexes separated may be those of rhodium, nickel, vanadium and other metals of groups VII A and VIII of the Periodic Table. Organic components may be hydrocarbons or mixtures from the dimerisation of olefins or from the hydroformylation of propylene.

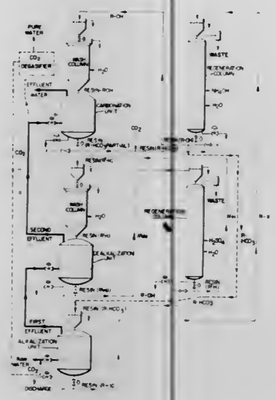
3,617,554
DESALTING AND PURIFYING WATER BY CONTINUOUS ION EXCHANGE

Charles H. Thorborg, Succasunna, N.J., assignor to Gulf Degremont, Inc., Bridgewater Township, N.J.

Division of Ser. No. 744,076, July 11, 1968. Filed June 2, 1970, Ser. No. 42,794
Int. Cl. B01d *15/02, 15/06*
U.S. Cl. 210—26 5 Claims

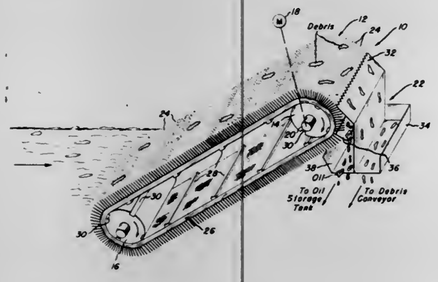
A method and apparatus are provided for the continuous treatment of brackish water, sea water, industrial wastes or sewage effluents using continuous ion exchange. Three units are provided in series, the raw water entering the first unit and purified water leaving the third unit. While the water moves continuously through the three units, an ion exchange resin is caused to flow countercurrent therethrough, a weak base anion exchange resin in the bicarbonate state passing through the first unit and the same resin, in the free base form, passing through the third unit. Passing through the

second unit countercurrent to the effluent is a weak acid cation exchange resin. After passage through the first and



second units, the resins are regenerated. The third unit is a carbon dioxide degasifier.

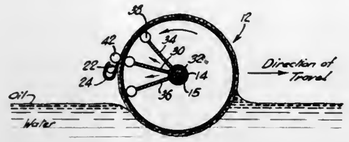
3,617,555
METHOD AND APPARATUS FOR REMOVING OIL AND DEBRIS FROM WATER
Irwin Ginsburgh, Morton Grove, Ill., and Robert G. Will, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Apr. 16, 1970, Ser. No. 29,170
Int. Cl. E02b *15/04*; B01d *33/14*
U.S. Cl. 210—30 **18 Claims**



Oil and debris are removed from the surface of water using a revolving, partially submerged, endless brush belt. The brush belt has outwardly projecting bristles which ensnare the debris and pick up oil. Polypropylene bristles are preferred. The oil and debris are removed from the belt before the belt is reimmersed in the water. Alternatively, a brush-type drum could be used in place of the endless brush belt.

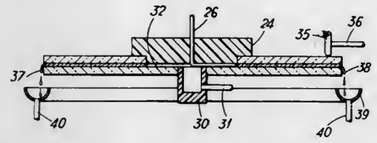
3,617,556
ERADICATING OIL SLICKS
Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 20, 1968, Ser. No. 785,566
Int. Cl. E02b *15/04*; B01d *33/12*
U.S. Cl. 210—30 **3 Claims**

Separation and recovery of oil from oil slicks on the surface of water by continuously and selectively picking up the surface oil in a relatively thick blanket of a bulk fabric composed of highly oleophilic fibers expressing the oil from the



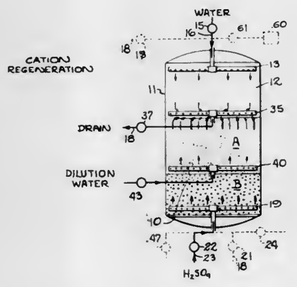
blanket and leaving the fibers in an open condition highly receptive to additional oil.

3,617,557
PREPARATIVE SEPARATION OF FLUID SAMPLES
John Giltrow, London, England, assignor to H. Reeve Angel & Company Limited, London, England
Filed Sept. 30, 1969, Ser. No. 862,300
Claims priority, application Great Britain, Oct. 15, 1968, 48,912/68
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 **5 Claims**



A method and apparatus for preparative separation of the components of a fluid sample as a result of differential migration through a porous medium in which the porous medium is in the form of an annulus to the inner surface of which both the fluid sample and a fluid carrier for the sample are supplied continuously and the separated components are collected continuously from the outer surface of the annulus as the result of relative rotation preferably produced by causing the annulus to rotate at a steady speed while keeping the point of application of the sample and a collection arrangement at the outer surface of the annulus stationary.

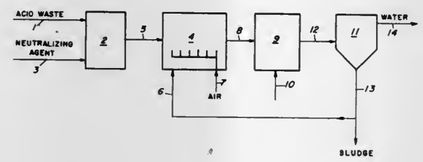
3,617,558
LAYERED ION EXCHANGE PROCESS
Gary D. Jones, Rockford, Ill., assignor to Illinois Water Treatment Co., Rockford, Ill.
Continuation-in-part of application Ser. No. 840,109, June 16, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 749,819, Aug. 2, 1968, now abandoned. This application Nov. 2, 1970, Ser. No. 086,150
Int. Cl. B01d *15/06*
U.S. Cl. 210—35 **9 Claims**



In an ion exchanger having a single upright tank with upper and lower stratified beds of resins respectively adapted

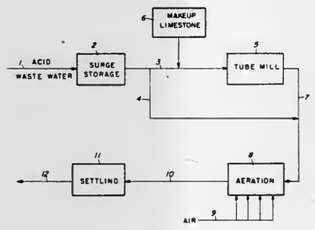
to absorbing different ions (cations or anions) of the same ionic polarity, a distributor for the inflow of water into the tank is disposed substantially at the interface between the two beds and used to effect the upward backwashing of the upper bed alone and, during regeneration of weak-and-strong-type exchange resins by the same regenerant passed successively through the beds of strong-and-weak-type resins, to dilute the regenerant to the concentration best suited for regeneration of the weak-type resin.

3,617,559
NEUTRALIZATION OF FERROUS IRON-CONTAINING ACID WASTES
Allen Cywin, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Interior
Filed Apr. 30, 1970, Ser. No. 33,455
Int. Cl. C02c *5/04*
U.S. Cl. 210—46 **8 Claims**



Acid waste waters containing ferrous iron are neutralized using limestone in a finely divided state. Substantial amounts of a mixed valence, hydrous iron oxide sludge are recycled back to the neutralization and aeration steps of the process to produce a dense, easily dewatered sludge having improved handling characteristics.

3,617,560
LIMESTONE NEUTRALIZATION OF DILUTE ACID WASTE WATERS
Maurice Deul, and Edward A. Mihok, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Interior
Filed Sept. 17, 1969, Ser. No. 9,249
Int. Cl. C02c *5/04*
U.S. Cl. 210—47 **7 Claims**

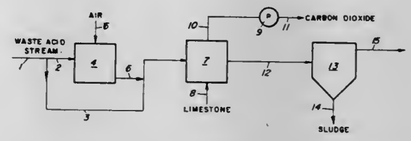


Dilute acid wastes, such as mine drainage waters, are neutralized by reaction with an extremely finely divided limestone slurry after which the neutralized effluent is aerated to strip carbon dioxide and oxidize ferrous iron. After clarification, the product stream is suitable for disposal in surface waters.

3,617,561
METHOD FOR CLARIFYING LIQUIDS
John R. Fanselow, Kalamazoo, Mich., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.
Filed July 1, 1969, Ser. No. 838,335
Int. Cl. B01d *21/01*
U.S. Cl. 210—47 **1 Claim**

An aqueous liquid containing suspended solids is clarified by a procedure in which attapulgite clay (preferably a concentrate of the attapulgite mineral content of such clay) is initially dispersed in the aqueous suspension. Before flocs form, there is incorporated an organic polymeric polyelectrolyte which interacts in situ with the deflocculated clay material to form flocs which occlude the matter that was originally suspended in the water. The clay material is preferably subjected to intensive mechanical work in the presence of water before it is added to the liquid to be clarified.

3,617,562
NEUTRALIZATION OF FERROUS IRON-CONTAINING ACID WASTES
Allen Cywin, Alexandria, Va., and Edward A. Mihok, Pittsburgh, Pa.
Filed May 8, 1970, Ser. No. 35,866
Int. Cl. C02c *5/04*
U.S. Cl. 210—48 **16 Claims**



Ferrous iron-containing acid waste waters are neutralized to form a dense, compact, and easily settleable sludge. Ferrous to ferric iron ratios are adjusted prior to neutralization by catalytic oxidation to conform approximately to that of magnetite; $1Fe^{++}$ to $2Fe^{+++}$. Neutralization of the acid waste and precipitation of a mixed valence iron oxide is accomplished using a finely divided limestone slurry as the preferred neutralizing agent.

3,617,563
PROCESS AND A PRODUCT FOR THE PURIFICATION OF POLLUTED WATER FROM HEAVY METAL IONS PRESENT THEREIN
Kaj O. H. Fuxelius, Billingsfors, Sweden, assignor to Research Ab, Sundbyberg
Filed Aug. 12, 1969, Ser. No. 849,499
Claims priority, application Sweden, Aug. 19, 1968, 11,151/68
Int. Cl. C08g *23/10*; B01d *15/04*
U.S. Cl. 210—38 **6 Claims**

A product for the pruification of polluted water from heavy metal ions such as lead and mercury, present therein. The process is characterized by treating the water with an ion exchange composition on the basis of epoxidized black liquor obtained from the sulfate pulp process. The product as used for this pruification may be a reaction product of (a) black liquor, (b) epichlorohydrin or 1,2 !- dichlorohydrin and if desired (c) a thiol compound

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3,617,564
REMOVING OIL OR OIL SUBSTANCE FROM WATER AND LAND AREAS USING CORNCOB COMPONENTS
John Vander Hooven, and David I. B. Vander Hooven, both of Maumee, Ohio, assignors to Anderson Cob Mills Incorporated, Maumee, Ohio
Filed June 1, 1970, Ser. No. 42,444
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **5 Claims**

Low-density corncob meal is placed on a polluting oil deposit in a body of water or on a land area. The corncob components absorb the oil and the contaminated corncob meal is then removed from the body of water or from the land area.

3,617,565
METHOD AND MEANS FOR THE ABSORPTION OF PETROLEUM PRODUCTS

Hans Erik Fahlvik, Rudsjostrand 5F, 802 40 Gavle, Sweden

Filed May 24, 1968, Ser. No. 731,799
Claims priority, application Sweden, May 26, 1967, 7,463/67
Int. Cl. E02b 15/04
U.S. Cl. 210—40 11 Claims

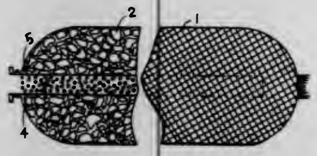


The absorption of petroleum products is attained by bringing bark from trees belonging to the order Coniferae into contact with the petroleum products. The absorption facilitates the collection and removal of the products from a substrate such as a water surface or a solid base.

3,617,566
METHOD AND MATERIAL FOR SEPARATING OIL FROM OIL-CONTAINING WATER

Katsutoshi Oshima, Tokyo; Jiro Kajiyama, Tokyo; Shin Fukumoto, Tokyo, and Nobuo Nagao, deceased, late of Yokohama-shi, all of Japan (by Aiko Nagao, legal representative), assignors to Osman Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1968, Ser. No. 773,058
Claims priority, application Japan, Nov. 6, 1967, 42/70928
Int. Cl. E02b 75/04
U.S. Cl. 210—40 13 Claims



Oil is separated from oil-containing water by contacting the oil-containing water with an adsorbing material consisting mainly of atactic, noncrystalline polypropylene having a molecular weight of 10,000 to 100,000.

Straw, wood wool, or natural fibers can be used as a carrier for the atactic-noncrystalline polypropylene.

3,617,567
DESTRUCTION OF CYANIDE IN AQUEOUS SOLUTIONS

Owen Bertwell Mathre, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1969, Ser. No. 825,038
Int. Cl. C02c 5/04
U.S. Cl. 210—50 6 Claims

A process for the destruction of cyanide anions in aqueous solutions is provided using hydrogen peroxide and a soluble metal compound catalyst such as a soluble copper compound to increase the reaction rate. An aqueous composition containing hydrogen peroxide and the catalyst is also provided which can be added directly to the cyanide solution. The pH of the cyanide solution to be treated is adjusted with acid or base to a pH of about 8.3 to 11, the soluble metal compound catalyst is added at a level to give about 5 to 1,000 p.p.m. of catalyst, the hydrogen peroxide is added to give a molar ratio of hydrogen peroxide to cyanide anions of at least about 0.8 and the temperature of the solution is maintained within the range of about 20° to 75° C.

3,617,568
PROCESS FOR FLOCCULATING COLLOIDAL PARTICLES BY THE SEQUENTIAL ADDITION OF POLYMERS

Herman E. Ries, Jr., Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 2, 1970, Ser. No. 460
Int. Cl. B01d 21/01
U.S. Cl. 210—53 1 Claim

The removal of colloidal particles from a colloidal system is enhanced by sequential addition of two polymeric flocculants in controlled amounts. The first has a polymeric ion form whose charge is opposite that of the colloidal particles and the second has a polymeric ion form whose charge is opposite that of the first polymeric ion. This process is particularly effective in aqueous systems and forms large, strongly bonded flocs of low density which may be readily removed by steps such as filtration of flotation.

3,617,569
REMOVAL OF PHOSPHATE FROM WASTE WATER

Stacy L. Daniels, and Daniel G. Parker, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 31, 1970, Ser. No. 60,093
Int. Cl. C02c 1/40
U.S. Cl. 210—53 9 Claims

Phosphates are removed from an aqueous stream by a two-stage precipitation process whereby the bulk of the phosphates are first precipitated by addition of a soluble aluminum, calcium or iron salt and phosphates still remaining in solution are then precipitated by addition of a soluble lanthanide metal salt or other such salt. Separation of the precipitated phosphates is facilitated by use of a water-soluble organic anionic polyelectrolyte flocculating agent such as a partially hydrolyzed polyacrylamide.

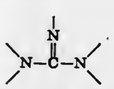
3,617,570
GUANIDINE DERIVED COMPOUNDS AS WATER CLARIFIERS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

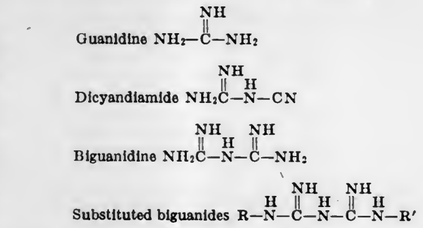
Division of Ser. No. 640,329, May 22, 1967, abandoned.
Filed Apr. 9, 1970, Ser. No. 27,136
Int. Cl. B01d 21/01
U.S. Cl. 210—54 10 Claims

The use as a water clarifier of the compounds formed by reacting guanidine-type compounds with polyamines. The compounds are formed by the reaction of guanidine-type compounds, (including compounds which although not guanidine-type compounds are capable of forming guanidine-type compounds).

In general, guanidine-type compounds are those which contain the



residue and may be illustrated by the following:



where at least one of the R's, which may or may not be the same, is a substituted group, for example alkyl, aryl, cycloalkyl, alkaryl, aralkyl, etc. and derivatives thereof.

An example of a compound which is not itself a guanidine type compound but is capable of forming a guanidine-type compound is cyanamide NH_2CN which reacts with itself to form dicyandiamide.

3,617,571
PROCESS OF DEMULSIFICATION WITH ULTRAHIGH MOLECULAR WEIGHT POLYOXIRANCES

Franklin E. Mange; Rudolf S. Buriks, and Allen R. Fauke, all of St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 655,355, July 24, 1967, Pat. No. 3,532,644.
Filed Apr. 16, 1970, Ser. No. 29,268
Int. Cl. B01d 17/04

A process of demulsifying water-in-oil emulsions, such as petroleum emulsions, which is characterized by the use of a hydrophobic ultra-high molecular weight polyoxirane; said polyoxirane being prepared by polymerizing an oxirane with a catalyst system comprising:

1. a catalyst capable of preparing ultra-high molecular weight oxirane polymers and
2. a nitro compound

The catalyst system is exemplified by (1) an organoaluminum compound, such as an aluminum-alkyl, and (2) a nitroaromatic such as nitrobenzene. A chelating agent and water may also be employed in the catalyst system.

3,617,572
FLOCCULATION AND SETTLING OF INORGANIC PARTICLES IN A SALT SOLUTION

Daniel J. Monagle, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 3, 1969, Ser. No. 873,672
Int. Cl. B01d 21/01
U.S. Cl. 210—54 4 Claims

Predominantly inorganic water-insoluble particles suspended in aqueous salt solutions are flocculated and settled by adding to the solution a water-soluble copolymer of acrylamide and an alkali metal salt of vinyl sulfonic acid. Preferred copolymer is acrylamide—sodium vinyl sulfonate.

3,617,573
WATER-SOLUBLE COPOLYMERS IN FLOCCULATION OF INORGANIC PARTICLES

Daniel J. Monagle, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 3, 1969, Ser. No. 873,673
Int. Cl. B01d 21/01
U.S. Cl. 210—54 3 Claims

Predominantly inorganic, water-insoluble particles suspended in aqueous salt solutions are flocculated and settled by adding to the solution a water-soluble copolymer of acrylamide and an alkali metal or ammonium salt of a sulfoalkyl acrylate. Preferred copolymer is acrylamide —sodium sulfopropllly acrylate.

3,617,574
PROCESS OF INHIBITING PRECIPITATION BY THE USE OF PHOSPHORUS COMPOUNDS CONTAINING THE ATOM SKELETON P-(C-P)$_2$ OR P-(C-P)$_3$

Ludwig Maier, Tiergartenstrasse 17, Kilchberg, Zurich, Switzerland

Division of Ser. No. 690,418, Dec. 14, 1967.
Filed Jan. 12, 1970, Ser. No. 7,429
Int. Cl. C02b 5/06
U.S. Cl. 210—58 13 Claims

Phosphorus compounds containing the skeleton P-(C-P)$_2$ or P-(C-P)$_3$ of the formula $P(O)_a(R^1)_b[CH\ P(O)(R^2)R^3]_{2b}$ and method for making by reacting a compound of the formula $P(O)_a(R^1)_b(CH_2Cl)_{2b}$ with a compound of the formula $P(R^5)(R^6)OR^4$ to split off R^4Cl. Also uses of the products as threshold agents, sequestering agents, detergent composition additives, peroxy solution stabilizers and chlorine releasing agent stabilization is claimed.

3,617,575
PROCESS OF TREATING AQUEOUS SOLUTIONS WITH AN ETHANE TRIPHOSPHONIC ACID COMPOUND

Oscar T. Quimby, Colorain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 602,161, Dec. 16, 1966, Pat. No. 3,551,339.
Filed Feb. 5, 1970, Ser. No. 13,224
Int. Cl. C02b 5/06

Aqueous solutions containing polyvalent metal ions are treated by adding an effective amount of a sequestering ethane triphosphonic acid compound.

3,617,576
METHODS OF SCALE INHIBITION

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 13, 1970, Ser. No. 27,984
Int. Cl. C02b 5/06
U.S. Cl. 210—58 23 Claims

The precipitation of scale-forming salts in an aqueous system is inhibited by adding either stoichiometric or substoichiometric amounts to said system of an organophosphorus compound which is a substituted ethane diphosphonic acid or its salt, said organophosphorus compound having the formula

wherein R_1 and R_2 are hereinafter defined and R_4 is hydrogen or a metal ion and n is an integer having a value of 1 or 2.

3,617,577
METHOD OF INHIBITING SCALE FORMATION

Thomas M. King, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 27, 1969, Ser. No. 853,552
Int. Cl. C02b 5/06
U.S. Cl. 210—58 2 Claims

Precipitation of scale-forming alkaline earth salts in aqueous systems is inhibited by maintaining threshold concentrations of ethylene-maleic acid copolymers having molecular weights of from about 1,000 to 5,000 in the system.

3,617,578
SCALE INHIBITION AND COMPOUNDS THEREFOR

James R. Stanford, Sugar Land, and Paul G. Vogelsang, Jr., Houston, both of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Nov. 25, 1969, Ser. No. 879,940The portion of the term of the patent subsequent to Nov. 11, 1986, has been disclaimed.
Int. Cl. C02b 5/06
U.S. Cl. 210—58 15 Claims

Phosphated oxypropylated amines obtained by reacting polyphosphoric acid or phosphorus pentoxide or mixtures thereof with oxypropylated amines, with or without

neutralization, are used as scale inhibitors for calcium, barium and magnesium salts in waters.

3,617,579
PROCESS FOR THE PARTIAL DENITRIFICATION OF A DILUTE NITRATE ION SOLUTION
Frank C. Gunderloy, Jr., Santa Susana, and Cliff Y. Fujikawa, Encino, both of Calif.
Filed Dec. 31, 1969, Ser. No. 889,719
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 **1 Claim**

A process for the partial denitrification of a dilute nitrate ion aqueous solution wherein the solution is treated in the presence of a catalytic quantity of cupric ion and at an initial pH between 7 and 11 with ferrous ion to thereby reduce the nitrate and partially denitrify the solution.

3,617,580
LUBRICATING OIL TREATMENT SYSTEM
Jerome Geyer, Elizabeth, and Shih-en Hu, Roselle, both of N.J., assignors to Esso Research and Engineering Company
Filed Dec. 16, 1968, Ser. No. 784,178
Int. Cl. B01d *37/00*
U.S. Cl. 210—60 **4 Claims**

A lubricating oil treatment system for internal combustion engines involves the circulation of such oil from an engine through an oil filter and returning the filtered oil to the engine. In this system, the oil filter or another chamber located either before or after the oil filter and through which the oil is circulated contains a relatively oil-insoluble solid inorganic element or particulate mixtures of two or more of such element, having an atomic number between 13 and 83, inclusive, and selected from the group consisting of Groups IIIA, IVA, VA, IB, IIB, IIIB, IVB, VB, VIB VIIB and VIII of the Periodic Table. The elements selected are those which upon being oxidized under the conditions obtained from their 0 valence state to an initial cation valence state have an E° oxidation-reduction potential greater than −0.94 volts, if measured in acid solution and greater than 0 volts, if measured in alkaline solution, with regard to the standard hydrogen electrode.

Inert filter elements may be employed within the oil filter in layer form interspersed with retained solid particles of the aforementioned elements or the elements may be interspersed within the porous filter elements such as porous paper, diatomaceous earth, kaolin, kieselguhr, cotton waste and linters, activated clay, charcoal or fuller's earth. Optionally, separate chambers containing the solid element may be inserted in the oil circulation system either before or after the oil filter. The preferred reducing elements are present conveniently in particle sizes ranging between about −4 and about 150 mesh standard Tyler screen size.

3,617,581
TREATMENT OF WATER-CONTAINING AROMATIC WASTES
Chun-Shan Wang, Midland, and James P. Easterly, Jr., Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 1, 1970, Ser. No. 33,926
Int. Cl. C02c *5/04*
U.S. Cl. 210—62 **9 Claims**

Carbocyclic oxyaromatic and heterocyclic contaminants such as phenols, pyridinols, benzofuran, and derivatives thereof in water are destroyed by dissolving excess alkali in the contaminated water and contacting the alkaline solution with sufficient chlorine to reduce the pH below seven.

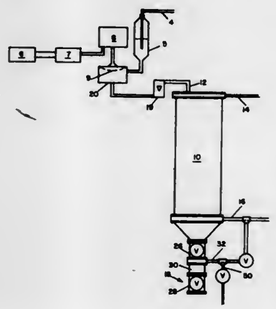
3,617,582
PROCESS FOR DETOXIFYING CYANIDE WASTE WATERS
Bernard Charles Lawes, and Owen Bertwell Mathre, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 2, 1970, Ser. No. 15,870
Int. Cl. C02c *5/04*
U.S. Cl. 210—63 **16 Claims**

A process for detoxifying cyanide waste waters such as from cyanide electroplating rinse waters and chemical process waste waters is provided which allows the treated waste waters to be discharged to a sewer or to a solids separation step. The process uses a combination of hydrogen peroxide and formaldehyde in certain ratios and preferably a magnesium salt such as Epsom salt. Hydrogen peroxide is used in amounts so as to provide an initial molar ratio of H_2O_2/CN^1 within the range of 0.6 to 3, preferably 0.75 to 1.5 while the formaldehyde is used in amounts so as to provide an initial molar ratio of CH_20/CN^1 within the range of 0.5 to 3, preferably 0,6 to 2. When the magnesium salt is used, it is used in an amount to provide at least about 0.3 p.p.m. of Mg^{++}, preferably about 0.3 to 100 p.p.m. of Mg^{++}. It is preferred that the temperature for carrying out the process be within the range of about 50° to 180° F. and the pH of the waste waters treated be within the range of about 9 to 12.5. When zinc cyanide electroplating rinse waters are treated, the settled or filtered basic zinc salts can be recycled to the zinc electroplating step. For the first time, the process of the present invention has brought economy and efficiency to the destruction of cyanide using peroxygen compounds without the need for a catalyst.

3,617,583
PRODUCTION OF LIME
Gerald Moss, Oxford, and Geoffrey P. Richard, Didcot, both of England, assignors to Esso Research and Engineering
Filed Sept. 29, 1969, Ser. No. 862,077
Claims priority, application Great Britain, Oct. 9, 1968, 47,895/68
Int. Cl. C04b *7/44*
U.S. Cl. 263—53 R **9 Claims**

A high-sulfur fuel oil can be used for firing limestone in lime kilns. The fuel oil is passed through a fluidized bed gasifier, containing fluidized lime or limestone which reacts with sulfur in the fuel oil, and substantially sulfur-free gases pass from the gasifier to fire the lime kiln.

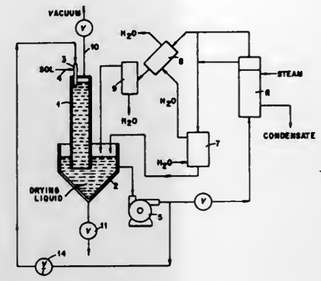
3,617,584
PROCESS FOR FORMING UNIFORM MICROSPHERES
Herbert P. Flack, Ellicott City; Herbert M. Katz, Silver Spring, and George E. Ashby, Highland, all of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed July 26, 1967, Ser. No. 656,266
Int. Cl. G21c *21/00*
U.S. Cl. 264—.5 **6 Claims**



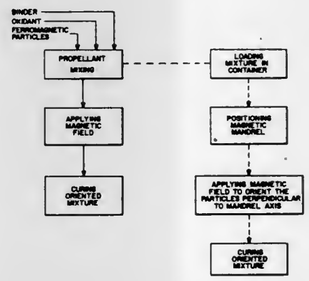
A process for preparing uniform sized microspheres of actinide, lanthanide and zirconium oxides and carbides, using sols or solutions as the feed. Uniform microspheres within a narrow size range are prepared using a vibrating diaphragm in the feed line.

3,617,585
METHOD FOR PREPARING OXIDE GEL MICROSPHERES FROM SOLS
Paul A. Haas, Knoxville, and Sam D. Clinton, Oak Ridge, both of Tenn.
Filed Sept. 23, 1969, Ser. No. 860,281
Int. Cl. G21c *21/00*
U.S. Cl. 264—0.5 **4 Claims**

A process for the production of gel microspheres characterized by a mean sphere diameter in the range of about 5 to 300 microns and a comparatively small proportion of spheres with diameters much smaller than the mean sphere diameter. A fine stream of a hydrous sol is introduced to a dehydrating stream of organic liquid through a capillary extending into the organic stream at an angle thereto. The flow rate of the organic stream is maintained at a value establishing a selected agitated flow condition at tee capillary outlet, thereby producing a sol drop dispersion yielding gel microspheres of the character desired.



3,617,586
BURNING RATE ACCELERATING METHOD
John M. Lenoir, Thousand Oaks, Calif.
Filed Dec. 30, 1963, Ser. No. 334,664
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C **8 Claims**

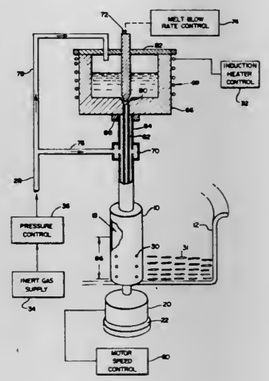


1. The method of accelerating the burning rate of a solid propellant grain, said grain consisting essentially of a cured, intimate mixture of a propellant mix consisting essentially of an uncured, liquid polymeric binder, fuel particles, and an oxidant therefor, said method comprising the steps of:

a. incorporating into said mix and uniformly distributing therethrough fine, elongated, ferromagnetic metal particles, the amount of said particles being from about 0.1 percent by weight to about 5.0 percent by weight of mix excluding the weight of said metal particles.

b. Subjecting the mix containing said metal particles to a magnetic field of sufficient strength to at least partially orient the lengthwise axis of some said metal particles substantially perpendicular to the combustion plane of said grain before said mix cures whereby upon curing of the mix said metal particles are rigidly held in the oriented position.

3,617,587
METHOD FOR PRODUCING METALLIC FILAMENTS HAVING A FORMED SKIN
Harbhajan S. Nayar, Waltham, Mass., and Walter L. Finlay, New York, N.Y., assignors to Copper Range Company, New York, N.Y.
Filed Oct. 10, 1968, Ser. No. 766,581
Int. Cl. B01j *2/04*
U.S. Cl. 264—8 **4 Claims**



Filaments composed characteristically of iron, useful for example in reinforcing concrete or the like, are produced by spinning an apertured crucible containing a melt of iron base composition, which includes a reactant agent capable of solid compound formation at the temperature of the melt, subjecting the melt to a pressure in order to cause extrusion of interrupted streams of the melt through the crucible apertures into a reactant gas, and chemically combining the reactant agent and the reactant gas at the surfaces of the filaments so formed in order to provide each individual filament with a traveling mold composed of the solid compound during solidification. This traveling mold, for example, is compatible with concrete or the like for secure bonding.

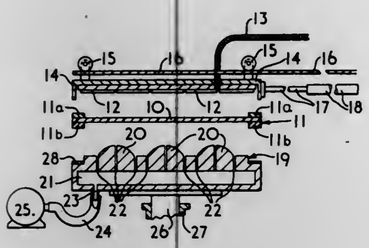
3,617,588
DIP-COATING PROCESS FOR PREPARING CELLULOSE ETHER CAPSULE SHELLS
Cyril A. J. Langman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 16, 1969, Ser. No. 833,715
Int. Cl. B29c *13/00*
U.S. Cl. 264—25 **6 Claims**

The dip-coating process for preparing cellulose ether film products is improved by (A) dipping a die mandrel with an electrically conductive outer surface into an aqueous thermal gelling solution containing at least 20 wt. percent of a film-forming hydroxyalkyl alkyl cellulose ether, (B) removing the coated die mandrel from the aqueous solution, (C) rapidly converting the coating into a nonflowing cellulose ether gel by induction heating, and thereafter (D) drying the gelled coating to form a stable film product. This process is particularly useful in making water-soluble, pharmaceutical capsule shells.

3,617,589
METHOD FOR MANUFACTURING TABLE-TENNIS BALLS
James Jones-Hinton, and Thomas E. H. Gray, both of Fort Dunlop Erdington, Birmington, 24, England
Continuation-in-part of application Ser. No. 492,617, Oct. 4, 1965, now abandoned. This application Apr. 18, 1968, Ser. No. 722,436
Int. Cl. B29c *17/04, 17/08, 27/04*
U.S. Cl. 264—27 **18 Claims**

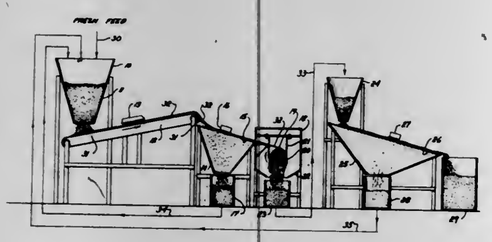
A method for forming table-tennis balls from a large number of thermoplastic materials including polyvinyl

chloride and terpolymers of acrylonitrile with butadiene and styrene, which includes the steps of heating a sheet of the rigid thermoplastic material until sufficiently softened, vacuum-forming the sheet into one or more hemispherical cavities of uniform wall thickness and assembling a pair of



cavities into a substantially spherical cavity. The vacuum-forming step is in two stages, partial shaping by a male or female forming tool and final shaping with a female or male forming tool. The pair of hemispherical cavities are adhered together by means of a butt-joint, with a reinforcing bead on the inside surface of the butt-joint.

3,617,590
PROCESS FOR PRODUCING THERMOPLASTIC FILTER MATERIAL
Harry O. Neukomm, Sugar Loaf Lane, Wilmington, Del., and Harold E. Graham, 2415 Rambler Road, Wilmington, Del.
Filed Dec. 29, 1966, Ser. No. 605,657
Int. Cl. B29b *3/00*; B06b *1/00*
U.S. Cl. 264—37 **1 Claim**



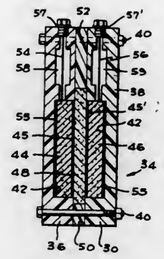
A superior thermoplastic filter material results when the individual particles each comprise a plurality of smaller particles partially fused or sintered together. The particulate material has a low bulk density and a high surface-to-volume ratio, causes a materially lower pressure drop, and has a lower resistance to fluid flow than a material having particles of other shapes.

Such a filter material can be produced by partially fusing together thermoplastic particles of smaller size than that desired and grinding the fused particles to obtain the desired size. A preferred manner for doing this comprises forming a thin layer of particles, fusing a portion of the layer by application of heat to form a partially fused ribbon, separating the fused ribbon from the unfused particles, and grinding it to produce a filter material of the desired size.

3,617,591
HIGH TEMPERATURE RESISTANT POLYCHLOROPRENE ADHESIVE RESIN
Kenneth C. Petersen, Scotia, N.Y.; and Thomas M. Galkiewicz, Schenectady, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.
Continuation-in-part of application 873,059, Oct. 31, 1969. This application June 15, 1970, Ser. No. 46,545
Int. Cl. C08g *5/22*
U.S. Cl. 260—25 **19 Claims**

Superior polychloroprene adhesives are prepared by incorporating the reaction product of an alkali catalyzed alkyl phenol-formaldehyde resin and zinc resinate. Preferably an arylphenol and/or bisphenol A is also incorporated. Also preferably rosin is included in the composition. Other zinc compounds, e.g., zinc oxide, zinc borate, zinc phosphate, zinc carbonate, and zinc salicylate can be used in place of zinc resinate.

3,617,592
PROCESS OF FORMING A SINTERED ZINC ELECTRODE
Frank C. Arrance, Costa Mesa, and Carl Berger, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Apr. 1, 1966, Ser. No. 539,555
Int. Cl. C04b *33/34*, *35/64*
U.S. Cl. 264—61 **4 Claims**



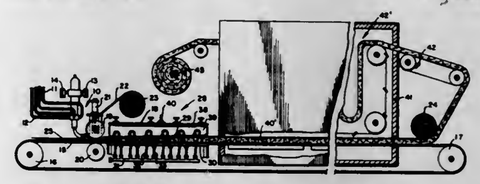
Production of a zinc electrode of improved strength and electrical conductivity, produced by compacting a mixture of calcined zinc oxide and zinc oxide, e.g. about 75 percent of the former and about 25 percent of the latter, sintering such compacted mixture at temperatures in excess of about 600° C. generally about 600° to about 1,450° C., and forming a strong ceramiclike zinc electrode.

3,617,593
METHOD FOR MAKING REINFORCED IGNITION-TUBE OF REINFORCED POLYURETHANE FOAM
Sterling W. Alderfer, Akron, Ohio, assignor to Teledyne, Inc., Los Angeles, Calif.
Division of Ser. No. 606,970, Jan. 3, 1967, Pat. No. 3,397,639. Filed May 1, 1968, Ser. No. 736,891
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **3 Claims**

A method of making a reinforce foam polyurethane ignition tube by selecting a length of woven polyester sleeve which exceeds the length of the mold cavity said sleeve having a weave pattern which causes the sleeve to expand radially upon axial compression and to contract radially upon axial elongation, inserting the sleeve into a cylindrical mold cavity, axially compressing the sleeve into conformity with

the outer forming surface of the mold cavity, charging the cavity with foamable polyurethane and allowing the polyurethane to foam and unite with the sleeve. The sleeve lies contiguous with the outer surface of the tube and serves to reinforce the tube.

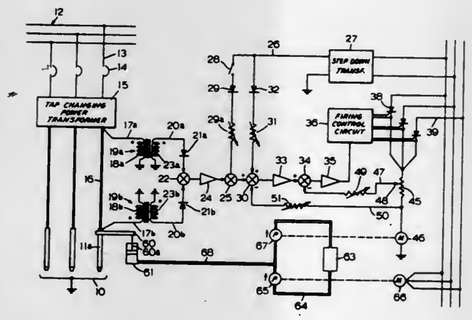
3,617,594
MANUFACTURE OF FOAM-FILLED SHEET PRODUCTS
John Willy, Attleboro, Mass., assignor to Specialty Converters, Inc.
Division of Ser. No. 460,929, June 3, 1965, abandoned, Continuation-in-part of application Ser. No. 444,984, Apr. 2, 1965, now abandoned. Filed June 6, 1969, Ser. No. 845,115
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **4 Claims**



A method of preparing polyurethane foam-filled products by adding a foamable polyurethane mixture to a fibrous batting material, compressing the batting material to remove substantially all air therefrom, placing the saturated batting under controlled compression so that the pressure thereon is sufficient to prevent return of the batting to its uncompressed state while heating said batting to a temperature sufficient to cause said plastic to foam and expand, said expansion also assisting said fibers to expand away from each other, maintaining said pressure on said batting until foaming is substantially complete, then curing foamed resin.

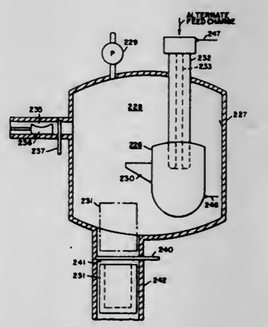
ELECTRICAL

3,617,595
ELECTRIC FURNACE CONTROL
Joseph Aloysius Mulcahy, Brooklin, Ontario, Canada, assignor to Lake Ontario Steel Company Limited, Whitby, Ontario, Canada
Filed Sept. 17, 1970, Ser. No. 73,094
Int. Cl. F27d *11/10*
U.S. Cl. 13—13 **11 Claims**



A method and apparatus for regulating the arc of an electrode in an electric arc melting furnace, in which the voltage drop across the bus bar feeding the electrode is transformed into a comparator signal which is used to regulate the vertical position of the electrode in the furnace to bring the comparator signal to a predetermined value.

3,617,596
NONCONSUMABLE ELECTRODE VACUUM ARC FURNACE FOR STEEL, ZIRCONIUM, TITANIUM AND OTHER METALS
Serafino M. DeCorso, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 717,560, Apr. 1, 1968. Filed Aug. 27, 1969, Ser. No. 870,759
Int. Cl. H05b *3/60*
U.S. Cl. 13—31 **3 Claims**



Within a vacuum chamber or skull furnace having opening thereinto a closeable passage for a removable ingot mold there is a furnace structure not occupying the entire vacuum chamber for producing a pool of molten metal from which the ingot is to be poured, the furnace apparatus including at least one electrode with a fluid-cooled arcing surface and a magnetic field coil for substantially continuously moving the arc around the arcing surface. The skull furnace includes means for feeding material to the molten pool.

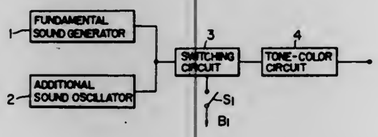
ERRATUM

For Class 75—60 see:
Patent No. 3,617,897

3,617,597
TRIANGLE SOUND SIMULATING DEVICE

Tsukasa Uba, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Jan. 20, 1970, Ser. No. 4,259
Claims priority, application Japan, Jan. 21, 1969, 44/4692
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 3 Claims

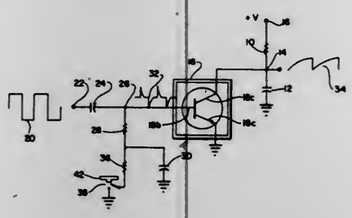


A triangle sound simulating device to be employed in an electronic musical instrument is composed of a fundamental sound signal oscillator, at least one additional sound signal oscillator for generating an additional sound signal of lower frequency than that of the fundamental sound frequency, the output level of the additional sound signal being selected to be lower than the output level of the fundamental sound signal obtained from the fundamental sound signal oscillator, and a switching circuit of nonlinear characteristic which, upon reception of the output signals can create a difference frequency sound signal of a frequency equal to the difference between those of the output signals each time the switching circuit is switched.

3,617,598
SAWTOOTH TONE GENERATING AND KEYING CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Robert F. Woody, Jr., Christiansburg, Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 25, 1970, Ser. No. 14,070
Int. Cl. G10h *5/10*
U.S. Cl. 84—1.01 16 Claims

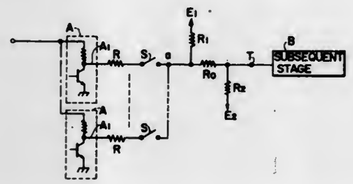


A circuit is provided for generating an output signal having the characteristics of a natural musical tone by converting a square wave input signal into a sawtooth wave output signal. The circuit includes a unidirectional current device and a biasing circuit providing a gradually changing bias voltage to the unidirectional current device. The circuit thereby produces a sawtooth wave output signal of gradually increasing and diminishing magnitude. Circuit arrangements are also provided for combining the musical tones produced by a plurality of such circuits.

3,617,599
KEYING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Aug. 3, 1970, Ser. No. 60,278
Claims priority, application Japan, Aug. 5, 1969, 44/74359, 44/74360, 44/74361, 44/74362; Nov. 20, 1969, 44/110254
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 6 Claims

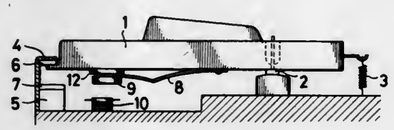


A keying circuit for electronic musical instruments in which—between a bank of keyer circuits and a subsequent circuit such as a tone-coloring circuit, a tone-mixing circuit or a tone-signal-amplifying circuit—there is provided a circuit including a resistor and a DC-bias-applying means. This arrangement may allow respective differences in DC potential between tone generators and said keyer circuits and between the latter and the subsequent circuit to be zero in direct coupling so that no DC isolation is needed which has hitherto been effected by employing capacitor-resistor coupling circuits between circuit stages. This results in acquisition of an inexpensive keying circuit.

3,617,600
MAGNETIC FIELD RESPONSIVE KEY SWITCH DEVICE FOR PRODUCING ATTACK EFFECT IN ELECTRONIC MUSICAL INSTRUMENTS

Junji Ohno, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi Shizuoka-ken, Japan

Filed Mar. 24, 1969, Ser. No. 809,799
Claims priority, application Japan, Mar. 30, 1968, 43/25064, 43/25065, 43/25066
Int. Cl. G10h *1/00, 1/02*
U.S. Cl. 84—1.1 4 Claims

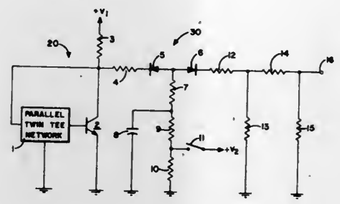


A key device for electronic musical instruments. A key in the keyboard has a magnet attached thereto directly or by way of a spring plate, and a magnetoresistor, which is an element the electric conductivity of which is controlled by the magnetic field of the magnet, is positioned at the place where the magnetic field of said magnet is applied when the key is depressed or beaten. The magnetoresistor is connected in the switching circuit of the instrument as a switch element so as to produce more voluminous sounds as said magnet comes near to said element. An elastic material such as sponge rubber of felt is mounted on the instrument beneath the key to define the lower position of the key. The combination of the spring plate attached to the key and the stop material to limit the lower position of the key makes possible an attack effect and touch-sensitive control effect during use of the keys.

3,617,601
ELECTRONIC MUSICAL TONE GENERATOR EMPLOYING PITCH COMPENSATION

Fred G. Krueger, 5051 Lindley Ave., Tarzana, Calif.

Filed May 29, 1969, Ser. No. 829,072
Int. Cl. G10h *5/00*
U.S. Cl. 84—1.01 3 Claims

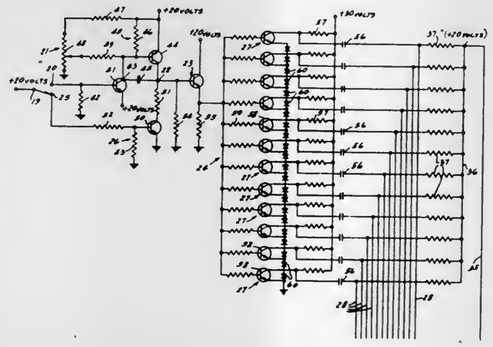


A continually operative tone oscillator has a keying network coupled to the output thereof. When the keying network is turned on, a capacitor gradually charges to a reference level. As the capacitor charges, the loading on the oscillator increases to simultaneously increase the frequency and the amplitude of the output tone. When the keying network is turned off, the capacitor discharges producing a gradual decay of the output tone. Simultaneously, the loading on the tone oscillator is decreased, thereby shifting the frequency thereof back to the original unkeyed value.

3,617,602
MUSICAL INSTRUMENT HAVING AUTOMATIC ARPEGGIO CIRCUITRY

Alberto E. Kniepkamp, Chicago, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed May 25, 1970, Ser. No. 41,149
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.17 26 Claims

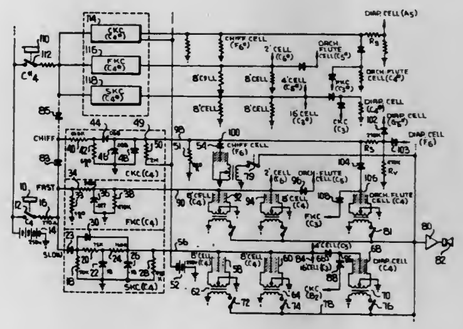


A musical instrument having a keyboard is provided with means for playing or producing an arpeggio automatically. Key switches under the control of the left-hand portion of the keyboard determine which tone producing means normally under the control of the right-hand portion of the keyboard shall be automatically actuated in sequence in the style of an arpeggio. A selectively actuatable switch is used to initiate the arpeggio and controls a triggerable circuit that provides a ramp potential for sequentially energizing the various stages of a cascade circuit that produces a series of control pulses sequentially which are directed to momentarily energize or actuate the tone producing means to make up the arpeggio.

3,617,603
CHIFF CIRCUITS FOR ELECTRONIC ORGANS

William C. Wayne, Jr., South Fort Mitchell, Ky., and Albert Meyer, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed Mar. 23, 1970, Ser. No. 21,815
Int. Cl. G10h *3/06*
U.S. Cl. 84—1.18 8 Claims

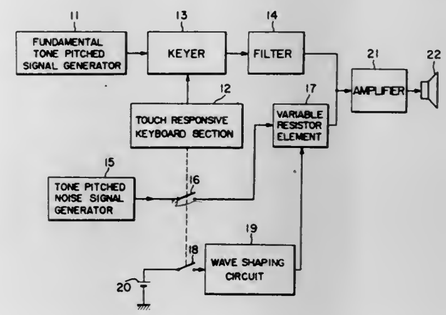


In a keyed-photocell electronic organ, two (or more) photocells are keyed with a single, make-break key switch via two (or more) respective RC keying or envelope-control circuits, one of which provides a transient keying pulse to a photocell in order to produce a chiff tone component. The chiff keying circuit includes a series capacitor, the output terminal of which is always clamped to ground by a diode circuit except for a short interval after the key switch is closed during which the level at the output terminal initially jumps and then falls off as the series capacitor charges.

3,617,604
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF GENERATING MUSICAL TONE SIGNALS SIMULATING THE SOUNDS OF A WIND INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

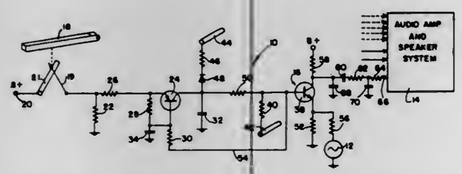
Filed Mar. 19, 1970, Ser. No. 21,079
Claims priority, application Japan, Mar. 22, 1969, 44/21426
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.22 16 Claims



An electronic musical instrument produces musical tones simulating a natural flute voice closely. The instrument comprises a fundamental tone-pitched signal generator, a keyer associated with a key and keying the signal from the generator with an amplitude responsive to a depressing force of the key, a filter giving a tone color, as a formant component, of

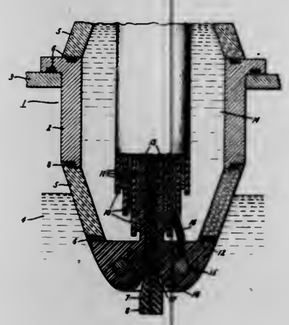
the flute voice to the keyed signal from the keyer, a tone pitched noise generator with a percussive envelope having a peak amplitude which is less responsive to the key-depressing force than the amplitude of the fundamental tone pitched signal, or not responsive to the key-depressing force. The tone signal having the flute formant and the noise signal having the pitch sense are mixed and radiated from a loudspeaker.

3,617,605
PERCUSSION KEYER CIRCUIT
James S. Southard, Bristol, Ind., assignor to C. G. Conn Ltd., Elkhart, Ind.
Filed Mar. 25, 1970, Ser. No. 22,441
Int. Cl. G01h *1/02*
U.S. Cl. 84—1.26 **18 Claims**



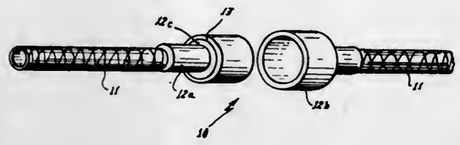
A tone generator is coupled to an audio reproducing circuit through a variable threshold gate circuit which operates in response to the actuation of a musical instrument key. Means are provided to apply a threshold voltage signal to the threshold gate circuit to initiate conduction of the gate to allow translation of the signals from the tone generator to the audio reproducing means. A current control device has its load electrodes connected between the key contactor and the input of the variable threshold gate circuit to apply an initial pulse thereto and means are provided to automatically terminate the application of such pulse whether said key contactor remains closed or is opened thereafter to simulate the percussive sound of a piano from an electronic organ.

3,617,606
SHIELDED BUSHING CONSTRUCTION
John C. Dutton, Rome, Ga., assignor to General Electric Company
Filed June 19, 1970, Ser. No. 47,742
Int. Cl. H01b *17/28*
U.S. Cl. 174—31 R **10 Claims**



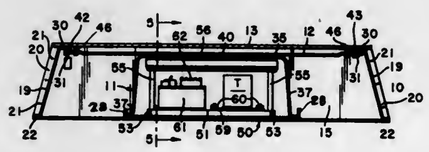
This disclosure relates to a capacitive core bushing which is adapted to be connected to a grounded, dielectric fluid filled, tank housing high voltage electrical apparatus. The bushing comprises a through conductor, a capacitive core surrounding the conductor and a housing around the core comprising upper and lower insulating shells. A conductive electrostatic field control electrode is provided, the potential of which is intermediate the line voltage and ground, located in the lower portion of the bushing, adjacent the point at which the through conductor emerges from the lower insulating shell. The field control electrode is preferably formed as a conductive ring and maintained at a selected intermediate potential by a connection to an equipotential surface of the capacitive bushing core. The field control electrode is embedded in a bushing cap of high-dielectric strength material through which the central conductor emerges at the lower end of the bushing. In a modified form a second electrostatic field control electrode is embedded in the bushing cap between the point of emergence of the through conductor and the first field control electrode and is electrically connected to a point at line potential.

3,617,607
ELECTROMAGNETIC INTERFERENCE SHIELD ISOLATOR
Jack D. Williams, Raleigh, N.C., assignor to The United States of America as represented by the Secretary of the Air Force
Filed July 10, 1970, Ser. No. 53,726
Int. Cl. H02g *15/08*
U.S. Cl. 174—35 C **2 Claims**



An electromagnetic interference shield isolator apparatus for coupling the shielded cables having a capacitor built into the coupler assembly to isolate the shield cables from each other with respect to both DC and RF interferences.

3,617,608
UNDERGROUND ELECTRICAL CONDUCTOR HOUSING FOR ACCOMMODATING A TRANSFORMER
Walter S. Wisniewski, Cheltenham, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.
Filed Apr. 15, 1970, Ser. No. 28,846
Int. Cl. H02g *9/02*
U.S. Cl. 174—37 **7 Claims**

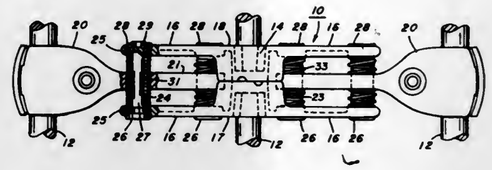


A flush-mounted receptacle is provided for electrical connections for use in the ground and for accommodation of a transformer with a protective mounting for the transformer for preventing access of internal condensation and for dissipation of heat released by the transformer.

3,617,609
CONDUCTOR VIBRATION DAMPING DEVICE
Paul D. Tuttle, Marshall, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 19, 1970, Ser. No. 90,907
Int. Cl. H02g *7/12, 7/14*
U.S. Cl. 174—42 **7 Claims**

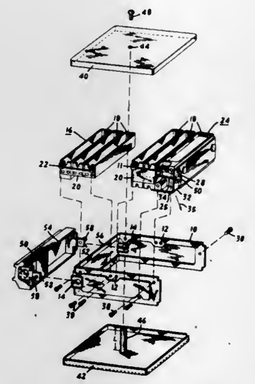
A device for damping mechanical vibrations of a conductor, the device including a body member and at least one member for clamping the conductor, one of the members having opposed arms or wall structures spaced from and located respectively on at least two sides of an arm of the other member. The arms of the two members are mechani-

cally and resiliently connected together by at least two close wound springs, the longitudinal axes of the springs extending



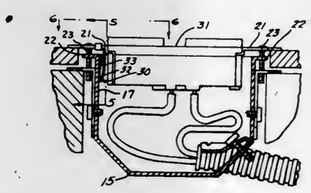
between the spaced arms of the one member and through the arm of the other member. Further, the springs are spaced along the length of the arms.

3,617,610
HOUSING FOR ELECTRONIC APPARATUS
Yasukazu Katayama; Katsuyoshi Okamoto; Hisayuki Nomura; and Akikazu Kurohara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1970, Ser. No. 6,523
Claims priority, application Japan, Jan. 31, 1969, 44/8379
Int. Cl. H05k *5/00*
U.S. Cl. 174—50 **2 Claims**



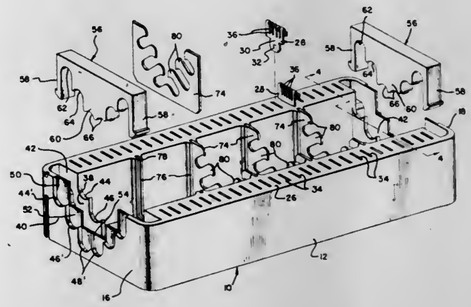
Several unit casings including electronic units respectively are disposed in side-to-side relationship and detachably fixed to a side member. Two covers are fitted onto the opposite ends of the united side member and unit casings and formed into a unitary structure along with the latter by means of a single screw engaging the covers.

3,617,611
GROUNDING CONNECTION FOR OUTLET BOX
Irwin C. Kuether, Clifton, Colo., assignor to Traylor, Harshman, Palo and Cowan
Filed Apr. 14, 1970, Ser. No. 28,402
Int. Cl. H05k *5/02*
U.S. Cl. 174—51 **3 Claims**



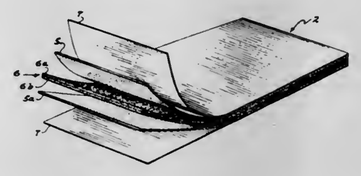
A spring metal clip mounted to connect the metal frame portion and ground terminal of an electrical receptacle unit to make spring contact with the box or may be connected to the box to make spring contact with a metal frame portion of the unit.

3,617,612
ELECTRICAL JUNCTION MEANS
George Allen Patton, Pfafftown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 25, 1970, Ser. No. 14,130
Int. Cl. H02g *3/08*
U.S. Cl. 174—59 **4 Claims**



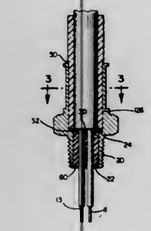
Electrical junction means comprises hollow box of insulating material having parallel relatively thick sidewalls, end walls, and cover. A plurality of terminal members are mounted on the sidewalls which are adapted to receive the conductors of cables extending through the end walls to the interior of the box. Cables are clamped by means of separate cable clamp which fits into the end walls and holds the cables between edge surfaces of the end walls and edge surfaces of the clamp.

3,617,613
PUNCHABLE PRINTED CIRCUIT BOARD BASE
James R. Benzinger, Orchard Park, and Canisius E. Kroth, Buffalo, both of N.Y., assignors to Spaulding Fibre Company, Inc., Tonawanda, N.Y.
Filed Oct. 17, 1968, Ser. No. 768,440
Int. Cl. H05k *1/00;* **B32b** *3/10*
U.S. Cl. 174—68.5 **8 Claims**



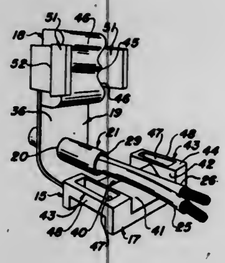
A punchable printed circuit board base laminate formed by laminating thermosetting resin impregnated woven glass fiber sheets in which the glass yarn filament diameters are between about 3 and 14 microns to the surfaces of a thermosetting resin impregnated nonwoven fiber glass core, the fibers of which have diameters in the range of 0.2 to 14 microns and lengths of between 1/32 and 1/4 inch, the laminate thickness being from 1/32 to about 3/32 of which the core thickness is about from 50 to 90 percent.

3,617,614
EXPLOSION-PROOF ELECTRICAL CONNECTOR AND CABLE ASSEMBLY
William J. Henry, Doylestown, Pa., assignor to William M. Wilson's Sons, Inc., Lansdale, Pa.
Filed Jan. 14, 1970, Ser. No. 2,839
Int. Cl. H02g 15/04
U.S. Cl. 174—77 R 1 Claim



A greatly simplified explosion-proof fitting for use particularly in the petroleum industry comprises a minimal number of parts including a conductor passing through a housing, a sealer and a strain relief member. The housing is crimped about the strain relief member to retain the conductor in position.

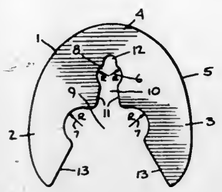
3,617,615
PROTECTOR FOR ELECTRICAL TERMINALS
Jerry L. Balzer, 7574 Carmen Drive N.W., North Canton, Ohio
Filed Jan. 19, 1970, Ser. No. 3,635
Int. Cl. H02g 15/08
U.S. Cl. 174—87 9 Claims



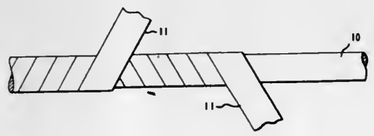
The protector has a pocket of insulating material which encloses the spliced stripped ends forming the terminal of electrical conductors, the terminal being secured in the pocket to prevent removal therefrom. In addition, a cord strain relief on the protector secures the conductors to the protector independently of the pocket to provide another lock which prevents removal of the terminal from its pocket, to thereby effect two safety features against possible exposure of the terminal causing shock hazards when embodied in an electrical appliance.

3,617,616
DUAL-WIRE CONNECTOR
Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 16, 1969, Ser. No. 816,689
Int. Cl. H02g 15/08
U.S. Cl. 174—94 4 Claims

This disclosure is directed to a connector and a method for joining electrical conductors thereby. The connector may be crescent shaped with its interior arcuate walls defining two cavities for conductors separated by a rib. The connector is crimped around uninsulated portions of the wires to form an electrical and mechanical connection. The conductors may be secured into the connector seriatim or simultaneously.



3,617,617
INSULATED ELECTRICAL CONDUCTOR
Morton Katz, Columbus, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 12, 1970, Ser. No. 45,699
Int. Cl. H01 7/02, 3/30
U.S. Cl. 174—120 7 Claims



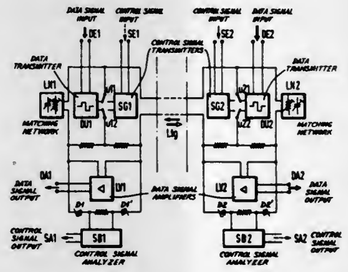
Insulated electrical conductors are provided wherein a silver conductor is wrapped with an insulation covering of polyimide polymeric material and a sulfur-containing polyimide polymeric material that is disposed between the silver conductor and the polyimide polymeric material.

3,617,618
MULTIRING HOLLOW HIGH-VOLTAGE INSULATOR WITH EXTERNAL AND INTERNAL SHEDS
Roy H. Albright, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Feb. 9, 1970, Ser. No. 9,821
Int. Cl. H01b 17/50, 17/60, 17/66
U.S. Cl. 174—209 6 Claims



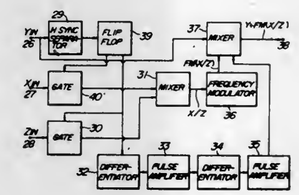
An insulator for supporting electrical switches, buses and the like in a high-power distribution system is constructed from annular shells or rings having both internal and external sheds with corrugations on the undersides thereof to increase creepage distances and to function as rain shields. The diameters of the rings are selected according to the stability required for the insulator, while the height of the individual assemblies are selected according to dielectric requirements.

3,617,619
METHOD AND APPARATUS FOR THE TRANSMISSION OF BINARY CODED DATA WITH LOW LEVEL DIRECT CURRENT VOLTAGES
Rudolf Roither; Ernst Schuhbauer, and Hans Heinrich Voss, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 25, 1968, Ser. No. 739,682
Claims priority, application Germany, July 20, 1967, P 15 37 336.1
Int. Cl. H04l 17/00
U.S. Cl. 178—4.1 R 6 Claims



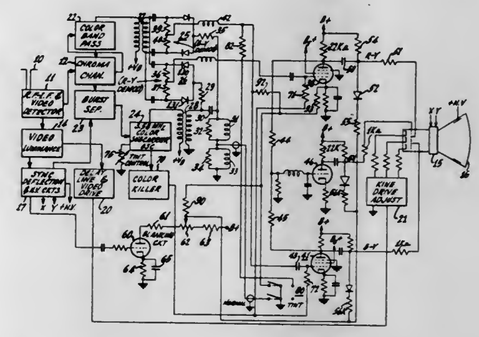
A method and apparatus to transmit control signals such as remote connection and disconnection signals, dialing signals, free signals, etc., the amplitudes of which rather than the time duration thereof, are evaluated. The leading and trailing edges of the control signals are leveled off, and the control signals are transmitted independently of the data transmission.

3,617,620
METHOD AND APPARATUS FOR TRANSMITTING OR RECORDING AND REPRODUCING LINE-SEQUENTIAL COLOR TELEVISION SIGNALS
Ichiro Arimura, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 29, 1968, Ser. No. 724,992
Claims priority, application Japan, May 8, 1967, July 4, 1967, Aug. 3, 1967; 42/29622, 42/43758, 42/50447
Int. Cl. H04n 9/40, 9/50
U.S. Cl. 178—5.2 R 5 Claims



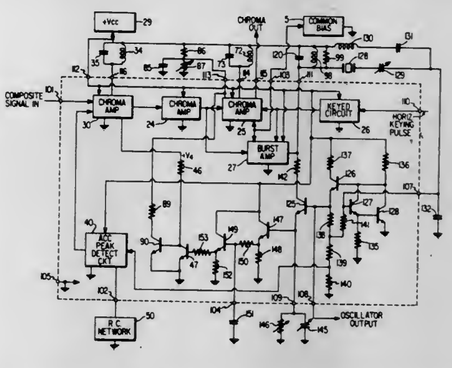
A transmission system wherein a color signal to be transmitted or recorded is separated into a luminance signal and two chrominance signals, said luminance signal is always transmitted or recorded while said two chrominance signals are line-sequentially transmitted or recorded alternately for every horizontal scanning period, and index pulses representing the scan for either one of said two chrominance signals are inserted in the horizontal synchronizing pulses contained in said luminance signal, thereby facilitating the conversion of line-sequential signals to simultaneous signals.

3,617,621
COLOR COMPENSATING CIRCUITS
Larry Allen Cochran, Indianapolis, Ind., assignor to RCA Corporation
Filed Mar. 17, 1970, Ser. No. 20,311
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 12 Claims



A color television receiver includes color-compensating circuitry which tends to reproduce flesh tones more accurately in the presence of spurious phase errors of the color burst relative to the color subcarrier. The receiver may be operated in the usual manner, or by throwing a switch, color compensation is achieved by causing a change in the demodulation axis of the color demodulators and simultaneously reducing the color temperature of the kinescope.

3,617,622
OSCILLATOR CIRCUITS FOR PROVIDING A VARIABLE AMPLITUDE OUTPUT SIGNAL UNDER CONTROL OF AN INJECTED INPUT SIGNAL
Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation
Filed May 8, 1969, Ser. No. 823,066
Int. Cl. H04m 9/46
U.S. Cl. 178—5.4 SY 10 Claims

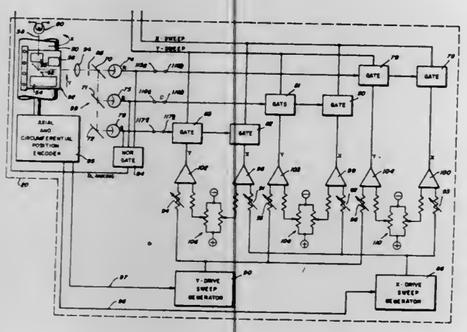


An oscillator circuit includes a first amplifier and a limiter amplifier coupled together through a filter network for supplying AC feedback thereto of a sufficient phase and magnitude to sustain oscillations. A reference signal, for phase-locking the signal of the oscillator, while varying the amplitude, is applied to the oscillator through the filter network. A passive network coupled to a separate terminal of the limiter-amplifier affords control of the peak amplitude of oscillations, while further providing a DC potential across the passive network representative of the average amplitude of the oscillatory signal.

3,617,623
APPARATUS FOR CONTROLLING PHOTOCOMPOSITION ON A CRT SCANNER

Austin Ross, Monroe, Conn., assignor to Printing Developments, Inc., New York, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,118
Int. Cl. H04n 9/12
U.S. Cl. 178—5.2 A 12 Claims

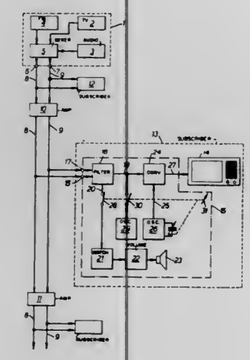


As described herein, the sweep circuits of a flying spot scanner in a photocomposition system are controlled in accordance with preselected positional and magnitudinal information signals provided by a light responsive photocomposition control circuit.

3,617,624
TELEVISION RECEIVING APPARATUS

Rupert I. Kinross, Shepperton, Middlesex, and Lionel T. Mudd, Horley, Surrey, both of England, assignors to Communications Patents Limited, London, England

Filed Sept. 4, 1968, Ser. No. 757,381
Claims priority, application Great Britain, Sept. 5, 1967, 40,467/67
Int. Cl. H04n 5/62
U.S. Cl. 178—5.8 A 3 Claims

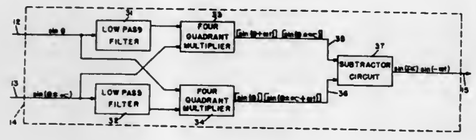


A subscriber system using an intercarrier broadcast television receiver provides for the processing of subscription signals at a different frequency range when not accompanied by a picture carrier by provision of two oscillators, one changing the subscription signals to a broadcast frequency and the other producing a carrier wave for reproduction of sound signals by the intercarrier method.

3,617,625
IMAGE CORRELATION SYSTEM

Donald C. Redpath, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 28, 1969, Ser. No. 819,829
Int. Cl. G06f 15/34; H04n 9/56
U.S. Cl. 178—6.5 18 Claims

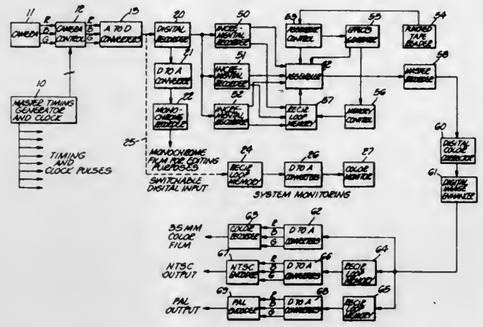


A dual image correlation system wherein a pair of video signals representing detail along corresponding paths in compared images are first filtered in low-pass filter circuits and then cross-multiplied with the original signals to produce a pair of product outputs. By providing the filter circuits with linear, frequency-dependent 0°–180° phase shift responses and sharp cutoff characteristics, the difference between the product outputs is indicative of both the magnitude and sense of image detail misregistration along the corresponding paths.

3,617,626
HIGH-DEFINITION COLOR PICTURE EDITING AND RECORDING SYSTEM

Joseph E. Bluth, North Hollywood, and Leo C. Hanseman, Burbank, both of Calif., assignors to Technicolor, Inc., Hollywood, Calif.

Filed May 16, 1969, Ser. No. 825,291
Int. Cl. G11c 27/02; H04n 5/78, 9/12
U.S. Cl. 178—6.6 A 18 Claims

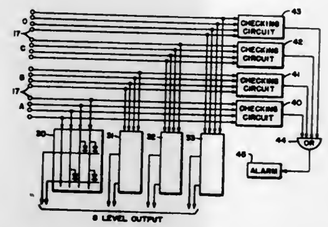


There is disclosed herein an electronic system for the production of high-definition color motion pictures for theatrical and television use. The system employs digital video techniques wherein electronic analog video color signals are digitized, and the digital signals are stored. A scene may be played back immediately during shooting for monitoring purposes or recorded subsequently on film for facilitating editing. Desired portions, such as frames or scenes, of the stored digital color picture information may be selected and assembled, and operated upon to provide special effects, to achieve suitable editing, the resulting pictures again being recorded digitally. This resulting recording may be reproduced and electronically color corrected and enhanced and then converted back to analog form for ultimate visual presentation. The analog signals may be used to generate a color film, or the digital signals before conversion may be converted to different scan standards for presentation according to various television scan standards.

3,617,627
CODE CONVERTER SUITABLE FOR USE WITH A KEYBOARD

Peter T. McLean, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 3, 1968, Ser. No. 726,354
Int. Cl. H04l 15/12
U.S. Cl. 178—17R 3 Claims

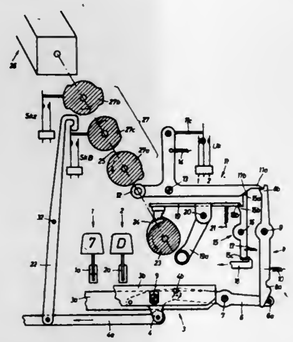


A photoelectic keyboard includes a code bar for each key, with a plurality of code bars mounted in parallel above 16 light channels. The code bars are each encoded by the presence of a single tine in one of four possible locations in each one of four fields, providing a four-out-of-16 encoding for each key. Depression of any one of the code bars then causes the light to be blocked in four out of the 16 light-carrying channels, and photo pickup cells respond to this blockage of light, providing a single output for each of the four fields. This output for each field is decoded into 2 bits of a corresponding binary character. Any time that more than 1 channel in a given field is blocked, a checking circuit, monitoring the outputs of the photocells, provides an output indicative of an error in the keyboard output.

3,617,628
ARRANGEMENT FOR AUTOMATICALLY INSERTING TYPE GROUP SHIFT SIGNALS IN KEYBOARD TRANSMITTERS

Otto Holstein, and Walter Herwig, both of Pforzheim, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,162
Claims priority, application Germany, Jan. 11, 1968, P 15 62 017.4
Int. Cl. H04l 17/02
U.S. Cl. 178—17 R 13 Claims

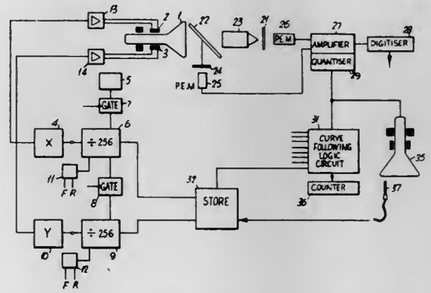


A teleprinter keyboard arrangement for automatically inserting type group shift signals. The shift signal is provided by depressing any key not included in the type group used in the previous action. The result therefrom is a change in the relative positions of two interacting bars forming a shift bar assembly. One of the bars responds and is common to all figure keys, and the other responds and is common to all letter keys. The relative change of positions of the bars disconnects the actual transmitter in favor of an auxiliary transmitter for the time required for transmission of one signal combination. The operation provided is accomplished without the aid of storage facilities.

3,617,629
PATTERN DETECTION APPARATUS

Brian Dennis McCarthy, Richmond, England, assignor to National Research Development Corporation, London, England

Filed Jan. 10, 1969, Ser. No. 790,373
Claims priority, application Great Britain, Jan. 17, 1968, 2649/68
Int. Cl. H04n 3/00
U.S. Cl. 178—6.8 3 Claims

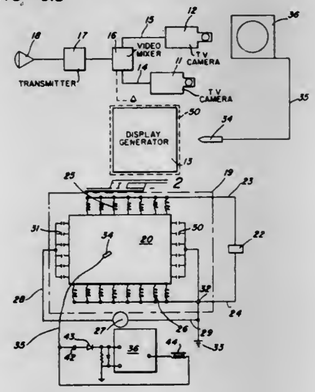


In apparatus for detecting cervical smears on microscope slides, an image of the field is scanned with a television-type scan and a detector detects any light changes caused when the scan crosses the boundary of a distinctive area. On the detection of such an area the apparatus switches to a tracing mode which traces around the area with a step-by-step motion in a series of small orthogonal steps and the coordinates of the stepping points are stored. Eventually the scan returns to its original starting point after which the television pattern scan continues until the next area is detected.

3,617,630
SUPERIMPOSED DYNAMIC TELEVISION DISPLAY SYSTEM

Leonard Reiffel, Chicago, Ill., assignor to Telestrator Industries, Inc., Chicago, Ill.

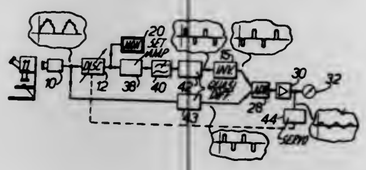
Continuation-in-part of application Ser. No. 720,130, Apr. 10, 1968, now abandoned. This application Oct. 7, 1968, Ser. No. 777,947
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 13 Claims



A visual display system for superimposing linear visual images upon a dynamic television image. System covers the

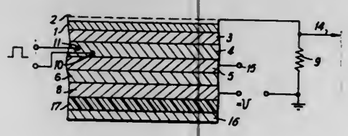
use of at least two television cameras or one camera and a source of electronic background video images such as a video tape recorder, or one scene camera used in conjunction with a double-ended scan converter. One camera or the converter picks up the image from a storage device which in turn is actuated by a signal generator, said image being superimposed on the background video image.

3,617,631
IMAGE ANALYSIS SYSTEMS
Michael Richard Soames, Cambridge, England, assignor to Metals Research Limited, Melbourn, Royston, England
Continuation of application Ser. No. 523,725, Jan. 28, 1966, now abandoned. This application Aug. 18, 1969, Ser. No. 852,972
Claims priority, application Great Britain, Feb. 6, 1965, 5256/65
Int. Cl. H04n *7/18*; H03k *5/20*
U.S. Cl. 178—6.8 15 Claims



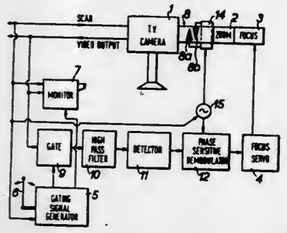
Apparatus for the quantitative analysis of a specific part of a complete picture of specimens such as blood samples, minerals and metallurgical specimens includes means for producing a scanned electrical first video signal of the complete picture, a discriminator for isolating the portion of the first video signal corresponding to a specific part of the complete picture, and means permitting a comparison between the output from the discriminator and the first video signal for accurately setting the level of the discriminator.

3,617,632
TELEVISION IMAGE ANALYZER
Valentin Fedorovich Zolotarev, K–482 Korpus 332, kv. 21; Vitaly Ivanovich Stafeev, K–482 Korpus 321, kv. 65, and Anatoly Pavlovich Budenny, ulitsa Scherbakovskaya, 16/18, kv. 218, all of, Moscow, U.S.S.R.
Filed Aug. 5, 1968, Ser. No. 750,135
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.1 10 Claims



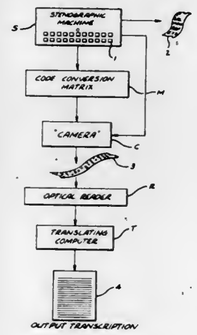
A television image analyzer comprises a photoelectric surface whose local areas or elements are switched sequentially to obtain a desired scanning pattern and which is coated with a translucent electrode. The photoelectric surface is arranged on a nonlinear resistive structure which has a current-controlled negative slope volt-ampere characteristic while the nonlinear structure, along with the photoelectric surface, is connected to a DC source and also to a pulse source so that a DC voltage is supplied at right angle to the excitation direction of the photoelectric-surface elements and a pulse is injected along this direction to produce in a nonlinear resistive structure a spontaneously propagating hyperconductive area which consecutively excites the elements of the photoelectric surface.

3,617,633
IMPROVEMENTS IN OR RELATING TO TELEVISION CAMERA AUTOMATIC FOCUS CONTROL SYSTEM
John Denzil Barr, Oadby, and Dexter Robert Plummer, Englehurst, both of England, assignors to The Rank Organisation Limited, London S.W.1, England
Filed Nov. 29, 1968, Ser. No. 779,899
Claims priority, application Great Britain, Dec. 14, 1967, 56897/67
Int. Cl. H04n *5/16*
U.S. Cl. 178—7.2 19 Claims



A system for automatically maintaining the focus of a television camera in which the camera focus setting is modulated, preferably at half the frame or line scan frequency, and the camera video output passed through a high pass filter to a phase-sensitive detector. The output of the detector is indicative of the magnitude and sense of the departure of the camera focus setting from sharp focus, and is used to control a focus servo.

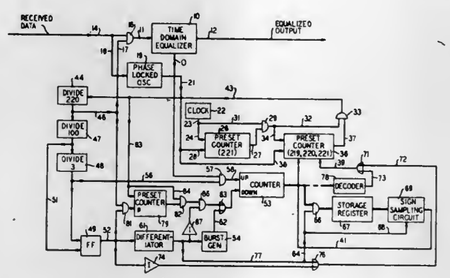
3,617,634
STENOGRAPHIC APPARATUS PROVIDING A PHOTOGRAPHICALLY RECORDED DIGITALLY ENCODER RECORD
Richard K. Snook, Bridgeton, and John C. Burton, St. Louis County, both of Mo., assignors to Digimetics Incorporated
Filed Sept. 17, 1969, Ser. No. 858,803
Int. Cl. H04l *17/14*
U.S. Cl. 178—15 29 Claims



An apparatus capable of being operatively connected to a conventional key operated stenographic machine for producing a digitally encoded photographically recorded record. The apparatus is operable by actuation of the keys of the stenographic apparatus. Operation of each of the keys of the stenographic machine energizes a selected circuit of the recording apparatus and release of the key provides an advance signal to bring an unrecorded area of the photographic film into recording position. A plurality of lamp circuits are provided and will be energized by means of a code conversion matrix interposed between a suitable camera and the stenographic machine. The lamps are operatively associated

with fiber optic light guides which are located to produce an image on the photosensitive surface of the photographic film upon energization of the light source. A second pair of light paths are provided for making an exposure on each margin of the film in alignment with the data exposures so that the energization of one or more lamps represents a keyboard operation. Thus, the apparatus provides a photographic record which corresponds to the printed record of the stenographic machine and which photographic record is readable by digital computing equipment for automatically preparing a printed transcription of the record. An alternate embodiment of the present invention provides a mechanism for photorecording by means of a crystalline material, which is made to change the degree of attenuation of light passing through the material by application of an electrical current. A second alternative embodiment provides a single light source mounted beneath the keyboard. A system of fiber-optics light guides are arranged as in the first described system with this difference, that the lower surface of each key lever is provided with a shutter which prevents the light from the source from reaching the input end of the light guide associated with that key until the key is depressed. A shutter will be opened by the actuation of the key to permit light to be directed upon the input end of the selected guide or guides and to thus produce the pattern of exposure described in the preferred embodiment.

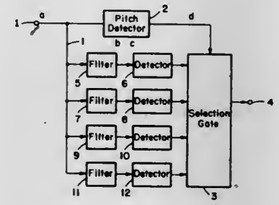
3,617,635
TIMING RECOVERY SYSTEM IN WHICH AN EQUALIZER'S SAMPLING TIME IS SET IN RESPONSE TO THE DIFFERENCE BETWEEN THE ACTUAL MEAN SQUARE ERROR AND A PREDETERMINED ACCEPTABLE ERROR
Donald Hirsch, Matawan, and Howard Clarence Meadors, Jr., Wayside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 15, 1970, Ser. No. 37,508
Int. Cl. H04b *1/10*
U.S. Cl. 178—69 R 7 Claims



A system is disclosed in which an error signal used for adjusting tap weights in a time domain equalizer is integrated in an up-down counter over one-half of an interval. At the end of the first one-half of the interval, the count in the counter is decreased by a predetermined amount proportional to a minimum acceptable error level. The count in the counter is then reduced at a predetermined rate until the count in the counter is zero. During the time the count is being reduced at the predetermined rate, the sampling time of a signal applied to the equalizer is phase shifted in a direction determined by the difference between the integrated error in the present and preceding intervals.

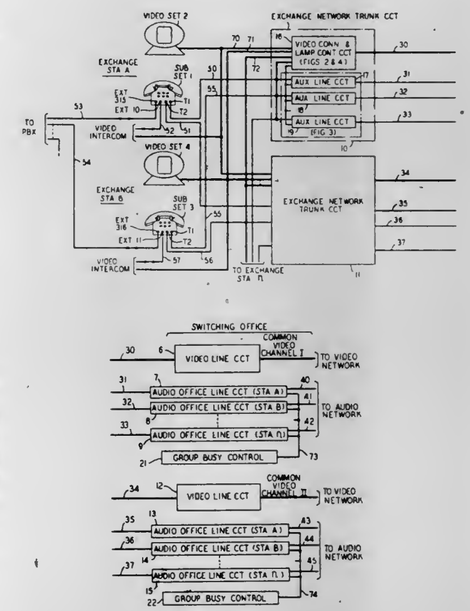
3,617,636
PITCH DETECTION APPARATUS
Takashi Ogihara, Tokyo-to, Japan, assignor to Nippon Electric Company, Limited, Minato-ku, Tokyo-to, Japan
Filed Sept. 22, 1969, Ser. No. 859,800
Claims priority, application Japan, Sept. 24, 1968, 43/68952
Int. Cl. G10l *1/04*
U.S. Cl. 179—1 SA 15 Claims

Pitch detection apparatus is disclosed in accordance with the teachings of the present invention wherein a double-pitch signal is eliminated by dividing an input speech into a plurality of frequency domains of discrete frequency ranges. The pitch frequency of the speech signal is detected and pitch



pulses representative thereof are produced and combined with the frequency domains to suppress certain ones of said pulses corresponding to the double-pitch signal.

3,617,637
SHARED WIDEBAND COMMUNICATION LINE FOR PRIVATE BRANCH EXCHANGE STATIONS
Patrick Henry Gorman, II, Little Silver, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Jan. 28, 1970, Ser. No. 6,370
Int. Cl. H04m *11/06*, *3/56*
U.S. Cl. 179—2 TV 16 Claims

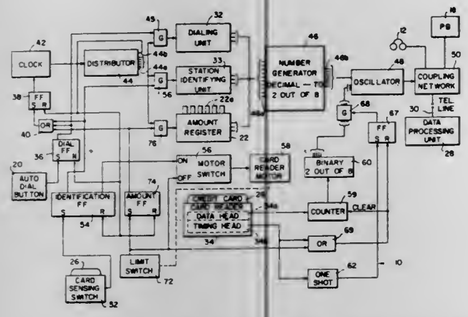


Equipment is disclosed including a shared wideband communication facility which may be key selected by private branch exchange stations or, alternatively, selected on an automatic basis to complete outgoing or incoming audio-video connections directly between line terminations of a switching office and the exchange stations.

3,617,638
SYSTEM FOR VERIFYING CREDIT CARD TRANSACTIONS

Dieter Jochimsen, Winchester, and Jurgen Kok, Bedford, both of Mass., assignors to Audac Corporation, Burlington, Mass.

Filed July 17, 1968, Ser. No. 749,557
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP 14 Claims

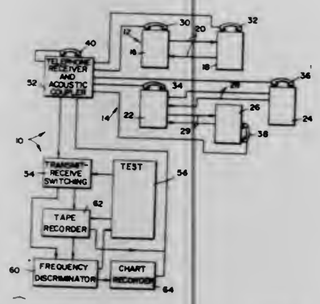


A transaction recording and verifying system employs data transmitters at remote locations where the transactions are made. Upon activation, each transmitter dials the telephone number of the data processing unit and after an acknowledgment signal has been received, it transmits over the telephone line numerical signals identifying the location of the transmitter; customer identifying signals automatically read from a credit card used in the transaction; and dollar amount signals obtained from a register into which the amount of the transaction has been entered by a cashier. The data processing unit then emits a signal indicating whether or not a lost, stolen or bogus credit card has been detected or the customer is delinquent in payment for previous transactions.

3,617,639
CENTRALLY MONITORED TELEMETRY SYSTEMS

Abe Propper, Madison, N.J., assignor to Quindar Electronics, Inc., Springfield, N.J.

Filed Nov. 26, 1968, Ser. No. 778,957
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP 11 Claims

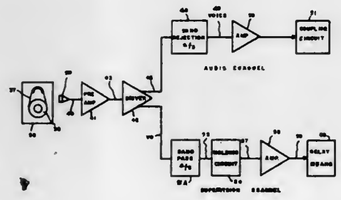


The present invention relates to a system for the central monitoring of telemetry and control systems, and, more particularly, to the central monitoring of master and remote stations of telemetry systems. The invention contemplates means for enabling the information transmitted and received by master and remote stations of a telemetry system to be transmitted to and received by a central monitoring station whereby the information is recorded by a recording means and analyzed to check the operation of the telemetry system without necessitating direct checking of the individual components of the system, i.e., the master and remote stations thereof, which are geographically located at installations remote from that of the central monitoring station. One means contemplated for the transmission of information or, more properly, data to the central monitoring station is by telephone lines in conjunction with acoustical coupling devices connected among the telephone lines, the operating stations of the telemetry system and the central monitoring station. The central monitoring station also is adapted to communicate vocally with the operating stations in order to facilitate any necessary repair.

3,617,640
AUTOMATIC SIGNALING AND REPORTING SYSTEM

Henry J. Cichanowicz, 1165 Westmoor Drive, Galion, Ohio

Filed Jan. 5, 1968, Ser. No. 696,054
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P 6 Claims

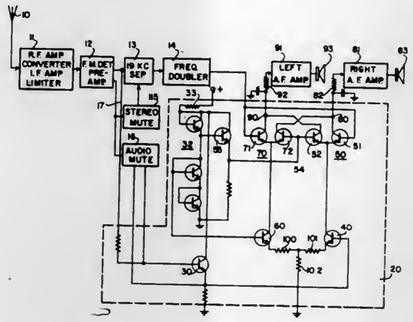


A system, capable of utilizing a conventional telephone network, for automatically dialing and reporting a monitored event, is disclosed which comprises means for recording a first frequency capable of acting both as a supervision tone, for maintaining the circuit connection to the telephone line, and as the dial-pulsing tone, for automatically dialing a receptor position, such as a fire station or police station. A recorded message in the audio frequency range is superimposed upon the first frequency. The superimposed first and second frequencies are prerecorded on a recording means, such as a track of a recording tape. A plurality of similar superpositions may be recorded on a multiple-track-recording tape network. In response to the actuation of a sensor monitoring a predetermined event, such as a fire or an intrusion, input circuit means are actuated to receive the output of the recording means which is representative of the monitored event, to the exclusion of would-be interrupting events on other channels. The input circuit means are coupled through amplifier circuit means to filter means. Filter means separate the supervision and dialing frequency from the audio frequency. Detector circuit means are connected to the filter circuit means for receiving the filtered supervision dialing tone. The programming of the network is such that a short period of time elapses between the actuation of the detector means and the acquisition of the dial tone before dialing is initiated. The electronic dialing is accomplished by successive actuation and deactuation of dialing pulses, particularly timed in accordance with telephone requirements. After the dialing has been completed, particular circuit features of the detector network are so arranged that the supervision tone maintains the circuit in an online condition, particularly where minute breakages and interruptions occur in the recording. After a short period of time has elapsed, a prerecorded audio message is transmitted through the telephone network. Power circuit means, channel-switching networks, shutoff networks, condition indicators, and the like, are further disclosed. In addition, an identifying signal network feature for use by the receiving party to attest to the integrity of the sending unit is disclosed to avoid false alarm actuation. In addition, an open microphone feature is disclosed whereby upon completion of the dialing cycle and transmission of the recorded message, the line will remain open to provide the receiver with the opportunity to monitor audibly the sending area.

3,617,641
STEREO MULTIPLEX DEMODULATOR

James H. Flet, Chicago, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of application Ser. No. 797,528, Feb. 7, 1969, now abandoned. This application Apr. 29, 1970, Ser. No. 31,822
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT 16 Claims

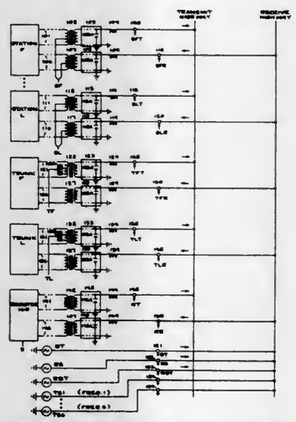


A silicon, monolithic, integrated circuit, stereo multiplex demodulator includes a first-gated symmetrical demodulator for providing the desired left and right output signals. A second-gated synchronous demodulator similar to the first is supplied with the same composite input signals supplied to the first demodulator; but the signals supplied to the second demodulator are substantially attenuated, with the second demodulator are substantially attenuated, with the second demodulator providing output signals in phase opposition to the output signals supplied by the first demodulator. The outputs of the two demodulators are combined so that the crosstalk components are effectively eliminated, since the attenuation of the signal supplied to the second demodulator is chosen so that the output of the second demodulator is equal in magnitude to the crosstalk component in the output of the first demodulator.

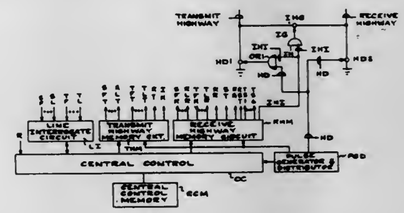
3,617,642
TIME DIVISION MULTIPLEX SYSTEM

Enn Aro, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Continuation of application Ser. No. 692,430, Dec. 21, 1967, now abandoned. This application June 10, 1970, Ser. No. 48,824
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AA 11 Claims



Arrangements for improving resonant transfer operation in time division multiplex communication systems by providing proper terminating impedance for lines connected to the highways during signal splitting by actuating the highway discharge gate during the signal transfer interval of the assigned time slot. In one embodiment involving interhighway gate means connected between transmit and receive highways, the inhibit signal to the interhighway gate means

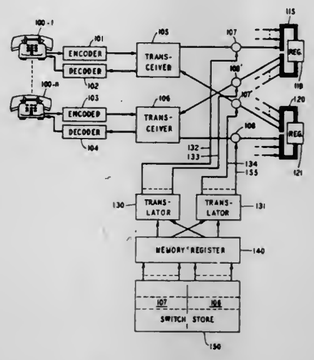


which accomplishes splitting is also directed as an enable signal to the highway discharge gate. At times, such as during the ringing operation, only the transmit highway discharge gate is so controlled, and at other times, such as during trunk signaling, both transmit and receive highway discharge gates may be so controlled.

3,617,643
TIME DIVISION SWITCHING SYSTEM EMPLOYING COMMON TRANSMISSION HIGHWAYS

Walter R. Nordquist, Naperville, and Wing N. Toy, Glen Ellyn, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 25, 1969, Ser. No. 844,945
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ 8 Claims



In a time division switching system, speech samples from a subscriber station are first encoded and then stored, in digital coded form in a register in a transceiver. The output of this register is gated to a second register in the common talking bus or highway during a first portion of a time slot; the sample from this register in the common highway is gated in a later portion of the same time slot to a similar transceiver connected to the called subscriber. It is then subsequently decoded and applied to the called subscriber. Two-wire, four-wire, and conferencing arrangements are disclosed.

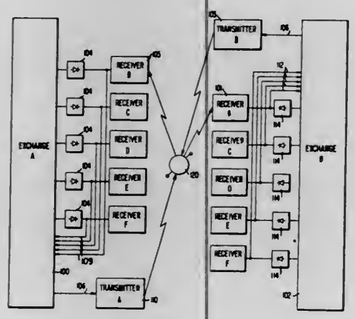
3,617,644
SATELLITE COMMUNICATION EXCHANGE STATION

John F. Boag, Billericay, England, assignor to The Communications Satellite Corporation

Filed July 8, 1968, Ser. No. 743,124
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A 12 Claims

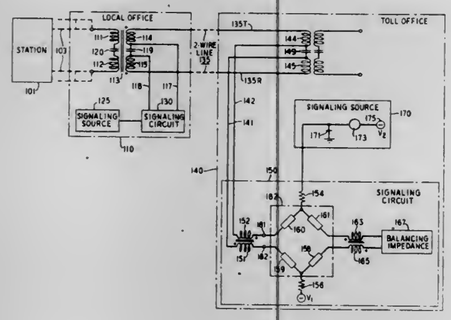
Communication paths between a plurality of earth stations on a demand assignment basis are provided. Each participat-

ing station transmits a carrier that is received by all other stations and identifies the transmitting station. A remote station is called by transmitting the remote station calling frequency or address via the local carrier. The remote station then detects its address frequency on the local station carrier and automatically locks onto the channel carrying signals received from the local station. The remote station then transmits the signal frequency or address of the local station via the remote



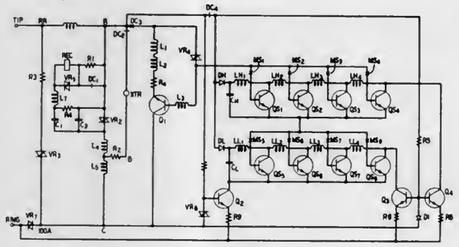
station carrier. When the address is received at the local station, it automatically locks onto the channel carrying signals received from the remote station, thereby providing a communication circuit (two-way communication path) between the calling and the called stations. Each participating station sends out a busy signal during the entire time it is in use. The busy signal from any one station is received by all other stations and prevents the calling of a busy station.

3,617,645
SIGNALING CIRCUIT WITH AUDIBLE NOISE REDUCTION
Robert H. Gumley, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 17, 1969, Ser. No. 842,652
Int. Cl. H04m *5/16*
U.S. Cl. 179—43 **7 Claims**



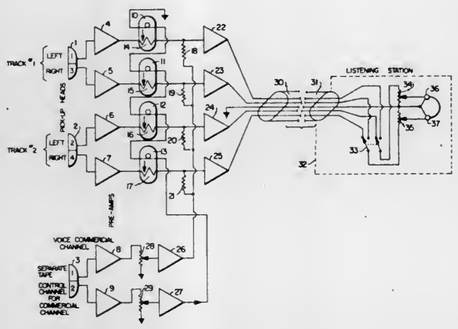
A signaling circuit connected between a signal source and a transmission path includes a pair of mutually coupled inductors connected in series with the conductors leading to the transmission path. The mutual coupling between the inductors operates to produce equal signals in the same direction on both conductors connected to the path.

3,617,646
MULTIFREQUENCY OSCILLATOR EMPLOYING SOLID-STATE DEVICE SWITCHING FOR FREQUENCY SELECTION
Dieter J. H. Knollman, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 22, 1969, Ser. No. 843,326
Int. Cl. H04m *1/50*
U.S. Cl. 179—90 K **5 Claims**



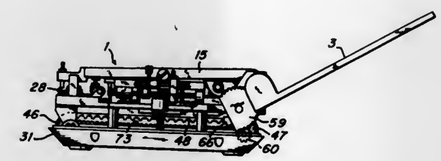
Signal frequency combinations in a multifrequency signal generator are produced selectively by establishing conductive paths through switched transistors to connect respective frequency-determining elements into the oscillator circuits.

3,617,647
PLURAL STEREO TAPE AUDIO LEVEL CONTROL SYSTEM FOR MULTIPLE UNITS
Edwin H. Maier, Catonsville, Md.; Joseph C. Stettner, Columbus, Ohio, and David C. Smith, Baltimore, Md., assignors to Styles N'Sound Inc., Catonsville, Md.
Filed Mar. 14, 1969, Ser. No. 807,255
Int. Cl. G11b *15/06*
U.S. Cl. 179—100.1 C **7 Claims**



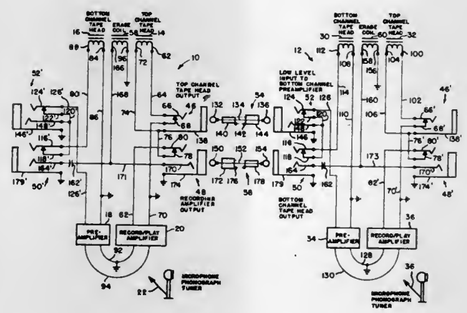
The system of the present invention produces stereophonically recorded music from one or more entertainment channels to headphones to be individually controlled by the user and worn during captive situations such as under a hairdrier, in a hospital bed or in a transportation vehicle. The system is to reproduce recorded entertainment from a first magnetic tape and to periodically superimpose recorded messages from a separate or second tape into the listening channel by reducing the audio signal on the entertainment channel to give precedence to the recorded message.

3,617,648
MAGNETIC COPYING APPARATUS WITH INERTIA CONTROL FEATURE
William F. Irving, and Walter F. Klein, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,508
Int. Cl. G11b *5/86*
U.S. Cl. 179—100.2 E **7 Claims**



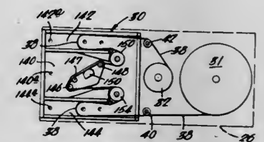
The invention concerns apparatus for making a plurality of duplicate copies from master recordings by using a magnetic transfer technique, particularly involving the steps of applying pressure between a master media and a blank copy media, thereafter moving an assembly of permanent magnets across the superimposed media to effect transfer of the information from the master media to the copy media by utilizing a one-way clutch mechanism interposed between the driving mechanisms and the permanent magnet assembly, all of the foregoing being accomplished by movement of a single operating member accessible to the operator and subsequently, due primarily to the clutch relationship with the permanent magnet assembly, releasing the magnet assembly at the end of its travel, thereby reducing inertia effects that would otherwise be objectionable from a loading standpoint.

3,617,649
MEANS FOR INTERCONNECTING TWO MONOPHONIC RECORDERS FOR STEREO RECORDING, REPRODUCING AND DUPLICATING
John Hartley, 2904 N. Paula, Clovis, Calif.
Continuation-in-part of application Ser. No. 615,010, Feb. 9, 1967, now abandoned. This application Feb. 16, 1970, Ser. No. 11,515
Int. Cl. G11b *5/00, 5/86*
U.S. Cl. 179—100.2 **2 Claims**



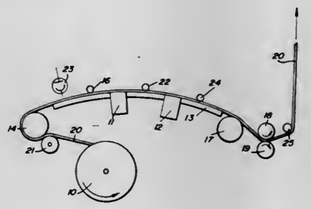
Magnetic recording and reproducing system utilizing two separate and distinct monophonic tape recorders. Each of the monophonic units is provided with a stereo head and jacks so that when the two units are interconnected they have a full range of stereophonic usage including playing and recording of stereophonic tape. The units retain their monophonic capability when disconnected from each other.

3,617,650
AUTOMATIC THREADING MECHANISM USING THREE TAPE LOOPS
Herbert Morello, Phoenixville, Pa., assignor to Digital Information Devices, Inc., Norristown, Pa.
Filed Dec. 4, 1968, Ser. No. 781,163
Int. Cl. G11b *15/66*
U.S. Cl. 179—100.2PM **15 Claims**



Referred apparatus employs a cartridge in the form of a narrow casing containing a supply of magnetic tape on and between a supply reel and takeup reel. The cartridge is inserted from above into a well in a support housing which is hinged along a bottom edge to move out from the console for loading and unloading and back to the console for cooperation with a tape drive. The tape reel supporting structure engage and center on drive hubs, and a vacuum system, including ports through the hubs, holds the reel supporting structure to the drive hubs. Automatic threading is then accomplished. Tape is withdrawn by vacuum through an opening in an edge of the cartridge through a vestibule into the middle one of three loop boxes opening into the vestibule. When in the middle loop box a pickup and recording head is moved across the box within the loop. Thereupon the vacuum is released in the middle box and imposed on each of two outer loop boxes opening into the vestibule each side of the middle box. This latter action pulls the tape around driving capstans in position to operate.

3,617,651
DEVICE FOR RECORDING ON CARDBOARD AND LIKE MAGNETIC RECORD MEDIA
Robert C. Bell, East Setauket, N.Y., assignor to Beltronix Systems, Inc.
Filed Aug. 5, 1969, Ser. No. 849,283
Int. Cl. G11b *5/78, 15/60*
U.S. Cl. 179—100.2 R **3 Claims**

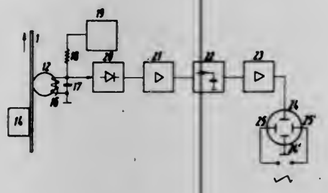


Device for recording on a continuous, relatively stiff magnetizable record medium including a source of supply for said record medium, at least one magnetic transducer head, a bedplate having a radius of curvature essentially the same as the radius of curvature of the transducer heads and apertures accommodating each of the heads, means for reversely flexing the record medium before it enters its line of travel over the bedplate and means drawing the record medium from the supply source, over the flexing means, and across the bedplate and thus into close contact with the transducer heads. Optional features include supplementary auxiliary holddown means for the record medium in positions proximate to the transducer heads, photocell or like control means to actuate the transducer heads in sequence with predetermined portions of the record medium, and tension control means for regulating the tension of the record medium as it is fed to further processing stations.

3,617,652
ARRANGEMENT FOR CONTROLLING THE RECORDING OF SIGNALS ON MAGNETIC STORAGE DEVICES

Gerhard Krause, Darmstadt, Germany, assignor to Fernsch GmbH, Darmstadt, Germany

Filed June 6, 1969, Ser. No. 831,109
Claims priority, application Germany, June 8, 1968, P 17 74 392.9
Int. Cl. G11b 27/36, 5/34, 5/38
U.S. Cl. 179—100.2 T 14 Claims

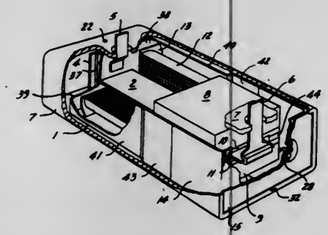


An arrangement for controlling the recording of signals on magnetic storage devices while the recording process takes place. Magnetic tape has information recorded on it through tracks which are inclined to the direction of motion of the tape. Viewed from the direction of motion of the magnetic tape, a control magnetic head is located behind the recording head. An electromagnetic coil wound upon the control magnetic head directs magnetic flux lines perpendicular to the direction of the recorded tracks. A voltage signal dependent upon the central magnetization of the tracks is generated and indicated. The electromagnetic coil may be in the form of an oscillating circuit with resonance frequency as a function of the magnetization of the tracks. A signal varying with the resonance frequency is indicated.

3,617,653
MAGNETIC REED TYPE ACOUSTIC TRANSDUCER WITH IMPROVED ARMATURE

George C. Tibbetts, and Joseph A. Sawyer, both of Camden, Maine, assignors to Tibbetts Industries, Inc., Camden, N.J.

Continuation of application Ser. No. 638,878, May 16, 1967, now abandoned. This application Feb. 2, 1970, Ser. No. 7,370
Int. Cl. H04r 11/00
U.S. Cl. 179—114 A 18 Claims

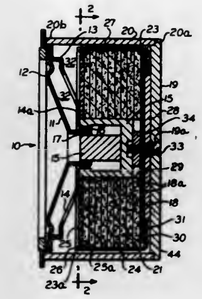


A miniaturized electromechanical transducer has a casing of high magnetic permeability material, magnets within the casing providing polarizing flux across a working gap, an electrical signal coil, and an armature of particular configuration. The armature has a substantially straight leg portion compliant in flexure and extending from the working gap through the coil to a crosspiece portion connected to another portion of the armature attached to the casing, whereby the position of the armature leg in the working gap may be adjusted by twisting inelastically the crosspiece portion.

3,617,654
ELECTROACOUSTIC TRANSDUCER

Stephen L. Heidrich, 24 Richmond Drive, Darien, Conn.

Filed Nov. 18, 1968, Ser. No. 776,718
Int. Cl. H04r 1/28
U.S. Cl. 179—115.5 R 15 Claims

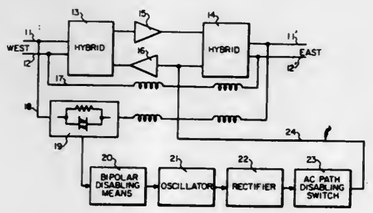


An electroacoustic transducer comprising a fluidtight housing at the rear of an acoustic diaphragm. A cartridge, including at least one wall enclosing a rear chamber and compressing a density optimizing damping means therein, is inserted in the housing dividing the latter into a front chamber adjacent the diaphragm and an air duct communicating the front chamber with the rear chamber, providing an optimized acoustic resistance-compliance network providing optimum acoustic response comparable to the electrical input.

3,617,655
DISABLING CIRCUIT OF A TRANSMISSION LINE AMPLIFIER

Russell C. Fischer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 1, 1970, Ser. No. 42,370
Int. Cl. H04b 3/44
U.S. Cl. 179—170.4 2 Claims

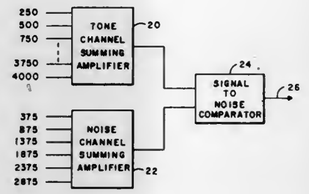


In a two-way transmission system where a two-wire transmission line divides into an alternating current path and a direct current path, as in a repeater, a disabling circuit responds to cessation of current flow in the direct current path to disable the alternating current path. The disabling is required to prevent self-oscillation resulting from mismatch of impedance in hybrid circuits when the line is not in use. The input circuit of the disabling circuit includes a varistor connected in parallel with the series resistor to limit voltage drop used for sensing. The control switch that is connected to this sensing circuit comprises a pair of complementary transistors, a different one being conductive for each direction of current flow in the direct current path.

3,617,656
TEST SPECTRUM RECOGNITION CIRCUIT FOR COMMUNICATION LINK ANALYZER

William S. Elliott, Cedar Rapids, Iowa; Ronald F. Palmer, Ralston, Nebr., and Robert H. Pool, Marion, Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Sept. 25, 1969, Ser. No. 861,107
Int. Cl. H04m 1/24, 3/22
U.S. Cl. 179—175.3 8 Claims

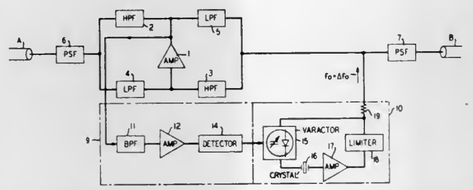


In a communication link analyzer including a test signal generator for generating a frequency spectrum and a signal analysis unit for receiving said spectrum through a communication link, a signal recognition circuit is provided to recognize the presence of said spectrum. Tone channels and noise sampling channels are monitored, summed and compared by the signal recognition circuit.

3,617,657
REPEATER MONITORING SYSTEM

Sherman T. Brewer, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 25, 1969, Ser. No. 852,813
Int. Cl. H04b 3/46
U.S. Cl. 179—175.31R 5 Claims



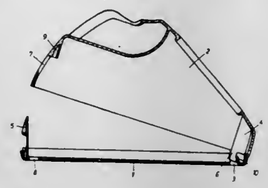
A repeater monitoring system wherein the individual signature frequency of the crystal oscillator associated with each repeater is varied over a small range determined by the control signal fed to the varactor in the crystal oscillator feedback loop. The control signal is in turn determined by the level of the signal at the monitoring frequency at the output of the repeater amplifier. This monitoring system has the capabilities of detecting failures in both transmission bands, sensing transmission levels, measuring intermodulation distortion, and detecting nonlinear and noisy repeaters.

3,617,658
SNAP-TOGETHER TELEPHONE SUBSET

Wolfgang Gruger, Stuttgart-Zuffenhausen; Heinz Ruster, Berlin, and Gunter Schwanck, Berlin, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 9,461
Claims priority, application Germany, May 29, 1969, P 19 27 443.2
Int. Cl. H04m 1/02
U.S. Cl. 179—179 4 Claims

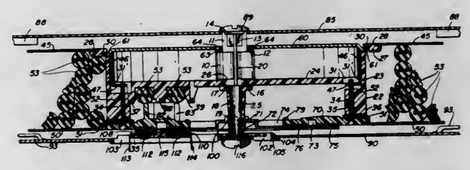
The baseplate and the cover of the subset are connected in such a way to one another that projections are arranged on the front side of the cover, for engaging correspondingly shaped slots provided in the baseplate, and in that on the rear side of the cover there is provided a recess which is engaged by a flexible hook-shaped projection provided on the baseplate.



3,617,659
ELECTRIC CORD REEL

Jerry H. Freeman, Mt. Prospect, Ill., assignor to Power Pak, Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 677,976, Oct. 25, 1967, now abandoned. This application May 25, 1970, Ser. No. 22,539
Int. Cl. H02g 11/00
U.S. Cl. 191—12.2 31 Claims

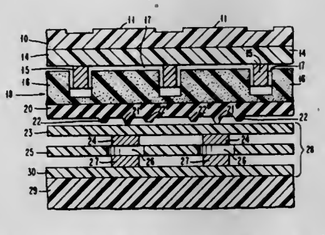


A cord reel structure for an electric cord includes a stationary arbor and a reel for an electric cord rotatably mounted thereon. The reel includes a molded synthetic plastic hollow hub having a cylindrical wall, a circular partition wall forming a spring motor chamber for a spiral spring and a slipring chamber for a slipring electrical connector in the hub, and a central bearing in the partition wall for rotatably mounting the hub on the arbor. An annular flange extends radially from each end of the hub to form the reel. The slipring electrical connector includes a slipring block having slipring contacts and a contact block having spring contacts engaging the slipring contacts, one of the blocks being mounted in the slipring chamber in the hub and the other being stationarily mounted, to provide for electrical connection to the electric cord on the reel.

3,617,660
KEYBOARD ACTUATING MECHANISM FOR DIAPHRAGM ELECTRIC SWITCH CONTACT ARRAY

Morris Krakinowski, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

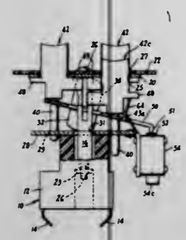
Filed Jan. 23, 1970, Ser. No. 5,431
Int. Cl. H01h 9/00, 43/08, 3/12
U.S. Cl. 200—1 R 21 Claims



A manual keyboard includes a nomenclature bearing sheet supported on a rigid frame having finger keying openings

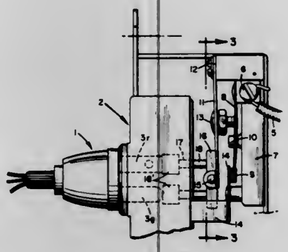
through which soft elastomeric pads project. Below the pads an actuator sheet bearing clusters of individual projections is positioned with the projections aligned with the openings for operation of the actuable inputs of an array of diaphragm switches including a plurality of electrical contacts. Stops for projections include a peripheral array of additional projections which can be shorter, elevated adjacent surface areas or rings.

3,617,661
MULTIPLE PUSHBUTTON SWITCH WITH IMPROVED ACTUATING MEANS
Harald Nome, Bloomfield, and Herman E. Zickfeld, Watertown, both of Conn., assignors to M. Z. M. Corp., Plainville, Conn.
Filed June 26, 1970, Ser. No. 50,117
Int. Cl. H01h *9/26, 3/00*
U.S. Cl. 200—5 R **19 Claims**



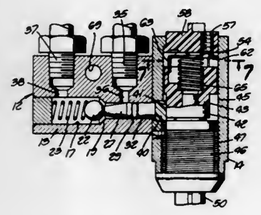
A broad range of switch operation is provided by an assembly using conventional multiple pushbutton switch for selective electrical connection of a plurality of terminals, a second switch, and a housing providing a pivot assembly and two rows of operating pushbuttons. The operating pushbuttons control the conventional switch directly and the second switch indirectly by means of the pivot assembly which discriminates between the rows of buttons depressed so that the second switch serves to double the range of the basic conventional pushbutton switch.

3,617,662
SAFETY ELECTRICAL OUTLET
Charles Frank Miller, Mathews Co., Va., assignor to Tidewater Research Corporation
Filed Feb. 3, 1970, Ser. No. 8,294
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **5 Claims**



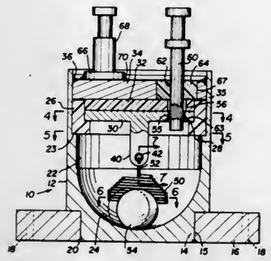
An electrical outlet wherein a plug receptacle is electrically separated from the electrical power wirer by the interposition of a switch means therebetween, which switch means is actuable only by the simultaneous insertion of at least two plug prongs into the receptacle.

3,617,663
ANTITHEFT LOCK FOR VEHICLE BRAKES AND IGNITION SYSTEM
Lawrence C. Whittemore, 19641 Waterbury Lane, Huntington Beach, Calif.
Filed Aug. 19, 1970, Ser. No. 64,992
Int. Cl. B60r *25/08;* **H01h** *27/06, 21/28*
U.S. Cl. 200—61.86 **5 Claims**



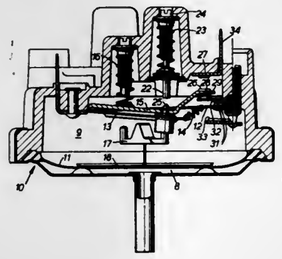
A lock mechanism for vehicles having two pairs of hydraulic brakes, each pair separately actuated from a dual master cylinder assembly, includes a pair of check valves which act to retain fluid under pressure in the individual brake cylinders to prevent movement of the vehicle. The check valves are both opened by a key-operated cam acting through a crosshead to release the brakes when desired. The cam operates a rotary electrical switch to interrupt the starter switch circuit when the check valves are closed.

3,617,664
ACCELERATION-RESPONSIVE SWITCH
Leonard P. Tetrault, Northport, N.Y., assignor to Aerodyne Controls Corporation, Farmingdale, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,121
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.51 **8 Claims**



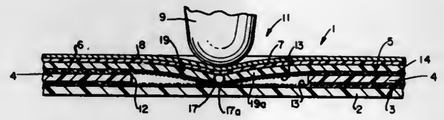
A switch assembly responsive to disturbance and displacement includes a baseplate on which is mounted a cylindrical electrically conductive shell. The shell has a cylindrical cavity with a spherically curved bottom surface on which is a freely moveable electrically conductive ball. The ball is surrounded by a tapered pendulum supported by an electrically conductive disk insulated from the shell. The pendulum is spaced from the ball radially and circumferentially. Electrical terminals are connected in circuit with the pendulum and shell respectively. Any displacement, disturbance, tilt, acceleration or vibration of the assembly beyond a predetermined magnitude causes the ball and pendulum to contact each other and close an external alarm or indicating circuit which may be connected to the electrical terminals.

3,617,665
SNAP-ACTION PRESSURE-SENSITIVE SWITCH WITH SAFETY FEATURE RESPONSIVE TO CONTACT WELDING
Johannes J. Berson, Mook, and Joseph Pilet, Nijmegen, both of Netherlands, assignors to Controls Company of America, Melrose Park, Ill.
Filed Dec. 4, 1969, Ser. No. 882,140
Claims priority, application Great Britain, Dec. 13, 1968, 59,540/68
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 R **7 Claims**



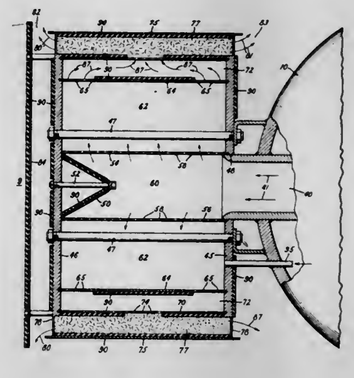
The pressure switch comprises a toggle switch in which a flexible switch tongue is moved by a pressure-actuated diaphragm against the force of a return spring, and a contact-carrying flexible switch blade, connected to the blade tongue, through an overcenter spring, is moved by snap-action in one direction as the blade tongue moves through the overcenter position in the opposite direction: To effect a safety function; a contact is movable by the switch tongue to engage a stationary contact after a predetermined movement of the switch tongue past the overcenter position, the switch tongue being movable despite the possibility of welding of the toggle switch contacts. Closure of the safety switch by the switch tongue in this way can be used to energize a pump in the event of failure of a water valve to close or to energize a water valve otherwise prevented from energization by welding of two of the toggle switch contacts.

3,617,666
PRESSURE-OPERATED LAYERED ELECTRICAL SWITCH AND SWITCH ARRAY
Charles E. Braue, Crestwood, N.Y., assignor to Data Appliance Corporation
Filed Apr. 30, 1970, Ser. No. 33,367
Int. Cl. H01h *43/08*
U.S. Cl. 200—86 **12 Claims**



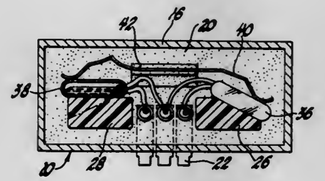
A pressure-operated electrical switch unit having a layered construction including a substantially planar surface to which pressure is applied to close the switch. The removal of the pressure opens the switch. The switch includes a layer having at least one elongated opening in it which permits portions of the layer to be deflected into an opening in an adjacent layer to move one electrically conductive layer to complete the electrical circuit. An array of the switches may be used for supplying signals created by the pressure of a writing instrument.

3,617,667
GAS-BLAST CIRCUIT BREAKER WITH NOISE-REDUCING EXHAUST MUFFLER ASSEMBLY
Francis Kirschner, East Hills, N.Y.; Vincent N. Stewart, Springfield, and Ugo R. Tognella, Philadelphia, Pa., assignors to General Electric Company
Filed Jan. 27, 1970, Ser. No. 6,244
Int. Cl. H01h *33/58*
U.S. Cl. 200—148 **11 Claims**



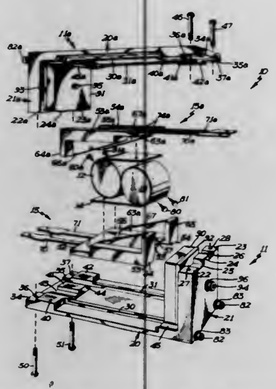
A noise-reducing exhaust muffler for a gas-blast circuit breaker comprises spaced end walls and four concentric tubular members mounted between the end walls. Exhaust gases enter through one end wall, flow into the space enclosed by the first tubular member, then flow radially outward through holes in the first, second, and third tubular members, and then axially of the muffler between the third and fourth tubular members. The holes in the third and second tubular members are in axially staggered locations so as to introduce additional turns into the flow path and provide solid wall barriers to the radiation of sound energy.

3,617,668
SWITCH OPERATING MECHANISM
Thomas E. Lohr, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 9, 1969, Ser. No. 865,035
Int. Cl. H01h *29/00*
U.S. Cl. 200—152 **2 Claims**



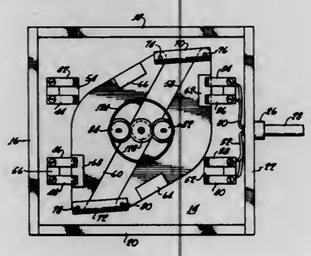
The invention relates generally to a switch-operating mechanism and, more particularly, to a switch-operating mechanism for controlling the up-down movement of automobile windows. The mechanism includes separate up-down pushbuttons in contact with separate mercury switches, with each of the pushbuttons having a cam arrangement that includes on-off position ramps to guide the mercury switches. Each pushbutton is spring biased to the off position to automatically return the mercury switch it contacts to the off position upon pushbutton release.

3,617,669
ROLAMITE APPARATUS
Patrick M. Maloney, St. Paul, and Gary R. Bluem, Golden Valley, both of Minn., assignors to Kroy Industries Inc., Stillwater, Minn.
Filed May 19, 1969, Ser. No. 825,728
Int. Cl. H01h 3/32
U.S. Cl. 200—153 R 18 Claims



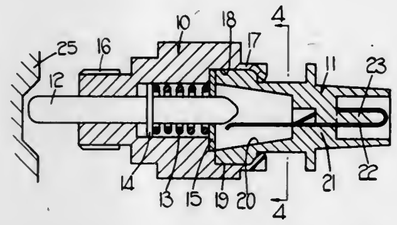
Rolamite apparatus including a pair of rollers entrapped in the loops of a generally S-shaped band with each of the rollers being electrically conductive and having electrical contacts extending radially outward therefrom and through the band and having an enlarged head portion which secures the band to the rollers. A housing for the rolamite apparatus has a pair of slide members longitudinally movable therein, one of them cooperating with each of the rollers and providing a guide and an end stop for the cooperating roller and having one end of the flexible band fixed to it whereby the slide members can be moved longitudinally relative to each other to affect tensioning of the band. The slide members also have fixed thereto contacts cooperable with the electrical contacts which are carried by the rollers in predetermined positions of the rolamite device. In the disclosed arrangement the band applies no substantial bias to the rolamite device and calibration is accomplished by longitudinally movable permanent magnets disposed on each end of the frame and establishing a magnetic coupling with the rollers which are formed of magnetically attractable material. In an alternative form the band provides an internal bias urging the rollers to one position while a permanent magnet establishes a magnetic coupling with the rollers and is adjustable longitudinally to provide adjustment of this coupling force.

3,617,670
KNIFE BLADE MICROSWITCH
Hal R. Linderfelt, 1594 S.E. Skyline Drive, Santa Ana, Calif.
Filed Dec. 5, 1969, Ser. No. 882,513
Int. Cl. H01h 3/00
U.S. Cl. 200—153 39 Claims



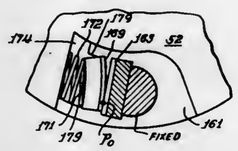
A linear-to-pivotal motion converting mechanism including a pair of blades pivotally secured at the ends in spaced relation in the form of a variable-area quadrilateral, hubs mounting the blades for pivotal movement about points displaced from the centers of the respective blades and an actuator for moving the hubs apart transversely thereby causing the blades to pivot about the hubs is disclosed. An electrical switch utilizing the mechanical movement is also disclosed. The switch is suitable for miniaturization as a microswitch and provides a knife switch wiping action with electrical contacts.

3,617,671
PLUNGER-OPERATED SWITCH WITH OFFSET ADJUSTMENT MEANS
Robert Leonard Gleeson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 18, 1969, Ser. No. 886,271
Claims priority, application Great Britain, Jan. 3, 1969, 539
Int. Cl. H01b 1/34
U.S. Cl. 200—159 R 2 Claims



An electrical switch having a two-part body, one part carrying a spring-loaded plunger and the other part carrying an electrical contact member, and the two parts of the body having respective cylindrical surfaces which are coaxial and parallel to the axis of the plunger, but the axes of the plunger and of the said cylindrical surfaces being offset and assembly of the switch being accomplished by fitting the plunger and the contact member to the parts of the body respectively, and fitting the two parts of the body together and rotating them relatively to one another with the plunger in its inward operative position until the contact member and plunger engage the two parts of the body then being secured in such a relative position.

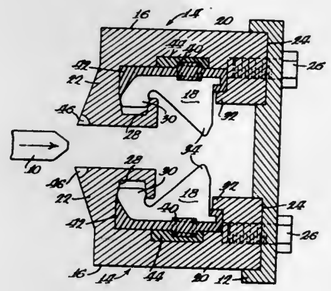
3,617,672
WOBBLE BUTT CONTACT SWITCH
Namik O. Atakkaan, Buffalo Grove, Ill., assignor to Appleton Electric Company, Chicago, Ill.
Filed Oct. 13, 1969, Ser. No. 865,595
Int. Cl. H01h 1/36
U.S. Cl. 200—164 3 Claims



One of each pair of butt contact elements has a convex contact surface. In the moment after closing, or before opening of the switch, the contact elements pivot or wobble with respect to each other while in contact with each other. Arcing does not damage a second contact point at which the elements are in operating contact while the switch is at rest in the closed position, since this point is spaced apart from a first contact point at which the contact elements first abut,

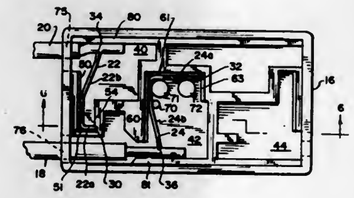
during closing, or separate, during opening of the switch. In a particularly useful embodiment, the switch includes fixed, spaced-apart line contacts, and a moveable conductive bridge carried on an insulated operator-controlled snap rotor element which includes means for assuring a first and second contact point by assuring pivoting or wobbling of the bridge in the moment after contact is made, or before contact is broken, with the fixed line contact elements.

3,617,673
CONTACT STRUCTURE
Donald E. Weston, East Sebago, Maine, assignor to H. K. Porter Company, Inc., Chicago, Ill.
Filed June 18, 1970, Ser. No. 47,429
Int. Cl. H01h 1/46
U.S. Cl. 200—166 E 12 Claims



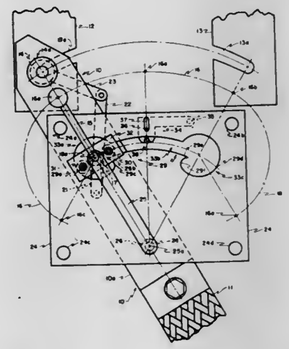
Contact structure having a pair of juxtaposed contact assemblies each having a generally L-shaped housing and terminal means at the free end of one leg of the housing. Contact members pivotally mounted on the other leg and generally paralleling the one leg to provide a reverse loop path of current flow. Means biasing the contact members away from the one leg including a yieldable moisture-impervious material filling the space between the contact members and the housing to prevent entry of moisture therebetween.

3,617,674
ELECTRICAL SWITCH HAVING INSULATED COVER FOR THE SWITCH TERMINALS
Thomas F. Osika, Gary, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Oct. 13, 1970, Ser. No. 80,396
Int. Cl. H01h 1/58
U.S. Cl. 200—166 CT 5 Claims



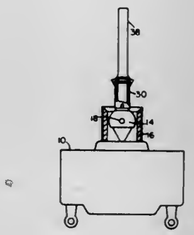
A plastic housing is fitted over the terminals of an electrical switch to electrically insulate the terminals in an operating installation. The plastic housing has integrally molded therewithin pockets for receiving the switch terminals. Each of the switch terminals has a serrated edge which, when the housing is fitted over the terminals, becomes embedded in the walls of the pocket to securely lock the housing to the switch body. Each of the terminals also has an extension which engages a wire when it is fitted into the housing, and traps the wire between it and a wall of the pocket to physically lock the wire within the housing and to electrically connect the same to the switch terminal.

3,617,675
HEAVY-DUTY SWITCH
George H. Pohm, Lorain; Harold O. Wright, Lorain, and Gary G. Siegmund, Elyria, all of Ohio, assignors to Lorain Products Corporation
Filed Feb. 27, 1970, Ser. No. 15,071
Int. Cl. H01h 1/50
U.S. Cl. 200—170 A 2 Claims



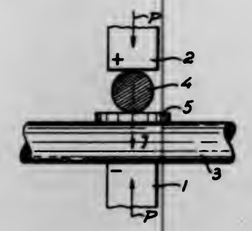
A pressure contact switch having a control member fixed with respect to a movable contact thereby to translate the movable contact from one fixed contact to another fixed contact about a first center when the control member is shifted laterally. A second center is provided about which the control member is rotated at each end of the translating stroke thereby to tighten the movable contact against the respective fixed contact.

3,617,676
SWITCH HANDLE FOR FIELD ASSEMBLY
John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.
Filed June 24, 1970, Ser. No. 49,449
Int. Cl. H01h 3/04
U.S. Cl. 200—172 A 9 Claims



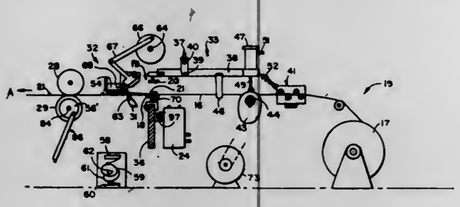
An elongated lever-type handle attachable to a switch in the field or after the switch is otherwise completely fabricated has a substantially cylindrical axial recess with an interior cylindrical bead. A switch-operating lever has a cylindrical part adapted to enter the handle recess, and a peripheral groove in which the bead seats. The outer end of the lever is tapered to facilitate sliding of the handle on the lever, and the inner end of the lever is flared and engaged by the end of the handle to afford a tight fit. Key-and-slot means on the lever and handle prevent relative rotation in engaged position.

3,617,677
METHOD OF MANUFACTURING WELDED STEEL GRATINGS
Klaus Ritter; Gerd Ritter; Josef Ritter, and Hans Gott, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungsgesellschaft m.b.H., Graz, Austria
Filed Sept. 5, 1969, Ser. No. 855,663
Claims priority, application Austria, Sept. 20, 1968, 9218/68
Int. Cl. B23k 11/16
U.S. Cl. 219—58 11 Claims



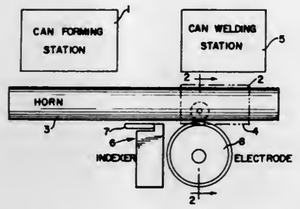
A method of manufacturing welded steel gratings by resistance welding includes the use of jointing pads inserted between the alloy steel wires which are to be joined. The jointing pads are made of soft iron or low carbon steel so that they will be able to take considerable stress. Preferably the dimensions of the jointing pads are selected so that the pads will act as heat sinks preventing the wires from cooling too rapidly. Pads which are relatively large or have a high volume of surface ratio have been found to be desirable.

3,617,678
ELECTRODE-MOVING AND PRESSURE-APPLYING MECHANISM OF WELDING APPARATUS IN AUTOMATIC MACHINERY AS FOR MAKING WIRE MESH OR THE LIKE
Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y.
Filed Aug. 11, 1969, Ser. No. 848,942
Int. Cl. B23k 11/10
U.S. Cl. 219—56 5 Claims



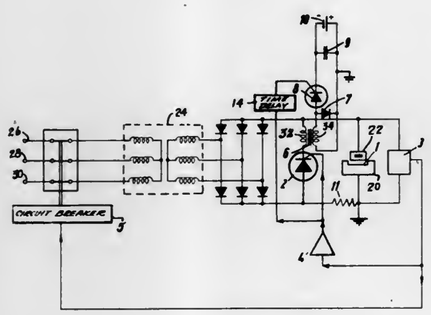
Serving in the welding apparatus in an automatic wire mesh making machine, for each of the longitudinal wires, meaning those arranged in the manner of warp, there is a fixed electrode, and a movable electrode which is at one end of a swingably mounted lever carrying an actuated air cylinder at the other end, whose piston rod is the follower of a cam; said lever being biased to keep the electrodes apart, and said cam guiding its associated longitudinal wire. Air under uniform pressure is fed to all the cylinders, or if needed, the pressure may be different in selected cylinders respectively, or two different sources offering air at different pressures are alternately fed the cylinders by automatic valve means whereby initially a relatively high pressure is applied to crush any rust on the work, and then for the greater part of the duration of the welding operation, a comparatively low, but proper operational pressure is applied. All components as necessary, are adjustable in position, so the spacing of the longitudinal wires can be changed, and there also is a means for extent of finished work movement adjustment, to change the distance between transverse wires, so the machine can be accommodated for the making of different size mesh.

3,617,679
MULTIPLE POSITION SEAM INDEXER
Anton A. Aschberger, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 11, 1969, Ser. No. 848,808
Int. Cl. B23k 11/16
U.S. Cl. 219—64 7 Claims



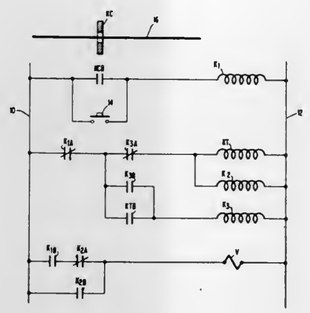
An indexer for turning a can on which the seam has not been fully welded so that the welding current goes through two or three positions on the surface of the electrode as successive can seams are turned to these positions by the indexer. The electrode erodes in definite patterns. This prolongs electrode life.

3,617,680
PROCESS AND CIRCUIT ARRANGEMENT FOR THE SWITCHING OF SHORT CIRCUITS OF INSTALLATIONS FOR THE ELECTROCHEMICAL REMOVAL OF MATERIAL
Rudolf E. Grosskopf, Aalen, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany
Filed Dec. 15, 1969, Ser. No. 884,805
Claims priority, application Germany, Dec. 24, 1968, P 18 16 865.5
Int. Cl. B23k 9/16
U.S. Cl. 219—69 S 11 Claims



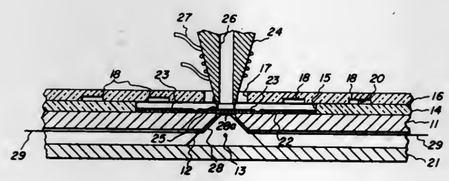
A method and apparatus for accelerating the deflection of current from a working gap for electrochemical machining whereby, when a short circuit is detected, a current is produced in the gap opposing the short circuit current. Preferably, one or more thyristors are provided in parallel with the gap to shunt current away from the gap when a short circuit is detected and each has the secondary winding of a transformer connected to it. The primary winding of the transformer is connected to a charged capacitor which discharges through the primary winding, when a thyristor also connected in series with the capacitor is switched to a low-resistance state upon detection of the short circuit, so that a voltage is induced in the secondary winding which produces a current in the gap opposing the short circuit current.

3,617,681
APPARATUS FOR GAS ARC WELDING
Warren F. Dyson, Richmond, Va., assignor to C & W Control Company
Filed May 13, 1969, Ser. No. 824,195
Int. Cl. B23k 9/10
U.S. Cl. 219—74 6 Claims



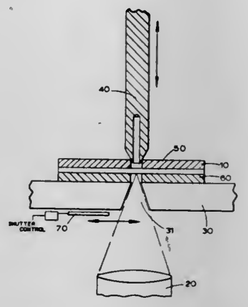
Apparatus for maintaining the flow of an inert gas around the electrode of an inert gas arc welder. The welder operator momentarily depresses a pushbutton which commences the gas flow. A sensor detects the arc welding current to maintain the gas flow so long as that current is present. After the arc is broken, the gas flow is maintained for sufficient time to cool and protect the weld and electrode, and then the gas flow is automatically terminated.

3,617,682
SEMICONDUCTOR CHIP BONDER
Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company
Filed June 23, 1969, Ser. No. 835,694
Int. Cl. B23k 1/04
U.S. Cl. 219—85 10 Claims



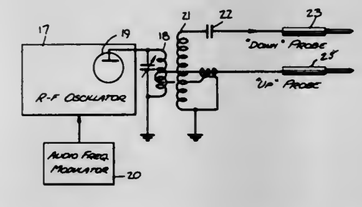
An apparatus for attaching semiconductor chips to gold pads is described as comprising a stainless steel hot stage mounted on top of a heater block having a temperature of approximately 300° C. with a platinum ribbon heater or an RF heater element protruding through a hole in the hot stage and flush with the top surface thereof so as to provide a local hot spot smaller than the gold pads to which the semiconductor chips are to be attached. A current passed through the platinum causes heating to a temperature sufficient to eutectically bond the chip to the gold pad. An inert atmosphere is provided during the bonding operation to enhance the accuracy and reproducibility of the bond.

3,617,683
METHOD AND APPARATUS FOR WORKING MATERIAL USING LASER BEAMS
Michael Patrick Beresford, Gloucester, and Brian Frederick Scott, Birmingham, both of England, assignors to The Universtiy of Birmingham, Birmingham, England and Spacratron Limited, Tuffley Crescent, Gloucester, England
Filed Jan. 13, 1970, Ser. No. 2,505
Claims priority, application Great Britain, Jan. 14, 1969, 2191/69
Int. Cl. B23k 9/00
U.S. Cl. 219—121 L 8 Claims



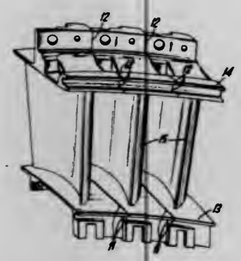
The invention relates to methods and apparatus for working materials using laser beams. The workpiece is laid on support means which include table beneath which is located a laser beam emitter and an associated optical system for focusing the laser beam. The support means, which include the worktable, has a generally vertical through hole and the workpiece is laid over this hole. The laser optical system is arranged to direct the beam from below through the hole in the support means and to focus the beam at the level of the upper end of the hole, that is, substantially on the underside of the workpiece. Means are provided above the worktable for indicating the position of the optical axis of the laser beam. Means are provided for shrouding the laser beam to prevent stray emission.

3,617,684
ELECTRONIC TRIMMING OF MICROELECTRONIC RESISTORS
Alfonso Di Mino, Woodcliff Lake, N.J., assignor to Datapax Computer Systems Corporation, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 013,697
Int. Cl. B23k 15/00
U.S. Cl. 219—121 R 4 Claims



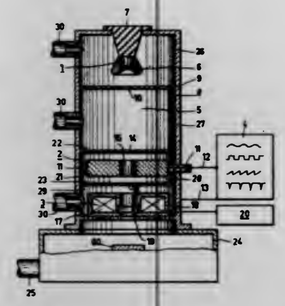
An electronic technique for changing the ohmic values of microelectronic resistors formed on a substrate, so as to either increase or decrease the values thereof without affecting their physical qualities. To bring about a decrease in value, the surface of the resistor is subjected to a corona discharge produced by radiofrequency energy having a low-frequency amplitude modulation component. The same energy source is used to effect an increase in ohmic value, this being effected by passing a heating current through the body of the resistor.

3,617,685
METHOD OF PRODUCING CRACK-FREE ELECTRON BEAM WELDS OF JET ENGINE COMPONENTS
Harry W. Brill-Edwards, New York, and Fereidoon Zahabi, Nyack, both of N.Y., assignors to Chromalloy American Corporation, Orangeburg, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,063
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EB 8 Claims



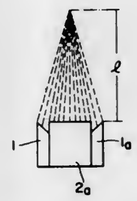
Crack-free welds of jet engine components formed essentially of a heat resistant nickel-base alloy having a tendency to be weld-crack sensitive are produced by abutting selected surface of at least a pair of structural elements of said nickel-base alloy, the elements being assembled in welding relationship with an iron-base shim therebetween, the elements being electron beam welded together into a unitary structure by melting the iron-base shim at the interface of the abutting surfaces, whereby the resulting weld which is an alloy of the iron-base shim and the nickel-base alloy is crack-free.

3,617,686
APPARATUS FOR TREATING WORKPIECES WITH MAGNETICALLY FOCUSED BEAMS OF ELECTRICALLY CHARGED PARTICLES
Walter Dietrich, 645 Hanau Reichenberger Str., Hanau; Dieter Fritz, 6461 Mittelgrundau Wiesenweg 6, Mittelgrundau, and Hans D. Kluger, 6451 Bruchkobel, am Heinischen Berg, Bruchkobel, all of Germany
Filed July 16, 1969, Ser. No. 842,244
Claims priority, application Germany, July 26, 1968, P 17 65 852.5
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EB 7 Claims



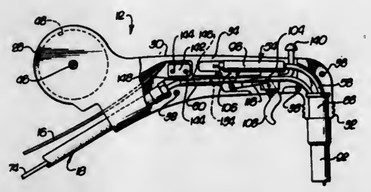
In an apparatus for the application of beams of charged particles to the treating of work and which includes an electron-optical lens for varying the energy density in the beam and an electromagnetic lens having an alternating potential component of fixed frequency superposed on its supply voltage so that the focal length of the lens varies as a function of the frequency, of means, particularly desirable for welding by electron beams, to make distribution of energy variable over the impingement section of the electron beam, that is, at the area of the treatment, whereby it becomes possible better to adapt to the properties of the material for achieving satisfactory welded connections.

3,617,687
DIRECTIONAL ARC-GENERATING DEVICE
Shuzo Katawoka, 86, 3-Chome, Kashiwasato-cho, Nishiyodogawa-ku, Osaka-shi, Osaka-fu, Japan
Filed Aug. 4, 1969, Ser. No. 847,139
Int. Cl. B23k 9/00
U.S. Cl. 219—122 5 Claims



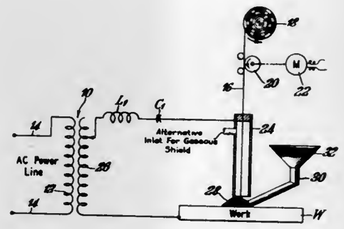
An arc-generating device comprising a plurality of electrode members each of which has the discharge surface sloped toward the inner and lower part thereof from the upper peripheral edge, said electrode members being assembled as an electrode assembly so that a conically concaved discharge space is formed by the discharge surfaces of all electrode members, and a longitudinal narrow gap is established between adjacent electrode members of each pair, whereby an electric arc is made to generate along said discharge space successively per two opposite discharge surfaces, thus establishing a directional arc stream along a common axis of the discharge surfaces, and respective pairs of the electrode members of said arc-generating device being supplied successively with pulse-shaped DC or AC voltage or a polyphase voltage.

3,617,688
TACK WELDING TORCH
Allen A. Fogelstrom, Sun Valley, Calif., assignor to SSP Industries, Burbank, Calif.
Filed July 29, 1969, Ser. No. 845,706
Int. Cl. B23k 9/00
U.S. Cl. 219—130 2 Claims
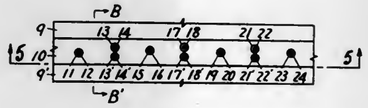


A tack welding torch adapted to be used in inert-gas-shielded-arc welding. The torch includes a handle means including a self-contained welding wire supply and means for urging said wire through said handle into contact with metal to be welded. Said torch also includes current control means for energizing said welding wire and insulating shield means disposed around the area to be welded. Mounted within the insulating shield means is an adjustable electrode in proximity to said welding wire.

3,617,689
CONSTANT POTENTIAL AC CONSUMABLE ELECTRODE WELDING
August Frederick Manz, Union, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,693
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 6 Claims



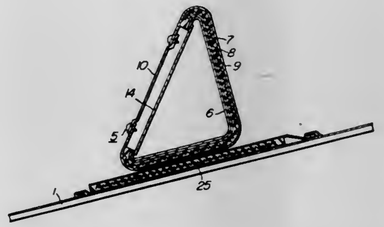
A method of establishing a self-supporting AC arc between a consumable electrode and a workpiece from a constant potential source of power comprising interposing an equivalent circuit consisting of a series-connected inductor and capacitor in series circuit relationship with the constant potential source and critically tuning the inductance and capacitance into an essentially resonant state.

3,617,690
AUTOMATIC NARROW-GAP JOINT WELDING METHOD WITH MULTIPLE ELECTRODES
Kiyoshi Terai, Ashiya; Sotaro Yamada, Tarumiku Kobe, and Nagano Tsuneo, Takarazuka, all of Japan, assignors to Kawasaki Jukogoyo Kabushiki Kaisha, Kobe, Japan
Filed Mar. 12, 1970, Ser. No. 18,900
Int. Cl. B13k 9/00
U.S. Cl. 219—137 8 Claims



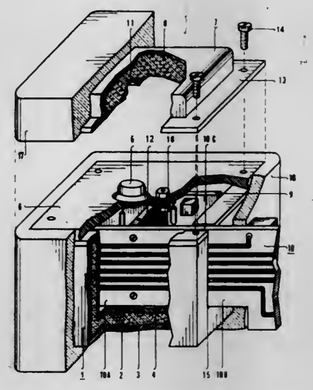
A method of welding a pair of horizontally disposed plates with a narrow groove between adjacent edges by means of electrodes projecting upwardly into the groove and in which a pair of electrodes form beads at the top edge of each surface of the groove and a single electrode connects the beads formed by the double electrodes and repeating the process to completely fill the groove.

3,617,691
HEATED SNOW STOPPER
Tadao Toyooka, Toyonaka-shi; Hiromutsu Ueda, Ibaragi-shi, and Akira Kobayashi, Toyonaka-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka, Japan
Division of Ser. No. 737,449, June 17, 1968, Pat. No. 3,521,029.
Filed Nov. 21, 1969, Ser. No. 878,598
Claims priorities, application Japan, June 19, 1967, Dec. 21, 1967; 42/53373, 42/108284
Int. Cl. H05b 1/00
U.S. Cl. 219—201 5 Claims



A snow stopper to be placed on a roof, which is provided with an electric heater.

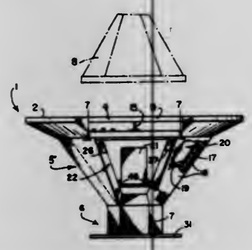
3,617,692
THERMALLY CONTROLLED APPARATUS CELL
Peter Landis, Urdorf, Switzerland, assignor to Albiswerk Zurich A.G., Zurich, Switzerland
Filed Oct. 31, 1969, Ser. No. 872,948
Claims priority, application Switzerland, Nov. 21, 1968, 17336/68
Int. Cl. H05b 1/00
U.S. Cl. 219—210 6 Claims



A novel apparatus cell in which the internal temperature thereof is maintained constant. The apparatus cell embodies a double-walled pot-shaped housing of heat conducting material with the hollow compartment between the double walls being filled with a heat-insulating material. A plate member also formed of a heat-conducting material and heated by a locally concentrated heat source serves to close the pot-shaped housing. A pot-shaped cover member also formed of heat conducting material having a collar-shaped marginal edge portion is provided, the cover member and particularly the edge portion thereof bearing upon the edge or marginal portion of the plate member. The space between the pot-shaped cover member and the plate member is at least partially filled with a heat insulating material. The apparatus cell of the instant invention provides a notable advantage in that only one heat source and one thermostat with

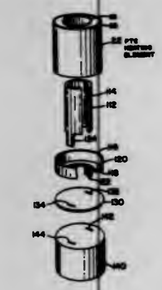
an associated sensor is required, and, in the preferred inventive embodiment, the heat source comprises a transistor mounted upon the plate member, the transistor being connected in the final stage of a thermostat-control amplifier.

3,617,693
COMBINED DINING AND COOKING TABLE
Ron Shimosawa, 230 East Ontario St., Chicago, Ill.
Filed June 19, 1970, Ser. No. 47,642
Int. Cl. H05b *1/00*
U.S. Cl. 219—218 **9 Claims**



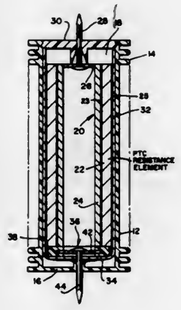
A table which is used for both cooking and dining, characterized by a generally outer annular tabletop which serves as the dining portion of the table and a centrally positioned electrically operated cooking unit positioned inwardly of the outer annular tabletop, said table being constructed so that the people sitting around the table are equidistantly spaced from the center of the table.

3,617,694
ELECTRICAL CONTACT MEANS FOR HAIR CURLER HAVING ELONGATED ANNULAR HEATER
John R. D'Entremont, Foxboro, Mass., assignor to Texas Instruments, Incorporated, Dallas, Tex.
Filed Jan. 27, 1970, Ser. No. 6,094
Int. Cl. A45d *2/36*; **H05b** *1/02, 3/12*
U.S. Cl. 219—222 **7 Claims**



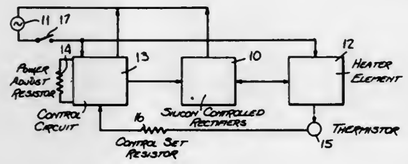
A hair curler employing a heater element formed of a conductive crystalline polymer is disclosed. The polymer, loaded with conductive particles, such as carbon black, has a positive temperature coefficient (PTC) of resistance characteristic and combines a fast warmup time with a slow cooldown time due to the phase change of amorphous polymer to crystalline upon cooling, yet does not become molten due to the sharp rise in resistance at temperatures above an anomaly temperature which limits the heat generation at elevated temperatures. Since the polymer retains its shape, no special sealing means is required to confine it as in prior art fusible wax devices. The heater element is an elongated annulus coated with conductive material on inner and outer peripheral surfaces. A sheet of conductive material is rolled into a cylinder and pressed into the bore of the annulus with a terminal extending therefrom. A sleeve of conductive material is placed about the annulus and a terminal attached to the sleeve to complete electrical connection. The outer shell of the curler extends over the terminal to provide a protected environment.

3,617,695
ELECTRICAL CONTACT MEANS FOR HAIR CURLER HAVING ELONGATED ANNULAR HEATER
John V. Meyer, Brighton, and Richard T. Nordlund, Mansfield, both of Mass., assignors to Texas Instruments, Incorporated, Dallas, Tex.
Filed Jan. 27, 1970, Ser. No. 6,087
Int. Cl. A45d *2/36*; **H05b** *1/02, 3/12*
U.S. Cl. 219—222 **4 Claims**



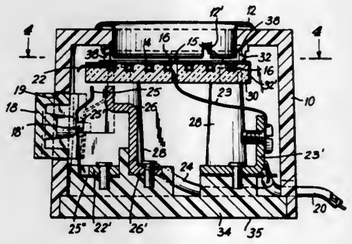
A hair curler employing a heater element formed of a conductive crystalline polymer is disclosed. The polymer, loaded with conductive particles, such as carbon black, has a positive temperature coefficient (PTC) of resistance characteristic and combines a fast warmup time with a slow cooldown time due to the phase change of amorphous polymer to crystalline polymer upon cooling, yet does not become molten due to the sharp rise in resistance at temperatures above an anomaly temperature which limits the heat generation at elevated temperatures. Since the polymer retains its shape, no special sealing means is required to confine it as in prior art, fusible wax devices. An elongated annular PTC heating element is employed with conductive coatings placed on the inner and outer peripheral surfaces thereof. Tubular elements are placed in biased relationship to the conductive coatings with terminals attached to the tubular elements extending from opposite ends of the curler.

3,617,696
HEAT-SEALING APPARATUS
John E. Reenstra, 10 Ronnie Road, Wayne, N.J., and Martin Malone, 27 Sunrise Drive, Hawthorne, N.J.
Filed May 3, 1968, Ser. No. 726,436
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **18 Claims**



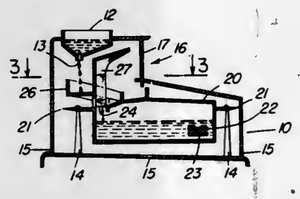
A heat-sealing tray is comprised of a thin sheet of heater element material bonded to an insulating substrate and a rigid backing member. The sheet is etched out in a pattern defining a heating current path. An automatic temperature-limiting control circuit is connected to the sheet. The circuit operates in full wave configuration and controls the partial cycle conduction of current through the heating path. A temperature sensor signals the circuit to remove the current through the path when a predetermined temperature is reached.

3,617,697
CIGARETTE LIGHTER
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,465
Int. Cl. F23g *7/22*
U.S. Cl. 219—267 **2 Claims**



A cigarette lighter is disclosed as including a base member having upright supporting posts extending therefrom for supporting a cigarette-lighting element. The unit includes other construction features providing improved heat dissipation means. Electrical power means and electrical contact means therefor are also included with a housing to cover the entire unit. The housing exposes the cigarette-lighter element and provides a means for operating the electrical contact means.

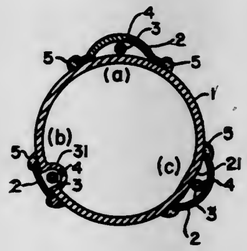
3,617,698
VAPORIZER APPARATUS
Robert H. Duncanson, St. Anthony Village, Minn., assignor to Faberge, Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 706,809, Feb. 20, 1968, now Patent No. 3,495,343. This application Feb. 11, 1970, Ser. No. 10,451
Int. Cl. H05b *3/60*
U.S. Cl. 219—284 **13 Claims**



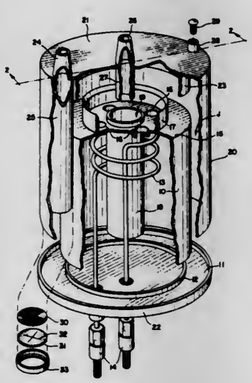
An electrical heater for liquids, particularly an electrode plate water vaporizer, is proofed against electrical shock hazard by insuring that current paths through the liquid into possible contact with the user are elongated, discontinuous, and on filling when the hazard is greatest, are completely interrupted to assure safety even under negligent handling.

3,617,699
A SYSTEM FOR ELECTRICALLY HEATING A FLUID BEING TRANSPORTED IN A PIPE
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y.
Filed Mar. 10, 1969, Ser. No. 805,718
Int. Cl. H05b *3/00*; **F24j** *3/04*
U.S. Cl. 219—300 **32 Claims**

A system for heating a fluid being transported in a pipe includes a ferromagnetic heat-tube coextensive with a section of pipe to be heated. The heat-tube is secured in heat exchange relation to the pipe and has a substantial part of its wall in common with the wall of the pipe. An insulated conductor is disposed within the tube. One end of the conductor is electrically connected to one terminal of an AC source and the other end thereof is electrically connected to an end of the tube. The other end of the tube is electrically connected to the other terminal of the AC source. When alternating current flows through the circuit thus established, it passes only the inner surface of the tube due to the skin effect of the alternating current, thereby generating heat on the inner surface of the tube without current appearing on the outer surface thereof. The heat-tube can be formed by welding a concave strip to the outer cylinder surface of the pipe with the conductor disposed therebetween. Alternatively, the heat-tube can be integrally formed with the pipe as one channel of a two-channel pipe, the other channel being used to transport the fluid. The heat-tube may be helically wound around pipe. The heat-tube is either evacuated or pressurized and means to detect pressure changes indicative of heat-tube leakage is provided.



3,617,700
IMMERSION HEATER
Robert Edward Hooper, Oakville, Ontario, Canada, assignor to Torginol Industries Incorporated
Filed June 2, 1969, Ser. No. 829,516
Int. Cl. F24h *1/10*
U.S. Cl. 219—306 **8 Claims**

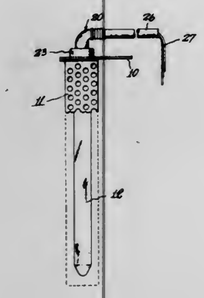


Electrical liquid-heating apparatus for rapid heating of small unit volumes of a liquid such as water in which a unit volume container is provided with a heating element at its upper end, and a partially closed top supports an upper well, heating of the water within the container driving a certain portion of the water upwardly into the well, and a recirculation conduit carries the water from the well downwardly to the bottom of the container, the whole structure being sealed within a housing, water being drawn into the housing and container from an outside source by means of a vacuum, and the heated unit volume of water being drawn off from the container by means of the same vacuum.

3,617,701
ELECTRIC HEATING ELEMENTS

John E. Volker, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 23, 1970, Ser. No. 31,210
Int. Cl. H05b 1/00
U.S. Cl. 219—336 10 Claims

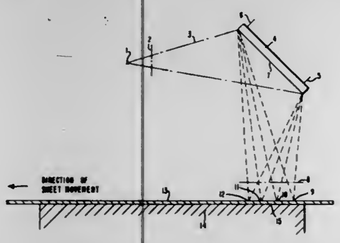


An electric heating element within a quartz tube, the latter having a swivel head connected to one end. The heating element comprises a ceramic core on which a resistance wire is wound helically, the core being formed in sections, each section having a helical groove formed thereon for receiving the resistance wire, the core sections being relatively rotatable to align the helical grooves.

3,617,702
APPARATUS AND METHOD FOR PERFORATING SHEET MATERIAL

Philip Flournoy, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 10, 1969, Ser. No. 831,920
Int. Cl. H05b 7/18
U.S. Cl. 219—384 29 Claims



Apparatus for perforating sheet material by means of a beam emitted from a laser source which comprises:

A. a means for moving the sheet material;

B. a laser source;

C. a reflective hologram, said hologram:

1. having its surface prepared in such a manner that it will reflect high-intensity spot images when a beam emitted from the laser source is cast thereon; and

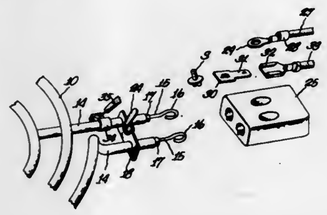
2. being positioned so that it will reflect the high-intensity spot images onto the sheet material; and

D. means for causing the high-intensity spot images to impinge upon certain areas of the sheet material for a duration that is greater than the duration of impingement in other areas, said sheet material areas of greater duration of impingement receiving sufficient energy to cause perforations to be formed therein, and said sheet material areas of lesser duration of impingement receiving impingement in the amount of from no impingement at all to an amount of impingement that contains less than the amount of energy required to perforate the sheet material.

3,617,703
SURFACE-TYPE ELECTRIC HEATING TREATMENT ELEMENTS

William A. Ewart, Jr., Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of application Ser. No. 791,480, Jan. 15, 1969, now abandoned. This application Aug. 11, 1970, Ser. No. 62,995
Int. Cl. H05b 3/68
U.S. Cl. 219—451 10 Claims

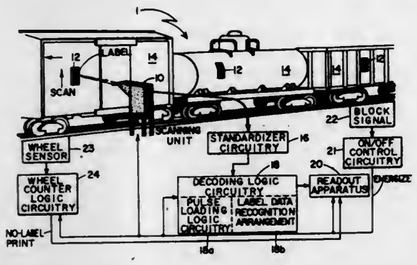


A surface-type electric heating element with terminal pins disposed within opposite ends of a tubular metal sheath and connected to respective ends of the heating resistance within the sheath, compacted refractory material electrically insulating the resistance and terminal pins from the sheath and holding them in position therewithin, each terminal pin extending outwardly from a sheath end and terminating in a loop, the compacted refractory material adequately supporting each terminal pin so that the latter may be twisted along its longitudinal axis whereby the loops may be disposed in selected angular relation to adapt for use with either a plug-in type socket or a screw-type socket. Each terminal pin, at least in the portion subjected to the twisting action, has a Rockwell hardness of about B38 to B55.

3,617,704
SIGNAL-PROCESSING SYSTEM

Christos B. Kapsambelis, Canton, Mass.; Thomas P. Morehouse, Lyndeboro, N.H.; Robert H. Reif, Groton, and Francis H. Stites, Wayland, Mass., assignors to Sylvania Electric Products, Inc.

Filed Oct. 13, 1969, Ser. No. 865,661
Int. Cl. G06k 7/00, 7/10
U.S. Cl. 235—61.11 18 Claims



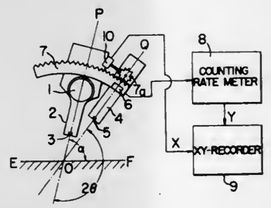
A coded-vehicle identification system including pulse loading logic circuitry for processing code pulses derived in response to scanning a coded retroreflective label affixed to a vehicle. The label comprises a vertical array of rectangular orange, blue, and white retroreflective stripes, and black nonretroreflective stripes arranged in a plurality of selected stripe-pair code combinations. The individual light patterns successively retroreflected from the stripe-pairs, in response to the individual stripe-pairs being successively scanned with incident light, are converted by standardizer circuitry into corresponding electrical code pulses and applied to pulse loading logic circuitry.

The pulse loading logic circuitry operates to determine the width of each of the code pulses and, if the widths of the pulses satisfy certain preestablished pulse-width criteria for valid label-derived pulses, the code pulses are assumed to be valid label-derived pulses and then loaded into and stored in a plurality of storage shift registers. During various stages of the processing of the code pulses, prior to and following the loading of the code pulses into the storage shift registers, additional time measurement tests are also performed to determine whether the timing of the code pulses satisfies preestablished timing criteria for valid label-derived pulses. If the width or timing of any code pulse is determined not to satisfy the preestablished criteria for valid label-derived pulses, final processing thereof is prevented.

3,617,705
METHOD OF MEASURING STRESS WITH X-RAYS

Hironobu Takano; Hiroshi Tsutsui; Masuo Kifune, and Katsuhiko Miyoshi, all of Kawasaki-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Mar. 25, 1969, Ser. No. 810,240
Claims priority, application Japan, Mar. 27, 1968, 43/23498, 43/19454, 43/23499
Int. Cl. G01n 23/20
U.S. Cl. 250—51.5 2 Claims



In the $\sin^2\Psi$ method of X-ray stress measurement, an X-ray beam is projected upon the surface of a material at varying incident angles α, a group of spectral distribution curves for respective incident angles are plotted on rectangular coordinates with the abscissa representing the diffraction angle 2θ of the X-ray beam while the ordinate counts, per second (cps), represents the intensity of the diffracted X-ray beam and the value of $\sin^2\Psi$, peak values (a, b, c, d) of the counts per second of respective distribution curves are determined, values (a', b', c', d') of $\sin^2\Psi$ for respective peak values are calculated, a straight line (a' b' c' d') is drawn by connecting said calculated values of $\sin^2\Psi$, and the slope

$$\frac{\partial 2\theta\Psi}{\partial \sin^2\Psi}$$

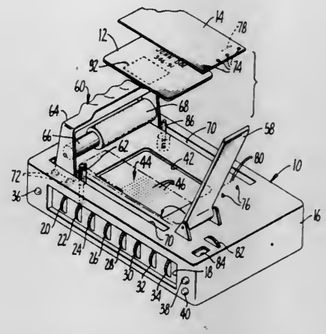
of the straight line is measured by means of a special rule.

3,617,706
VERIFICATION SYSTEM

George S. Oberhart, San Mateo, Calif., assignor to Cred-X Corporation, San Mateo, Calif.

Filed Aug. 4, 1969, Ser. No. 855,068
Int. Cl. G06k 9/00
U.S. Cl. 235—61.7 B 5 Claims

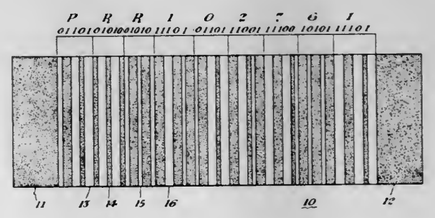
A system employing wire-encoded cards and a card verification machine which is selectively adjustable to establish connection with the wires in a card and complete a circuit therethrough. Adjustment of the machine in accordance with a code establishes a predetermined partial circuit therein which complements a partial circuit provided by the wires in the card. The cards may be of the credit card type and for this purpose the system also includes wire encoded vouchers and a partial circuit within the machine which is adjustable to complement the wire encoding of the voucher. The machine is provided with a circuit interrupter to detect fraudulent cards and deactivating structure for the printer to prevent misuse of the printer.



3,617,707
AUTOMATIC CAR IDENTIFICATION SYSTEM

Charles B. Shields, Columbus, and Roelif Stapelfeldt, Cleveland, both of Ohio, assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Continuation of application Ser. No. 230,351, Oct. 15, 1962, now abandoned. This application Aug. 17, 1967, Ser. No. 661,468
Int. Cl. G06k 7/10; G01n 21/30
U.S. Cl. 235—61.11 E 4 Claims



An automatic identification system for identifying objects passing a wayside point having an identification member consisting of alternative reflective and nonreflective areas in which each of the areas has one of at least two different widths for "logically" signifying in binary form the identity of the particular object passing the wayside point and having a wayside scanning unit including a source of radiant energy directed onto said objects and including photosensitive detecting means responsive to radiant energy reflected from the identification member for producing signals indicative of the particular object passing the wayside point.

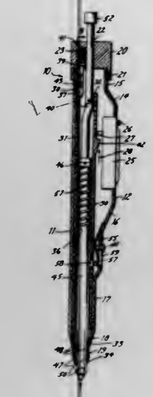
3,617,708
MARKER-COUNTER DEVICE

Anthony S. Bonglovanni, Woodbury, N.J., assignor to Esti-Mate, Inc., Woodbury, N.J.

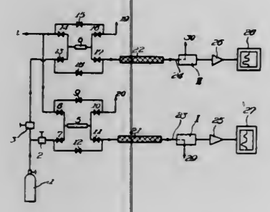
Filed May 11, 1970, Ser. No. 36,229
Int. Cl. B43k 29/08
U.S. Cl. 235—64 4 Claims

An elongate outer casing having a window and a counter mounted in the casing for presenting numerical indicia

through the window, the casing being provided interiorly with a shiftable mechanism for actuating the counter and including marking means extending exteriorly for marking and depressible to shift the mechanism and actuate the counter.



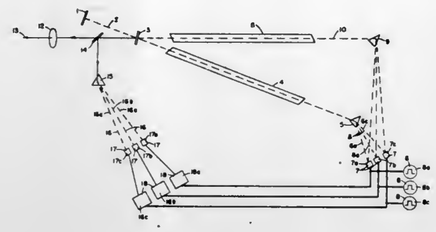
3,617,709
APPARATUS FOR DETECTING FAILURES OF NUCLEAR FUEL ELEMENTS
Hirohito Tone, Naka-gun, Japan, assignor to Nihon Genshiryoku Kenkyusho, Tokyo, Japan
Continuation-in-part of application Ser. No. 511,755, Dec. 6, 1965, now abandoned. This application Mar. 28, 1969, Ser. No. 811,333
Int. Cl. G01t 1/18
U.S. Cl. 250—83.6 **9 Claims**



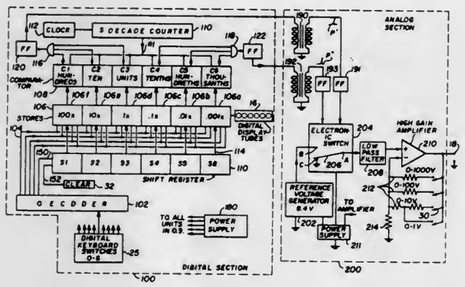
An apparatus is provided for detecting failures in nuclear fuel elements. Specific measurement of Krypton and Xenon as gaseous nuclear fission products is achieved by separating these elements from other coexisting radioactive elements and measuring the beta rays emitted from the Krypton and Xenon thus separated with a high counting efficiency. Separation is provided by passing the combined gases through separate columns filled with molecular sieve materials, or activated charcoal, in combination with a carrier Q-gas as used in a gas flow counter.

3,617,710
MULTIPLEX DIGITAL LASER GENERATOR
Thomas E. Honeycutt, and John J. Ehrlich, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 17, 1969, Ser. No. 877,342
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **7 Claims**

A laser generator for producing a single laser beam carrying several channels of digital information simultaneously is disclosed. The frequency components of the laser emission are spatially separated inside the generator cavity, and each component is separately pulse-code modulated according to a digital input signal. A simple receiver is also disclosed.



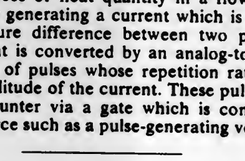
3,617,711
APPARATUS FOR CHANGING A DIGIT OF A STORED NUMBER
Robert C. Smyth, Huntington Beach, N.Y., assignor to Digital Apparatus Corporation, Deer Park, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,300
Int. Cl. G06f 11/00; H03R 21/00; G08c 11/00
U.S. Cl. 235—92 EA **6 Claims**



A high-precision power supply generates voltage with an accuracy of at least 30 parts per million and is comprised of a digital section interconnected with an analog section by pulse transformers. Numbered keyboard switches in the digital section select a desired output voltage which is displayed numerically by electronic digital display tubes. A shift register in circuit with number storage means enables any one of the displayed numbers to be changed without changing any other displayed number. The analog section includes a stable reference voltage generator, electronic switch, filter and a high-gain amplifier which produces an output voltage corresponding to the displayed numbers. The electronic switch passes proportional parts of the reference voltage to the amplifier via the filter under control of pulses received from the digital section. The amplifier is capable of producing current in one of two ranges depending upon the output voltage.

3,617,712
NUMERICAL DISPLAYING APPARATUS
Hitoshi Sone, Chigasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 22, 1968, Ser. No. 723,028
Claims priority, application Japan, Apr. 24, 1967, 42/25856
Int. Cl. G09f 9/00
U.S. Cl. 235—92 EA **2 Claims**

Binary counters FF1, FF2, FF3, and FF4, which are used in a decimal notation displaying device (L), respectively indicate a numeral which corresponds to 1, 2, 4, and 8. A decimal notation number in the aforesaid displaying device is illustrated as a sum of displays which correspond to the aforesaid 1, 2, 4, and 8 respectively.

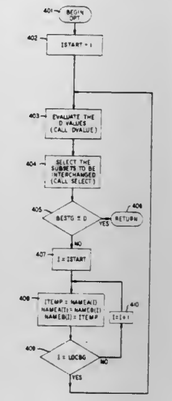


3,617,713
ARRANGEMENT FOR MEASUREMENT OF TEMPERATURE DIFFERENCE AND HEAT VOLUME
Stig Ingvar Karlsson, Nyhemsvagen, 2, 371 00 Karlskrona, Sweden
Filed Jan. 29, 1969, Ser. No. 794,959
Claims priority, application Sweden, Feb. 27, 1968, 2491/68
Int. Cl. H03k 21/08
U.S. Cl. 235—92 MT **4 Claims**

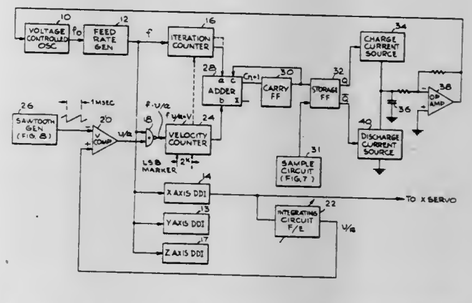
Apparatus for measuring a thermal property such as temperature differences or heat quantity in a flowing fluid includes means for generating a current which is proportional to the temperature difference between two points in the fluid. The current is converted by an analog-to-digital converter to a train of pulses whose repetition rate is proportional to the amplitude of the current. These pulses are accumulated by a counter via a gate which is controlled by a further pulse source such as a pulse-generating volumeter.

3,617,714
METHOD OF MINIMIZING THE INTERCONNECTION COST OF LINKED OBJECTS
Brian W. Kernighan, North Plainfield, and Shen Lin, Gillette, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 15, 1969, Ser. No. 816,208
Int. Cl. G06f 9/06
U.S. Cl. 235—150 **9 Claims**

A method of partitioning the vertices of a graph into sets is disclosed. The method, desirably practiced by using a digital computer program, minimizes the total cost of interconnections between sets using constraints on the maximum number of sets, the maximum number of vertices that can be assigned to any particular set, and the maximum number of connections which can be made to any one set. The method is particularly useful in the layout of circuit components on physical supports such as chassis, printed circuit cards, and semiconductor substrates.



3,617,715
AUTOMATIC ACCELERATION/DECELERATION FOR A NUMERICAL CONTROLLED MACHINE TOOL
Ernst H. Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed May 4, 1970, Ser. No. 34,206
Int. Cl. G06f 7/38; G05b 19/18
U.S. Cl. 235—151.11 **13 Claims**

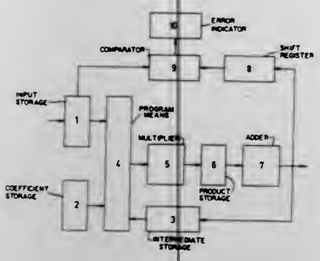


A system is provided in a numerically controlled machine tool for maintaining constant its acceleration up to a desired velocity and its deceleration at a proper time from said velocity.

3,617,716
METHOD AND ARRANGEMENT FOR EXTRAPOLATION OF A CONTINUOUS FUNCTION
Hansrichard Schulz, Villingen/Black Forest, Germany, assignor to Saba Schwarzwaelder Apparate-Bau-Anstalt August Schwer Soehne GmbH, Villingen/Black Forest, Germany
Filed Jan. 23, 1969, Ser. No. 794,479
Claims priority, application Germany, Jan. 27, 1968, P 15 74 604.0
Int. Cl. G06f 7/38, 15/34
U.S. Cl. 235—152 **12 Claims**

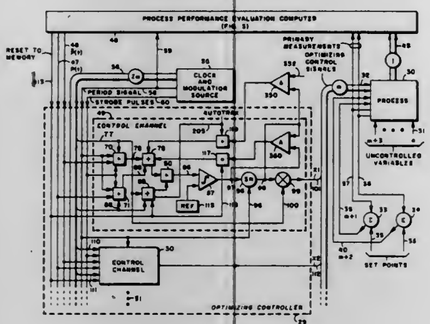
Extrapolated values of a continuous function of an independent variable are computed for a given extrapolation range of the independent variable by measuring the function at predetermined values of the independent variable within a measurement range of said variable. The measured values are

combined according to the Lagrange interpolation formula to generate one extrapolated value of the function which is then



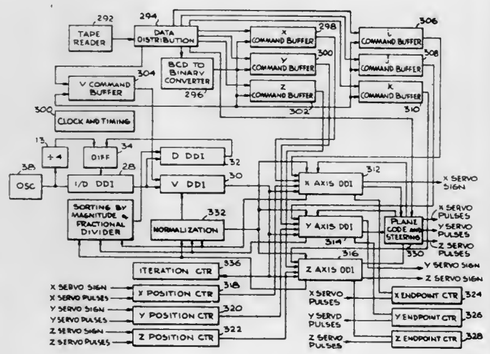
stored and used as a pseudomeasurement signal during the computation of the subsequent extrapolated value.

3,617,717
OPTIMIZING CONTROL SYSTEMS
Lawrence R. Smith, Phoenix, Ariz., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 770,284, Oct. 24, 1968, now abandoned. This application Apr. 28, 1969, Ser. No. 819,877
Int. Cl. G05b *13/02*
U.S. Cl. 235—151.1 **46 Claims**



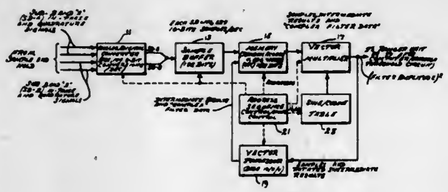
Orthogonal Modulations of process control variables produces modulation of a performance indicating signal. This performance indicating signal is processed to generate a plurality of control signals indicative of direction and magnitude of change of a process control variable toward obtaining optimum performance. Each control signal results from multiplying the performance indicating signal by its respective modulation signal followed by integration and a sample and hold circuit. Primary control signals may be imposed on the process control with the optimumly controlled variables interacting with such primary control through process interactions. The integrated control signals are sampled during time periods small with respect to the shortest time period of the orthogonal modulation. The process control permits the process being controlled to settle down after each optimum control period. Adaptive feedforward techniques are described. Phase reversal of modulation between successive measurements improves noise immunity. Random noise modulation of frequency of modulation and phase reversals also increases noise immunity.

3,617,718
NUMERICAL CONTROL CONTOURING SYSTEM WHEREIN DESIRED VELOCITY INFORMATION IS ENTERED INTO THE SYSTEM INSTEAD OF FEEDRATE NUMBER
Ernst H. Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed July 15, 1969, Ser. No. 841,846
Int. Cl. G05b *19/18*
U.S. Cl. 235—151.11 **23 Claims**



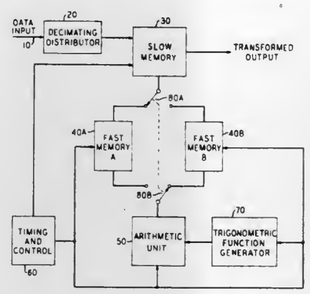
A feedrate generator and a contour generator for a numerical control contouring system are provided wherein the velocity of the operation of the machine tool may be specified by a feedrate number (FRN) addressed with an identifying letter code or by velocity in inches per minute addressed with an identifying letter code. In both cases a normalization process is employed for increasing the operating speed of the system.

3,617,719
STAGGERED PROCESSING IN DIGITAL OR HYBRID SIGNAL PROCESSORS
Sung Y. Wong, Tarzana, and Arthur S. Zukin, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Mar. 11, 1970, Ser. No. 18,585
Int. Cl. G06f *7/38*
U.S. Cl. 235—152 **2 Claims**



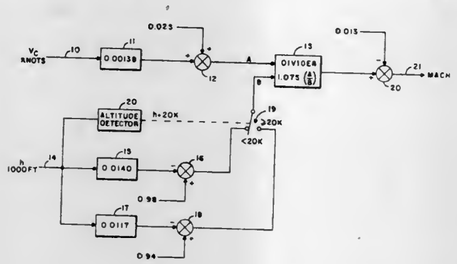
A digital processor of analog in phase and quadrature signals in which the signals are converted to digital form, fed to a sample buffer and then applying the novel means for feeding the signals to a random access memory in staggered sequence. A predetermined number of loops is made with each loop consisting of a vector multiplier, a vector processor, and a return to the memory. Upon completion of the loops, the output is read out from the vector multiplier.

3,617,720
FAST FOURIER TRANSFORM USING HIERARCHICAL STORE
William M. Gentleman, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 12, 1967, Ser. No. 667,113
Int. Cl. G06f *7/38*
U.S. Cl. 235—156 **10 Claims**



Methods and apparatus for performing fast Fourier transforms corresponding to a sequence of input data signals are described. Efficient allocation and buffering of a small high-speed memory within a hierarchical memory system permits computations to proceed at a rate approximating that available with a single large store operating at the speed of the high-speed memory.

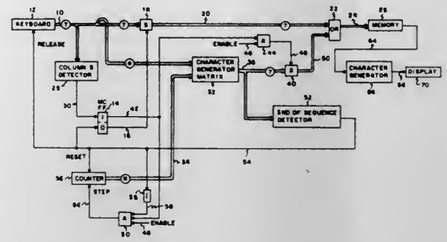
3,617,721
MACH COMPUTATION FROM ALTITUDE AND CALIBRATED AIRSPEED
Jimmie L. Foster, Granada Hills, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Oct. 13, 1969, Ser. No. 865,843
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.2 **11 Claims**



Mach number, as defined in terms of barometric altitude and calibrated airspeed, is a complex nonlinear relationship. A method and means for deriving Mach number by linear analogue computation from altitude and airspeed is described. Selected linear techniques involving one or more straight line approximations reduce the computation to one or more linear functions and an ordinary dividing operation which may be readily implemented by electronic analogue computation.

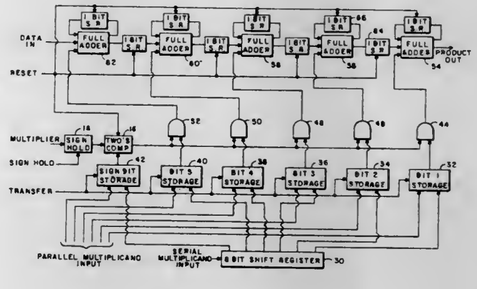
3,617,722
MULTIPLE-CHARACTER GENERATOR
Stephen A. Grosky, Monroe, Conn., assignor to The Bunker-Ramo Corporation, Stamford, Conn.
Filed Oct. 8, 1969, Ser. No. 864,765
Int. Cl. H04l *3/02*
U.S. Cl. 235—154 **10 Claims**

A circuit for converting a single coded input character into a plurality of coded output characters by applying a portion of the coded input character to a character generator device and deriving the remaining inputs to the character generator device from a counter which is incremented each time an



output character is generated. The multiple character sequence is terminated when a predetermined output is obtained from the character generator.

3,617,723
DIGITALIZED MULTIPLIER
William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.
Filed Feb. 25, 1970, Ser. No. 14,151
Int. Cl. G06f *7/39*, *7/52*
U.S. Cl. 235—164 **12 Claims**

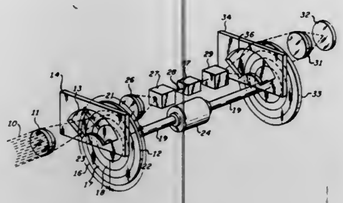


A binary number in sign-magnitude format is multiplied by a second binary number in two's complemented format. The second number is stretched by repeating its sign bit a number of times equal to the number of magnitude bits of the first number, and the second number is then two's complemented when said first number is negative. Gate means controlled by said second number provides summing means with said first number. Said summing means develops the partial product and final product of the multiplication.

3,617,724
SHIFTED SEQUENCE PSEUDO RANDOM CODED RETICLE CORRELATION APPARATUS
Stephen G. McCarthy, Dobbs Ferry; Irving Roth, Williston Park, and Edward W. Stark, Garden City, all of N.Y., assignors to Sperry Rand Corporation
Filed Apr. 4, 1968, Ser. No. 718,751
Int. Cl. G06f *15/34*
U.S. Cl. 235—181 **6 Claims**

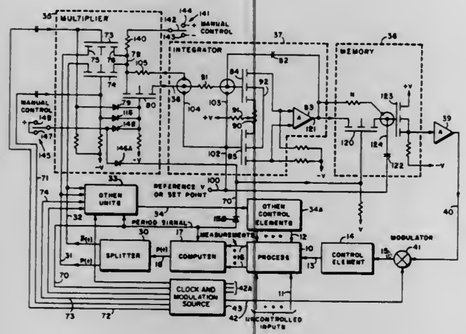
Optical radiant energy encoding and correlating apparatus for eliminating correlation residues including a movable reticle with a plurality of continuous loop tracks each having the same pseudo random code formed thereon for encoding incident radiation and means for correlating the encoded data with a plurality of phase shifted replicas of the pseudo random code, the code in each reticle track being shifted rela-

tive to the adjacent tracks by an amount equal to the width of the field focused on the reticle and a sufficient number of



tracks being provided so that the periphery of the field encompasses a complete code.

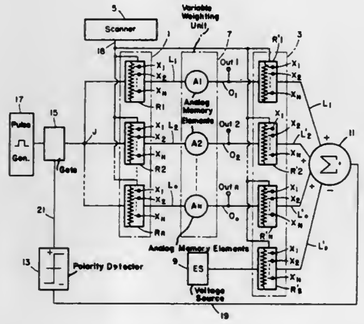
3,617,725
CONTROL CHANNEL FOR AN OPTIMIZING CONTROL SYSTEM
Lawrence R. Smith, Phoenix, Ariz., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 24, 1968, Ser. No. 770,288
Int. Cl. G06g *7/18, 7/66*
U.S. Cl. 235—183 **8 Claims**



A control channel circuit for a control system utilizing more than one channel is disclosed wherein orthogonal modulation signals are provided for each control channel. In each control channel circuit an analog voltage signal corresponding to the gradient of the process performance indicating signal for the particular process variable is obtained by sequentially gating positive and negative pulses to an integrator circuit. The pulses which correspond to the performance indicating signal and its complement accumulate in the integrator circuit to give their net sum.

The net sum determines whether that process variable is at optimum and if not, the net sum is used, through a memory circuit, for subsequently controlling the process variable. The net sum is updated or improved at predetermined intervals to move the process variable toward optimum. The integrator circuit has a long time-constant of integration so that the integration is independent of the base period. Both the storage capacitor of the integrator circuit and the memory capacitor of the memory circuit, as well as the other components of the circuit, are such that leakage from the capacitors is essentially zero whereby the analog voltage values thereon are maintained for as long a period of time as is needed which may be hours or even days.

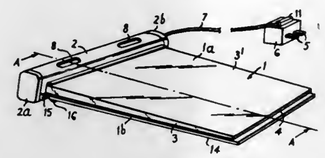
3,617,726
AUTOMATIC WAVEFORM ANALYZING APPARATUS FOR OBSERVING ARBITRARY WAVEFORMS BY THE SYNTHESIS OF A PLURALITY OF OPTIMUMLY WEIGHTED FUNDAMENTAL WAVEFORMS
Yushi Uchida; Mineki Watanabe; Sadamu Ohteru, and Hiroshi Kobayashi, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Minato-ku, Tokyo, Japan
Filed Nov. 17, 1969, Ser. No. 877,273
Claims priority, application Japan, Nov. 17, 1968, 43/83877, Jan. 14, 1969, 44/3014
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **10 Claims**



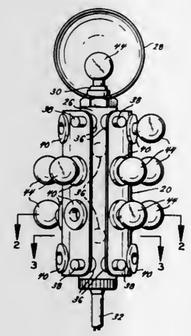
Automatic waveform analyzing apparatus for deriving arbitrary waveforms by the synthesis of a plurality of optimumly weighted fundamental waveforms whose optimum weighting factors are determined by repeatedly sampling said plurality of fundamental waveforms at a plurality of sampling points and modifying previously established values for such weighting factors in response to values obtained at each sampling point is provided in accordance with the teachings of the present invention. In the automatic waveform analyzing apparatus according to the present invention, a plurality of analog memory elements are disposed in accordance with the sampling points selected such that one such analog memory elements is associated with each sampling point. The analog memory elements are read and each readout pulse derived therefrom is branched and apportioned into a plurality of output signals representing the value of each fundamental waveform as evaluated at the sampling point associated with the analog storage element producing such readout pulse. The branched and apportioned output signals from all of the analog memory elements are then selectively added on the basis of the correspondence of the associated fundamental waveforms associated therewith and a summation signal is produced for each fundamental waveform relied upon. Each summation signal produced is then apportioned on the basis of the value of the fundamental waveform associated therewith at each of the sampling points selected. Such apportioned values are then selectively added and compared to corresponding values of the arbitrary waveform. The analog storage element associated with the sampling point at which the selective addition and comparison has taken place has its contents selectively modified. This operation is repeatedly performed at each sampling point until the selective comparison indicates that an equivalent waveform has been synthesized.

3,617,727
ILLUMINATING DEVICE WITH A RECHARGEABLE BATTERY OR A MAINS SUPPLY POWER SOURCE
Stanley Balfour-Lynn, 6a Palace Gate, London, W.8., England
Filed Aug. 9, 1968, Ser. No. 751,578
Int. Cl. F21l
U.S. Cl. 240—1 R **10 Claims**

This disclosure relates to an illuminating device, primarily for use as a book reader, in which a slightly tapering transparent sheet is illuminated edgewise by low-intensity lamps in a housing extending along its thicker edge. The sheet is placed flat against the book page to be read, the page being illuminated by light internally reflected from the front surface of the transparent sheet and being read through the transparent sheet. Circuits are described for alternatively energizing the lamps from the mains supply and a rechargeable battery.



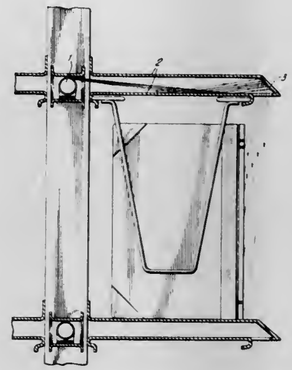
3,617,728
FLASHBULB-HOLDING ATTACHMENT
Milo F. Mracek, 22 Morwood Lane, Creve Coeur, Mo., and David J. Black, 10156 Camshire Court, Saint Ann, Mo.
Filed Sept. 22, 1969, Ser. No. 859,884
Int. Cl. G03b *15/03*
U.S. Cl. 240—1.3 **14 Claims**



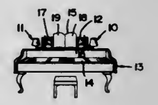
A perforate support, which is securable to the battery housing of a flash gun, has resilient grommets mounted within the openings thereof to releasably hold flashbulbs.

3,617,729
ARRANGEMENT FOR THE ILLUMINATION OF OBJECTS PLACED UNDERNEATH OR ON SHELVES
Flemming Lassen, Kaasalle 15, 2900 Hellerup, and Per Lassen, Bernstarfflundalle 64, 2920 Charlottenlund, both of Copenhagen, Denmark
Filed Sept. 18, 1969, Ser. No. 859,130
Claims priority, application Denmark, Sept. 19, 1968, 4506/68
Int. Cl. A47b *63/00;* **F21v** *7/22, 7/10*
U.S. Cl. 240—2 AD **10 Claims**

This is a device for effecting illumination of objects located underneath or upon shelves. A construction comprising light source along the rear edge of the hollow shelf directs light through the shelf between its upper and lower members and this shelf has a reflector on its front edge for directing the light downwardly toward the books or objects located on a bottom shelf so that their titles can be easily read.



3,617,730
LIGHTING ARRANGEMENT FOR KEYBOARD INSTRUMENTS
Sergei I. Mihailoff, 2820 Baker St., San Francisco, Calif.
Division of Ser. No. 741,000, June 28, 1968. Filed Feb. 16, 1970, Ser. No. 14,839
Int. Cl. A47b *97/00*
U.S. Cl. 240—4 **7 Claims**

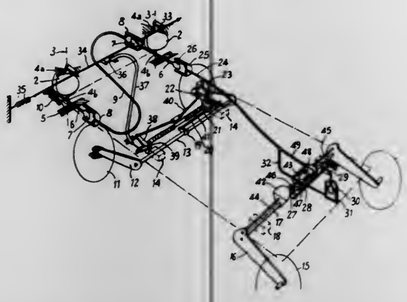


A piano lighting arrangement comprising two lamp fixtures, one on each side of the piano music rack and each supported by the piano, each lamp fixture having a light bulb and means providing an opaque portion which protects the player's eyes from the direct light of its bulb, while the light shines on the music rack to illuminate written music thereon and on the keyboard to illuminate the keys.

3,617,731
ADJUSTABLE LIGHTING EQUIPMENT FOR ROAD VEHICLE
Jacques Fleury, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Feb. 24, 1969, Ser. No. 801,285
Claims priority, application France, Feb. 28, 1968, 3471
Int. Cl. B60q *1/12*
U.S. Cl. 240—8.25 **4 Claims**

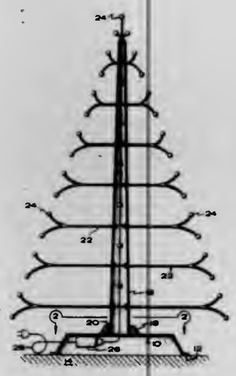
A road vehicle has head lamps pivotally mounted to illuminate the road round a curve as the vehicle moves into the curve. The lamps are also pivotal about horizontal axes to compensate for relative height of the vehicle structure at the front and the rear and also to compensate for roll. In a

modification a device sensitive to acceleration or deceleration is also effective to maintain the lamp beams in a preset



horizontal plane irrespective of the acceleration or deceleration.

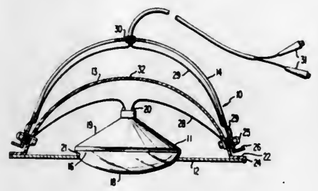
3,617,732
ARTIFICIAL TREE WITH AN ELECTRICAL ILLUMINATING SYSTEM
Royal P. Fisher, Salt Lake City, Utah
Filed Nov. 19, 1969, Ser. No. 878,138
Int. Cl. A47g *33/16*
U.S. Cl. 240—10 T **8 Claims**



An artificial tree having a support base, a trunk member removably connected to the base with connection means for supporting the trunk outwardly away from the base's support surface, a limb member connected to the trunk member, an electric light secured to the limb member and electrically connected to power supply means regulated with voltage reduction means connected to the tree's base. The electric light can be directly connected to the trunk member and the tree's base can include means for rotating the trunk member.

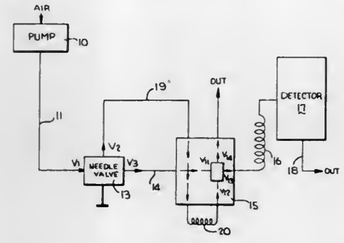
3,617,733
FLOATING UTILITY LIGHT
Bob R. Adams, Bird-Adams, Co., Inc., P.O. Box 38, Doraville, Ga.
Filed June 10, 1968, Ser. No. 735,764
Int. Cl. F21v *31/00*
U.S. Cl. 240—26 **5 Claims**

A floating utility light including a light bulb and a housing including a frame defining a central aperture through which the enlarged portion of the light bulb protrudes, and a concave section connected at its periphery to the edges of the frame and extending over the rear portion of the light bulb to which the electrical connections are made. The housing is substantially water impervious and is of low profile so that it floats with the portion of the bulb extending through the aperture of the frame immersed in water. The concave portion of the housing is translucent, so that when the light bulb is illuminated, the concave portion of the housing will glow



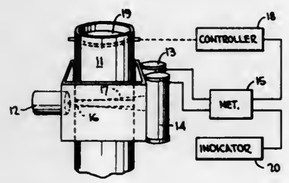
or emit dispersed light, while a beam of light will be directed into the water. An arcuate handle is connected at its ends to the concave housing for convenience in retrieving the utility light from the water and for handling the light in other situations.

3,617,734
DETECTION SYSTEM FOR MONITORING GASEOUS COMPONENTS IN AIR
Julian H. Chaudet, Fairfax, Va.; Harold G. Eaton, Jr., Washington, D.C., and Victor R. Huebner, Diamond Bar, Calif., assignors to Melpar, Inc., Falls Church, Va.
Continuation-in-part of application Ser. No. 324,071, Nov. 15, 1963. This application June 7, 1967, Ser. No. 644,205
Int. Cl. H01j *37/00*
U.S. Cl. 250—43.5 **6 Claims**



A gas detection system in which air at near atmospheric pressure is pulse fed to a delay tube, which, because of difference in diffusion of the gaseous components, separates each pulse into components according to diffusion rate. The output of the delay tube is applied to an ionization detector having a feedback stabilized amplifier system capable of compensating long term variations without affecting the short pulses, for sensing the presence of a gas or gases of interest.

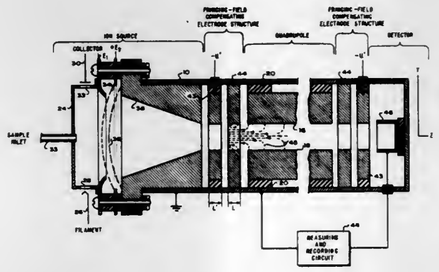
3,617,735
MATERIAL LEVEL DETECTOR
David J. Shoemaker, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Filed Aug. 13, 1968, Ser. No. 771,688
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 **13 Claims**



A level detector for fluent material in a receptacle or conduit includes a gamma ray source and detector means for

deriving a signal indicative of the amount of radiation absorbed by the material. The output of the detector is fed to a pair of channels, each including a comparator network having a different reference input. The comparator channels together feed a logic network whereby a deadband is established between material levels related to the reference inputs to the comparators.

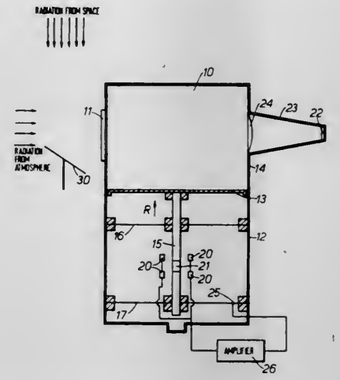
3,617,736
QUADRUPOLE MASS FILTER WITH ELECTRODE STRUCTURE FOR FRINGING-FIELD COMPENSATION
Edward F. Barnett, Los Altos Hills; Donald L. Hammond, Los Altos Hills, and William S. W. Tandler, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 19, 1968, Ser. No. 738,142
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 **10 Claims**



Four parallel primary electrodes are symmetrically disposed about a central axis within an electrically conductive housing operated at a reference potential. These electrodes are driven by an excitation voltage comprising AC and DC components balanced with respect to the reference potential to provide a quadrupole mass filter. An ion source is positioned near the entrance of the quadrupole for transmitting ions generally along the central axis toward an ion detector positioned near the exit of the quadrupole. A pair of electrodes is symmetrically positioned about the central axis between the ion source and the entrance of the quadrupole. The electrode nearest the ion source is operated at a DC voltage referred to the reference potential and maintained directly proportional to the DC excitation voltage component applied to the quadrupole. The electrode nearest the quadrupole is operated at a fixed DC voltage referred to the reference potential. A similar pair of electrodes is also employed between the ion detector and the exit of the quadrupole.

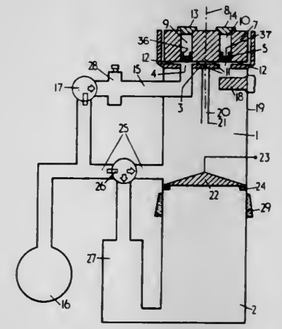
3,617,737
RADIOMETER APPARATUS COMPRISING A VOLUME OF GAS WHOSE PRESSURE IS CYCLICALLY VARIED
John Theodore Houghton; Guy Denton Peskett; Clive Douglas Rodgers, and Fredric William Taylor, all of Oxford, England, assignors to National Research Development Corporation, London, England
Filed July 9, 1969, Ser. No. 840,194
Int. Cl. G01n *21/26*; **G01j** *5/10*
U.S. Cl. 250—43.5 R **13 Claims**

The invention concerns apparatus for detecting radiation emitted from a quantity of gas, said apparatus comprising a chamber containing a predetermined amount of a given component of said gas having absorption lines in a band of the emission spectrum, means for cyclically varying the pressure of said component in said chamber, and detector means adapted to provide an output signal which is dependent on the radiation intensity wavelengths of the absorption lines or at predetermined wavelengths in the region thereof, said wavelengths being such that the absorption coefficients of the gas at all detected wavelengths are substantially the same,



and the radiation is known to originate predominantly from a particular region of the said quantity of gas.

3,617,738
AN ELECTRONIC ENERGY SAMPLE ANALYSIS DEVICE
Yvan Louis Houbart, Chenee, Belgium, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Sept. 17, 1968, Ser. No. 760,149
Claims priority, application Luxembourg, Sept. 18, 1967, 54 494
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 **4 Claims**

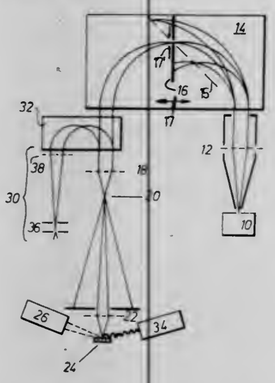


An apparatus for analysis of a sample by bombardment under high vacuum (10^{13} mm.Hg.), wherein the sample is received in a rotatable turret having two through bores which sealingly mate alternately with two apertures. One of these apertures communicates directly with an enclosure under high vacuum and the sample is bombarded therethrough, and the other aperture leads to a conduit adapted to be alternately vented to atmosphere and then reduced to an intermediate vacuum level (e.g., 10^{13} mm.Hg.). The aperture is vented to enable a sample holder to be removed and clamped and the intermediate level is then reached. The turret is then rotated to interchange the position of the through bores. During the rotation the through bore with the fresh sample is briefly opened into a further aperture leading by a conduit into the evacuated enclosure at a point remote from the bombardment zone so that the through bore is evacuated without significantly affecting the vacuum near the bombardment zone.

3,617,739
ION LENS TO PROVIDE A FOCUSED ION, OR ION AND ELECTRON BEAM AT A TARGET, PARTICULARLY FOR ION MICROPROBE APPARATUS

Helmut Liebl, Eching, Germany, assignor to Institut fur Plasmaphysik G.m.b.H., Garching, Germany

Filed Apr. 9, 1970, Ser. No. 26,893
Claims priority, application Germany, July 23, 1969, P 19 37 482.4
Int. Cl. H01j 37/14, 37/12
U.S. Cl. 250—49.5 P 12 Claims

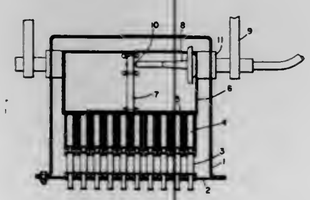


An ion lens (12) is located between an ion source (10) and the magnetic sector field of an ion microprobe apparatus, the ion lens having its input focal plane in the region in which the ion beam emitted by the ion source has its smallest cross section, the magnetic sector field being a uniform homogeneous 180° magnetic field in which the ions emitted from the ion lens (12) as parallel bundles are first deflected by 90°, then passed through an aperture for selection of ions of predetermined mass, and again deflected by 90°, to be emitted as parallel bundles of ions of preselected mass. The microprobe may be combined with an electron beam generator which emits a parallel beam of electrons to a second uniform 180° magnetic field, which places the electron beam coaxially with the ion beam. The ion beam passes through a portion of this second magnetic field in a region which is of insufficient field strength to deflect the ion beam, to provide for simultaneous, or selective irradiation of the same spot on a test sample by ions or electrons. Lenses for simultaneous focusing of ions and electrons (FIG. 2) includes a pair of pole shoes with a magnetic field therebetween and a nonmagnetic electrode located between the pole shoes and energized with respect to the pole shoes to provide for combined magnetic and electrical action on the ion, and/or electron beam.

3,617,740
MODULAR ELECTRON SOURCE FOR UNIFORMLY IRRADIATING THE SURFACE OF A PRODUCT

Brian Skillicorn, Topsfield, Mass., assignor to High Voltage Engineering Corp., Burlington, Mass.

Filed Oct. 8, 1968, Ser. No. 765,846
Int. Cl. G01n 21/00
U.S. Cl. 250—49.5 13 Claims

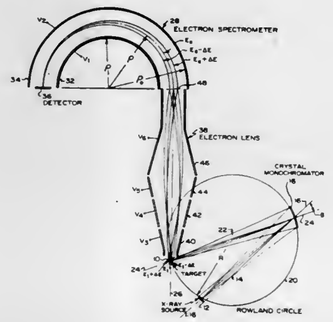


The invention relates to the irradiation of coatings and similar materials wherein a relatively large surface of complex shape is to be irradiated. The invention employs a modular construction wherein each module comprises a relatively small and independently movable electron accelerator which is complete but for the provision of the accelerating voltage. In general, apparatus is used having a common insulating housing and a common voltage source. In the housing are mounted independently movable electron accelerators. A multiplicity of these accelerators is arranged so as to provide a wide array of generally parallel electron beams which are positioned so as to overlap at the surface of the product to be irradiated. Depending upon the nature of the surface, the electron beams may or may not be actually parallel, the purpose being to insure that each electron beam impinges on the surface to be irradiated normal thereto.

3,617,741
ELECTRON SPECTROSCOPY SYSTEM WITH A MULTIPLE ELECTRODE ELECTRON LENS

Kai M. B. Siegbahn, Uppsala, Sweden, and Edward F. Barnett, Los Altos Hills, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 2, 1969, Ser. No. 854,437
Int. Cl. H01j 37/00; G01n 23/00
U.S. Cl. 250—49.5 AE 23 Claims



A source of X-radiation and a target under study are mounted on the Rowland circle of a crystal monochromator employed to focus a characteristic line of the X-radiation on the target. An electron lens with four electrodes for providing three independently variable electrical parameters is mounted in the photoelectron path between the target and an electron spectrometer adjusted to focus photoelectrons within a fixed energy range on a detector. The electrical parameters of this electron lens are adjusted to provide a target image of constant size and position at the entrance of the electron spectrometer while accelerating or decelerating photoelectrons from the target into the energy range for which the electron spectrometer is adjusted.

ERRATA

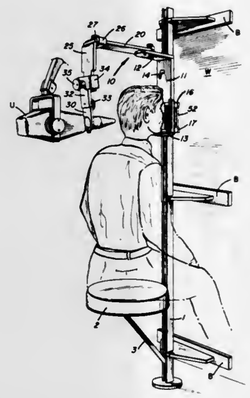
For Classes 250—51.5, 250—83.6 and 250—199 see: Patent Nos. 3,617,705, 3,617,709 and 3,617,710

3,617,742
PANORAMICLIKE DENTAL ARCH X-RAY APPARATUS

Martin L. Schulman, 4100 Cathedral Ave. N.W., Washington, D.C., and Thomas M. Howard, Jr., 13631 Nichols Drive, Clarksville, Md., assignors to Dental Corporation of America, Rockville, Md.

Filed May 8, 1969, Ser. No. 823,121
Int. Cl. G03b 41/16
U.S. Cl. 250—61.5 17 Claims

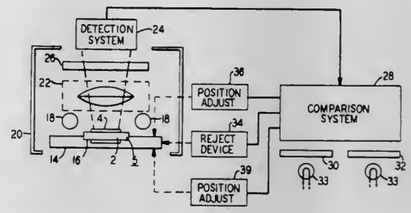
The obtention of a panoramiclike radiograph of the upper and lower dental arches composed from overlapping exposures of X-rays directed successively at different angles from the back of the patient's head towards a forwardly disposed extra-oral film supported on a vertically adjustable framework assembly which includes a laterally movable holder for the film as well as a fixed reference plate for positioning within the patient's mouth at the occlusal plane between the upper and lower dental arches. The plate within the patient's mouth constitutes a reliable stabilizing device against movement during exposure and presents a constant plane of reference in successive radiographs, by the dentist for comparisons of progress or growth. The framework assembly also comprises a fixator or support for an X-ray unit which may be shifted angularly and rectilinearly and is indexed at predetermined positions to make possible a rapid setting of the components while the patient remains fixed, for obtaining radiographs of consistently excellent characteristics despite variations in the shape and size of the patient's head and dental arches.



3,617,744
METHOD AND APPARATUS FOR CIRCUIT MODULE TESTING BY COMPARISON OF A FLUORESCENT IMAGE WITH A STANDARD PATTERN

Carleton D. Irish, Neptune, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1969, Ser. No. 838,259
Int. Cl. G01b 9/08
U.S. Cl. 250—71 10 Claims



Substrate-supported metallic circuitry is manufactured and tested, by forming it on dielectric substrate having a fluorescent character and irradiating the substrate with ultraviolet light. The resulting shadow image of the metallic circuitry is then superimposed on the negative image of a test mask shaped according to the desired circuitry configuration. The negative image of the circuitry is also superimposed upon the positive image of the mask. Passage of light through the superimposed images indicates defects.

3,617,745
PHOTOMETER RADIOMETER IRRADIANCE REFERENCE SOURCE

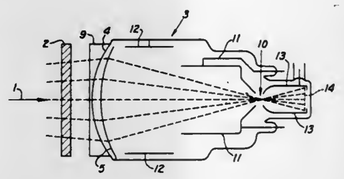
John C. Reed, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed May 19, 1970, Ser. No. 38,821
Int. Cl. G01g 5/10
U.S. Cl. 250—83.3 H 1 Claim

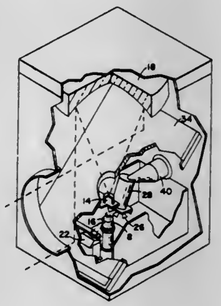
3,617,743
X-RAY IMAGE CONVERTORS UTILIZING LANTHANUM AND GADOLINIUM OXYHALIDE LUMINESCENT MATERIALS ACTIVATED WITH TERBIUM

Jacob G. Rabatin, Chardon, Ohio, and Robert A. Sieger, Greenfield, Wis., assignors to General Electric Company

Filed Oct. 23, 1968, Ser. No. 769,894
Int. Cl. G01t 1/20; H01j 31/50
U.S. Cl. 250—71 12 Claims



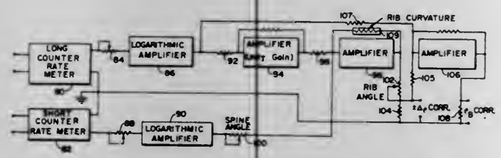
Oxyhalides of lanthanum and gadolinium, including the oxychlorides, oxybromides, and oxyiodides, activated with terbium and optionally sensitized with cerium are found to be some of the most efficient oxygen-dominated phosphors known, having radiant efficiencies with excitation by cathode rays of the same order of magnitude as the best sulfide phosphors. In the conversion of X-rays to visible light, these phosphors are superior in their conversion efficiency to the known X-ray phosphors. These new phosphors are useful in X-ray image-intensifier tubes, in fluoroscopic screens, in radiographic intensifier screens, in lamps and in cathode-ray tubes.



An improved photometer radiometer for use in detecting targets in clear nighttime sky in which a conventional supercooled irradiance reference source is replaced with a reflective mirror operating at ambient temperature. The mirror is positioned to rereflect irradiance from a supercooled photometer detector back into the detector. The mirror will rereflect an irradiance back into the detector according to the natural irradiance emitted from the supercooled detector, and thus the mirror appears as a supercooled irradiance reference source. The improvement further includes an infrared reference source that is adaptable for emitting a range of irradiances. The source is positioned behind a small hole in the center of the mirror for combining its irradiance with the rereflected irradiance from the cooled detector. A constant speed reflective chopper blade alternately switches the combined irradiances with incoming background irradiance within the field of view of the radiometer for comparison in

the photometer detector. The irradiances will null the output of the detector when no target is within the field of view of the radiometer in clear nighttime sky. After the radiometer output is nulled, irradiance from a target may be measured with extreme accuracy.

3,617,746
DUAL DETECTOR-COMPENSATED DENSITY WELL-LOGGING SYSTEM
Hermann W. Janssen, Kiel, Germany, and James F. Mooring, Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed July 10, 1967, Ser. No. 652,115
Int. Cl. G01t 1/16; G01v 5/00; G01n 23/22
U.S. Cl. 250—83.3 **5 Claims**



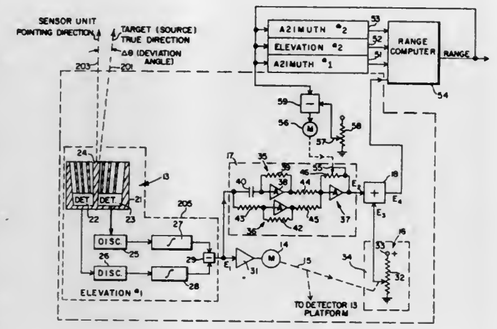
A density well-logging-compensation system wherein the outputs of the two detectors, which are spaced different distances from a gamma ray source, are applied to temperature-compensated logarithmic amplifiers the outputs of which are compared to derive a correction signal which is employed to correct the output of one of the detectors to give true formation density. In connection with the spine and ribs plot of such a system, provision is made for adjusting both the spine angle and the rib angle so that the compensation system may be employed with density-logging tools of different geometries and physical dimensions. Furthermore, provision is made for compensation for curvature of the rib with increasing mud cake thickness. Facilities are also provided for holding the source end of the logging instrument against the borehole wall to minimize errors in the compensated output of the system.

3,617,747
DETECTING MINUTE AMOUNTS OF RESIDUAL CORE MATERIAL BY MEANS OF NEUTRON RADIOGRAPHY
Charles D. Wilkinson, Livermore, and Bruce C. Meyer, Los Altos Hills, both of Calif., assignors to General Electric Company
Filed Sept. 26, 1968, Ser. No. 762,949
Int. Cl. G01t 3/00
U.S. Cl. 250—83.1 **6 Claims**

A method of detecting very small amounts of residual core material remaining in inaccessible internal passages in a cast metal article is disclosed. Typically, a very small amount of a material having a high neutron absorption cross section, such as gadolinium oxide, is mixed into the core material. After the metal article is cast and the core material removed, such as by dissolving the core away, a neutron radiograph of the article is prepared. Any remaining particles of the doped core material are very distinctly visible in the radiograph. This system is capable of detecting about 0.5 milligram particles.

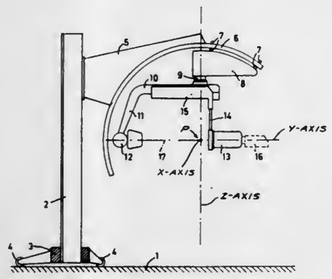
3,617,748
ANGLE TRACKER WITH CORRECTION MEANS HAVING TRANSFER FUNCTION INVERSELY RELATED TO SENOR TRANSFER FUNCTION
Henry Roy Chope, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Filed May 1, 1968, Ser. No. 725,873
Int. Cl. G01t 1/17
U.S. Cl. 250—83.3 **13 Claims**

A position tracker that is arranged in one embodiment for use with a nucleonic source includes a sensor unit having a nucleonic detector for deriving a signal indicative of the deviation angle between the sensor unit pointing direction and the direction of the nucleonic source. The sensor unit output is fed in parallel to motive means for driving the sensor unit, to reduce the signal and to a correction network for deriving another signal directly proportional to the deviation angle. The correction network has a transfer function that is the reciprocal of the transfer function of the sensor unit. An indication of the sensor unit pointing direction is summed



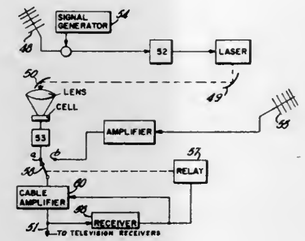
with the output of the correction network to derive a signal directly proportional to the true or actual direction of the source. The true angle indication is combined with other similar signals in a computer, the output of which is a signal proportional to the range between the source and sensor unit. The range indication is fed back to the correction network to control the gain factor thereof.

3,617,749
COLUMN SUPPORT FOR X-RAY APPARATUS
Andre Massiot, Saint-Cloud, France, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 774,546, Nov. 8, 1968, now abandoned , Continuation of application Ser. No. 493,429, Oct. 6, 1965, now abandoned. This application Jan. 12, 1970, Ser. No. 1,962
Int. Cl. H01j 5/48, 39/12
U.S. Cl. 250—92 **7 Claims**



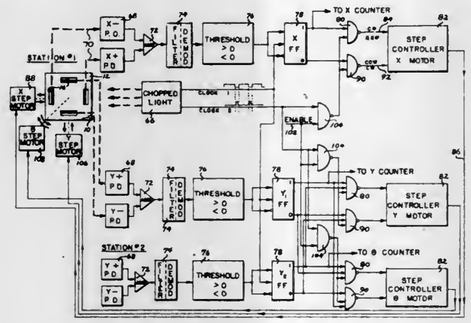
A stand for an X-ray apparatus includes a column, an arm vertically movable on the column, and a carriage supported by the arm. The carriage carries an X-ray tube and a detector and is rotatable about a horizontal axis and about an intersecting vertical axis. Also, the X-ray detector is movable toward the X-ray tube along a third axis which intersects the other axes and is perpendicular with the vertical axes.

3,617,750
LASER LINK COMMUNICATION SYSTEM
Harold R. Walker, Metuchen, N.J., assignor to Laser Link Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 585,647, Oct. 10, 1966, now abandoned. This application Feb. 9, 1970, Ser. No. 9,113
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **2 Claims**



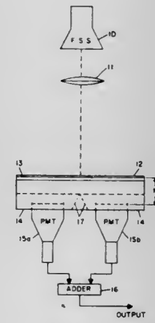
A laser modulator and its application to a communication system and in particular to a television signal distribution system employing modulated laser beams is disclosed.

3,617,751
METHOD AND APPARATUS FOR ARTICLE POSITIONING UTILIZING AN INCREMENTAL ARTICLE DRIVE SYSTEM AND NULL TRANSIT COUNTER
Kenneth Levy, Framingham; James M. Mulvaney, Southboro, and David Friedman, Framingham, all of Mass., assignors to Computervision Corporation, Waltham, Mass.
Filed Aug. 18, 1969, Ser. No. 850,976
Int. Cl. G01j 1/20; G05b 1/00
U.S. Cl. 250—201 **10 Claims**



A system for positioning an article in a preselected translational and rotary orientation with respect to two coordinate axes. The system produces X, Y and θ electrical signals each having a parameter which changes between a first state and a second state depending upon the direction of displacement of the article from the preselected orientation. Three article positioners incrementally move the article in the X, Y and θ directions in response to the respective X Y and θ electrical signals. Three corresponding counters count the changes in state of the x, y and θ electrical signals. When the counts in the X, Y and θ counters reach preselected counts, the three article positioners are inhibited. At this point, the article is positioned within one X, Y and θ movement increment of the preselected orientation.

3,617,752
LIGHT COLLECTION AND DETECTION APPARATUS COMPRISING PLURAL LIGHT SENSORS SO SPACED THAT THE COMPOSITE RESPONSE IS INDEPENDENT OF SOURCE POSITION
Charles E. Page, Westbury, and Gustavo A. Andersen, Hollis, both of N.Y., assignors to Hazeltine Corporation
Filed Nov. 6, 1969, Ser. No. 874,548
Int. Cl. H01j 39/12
U.S. Cl. 250—209 **20 Claims**

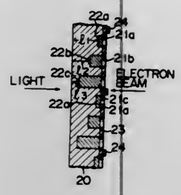


Disclosed is light collection and detection apparatus which exhibits a substantially uniform response characteristic with respect to a diffuse spot of light which may emanate from any point on a planar source such as exists where a flying spot scanner scans a photographic transparency that is positioned on a translucent, opal glass plate. Located below the glass plate and separated therefrom by a chosen distance is a plurality of photomultipliers, each having a known polar light response characteristic which is nonuniform with respect to at least some of the possible points from which the diffuse spot of light may emanate on the opal surface of the glass plate. Each of the photomultipliers develops an output signal representative of the intensity of the diffuse spot, and the plurality of photomultipliers are arranged in a predetermined array in a plane substantially parallel to that of the glass plate so as to effect an overlapping of the light response characteristics of the individual photomultipliers by a selected amount in the plane of the opal glass plate. The output signals from the individual photomultipliers are additively combined to develop a resultant output signal whose amplitude is substantially linearly proportional to the intensity of the diffuse spot of light regardless of the location of the point on the opal glass plate from which the spot of light emanates. Other embodiments are disclosed.

3,617,753
SEMICONDUCTOR PHOTOELECTRIC CONVERTING DEVICE
Taketoshi Kato, Yokohama-shi; Shigeharu Horiuchi, Yokohama-shi, and Shigeo Tsuji, Fujisawa-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Jan. 12, 1970, Ser. No. 2,171
Claims priority, application Japan, Jan. 13, 1969, Mar. 3, 1969; 44/2788, 44/15406
Int. Cl. H01j 39/12
U.S. Cl. 250—211 J **10 Claims**

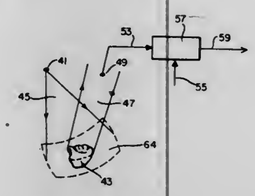
A semiconductor photoelectric converting device comprising a semiconductor substrate having a plurality of PN-junc-

tions separately formed therein in three groups according to their different depths so as to allow the red, green and blue



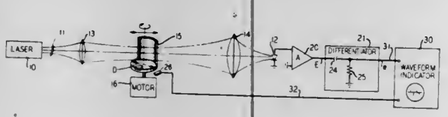
components of a light from a foreground object to be separated by said groups respectively.

3,617,754
SCANNED OBJECT HOLOGRAPHY
Bernard P. Hildebrand, Richland, Wash., assignor to Holotron Corporation, Wilmington, Del.
Filed Dec. 10, 1968, Ser. No. 782,582
Int. Cl. G02b 27/22
U.S. Cl. 250—216 **9 Claims**



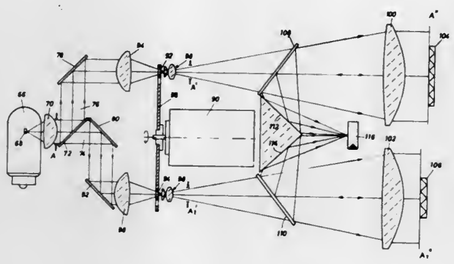
A technique for constructing a hologram by scanning an object relative to a fixed source and receiver. The object motion is restricted either relative to the source radiation or relative to the receiver in a manner to allow construction of an ordinary hologram from which the usual type of images may be reconstructed.

3,617,755
APPARATUS FOR LOCATING AND MEASURING THE BEAM-WAIST RADIUS OF A GAUSSIAN LASER BEAM
Jacques A. Arnaud, Colts Neck, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Dec. 10, 1969, Ser. No. 883,695
Int. Cl. G02b 1/28
U.S. Cl. 250—217 **8 Claims**



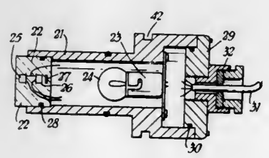
The beam-waist and beam-waist radius of a Gaussian laser beam are electronically located and measured by selectively interrupting the laser beam at two or more parallel planes separated by a preestablished fixed distance. Pulsive signals representative of the light intensity at each of the planes of interruption are differentiated to obtain signals representative of the beam radius at the planes of interruption. A ratio of the peak amplitudes of the signals representative of the beam radii is obtained and utilized as a measure of the beam-waist radius.

3,617,756
OPTICAL MEASURING APPARATUS USING MEASURING AND COMPARISON LIGHT BEAMS
Erwin Sick, Stifterweg 6, Icking (Isartal), Germany
Filed Mar. 24, 1969, Ser. No. 809,598
Claims priority, application Germany, Mar. 26, 1968, P 17 72 064.8
Int. Cl. G01n 21/12
U.S. Cl. 250—218 **7 Claims**



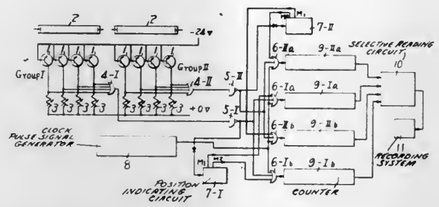
An optical measuring apparatus has optical elements which define two light paths from the filament of a light source to a photoelectric cell. Both of these paths traverse a rotating chopping disc. The beam along one path forms a comparison beam and the beam along the other path serves as a measuring beam. The optical elements of the measuring beam include a reflector so that the measuring beam has a portion of its path coincident in front of the reflector. An aperture diaphragm is positioned across a portion of the path of the measuring beam and the optical elements of the measuring beam are such as to image the aperture diaphragm in the plane of the reflector and in a size larger than the size of the reflector.

3,617,757
MEASUREMENT OF THE CONCENTRATION OF SOLIDS IN FLUIDS
Kenneth John Burr, and Terence Wilfrid Webb, both of Cornwall, England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England
Filed Oct. 3, 1969, Ser. No. 863,560
Claims priority, application Great Britain, Oct. 9, 1968, 47,946/68
Int. Cl. G01n 21/26
U.S. Cl. 250—218 **8 Claims**



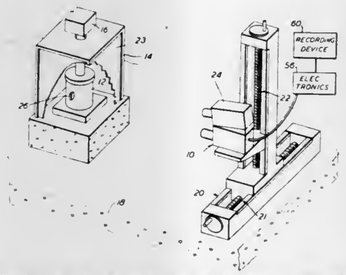
An apparatus for determining the concentration of solids in suspension in a fluid. The apparatus comprises a source of light, a measurement chamber to contain a quantity of the suspension and to admit thereinto only a single beam of light from said source of light, a first photocell to receive light originating from said source of light and reflected through an angle of approximately 180° by solid particles in the suspension and to produce a signal proportional to the intensity of the reflected light, a second photocell to receive light directly thereon from said source of light and to produce a signal proportional to the intensity of the light, and means for comparing the signals produced by the first and second photocells as a function of the solids concentration of the suspension in the measurement chamber.

3,617,758
METHOD AND APPARATUS FOR MEASURING SIZE OF ZONE HAVING OPTICAL STAINS
Kazuo Nagamatsu, Amagasaki-shi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka-shi, Japan
Filed Dec. 22, 1969, Ser. No. 887,298
Claims priority, application Japan, Dec. 30, 1968, 44/800
Int. Cl. G01b 7/12
U.S. Cl. 250—222 **15 Claims**



In measuring the size of a zone having optical stains, such as an inhibition zone of micro-organism growth, the method of the invention is characterized by scanning said zone by plural photoconductive detectors disposed in a row at a constant speed, the scanning direction being at a right angle to the row of said detectors, and measuring the size of said zone by electrically measuring the time during which at least one of said detectors is in operation.

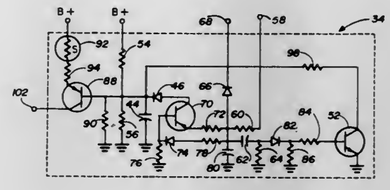
3,617,759
ELECTROOPTICAL MEASURING SYSTEM
Kelsey Martin, Azle, Tex., assignor to Martin Tracker Corporation, College Station, Tex.
Filed Apr. 3, 1968, Ser. No. 718,444
Int. Cl. H01j 3/14, 5/16, 39/12
U.S. Cl. 250—234 **20 Claims**



An optical tracker formed of a substantially light-tight housing having an optical system which focuses an image of an illuminated target on an image plane having four apertures which are symmetrically spaced on X- and Y-axes. A light pipe conveys the light entering each aperture to a photosensitive cell which has a linear and fast response. The cell provides an electrical signal proportional to the light received. The signals from a pair of cells are transmitted to a difference circuit for obtaining an electrical quantity proportional to the difference between the currents from the pair of cells. An amplifier provides a higher amplitude signal.

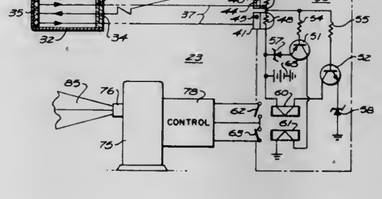
3,617,760
PULSE-WIDTH DETECTOR
James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 30, 1969, Ser. No. 837,418
Int. Cl. H03k 4/08
U.S. Cl. 307—234 **14 Claims**

A vehicle skid-control braking system of the type that includes circuit means for generating a signal varying in accordance with braking conditions, such as vehicle speed, wheel speed and road surface conditions. The system includes a pulse-width detector that receives a source of signals that vary from a first value to a second value and includes circuit means for storing a charge when the signal is at a first



value with the charge increasing until the signal reaches a second value, and reset circuit means responsive to a reset signal generated at each change of the signal from the first value to the second value for discharging the stored charge at the beginning of each subsequent charge cycle.

3,617,761
RADIATION SENSITIVE REMOTE CONTROL SYSTEM
Dexter P. Cooper, Jr., Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 15, 1969, Ser. No. 885,010
Int. Cl. G02f 1/18
U.S. Cl. 250—225 **20 Claims**

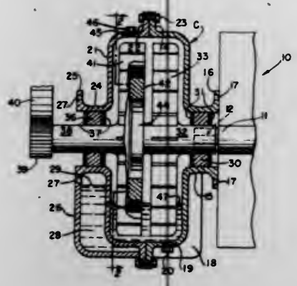


A remote control system has a control for effecting a first control function in response to sensed incident light which has a first quality of polarization, and a second control function in response to sensed incident light which has a second quality of polarization. A projecting arrangement directs a beam of light away from polarized light-sensing means connected to the control, and a portable remote unit includes a reflector for directing the light beam to the sensing means, and light polarizers for selectively imparting on the light beam the mentioned first quality of polarization and alternatively the mentioned second quality of polarization.

3,617,762
STARTER MOTOR GENERATOR COUPLING
Kevin L. Price, 22516 Wanamaker Pl., Detroit, Mich., and James C. Le Blanc, 39384 West Archer, Mt. Clemens, Mich.
Filed Aug. 25, 1970, Ser. No. 66,733
Int. Cl. H02k 23/52
U.S. Cl. 290—46 **8 Claims**

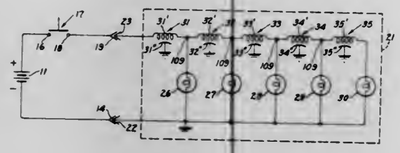
A starter motor having an armature shaft that is connected to the flywheel of an internal combustion engine by mechani-

cal driving connections to drive the flywheel from the motor. However, when the motor is to be driven from the engine this



mechanical drive is disabled and a fluid coupling is rendered effective to convert the motor to a generator.

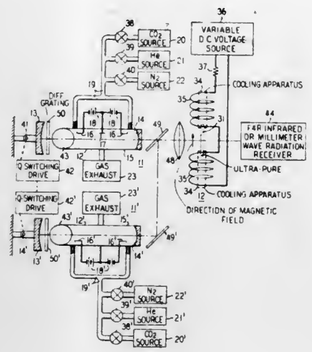
3,617,763
DELAY LINE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS
Edward L. Laskowski, Parma, Ohio, assignor to General Electric Company
Filed Aug. 28, 1970, Ser. No. 67,889
Int. Cl. H02j *3/14*
U.S. Cl. 307—41 **11 Claims**



A delay line circuit for causing sequential flashing of photoflash lamps from firing pulses of electrical energy. Delay line segments are successively connected in series between the individual photoflash lamps. A light detector and pulse control circuitry insures flashing of a single lamp per firing pulse, and an exposure control modification thereof insures flashing of one or more lamps per firing pulse as needed for correct exposure.

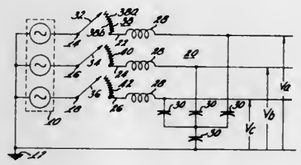
3,617,764
FAR INFRARED WAVE GENERATOR OR MIXER
Chandra K. Patel, Summit, and Nguyen Van Tran, Matawan Township, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 690,307, Dec. 13, 1967, now Patent No. 3,461,403, dated Aug., 1969. This application May 6, 1969, Ser. No. 822,241
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 **6 Claims**

A phase-matched tunable millimeter wave or far infrared wave generator or mixer employs semiconductor active media having large bound-electron second-order nonlinear effects but which, in particular instances, are not sufficiently birefringent to be phase-matchable by conventional techniques. There is generated a linearly polarized difference-frequency wave for which free carriers (electrons or holes) have the effect of subtracting an appreciable amount from the index of refraction determining its propagation constant. The linearly polarized wave is generated in crystals of the active medium when the frequencies of a pair of input radiations to be mixed and a tuning condition, such as the magnitude of magnetic field applied transversely to the direction of propagation of the input radiations, are appropriately selected. Also, in a parametric oscillator, one radiation is supplied and a second radiation relatively closely spaced in frequency is highly resonated, the frequency of the



second radiation and the difference frequency being variable by variation of the magnetic field magnitude.

3,617,765
VARIABLE CLOSING RESISTOR
Alfred E. Kilgour, Brookfield, and James H. Harlow, Hales Corners, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 16, 1968, Ser. No. 721,666
Int. Cl. H02h *3/22*
U.S. Cl. 307—93 **9 Claims**

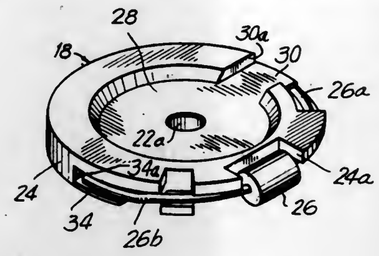


A source of high-voltage electrical power and an electrical system, comprising transmission lines, which is connectable to the source. Switching means are provided to effect such connection. Impedance means, comprising closing resistors, are provided for insertion in series between the source and system upon closing of the switching means to reduce voltage surges in the system. Each closing resistor has a variable resistance value, i.e., a predetermined initial value when first inserted which is decreased at a predetermined rate within a predetermined time after insertion to effect improved reduction of voltage surges.

3,617,766
RECTIFIER FOR EXTENDING THE LIFE OF LIGHT BULBS
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Sept. 25, 1969, Ser. No. 861,003
Int. Cl. H05b *41/392*
U.S. Cl. 307—146 **1 Claim**

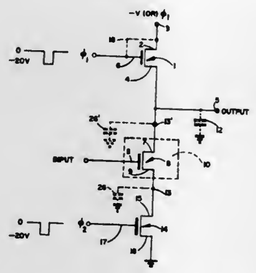
A lighting accessory device is described for rectifying the alternating current voltage input to a conventional light bulb. The device includes an insulator separator plate having a diode inserted to its periphery, the diode being connected to contact plates above and below the insulator separator plate.

A plastic, annular housing is used for the device to provide an economical, safe and convenient accessory device for



lowering operating voltage and thereby extending the life of the bulb filament.

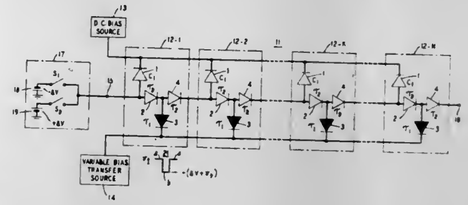
3,617,767
FIELD EFFECT TRANSISTOR LOGIC GATE WITH ISOLATION DEVICE FOR REDUCING POWER DISSIPATION
Robert Kenneth Booher, Mission Viejo, Calif., assignor to North American Rockwell Corporation
Continuation of application Ser. No. 523,767, Jan. 28, 1966, now Patent No. 3,526,783, dated Sept. 1, 1970. This application Feb. 11, 1970, Ser. No. 10,966
Int. Cl. H03k *19/08*; **G11c** *19/00*
U.S. Cl. 307—205 **8 Claims**



The logic gate includes a two-terminal logic network comprising one or more field effect transistors. Signals on the gate electrodes of the field effect transistors determine the impedance of an electrical path between the terminals. During a first phase recurring clock signal, a first semiconductor switch is turned on to connect a first voltage level to the output and to a first terminal of the logic network. During the first phase recurring clock signal, the second terminal of the logic network is isolated from a second voltage level by an isolation field effect transistor connected between the second terminal and the second voltage level. During a second phase recurring clock signal, the isolation field effect transistor is turned on to permit the output to be connected to the second voltage level through the logical network if a relatively low-impedance path exists during the second phase recurring clock signal.

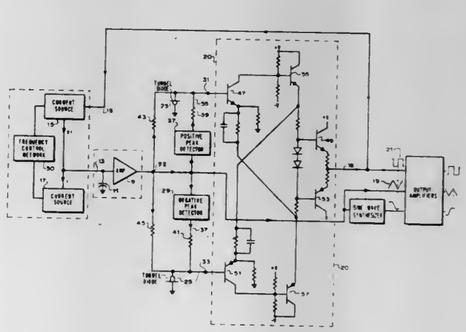
3,617,768
CHARGE TRANSFER DIODE SHIFT REGISTER
Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 3, 1970, Ser. No. 69,227
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 **13 Claims**

This application describes a shift register which employs a plurality of diode storage stages. Each of the diode stages includes: a first reverse-biased diode which is used as a capacitance for information storage; a second diode, of the charge-storage type, which is used for temporary information storage and for information transfer; and third and fourth diodes, of the Schottky barrier type, which are used for stage isolation and for directionality. Information, in the form of stored charge, is transferred from a first stage of the register to the next adjacent stage by applying a forward bias to the charge-storage diode of the former. Application of the bias



enables the charge stored in the capacitance of the first diode of the first stage to flow through the third diode of that stage and into the charge-storage diode, where it is temporarily stored. Reversal of the bias causes the stored charge to be discharged from the charge-storage diode, and to flow through the fourth diode into the capacitance of the first diode of the next adjacent stage, where it is again stored.

3,617,769
WAVE GENERATOR HAVING FREQUENCY-DEPENDENT TRIGGER LEVEL FOR CORRECTION OF LOOP DELAY
Raymond C. Hanson, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 12, 1969, Ser. No. 806,568
Int. Cl. H03k *5/00*, *4/06*
U.S. Cl. 307—229 **2 Claims**



A wave generator includes an integrator with adjustable upper and lower limit detectors coupled to the output of the integrator for periodically reversing the current applied to the integrator to produce a repetitive triangle wave. The upper and lower levels of the triangle wave at which the detectors are actuated are altered as the operating frequency of the circuit increases.

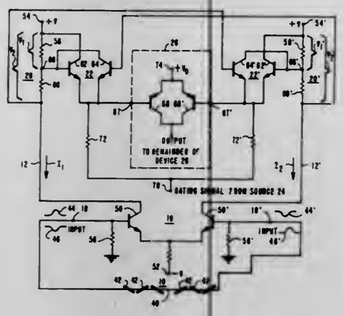
ERRATUM

For Class 307—234 see:
Patent No. 3,617,760

3,617,770
SENSING CIRCUIT HAVING REGENERATIVE LATCHING CIRCUITS RESPONSIVE TO THRESHOLD DIFFERENCES IN BIASING VOLTAGES DERIVED FROM A PAIR OF DIFFERENTIALLY VARIABLE CURRENTS

David E. Norton, Boulder, Colo., and Joseph A. Lake, Jr., Lincoln Park, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,247
Int. Cl. H03k 5/20, 3/286
U.S. Cl. 307—235 6 Claims

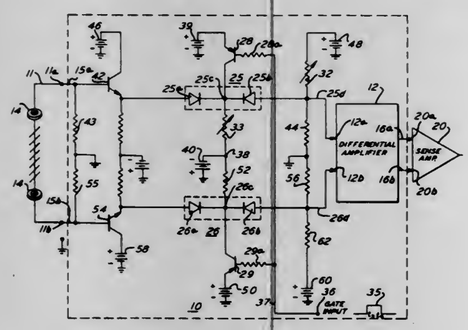


A sensing circuit in which currents in two different paths are differentially varied in response to bipolar input signals. A differential change in the currents sufficient to render the voltage drop across a pair of resistors in either current path approximately equal to the drop across the first one of a like pair of resistors in the other path results in the conduction of the second transistor in an appropriate one of a complementary pair of two-transistor latches to provide an output indication that an input signal at least equal to a predetermined minimum value has been sensed. The voltage drop across the second resistor of each pair establishes an operational threshold which is relatively insensitive to common circuit variations such as in the total current through the two paths, and the latches are regenerative in that conduction by the second transistor in either latch increases the current through the first one of the like pair of resistors to further bias the first transistor thereof into nonconduction.

3,617,771
DIFFERENTIAL SWITCHING SYSTEM FOR SWITCHING LOW-LEVEL SIGNALS

Don N. Lee, Willingboro, N.J., assignor to Computer Test Corporation

Filed July 3, 1969, Ser. No. 838,828
Int. Cl. H03k 17/00
U.S. Cl. 307—242 11 Claims

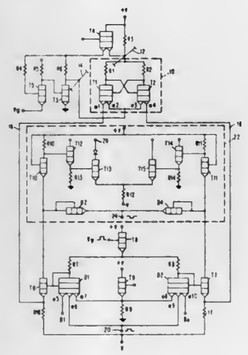


A differential switching system for switching low-level signals in the presence of high-level unwanted signals having

3,617,772
SENSE AMPLIFIER/BIT DRIVER FOR A MEMORY CELL

Klaus G. Tertel, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 9, 1969, Ser. No. 840,172
Int. Cl. G11c 7/00; H03k 17/56
U.S. Cl. 307—247 12 Claims

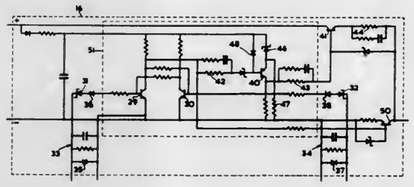


This specification discloses a sense amplifier/bit driver circuit for a monolithic memory storage cell using a double ended bit drive and sensing scheme. Each of the bit lines serving this storage cell is fed to the emitter of a separate transistor of the sense/drive circuit. The collectors of both these transistors are connected to opposite ends of a differential sense amplifier while the bases of transistors are connected to a diode logic circuit which controls the potential at the base. By changing the potential at the bases of the transistors, conduction through the transistors may be varied in concert or individually for reading and writing of information in the storage cells and for turning the transistors off while the storage cell is not being addressed.

3,617,773
THYRISTOR GATING CIRCUITS

Arnaud Michael Eccles, Stafford, England, assignor to The English Electric Company Limited, London, England

Filed Jan. 27, 1969, Ser. No. 794,146
Claims priority, application Great Britain, Jan. 25, 1968; Jan. 25, 1968; 3976/68, 3977/68
Int. Cl. H03k 17/72, 17/06
U.S. Cl. 307—252 C 7 Claims



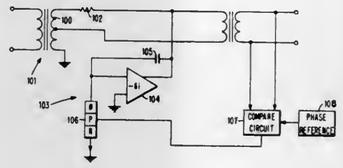
A thyristor gating circuit embodying a bistable circuit and a constant current stage, the bistable being activated by light-responsive control signals so as selectively to provide through

this stage a constant current output of positive polarity for maintaining the thyristor conductive, and a constant current output of negative polarity for "blocking" the thyristor. A sharp positive impulse is initially produced to gate-on the thyristor during each cycle, this impulse either being developed directly in response to the control signal or being produced by resistance—Capacitance circuits coupled to the bistable.

3,617,774
AUTOMATIC PHASE CONTROL CIRCUIT

William G. Crouse, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 665,074, Sept. 1, 1967, Pat. No. 3,539,826.
Filed Mar. 4, 1970, Ser. No. 16,504
Int. Cl. H03k 1/12
U.S. Cl. 307—262 3 Claims

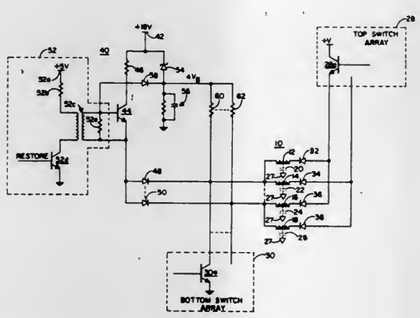


An inverting amplifier includes a shunt feedback impedance element connected between its input and output terminals. The feedback current is divided between a series input resistance Rin and an impedance Rs shunting Rin. Either Rs or Rin is in the form of a variable impedance semiconductor device and a suitable source of control signals is applied to the semiconductor device to cause it to have a variable impedance. This variable impedance causes the output impedance Zo of the amplifier to vary as a function of the input control signals to the semiconductor device. The output impedance is resistive, capacitive, inductive, or the like, depending upon the nature of the feedback impedance of the amplifier; and the device is useful in varied applications such as automatic gain control, frequency and phase control, power regulation, delay equalizers, modulators and the like.

3,617,775
CIRCUIT FOR CHARGING THE DISTRIBUTED CAPACITANCE OF A PLATED WIRE MEMORY

James D. Allen, Pinellas, Fla.

Filed June 3, 1970, Ser. No. 42,948
Int. Cl. H03k 3/21, 3/51
U.S. Cl. 307—270 5 Claims

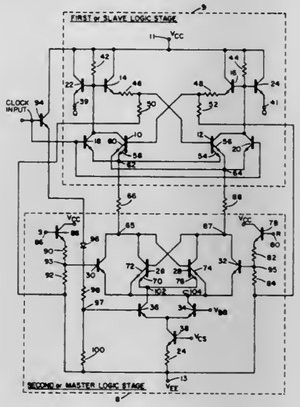


A circuit used in a plated wire memory stack for rapidly charging the distributed capacitance associated with inductive word straps in the stack. Charging follows read or write cycles and effectively reverse-biases diodes in series with the previously selected straps in preparation for a new cycle, thus preventing the inductive kick of a newly selected strap from energizing nonselected straps.

3,617,776
MASTER SLAVE FLIP-FLOP

Ury Priel, Cupertino, Calif., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 13, 1969, Ser. No. 806,981
Int. Cl. H03k 3/12
U.S. Cl. 307—291 18 Claims

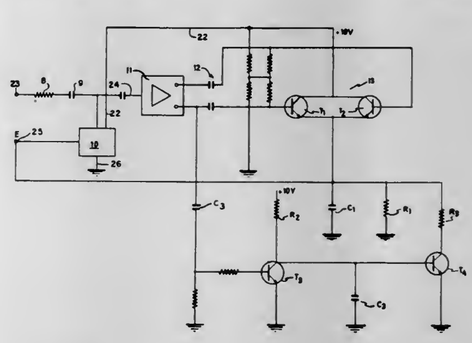


Disclosed is a master slave flip-flop including two bistable logic stages, each of which includes transistors which are cross-connected to alternately conduct as binary information is applied to the stages. Both logic stages are connected to receive clock signals which enable binary information to be applied to and stored by one of the two logic stages and thereafter shifted into the other stage when the level of clock signals changes.

3,617,777
AUTOMATIC SENSITIVITY-REGULATING DEVICE

Stefan Kudelski, CH. de la Croix-1052 Le Mont-sur-Lausanne, Chemin de la Croix, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,302
Claims priority, application Switzerland, Dec. 26, 1968, 19,289/68
Int. Cl. H03k 17/28
U.S. Cl. 307—293 6 Claims

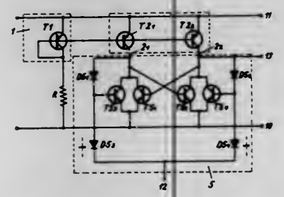


Automatic sensitivity-regulating device, characterized by the fact that it has two sensitivity recovery time constants, one a slow one which is applied permanently in case of the presence of a signal and the other a rapid one which is placed in operation if the signal remains less than a selected level during a selected period of time.

3,617,778
ELECTRONIC CIRCUIT ARRANGEMENT WITH AT LEAST ONE INTEGRATED ELECTRONIC CIRCUIT UTILIZING CONSTANT CURRENT SOURCES IN CONNECTION WITH GALVANIC COUPLING BETWEEN TRANSISTOR STAGES COUPLED WITH EACH OTHER IN LIEU OF HIGH OHMIC RESISTORS

Arpad Korom, Zurich, Switzerland, assignor to Gesellschaft Zur Forderung Der Forschung An Der Eidg Techn Hochschule, Zurich, Switzerland

Filed June 11, 1969, Ser. No. 832,287
Claims priority, application Switzerland, July 6, 1968, 10174
Int. Cl. H03k *23/08*
U.S. Cl. 307—303 32 Claims

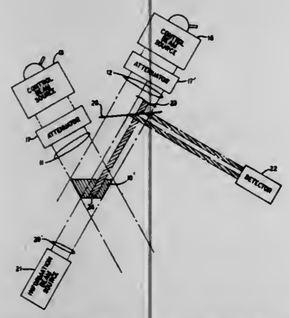


Integrated circuit arrangement, wherein the difficulties of building up high ohmic resistors with good properties within integrated circuits have been removed by means of replacing the high ohmic collector resistors and the high ohmic base biasing resistors of conventional integrated circuits by constant current sources in connection with galvanic coupling between transistor stages following one another. The mean collector current and the mean base biasing current of galvanically coupled transistors following one another are delivered by one constant current source. The alternating collector current superposed to this means collector current flows directly and completely into the base-emitter circuit of the galvanic coupled following transistor.

3,617,779
ELECTROMAGNETIC ENERGY LOGIC EMPLOYING SATURABLE ABSORBERS

Robert Rosenberg, FairHaven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 10, 1968, Ser. No. 743,860
Int. Cl. H03k *19/32*
U.S. Cl. 307—312 23 Claims

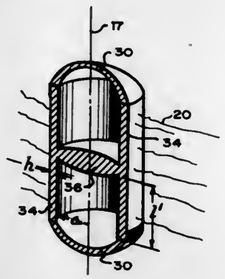


Control beams of electromagnetic radiation are applied to a member of saturable, energy-absorbing material to control the transmission of a signal beam therethrough. Incoherent beams on different volumes of material accomplish a threshold gate logic function, and similar beams on a common volume accomplish the OR logic functions. The use of coherent control beams produces an interference pattern of alternate bands of saturated and absorbent material, which pattern attenuates the transmission of the information beam through the material even though each control beam is of sufficient intensity, when acting alone, to saturate the material so that it is essentially transparent to the signal beam. Information signal transmission occurs as an EXCLUSIVE OR logic function of the coherent control beams, and such function is extendable for generating a logical NEGATION function and for complementing the information in a photographic transparency.

3,617,780
PIEZOELECTRIC TRANSDUCER AND METHOD FOR MOUNTING SAME

Albert Benjaminson, Menlo Park, and Donald L. Hammond, Los Altos Hills, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 26, 1967, Ser. No. 678,306
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 6 Claims

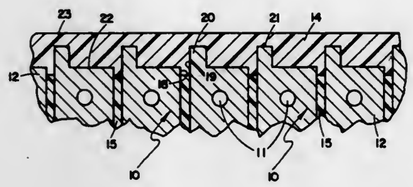


Piezoelectric transducer apparatus which includes a resonator section peripherally supported by a hollow cylindrical housing section formed as an integral part of the resonator section. Electrodes are disposed about the resonator section to produce a vibration-exciting electric field in response to a signal appearing on the electrodes.

3,617,781
METHOD OF PREVENTING MATERIAL BUILDUP IN ELECTRODES IN MHD DEVICES

Richard J. Rosa, Reading, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed July 24, 1969, Ser. No. 844,582
Int. Cl. H02m *4/02*
U.S. Cl. 310—11 2 Claims

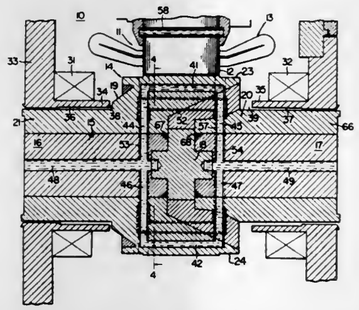


Prevention of buildup of material on the cathodes and anodes in direct current magnetohydrodynamic devices which would otherwise occur is substantially reduced if not prevented by providing periodic current reversal in the electrodes. Such current reversal may be achieved in accordance with the invention by providing electrode segments around the periphery of the channel, maintaining a fixed relationship between magnetic field and means coupling appropriate electrode segments to the load and rotating the channel.

3,617,782
SYNCHRONOUS MACHINE PROVIDED WITH LIQUID-COOLED COMB-SHAPED ROTOR

Hideteru Nakamura; Moriyoshi Sakamoto, and Hiroyuki Kitamura, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (also known as Tokyo Shibaura Electric Co., Ltd.), Kanagawa-ken, Japan

Filed Jan. 16, 1970, Ser. No. 3,462
Claims priority, application Japan, Jan. 20, 1969, Jan. 20, 1969; 44/3405, 44/3406
Int. Cl. H02k *9/00, 1/22*
U.S. Cl. 310—61 3 Claims

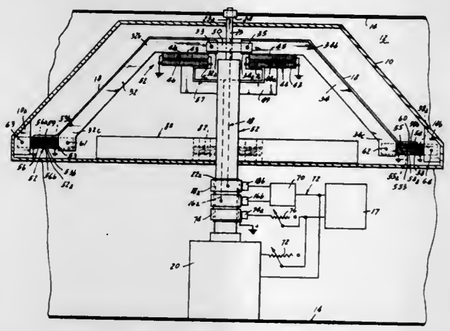


A synchronous machine provided with a comb-shaped pole-type rotor which includes ducts in the rotor for passage of cooling liquid therethrough. There are provided wedge members of nonmagnetic material, each of which is welded at the side edges thereof to sidewalls of the adjacent pole pieces of the rotor whereby an airgap of the machine is prevented from leaking the cooling liquid thereinto.

3,617,783
CENTRIFUGAL ELECTROMAGNETIC PROPULSION MACHINE

Thomas Joseph Sutter, Jr., 8417 South Wayne Ave., Chicago, Ill.

Filed Mar. 24, 1970, Ser. No. 22,240
Int. Cl. H02k *7/00*
U.S. Cl. 310—67 9 Claims

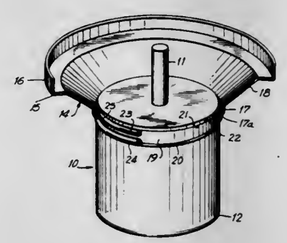


Unilateral linear movement of a mechanism is produced by an apparatus comprising at least two arm members pivotally attached at their inner ends to a main rotary shaft so that as the shaft is rotated the centrifugal force will cause the arms to produce a gyroscopic effect. An electromagnet means attached to the main shaft below the point of attachment of the arms and positioned in fixed relationship to each of the arms attracts a magnet means on each of the arms spaced therefrom by a generally fixed gap during the rotary movement of the arm members whereby when the arms are under the influence of centrifugal force caused by rotary motion the main rotary shaft is raised upwardly to cause unidirectional movement of the mechanism.

3,617,784
STRUCTURE FOR MOUNTING ELECTRIC MOTORS

Nils Kauri Lindgren, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 9, 1970, Ser. No. 96,472
Claims priority, application Sweden, Dec. 12, 1969, 17168/69
Int. Cl. H02k *5/00*
U.S. Cl. 310—91 6 Claims

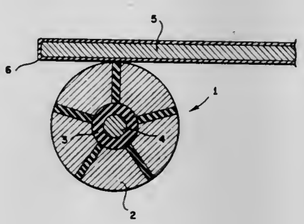


An electric motor having a stationary part formed with an annular groove is mounted on a member at an aperture therein. The member at the aperture has an inner edge which includes an inward extending portion between a pair of elastomeric O-rings disposed in the bottom of the groove. The inner edge of the apertured member functions to hold the O-rings in frictional engagement with the motor part. Each of the O-rings in such frictional engagement with the motor part presses against the other with each of the O-rings bearing against a different one of the axially spaced shoulders of the groove in sealing engagement therewith.

3,617,785
CURRENT-COLLECTING DEVICE FOR SMALL COMMUTATING MACHINES

Henry Kristiansen, Sarnen, Switzerland, assignor to Interelectric Sachseln A.G., Switzerland

Filed July 24, 1970, Ser. No. 57,964
Int. Cl. H01r *39/20*
U.S. Cl. 310—236 9 Claims

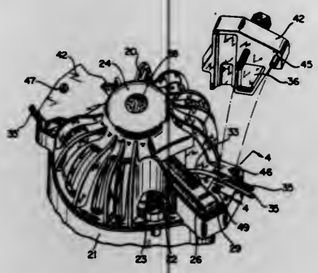


A current-collecting device for small commutating machines having a commutator of 85 to 95 percent silver and 15 to 5 percent copper; and having brushes of 50 to 70 percent silver, 25 to 40 percent palladium, and 3 to 10 percent copper.

3,617,786
ELECTRIC MOTOR COMMUTATOR END CONSTRUCTION

Henry J. Stielper, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 13, 1970, Ser. No. 36,860
Int. Cl. H01r 39/38
U.S. Cl. 310—242 7 Claims



A rotary electric lawn mower having a double insulated permanent magnet motor. An insulating end cap is fitted to the field retaining ring and holds the armature bearing. Brush rigging for the commutator is trapped under a cap affixed to the end member. Ribs are provided in an outer housing to keep the cap in position if the normal retaining means becomes loose.

3,617,787
BIMETALLIC SPRING SUPPORT FOR A SHADOW MASK

Gerardus Wilhelmus Plukker, Emmasingel, Eindhoven, Netherlands

Filed June 19, 1969, Ser. No. 834,684
Claims priority, application Netherlands, June 21, 1968, 6808720
Int. Cl. H01j 29/46, 31/20
U.S. Cl. 313—85 3 Claims



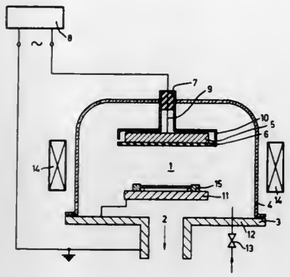
In order to check displacement of a shadow mask in a plane at right-angles to the axis of a cathode-ray tube, it is suspended from three flat springs consisting of two strips which are welded together along their narrow sides and constitute a bimetal; the coefficient of expansion of said springs is adapted to the location of the springs on the shadow mask edge by the location of the supporting point of the spring to the envelope, on a line at right-angles to the welding seam at different distances from the welding seam.

3,617,788
METHOD OF VACUUM-TIGHT CLOSURE OF THIN BERYLLIUM WINDOWS AND X-RAY TUBE PROVIDED WITH SUCH A WINDOW

Jan Goorissen, and Pieter Van Der Werf, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,647
Claims priority, application Netherlands, Sept. 14, 1968, 6813190
Int. Cl. H01j 35/18
U.S. Cl. 313—59 5 Claims

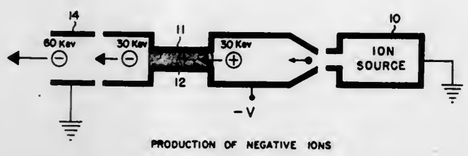
The invention provides a method of vacuum-tight closure of beryllium windows of X-ray tubes and especially thin windows for use in X-ray fluorescence analysis of elements of a low atomic number, said windows having a thickness of only about 50 μ. The window material or the ready windows are for this purpose provided by a known method of sputtering material particles with an extremely thin layer of beryllium or beryllium oxide. The practically unavoidable pores or cracks in the beryllium foil are found to be completely closed by a layer thickness of about 1 μ. By this method rejects in the production due to bad vacuum-tightness can be avoided and it becomes thus possible to manufacture reliable X-ray tubes provided with these extremely thin windows.



3,617,789
PROCESS FOR PRODUCTION OF NEGATIVE HELIUM IONS AND OTHER NEGATIVE IONS

Roy Middleton, Moylan, and Charles T. Adams, Wallingford, both of Pa., assignors to University of Pennsylvania, Philadelphia, Pa.

Filed Apr. 14, 1969, Ser. No. 815,551
Int. Cl. H05h 5/00
U.S. Cl. 313—63 6 Claims



PRODUCTION OF NEGATIVE IONS

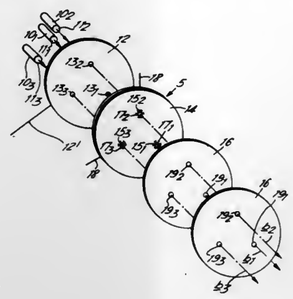
A method is disclosed for producing negative ions by passing energetic positive ions through a charge exchange medium consisting of metallic vapors of low ionization potential. This process, in which all low ionization potential metallic vapors can be utilized, enables the production of a large species of negative ions at more copious rates than hitherto possible by charge exchange.

3,617,790
SHADOW-MASK TYPE COLOR TELEVISION TUBE WITH SCREENING ELECTRODES FOR CONVERGING THE ELECTRON BEAMS ON THE SHADOW MASK

Douglas S. Hills, East Peckham, Tonbridge, Kent, England, assignor to The Rank Organisation Limited, London, England

Filed Apr. 10, 1969, Ser. No. 814,962
Claims priority, application Great Britain, Apr. 10, 1968, 17,261/68
Int. Cl. H01j 29/06, 29/46, 29/56
U.S. Cl. 313—82 15 Claims

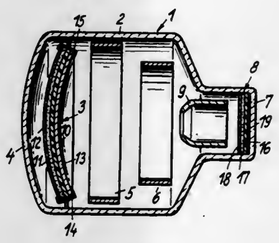
An electron gun assembly for use particularly in a shadow-mask color television cathode-ray tube has a plurality of (usually three) electron emissive areas adjacent which an accelerating electrode or electrodes is or are arranged for producing respective substantially collimated electron beams from electrons emitted by said areas. The collimated beams pass through an apertured screening electrode or electrodes so arranged that the space extending up to the electron emissive areas is effectively screened from electric fields in the tube beyond the screening electrode or electrodes.



3,617,791
IMAGE INTENSIFIER INCLUDING POLYIMIDE SUPPORT

Karl Franz, and Gerhard Kochmann, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 11, 1969, Ser. No. 812,543
Claims priority, application Germany, Mar. 14, 1968, P 16 22 999.5
Int. Cl. H01j 39/00, 39/04, 31/50
U.S. Cl. 313—94 3 Claims

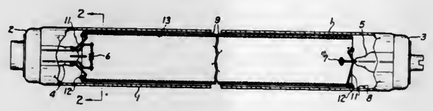


A screen which comprises a support on which is arranged a layer of a substance capable of fluorescing has the support formed of a polyimide. The screen is suitable for use in a vacuum image intensifier.

3,617,792
HIGHLY LOADED FLOURESCENT LAMP PARTICULARLY FOR DC OPERATION

William H. Lake, Novelty, Ohio, assignor to General Electric Co.

Filed Feb. 24, 1969, Ser. No. 801,612
Int. Cl. H01j 61/20, 61/44
U.S. Cl. 313—109 5 Claims

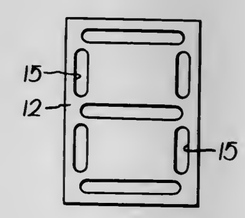


A highly loaded fluorescent lamp in which the discharge is confined to an inner vitreous tube within a sealed outer envelope. The tube is open at the ends and internally phosphor coated. Lower temperature control of the mercury vapor is achieved, together with higher electrical efficiency, particularly when a noncircular inner tube, such as an oval or grooved tube, is used to decrease the diffusion length of the discharge. The inner tube may be thin-walled because the pressure is the same on both sides. In DC operation, cataphoretic pumping of mercury vapor from the anode towards the cathode is largely overcome by gas flow in the zone between inner tube and outer envelope.

3,617,793
ELECTRODE MOUNTING STRUCTURE FOR PROVIDING INSULATION

Tokuo Matsushita, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Denki Sangyo Kabushikikaisha, Tokyo, Japan

Filed Oct. 2, 1969, Ser. No. 863,043
Claims priority, application Japan, Oct. 19, 1968, 43/73728
Int. Cl. H01j 1/90, 19/44
U.S. Cl. 313—109.5 3 Claims



An indicator discharge tube having an insulating mask in which a plurality of slits are formed with similar pattern to that of cathode electrodes disposed on an insulating baseplate, said insulating mask being arranged between said insulating baseplate and an anode electrode with a narrow gap from said insulating plate.

3,617,794
HALOGEN LAMP EMPLOYING A QUARTZ ENVELOPE PROVIDED WITH A COLORED LAYER

Henricus Antonius Van Bakel, and Riksterus Aguste Johannes Maria Meijer, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,966
Claims priority, application Netherlands, Dec. 15, 1967, 6717090
Int. Cl. H01j 61/40, 61/38
U.S. Cl. 313—112 4 Claims

A colored halogen lamp having a quartz envelope that has been coated with a layer of luster lacquer, essentially consisting of metal salts of resin acids dissolved in ethereal oils. The coating is fired up to temperatures between 500° C. and 600° C.

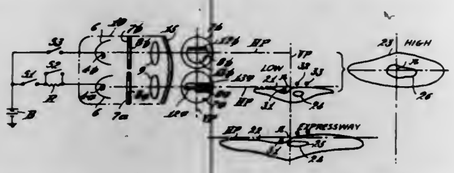
3,617,795
AUTOMOTIVE HEADLIGHT SYSTEM

Sandford C. Peek, Ipswich, Mass., assignor to Sylvania Electric Products Inc.

Filed Mar. 16, 1970, Ser. No. 19,882
Int. Cl. B60q 1/14, 1/16
U.S. Cl. 313—117 4 Claims

An automobile headlight system comprises two elliptical reflectors each with a tungsten halogen lamp filament at or near one focus. From each reflector a light beam is projected through a light gate at the other focus and thence through a lens which cooperates with the elliptical reflector to throw a narrow light beam nearly parallel to the optical axis of the reflector and lens. The light gate before one lamp has a horizontally elongate aperture transmitting more light to the

right beyond the lens. The light gate before the other lamp has generally vertically symmetrical aperture and transmits light higher above the horizontal than the first-mentioned light gate. The lamps are electrically connected to a power supply with a switching system such that they can be



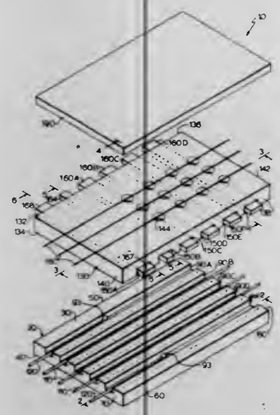
operated in three different modes: the first lamp at low voltage producing a low beam; the first lamp at higher voltage producing a low but brighter beam; and both lamps together producing a composite beam having high and low components.

3,617,796

DISPLAY PANEL CONSTRUCTION

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 29, 1970, Ser. No. 6,839
Int. Cl. H01j 61/30
U.S. Cl. 313—220 7 Claims



A gaseous display panel includes a top plate, a bottom plate, a center plate, and a plurality of arrays of electrodes associated therewith. The bottom plate, and the top plate if desired, are provided with slots, the center plate is provided with an array of holes, and the electrodes are arrayed to provide two layers of gas-filled glow cells. The various parts are constructed to provide optimum uniformity and thereby to achieve optimum operation with maximum economies and ease in construction.

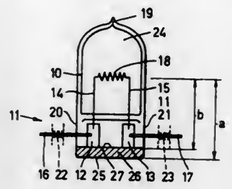
3,617,797

PINCH-BASE ELECTRIC LAMP WITH TRANSVERSELY ARRANGED SUPPLY WIRES

Riksterus Auguste Johannes Maria Meijer, Emmasingel, Eindhoven, and Jan Christiaan Pennekamp, Heerlen, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed May 14, 1969, Ser. No. 824,478
Claims priority, application Netherlands, May 16, 1968, 6806902
Int. Cl. H01j 5/48
U.S. Cl. 313—318 5 Claims

A pinch-base lamp and method of making same where foils are sealed in the pinch, and secured to each foil are one end of a pole wire oriented generally parallel to the lamp axis and one end of a supply wire oriented at a right-angle to the pole wire. When the lamp is mounted the laterally extending supply wires are subjected to torsional instead of bending



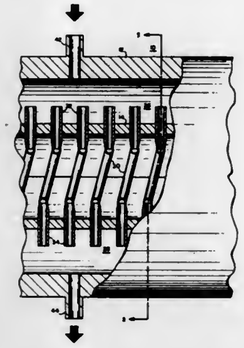
stress, thereby reducing the likelihood of fracturing the pinch, and the base of the pinch, being free of supply wires, may be ground to provide an accurate reference surface from the filament.

3,617,798

FLUID-COOLING SLOW WAVE INTERACTION STRUCTURE FOR A TRAVELING WAVE TUBE

Theodore J. Marchese, North Springfield; Sidney T. Smith, Alexandria, Va., and Henry D. Arnett, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 22, 1970, Ser. No. 57,259
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 6 Claims



A helical slow wave structure formed of hollow metal tubing communicating with inlet and outlet fluid manifolds through supporting hollow ceramic tubes brazed to the helix at every half turn. Fluid coolant flows from the inlet manifold through the ceramic tubes and into each half turn of the helix and then out through the ceramic tubes on the other side of the outlet manifold where it is pumped to a heat exchanger and then returned to the inlet manifold.

3,617,799

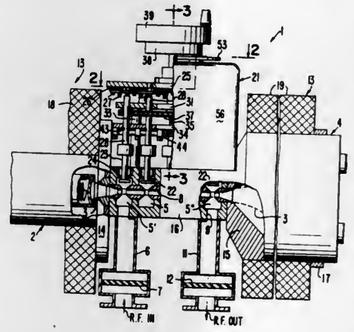
GANG TUNER FOR A MULTICAVITY MICROWAVE TUBE

Robert C. Schmidt, Woodside, and Walter E. Nelson, Sunnyvale, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 21, 1968, Ser. No. 739,016
Int. Cl. H01j 25/10
U.S. Cl. 315—5.47 7 Claims

A multicavity microwave amplifier tube is disclosed. The tube includes a plurality of cavity resonators successively arranged along a beam path for successive electromagnetic interaction with the beam to produce output-amplified microwave energy. Translatable cavity tuners are provided within a plurality of the cavity resonators for tuning the

frequency of the resonators. The external tuning structure includes a plurality of rotatable cam wheels mechanically interconnected for synchronous rotation. Each cam wheel includes a set of cams. A plurality of cam followers are connected to the cavity tuners and each includes a bearing surface for engaging one of the cams in one the set of cams for tuning the respective cavity resonators in accordance with the position of the respective cam in the set of cams on the



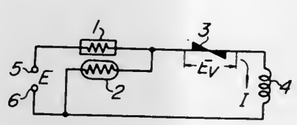
cam wheel. Means are provided for disengaging the cam followers from the cams before rotation of the cam wheels to new tuner positions. A stop is provided for the preventing rotation of the cam wheels while the cam followers are in engagement with the cams to alleviate wear on the engaging surfaces of the cams and the cam followers, whereby the microwave amplifier tube can be precisely and repeatedly tuned to certain preselected channel frequencies within a band of frequencies.

3,617,800

DEGAUSSING DEVICE FOR COLOR TELEVISION RECEIVER

Kazuo Ishikawa, Kadoma, and Hiroshi Yamashita, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1970, Ser. No. 30,062
Claims priority, application Japan, May 6, 1969, 44/35884
Int. Cl. H01j 29/06
U.S. Cl. 315—8 1 Claim



A degaussing device for color television receiver, wherein the degaussing time is extremely shortened and the current value flowing through the degaussing coil after the degaussing is completed is minimized by making elaborate use of the actions of a thermistor having a positive temperature coefficient, thermistor having a negative temperature coefficient and a varistor.

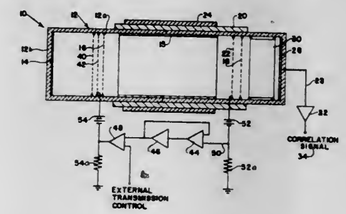
3,617,801

INTENSITY CONTROL AND SIGNAL ENHANCEMENT CORRELATION TUBE

James J. Hogan, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 23, 1968, Ser. No. 731,597
Int. Cl. H01j 31/48
U.S. Cl. 315—11 5 Claims

The invention consists of a variable transmission field mesh which has the unique capability of isolating the uniform, accelerating electrostatic field in the photocathode region from the focus field in the drift tube while both regions are effectively isolated from the control signal. This isolation controls the electronic image intensity after the image has been generated by the photocathode, but before the image enters appreciably in the drift-tube region, without seriously degrading characteristics of the image tube such as sensitivity, resolution, and image distortion. The invention also contemplates intensity control of the output signal from the tube by actually sensing the intensity of the electron image as well as the transmisivity of the storage grid and feeding the resulting signal back to the variable transmission field mesh. A preferable construction is with a double-decked sandwich field mesh consisting of three conducting, aligned meshes



separated by two insulating or vacuum layers. The middle mesh is the control mesh while the one facing the photocathode controls the field at the photocathode and the mesh facing the drift-tube maintains the drift-tube electrostatic field at essentially zero. The potential on the control mesh may vary from a value considerably below the potentials of the other two meshes for low transmission to considerably above for high transmission.

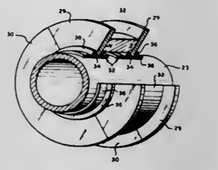
Essentially, the invention relates to an electronic iris for controlling intensity of the signal in an electronic correlation tube through signal enhancement or intensity control utilizing a control mesh in association with the storage grid.

3,617,802

TRAVELING-WAVE TUBE

Arthur E. Manoly, Palos Verdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 6, 1970, Ser. No. 34,933
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 6 Claims



A traveling-wave tube including an improved permanent magnet assembly for collimating an electron beam. The assembly comprises a plurality of ferromagnetic pole piece hubs spaced along the tube with annular channels for the insertion of ferromagnetic segmented arcuately formed pole pieces. Annular magnets are slidable over the outer periphery of the pole piece hubs and alternately spaced between the adjacent segmented pole pieces.

3,617,803

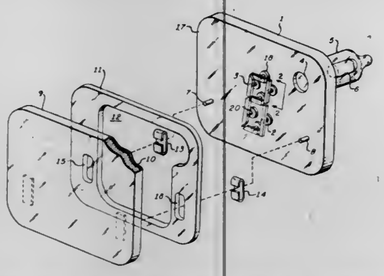
RAISED-CATHODE GAS DISCHARGE INDICATOR HAVING A SPUTTER SHIELD

James W. Wheeler, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed Nov. 14, 1969, Ser. No. 876,618
Int. Cl. H01j 61/04
U.S. Cl. 313—207 3 Claims

A gas discharge indicating device comprising a plurality of symbol-forming cathode elements disposed intermediate a

cathode-supporting substrate and a transparent anode connected to one another in a manner to form a hermetically sealed enclosure for containing an ionizable gas, the cathode elements being supported in spaced relation to both the anode and substrate on pins passing through the latter. An insulating shield is provided on each support pin proximate the substrate preferably in noncontacting relation therewith. Under appropriate conditions of gas pressure and anode-



cathode and cathode-substrate spacing, localized glow discharges between the anode and selectively energized cathodes are confined to the regions therebetween, resulting in minimized sputtering from the substrate side of the cathode. This feature in combination with the insulating shields operates to preclude sputtered shorting contacts from developing between the respective support pins in the region of the substrate.

3,617,804

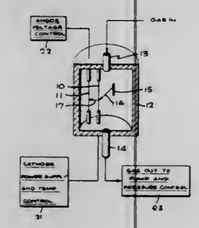
CONTINUOUS PLASMA LIGHT SOURCE

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Willard F. Libby; Carl A. Jensen, and Lowell L. Wood all of Los Angeles, Calif.

Continuation of application Ser. No. 479,357, Aug. 12, 1965, now abandoned. This application Oct. 14, 1969, Ser. No. 866,442

Int. Cl. H01j *61/16, 61/28, 61/78*

U.S. Cl. 315—326 **1 Claim**



A light source apparatus for producing intense monochromatic light from a low-temperature plasma is disclosed. The light source apparatus comprises a housing member for confining a gas at subatmospheric pressure, the housing containing output means disposed to transmit light from the confined gas. At least one anode and one cathode are positioned within the gas in electrical circuit relationship with each other. First control means are provided for controlling the voltage applied to the anode and second control means independently control the temperature of the cathode by regulating the power supplied to it. The pressure of the gas is controlled by a third control means. An intense monochromatic light output is achieved by confining the gas in said chamber at a controlled predetermined reduced pressure, independently controlling the temperature of the electron emitting cathode by means of said second control means and applying a predetermined controlled low voltage to said anode by said first control means. An intermediate mode current is drawn from said cathode and produces in the confined gas a region having a high density of metastable atomic states. A low-temperature, high-density plasma is continuously produced in said region and intense monochromatic light is emitted as a result of the recombination of ions and electrons in said plasma.

3,617,805

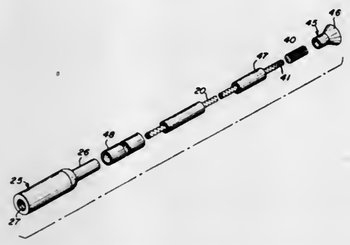
LOW-NOISE STATIC DISCHARGER DEVICE

Robert L. Truax, Lauderhill, Fla., assignor to Dayton Aircraft Products, Inc., Fort Lauderdale, Fla.

Filed Mar. 2, 1970, Ser. No. 15,486

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 E **10 Claims**



A static discharging device for use on an aircraft includes a resistance element having one end electrically attached to the aircraft and a plurality of resistively separated metallic fibers of substantially constant diameter of 10 microns or less and a length of less than one-half inch attached to its other end. The resistance element is preferably a nylon substrate having a carbon-impregnated plastic coating thereon to provide a controlled resistance of 20 to 80 megohms over its length. A lightning diverter element may also be included with the static discharge device and includes a separate semiconductive strip on which may be placed a plurality of spaced-apart aluminum disks which will support an external ion plasma and thus prevent a large amount of energy from being dissipated in the static discharger resistance element and at the same instance providing lightning protection in the immediate region of the discharger's installation. The discharger also provides a nominal minimum of 50 db. of radiofrequency noise quieting regardless of its physical or electrical orientation to surrounding receiver antenna radiofrequency fields.

3,617,806

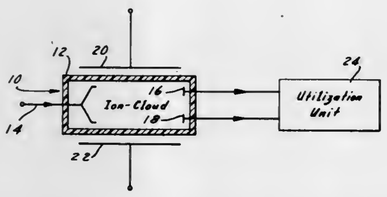
ION SWITCH

Ralph G. Lillevang, Apt. 17, Fashion Park, 8335 Washington Blvd., Pico-Rivera, Calif.

Filed Nov. 13, 1969, Ser. No. 876,238

Int. Cl. H01h *36/00*

U.S. Cl. 317—4 **9 Claims**



This invention relates to a multipurpose electronic device that can be used as a switch, as a binary signal generator, as a comparator, as a variable resistor and as a frequency mul-

tiplier—among other uses. Basically, it comprises an envelope containing a cloud of ions; and as selected control signals are applied to the device the ions are directed to selected output electrodes.

3,617,807

CURRENT-LIMITING SWITCH EMPLOYING LOW-TEMPERATURE RESISTOR

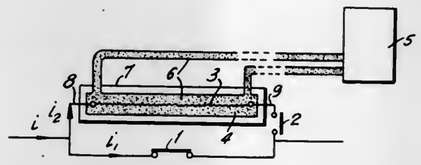
Fritz Kesselring, Kusnacht, Switzerland, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 20, 1970, Ser. No. 39,040

Claims priority, application Germany, May 23, 1969, P 19 26 972.8

Int. Cl. H02h *7/22*

U.S. Cl. 317—11 E **6 Claims**



A circuit interrupter is provided with a parallel-connected resistor which is cooled to a temperature of from 4° K. to 80° K., but higher than the critical temperature of the resistance material. The resistor is connected in parallel with the circuit interrupter contacts at either an arbitrary time or just prior to a current zero value. The heating of the resistor during current-limiting operation increases its resistivity by about 100 times.

3,617,808

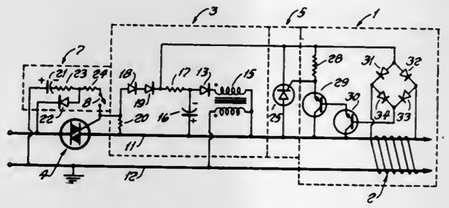
ELECTROCUTION PREVENTION CIRCUIT

Max N. Yoder, 3968 Second St., S.W., Washington, D.C.

Filed May 21, 1970, Ser. No. 40,469

Int. Cl. H02h *3/16, 3/28*

U.S. Cl. 317—18 D **10 Claims**



A circuit which prevents accidental electrocution is described. It may be used as an integral part of the electrical service entrance panel or in individual branch circuits, and operates on the principle of interrupting the current in a period of time so short as to prevent ventricular fibrillation.

3,617,809

ELECTRONIC SAFETY SYSTEM

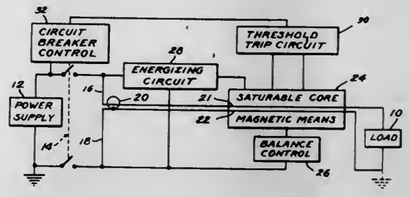
Thomas C. Penn, Richardson, Tex., and Arthur L. Reenstra, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 15, 1970, Ser. No. 37,560

Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **19 Claims**

An electronic safety system is disclosed for detecting leakage of electrical signals from a load circuit to ground in order to selectively disrupt the supply of power to the load circuit. A pair of electrical conductors couple the load circuit to the source of power. At least a portion of the pair of electrical conductors intermediate the load circuit and the power supply comprises a section of coaxial electrical cable inductively coupled to a selectively energizable saturable core magnetic means, which is connected to an energizing circuit adapted to establish a magnetic field within the saturable core magnetic means. Means are coupled to the saturable core magnetic means for sensing affects on the magnetic field generated by the presence of unequal currents in the section of the coaxial cable inductively coupled to the saturable core



magnetic means, such unequal currents being due to the leakage of current from one of the conductors to ground. Such affects are arranged to produce an electrical output signal, which may be utilized for effecting operation of a circuit breaker to disrupt the power being supplied to the load.

3,617,810

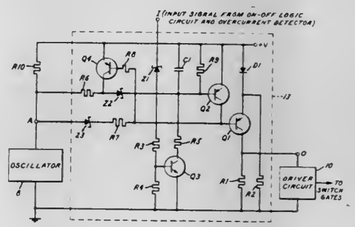
TURN-ON DIRECTING CIRCUIT FOR STATIC SWITCH

Floyd L. Steen, Lansdowne, Pa., assignor to General Electric Company

Filed Aug. 7, 1970, Ser. No. 61,904

Int. Cl. H02h *3/08*

U.S. Cl. 317—33 SC **4 Claims**



A turn-on directing circuit is provided for a static switch. The switch includes an oscillator for producing a train of discrete control signals, control signal enabling means and logic circuit means. When switch conduction is desired an ON signal is provided to the enabling means to enable said means to effect switch turn-on. The turn-on directing circuit includes a supervisory circuit which temporarily disables the enabling means if a control signal is in existence when the ON signal is given and for reenabling the enabling means in time to allow the first successive control signal following the ON signal to effect switch turn-on.

3,617,811

CABLE TELEVISION TAPOFF UNIT

David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation, Alachua, Fla.

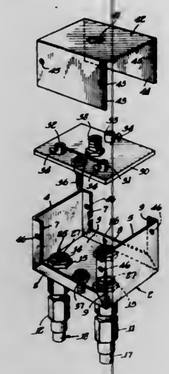
Filed July 22, 1970, Ser. No. 57,182

Int. Cl. H01p *5/14;* **H03h** *7/48*

U.S. Cl. 317—99 **7 Claims**

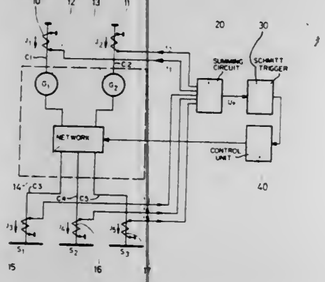
A cable television tapoff unit comprises a housing into which coaxial cables are connected and which is used with modularized circuit boards which are of similar physical configuration and are interchangeably mounted in the housing so

that a given housing may be used as or converted to a line splitter, directional coupler, housedrop, etc. The circuit



boards contain all of the circuitry for the unit and the housing is free of integrally wired-in components.

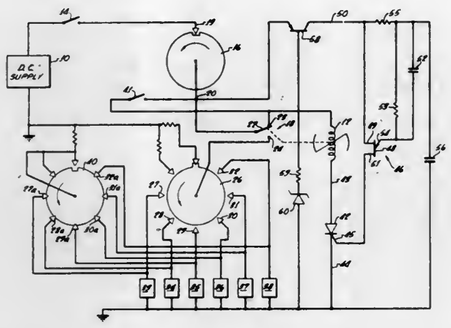
3,617,812
PROTECTIVE DEVICE FOR POWER SUPPLY SYSTEMS
Burkhard Deter, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm, Munich, Germany
Filed Nov. 26, 1969, Ser. No. 880,138
Claims priority, application Germany, Nov. 28, 1968, P 18 11 422.2
Int. Cl. H02h *3/28*
U.S. Cl. 317—27 **7 Claims**



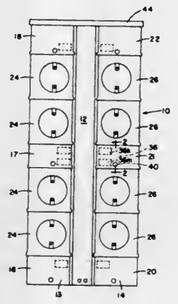
A differential protective device for providing short circuit protection for electrical networks such as airborne power supply systems includes a series of current transformers for monitoring the input and output leads of a network and a summing circuit for summing the output signals from the current transformers. Where a fault exists in the network a non-zero current summation will result and a corresponding output voltage produced by the summing circuit. The output voltage is applied to a comparator circuit which is connected to a control unit for controlling a programmed switching operation within the network to locate the fault.

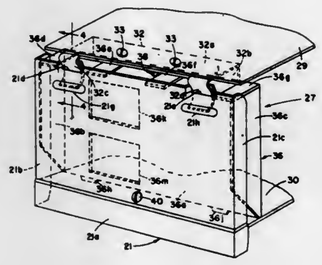
3,617,813
INTERVALOMETER AND TIMING OSCILLATOR
Charles E. Everest, Corona Del Mar, Calif., assignor to William Wahl Corporation, Los Angeles, Calif.
Filed Aug. 11, 1970, Ser. No. 62,948
Int. Cl. F23g *7/02*
U.S. Cl. 317—80 **22 Claims**

An intervalometer for firing one or a group of ordnance devices comprises a normally self-stepping electromechanical solenoid-operated switching device and a separate independent timing oscillator. The oscillator is connected to the stepping switch to externally trigger initiation of each step of the switch and is arranged to permit substantially instantaneous actuation of the intervalometer upon receipt of the electrical fire command signal. Although normally instantaneously starting, the oscillator is provided with a delay to accommodate bounce time of pilot-operated firing switches. Continued oscillator operation in the event of temporary power dropout is provided.



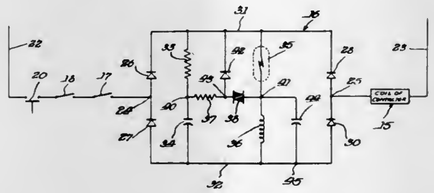
3,617,814
CONCEALED-HINGE MOUNTING FOR RAINTIGHT COVER OF MULTIMETERING ELECTRICAL PANELBOARD
Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.
Filed Mar. 2, 1970, Ser. No. 15,370
Int. Cl. H02b *9/00*; **E05d** *7/00*
U.S. Cl. 317—106 **10 Claims**





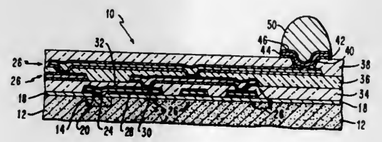
A circuit breaker compartment in a column of watt-hour meter socket compartments is partially defined by a pair of vertically spaced, horizontally extending partitions. A mounting bracket secured to an upper one of the partitions has a depending rear portion and a pair of spaced depending front leg portions. An interior trim panel is secured to the rear portion of the bracket and anchored in a lower one of the partitions. A front cover having a pair of horizontally spaced slots in an upper edge portion is mounted on the front leg portions of the bracket and secured in closed position by a screw extending through a lower edge portion of the cover into threaded engagement with the interior trim panel. The slotted upper edge portion of the cover is normally covered by a depending lip portion of a front cover for a meter socket compartment spaced immediately above the circuit breaker compartment.

3,617,815
IMPEDANCE SWITCHING TIMER
Ernie Foldvari, Carpentersville, and Dennis C. Walstad, Winfield, both of Ill., assignors to Furnas Electric Company, Batavia, Ill.
Filed Sept. 18, 1969, Ser. No. 858,993
Int. Cl. H01h *47/18*
U.S. Cl. 317—142 **3 Claims**



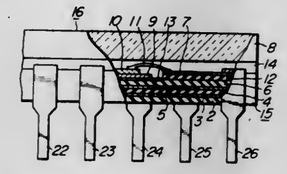
The timing circuit is connected in series relation with the coil of a contactor and the same includes a charging circuit and a conducting circuit. A resistor of high ohmic value and a series connected condenser form the charging circuit. Since the resistor is relatively high in ohms the charging of the condenser is delayed to give the desired time delay interval to the timing circuit. The conducting circuit includes a magnetically actuated reed switch and an inductance coil which is wound around the glass enclosed reed switch. A trigger diode which is caused to close when the condenser is charged to a predetermined voltage effects a discharge of the condenser through the inductance coil.

3,617,816
COMPOSITE METALLURGY STRIPE FOR SEMICONDUCTOR DEVICES
Jacob Riseman, and Paul A. Totta, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,618
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **6 Claims**



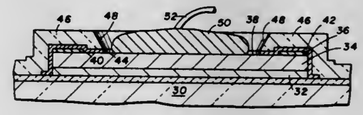
A metallurgy interconnection system for semiconductor devices made up of laminar stripes, each having a layer of gold disposed between layers of tantalum.

3,617,817
LAMINATED CERAMIC STRUCTURE FOR CONTAINING A SEMICONDUCTOR ELEMENT
Fumimaro Kawakatsu, Koganei-shi; Takahiko Ihochi, Kodaira-shi, and Takahiro Okabe, Hachioji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 23, 1969, Ser. No. 887,681
Claims priority, application Japan, Dec. 25, 1968, 43/94538
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **8 Claims**



A package having a bottom plate comprises by laminating at least two ceramic plates, in which a semiconductor substrate including an integrated circuit is fixed on the principal surface of said bottom plate and a conducting layer with low resistivity is extended between said ceramic plates, an operating current being supplied to said integrated circuit through the conducting layer, thus the ohmic loss is reduced at the time of supplying the operating current.

3,617,818
CORROSION-RESISTENT MULTIMETAL LEAD CONTACT FOR SEMICONDUCTOR DEVICES
Clyde R. Fuller, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 31, 1968, Ser. No. 788,264
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **8 Claims**

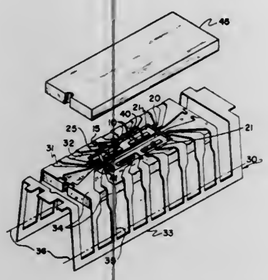


A gold-bonding area is exposed by an opening in the upper molybdenum layer of a trimetal molybdenum-gold-molybdenum contact system for a semiconductor device. A layer of chromium, or other suitable corrosion-resistant material, is formed over the edges of the molybdenum layers and extends for a distance over the exposed gold-bonding area in order to seal the edges of the molybdenum layers. An insulation layer is formed over the layer of chromium and selectively removed to define an opening exposing the gold-bonding area. In one embodiment, a second layer of gold is formed over the edges of the chromium layer, with the insulation layer abutting the outer edges of the second gold layer.

3,617,819
A SEMICONDUCTOR DEVICE HAVING A CONNECTING PAD OF LOW RESISTIVITY SEMICONDUCTOR MATERIAL INTERCONNECTING GOLD ELECTRODES AND ALUMINUM CONTACTS OF AN ENCLOSURE
Alfred R. Boisvert, Hillsboro, and Wilfred L. Boule, Antrim, both of N.H., assignors to Sylvania Electric Products Inc.
Filed Oct. 15, 1970, Ser. No. 81,017
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **4 Claims**

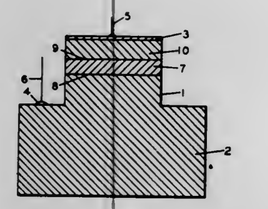
A semiconductor device including the combination of an enclosure having leads with aluminum contact regions and a body of silicon having a gold electrode. The connecting path between the gold electrode and the aluminum contact region of a lead includes a connecting pad of low resistivity silicon

with a layer of gold on one surface and a layer of aluminum on the other. Thus, direct gold-to-aluminum connections



which produce harmful gold-aluminum compounds at elevated temperatures are avoided.

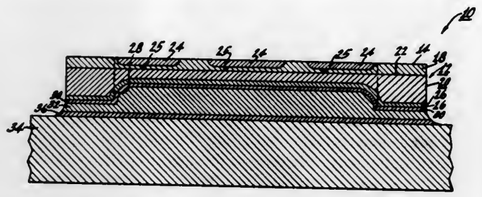
3,617,820
INJECTION-LUMINESCENT DIODES
Arno Henry Herzog, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 509,598, Nov. 24, 1965, now Patent No. 3,419,742. This application Nov. 18, 1966, Ser. No. 595,363. The portion of the term of the patent subsequent to Dec. 31, 1985, has been disclaimed
Int. Cl. H01l 9/00
U.S. Cl. 317—234 **10 Claims**



This disclosure relates to injection-luminescent diodes of gallium arsenide, gallium phosphide and mixed binary crystals thereof having the formula $GaAs_xP_{1-x}$, where x is a numerical value greater than zero and less than one, said diodes having an N-type conductivity region doped to a carrier concentration of from 10^{15} to 10^{19} carriers/cc. of N-type impurity atoms and a substantially linearly graded PN junction merging with a radiative recombination band which extends from about 5 to 25 microns into a region of P-type conductivity and is doped with P-type impurity atoms to a carrier concentration of about 4×10^{16} carriers/cc. at the distal edge of said band from the PN junction. The injection-luminescent diodes of this invention are produced by a diffusion process.

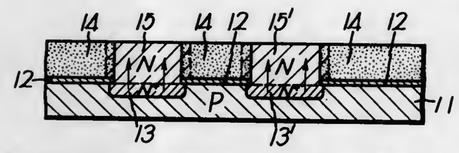
3,617,821
HIGH-VOLTAGE TRANSISTOR STRUCTURE HAVING UNIFORM THERMAL CHARACTERISTICS
Willem Gerard Einthoven, Belle Meade, N.J., assignor to RCA Corporation
Filed Sept. 17, 1970, Ser. No. 73,028
Int. Cl. H01l 1/12
U.S. Cl. 317—235 **4 Claims**

A high-voltage transistor is formed jn a semiconductor body having two opposed major surfaces. The transistor has emitter, base, and collector regions, with the emitter-base junction extending to a first one of the surfaces, and with the collector region extending to the second surface. A nickel layer is disposed on the second surface, and a layer of a thermally conductive metal of about the same thickness as the



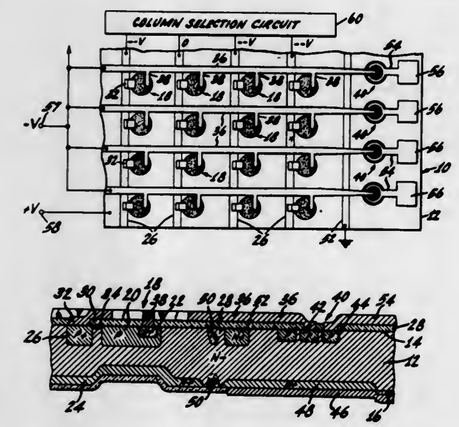
semiconductor body, or greater, is integrally joined to the nickel layer.

3,617,822
SEMICONDUCTOR INTEGRATED CIRCUIT
Isamu Kobayashi, Yokohama-shi, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of application Ser. No. 780,702, Dec. 3, 1968. This application Oct. 29, 1969, Ser. No. 872,335
Claims priority, application Japan, Dec. 12, 1967, Oct. 30, 1968, Oct. 30, 1968 42/78032; 43/79129; 43/79130
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R **7 Claims**



A semiconductor integrated circuit comprising single crystal regions isolated from each other by means of high-resistance polycrystalline regions and PN junctions. The polycrystalline regions and the single crystal regions and doped with the same impurity concentration but the resistivity of the polycrystalline regions is much greater than that of the single crystal regions.

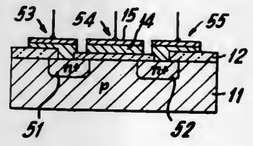
3,617,823
SELF-SCANNED PHOTOTRANSISTOR ARRAY EMPLOYING COMMON SUBSTRATE
Steven R. Hofstein, Princeton, N.J., assignor to RCA Corporation
Filed Mar. 7, 1969, Ser. No. 805,237
Int. Cl. H01l 11/14
U.S. Cl. 317—235 **13 Claims**



A planar phototransistor array having relatively fast response time and being efficiently sensitive to radiation in

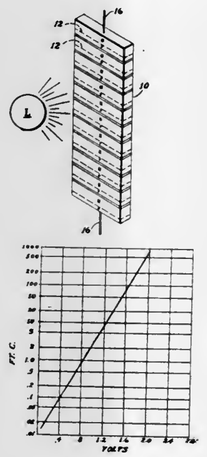
the near infrared includes a plurality of phototransistors arranged in rows and columns and conductive means which may be selectively coupled by means of an insulated gate enhancement structure to the base regions of each of the transistors. In operation, all transistors are normally biased into a nonconductive condition, but selected ones of the transistors may be biased into photoconduction and provide outputs representative of the light falling thereon.

3,617,824
MOS DEVICE WITH A METAL-SILICIDE GATE
Daizaburo Shinoda; Masaoki Ishikawa; Hiroki Muta; Shizuo Asanbe, and Nobuo Kawamura, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed July 10, 1968, Ser. No. 743,900
Claims priority, application Japan, July 12, 1965, Dec. 12, 1967, Dec. 12, 1967, 42/44848; 42/79658; 42/79660
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **3 Claims**



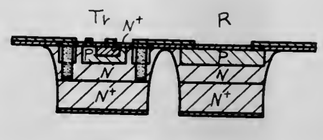
A semiconductor device obtains in which a silicide film of 3*d*, 4*d* and 5*d* transition metal such as iron (Fe), cobalt (Co), nickel (Ni), molybdenum (Mo), palladium (Pd), platinum (Pt), or the like, is used as a conductive means in place of the conventional simple metal and whose structure is semiconductor-insular-silicide.

3,617,825
MULTIJUNCTION PHOTODIODE DETECTOR
George E. Chilton, 144 Valley Road, Haworth, N.J., and Karabet Simonyan, 10 Graham Court, Saddle Brook, N.J.
Filed Dec. 23, 1968, Ser. No. 785,927
Int. Cl. H01l 15/00
U.S. Cl. 317—234 **1 Claim**



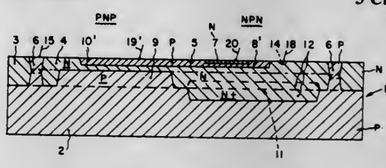
A stack of semiconductors are arranged with the edge of the junctions exposed to a source of light whose intensity is to be measured. There is a resulting output voltage which is virtually independent of the exposed area. This characteristic permits high-output devices of small size.

3,617,826
AN INTEGRATED TRANSISTOR WITH A POLYCRYSTALLINE CONTACT TO A BURIED COLLECTOR REGION
Isamu Kobayashi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 12, 1968, Ser. No. 774,703
Claims priority, application Japan, Nov. 14, 1967, Dec. 21, 1967, 42/73155; 42/82053
Int. Cl. H01l 11/00, 7/36
U.S. Cl. 317—235 R **5 Claims**



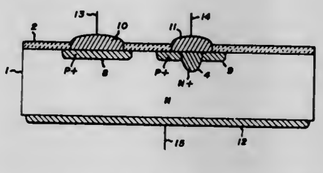
Semiconductor devices of the integrated circuit type including contiguous semiconductor regions, portions of these regions containing both a polycrystalline area and a single crystal area.

3,617,827
SEMICONDUCTOR DEVICE WITH COMPLEMENTARY TRANSISTORS
Albert Schmitz; Cornelis Mulder, and Arie Slob, all of Emmasingel, Eindhoven, Netherlands
Division of Ser. No. 676,235, Oct. 18, 1967. Filed Mar. 30, 1970, Ser. No. 23,784
Claims priority, application Netherlands, Oct. 21, 1965, 6614858
Int. Cl. H01l 19/00
U.S. Cl. 317—235 **3 Claims**



A semiconductor device comprising complementary transistors is described. Both transistors are made in a single island and each include a buried layer. The PNP transistor uses the buried layer as collector, and the NPN transistor uses the buried layer to reduce collector resistance. The result is a fast-switching NPN transistor.

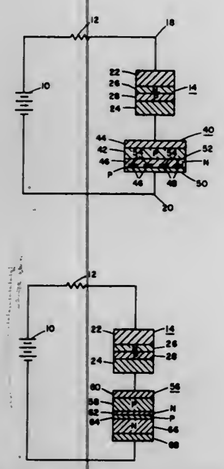
3,617,828
SEMICONDUCTOR UNIJUNCTION TRANSISTOR DEVICE HAVING A CONTROLLED CROSS-SECTIONAL AREA BASE CONTACT REGION
Samyon E. Daniluk, Camillus, N.Y., assignor to General Electric Company
Filed Sept. 24, 1969, Ser. No. 860,504
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **1 Claim**



A semiconductor device including a contact region of one conductivity region having a predetermined cross-sectional

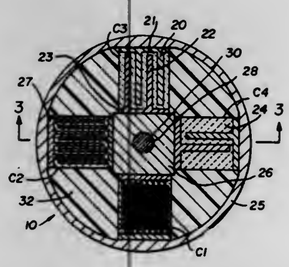
area is provided with a surrounding collar-shaped semiconductor region of opposite conductivity type, which region effectively blocks the spreading action of the contact region thereby controlling its resistance to a constant value.

3,617,829
RADIATION-INSENSITIVE VOLTAGE STANDARD MEANS
Israel Arnold Lesk, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 1, 1969, Ser. No. 881,257
Int. Cl. H011 *9/00*
U.S. Cl. 317—235 R **8 Claims**



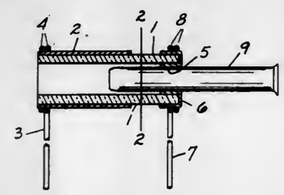
A diode which is used as the forward-biased element of a pair of series-connected diodes comprising a zero temperature coefficient voltage standard means is hardened against irradiation by neutrons. The diode can take one of several forms. These forms include diodes having thin bases and high recombination surfaces, transistors each having a plurality of collectors, each shorted to the base thereof four-layer semiconductor elements in which the middle two layers are very thin. In each case, the excess number of minority carriers is kept constant for a given current through the forward-biased element, resulting in an unchanged voltage drop at a given current after neutron irradiation.

3,617,830
MINIATURE FEED-THROUGH WIDE BAND BYPASS CAPACITOR ASSEMBLY
Vincent F. Perna, Jr., Centerport, N.Y., assignor to Phase Industries Incorporated, Huntington, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,225
Int. Cl. H01g *5/00*
U.S. Cl. 317—242 **10 Claims**



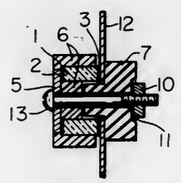
A miniature capacitor assembly comprises a plurality of capacitors each having laterally spaced plates embedded in a ceramic block with alternate plates terminating in contact members at opposite ends of the block. The capacitors are disposed in circumferentially spaced radial array inside a conductive ring with a conductive member at the center of the ring. The contact members contact the ring and conductive member respectively so that the capacitors are effectively in parallel with each other. The capacitors have different capacitance values whereby the assembly has an overall attenuation-frequency characteristic which is substantially flat over a range as high as 14 gigahertz.

3,617,831
TUBULAR TRIMMER CAPACITOR WITH AN INTERNAL MOVABLE ELECTRODE OF AN AXIALLY WOUND SPIRAL OF MORE THAN ONE TURN OF SPRING METAL
John F. Moulthrop, McKean, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.
Filed Mar. 5, 1970, Ser. No. 16,767
Int. Cl. H01g *5/01, 5/24*
U.S. Cl. 317—249 T **2 Claims**



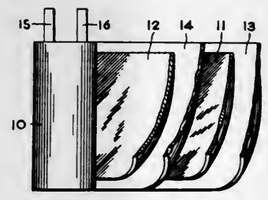
A capacitor having a tubular dielectric with a stationary external electrode and a tubular internal movable electrode of an axially wound spiral of more than one turn of spring metal having its unstressed outside diameter greater than the inside diameter of the bore of the dielectric.

3,617,832
CERAMIC CONDENSERS
Shiro Ito, and Shoichi Iwaya, both of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,215
Claims priority, application Japan, Aug. 26, 1969, Sept. 3, 1969, Oct. 8, 1969, Oct. 8, 1969, Nov. 25, 1969, Nov. 27, 1969, 44/80476; 44/83286; 44/79991; 44/95422; 44/112334; 44/112750
Int. Cl. H01g *1/03*
U.S. Cl. 317—256 **3 Claims**



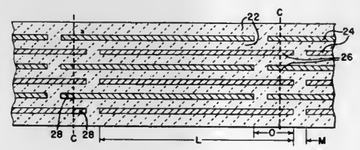
A ceramic condenser which comprises a combination of a cylindrical ceramic dielectric member having metal electrodes at both end surfaces and an insulator having a projection to be engaged in central through hole of the dielectric member. The member is provided with a connecting metal fixture as butted against one of the electrodes at the side opposite to the one receiving the insulator. A synthetic resin is molded around outer and inner peripheries of the dielectric member so as to expose the connecting metal member and the other electrode. The connecting fixture has a conductor extending through the central through holes of the dielectric member and the insulator, and threaded at its end so as to be fastened by means of a nut, so that a panel shape metal connecting plate will be held between the dielectric member and insulator as butted against exposed electrode of the member.

3,617,833
SILICATE-IMPREGNATED POLYOLEFIN CAPACITOR
Sidney D. Ross, Williamstown, Mass., and Raynor Linzey, Stamford, Conn., assignors to Sprague Electric Company, North Adams, Mass.
Filed Feb. 9, 1970, Ser. No. 9,713
Int. Cl. H01g *3/175*
U.S. Cl. 317—258 **6 Claims**



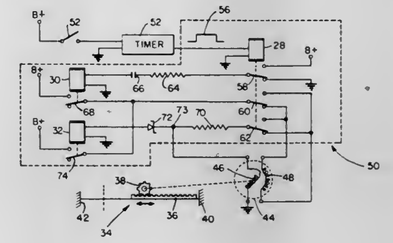
Polyolefin film dielectric capacitors are impregnated with a dielectric of a tetraalkyl orthosilicate to yield high corona starting voltage capacitors.

3,617,834
MONOLITHIC CAPACITOR COMPONENTS AND PROCESS FOR PRODUCING SAME
Charles C. Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,272
Int. Cl. H01g *3/26*
U.S. Cl. 317—261 **11 Claims**



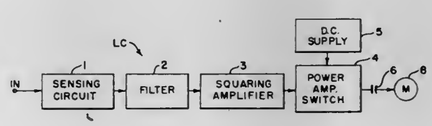
A monolithic capacitor component includes at least first and second layers separated by dielectric material and having nonoverlapping terminal portions of the electrode layers. Aligned with each electrode layer in the nonoverlapped area of the terminal portion is a nonactive electrode segment which is spaced from the electrode layer with which it is aligned. In the manufacture of such a component at least two electrode layers each having discrete electrode sections are separated dielectric and stacked and arranged relative to one another to provide overlapped terminal portions of the discrete electrode sections in the electrode layers whereby it is possible to sever the stacked and arranged dielectric and electrode layers in the area of the overlapped terminal portions to provide monolithic capacitor constructions.

3,617,835
OPERATING MEANS FOR RECIPROCATING MECHANISM
Stephen T. Dreher, Cornwells Heights, Pa.; John W. Marchetti, Cherry Hill, N.J., and Gary H. Stock, Fairless Hills, Pa., assignors to The Budd Company, Philadelphia, Pa.
Filed Sept. 29, 1969, Ser. No. 861,667
Int. Cl. H02p *3/00*
U.S. Cl. 318—266 **6 Claims**



A bidirectional motor includes armature and field windings. A switching circuit connects power to drive the motor in a first direction. A detector is responsive to a decrease in the current flow in the armature winding to stop the motor and then switch the switching circuit to apply the power to drive the motor in a second direction.

3,617,836
CONTROL CIRCUIT FOR SYNCHRONOUS MOTOR
Donald E. Henry, Davenport, Iowa, assignor to Gulf & Western Industries, New York, N.Y.
Filed July 18, 1968, Ser. No. 749,558. This application filed under rule 47.
Int. Cl. H02p *5/34*
U.S. Cl. 318—171 **11 Claims**

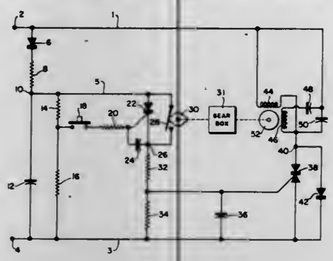


A control circuit is disclosed herein for applying signals to an inductive load, such as the winding of a synchronous motor. The circuit includes means for producing essentially a square wave signal together with a capacitor for coupling the signal to the inductive load. The average current impressed across and, hence, power consumed by the inductive load is limited by the capacitor in such a manner to prevent destruction of the inductive load at low frequencies.

3,617,837
PULSE ACTUATED MOTOR CONTROL CIRCUIT
Francis J. Beck, Churchville, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 6, 1970, Ser. No. 78,499
Int. Cl. H02p *3/24*
U.S. Cl. 318—212 **5 Claims**

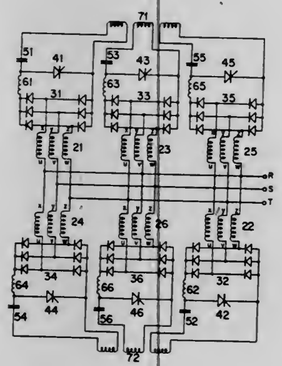
A motor control circuit includes a momentary contact closure which actuates a switching means to apply an AC signal to the motor field windings causing rotation of the motor ar-

mature. Means are also provided to detect a predetermined rotational movement of the armature and, upon attainment



thereof, to apply a DC signal to the field windings and thereby arrest the armature rotation.

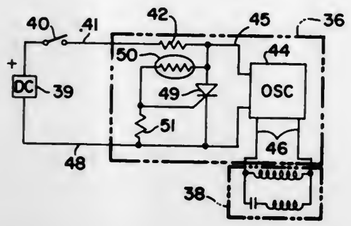
3,617,838
ARRANGEMENT FOR STEPLESS SPEED REGULATION OF A MOTOR FED WITH CURRENT FROM A CONVERTER
Armand Brandt, Luzern, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Jan. 23, 1970, Ser. No. 5,172
Claims priority, application Switzerland, Jan. 28, 1969, 1,487/69
Int. Cl. H02p *5/28*
U.S. Cl. 318—225 R **4 Claims**



A converter motor which provides a stepless variable speed control includes a pair of stator elements surrounding a common rotor which may be of the squirrel cage type. Each stator of the motor is provided with at least two open three-phase winding systems supplied from a three-phase mains and which are connected periodically with cyclically interchanged phase sequence by way of a controllable valve group to form a star point. The individual valve groups are controlled periodically with a frequency *f*2 which is different from the mains frequency *f*1 supplying the three-phase windings so that the star points of the three-phase stator winding systems are periodically closed and opened to thus establish a rotary stator field which rotates with a frequency equal to *f*2–*f*1 and which reacts with the rotor to drive the rotor at the rotational frequency of the stator field.

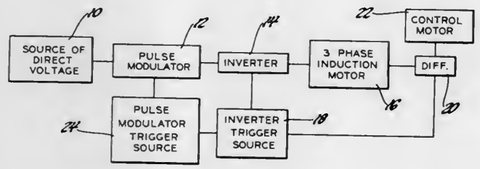
3,617,839
BRUSHLESS MOTOR AND INVERTER
Arthur Hill, North Olmsted, Ohio, assignor to Lear-Siegler, Inc., Maple Heights, Ohio
Filed Dec. 1, 1969, Ser. No. 881,085
Int. Cl. H02p *5/40*
U.S. Cl. 318—225 **7 Claims**

A control system and power supply for energizing a single-phase AC motor from a DC source for critical brush wear applications utilizing a solid-state inverter circuit and an auxiliary start winding for the motor continuously energized through a capacitor connection. An automatic shutdown feature for the motor-inverter combination is included for loss



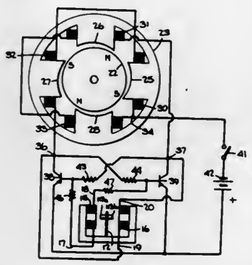
of fluid heat sink in fluid environments comprising a temperature responsive sensing element, an SCR trigger device and a power interrupter activated thereby.

3,617,840
SYNCHRONIZED INVERTER AND PULSE MODULATOR
Jalal T. Salihi, 4718 Pickering Road, Birmingham, Mich.
Filed Nov. 27, 1970, Ser. No. 93,276
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **2 Claims**



A synchronized controlled rectifier inverter and controlled rectifier pulse modulator system providing an AC output voltage when supplied a direct voltage input. The pulse modulator is connected between the inverter and a source of direct voltage to regulate the DC level supplied the inverter. In operation, controlled rectifiers in the pulse modulator are gated in synchronism with the gating of controlled rectifiers in the inverter. This synchronization is effected by an oscillator angle control and differentiator circuit which develops the necessary trigger signals.

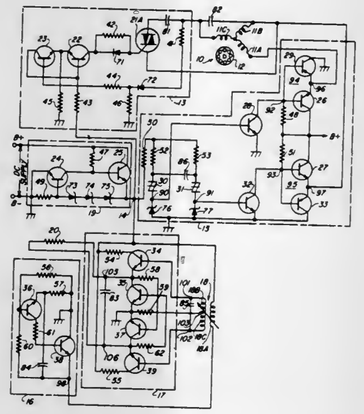
3,617,841
SELF-SYNCHRONIZING DIRECT CURRENT BRUSHLESS MOTOR
Harrison D. Brailsford, 670 Milton Road, Rye, N.Y.
Filed Oct. 31, 1968, Ser. No. 772,112
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **14 Claims**



The disclosed invention is a synchronized motor operated by direct current and having a synchronizer in the form of a

mechanical oscillator. The motor has a permanent magnet rotor and stator coils commutated by solid-state elements to produce magnetic pulses properly phased to keep the rotor turning. The mechanical oscillator has a member that oscillates at a natural frequency in response to the interaction of a permanent magnet and the pulsed field of a driving coil. The driving coil is connected to the stator coil section of the motor to receive a pulse, or oscillatory, driving signal therefrom. A pickup coil is energized by the oscillating member to produce a feedback signal at the natural frequency of the oscillating member, and this feedback signal is connected to the solid-state elements to control the timing of magnetic pulses in the stator coils thereby synchronizing the rotor speed in step with the natural frequency of the mechanical oscillator.

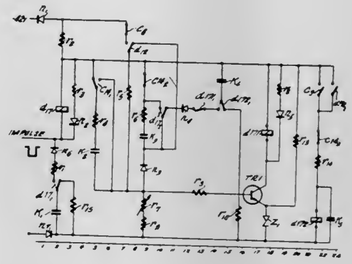
3,617,842
RATE GYRO ELECTRICAL CONTROL AND INDICATOR SYSTEM
John Van Dyke, Byron Center, and Benard Lamfers, Jenison, both of Mich., assignors to R. C. Allen Business Machines Incorporated, Grand Rapids, Mich.
Filed Jan. 27, 1969, Ser. No. 794,018
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **6 Claims**



An electrical control and indicator system for a rate gyro of the kind comprising a synchronous AC spin motor and a pickoff device for developing two AC turn rate analog signals, comprising a motor start control circuit for switching a starting capacitor into and out of the motor circuit in response to changes in the stator voltages. The system further includes an inverter power supply with driver and switch circuits to energize the motor from a DC source without appreciable loading of the inverter. The demodulator of the system is a balanced differential rectifying amplifier comprising two cross-connected emitter follower stages each using a transistor as the load impedance for the emitter follower. The start control circuit, the inverter power supply, and the demodulator all comprise a single noninductive integrated silicon circuit.

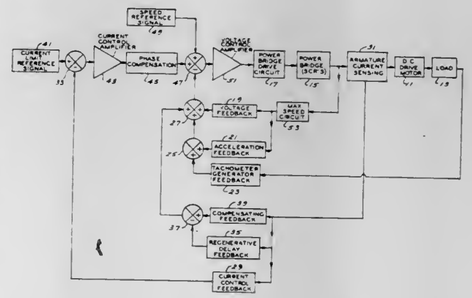
3,617,843
SLOW-MOTION CONTROL FOR PAPER-CUTTING MACHINES
Helmut Neumann, and Artur Guse, both of Hannover, Germany, assignors to H. Wohlenberg Kommanditgesellschaft, Hannover, Germany
Continuation-in-part of application Ser. No. 664,006, Aug. 29, 1967, now abandoned. This application Sept. 22, 1969, Ser. No. 859,979
Int. Cl. H02p *3/00*
U.S. Cl. 318—272 **2 Claims**

Resistor-capacitor timing control circuits are provided to start the back gauge of a guillotine type paper-cutting



machine at fast speed following each cut unless a slow speed is specifically required.

3,617,844
CONTROLLED-VELOCITY DRIVE
James W. Grygera, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed May 21, 1969, Ser. No. 826,629
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **8 Claims**

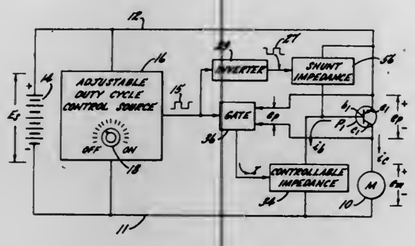


A DC controlled-velocity drive. An SCR power bridge is energized by a three-phase AC power source for supplying DC voltage to the armature of a DC drive motor when the SCR's are triggered, shifting of the phase of triggering causing variation of the DC voltage for varying the motor speed. Various regenerative and degenerative feedback circuits are employed, among them being a feedback circuit sensing this DC voltage and a feedback circuit sensing the motor armature current. These feedback circuits produce feedback signals which are compared with motor speed and armature current reference signals for the purpose of controlling the phase of triggering of the SCR's in order to maintain the motor speed substantially equal to a preselected motor speed while preventing the motor armature current from exceeding a predetermined maximum.

3,617,845
ENERGY-CONSERVING CONTROL CIRCUIT USING POWER TRANSISTORS

William F. McKenna, Rockford, Ill., assignor to Applied Motors, Inc., Rockford, Ill.

Filed Apr. 27, 1970, Ser. No. 32,269
Int. Cl. H02p 5/16
U.S. Cl. 318—341 16 Claims

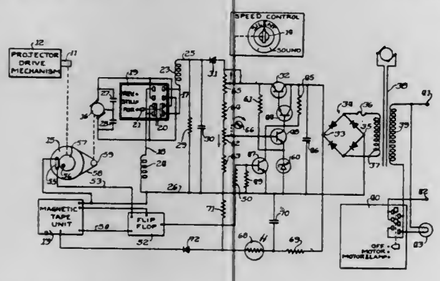


A control circuit for supplying pulses of current, with a variable duty cycle, from a voltage source through a load which may vary in its effective impedance and wherein a power transistor is in series with the load to turn the current on and off. The transistor is driven always to collector current saturation when it is turned on so that power loss in the transistor and excessive heating are substantially minimized. But when the effective load impedance is high, the base-emitter current required to saturate the transistor is considerably less than that required when the effective load impedance is low. To avoid energy dissipation and loss due to unnecessarily high emitter-base current, the base-emitter circuit includes a control transistor which acts as a controllable impedance, the control transistor receiving emitter-base current proportional to the voltage drop across the power transistor so that emitter-base current of the power transistor is always just sufficiently great to keep the power transistor saturated. The average current through the load, e.g., a DC motor, is varied by employing a multivibrator adjustable in its duty cycle to produce a control signal which alternately enables or disables the control transistor. And to avoid energy loss due to slow turnoff of the power transistor, the emitter-base junction of the power transistor is shunted by a transistor automatically switched to its conductive, low-impedance state or its nonconductive, high-impedance state by a signal from the multivibrator when the power transistor is turned on or off. These energy-conserving features are of particular benefit in applications such as speed control of a DC motor in golf carts, fork lift trucks and the like where the voltage source is a battery and maximum usage between recharges is important.

3,617,846
DC MOTOR PROJECTOR DRIVE SYSTEM

Sanford M. Hanberg, Morton Grove, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 30, 1969, Ser. No. 889,195
Int. Cl. H02p 5/16
U.S. Cl. 318—341 4 Claims

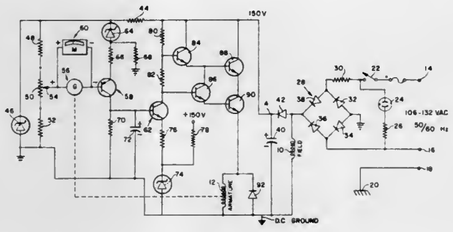


Drive system for operating a motion picture projector in synchronism with a sound reproducing unit in which a DC motor is connected to an unregulated DC voltage-supply source through a voltage-dropping device which is controlled through a first regulator circuit from a speed control signal and which is controlled through a second regulator circuit to regulate the maximum adjusted DC motor voltage. During silent operation, the first regulator circuit is inactive and the second regulator circuit is adjustable to adjust DC motor speed. During sound reproduction, the second regulator circuit is set at a relatively high voltage position (free run maximum speed). In both operations, the effect of changes in supply voltage and other variables is minimized to stabilize operation.

3,617,847
SPEED REGULATING ELECTRONIC CIRCUIT FOR DC MOTOR CONTROL

Frederick W. Powell, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 730,442, May 20, 1968, now abandoned. This application Feb. 24, 1970, Ser. No. 14,745
Int. Cl. H02p 5/16
U.S. Cl. 318—345 1 Claim



This invention relates to a speed regulating electronic circuit for a DC motor. A tachometer generator, driven by the armature shaft of the DC motor, provides a voltage signal which is a function of the instantaneous speed of the motor. The tachometer generator output voltage is combined with a reference voltage which is a function of the desired speed, and the difference is applied to a plurality of amplifiers in cascade to develop a DC potential level which is applied across n equal resistors connected in series to provide n voltage drops, where n is an integer selected from the series 2,3,4,.....n. These n voltage drops are applied to a first set of n transistor amplifiers connected in cascade, and the n outputs which they provide are applied to a second set of n transistors connected in cascade and in series with the motor armature. This arrangement insures that each transistor of the second set of n transistors will dissipate equal power, regardless of armature load current demand, with concomitant advantages in increased efficiency and lower costs.

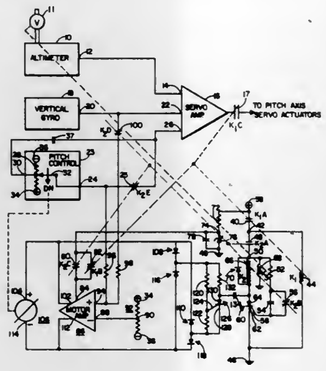
3,617,848
SYNCHRONIZATION AND ATTITUDE COMMAND NULLING APPARATUS

Robert E. Friday; Clyde M. Kobe, and James W. Locker, all of, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 10, 1968, Ser. No. 758,752
Int. Cl. G05b 7/00; B64c 13/18
U.S. Cl. 318—584 3 Claims

A pitch axis flight control having a single motor to provide preengagement synchronization of the pitch axis manual controller and automatic nulling of the control after a control mode change from an attitude hold mode to an altitude hold mode. Preengagement synchronization is provided by electrically summing outputs of a vertical gyro and the manual controller, and using the summed signal to control an amplifier and motor combination, which drives the manual controller to a position such that the vertical gyro output signal is nullified by the manual controller output. Upon switching of the system from an attitude hold mode to an altitude hold mode, a switching relay actuates an altitude error device whose

signal is combined with the vertical gyro signal and the pitch controller signal to derive a control error signal. To insure levelling off of the craft in altitude hold, a switching relay disconnects the vertical gyro signal from the amplifier and

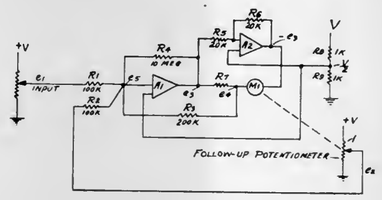


motor combination, thereby causing the pitch control potentiometer to be driven to a null output. Apparatus for automatically switching the flight control from an altitude to an attitude hold mode upon repositioning the pitch control potentiometer is also disclosed.

3,617,849
MOTOR CONTROL DAMPING CIRCUIT

Robert L. Charlton, Earlysville, Va., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 14, 1970, Ser. No. 64,543
Int. Cl. G05b 5/01
U.S. Cl. 318—616 6 Claims



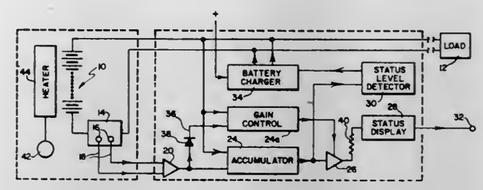
The circuit controlling the motor which actuates a control potentiometer or the like is made up of operational amplifiers and resistors connected so that, at stall, the feedback loop is not effective and the feedback loop is effective only when the motor is turning, which provides the desired rate feedback for servo damping.

3,617,850
BATTERY-STATUS DEVICE

Ernest H. Domshy, Downey, Calif., assignor to North American Rockwell Corporation

Filed Dec. 9, 1968, Ser. No. 782,199
Int. Cl. H02j 7/00
U.S. Cl. 320—31 10 Claims

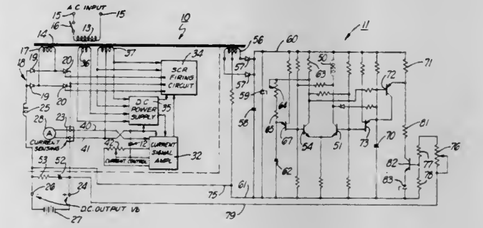
This disclosure is directed to a battery and a battery-status device that indicates at all times the energy available from a battery. The arrangement is such that it takes into consideration: the energy drawn from the battery, the energy that is pumped back into the battery, the past history of the battery (whether it has been on standby duty or has been in a constant charge/discharge usage), the age of the battery, and the temperature of the battery—the temperature measurement being useful for two purposes—namely; to heat the battery to its proper operating temperature, and to vary the status-indication to show the amount of energy available at that temperature.



3,617,851
BATTERY CHARGER WITH CONTROL CIRCUIT FOR CYCLICAL CHARGE AND DISCHARGE AS A FUNCTION OF BATTERY VOLTAGE DURING DISCHARGE

Glen O. Du Puy, and Mark Schindler, both of Los Angeles, Calif., assignors to Christie Electric Corp., Los Angeles, Calif.

Filed Sept. 29, 1969, Ser. No. 861,569
Int. Cl. H02j 7/10
U.S. Cl. 320—22 13 Claims



A battery charger for charging to full charge in a minimum time while avoiding heating, gassing and loss of electrolyte. A charger which delivers charging current during on or charge periods and which provides a load to the battery during off or discharge periods. A control circuit for controlling the duration of the on and off periods and for varying one of the periods as a function of the battery voltage prevailing during off periods, e.g., by increasing the duration of the off period as the off period battery voltage rises above a given value.

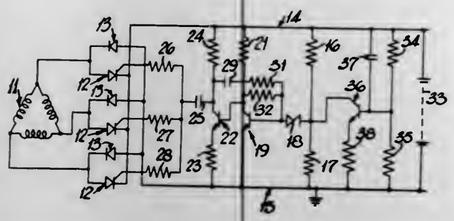
3,617,852
BATTERY CHARGING SYSTEM WITH A PERMANENT MAGNET ALTERNATOR AND MEANS FOR MINIMIZING NOISE

Lancelot Phoenix, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 10, 1968, Ser. No. 758,859
Claims priority, application Great Britain, Sept. 11, 1967, 41299/67
Int. Cl. H02j 7/14
U.S. Cl. 320—61 2 Claims

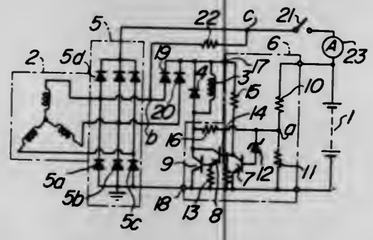
In a battery charging system the battery is connected between a pair of supply lines and is charged by a permanent magnet alternator through a combined full-wave rectifier and regulating circuit, including thyristors which are controlled to control the supply from the alternator to the battery. A voltage regulator controls the gate currents of the thyristors, and there is further provided a control circuit connected across

the supply lines and providing to the regulator an input signal which when the regulator changes state ensures that the



regulator operates to change the gate current only after a delay.

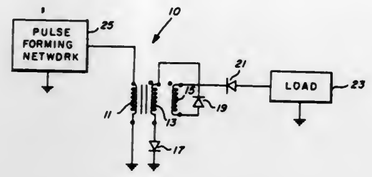
3,617,853
BATTERY VOLTAGE REGULATING SYSTEM USING A TRANSISTOR SWITCHING CIRCUIT
Yohichi Kawashima, Gifu-shi, and Hisami Mitsueda, Mie-gun, both of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan
Filed July 15, 1969, Ser. No. 841,917
Claims priority, application Japan, Sept. 26, 1968, 43/69673
Int. Cl. H02j 7/14
U.S. Cl. 320—61 **6 Claims**



This specification discloses improvements in or relating to a power source system comprising a three-phase AC generator, a three-phase full-wave rectifier for rectifying the output from the three-phase AC generator, a battery connected with the output terminal of the three-phase AC generator, and a voltage regulating system for controlling the excitation of the generator so as to maintain the terminal voltage of the battery at a predetermined value. The improvements particularly relate to the voltage regulating system, and lie in that a transistor switching circuit is provided with feedback to cause a switching hysteresis for minimizing high-frequency switching noise while the source voltage of the transistor voltage regulating system which has hitherto been derived from a three-phase full-wave rectifier circuit, is derived from a two-phase full-wave rectifier circuit, to provide a periodic off-time for preventing undue battery voltage deviations that might otherwise be caused by such switching hyteresis and in order to economize the number and size of components to be used, and to improve the regulating characteristic as well as to facilitate the compact construction of the entire system.

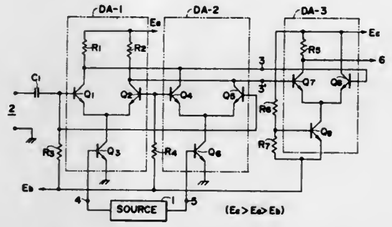
3,617,854
PULSE TRANSFORMER
Benjamin R. Cole, Arlington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Apr. 20, 1970, Ser. No. 29,813
Int. Cl. H02m 7/00
U.S. Cl. 321—15 **3 Claims**

An electromagnetic transformer of special design which, when operated with associated circuitry, exhibits, during at least one portion of each cycle of operation, a lower interwinding capacitance than known transformers of comparable design. The secondary winding, or windings, of the disclosed transformer consist of a plurality of single layer segments, successive ones of such segments being joined through a diode in such a manner that, when a signal of a given polarity is applied to the primary winding of the transformer, the



diodes conduct to connect the segments in series and when a signal of opposite polarity is applied to the primary winding of the transformer the diodes are cut off to disconnect the segments one from the other. In the latter condition the interwinding capacitance of the transformer is a minimum.

3,617,855
PHASE-DETECTING CIRCUITS
Chosaku Hisatsu, Chigasaki, Japan, assignor to Nippon Oceanics Institute, Ltd., Katase, Fujisawa, Japan
Filed Sept. 23, 1970, Ser. No. 74,809
Claims priority, application Japan, Apr. 24, 1970, 45/34930
Int. Cl. H02m 5/00; H03f 21/00
U.S. Cl. 321—51 **2 Claims**

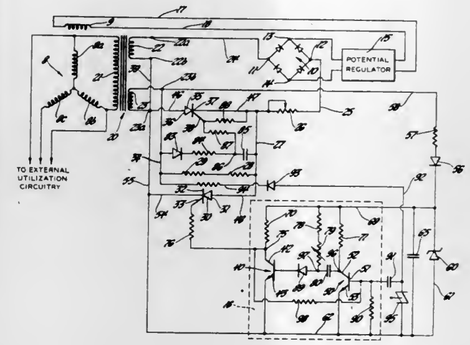


A circuit for detecting the phase of an AC input signal comprises first and second differential amplifiers connected in parallel, means to render the first and second differential amplifiers ON and OFF with a phase difference of 180° in response to the AC input signal, and a third differential amplifier which compares outputs from the first and second differential amplifiers to provide a DC output having a polarity related to the phase of the AC input signal.

3,617,856
ALTERNATOR UNDER-FREQUENCY DETECTING CIRCUIT
Richard N. Lehnhoff, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 18, 1970, Ser. No. 90,623
Int. Cl. H02p 9/26, 9/42
U.S. Cl. 322—24 **5 Claims**

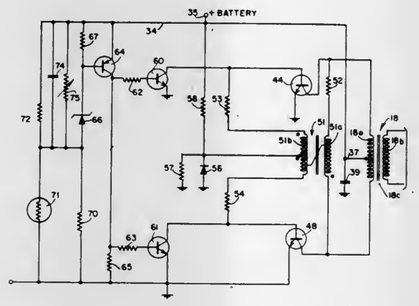
An alternator under-frequency detecting circuit for reducing the alternator output potential with conditions of less than normal output potential frequency. A source of each an alternating current sensing potential and an alternating current auxiliary sensing potential are connected in series aiding relationship across the alternating current input circuitry of a sensing potential rectifier circuit and a pair of silicon-controlled rectifiers are connected in an opposite polarity relationship across the source of alternating current auxiliary sensing potential. A trigger signal, produced at the beginning of each selected half-cycle of the alternating current auxiliary sensing potential for a predetermined duration of time

greater than the normal frequency period of the selected half-cycles is applied across the gate-cathode electrodes of one of the silicon-controlled rectifiers. With normal alternator output potential frequency, the silicon-controlled rectifiers are triggered conductive to effectively shunt the auxiliary sensing potential from the rectifier circuit and the alternator-rectifier system functions normally. With less than



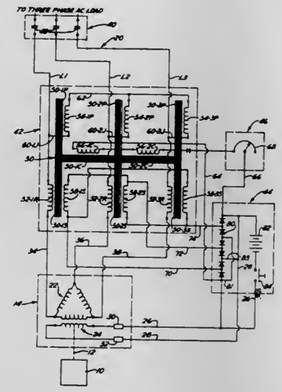
normal alternator output potential frequency, the silicon-controlled rectifiers are not triggered conductive, consequently, the sensing and auxiliary sensing potentials are applied across the rectifier circuit in a series aiding relationship, are rectified thereby and sensed by a potential regulator circuit which decreases the alternator field excitation and output potential magnitude.

3,617,857
VOLTAGE REGULATOR FOR BRUSHLESS ALTERNATOR
Philip D. Gunderson, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed May 26, 1970, Ser. No. 40,589
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **5 Claims**



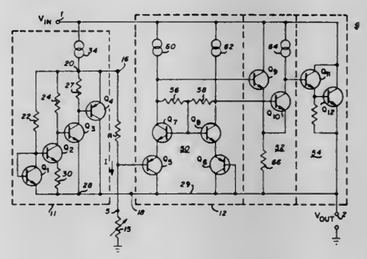
A voltage regulator for brushless alternators including an oscillator circuit which has the output thereof fed into a stationary, primary winding of a rotary transformer device which, in turn, has a secondary winding thereof rotatable with the rotor shaft of the alternator. The oscillator is a free running oscillator at substantially a fixed frequency and the output of the alternator is fed back to a voltage sensor circuit which, in turn controls the oscillator between fully on and fully off conditions to regulate the output therefrom to the primary winding of the rotary transformer thereby regulating the power output of the alternator.

3,617,858
EXCITATION OF ALTERNATING CURRENT MACHINERY
Edward G. Oder, Jr., Sulphur Springs, Tex., assignor to Warren Petroleum Corporation, Tulsa, Okla.
Filed July 7, 1969, Ser. No. 839,307
Int. Cl. H02p 9/32
U.S. Cl. 322—76 **10 Claims**



An excitation and control system for heavy-duty electricity generating machines wherein a single-transformer and rectifying means is provided to serve all control purposes. The transformer is provided with an arm for each phase which carries a control coil tapped into the rectifying means. By manually adjusting a rheostat, saturation of the transformer core between the primary and secondary coils is controlled to finely control output voltage. The entire system has no moving parts and may be sealed.

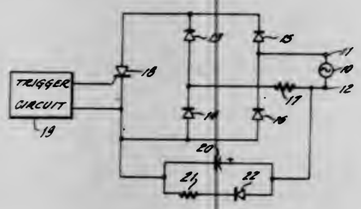
3,617,859
ELECTRICAL REGULATOR APPARATUS INCLUDING A ZERO TEMPERATURE COEFFICIENT VOLTAGE REFERENCE CIRCUIT
Robert C. Dobkin, Menlo Park, and Robert J. Widlar, Mountain View, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Mar. 23, 1970, Ser. No. 21,968
Int. Cl. G05f 1/58
U.S. Cl. 323—4 **12 Claims**



An integrated circuit regulator including a temperature stable constant voltage reference wherein the negative temperature coefficient of the base-to-emitter voltage a first transistor in conjunction with the positive temperature coefficient of the base-to-emitter voltage differential between two additional transistors operating at different current densities is used to achieve a zero temperature coefficient reference potential. The constant voltage reference is combined with a voltage follower and provides a source of constant current which is passed through an external variable resistance to develop a selectable and predictable adjustment voltage for

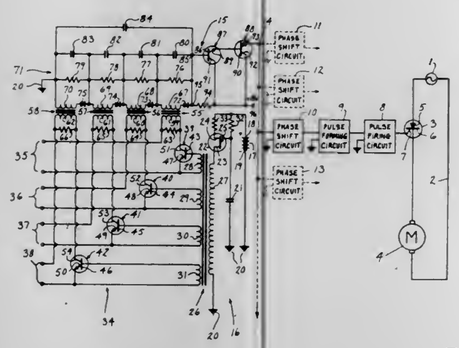
driving the voltage follower so as to cause an unregulated input voltage applied thereto to be regulated at an output terminal.

3,617,860
THYRISTOR VOLTAGE CONTROL CIRCUIT WITH COMMUTATING CAPACITOR
Richard J. Williams, Carson, and Paul Pavljuk, Los Angeles, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.
Filed July 9, 1970, Ser. No. 53,424
Int. Cl. G05f 1/44
U.S. Cl. 323—19 **7 Claims**



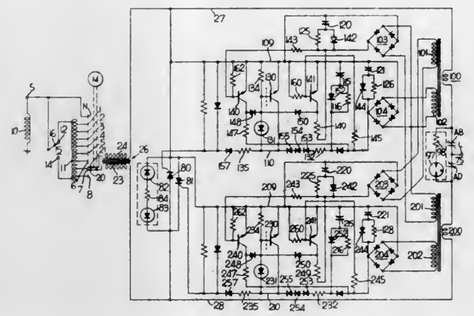
An AC voltage control circuit contains a full-wave bridge rectifier in series with an AC voltage source and load, and a thyristor is connected across the DC terminals of the bridge. A commutating circuit including a capacitor in parallel with a series connected diode and discharge resistor is connected between the source terminal end of the load and a terminal of the thyristor and extends the available turnoff time of the thyristor.

3,617,861
CIRCUIT FOR SUMMING ELECTRICALLY ISOLATED SIGNALS
David E. Ford, Jr., Milwaukee, and Richard W. Waltz, New Berlin, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed Feb. 6, 1970, Ser. No. 9,216
Int. Cl. H02p 13/16; H02m 5/28
U.S. Cl. 323—33 **6 Claims**



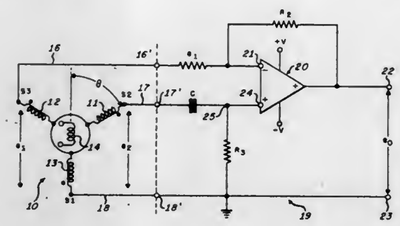
A control circuit for an SCR that is capable of responding to a plurality of electrically isolated input signals has a summing circuit connected to its input terminals to sum functions of the input signals. The summed signals are phase synchronized with formed SCR in a Phase Shift Circuit. The synchronized signal is formed into pulse trains functional of the summed input signals. The pulse trains are shaped in a pulse firing signal, which is connected to the SCR gate. The summing circuit chops the DC input signals with a reference carrier and sums the resulting envelopes in the secondaries of output coupling transformers.

3,617,862
ARCLESS LOAD TAP CHANGING APPARATUS
Frederick A. Stich, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 31, 1969, Ser. No. 889,639
Int. Cl. H02p 13/06; G05f 1/14
U.S. Cl. 323—43.5 S **29 Claims**



A load tap changing voltage regulator has a dial type tap-changing switch and an odd-even switch integral therewith having first and second pairs of contacts connected in series with first and second rotatable tap changer contacts forming first and second load circuits, and the odd-even switch contacts open before the corresponding tap changer rotatable contact disengages a stationary contact and close after it engages a succeeding stationary contact. A pair of oppositely poled thyristors are connected across the first and second load circuits. First and second current transformers are connected in the first and second load circuits and energize bridge rectifiers which supply gating current to the thyristors and also indicate whether the load circuits are open or closed. RC time delay circuits responsive to the opening of either load circuit remove the gating signals to the thyristors after a predetermined time delay, thus assuring that the tap changer switch contacts and the odd-even switch contacts do not interrupt current and that the current is commutated off by the thyristors at current zero. Shunt regulators between the bridge rectifiers and the cathode-gate circuits of the thyristors regulate the power dissipation of the gate circuits, and the shunt control elements are biased in the active region to permit gating current to flow to the thyristors when both load circuits are closed and they are biased into saturation to shunt gating current from the thyristors a predetermined interval subsequent to the opening of either of the pairs of odd-even switch contacts.

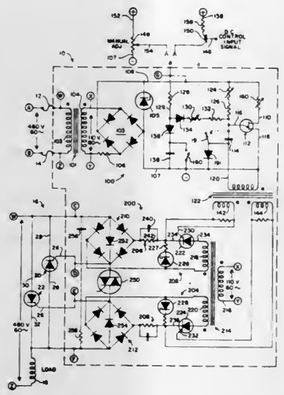
3,617,863
CONSTANT AMPLITUDE-VARIABLE PHASE CIRCUIT
David A. Espen, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed Apr. 2, 1970, Ser. No. 25,004
Int. Cl. G05f ; G01r 25/10
U.S. Cl. 323—109 **9 Claims**



An electronic circuit including an operational amplifier having a differential input stage coupled to passive linear

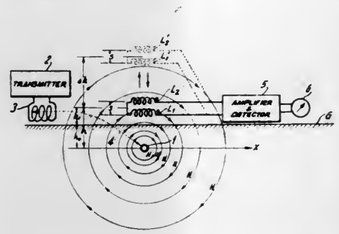
input and feedback circuit components for converting three wire synchro-type data to an equivalent constant amplitude-variable phase signal.

3,617,864
SOLID-STATE PHASE CONTROL PANEL
David J. Senger, 406 S. Hester, Stillwater, Okla.
Filed May 18, 1970, Ser. No. 38,415
Int. Cl. G05f 1/40; H03k 17/00
U.S. Cl. 323—22 SC **9 Claims**



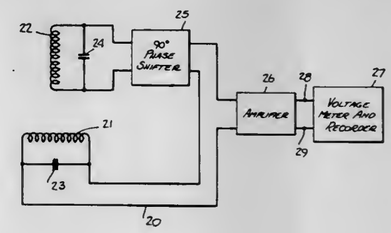
An air-cooled phase control panel, including two controlled rectifiers, is designed to supply regulated amounts of power to a heavy industrial load such as a resistance welding unit. A trigger delay capacitor limits the power initially supplied to the load and protects the controlled rectifiers from starting transient currents. This trigger delay capacitor makes it possible to use high-speed overcurrent circuit breakers in series with the controlled rectifiers. A voltage breakdown device connected between the trigger terminals of the rectifiers protects the rectifiers from voltage transients. A trigger pulse amplifying and peaking circuit insures that the controlled rectifiers are rendered fully conductive in the minimum possible time and thus prevents any localized thermal destruction from occurring within the controlled rectifiers. Both single and multiple-phase embodiments are disclosed.

3,617,865
METHOD AND APPARATUS FOR LOCATING A BURIED METALLIC LINE EMPLOYING MAGNETIC FIELD GRADIENT MEASUREMENTS
Goroku Hakata, 6-17-4, Matsubara, Setagaya-ku, Tokyo-to, Japan
Filed May 22, 1969, Ser. No. 826,898
Claims priority, application Japan, May 25, 1968, 43/35328
Int. Cl. G01r 33/02; G01v 3/00
U.S. Cl. 324—3 **7 Claims**



A method and apparatus for locating a buried metallic line such as, for instance, a power line, telephone cable, water pipe, gas pipe, etc. without digging. An AC current is placed through the buried metallic line by direct connection or electromagnetic induction at a frequency of, for example, 100 kc., and the gradient of the magnetic field generated by the AC current is measured on a first and a second level above the ground surface. The lateral position on the ground surface where the metallic line is buried, is determined by the maximum reading of the magnetic field gradient when it is measured along the first level, while the depth of the buried metallic line may be obtained by comparing the magnetic field gradients measured on the first and second levels, respectively, at the detected position. The apparatus essentially comprises an AC signal generator to be connnected or coupled to the buried metallic line, at least one pair of differentially connected parallel coils, and means for measuring the voltage inducted in the coil pair. Since the field gradient is measured rather than the magnetic field, itself, any uniform magnetic field such as the field directly generated by the AC signal generator will not affect the positional information derived from the measurement, and thus the accuracy of the location of the buried metallic line is not adversely affected.

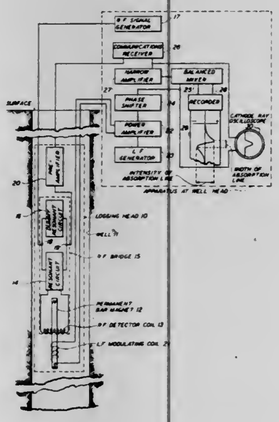
3,617,866
GEOPHYSICAL SURVEYING WITH AUDIO FREQUENCY ELECTROMAGNETIC FIELDS AND ORTHOGONAL RECEIVER COILS
John Shillington Dowsett, and Russell David Leask, both of Copper Cliff, Ontario, Canada, assignors to The International Company, Inc., New York, N.Y.
Filed June 10, 1969, Ser. No. 831,833
Claims priority, application Canada, Mar. 7, 1969, 045045
Int. Cl. G01v 3/16
U.S. Cl. 324—4 **16 Claims**



Method and apparatus for conducting electromagnetic geophysical surveys, including airborne electromagnetic surveys, to explore for electrically conductive ore bodies while radiating audiofrequency electromagnetic fields over the terrain being surveyed. Two mutually perpendicular receiver coils each pickup (or generate) electric signals from an electromagnetic field at one frequency and, advantageously, an additional receiver coil, or two additional receiver coils arranged as a mutually perpendicular pair, pickup signals from another field at a second frequency. Receiver coils in mutually perpendicular pairs are electromagnetically matched to provide mutually equal electromagnetic pickup capabilities and are disposed in a position of minimum mutual coupling. Signals from a matched pair of receiver coils are maintained in undistorted form and are subjected to a 90° phase shift and then combined to sum or add the signals vectorially to each other to obtain a resultant signal having a magnitude responsive to both the magnitude and the phase of secondary, possibly phase-shifted, fields when received with the primary field over terrain being surveyed and provide high discrimination of desired anomalous electromagnetic effect signals, such as occur above electrically conductive ore bodies, from undesired noise signals such as maneuver noise. Summing the receiver coil signals after 90° phase shift is introduced functions to suppress maneuver noise otherwise tending to arise during rotational variation of the orientation of a search coil in the transmitted field and also serves to enhance desired anomalous electromagnetic effects. In certain advantageous embodiments, additional signals are picked up at a second frequency, the magnitudes of signals

received at the two frequencies are electrically compared and a resultant difference signal responsive to magnitude and phase effects of secondary fields, when present, is produced and provides especially high discrimination of desired anomalous effect signals over noise signals.

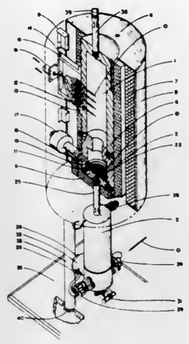
3,617,867
METHOD AND APPARATUS FOR WELL LOGGING UTILIZING RESONANCE
Gerherd Herzog, Houston, Tex., assignor to Texaco Inc.
Continuation-in-part of application Ser. No. 238,754, July 26, 1951, now abandoned. This application July 17, 1953, Ser. No. 368,547
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 **69 Claims**



1. In well logging, the improvement which comprises producing a unidirectional magnetic field in a region including earth adjacent the well, simultaneously producing in the same region an alternating magnetic field having a component of its vector transverse to that of the unidirectional magnetic field, the alternating magnetic field being tuned to the resonance frequency for nuclei of atoms present in a substance contained in the region, and detecting the resulting input of energy from the alternating magnetic field to the nuclei.

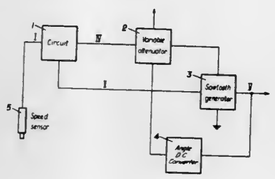
3,617,868
RESISTIVITY CELL INCLUDING A GROUNDED SHIELD FOR LIQUID-SOLID MIXTURES
James E. Beitel, Englewood, Colo; Eugene Allen Breitenbach, and Charles R. Bruce, Colo. Assignor to Marathon Oil Company, Findlay, Ohio
Filed June 9, 1969, Ser. No. 831,676
Int. Cl. G01n *27/04*
U.S. Cl. 324—13 **11 Claims**

The resistivity of drilling fluid components, e.g. mud solution, mud cake, and mud filtrate water, are determined using a pressurized and heat controlled cylindrical cell to simulate bore hole conditions. The cell has an upper mud receiving portion separated from a lower mud filtrate receiving portion by a porous partition upon which mud cake deposits. Three sets of electrodes, preferably the four electrode type, extend into each of the mud, mud cake, and mud filtrate receiving portions, so that upon application of current, across the two outer electrodes in each of the three systems and upon taking a voltage reading across the two inner electrodes of each of the three systems, the resistivity of the mud, mud cake, and mud filtrate, may be determined. Knowledge of these resistivity values is helpful in further determining subterranean



formation parameters, such as fluid saturation, porosity, and permeability.

3,617,869
CIRCUITRY FOR THE PRODUCTION OF A SPEED-PROPORTIONAL DEFLECTING VOLTAGE
Reimar Germann, and Siegbert Haase, both of Graz, Austria, assignors to Hans List, Graz, Austria
Filed May 14, 1969, Ser. No. 824,643
Claims priority, application Austria, Apr. 18, 1969, A 3802/69
Int. Cl. G01m *15/00*
U.S. Cl. 324—15 **1 Claim**

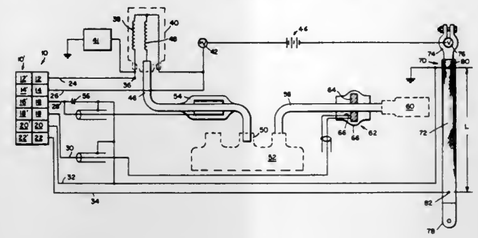


A circuit for the generation of a deflecting voltage for the time-base deflection of an oscilloscope, which deflection is proportional to the speed of an engine and including a sawtooth generator controlled by the input pulses of a speed sensor on the engine. A variable attenuator regulates the slope of the sawtooth generator deflecting voltage so as to vary the frequency of the sawtooth voltage in accordance with the repetition rate of the engine ignition signals.

3,617,870
AUTOMOBILE CONNECTOR APPARATUS FOR USE WITH AN ELECTRONIC ANALYZER
Peter A. Howes, La Verne, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Aug. 1, 1969, Ser. No. 846,822
Int. Cl. G01m *15/00*
U.S. Cl. 324—15 **9 Claims**

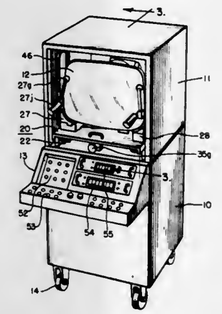
Connector and sensor apparatus permanently installed at probe pickup locations in an automobile's electrical system, for connection to an electronic analyzer. A current probe included by the apparatus involves the determination of a length of a battery ground cable relating voltage difference

across the determined length to current passing through the cable in a calibrated manner, and connecting the determined



length to the analyzer for measuring voltage difference thereacross.

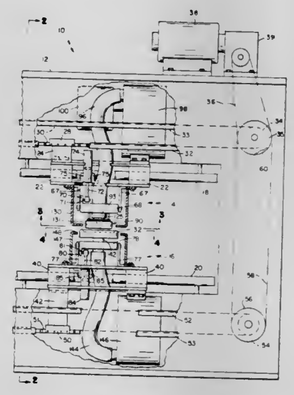
3,617,871
FINAL TEST ARRANGEMENT FOR COLOR CATHODE-RAY TUBE
Emil Rogus, and Michael S. Tamkin, both of Chicago, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,012
Int. Cl. G01r *31/24*
U.S. Cl. 324—20 **16 Claims**



A test cart has an upper compartment into which a shadow mask color tube is loaded, being received in a movable workholder with the tube axis aligned with a horizontal reference axis. The workholder carries the tube into proper operating relation with respect to the usual accessories such as deflection yoke, convergence assembly, blue lateral, purity coil and tube socket. Various electrical systems are housed in the lower compartment of the cart, supplying energizing potentials and electrical signals necessary to test the tube in an environment closely simulating that of a color television receiver. A digital voltmeter is controlled by a function switching deck for convenient measurement of the operating characteristics of the tube under test.

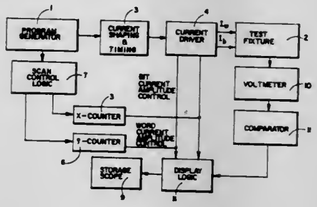
3,617,872
MAGNETIC THICKNESS GAUGE WITH A GAS-SUPPORTED SENSOR AND A SUCTION SOURCE IN THE BASE
John J. Horn, East Greenwich, and George E. Corneau, Central Falls, both of R.I., assignors to Indev, Inc., Pawtucket, R.I.
Filed Oct. 6, 1969, Ser. No. 864,130
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 TK **8 Claims**

In an apparatus for measuring the thickness of material including a magnetic sensor forming an incomplete magnetic circuit, a gas source, structure defining a gas-confining chamber in communication with said gas source providing a gas cushion on the top surface of said material for supporting the sensor a fixed distance above the top surface of said material, and readout means for producing a signal dependent on relative vertical sensor movement, the improvement comprising material support structure including a supporting member formed of magnetic material to complete a magnetic circuit with the sensor, and providing a flat supporting surface located opposite the sensor and contacting the underside of the material, a suction source, and structure providing



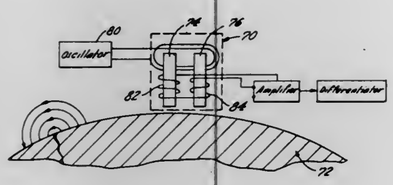
communication between the suction source and the underside of the material adjacent said flat supporting surface to maintain the underside of the material flush against the flat supporting circuit such that parameters of the magnetic circuit due to the distance between the sensor and the magnetic supporting member are dependent solely on the thickness of the material.

3,617,873
SYSTEM FOR GENERATING SWITCHING WINDOW FOR PLATED WIRE
Glenn W. Murray, Irvine, and Bruce A. Kaufman, Los Angeles, both of Calif., assignors to North American Rockwell Corporation
Filed Dec. 22, 1969, Ser. No. 887,153
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 R **3 Claims**



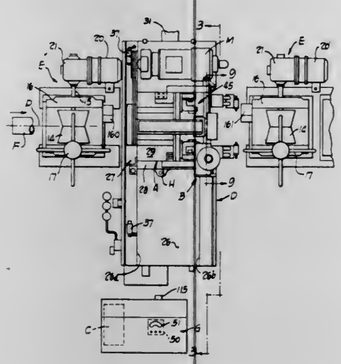
Counters are used to sweep word and bit currents for a plated wire sample in a synchronous incremental manner over a matrix in an X-Y plane. The output from the plated wire at each X-Y coordinate is compared with a reference voltage. If the output voltage is less than the reference voltage, a dot is generated on a display oscilloscope. If the voltage is in excess of the reference voltages, the dot is blanked out. The sweeping continues until the wire has been tested for all values of word and bit current. The switching window display (area of blanked dots) on the oscilloscope is thereby generated automatically.

3,617,874
MAGNETIC LEAKAGE FIELD FLAW DETECTOR UTILIZING TWO RING CORE SENSORS
Friedrick M. O. Forster, Der Schoene Weg 144, 741 Reutlingen, Germany
Continuation of application Ser. No. 661,458, Aug. 17, 1967. This application Apr. 13, 1970, Ser. No. 28,172
Int. Cl. G01r 33/12
U.S. Cl. 324—37 3 Claims



This invention is concerned with magnetic flaw detection. A magnetic field is impressed upon a workpiece, which field is distorted in the region of a flaw. The flaw detector employed consists of a ring core of magnetic material. An energizing coil is wound upon the core to create a magnetic field totally within the core. A pickup winding is wound diametrically about said core. When the core is scanned across the workpiece the core intercepts the leakage field of the flaw. The interaction of the leakage field and the energized field in the core create an output signed on the pickup winding. Two cores can be used together to yield a signal indicative of the gradient of the stray field.

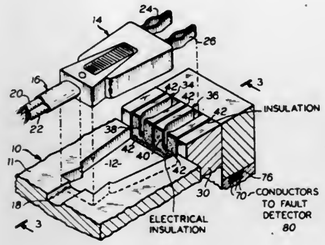
3,617,875
METHOD AND APPARATUS FOR DETECTING DEFECTS IN ARTICLES AND FOR MARKING THE LOCATIONS OF DEFECTS DETECTED IN THE ARTICLES
Joseph M. Mandula, Seven Hills, and John B. Fox, Shaker Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Jan. 24, 1969, Ser. No. 793,652
Int. Cl. G01r 33/12
U.S. Cl. 324—37 17 Claims



Apparatus for electrically detecting and marking defects in metal articles includes inspection devices for orbiting about a moving article to detect flaws in the article, a logic unit associated with the inspection devices for processing inspection information provided by the devices, and a marker unit operated by output signals from the logic unit to mark the locations of the flaws.

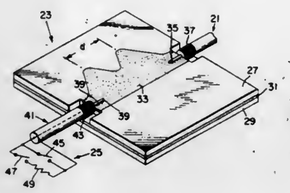
The disclosed apparatus also includes a calibration device for quick and simple calibration of the inspection devices.

3,617,876
MOLD ELECTRICAL TESTER FOR MOLDED CORDS
Daniel E. Robinson, Metuchen, N.J., assignor to General Cable Corporation, New York, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,258
Int. Cl. B22d 19/04; G01r 31/02
U.S. Cl. 324—51 14 Claims



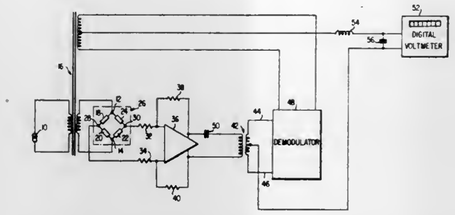
This mold for the terminations of electrical cords and harnesses has electrically conductive walls of the mold insulated from electrically conductive walls of holders for prongs or sockets of the mold termination; and the holders for the different prongs and sockets are insulated from one another. Conductors from these insulated walls lead to a fault detector which indicates defects such as open circuits, short circuits, crosses or "whiskers" in the cord or harness at the completion of the molding operation, thus providing an automatic test and eliminating the usual separate testing step in the manufacture of electrical cords and harnesses.

3,617,877
COAXIAL LINE MEASUREMENT DEVICE HAVING METAL STRIP FILTER
Charles A. Hobson, Fremont, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 1, 1969, Ser. No. 838,166
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 6 Claims



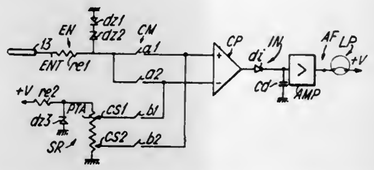
A coaxial line measurement device having a step function generator connected to the input of a coaxial line to be tested. The output of the coaxial line is connected to a sinusoid impedance anomoly device having a metal strip that has a physical configuration corresponding to the signal to be filtered. The step function signal is filtered and then the filtered signal is reflected back through the coaxial line and is compared to a signal from the step function generator that has been filtered and reflected by the sinusoid impedance anomoly device when the coaxial line is removed. The difference in the compared signals indicates the attenuation by the coaxial line under test. The device may be also used to measure the characteristics of antennas.

3,617,878
AC TO DC HIGH-ACCURACY LOW-LEVEL VOLTAGE MEASURING SYSTEM
Donald A. Senour, Carlisle, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.
Filed Apr. 21, 1969, Ser. No. 817,809
Int. Cl. G01r 27/00
U.S. Cl. 324—57 5 Claims



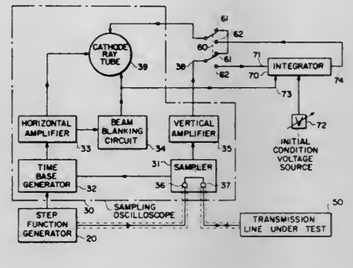
An AC to DC system is provided for measuring with high accuracy the low-level output voltage signals from an AC—excited Wheatstone—bridge-type circuit arrangement including electrical strain-responsive elements in its arms. In such a circuit arrangement, output voltages from the initially balanced bridge will be caused by a change in impedance of the strain-responsive elements due to external influences which are to be measured. The output signals from the bridge circuit arrangement are operationally amplified, demodulated to DC, and then read by a digital indicator, such as a digital voltmeter, to give an indication proportional to the to-be-measured influences upon the electrical strain responsive elements. A second demodulator may be used to compensate for system lead resistance and any demodulator inaccuracy, by using the output thereof to control the AC excitation applied to the bridge circuit arrangement input. The second demodulator output may also be directly applied as a reference input for a ratiometer-type digital indication. In one particular application, the strain-responsive elements are mounted as part of a load cell or transducer, and, when loads are applied to the same, the system output indications will be accurately related to the applied load.

3,617,879
APPARATUS FOR AUTOMATICALLY INDICATING WHETHER OR NOT A TEST JOINT IN A CIRCUIT IS ABOVE OR BELOW A PREDETERMINED REFERENCE POTENTIAL
Robert E. F. Mugnier, Annecy (Haute-Savole), France, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,998
Int. Cl. G01n 27/00
U.S. Cl. 324—57 R 1 Claim



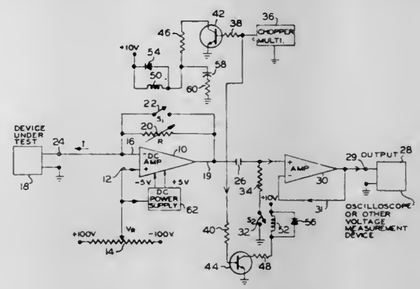
A testing method including the step of applying a rectangular wave to a logic circuit under test. Different points in the circuit under test are then probed and a signal lamp lights if the test point potential is sufficiently high or sufficiently low. The test point potential is compared with a reference. Duplicate indicators may be used to test for both high and low practically at the same time and without any operating switch. Alternatively, a double-pole, double-throw switch may be used with one indicator to test for either high or low. However, one or the other but not both low and high may be tested for in a single position of the switch.

3,617,880
TIME DOMAIN REFLECTOMETER
George D. Cormack, and Ronald P. Manning, Ottawa, Ontario, Canada, assignors to Northern Electric Company, Limited, Montreal, Quebec, Canada
Filed May 15, 1970, Ser. No. 37,724
Int. Cl. G01r 27/06
U.S. Cl. 324—57 4 Claims



A typical sampling time domain reflectometer (T.D.R.) apparatus is modified by the addition of an integrator which can be selectively switched into and out of the vertical signal path. The integrator is utilized to integrate signals reflected from any reactive discontinuity in a transmission line under test. The amplitude of the integrated signal is utilized to enable the accurate determination of the reflection coefficient. The derived results are substantially unaffected by variations in the rise time of the step function signal. In addition, the apparatus' independence from the step function signal rise time enables the use of a longer rise time and thus the system's bandwidth requirement is lessened to the point where a real time T.D.R. apparatus may be utilized.

3,617,881
DC VOLTAGE-TESTING AND CURRENT-MEASURING CIRCUIT INCLUDING DIFFERENTIAL AMPLIFIER
John J. McCormick, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Nov. 24, 1969, Ser. No. 879,393
Int. Cl. G01n 27/00
U.S. Cl. 324—57 R 11 Claims



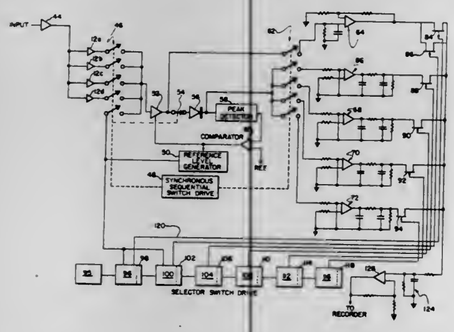
A circuit for measuring DC current flowing through a device under test at a known applied DC reference voltage is described in which a high-gain DC coupled differential amplifier is employed with a positive input connected to an adjustable source of such reference voltage and a negative input connected to the test device and to its output through a feedback resistor. The feedback resistor is initially short circuited by a first switch to produce on the output and negative input a DC voltage corresponding to the reference voltage because of the high gain and causes a DC current signal to flow through the device under test. Then, the first switch is subsequently opened to cause the current signal to be transmitted through the feedback resistor, rather than such switch, and produce a corresponding voltage step signal at the output of the amplifier. This voltage step signal is propor-

tional to the current signal and is transmitted through a coupling capacitor and an output amplifier to a voltage measurement device. The output terminal of such capacitor may be connected to ground through a second switch, which is initially closed to provide the step signal with a quiescent voltage level of zero, and is opened immediately before the opening of the first switch to prevent "droop" in the top of such step signal.

3,617,882
SPECTRUM ANALYZER WITH VARIABLE NORMALIZING MEANS AND MEANS FOR INDICATING THE DEGREE OF NORMALIZATION

Ken Y. Ishikawa, Bellflower, and Charles R. Johnson, La Mirada, both of Calif., assignors to North American Rockwell Corporation

Filed July 17, 1969, Ser. No. 842,503
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 E **3 Claims**



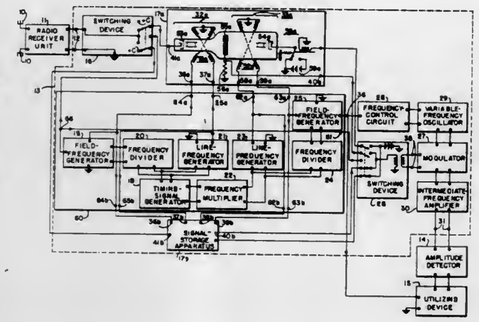
A number of signals that can vary over a wide dynamic range and having a broad range of low-frequency variation are processed by long term integration circuits and then selectably switched for recording or display of an accurate and precision representation of frequency components and amplitudes. Precision processing of the signals is enabled by an electronic data-normalizing system that is interposed between the bank of input filters and the processing equipment. The recording or display includes an arrangement for sensing a unique phenomenon in the signals being received and initiating operation of the recorder at such time so as to record anomalous conditions. Information displayed is accompanied by a reference signal having a predetermined magnitude and coded to indicate a range of magnitude variations of the incoming signals.

3,617,883
SPECTRUM-ANALYZING SYSTEM

Donald Richman, Flushing, N.Y., assignor to Hazeltine Research, Inc., Chicago, Ill.

Filed Apr. 4, 1952, Ser. No. 280,456
Int. Cl. G01r *23/14*
U.S. Cl. 324—77 C **7 Claims**

1. A spectrum-analyzing system comprising: a circuit for supplying the signals in a predetermined frequency spectrum; a plurality of signal-storage devices; means for causing said devices individually to be responsive to said supplied signals during different groups of recurrent intervals having durations longer than the interludes therebetween for individually storing effects representative of those of said supplied signals occuring during different ones of said groups of intervals, said groups of intervals being staggered in time and partially overlapping to diminish aperture distortion in the storing of said effects; a signal-deriving apparatus coupled to said storage devices; means for causing said deriving apparatus to be sequentially responsive to said stored effects at times corresponding to said interludes for deriving during each interlude from the effects stored in one of said intervals and at a rate higher than the storing rate thereof a plurality of groups of signals, each derived group being representative of those of said supplied signals occurring during said one interval; and signal-selecting means coupled to said deriving device

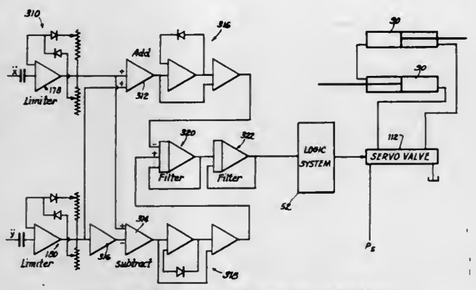


and including a network having a pass band narrow relative to the frequency range of each of said groups of derived signals for sequentially developing signals each having the frequency limits of said network and individually representative of different frequency bands of said groups of derived signals.

3,617,884
PHASE ANGLE MEASURING SYSTEM FOR VIBRATION DAMPERS OR THE LIKE

James A. Bonesho, Alexandria, Va., and John Gustave Bollinger, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 784,283, Dec. 6, 1968, Pat. No. 3,483,951.
Filed Aug. 18, 1969, Ser. No. 862,137
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 A **1 Claim**



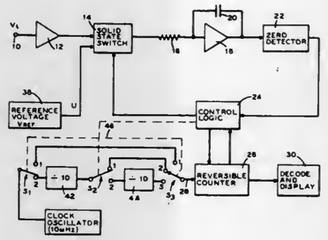
ANALOG CONTROL CIRCUIT FOR PHASE ANGLE MEASUREMENT THAT USES NO MULTIPLIERS

The disclosed system measures the phase angle between two signals and produces an error or difference signal which changes polarity at an angle of 90° and is a linear function of the phase angle. The system comprises first and second limiter means for deriving square waves of fixed amplitude corresponding to the first and second input signals. The sum and difference of such square waves are derived by adder means and first subtracter means. First and second absolute value means are provided to derive the absolute values of such sum and difference. Second subtracter means are utilized to derive the difference between such absolute values. Means are then provided to derive the mean value of the last mentioned difference. Such means value affords the desired error signal.

3,617,885
DIGITAL VOLTMETERS

Desmon Wheable, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Feb. 27, 1968, Ser. No. 708,652
Claims priority, application Great Britain, Mar. 1, 1967, 9743/67
Int. Cl. G01r *17/06, 15/08*
U.S. Cl. 324—99 D **9 Claims**

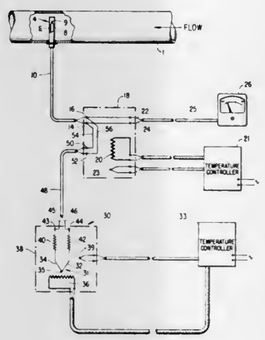


In a dual ramp digital voltmeter an input voltage is integrated for a standard number of clock pulses to ramp up the integrator output and then an opposing reference voltage is integrated to ramp down the integrator output to datum level again, the number of clock pulses during the ramp down being counted. In the present invention the clock pulse rate can be selectively varied in the ramp up or ramp down interval so as to effect range switching. Alternatively or additionally the clock pulse rate can be selectively varied as between different segments of the ramp down interval so as to yield a nonlinear relationship between the input voltage and the number of clock pulses counted during the ramp down.

3,617,886
TRANSDUCER OPEN-CIRCUIT FAILURE DETECTOR

John V. Werme, Painesville, Ohio, assignor to Bailey Meter Company

Filed July 26, 1968, Ser. No. 748,072
Int. Cl. G01r *1/00, 31/02*
U.S. Cl. 324—110 **7 Claims**

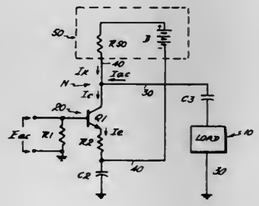


A high-impedance, open-circuit detector having a thermocouple generating a voltage proportional to the temperature level established by a controllable heater. The detector circuit voltage is applied in parallel with a low-impedance transducer measuring circuit at the input of a transducer monitoring circuit. The high-impedance detector voltage circuit is connected with the voltage polarity in reverse to the polarity of the transducer measuring circuit. The transducer measuring circuit is unaffected by the high-impedance detector voltage, and, therefore, the monitoring circuit responds only to the measuring circuit, while electrical continuity is maintained between the circuits. In the event the measuring circuit is electrically opened, the detector circuit will apply a reverse polarity voltage to the measuring circuit causing said circuit to indicate a condition wholly inconsistent with the range of the measuring transducer. This response to the detector voltage is an indication of open-circuit failure in the transducer measuring circuit.

3,617,887
VOLTAGE-TO-CURRENT CONVERTER FOR DRIVING A METER MOVEMENT

Harold David Alcalde, Bedford, Mass., assignor to Continental Electronics Manufacturing Co., Dallas, Tex.

Filed Apr. 18, 1968, Ser. No. 722,257
Int. Cl. G01r *19/26, 1/30*
U.S. Cl. 324—120 **4 Claims**



An alternating voltage is converted linearly to an alternating current by circuitry which includes an amplifier operating as a first current source and responding to the alternating voltage. The collector current of the amplifier is composed of a direct component and an alternating component proportional, the latter being proportional to the alternating voltage. The two components are split into two separate lines connected to the collector. One line connects to a second constant-current generator which accepts only the direct component. The other line is the output line and contains a capacitor which accepts only the alternating component proportional to the alternating voltage. The proportional current in the output line may be rectified to operate a DC meter, and the response of the rectifier circuit is linear essentially to zero, while the complexity of the circuitry is substantially reduced with respect to conventional circuits.

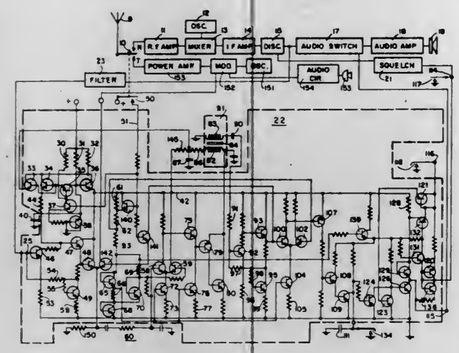
3,617,888
ENCODER-DECODER DEVICE FOR SELECTIVE SIGNALLING

George M. Hanus, Norridge; Alfred R. Lucas, Northbrook, and Frank R. Skutta, Mount Prospect, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

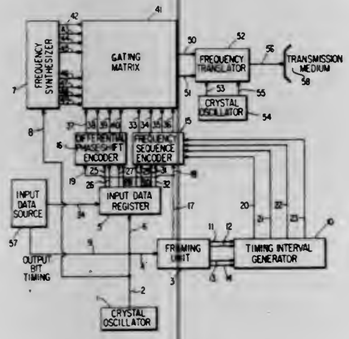
Filed Aug. 7, 1969, Ser. No. 848,200
Int. Cl. H04b *1/48*
U.S. Cl. 325—18 **15 Claims**

A tone signal encoder-decoder circuit uses an amplifier and a single tuned circuit for decoding and encoding a tone signal. A switching network enables a feedback circuit to cause operation of the circuit as an encoder and disables the feedback circuit to cause operation as a decoder. The DC operating levels for the circuit are increased and the source of operating potential for the frequency-responsive unit of the circuit operates through a higher impedance in the encoder mode. A provision also is made for facilitating rapid start for the encoding oscillator unit. Switching from the decoder to the encoder mode also disables the decoder mode preamplifier circuit and changes the biasing level of the detector to increase the threshold thereof when the circuit is in the encode mode of operation. A final provision is made for causing the radio receiver with which the circuit is employed to have the audio portion thereof selectively controlled by

the output of the detector in the encoder-decoder circuit or the output of the normal receiver squelch circuit or a combination of the outputs of the squelch circuit and the detector at the option of the operator of the receiver.



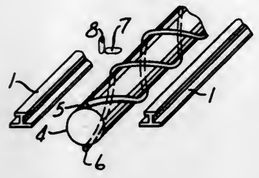
3,617,889
TIME-FREQUENCY-PHASE IN-BAND CODED COMMUNICATIONS SYSTEM
Jacob Rabinowitz, New York, N.Y., assignor to RCA Corporation
Filed Aug. 13, 1969, Ser. No. 849,753
Int. Cl. H04l 27/30; H04b 7/12
U.S. Cl. 325—30 **27 Claims**



A communication system which uses a diversity technique to overcome problems of signal fading and multipath distortion. Frequency shift keying (FSK) and differential phase shift keying (DPSK) are employed in combination to code a sequence of signals responsive to a word represented by a stream of input binary digits. The sequences of signals to be transmitted are arranged such that identification of the frequency, phase shift and location of one signal in the sequence uniquely defines the input word.

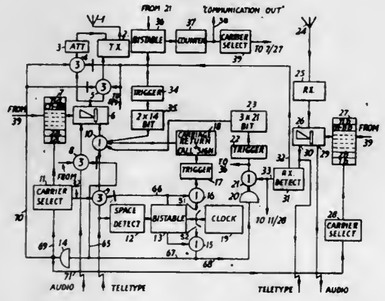
3,617,890
INDUCTION RADIO SYSTEM FOR VEHICLES
Noritaka Kurauchi, Suita, and Kenichi Yoshida, Sakai, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jan. 11, 1968, Ser. No. 697,069
Claims priority, application Japan, Jan. 12, 1967, 42/2324, Feb. 16, 1967, 42/9981; Mar. 20, 1967, 42/17274, 42/17276, 42/17277, 42/17278; June 18, 1967, 42/38985
Int. Cl. H04b 7/10; H01q 1/36
U.S. Cl. 325—51 **9 Claims**

An induction-radio system with a low induced noise level and unwanted radiation level for transmission of communication and control signals between a vehicle following a track and wayside station. The transmission line is positioned in parallel along the track and consists of two conductors helically wound with an equal and constant pitch and the antenna is mounted on the vehicle adjacent the transmission line



for continuous coupling therewith. The antenna consists of at least one pair of adjacent elements positioned to receive the carrier current in the transmission line with a phase shift difference of an odd multiple of 90° and a phase combining means connected to the elements additively phase combines the received outputs of the elements.

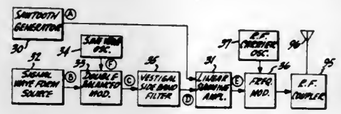
3,617,891
OPTIMUM FREQUENCY DETERMINING RADIO COMMUNICATION SYSTEM
Dennis Henry Covill, Nova Scotia, Canada, assignor to E.M.I. Electronics Canada Limited, Nova Scotia, Canada
Filed May 26, 1969, Ser. No. 827,663
Int. Cl. H04b 1/50; H04l 7/00
U.S. Cl. 325—53 **8 Claims**



A radio communication system is disclosed in which a transmitter transmits a carrier wave modulated by intelligence to a receiver for receiving the carrier wave, transmission is interrupted at intervals and the optimum frequency in a range of frequencies for the carrier wave is determined with the aid of the transmitter and the receiver during the interruptions. If the optimum carrier frequency differs from that previously in use the carrier wave is switched to the optimum frequency and transmission is then resumed. A clock initiates the interruptions at regular intervals, and the interruptions are delayed until a break occurs in the traffic.

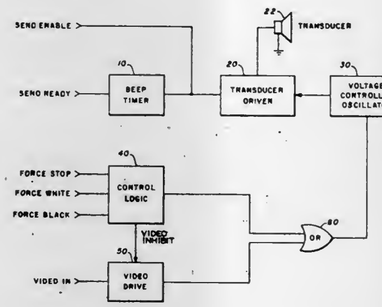
3,617,892
FREQUENCY MODULATION SYSTEM FOR SPREADING RADIATED POWER
James J. Hawley, and Francis H. Taylor, both of Cranbury, N.J., assignors to RCA Corporation
Filed Feb. 27, 1967, Ser. No. 618,836
Int. Cl. H04b 1/02, 7/20
U.S. Cl. 325—145 **7 Claims**

A communications system for use in a frequency band having a restricted spectral power flux density uses a transmitter having a specified carrier frequency within the band. A linear sawtooth generator's output is summed together with an information bearing signal in a linear adding amplifier to produce a composite signal. The composite signal is then used to frequency modulate a carrier frequency oscillator whose energy is caused to spread out over the frequency band such that the amount of energy in each of a group of



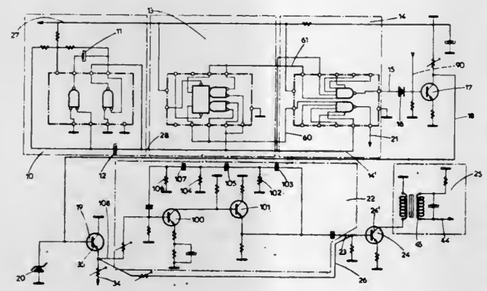
slots within the frequency band is within permitted limits. The spacing of the slots is determined by the sawtooth generator's repetition rate.

3,617,893
FREQUENCY MODULATED SIGNAL GENERATOR
Allan J. Bell, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Jan. 2, 1969, Ser. No. 789,087
Int. Cl. H04b 1/04
U.S. Cl. 325—145 **7 Claims**



In a data communication system a modulator for use in generating frequency modulated signals. A plurality of frequencies is generated in response to information and other supervisory signals applied thereto by utilizing logic and other type circuitry in accordance with a predetermined priority of input signals.

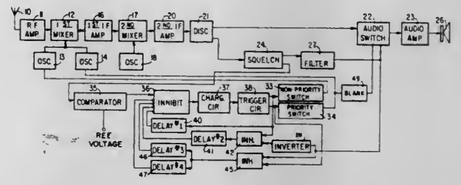
3,617,894
TWO-TRANSMITTER RADIO BEACON
Marcel E. Benoit, 34, Quai Louis-Bleriot, (75) Paris, 16°, France
Filed June 4, 1968, Ser. No. 734,321
Claims priority, application France, Sept. 27, 1967, 122,394
Int. Cl. H04b 1/04
U.S. Cl. 325—166 **5 Claims**



. A radio beacon generating an audio-modulated UHF signal has two transmitters keyed by the outputs of independent

square-pulse generators. Each pulse generator works into an associated amplifier stage, an inversion of the output of the pulse generator feeding the first transmitter being also supplied to the amplifier stage of the second transmitter (in parallel with the output of the other pulse generator) whereby the complement of the keying signal of the first or master transmitter normally overrides the keying signal of the second or slave transmitter and the two transmitters operate at interleaved intervals. If the master transmitter should fail, the slave transmitter continues operating in the rhythm of its own keying signal.

3,617,895
MULTI-FREQUENCY RECEIVER WITH AUTOMATIC CHANNEL SELECTION AND PRIORITY CHANNEL MONITORING
Stanley J. Tomsa, Chicago, and David F. Willard, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 8, 1969, Ser. No. 848,627
Int. Cl. H04b 1/32
U.S. Cl. 325—334 **9 Claims**

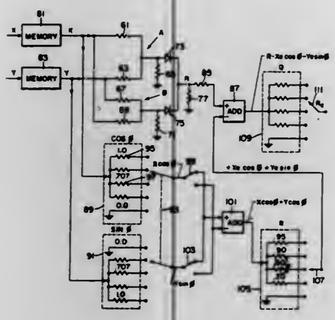


A switching system for a receiver with a plurality of local oscillators for operating on different channels renders the oscillators operative in turn, with the switching system being latched when a carrier is received to hold the receiver on the channel having the carrier. One channel is designated a priority channel, and the oscillator for that channel is operated at recurring short periods when another channel is being received in order to continually sample the priority channel. If a signal is detected on the priority channel during the sampling interval, the receiver locks onto the priority channel until the carrier on that channel terminates. The length of time that the priority channel is sampled during reception on another channel is variable in that there are no circuit time constants which force the circuitry to return to the nonpriority channel after a fixed length of time. When the system samples the priority channel, it stays on the priority channel until noise is detected. If a marginal signal is on the priority channel or if a statistical noise null is present, the sample length is extended until noise reappears on the priority channel.

3,617,896
ELLIPTICAL FUNCTION SIMULATION SYSTEM
Thomas W. McCurnin, and Lloyd J. Perper, both of Tucson, Ariz.
Filed Jan. 22, 1969, Ser. No. 793,124
Int. Cl. H04b 1/00
U.S. Cl. 325—363 **5 Claims**

A simulation system including a control device, a master transmitter, a plurality of slave transmitters and a plurality of receivers. The master and slave transmitters are physically spaced apart and their transmission signals form a hyperbolic grid network. The receivers are positioned within the hyperbolic grid network and process the signals from the master and slave transmitters to simulate dose and dose rate from yield and fallout information of a simulated detonation that takes place in the hyperbolic grid network. The yield (Yi) information is processed by the receivers as a pulse train having a frequency that decreases exponentially with time. The X and Y rectangular coordinate information is converted into the polar coordinate system to eliminate the necessity of performing complex square or square root functions for detecting the actual distance R. To determine fallout the actual distance R is converted to an effective distance R_E to take

into account wind direction and velocity by employing an elliptical function where the eccentricity (e) is a function of

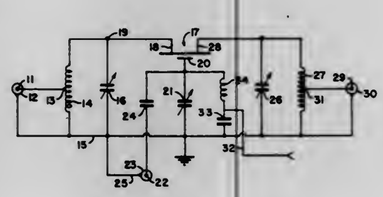


wind velocity and the angle (Φ) of the major axis is a function of wind direction.

3,617,897
METHOD FOR THE REFINING OF A CARBONACEOUS METAL MELT
Hans Karl Gustav Sandberg, and Erik Axel Bengtsson, both of Borlange, Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden
Filed Apr. 22, 1969, Ser. No. 818,252
Claims priority, application Sweden, Apr. 25, 1968, 5618
Int. Cl. C21c 5/32
U.S. Cl. 75—60 **9 Claims**

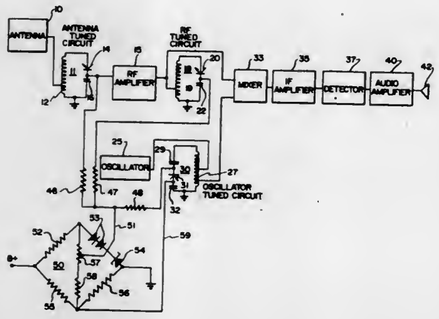
The final phase of carbonaceous metal melt refining operation is carried out with a deficiency of oxygen in the furnace space in order to reduce the wear of the furnace lining without decreasing the content of iron oxide in the slag.

3,617,898
ORTHOGONAL PASSIVE FREQUENCY CONVERTER WITH CONTROL PORT AND SIGNAL PORT
Eugene A. Janning, Jr., West Chester, Ohio, and Avco Corporation, Cincinnati, Ohio
Filed Apr. 9, 1969, Ser. No. 814,772
Int. Cl. H04b 1/26
U.S. Cl. 325—451 **1 Claim**



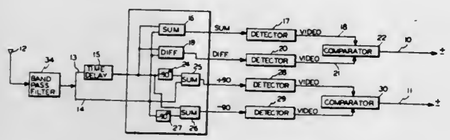
A field effect transistor is so arranged that a radio frequency input signal is applied to a signal port, comprising the source drain circuit. A local oscillator applies the locally generated oscillations to the control port, comprising the gate and source electrodes. The combination is operated as an orthogonally pumped resistive mixer. The resistive nonlinearity of the signal port is controlled only by the local oscillator pump signal voltage applied to the control port.

3,617,899
TUNING CONTROL FOR MULTIPLE ELECTRONICALLY TUNED CIRCUITS
Nikolai Goncharoff, Roselle, and Kamil Y. Jabbar, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 15, 1969, Ser. No. 791,468
Int. Cl. H04b 1/16
U.S. Cl. 325—452 **13 Claims**



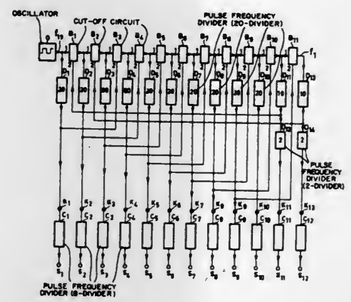
Simultaneous tuning and tracking of the tuned circuits in a radio receiver using electronically tuned voltage variable capacitors in the tuned circuits of the receiver is accomplished by providing a regulated DC supply across a four-arm bridge circuit, three arms of which constitute resistive elements and the fourth arm of which is a Zener diode. The diagonal of the bridge includes a potentiometer, the tap of which provides a variable tuning voltage which is applied to one terminal of the voltage variable capacitors in each of the tuned circuits. In order to provide tracking of the tuned circuits to different frequencies, the other terminal of the voltage variable capacitors in each of the circuits is provided with different DC reference potentials, so that the circuits are tuned together to provide tracking with a predetermined offset.

3,617,900
DIGITAL FREQUENCY DETECTING SYSTEM
Charles Fink, Silver Spring; Fred E. Burnham, Silver Spring, and Maury I. Marks, Bowie, all of Md., assignors to Litton Systems, Inc., Silver Spring, Md.
Filed July 7, 1966, Ser. No. 555,858
Int. Cl. G01r 23/12
U.S. Cl. 324—82 **7 Claims**



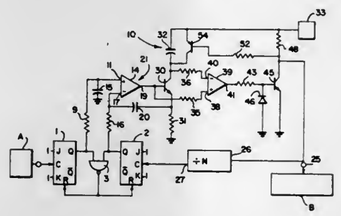
A frequency measuring system having one or more channels each of which, has time delay means responsive to an input signal whose frequency is to be determined, and phase shifts such signal in proportion to its frequency. Each channel determines whether the signal frequency lies within a given frequency range by analyzing said phase shift to result in a digital indication of such frequency range. The signal is processed in as many different channels as desired, each channel determining a different frequency range. Each channel also includes resolution improving means for resolving ambiguity in the analysis of the phase shift therein.

3,617,901
METHOD OF PRODUCING TONES OF AN EQUALLY TEMPERED SCALE
Nico Valentinus Franssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 2, 1968, Ser. No. 749,828
Claims priority, application Netherlands, Aug. 15, 1967, 6711170
Int. Cl. H03b 19/00
U.S. Cl. 328—17 **11 Claims**



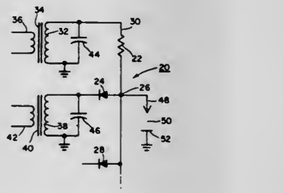
A single oscillator connected to a series of pulse dividers and cutoff circuits generates the twelve tones of a musical scale. Each cutoff circuit removes a single cycle from a first input signal in response to each cycle of a second input signal.

3,617,902
FREQUENCY MULTIPLIER
Douglas M. Bauer, Danvers, Mass., assignor to General Electric Company
Filed Aug. 4, 1970, Ser. No. 60,819
Int. Cl. H03k 5/00
U.S. Cl. 328—38 **6 Claims**



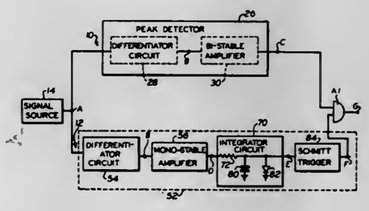
A frequency multiplier which comprises a voltage-controlled oscillator the output of which is controlled by differential integrator. First and second bistable logic circuits are connected to the inputs of the integrator. The first bistable logic circuit changes its state in response to an input pulse to produce a control voltage for the oscillator from the integrator. A feedback loop from the oscillator to the second bistable circuit includes a counter coupled to the second bistable logic circuit to change the state of the second bistable logic and resets the first circuit after a predetermined number of output pulses. This sequence controls the input level to the voltage-controlled oscillator, and hence the multiplication factor of the circuit.

3,617,903
CONDITION RESPONSIVE HIGH-VOLTAGE GATE
Andrew E. Trollo, 210 Carlton Ave., Broomall, Pa., and Edward G. Busch, 454 Malin Road, Newton Square, Pa.
Continuation of application Ser. No. 507,145, Nov. 10, 1965, now abandoned. This application Sept. 29, 1969, Ser. No. 863,026
Int. Cl. H03k 17/74
U.S. Cl. 328—94 **3 Claims**



Gating circuitry for ultraminiature light sources. Each gate comprises a plurality of input means which are connected to a different high-voltage pulse source and an output means connected to the electrode of an ultraminiature light source. One of the plurality of input means includes a resistor and the remainder of the inputs each includes a diode. The plurality of input means are connected to output means so that the gate energizes the light source upon coincidence of a pulse generated at each of the voltage sources.

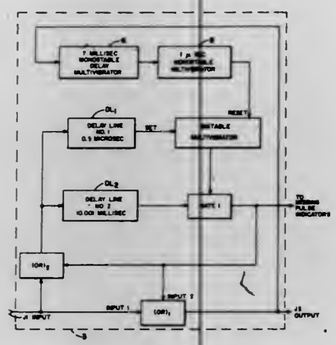
3,617,904
NOISE INSENSITIVE PEAK DETECTOR
Francis C. Marino, Huntington, N.Y., assignor to Digitronics Corporation, Albertson, N.Y.
Filed June 5, 1969, Ser. No. 830,838
Int. Cl. H03k 5/20
U.S. Cl. 328—117 **5 Claims**



A noise insensitive peak detector which includes a first signal path and a second signal path both of which are adapted to be connected to a signal source wherein the source signal may comprise noise signals in addition to information signals. The first path includes a peak detector which produces a pulse in response to the peaks in the source signal. The second signal path includes a first pulse-producing means for producing first pulses in response to the portions of the source signal having substantially zero slope and second pulse-producing means for producing second pulses in response to said first pulses having a width greater than a preselected width. Coincidence means is provided which is connected to the first and second paths and is responsive to the coincidence of the output of the peak detector and the second pulses for producing an output pulse.

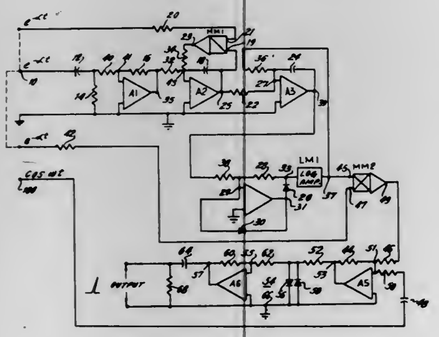
The invention also includes the novel noise rejection system in said second path.

3,617,905
MISSING PULSE GENERATOR
Joseph N. Castelli, Kwajalein, Marshall Islands, assignor to Sylvania Electric Products, Inc.
Filed Dec. 1, 1969, Ser. No. 881,032
Int. Cl. H04b 1/04
U.S. Cl. 328—120 3 Claims



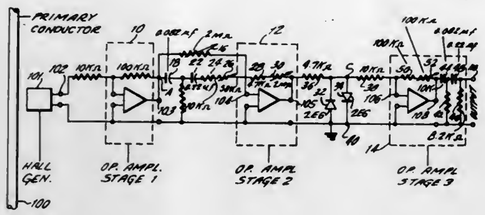
A device for supplying a pulse when a pulse is missing from a continuous train of pulses. The continuous train of pulses passes directly through the device and also to delay lines which delay each pulse so that it appears at the input of a gate circuit at approximately the same time as the next successive pulse would appear at the output of the device. If a pulse is missing, a previously received delayed pulse is passed by the gate to the output. When a pulse does appear, it inhibits the gate circuit from passing the delayed pulse.

3,617,906
CURRENT ZERO ANTICIPATING CIRCUIT FOR ASYMMETRIC WAVES
Ruben D. Garzon, Malvern, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed May 6, 1970, Ser. No. 35,174
Int. Cl. H03k 5/20
U.S. Cl. 328—150 6 Claims



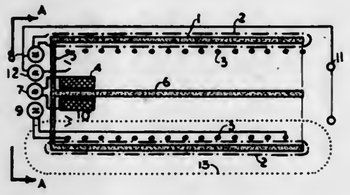
A signal pulse is generated a given time before an asymmetric current passes through its zero value by phase shifting both the sinusoidal term and exponential term of the defining current waveform, by adding the two-phase shifted components, and by processing the resulting phase shifted wave to obtain the pulses where desired.

3,617,907
CURRENT ZERO-ANTICIPATING CIRCUIT
Ruben D. Garzon, Malvern, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed May 28, 1970, Ser. No. 41,421
Int. Cl. H03k 5/20
U.S. Cl. 328—150 9 Claims



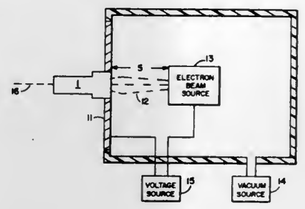
A signal pulse is generated a given time before a symmetric or asymmetric current passes through its zero value by obtaining a clipped voltage which is phase shifted with respect to the initiating current and by differentiating the clipped components to provide a pulse of controllable width and time displacement.

3,617,908
CHARGED PARTICLE ACCELERATOR WITH SINGLE OR MULTIMODE OPERATION
Henry Greber, 225 West, 80th Street, Apt. 8-D, New York, N.Y.
Filed Feb. 24, 1969, Ser. No. 801,276
Int. Cl. H05h 9/02, 11/00, 13/00
U.S. Cl. 328—233 4 Claims



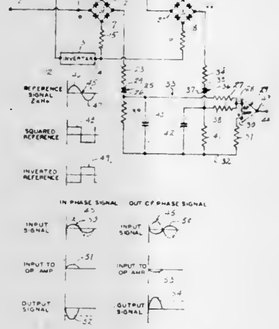
This invention pertains to a particle accelerator which can be made in linear, circular, helical or spiral form. It functions in one, or in a combination of modes of operation as a double betatron, double cyclotron, double traveling wave tube, or double-rotating magnetic flux device. In the double betatron mode, the particles rotate around two magnetic fluxes intertwined like two consecutive links of a chain. In the double cyclotron arrangement, the particles are accelerated at their passage between two consecutive tubes, and also between two halves of the same tube section, split longitudinally. In the traveling wave tube mode, the particles are accelerated through their energy exchange with traveling waves flowing along a coiled coil helical winding. In the arrangement with two sets of windings producing two interlinked rotating magnetic fluxes, the particles act like free electrons in the rotor of an asynchronous motor. In any one, or in any combination of these modes of operation of this particle accelerator, the particles perform a motion along a helical path, along which they cut the lines of the magnetic force of a radial, stationary, (DC excited) magnetic flux, which induces in them an electromotive force in direction of their acceleration. Normally, this particle accelerator is evacuated, but it can also be filled with a semiconductor, semimetal, or electrolyte, with the result of a considerable simplification of the device. This accelerator can be used for single, or for repeated passages of the particles through it.

3,617,909
ELECTROSTATIC LENS AND FEED-THROUGH
Thomas E. Horton, Jr., Oxford, Miss., and Charles M. Cason, III, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Dec. 23, 1969, Ser. No. 887,601
Int. Cl. H01j 29/58
U.S. Cl. 328—228 4 Claims



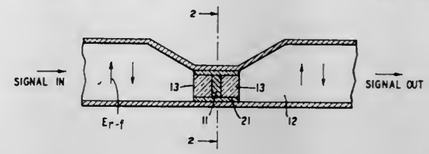
Apparatus for focusing and passing a charged particle beam from a region of low pressure to a higher pressure region. The apparatus is a unitary structure including both the feed-through means and the means for electrostatically focusing the beam as it passes to the higher pressure region.

3,617,910
PHASE AND AMPLITUDE DETECTORS
Odo J. Struger, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed Apr. 2, 1970, Ser. No. 25,069
Int. Cl. H03d 5/00
U.S. Cl. 329—166 7 Claims



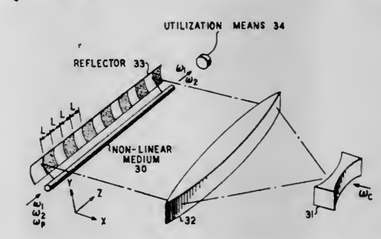
In both half-wave and full-wave detectors a 2 kHz., squared reference signal is imposed on DC terminals on one side of a pair of diode gates, and, inverted, on DC terminals on an opposite side of a pair of diode gates. A 2 kHz. input signal is connected to one AC terminal of both diode gates. The other AC terminals of the diode gates are connected to the input terminals of an inverting operational amplifier on the output terminal which the detector output signal appears. In the half-wave detector, the diode gates are uniformly oriented with respect to the reference signal and the AC terminals of the diode gates are both connected directly to the inverting input terminal of the operational amplifier. In the full-wave embodiment, the diode gates are oppositely oriented with respect to the reference signal and one of the diode gates has its AC terminal connected to the noninverting input terminals of the operational amplifier while the other diode gate has its AC terminal connected to the inverting input terminal of the operational amplifier.

3,617,911
WIDE BAND DIRECT-CURRENT-PUMPED SEMICONDUCTOR MASER
John A. Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 1, 1969, Ser. No. 812,115
Int. Cl. H01s 1/00
U.S. Cl. 330—4 18 Claims



A wafer of two-valley semiconductor material such as gallium arsenide is used as the active negative temperature medium of a maser. The maser is pumped by a DC voltage across the wafer. Care is taken to avoid the formation of Gunn-effect domains as, for example, by using a wafer with an appropriately small nL product. In a preferred embodiment, a magnetic field across the wafer increases bandwidth, efficiency, and frequency of operation. A layer of a material, such as GaP, having a lower energy valley corresponding to the upper valley of the active medium, may be included between the cathode contact and the active medium for further improving efficiency.

3,617,912
TRAVELING WAVE PARAMETRIC DEVICES WITH DISTRIBUTED COUPLING OF MORE THAN A SINGLE PUMP
Stewart E. Miller, Middletown Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Apr. 4, 1969, Ser. No. 813,425
Int. Cl. H03f 7/04
U.S. Cl. 330—4.6 10 Claims

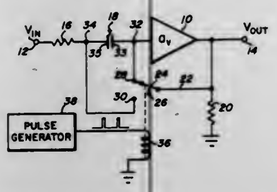


Described herein optical traveling wave parametric devices with distributed coupling in nonlinear solid waveguide media, to which more than a single pump frequency is applied. In order to satisfy simultaneously the parametric relation involving frequencies and the parametric relation involving wave propagation constants, at least one of these pumps has a controllably variable frequency or a controllably variable component of propagation constant along the direction of propagation of the other pump. This invention is especially useful for optical parametric amplification or frequency conversion.

3,617,913
CHOPPER STABILIZED DC AMPLIFIER
Rolf Schmidhauser, Palo Alto, and S. Cameron Reid, Mountain View, both of Calif., assignors to Data Technology Corporation, by said Rolf Schmidhauser
This application filed under Rule 47
Filed Aug. 15, 1968, Ser. No. 757,206
Int. Cl. H03f 1/02, 1/36
U.S. Cl. 330—9 3 Claims

A chopper stabilized DC amplifier including a capacitive memory unit and a pair of alternately connected feedback

loops. When the first loop is connected, one side of the capacitor is charged to a voltage V_{off} which is equal in magnitude to the drift voltage of the amplifier, and the other side is charged to the input voltage V_{in} such that the charge across the capacitor equals $V_{in}-V_{off}$. When the first loop is disconnected and the other loop is connected to the other

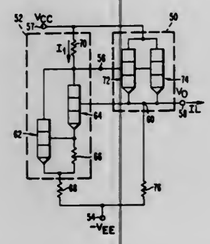


side of the capacitor, the output voltage V_{out} of the amplifier is driven equal to V_{in} as the amplifier attempts to maintain V_{off} equal to the amplifier drift. At a duty cycle of 100 to 1 a chain of pulses is produced, the amplitudes of which are equal to the instantaneous value of the input signal and are completely independent of any drift in the amplifier.

3,617,914
MONOLITHIC CONSTANT VOLTAGE SOURCE

Jack A. Dorler, Wappingers Falls, and Rocco Robortaccio, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 7, 1969, Ser. No. 839,493
Int. Cl. H03f *1/32*
U.S. Cl. 330—23 **5 Claims**

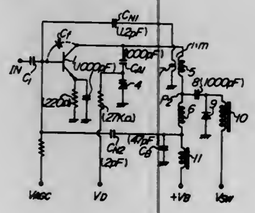


A monolithic circuit constant voltage source comprising an emitter-follower amplifier and having a compensating voltage amplifier connected thereto in feedback relationship.

3,617,915
TUNING CIRCUIT HAVING A NEUTRALIZING CIRCUIT

Kiyoshi Amemiya, Yokohama, and Kazuhiko Yamazaki, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 26, 1970, Ser. No. 50,187
Claims priority, application Japan, June 29, 1969, 44/51135
Int. Cl. H03f *1/14*
U.S. Cl. 330—27 **2 Claims**

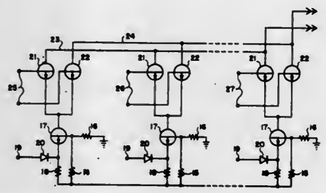


An electronic tuning circuit comprising a serial circuit of a high-frequency band tuning coil and a low-frequency band tuning coil for tuning with broadcast waves having channels in the high- and low-frequency bands, the serial circuit being connected with an amplifier element, whereby during the tuning with the high-frequency band the low-frequency band tuning coil is AC grounded and a first neutralizing condenser is connected between the input terminal of the amplifier element and a coil electromagnetically coupled to the high-frequency band coil to thereby feed back the output signal of the amplifier element to the input, and during the tuning with the low-frequency band the low frequency band tuning coil produces an output signal which is fed back to the input through a second neutralizing condenser.

3,617,916
COMMUTATED BUFFER AMPLIFIER

Leland B. Smith, Whittier, Calif., assignor to Beckman Instruments, Inc.

Continuation of application Ser. No. 581,040, Sept. 21, 1966, now abandoned. This application July 24, 1969, Ser. No. 848,396
Int. Cl. H05f *3/68*
U.S. Cl. 330—30 **10 Claims**

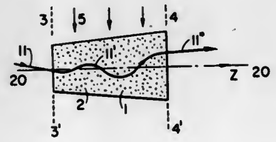


The invention discloses a new and improved muliplex system wherein each of a multiplicity of inputs are sequentially connected by a switched differential input amplifier stage to a common output amplifier stage. Each input stage is rendered operative and inoperative by a control circuit through which bias current to the input stage is either supplied or denied. The control circuit consists of a switched transistor current source connected to the emitters of a differentially connected pair of transistors comprising the input amplifier stage. The respective transistor collectors of all the input stages are connected in parallel to the common output amplifier stage. The common output stage is composed of a number of transistors connected to provide a differential input and a single ended output. Feedback may be provided from the single ended output to each of the multiple inputs by either an operational or potentiometric configuration. By reason of the switched transistor current source control circuit connected to the differential input stage and the feedback from the single ended output to the multiple inputs, a combined switching speed and amplifier accuracy are provided that heretofore were not possible.

3,617,917
CONVERGING SOLID-STATE LASER ELEMENT FOR HIGH-POWER OUTPUT USE

Teiji Uchida, Tokyo, Japan, assignor to Nippon Selfoc Company, Limited, Tokyo, Japan

Filed Nov. 17, 1969, Ser. No. 877,238
Claims priority, application Japan, Nov. 16, 1968, 43/83,672
Int. Cl. H01s *3/00*
U.S. Cl. 330—4.3 **1 Claim**



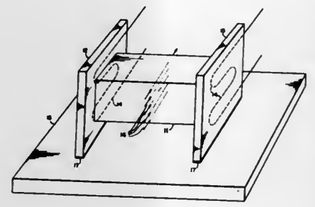
A converging laser element having an index of refraction distribution of $n=N(1-\frac{1}{2}ar^2)$ is disclosed wherein at least N

or a varies along the axis of the element. As a result, the spot size at the output end of the element can be made greater than the incident spot size at the input end surface.

3,617,918
RAPID FREQUENCY SCANNING OF TEMPERATURE TUNED OPTICAL PARAMETRIC OSCILLATORS

Herbert Rabin, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 9, 1969, Ser. No. 856,294
Int. Cl. H01s *3/00, 3/10*
U.S. Cl. 330—4.3 **5 Claims**



This disclosure is directed to a means and method of changing the operating frequency of optical parametric amplifiers or oscillators over a wide range of frequencies by establishing a thermal gradient in a nonlinear crystal such as lithium niobate or barium-sodium niobate compositions of matter.

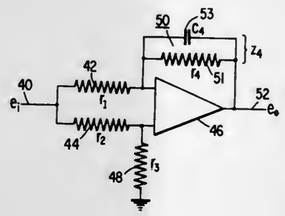
ERRATUM

For Class 330—53 see:
Patent No. 3,618,126

3,617,919
CANONICAL ORTHOGONAL FILTER

Albert Andrews Clark, Woburn, Mass., assignor to RCA Corporation

Filed July 30, 1969, Ser. No. 846,028
Int. Cl. H03f *1/36*
U.S. Cl. 330—107 **2 Claims**

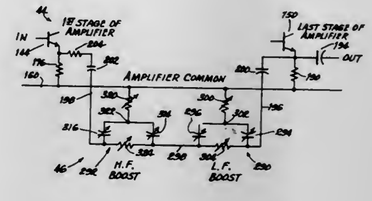


A canonical orthogonal filter is accurately synthesized from a particular transfer function. Filters are provided having a first and second resistor respectively connected to first and second input terminals of a differential amplifier. A third resistor is connected from one amplifier input terminal to a point of reference potential, and the parallel combination of a fourth resistor and a capacitor is connected from the other input terminal of the amplifier to the output terminal of the amplifier which is also the output terminal of the filter.

3,617,920
AUDIO EQUALIZATION SYSTEM

John P. Jarvis, Northridge, Calif., assignor to Scientific Industries, Inc., Santa Ana, Calif.

Division of Ser. No. 714,592, Mar. 20, 1968, Pat. No. 3,541,260.
Filed Jan. 26, 1970, Ser. No. 5,688
Int. Cl. H03f *1/34*
U.S. Cl. 330—109 **5 Claims**

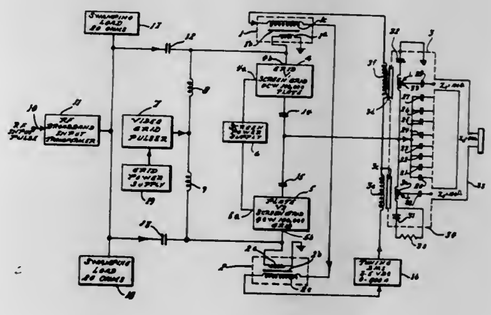


The disclosed audio equalization system comprises an amplifier, a negative feedback path between the output and the input of said amplifier, a low-frequency equalization network connected into said negative feedback path, and a high-frequency equalization network connected into said path in cascade with said low-frequency equalization network, each network comprising a pair of series connected capacitors, a first resistor connected between the junction of said capacitors and the common terminal of the amplifier, and a second resistor connected in parallel with said series connected capacitors. A switching system or the like is preferably provided to change the values of said capacitors so as to change the boost frequency range. Means are preferably provided for changing the value of the first resistor while inversely changing the value of the second resistor for changing the extent of the boost.

3,617,921
SYNCHRONOUS FERRITE TUNER

William I. Smith, Palmyra, N.J., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 14, 1970, Ser. No. 28,486
Int. Cl. H03j *3/16, 3/24;* **H03f** *1/46*
U.S. Cl. 330—207 **1 Claim**

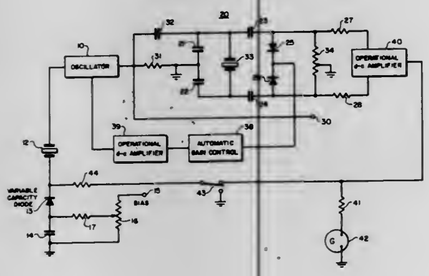


A synchronous ferrite tuner for an RF amplifier in which tuning is performed by applying a single DC control current to set simultaneously the inductance of ferrite cores in both grid and plate circuit resonators.

3,617,922
CRYSTAL OSCILLATOR WITH PHASE CONTROL LOOP INCLUDING A CRYSTAL DISCRIMINATOR

Marvin Bernstein, Asbury Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 28, 1970, Ser. No. 41,341
Int. Cl. H03b 3/04; H03d 3/16
U.S. Cl. 331—1 5 Claims

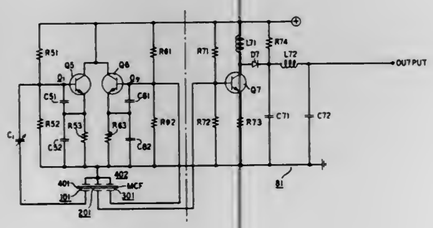


A crystal oscillator is phase controlled by means of a feedback loop containing a tuned crystal discriminator which supplies a corrective signal to a variable capacitance diode in series with the oscillator crystal.

3,617,923
BEAT FREQUENCY GENERATOR USING TWO OSCILLATORS CONTROLLED BY A MULTIRESONATOR CRYSTAL

Robert E. Paradysz, Coopersburg, and Warren L. Smith, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 6, 1969, Ser. No. 874,453
Int. Cl. H03b 5/36, 21/00
U.S. Cl. 331—43 14 Claims



The unique properties of a monolithic crystal filter are turned to account in a low-frequency crystal oscillator system. Each of two different relatively high-frequency signals is generated by a respective crystal controlled oscillator. The oscillators share a common crystal wafer to which each is connected by a respective pair of electrodes. The relatively low beat frequency signal or difference frequency of the oscillators is extracted by a third set of electrodes mounted on the crystal between the electrode pairs connected to the oscillators.

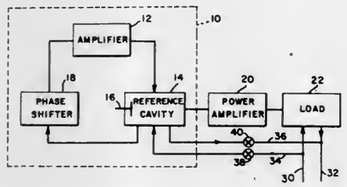
ERRATA

For Classes 331—54 and 331—179 see:
Patent Nos. 3,618,127 thru 3,618,132

3,617,924
AUTOMATIC FREQUENCY TUNING SYSTEM

Hyoa Fujita, and Kouichi Irie, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1969, Ser. No. 815,618
Claims priority, application Japan, Apr. 17, 1968, 43/25678
Int. Cl. H03b 5/18
U.S. Cl. 331—70 4 Claims

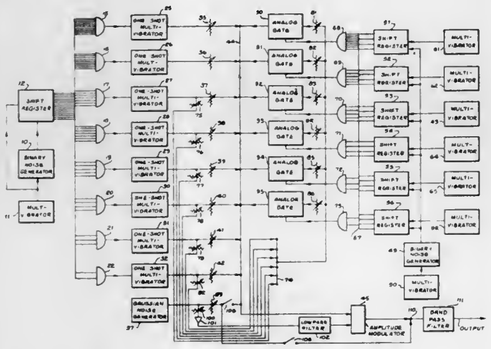


An oscillator includes a reference cavity and a load cooled with a cooling water supplied by a single water source for the purpose of controlling an oscillation frequency in accordance with the temperature of the load.

3,617,925
SIMULATOR FOR ATMOSPHERIC RADIO NOISE

William D. Bensema; Robert M. Coon; Wesley M. Beery; Clark C. Watterson, and Earl C. Bolton, all of Boulder, Colo., assignors to The United States of America as represented by the Secretary of Commerce

Filed June 9, 1970, Ser. No. 44,842
Int. Cl. H03b 29/00
U.S. Cl. 331—78 17 Claims

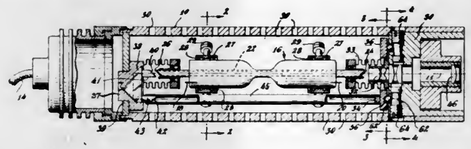


One-shot multivibrators generate random impulses that have a nonperiodic repetition rate and selected probabilities of occurrence. Each of several analog gates has a different probability that it will open during a predetermined time interval; the durations of the open-periods have random values. When an analog gate is open, it passes a burst of impulses generated by the multivibrators during the open-period. In another source Gaussian noise is also generated. The impulses and bursts are applied to an amplitude modulator. A portion of the noise frequency band functions as a modulating signal so that the impulses in the modulator output have amplitudes that vary randomly. Gaussian noise is added to the modulator output before a final band-pass filter in the simulator.

3,617,926
LASER USING A CUBE CORNER REFLECTOR AT ONE END OF THE DISCHARGE TUBE SO THAT BOTH CAVITY REFLECTORS ARE AT THE OTHER END TO COMPENSATE FOR THERMAL DISTORTION

Henry W. Bullinger, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 3, 1968, Ser. No. 764,663
Int. Cl. H01s 3/05
U.S. Cl. 331—94.5 7 Claims

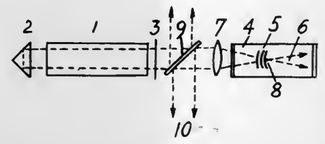


This laser light source includes an optical resonator cavity having first and second resonant cavity reflective surfaces positioned near a first output window of a laser discharge tube and a third reflective means comprising a corner cube positioned adjacent a second output window of the discharge tube. The corner cube is adapted for laterally translating and reflecting an output light beam from the discharge tube to the second cavity reflective surface.

3,617,927
ARRANGEMENT FOR CONTROLLING THE Q-FACTOR OF A RESONATOR OF AN OPTICAL EMITTER OF COHERENT ELECTROMAGNETIC RADIATION, FOR THE PURPOSE OF GENERATING GIANT PULSES

Dieter Pohl, No. 5b, Otztalerstrasse, Munich 25, Germany

Filed Jan. 19, 1968, Ser. No. 699,260
Claims priority, application Germany, Jan. 31, 1967, P 41324
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 9 Claims



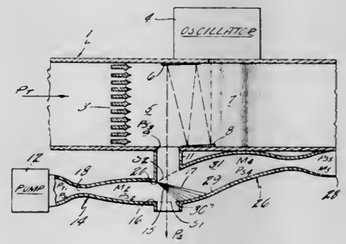
An arrangement for controlling the Q-factor of a resonator of an optical emitter of coherent electromagnetic radiation is provided which consists of a body serving as Q-control member located in a line with and at the same end of an active amplifying medium as at least one partial reflector which end is opposite the end at which a totally reflecting prism is located. The body is capable of being excited to stimulated Brillouin scatter and is arranged such that the scattered radiation is coupled back into said active amplifying medium. There may be one or several partial reflectors located at the end of the body remote from the active amplifying medium and between the body and this medium, respectively. A collecting lens may be arranged between the body and the active amplifying medium, and another such lens may be located adjacent the end of the body remote from the active amplifying member. A semitransparent obliquely placed mirror may be provided between the totally reflecting prism and the body.

3,617,928
AERODYNAMIC WINDOW FOR GAS DYNAMIC LASER

George F. Hausmann, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 23, 1968, Ser. No. 731,658
Int. Cl. H01s 3/05
U.S. Cl. 331—94.5 5 Claims

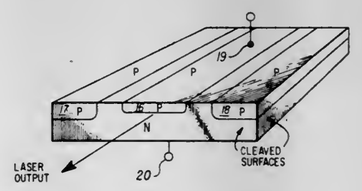
A gas dynamic laser emits an output beam from a low-pressure region downstream of a nozzle section through which gases are expanded which contain the constituents necessary to obtain a lasing action. A gas dynamic laser employs the principles of kinetic relaxation of excited states of specific gas species to effect a population inversion of the excited states to obtain lasing action. An oscillator directs a low beam into said low-pressure lasing region, and through an optic arrangement the beam is amplified and directed out of an opening in the gas dynamic laser. Under normal circumstances the provision of such an opening would incur a flow of air from the ambient pressure to the low pressure within the laser cavity. The opening is connected to an aerodynamic window. The window has a passage leading from the low-pressure region of the gas dynamic laser in which pressures are set up permitting passage of the laser beam with no physical obstruction, yet prevent or minimize the flow of ambient air into the cavity.



3,617,929
JUNCTION LASER DEVICES HAVING A MODE-SUPPRESSING REGION AND METHODS OF FABRICATION

Hans A. Strack, Richardson, and George D. Clark, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,760
Int. Cl. H01l 15/00
U.S. Cl. 331—94.5 4 Claims

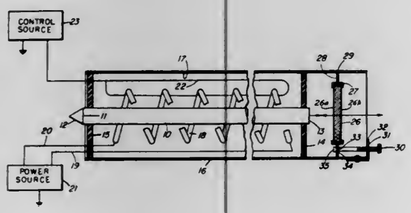


A PN junction laser device having a central lasing region paralleled by P-type regions which serve to suppress transverse lasing modes is prepared from an N-type gallium arsenide crystal by the selective diffusion of zinc, employing a three-layer masking system. The first layer is phosphorous-doped SiO_2, substantially impermeable to zinc, patterned to preserve N-type conductivity between the mode-suppressing regions and the central P-type region. The second and third masking layers are SiO_2 patterned to reduce excessive build-dup of dopant concentrations at the semiconductor surface, and to control the diffusion rates so that the mode-suppressing regions are diffused deeper than the central P-type region.

3,617,930
LASER STRUCTURE HAVING A CONTROLLABLE FREQUENCY SPECTRUM OF STIMULATED EMISSIVE ENERGY

Elias Snitzer, Wellesley; Frank W. Hoffman, Sturbridge, and Normand A. Guertin, Southbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 333,012, Dec. 12, 1963, now abandoned. This application Mar. 24, 1969, Ser. No. 814,505
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 **9 Claims**

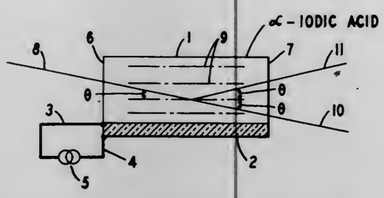


An elongated laser element is provided with a light energy reflective termination at one end and its opposite end is optically ground and polished normal to the axis of the element to provide a Fresnel-reflective termination at such other end. The laser is adapted to emit stimulated emissive radiation exiting as a beam through its Fresnel-reflective end, and a laser-light transmissive member is supported axially of the element in the path of the emitted beam of light energy. This member has at least one pair of at least partially reflective surfaces which receive laser-light energy from the laser element and reflectively return laser-light energy The path or paths traversed through this member by laser light reflected by one or more reflective surfaces of the member has or have a length equal to an odd integral number of quarter wavelengths at the wavelength of at least one preselected laser-light energy returned by the transmissive member to the laser element substantially augments the stimulated emission by the element of laser-light energy at the wavelength of each such preselected frequency component.

3,617,931
ACOUSTO-OPTIC DEVICES USING LEAD MOLYBDATE AND RELATED COMPOUNDS

Douglas A. Pinnow, Berkeley Heights, and LeGrand G. Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1969, Ser. No. 821,894
Int. Cl. G02f *1/32*
U.S. Cl. 331—94.5 **11 Claims**

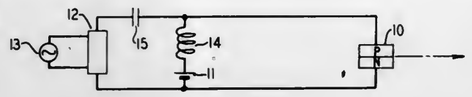


Acousto-optic devices dependent for their operation on lead molybdate ($PbMoO_4$) and related compounds show efficiencies comparable to that of devices made from alpha-iodic acid and superior to that of devices constructed of earlier materials such as lithium niobate. Optical deflectors useful in modulators, switches and correlators are described.

3,617,932
METHOD FOR PULSE-WIDTH-MODULATING SEMICONDUCTOR LASERS

Thomas L. Paoli, Chatham, and Jose' E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 16, 1969, Ser. No. 833,366
Int. Cl. H01s *3/18*
U.S. Cl. 331—94.5 **8 Claims**

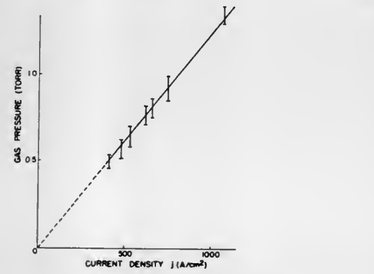


The width of pulses in the output of a semiconductor laser exhibiting self-induced pulsing at a relatively constant repetition rate is modulated by applying to the laser a perturbation signal at a frequency that is related to the pulse repetition rate as the ratio of two integral numbers and amplitude modulating the signal.

3,617,933
METHOD FOR GENERATING OSCILLATION IN KRYPTON LASER

Manabu Yamamoto, Odawara-shi, Kanagawa-ken; Shunsuke Tomiyama, Kunitachi-shi, Tokyo-to; Akira Hashimoto, Kodaira-shi, Tokyo-to, and Susumu Saito, Hachioji-shi, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to, Japan

Filed June 17, 1969, Ser. No. 834,044
Claims priority, application Japan, June 21, 1969, 44/43292
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **3 Claims**



Disclosed herein is a method for obtaining oscillation in krypton ion gas laser, wherein such oscillation is not subject to the phenomenon of instability which method is carried out by causing laser oscillation with high discharge current density in a capillary discharge tube filled with a discharge gas consisting principally of krypton, at a pressure which exceeds a predetermined value related to the discharge current density.

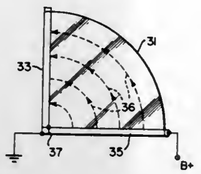
3,617,934
CONVERSION OF TANGENTIAL AND RADIAL POLARIZATION COMPONENTS TO RECTANGULAR COORDINATE COMPONENTS

Joseph P. Segre, 45 Quaboag Road, Acton, Mass.

Filed Sept. 2, 1969, Ser. No. 854,704
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **8 Claims**

An electro-optic crystal such as lithium niobate is formed into a half-wave plate to convert tangential and radial polarization components in a laser beam to rectangular coordinate components. To achieve this polarization conversion a transverse electric field is applied to the crystal in an uniform strength pattern such that the direction of the field varies with the angular position in the crystal changing at the same rate as the angular rate of change of position in the crystal.

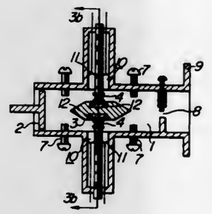
Such polarization conversion devices are combined with a laser and in a laser cavity to limit laser oscillations in the laser cavity to be either only tangentially polarized or only radially polarized.



3,617,935
SOLID-STATE OSCILLATOR

Katuhiro Kimura, Tokyo; Yoichi Kaneko, Kokubunji-shi, and Masao Kamimura, Kokubunji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1969, Ser. No. 866,236
Claims priority, application Japan, Oct. 18, 1968, 43/75618
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **9 Claims**

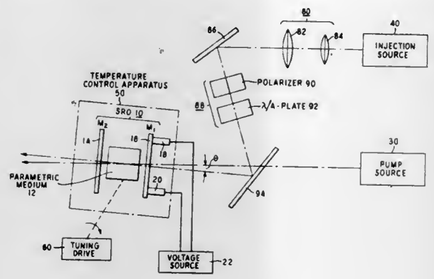


A high-power solid-state oscillator comprising a cavity resonator, a conductive plate positioned in said cavity resonator and in a plane perpendicular to the electric field in said cavity resonator and bisecting said cavity resonator, and at least two solid-state oscillating elements symmetrically positioned respectively on opposite surfaces of said conductive plate and positioned in a plane perpendicular to the axis of said cavity resonator.

3,617,936
FREQUENCY CONTROL OF A PULSED PARAMETRIC OSCILLATOR BY RADIATION INJECTION

John E. Bjorkholm, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 26, 1969, Ser. No. 827,708
Int. Cl. H03f *7/00*
U.S. Cl. 331—175 **6 Claims**



A singly resonant optical parametric oscillator (SRO) is pumped by a high power, pulsed source and is tuned approximately to a predetermined desired frequency. Radiation of that frequency is injected into a mode of the SRO from a stabilized, low-power injection source. The output of the SRO is a pulsed, high-power signal with frequency equal to the predetermined frequency to a high degree of accuracy.

3,617,937
LASER CONTAINING NEODYMIUM-DOPED CALCIUM FLUOROAPATITE LASER CRYSTAL

Robert Mazelsky, Monroeville, Pa., and Robert C. Ohlmann, Palo Alto, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

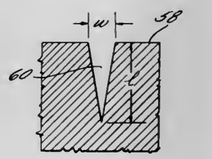
Division of Ser. No. 567,918, July 26, 1966, Pat. No. 3,505,239. Filed July 18, 1969, Ser. No. 843,036
Int. Cl. H01s *3/16*; C09k *1/36*
U.S. Cl. 331—94.5 **8 Claims**

A laser having a light source and a cylindrical rod composed of a material having the formula $Ca_{5-x-y-w}Nd_xMn_yM_w(PO_4)_3F_{1-z}O_z$, where x has a value of from 0.001 to 0.2, y has a value of from zero to x, z has a value of from zero up to the limit of lattice stability, w has a value of from zero to x, and M is at least one of the alkaline earth metals, the rod having parallel ends, and reflective means disposed parallel to each end.

3,617,938
POLARIZING LASER MIRROR

Louis J. Denes, Monroeville, Pa., and Patrick C. Ward, South Windsor, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 4, 1970, Ser. No. 34,234
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **5 Claims**

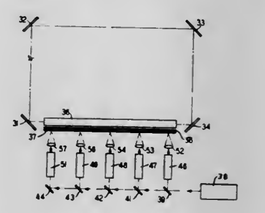


The surface of a laser mirror is formed with grooves to induce polarization of a laser energy incident therein, the plane of polarization being selective and reproducible. The dimensions and spacing of the grooves are a function of the wavelength of the laser energy.

3,617,939
PUMPING ARRANGEMENTS FOR LASERS OPERATING AT WAVELENGTHS SHORTER THAN VISIBLE LIGHT

Walter L. Bond, Berkeley Heights; Michel A. Duguay, Berkeley Heights, and Peter M. Rentzepis, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

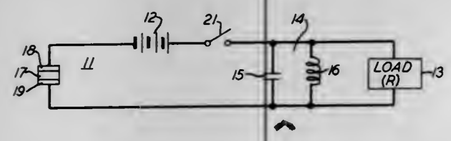
Original application Apr. 11, 1967, Ser. No. 629,937, now Patent No. 3,484,721. Divided and this application June 16, 1969, Ser. No. 847,770
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **7 Claims**



A laser device for operation in the X-ray region comprises a resonator of three-dimensional polygonal shape having

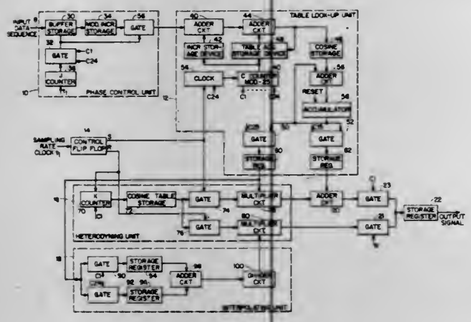
Bragg angle reflections at the apices of the polygon. The laser is pumped by removing electrons from the innermost shelfs of atoms of the active medium in synchronism with generation of X-rays traveling in the active medium. Pumping energy is achieved by collisions of relativistic particles and laser beams or by laser beam impingement on X-ray-emitting material.

3,617,940
LSA OSCILLATOR
John A. Copeland, III, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 11, 1966, Ser. No. 564,081
Int. Cl. H03b 7/14
U.S. Cl. 331—107 G **9 Claims**



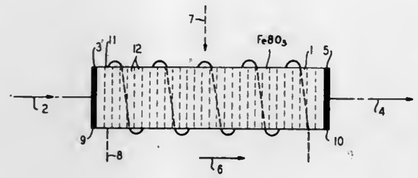
Under specified operating conditions a bulk semiconductor diode connected to an appropriate load through a resonant circuit will operate in a new oscillatory mode now generally designated the LSA mode (for Limited Space-Charge Accumulation). This mode is characterized by electric field excursions into the positive resistance region of the diode which are sufficient to preclude the formation of traveling electric field domains, and excursions into the negative resistance region which are sufficient to give a net gain.

3,617,941
TABLE LOOK-UP MODULATOR
Joseph DeLellis, Jr., Walpole, Mass., assignor to Sylvania Electric Products, Inc.
Filed Aug. 3, 1970, Ser. No. 60,274
Int. Cl. H04l 27/20; H03c 3/00
U.S. Cl. 332—16 R **4 Claims**



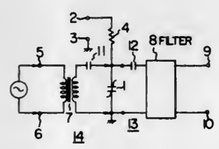
A table look-up modulator employs a phase control unit connected to a modulating means to generate in digital form a first and second plurality of tones at a predetermined baud rate. The phase of each tone is determined by a separate pair of input bits to be transmitted. During a first time interval (equal to the reciprocal of half the sampling rate), the second plurality of tones are heterodyned and combined with the first plurality of tones to generate a composite signal at one-half the sampling rate. During a second time interval, a signal representing an interpolated value of the second plurality of tones is generated at one-half the sampling rate. The combination of the composite signal generated during the first time interval and the signal representing the interpolated value generated during the second time interval is directed from the table look-up modulator at the sampling rate.

3,617,942
IRON BORATE ($FeBO_3$) DEVICES
Arjeh J. Kurtzig, Short Hills; Roy Conway LeCraw, Madison, and Raymond Wolfe, Union, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 14, 1969, Ser. No. 876,685
Int. Cl. G02f 1/22
U.S. Cl. 332—7.51 **7 Claims**



Iron borate ($FeBO_3$) evidences a magneto-optic effect of device interest over a broad frequency range including parts of the visible spectrum. Modulators and isolators, either continuous or pulsed, may be operated over this entire frequency range at room temperature.

3,617,943
MODULATOR WITH REACTANCE ELEMENT HAVING NONLINEARITY
Zenmon Abe; Yoshio Furuhata, and Yasuo Kato, all of Tokyo-to, Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to, Japan
Filed Apr. 25, 1967, Ser. No. 633,497
Claims priority, application Japan, Apr. 27, 1966, 41/26310
Int. Cl. H03c 1/00
U.S. Cl. 332—52 **5 Claims**

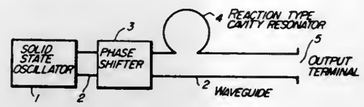


A reactance element in which a ferromagnetic, ferroelectric, or antiferroelectric material having point-symmetry, saturated nonlinearity is interposed as a modulation element between signal input terminals and output terminals and provided with excitation signal input terminals for receiving a carrier and is caused to operate as it is maintained at a constant temperature in the vicinity of its Curie point, a wave filter being inserted between the reactance element and the output terminals, whereby a DC input applied to the signal input terminals is modulated into an AC signal of the second harmonics of the carrier, which AC signal is equal in magnitude to the DC input and appears, at the output terminals after leaving the wave filter.

3,617,944
MICROWAVE CIRCUIT DEVICE
Akira Honda, Hachioji-shi, and Masao Kamimura, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 25, 1969, Ser. No. 852,589
Claims priority, application Japan, Aug. 26, 1968, 43/60478
43/60479; Apr. 9, 1969, 44/26837
Int. Cl. H03c 1/08
U.S. Cl. 332—56 **6 Claims**

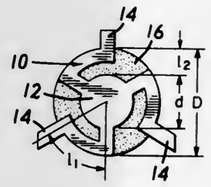
A microwave circuit device composed principally of a solid state oscillator and a reaction type cavity resonator, con-

structed so as to develop a microwave output through a phase shifter and the above-mentioned reaction type cavity resonator at the output side of the above-mentioned solid



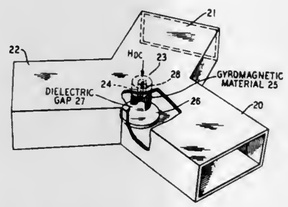
state oscillator, and adapted to develop an oscillation output or modulated signal output suppressing noise generated in the solid state oscillator.

3,617,945
STRIP LINE CIRCULATOR WHEREIN THE BRANCH ARMS HAVE PORTIONS EXTENDING IN A NONRADIAL DIRECTION
Shojiro Nakahara, and Nobutake Orime, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Nov. 25, 1969, Ser. No. 879,760
Claims priority, application Japan, Nov. 28, 1968, 41/87184
Int. Cl. H01p 1/32, 5/12
U.S. Cl. 333—1.1 **10 Claims**



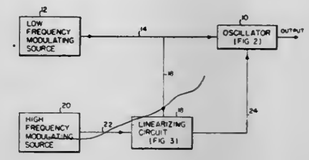
Branch lines radially extend from a circular junction of an intermediate conductor on a ferri-magnetic disc and include one portion running circumferentially of the disc. This causes an increase in area with which the disc overlaps the branch lines while the lines are maintained relatively small in radial length resulting in a small-sized circulator low in center frequency.

3,617,946
JUNCTION CIRCULATOR WHEREIN A CONDUCTIVE CORE EXTENDS WITHIN GYROMAGNETIC MATERIAL
Brian Owen, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 2, 1970, Ser. No. 7,872
Int. Cl. H01p 1/32, 5/12
U.S. Cl. 333—1.1 **6 Claims**



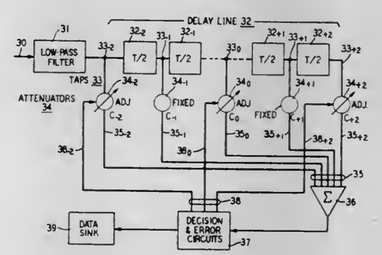
A junction circulator in which the usual magnetically biased ferrite post is modified by being separated from one conductive boundary by a dielectric gap and by having a conductive core extending axially therein from the other boundary. These modifications induce wave fields which simulate those of the turnstile circulator and produce a comparable broadband circulation.

3,617,947
WIDE BAND FREQUENCY MODULATOR
Garold K. Jensen, Pinecrest, Va., and James E. McGeogh, Silver Spring, Md.
Filed Oct. 29, 1964, Ser. No. 407,589
Int. Cl. H03c 3/08, 3/18, 3/22
U.S. Cl. 332—18 **6 Claims**



Variable frequency oscillator having a back-biased semiconductor element and controlled by low- and high-frequency input signals, either of which is capable of varying the oscillator frequency over a 2:1 range. Nonlinearity of oscillator compensated by linearizing circuit which includes compensating distortions in the form of nonlinear tubes and shunted diode, voltage divider circuit.

3,617,948
TRANSVERSAL EQUALIZER MODIFIED FOR SIGNAL FILTERING
Robert W. Lucky, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 17, 1969, Ser. No. 858,781
Int. Cl. H04b 3/04
U.S. Cl. 333—18 **6 Claims**

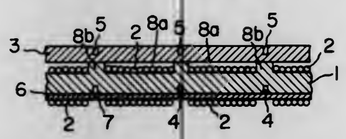


The transversal equalizer with tap-spacing set for adaptive minimization of intersymbol interference in a synchronous digital data transmission system is modified to provide simultaneous shaping of the signal frequency spectrum. Adaptively variable tap gains for time domain equalization are augmented by fixed tap gains for frequency domain signal shaping. Signals from fixed and variable gain attenuators, relatively delayed by a fractional symbol interval with respect to each other, are combined to form optimized output signals. The respective fixed and variable gain contributions thus act substantially independently in accomplishing spectral shaping and intersymbol interference minimization due to their staggered relationships.

3,617,949
DELAY LINE
Kazuo Kameya, Yokohama-shi; Kanazu Taniguchi, Tokyo-to, and Osamu Isaka, Tokyo-to, all of Japan, assignors to Toko Kabushiki Kaisha, Ota-ku, Tokyo-to, Japan
Filed Dec. 19, 1969, Ser. No. 886,439
Claims priority, application Japan, Dec. 23, 1968, 43/94356
Jan. 22, 1969, 44/4546
Int. Cl. H03h 7/32
U.S. Cl. 333—29 **12 Claims**

A delay line comprising a first magnetic core of planar type, an inductance coil wound along the length of the planar

magnetic core, a second magnetic core also of planar configuration applied on the first magnetic core in an overlying relationship, and several recessed portions provided either on the inner surfaces of said first and second magnetic cores fac-



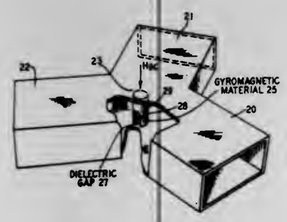
ing the inductance coil or on the outer surfaces of the first and second magnetic cores at spaced apart positions or intermediate between coil sections when the inductance coil has been split into a number of coil sections.

3,617,950

JUNCTION CIRCULATOR HAVING A CONDUCTIVE SEPTUM IN JUNCTION REGION

Clare Earl Barnes, Bethlehem, and Brian Owen, Allentown, both of, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1970, Ser. No. 7,873
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **6 Claims**



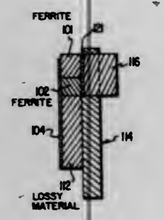
A junction circulator in which the usual magnetically biased ferrite post is modified by being separated from at least one conductive boundary by a dielectric gap and by having a conductive septum extending normal to the axis of the post at a point between the conductive boundaries. These modifications induce wave fields that more or less simulate those of the turnstile circulator and produce improved bandwidths of circulation.

3,617,951

BROADBAND CIRCULATOR OR ISOLATOR OF THE STRIP LINE OR MICROSTRIP TYPE

Ross Anderson, Campbell, Calif., assignor to Western Microwave Laboratories, Inc., Los Gatos, Calif.

Continuation-in-part of application Ser. No. 777,804, Nov. 21, 1968, now Patent No. 3,555,459. This application Nov. 7, 1969, Ser. No. 874,815
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **26 Claims**



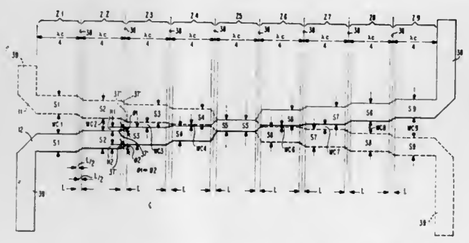
A microwave wide band circulator or isolator device of the strip line or microstrip type wherein the circuit is planar and has a plurality of outwardly tapering legs each of which constitutes a port. Ferrimagnetic or gyromagnetic material is provided overlying a substantial portion of the circuit including at least substantially all of the portion thereof functioning as the input and output ports of the device. The energy in the device propagates along the edges thereof, and accordingly the edges are designed to be free of abrupt changes in order that there be no abrupt impedance changes in the circuit. Uniformity of the field within the device utilizing relatively small magnets is achieved by a ground plane structure wherein the portion thereof in contact with the magnet and the gyromagnetic medium is formed from a highly permeable material while the remainder of the ground plane structure is formed from a nonmagnetic material. The peak power handling capability of the device may be increased by utilizing a gyromagnetic medium formed from two different materials chosen for respective optimum forward and reverse propagation characteristics, while the average power handling capability may be improved by means of a unique load structure.

3,617,952

STEPPED-IMPEDANCE DIRECTIONAL COUPLER

Elmer E. Beech, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1969, Ser. No. 854,360
Int. Cl. H01p *3/08, 5/14*
U.S. Cl. 333—10 **8 Claims**



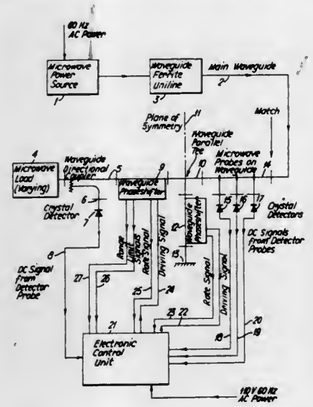
One or more transition regions of a microwave energy stepped-impedance directional coupling device, which has plural cascaded quarter-wavelength sections of parallel-coupled transmission lines, is or are provided with sloped edges. The sloped edges of a transition region are disposed in an oblique relationship with respect to each other.

3,617,953

MICROWAVE IMPEDANCE MATCHING SYSTEM

Ynte J. Kingma, and Jan Frederik Vaneldik, both of Edmonton, Alberta, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Mar. 16, 1971, Ser. No. 19,949
Int. Cl. H01p *5/08;* **H03h** *7/40*
U.S. Cl. 333—17 **12 Claims**



An impedance matching device for automatically and continuously matching a time varying microwave load to a fixed frequency microwave power source and its output line.

ERRATA

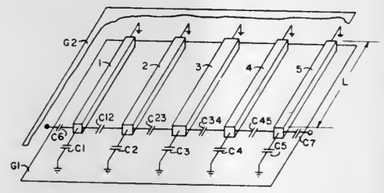
For Classes 33—24 and 333—202 see:
Patent Nos. 3,618,133 thru 3,618,135

3,617,954

SEMILUMPED COMB LINE FILTER

Ralph Levy, Newton, Mass., and John David Rhodes, Guisley, England, assignors to Microwave Development Laboratories, Inc., Needham Heights, Mass.

Filed May 8, 1970, Ser. No. 35,695
Int. Cl. H03h *7/10*
U.S. Cl. 333—73 **3 Claims**



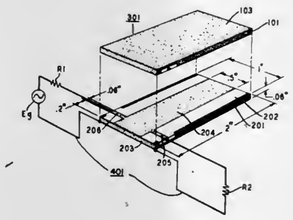
A band-pass filter for use in the VHF and UHF regions employs a digital line in which the length of the digits can be as short as one twelfth of the wavelength at the filter's midband frequency to permit the filter structure to be small compared to the wavelengths in the pass band while obtaining the advantage of the low loss of a digital line. The filter has an elliptic function and is particularly suitable for narrow band applications. The digital line is disposed between and spaced from a pair of ground plane plates and the line is formed by parallel digits which are short circuited at one end in the manner of a "comb" line. At the opposite end is a network of lumped element capacitors interconnecting adjacent digits of the line and coupling the end of each digit to ground.

3,617,955

TEMPERATURE COMPENSATED STRIPLINE FILTER

Joel C. Masland, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1969, Ser. No. 814,248
Int. Cl. H03h *7/02;* **H05k** *1/00*
U.S. Cl. 333—73 S **9 Claims**



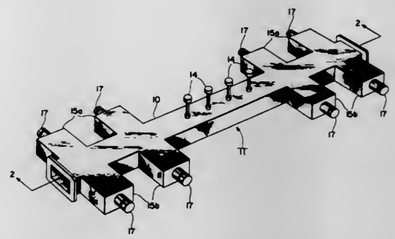
In a stripline filter that comprises a resonant length of stripline, the dielectric material is selected to have a dielectric constant with a negative temperature coefficient that is a direct function of the coefficient of linear thermal expansion of the stripline structure thereby substantially offsetting the frequency shifts caused by thermal expansion.

3,617,956

MICROWAVE WAVEGUIDE FILTER

Arvind R. Bastikar, Kanata, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Jan. 26, 1970, Ser. No. 5,562
Int. Cl. H03j *3/26;* **H03h** *7/10*
U.S. Cl. 333—73 W **4 Claims**



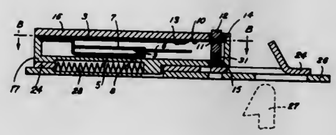
A complex waveguide filter which utilizes a number of conventional band-pass cavity resonators in conjunction with pairs of inductively coupled band-stop cavity resonators. The latter being inductively coupled to the waveguide to provide improved passband insertion loss and group delay characteristics.

3,617,957

LOCKING DEVICES FOR WASHING MACHINES OR ELECTROMECHANICAL APPLIANCES WITH BIMETALLIC ELEMENT

Norberto Brighenti, Naples, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 12, 1968, Ser. No. 783,372
Int. Cl. H01h *27/06, 61/06*
U.S. Cl. 337—77 **8 Claims**



A safety interlock for the door of electrical appliances such as washing machines comprises a thermostatic element heated by electrical power supplied to the appliance causing it to deflect. The deflection causes a locking member to slide into a mating aperture in a slide plate when the slide plate is biased into position by a hook on the appliance door. Once the locking member is in locking position, the door cannot be opened until the thermostatic element cools after deenergization. Means are provided for preventing excessive deformation of the thermostatic element and a shunt current path is provided to limit the amount of current passing through the thermostatic element and/or heater. Two forms of thermostatic elements and heaters therefor are disclosed.

3,617,958

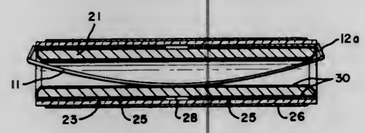
CONTACT SPRING

Ferdinand W. Schor, 3415 Rubio Crest Drive, Altadena, Calif., and Rolland R. Roup, 906 Story Place, Alhambra, Calif.

Filed Sept. 26, 1969, Ser. No. 861,299
Int. Cl. H03h *7/14*
U.S. Cl. 333—79 **3 Claims**

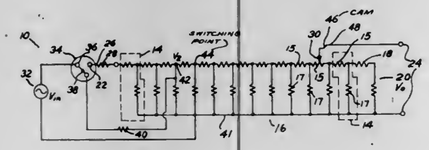
A filter connector assembly is disclosed which features an electrically conductive contact spring composed of beryllium copper or the like material and having a thin, elongated, and curved central portion of uniform cross section together with

latching tabs or lugs at each end of the central portion. These latching tabs are integral with the central portion of the spring and assume a bent-up position so as to be substantially perpendicular to the plane of the corresponding end part. The connector assembly includes a tubular-shaped filter mounted in the assembly; a connector contact pin which is inserted in and may be removed from the central bore of the tubular filter and which may have an external lead connected thereto in any desired manner; and the aforementioned contact spring permanently retained or captivated within the tubular filter after its initial insertion therein. The filter itself takes the form of an inner ferrite tube and an outer ceramic tube closely surrounding the ferrite tube, with appropriately located conductive coatings applied to the surfaces of both



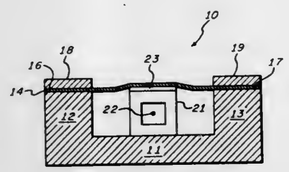
tubes. The filter may be of any desired type to give whatever filtering effect is required in a particular application, such as blocking interference signals, modifying pulse waveforms, establishing or changing passbands for applied signals, etc. The contact spring disclosed herein serves the dual functions of (a) making a stable and constant electrical contact between the conductive coating on the inner wall of the ferrite tube and the contact pin and (b) mechanically holding or securing the contact pin within the central bore of the ferrite tube. Another feature is that the latching tabs or lugs are so shaped and dimensioned as to fit within the ferrite tube bore with a clearance just sufficient to permit initial insertion of the contact spring, the latching tabs then serving to permanently retain the contact spring captive within the filter.

3,617,959
VARIABLE ATTENUATOR WHEREIN INPUT SIGNAL IS SWITCHED IN RESPONSE TO MOVEMENT OF VARIABLE TAP
Richard Brander, Cicero, Ill., assignor to Beltone Electronics Corp.
Filed May 27, 1970, Ser. No. 40,956
Int. Cl. H03h *7/26*
U.S. Cl 333—81 R **9 Claims**



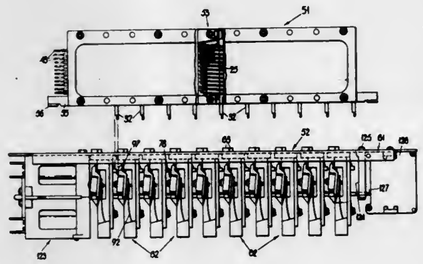
A ladder network having cascaded symmetrical resistor sections with a continuously variable output tap. A switch is provided at the input of the network to switch the input tap as a function of the attenuator setting to extend the attenuation range of a continuously variable attenuator. A bypass network functions to maintain the voltage at the output of the attenuator at a constant level when the input tap is switched.

3,617,960
WAVEGUIDE PARTIALLY FORMED OF A FLEXIBLE MEMBER FOR OBTAINING UNIFORM MINIMAL PRESSURE CONTACT WITH A LOAD THEREIN
Louis J. Lavedan, Jr., Clearwater, Fla., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,845
Int. Cl. H01p *3/12, 1/30*
U.S. Cl. 333—95 R **7 Claims**



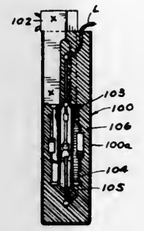
A microwave device comprising a waveguide having part of its periphery constructed of a flexible member held in contact at substantially zero pressure with a load positioned in the guide.

3,617,961
ELECTRIC CROSSBAR SWITCHES
Gerald David Breeze, Coventry, England, assignor to The General Electric Company Limited, London, England
Filed Aug. 17, 1970, Ser. No. 064,239
Int. Cl. H01h *67/14*
U.S. Cl. 335—112 **5 Claims**



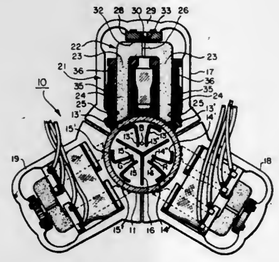
A crossbar switch comprising a rectangular array of contact sets formed by intersecting wire contacts. Each contact set is operated by an individual comb which is driven by a bridge magnet armature. Each column of contact sets has an associated bridge magnet. One contact set out of a column is selected for operation by selecting a particular 'select' bar, each row of contact sets having an associated select bar. A comb is only driven by a bridge armature when an 'interposer member' is interposed between the armature and the comb, which is otherwise inaccessible to the armature. The interposers are moved a row at a time by the select bars. The bridge armature does not drive the interposer directly but by way of a lost-motion coupling which permits the comb travel to be determined independently.

3,617,962
AUTOMATIC GUIDANCE SYSTEM FOR VEHICLES
Kenneth A. Wilson, Locust Valley, N.Y., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Division of Ser. No. 680,182, Nov. 2, 1967, Pat. No. 3,512,601.
Filed Apr. 3, 1970, Ser. No. 25,344
Int. Cl. H01h *36/00, 51/28*
U.S. Cl. 335—151 **7 Claims**



A switch device for placement in a floor for an automatic vehicle guidance system utilizing a reed switch encased in the floor having armature plates extending from the reed switch to the floor surface to detect the presence of a vehicle.

3,617,963
TEMPERATURE-COMPENSATED STATIC CONVERGENCE APPARATUS
Raymond F. De Both, Broadview, Ill., and Albert M. Anthony, Conneaut, Ohio, assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Jan. 2, 1970, Ser. No. 85
Int. Cl. H01f *3/12*
U.S. Cl. 335—211 **3 Claims**

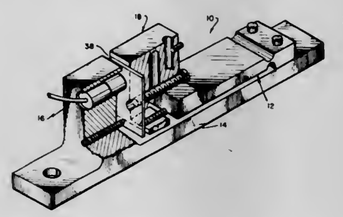


A temperature-compensated static convergence apparatus for establishing and maintaining a substantially constant magnetic flux field across an electron beam path in a tricolor cathode-ray tube has a primary flux circuit for directing the field of magnetic flux across the beam path. A permanent magnet, which applies a field of magnetic flux to the primary flux circuit, has a flux density that varies inversely with temperature. A flux-permeable compensating member, having a permeability that varies inversely with temperature, is disposed in magnetic coupling relation to the magnet and constitutes a flux loading circuit that diverts a portion of the magnetic flux from the primary flux circuit. The magnet and compensating member collectively establish, at a given temperature, a resultant magnetic flux field of predetermined strength across the electron beam path. Thus, a change in temperature that effects a change in the flux contribution of the magnet simultaneously alters the permeability of the compensating member so as to effect a substantially corresponding offsetting change in the loading effect of the compensator upon the field of the magnet, thereby maintaining the resultant flux field across the beam path at a predetermined strength.

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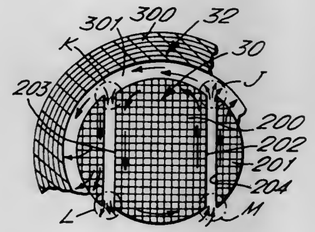
For Classes 335—212, 335—202 and 335—285 see: Patent Nos. 3,618,125, 3,618,136 and 3,618,137

3,617,964
LINEAR DISPLACEMENT AMPLIFICATION DEVICE AND DEFLECTION TRANSDUCER EMBODYING SAME
Ronald W. Bocksruker, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed May 4, 1970, Ser. No. 34,459
Int. Cl. H01f *21/02*
U.S. Cl. 336—30 **5 Claims**



A linear displacement amplification device having fulcrum means rockably engaging opposite sides of a lever in a common plane normal to the longitudinal axis of the lever and restrained against sliding movement along the lever, and means supporting one fulcrum, means for movement lengthwise of the lever relative to the other fulcrum means in response to a linear input displacement. This relative movement of the fulcrum means causes lateral displacement of one end of the lever proportional to but substantially greater than the input displacement. A deflection transducer embodying the linear displacement amplification device for producing an electrical output representing the amplified input displacement.

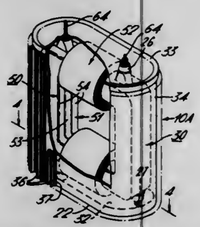
3,617,965
CORE ASSEMBLY FOR AN INDUCTIVE DEVICE
Anthony B. Trench, 25 Elizabeth St., Thornhill; Vaughan I. C. Marks, 56 Blakemanor Blvd., Scarborough, and William T. Arnold, R.R. #1, Queensville, all of Canada
Filed Apr. 9, 1969, Ser. No. 814,705
Claims priority, application Canada, Apr. 11, 1968, 017,329
Int. Cl. H01f *27/08, 27/24*
U.S. Cl. 336—61 **12 Claims**



A transformer of the shell type having two or more conductive coils physically in the form of closed loops and located side-by-side along a common axis with magnetizable material being provided by a ribbon of grain-oriented steel spirally wound around the legs of the coils to embrace the latter. The magnetizable material may be provided by concentric cylinders of spirally wound ribbon steel with adjacent spirals having the ribbons located substantially perpendicular to one another. A cylinder with the ribbon perpendicular to the axis of the cylinder may be formed of a grain-oriented steel in which case the ribbon is undulated, facilitating bending the same into a close spiral. The undulations are located

in internested relation reducing the likelihood of noise. The core and coil assembly is enclosed in a casing conforming substantially in shape to the outline configuration of the core and coil assembly and bushings are secured to the casing. Heat dissipation is facilitated by fins projecting outwardly from the casing and also by utilizing heat sinks having a portion located between the coils and a further portion projecting outwardly therefrom in direct physical contact with the casing. The heat sinks are preferably located so as not to intersect the high-density magnetic flux. The transformers may be constructed as identical units which may be stacked for increasing capacity and in which case the terminals are located electrically to interconnect adjacent units simultaneously with physically placing such units in stacked relation. A method of forming a coil is provided which includes simultaneously insulating the conductor turns one from the other and encapsulating the coil in a potting compound. To effect this, a spacer is applied to the conductor in the form of glass strands spirally wound onto the conductor and the conductor is thereafter wound into a closed loop coil. The formed coil is then placed in apparatus for impregnating the coil with an encapsulant. The same method is utilized to form a transformer with the encapsulation being effected with the core and coil assembly physically located within the transformer casing.

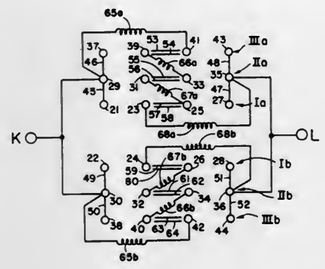
3,617,966
CORE AND COIL ASSEMBLY
Anthony B. Trench, 25 Elizabeth St., Thornhill, and Vaughan I. C. Marks, 56 Blakemanor Blvd., Scarborough, both of Canada
Filed Apr. 9, 1969, Ser. No. 814,733
Claims priority, application Canada, Apr. 11, 1968, 017327
Int. Cl. H01f *27/06*
U.S. Cl. 336—61 **7 Claims**



A shell core transformer having a core and coil assembly located in a casing with each coil being a separate element having a plurality of windings of conductor encapsulated in a potting compound. The coils are assembled in side-by-side relation and embraced by a magnetizable material preferably in the form of ribbon bands spirally wound around two or all four legs of the rectangularly shaped coils. Posts are formed integral with the encapsulant which serve as terminals and mounting members supporting the core and coil assembly within the casing. Each coil has a semiconductive film on the surface of the encapsulant. To facilitate dissipating heat, heat sinks are provided consisting of flat plates or fins having a portion disposed between adjacent faces of the coils and a further portion projecting radially outward therefrom and in contact with the casing. The casing also is provided, in some instances, with fins. There is also a method of forming a coil which includes winding a plurality of turns onto a disc having a groove in one face thereof for receiving the conductor and subsequently assembling further members to enclose the wound coil in a chamber for receiving an encapsulant.

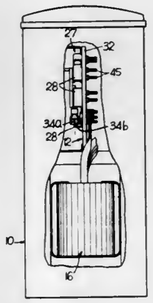
3,617,967
CURRENT TRANSFORMER HAVING PRIMARY SIDE SWITCHABLE TO DIFFERENT MEASURING RANGES
Werner Mitrach, Bamberg, Germany, assignor to Electromagnetic Industries, Inc., Clearwater, Fla.
Filed Apr. 14, 1970, Ser. No. 28,462
Int. Cl. H01f *21/00*
U.S. Cl. 336—147 **10 Claims**

A current transformer has a pair of input terminals and a primary side which is switchable to different measuring ranges, the current transformer having two or four primary winding sections whose ends are connected to switching terminals disposed in a transformer head having a pair of spaced partitions. By means of the switching terminals, two primary winding sections may be connected selectively either in parallel or in series, or four primary winding sections may be connectable selectively in parallel, series-parallel, or series.



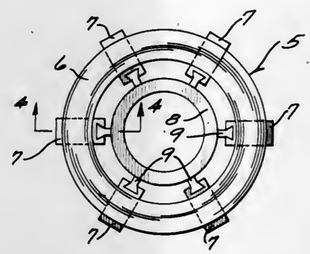
The switching terminals are arranged in pairs each including a first terminal and a second terminal, with the first terminals being arranged in one or more rows on one of the partitions and the second terminals being arranged in one or more rows on the other of the partitions. Each end of each winding section is connected to a respective one of the pairs of switching terminals, including a respective first and a respective second terminal.

3,617,968
CONNECTOR LEAD FOR ELECTRICAL APPARATUS AND COMBINATION THEREOF WITH SAID APPARATUS
Ralph D. Wakeam, Gadsden, Ala., and Edward Soref, Milwaukee, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Sept. 22, 1969, Ser. No. 859,932
Int. Cl. H01j *15/10*
U.S. Cl. 336—192 **23 Claims**



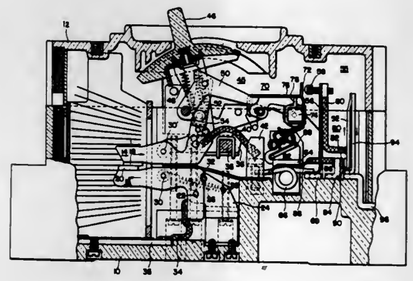
In combination with an electrical apparatus having an aluminum sheet winding, a multiple layer strip-type connector lead between the winding and a terminal spaced from the winding, and a method of making said connector lead. One end of the connector lead is mechanically and electrically secured to a convolution of the aluminum sheet winding by one or more pluglike welds, the connector lead being secured at the opposite end thereof to a terminal stud or studs. When the connector lead is of aluminum, it may be plated with tin or other suitable metal on at least the end thereof connected to the terminal stud or studs to prevent formation of an aluminum oxide coating on the portion of the connector lead which is so plated.

3,617,969
ADHESIVE AND METHOD OF APPLYING SAME
Frank W. Heinrichs, McMurray, Pa., assignor to McGraw Edison Company, Elgin, Ill.
Continuation-in-part of Ser. No. 601,292, Nov. 21, 1966
Filed July 28, 1969, Ser. No. 847,812
Int. Cl. H01f *27/30*; **B32b** *27/30, 27/42*
U.S. Cl. 336—199 **10 Claims**



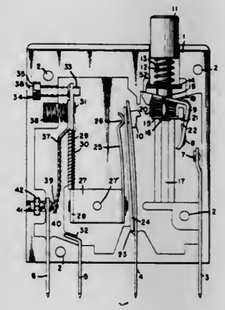
An adhesive is provided which includes polyvinyl butyral to improve the corona starting voltage characteristics of the adhesive. The adhesive is a mixture of a polyvinyl butyral varnish with an equal amount of phenolic resin varnish. The phenolic is a predominant ingredient by weight in the phenolic resin varnish but the polyvinyl butyral is not the predominant ingredient in the polyvinyl butyral varnish so that the resultant adhesive, although containing polyvinyl butyral, is predominantly phenolic.

3,617,970
DEVICE FOR PROTECTING THERMALLY RESPONSIVE ELEMENT OF CIRCUIT INTERRUPTER
Tutomu Hanafusa, Osaka, and Yoshio Kobayashi, Nara, both of Japan, assignors to Terasaki Denki Sangyo Kabushiki, Kaisha, Osaka, Japan
Continuation of application Ser. No. 690,234, Dec. 13, 1967, now abandoned. This application May 6, 1970, Ser. No. 37,369
Int. Cl. H01h *71/16, 73/54, 75/12*
U.S. Cl. 337—3 **2 Claims**



A protective device for protecting a thermally responsive element disposed in a circuit breaker comprising a movable contact carried by one end of a resilient conductor disposed in slightly spaced, parallel relation to a rigid conductor. The resilient conductor is connected at a point intermediate both ends to the bimetallic element through a flexible lead. A short circuit current flows in opposite directions through both parallel conductors to immediately generate an electromagnetic repulsion between them. This causes the movable contact to engage the associated stationary contact to complete a branch circuit around the bimetallic element to protect it from the short circuit current.

3,617,971
THERMAL SWITCH WITH A BIMETALLIC STRIP AND A HEAT STORAGE DEVICE
Jakob Ellenberger, Ernhofer Weg 2, Altdorf, near Nuernberg, Germany
Filed Nov. 5, 1969, Ser. No. 874,255
Claims priority, application Germany, Nov. 7, 1968, P 18 07 560.0
Int. Cl. H01h *61/013, 71/16, 73/30*
U.S. Cl. 337—66 **8 Claims**

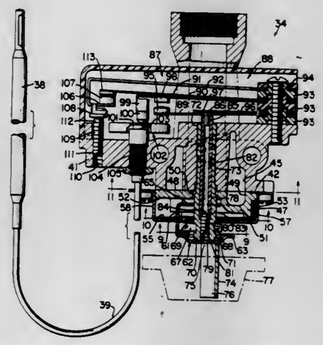


A thermal switch has a housing and a heat storage device having the shape of a parallelopipedic metal block swingably mounted by a pin in the housing. A bimetallic strip has an end fixed to the heat storage device on one side of its pin. A metal strip has an end fixed to the opposite side of the heat storage device. The metal strip carries electrical heating winding. A contact bridge is actuated by the bending of the bimetallic strip caused by the heating by the heat storage device.

ERRATUM

For Class 337—77 see:
Patent No. 3,617,957

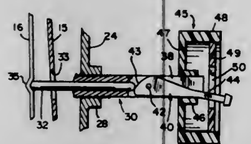
3,617,972
FUEL CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE
Charles D. Branson, and Denis G. Wolfe, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 672,520, Oct. 3, 1967, Pat. No. 3,521,814.
Filed Dec. 9, 1969, Ser. No. 880,513
Int. Cl. H01h *37/26, 37/40*
U.S. Cl. 337—323 **10 Claims**



An electrical thermostat having a movable selector carried by the housing thereof. A temperature sensing device is car-

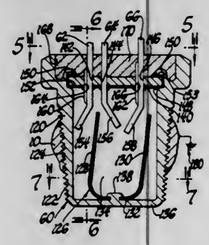
ried by the housing and has a movable part facing in one direction. A first spring blade is carried by the housing and has a first contact. A second spring blade is carried by the housing and has a second contact cooperable with the first contact. The second spring blade is normally being urged toward the first contact and engages the movable part of the temperature sensing device to follow movement thereof while the first spring blade is normally being urged toward the second contact. Means are carried by the housing for overriding the first spring blade to tend to move the first contact away from the second contact, the selector having a part facing in the one direction and engaging the overriding means for positioning the overriding means relative to the housing and thus positioning the first contact relative to the second contact whereby the temperature sensing device is adapted to place the contacts in contact with each other when the temperature sensing device senses a temperature effect below a preselected temperature effect setting of the selector and is adapted to move the second contact away from the first contact when the temperature-sensing device senses a temperature effect above the preselected temperature effect of the selector means.

3,617,973
ELECTRIC SWITCH
Amos E. Chesnut, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed June 19, 1970, Ser. No. 47,750
Int. Cl. H01h *37/18*
U.S. Cl. 337—375 **6 Claims**



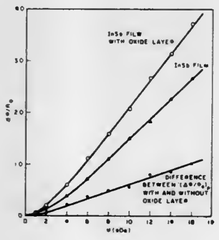
An electric switch in which a pair of blades having contacts thereon are mounted on a base. A bimetallic blade is also mounted on said base in engagement with one of said pair of blades to vary the position of their contacts with respect to each other in response to temperature changes. A sleeve adjustably carried in a rigid arm mounted on the base has a pin projecting therefrom for engagement with one of said pair of blades to vary the position of their contacts with respect to each other for controlling the temperature at which said bimetallic blade will effect contact opening and closing. Said pin is also movable with respect to the sleeve by a cam swingably mounted in said sleeve to vary the position of the contacts between an off position in which they are prevented from closing and an on position in which they are opened and closed under the action of the bimetallic blade.

3,617,974
ELECTRICAL SWITCHING MEANS
Aloysius Joseph Kochanski, 27312 Spring Arbor Drive, Southfield, Mich., and Charles John Hire, 6 Cranswick Lane, Rochester, N.Y.
Filed Nov. 25, 1969, Ser. No. 879,648
Int. Cl. H01h *37/04, 37/28, 37/52*
U.S. Cl. 337—380 **9 Claims**



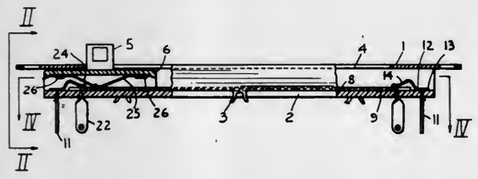
An electrical switching assembly has a temperature-responsive bimetal for completing an electrical circuit with a cooperating switch terminal member which can be variably positioned in order to achieve the making and breaking of a related circuit at a predetermined temperature. Modifications of such a switch assembly include the provision of controlled hysteresis within the bimetal in order to result in the making of the circuit therethrough to occur at an environmental temperature different from the environmental temperature at which the circuit therethrough is opened.

3,617,975
TWO-LAYER MAGNETORESISTORS
Harry H. Wieder, Riverside, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Oct. 13, 1969, Ser. No. 865,708
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 **9 Claims**



Thin film and bulk magnetoresistors having sensitivity improved by a factor greater than two by coating the magnetoresistor element with a thin conductive layer which short circuits the Hall effect in the semiconducting material.

3,617,976
DOUBLE PATH LINEAR MOTION POTENTIOMETER
Dudley H. Campbell, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.
Filed Feb. 8, 1968, Ser. No. 704,005
Int. Cl. H01c *5/02*
U.S. Cl. 338—133 **5 Claims**

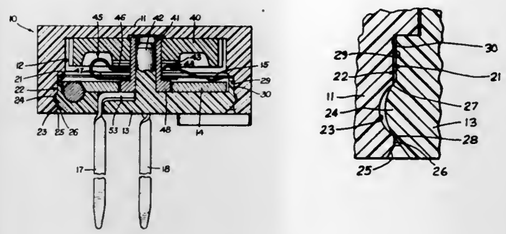


Two laterally spaced parallel bands of electrical resistive material are applied to a dielectric surface of a linear motion potentiometer. A slide movable lengthwise of the bands carries a pair of sliding contacts, each of which engages a different one of the bands and a separate collector strip beside it. The ends of the bands are engaged by resilient electric terminals.

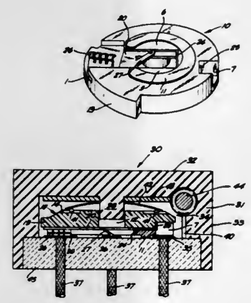
3,617,977
ELECTRICAL DEVICE HAVING SNAP TOGETHER HOUSING PARTS
Adolf K. Schelterbauer, Munich, and Helmut Stickdorn, Neubiberg Bavaria, both of Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Sept. 5, 1969, Ser. No. 855,506
Int. Cl. H01c *9/02, 5/02*
U.S. Cl. 338—164 **11 Claims**

Electrical device having snap together housing parts, one part having a cylindrical outside surface formed with an annular projection to snap into an annular groove of a cylindrical inside surface of the other part. The projection and the groove have rounded cross-sectional shapes and the radius of

curvature of the projection is greater than that of the groove, providing restricted areas interengaged with a high unit pressure to provide an effective seal. Impedance means are provided on one part in the form of an annular resistance element engaged by a wiper contact rotatable about the axis of the cylindrical surfaces and connected to a worm gear which is engaged by a worm on the other part when the parts are assembled.

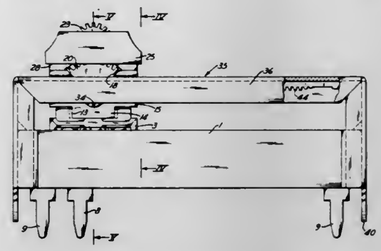


3,617,978
ROTOR AND CONTACT ASSEMBLY FOR VARIABLE RESISTANCE DEVICE
George A. Gerstmeier, Santa Ana, Calif., assignor to Beckman Instruments, Inc.
Filed Mar. 12, 1970, Ser. No. 18,835
Int. Cl. H01c *9/02*
U.S. Cl. 338—174 **11 Claims**



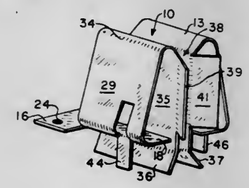
In a variable resistance device of the type including a housing enclosing an annular resistance element, a rotor member mounted within the housing, an electrically conductive wiper contact attached to the rotor member for rotation therewith, the wiper contact having a resilient wiper arm extending into electrically conductive engagement with the resistance element, and drive means for rotating the rotor member, the improvement wherein the rotor member includes a pocketlike slot therein, and wherein the wiper contact includes a substantially planar section, the width of at least a portion of which is slightly greater than the width of the slot, the planar section extending into the slot thereby forming an interference fit therewith. The wiper contact includes an upended tab which abuts against a wall of the rotor member to accurately locate the contact relative to the rotor member. A tab on the wiper contact extends through a further slot in the rotor member into a cavity therein. By bending the tab down into the cavity, the contact is securely locked in place.

3,617,979
LINEAR MOTION POTENTIOMETER WITH GEARS AND RACK
Harold L. Purdy, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.
Filed Oct. 5, 1970, Ser. No. 77,921
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **13 Claims**



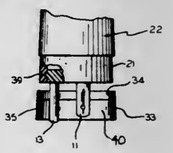
An elongated case is provided in one of its sidewalls with a longitudinal slot, through which extends slidable means movable lengthwise of the slot. A bridging contact inside the case is carried by the The slideable means also means in engagement with resistance and collector elements. The slideable means also carry a large gear that rotates a pinion. An exposed manually rotatable small gear meshes with the large gear and is likewise carried by the slidable means. Rack teeth extend along the case and engage the pinion so that when the small gear is turned by hand the slidable means will be moved lengthwise of the case to adjust the potentiometer.

3,617,980
PRINTED CIRCUIT BOARD CONNECTOR CLIP
John C. Alkire, Santa Ana, and Donn G. Nelson, Orange, both of Calif., assignors to Anaconda Wire and Cable Company
Filed June 18, 1970, Ser. No. 47,498
Int. Cl. H01r *27/02*
U.S. Cl. 339—32 R **8 Claims**



A clip is described that can be folded from a single sheet metal stamping and which, when fastened to a printed circuit board, will accept and grip connector pins from above, below, or across the board.

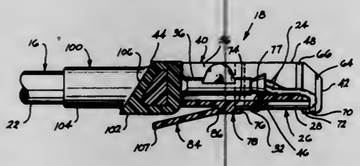
3,617,981
HEAVY DUTY ELECTRICAL PLUG
David E. Kramer, Northbrook, Ill., assignor to Daniel Woodhead Company, Northbrook, Ill.
Filed Dec. 15, 1969, Ser. No. 884,981
Int. Cl. H01r *15/06, 33/06*
U.S. Cl. 339—63 M **3 Claims**



Heavy-duty electrical plug having a tubular elastomeric body portion, a disc tightly seated in one end thereof, a plurality of male thermal contacts mounted in the disc, a sub-

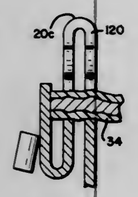
stantially rigid ring fixed tightly about said end of the body portion, a threaded nipple mounted in the other end of the body portion, a tapered elastomer grommet seated in the nipple, and a cord grip nut threaded on the nipple.

3,617,982
DEVICE FOR MAKING AN ELECTRICAL CONNECTION
Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Sept. 9, 1968, Ser. No. 758,502
Int. Cl. H01r *13/56, 23/04*
U.S. Cl. 339—91 **9 Claims**



A plug is provided wherein substantially straight terminals can be attached to flexible conductors, and the straight terminals can be inserted into a molded dielectric body of the plug with substantial ease from a high-volume manufacturing point of view. The body of the plug is molded together integrally so that it can be handled as a one-piece structure when it is being assembled with the terminals.

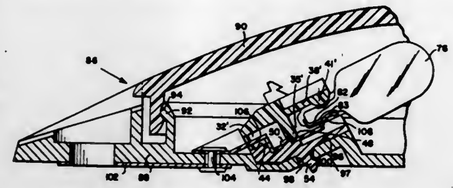
3,617,983
TERMINAL JUNCTION INTERCONNECTION SYSTEM
George Allen Patton, Pfafftown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of application Ser. No. 724,346, Apr. 26, 1968, now abandoned. This application Mar. 7, 1969, Ser. No. 805,160
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 **10 Claims**



Terminal device for a wire comprises a section of metal strip bent 180° intermediate its end to form two plate sections connected by a bight. A slot extends into the bight and partially into the plate sections. Wire is forced into the slot and electrically contacted by edges of the slot in each plate section. Modified version has a third plate section integral with other two plate sections. Third plate section may be slotted or unslotted; if unslotted, the third plate section functions as a wire trimming means in cooperation with an insertion tool. Housings and mounting means of various types for terminals are also disclosed to hold a plurality of terminals.

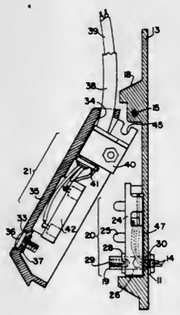
3,617,984
SOCKET FOR ELECTRIC LIGHT BULBS
Robert R. Rossi, Audubon, N.J., assignor to Arrow-Safety Device Company, Mt. Holly, N.J.
Filed Oct. 1, 1969, Ser. No. 862,651
Int. Cl. H01r *13/48*
U.S. Cl. 339—61 L **5 Claims**

A molded plastic socket for special bulbs of the type having a glass base around which are bent loops of wire comprises a pair of identical molded plastic elements arranged to interlock with each other. A flexible plastic arm forming part of each of the two socket members cooperates with a metal clip mounted in the opposite socket member to hold the bulb in place and to deliver electric current to operate the bulb.



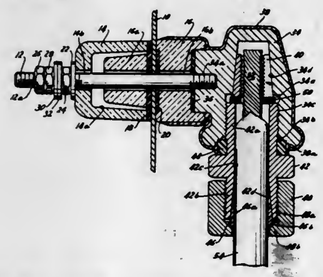
Wire may be connected to the metal clips by insulation-piercing elements formed in clips.

3,617,985
ACCESSORY CONNECTOR
Joseph D. Kehl, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 24, 1969, Ser. No. 869,171
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 M **6 Claims**



An accessory connector for attaching an external control device to a portable two-way radio. The connector consists of two portions; the first portion being secured to the radio housing in place of the push-to-talk switch, and the second portion being secured to the radio housing in place of the push-to-talk switch actuator. The two portions, when coupled together, provide an electrical and mechanical connection between the external operating device and the two-way radio thereby allowing remote operation in place of operation from the push-to-talk switch.

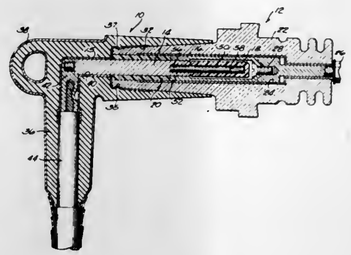
3,617,986
TRANSFORMER TAP FOR UNDERGROUND APPLICATIONS
Stephen P. Becker, and Henry R. Wengen, both of Poughkeepsie, N.Y., assignors to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.
Filed Mar. 6, 1969, Ser. No. 804,912
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 A **1 Claim**



A rugged and compact connector or tap to a transformer or other encased electrical component for direct burial appli-

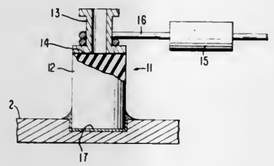
cations providing permanent, watertight, insulated junction including internal and external attachment means and external insulation means.

3,617,987
MAGNETIC SAFE BREAK TERMINATOR ARC SUPPRESSOR
Edward L. Sankey, New Berlin, Wis., assignor to RTE Corporation, Waukesha, Wis.
Filed Mar. 10, 1969, Ser. No. 805,435
Int. Cl. H01r *13/52*
U.S. Cl. 339—111 **6 Claims**



An electrical connector including a plug having a member of arc-extinguishing material connected to an electrically conductive male element by a ferromagnetic stud and a receptacle having a sleeve of arc-extinguishing material connected to a hollow electrically conductive female element.

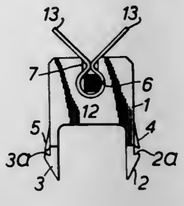
3,617,988
INSULATIVE ELECTRICAL TERMINAL
Curtis Eugene Ward, 11486 Miller Ave., Los Altos, Calif.
Filed Aug. 11, 1969, Ser. No. 848,985
Int. Cl. H01r *9/06*
U.S. Cl. 339—112 **4 Claims**



An insulative electrical terminal is disclosed. The terminal includes a ceramic body metallized on one end which is brazed to a terminal post structure to which an electrical circuit component is to be soldered. The other end of the ceramic insulator body is affixed to a metallic chassis via a thermally conductive adhesive which preferably forms a fillet between the insulator body and a pocket formed in the metallic chassis member.

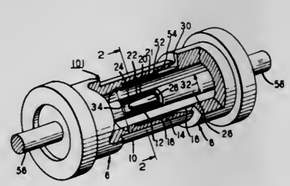
3,617,989
ELECTRICAL CONNECTOR
Clarence Willans Heath, Sycamore House, Bleasby, Nottinghamshire, England
Filed Feb. 19, 1968, Ser. No. 706,549
Claims priority, application Great Britain, Feb. 24, 1967, 8872/67
Int. Cl. H01r *9/12, 9/16*
U.S. Cl. 339—198 **3 Claims**

An electrical connector comprises a body of insulating material having a channel-shaped recess in which a contact strip is assembled. The strip has an arcuate-shaped base nested in the recess which is of corresponding shape and a plurality of contact fingers for attachment to lead wires. A metal terminal block for connection to a main supply, extends transversely of said recess and is engaged by the contact strip. The connector is formed with resilient legs for



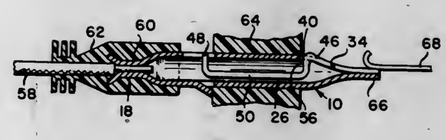
snapping into an aperture in a support on which the connector is to be mounted.

3,617,990
COAXIAL CONNECTOR
Roger J. Colardeau, Florham Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 1, 1969, Ser. No. 881,008
Int. Cl. H01r *17/06, 11/22*
U.S. Cl. 339—177 E **2 Claims**



A coaxial connector has solid conductive sleeves surrounding both the inner and outer conductor contacts to reduce RF leakage and degradation caused by mechanical discontinuities. The connector has all contacts in one half of the connector and very low insertion forces are sufficient to achieve good electrical contact.

3,617,991
ONE-PIECE CONNECTOR INCLUDING RELEASE MEANS
Bernard Edward Shlesinger, Jr., Annandale, Va., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 19, 1967, Ser. No. 654,504
Int. Cl. H01r *9/16*
U.S. Cl. 339—217 J **47 Claims**

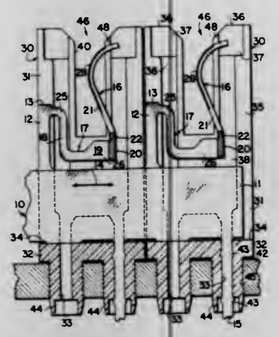


A one piece plug connector comprising a front portion, an intermediate portion and a rear portion and said plug connector having an integral locking member comprising a detect and a release member; an opening in the front portion for the detent and an opening in the rear portion for a release member; and said plug connector being formed from a one piece blank of material having a detent cutout on the front portion and the locking member extending along one side and parallel to that side edge of the blank.

3,617,992
SWAGED CARD-EDGE CONTACT AND BUS STRIP WITH INTEGRAL CONTACTS

Herbert E. Ruehlemann, Huntingdon Valley, and Peter Slobodzian, Philadelphia, both of Pa., assignors to Elco Corporation, Willow Grove, Pa.

Continuation of application Ser. No. 630,612, Apr. 13, 1967, now abandoned. This application Aug. 26, 1968, Ser. No. 757,214
Int. Cl. H01r *9/14, 13/26*
U.S. Cl. 339—242 **11 Claims**

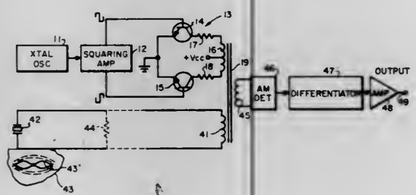


The nose section of a printed circuit board connector stamped from a strip of metal has two different thicknesses achieved by progressively piercing a U-shaped hole in the strip to form a cantilevered lug oriented normal to the grain direction, and then swaging the lug to increase its width and reduce its thickness. The U-shaped hole provides clearance for the two dimensional growth of the lug resulting from the swaging operation without affecting the remainder of the strip which is then progressively pierced to form a cantilevered ear oriented in a direction parallel to the grain with the swaged lug supported on the free end of the ear. The cantilevered ear is then progressively bent along the line perpendicular to the grain to turn the lug so that it defines a surface perpendicular to the ear, thus establishing the wiping finger of the contact.

3,617,993
CW DOPPLER TRANSCEIVER SYSTEM

Harold Lee Massie, Trenton, and Bruce Elson Mount, Wayne, both of N.J., assignors to Hoffmann La Roche Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 830,681, June 5, 1969, now abandoned. This application Sept. 10, 1969, Ser. No. 856,759
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **10 Claims**

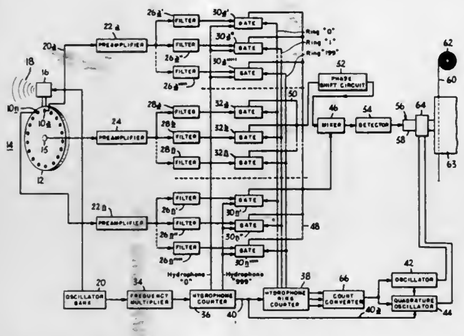


A transceiver system for processing a Doppler signal, utilizing a common transmit-receive transducer driven by a high-frequency RF-square wave amplitude limited signal for eliminating AM transmitter noise, and a receiver for amplitude-demodulating the received RF output of the transducer to provide a Doppler frequency output.

3,617,994
SONOGRAPHY SYSTEM

William E. Glenn, Jr., 140 Bentwood Drive, and Frank B. Gorman, 276 East Hunting Ridge Road, both of Stamford, Conn.

Filed Jan. 28, 1969, Ser. No. 794,560
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 **15 Claims**

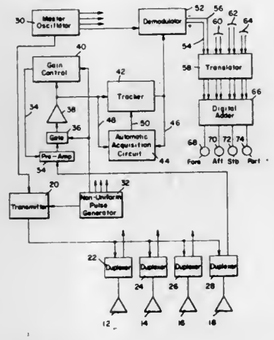


As described herein, an object field is simultaneously illuminated by acoustic waves having different frequencies and the waves reflected off objects in the field are recorded by a plurality of hydrophones arranged in a circular array and supplied as voltage signals to a plurality of tuned circuits. The tuned circuits separate the different frequency components of the developed signals and supply the component signals, either sequentially through a scanning network to a mixer circuit wherein the component signals are combined with a reference signal having frequencies equal to the frequencies of the separated component signals and selectively out-of-phase therewith, or to a plurality of mixer circuits wherein the component signals are combined with reference signals having frequencies equal to the frequencies of the separated component signals and selectively out-of-phase therewith. The combined signals are then supplied sequentially to a recording apparatus which records the signals on thermoplastic film in differently dimensioned patterns which correspond to the hydrophone array.

3,617,995
NONUNIFORM PULSE SONAR NAVIGATION SYSTEM

Thomas A. Goulet, Reseda, Calif., assignor to The Marquardt Corporation, Van Nuys, Calif.

Filed Apr. 10, 1969, Ser. No. 814,987
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **10 Claims**



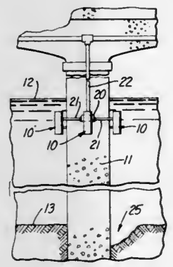
A nonuniform pulse sonar system employing Doppler information for navigational purposes is disclosed. A train of

pulses including a plurality of energy pulses having varying predetermined widths and spacing is provided by a nonuniform pulse generator to energize a transducer which serves as a projector adapted to transmit acoustical energy into a body of water. Reflected energy is sensed by the transducer, which also serves as a hydrophone, and subsequently processed by a tracker which selects and reproduces, as a continuous frequency signal, the predominant frequency in the frequency spectrum of the reflected energy detected. A demodulator unit is employed to compare the continuous frequency signal with the frequency of the energy pulses used to energize the transducer, the frequency difference constituting a Doppler frequency that is proportional to the velocity of a craft, on which the sonar system is mounted, relative to the object, or objects, such as the ocean floor, from which the transmitted energy is reflected.

3,617,996
SCOUR DETECTION AT BRIDGE PIERS AND THE LIKE

Frederick George Herbert, Oakton, Va., assignor to Data-Design Laboratories, Cucamonga, Calif.

Filed Nov. 24, 1969, Ser. No. 879,301
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **8 Claims**



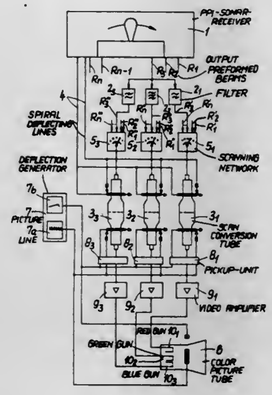
Apparatus for measuring bottom scour at structures in the water, such as bridge piers, abutments, retaining walls, dams, locks, drilling rigs, lighthouses and radar platforms, A plurality of electroacoustical transducers on the structure at spaced locations and directed toward the bottom, with means for periodically energizing a transducer at each location and means for determining transit times to the bottom and return. The transit times can be viewed, recorded and compared, with differences in transit times providing a measure of scour at the bottom.

3,617,997
DISPLAY DEVICE FOR TARGET POSITION-FINDING APPARATUS

Heinrich Maass, Bremen St. Magnus, and Reinhard Wilhelm Leisterer, Bremen, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter, Haftung, Essen, Germany

Continuation of application Ser. No. 775,477, Nov. 13, 1968, now abandoned. This application Dec. 29, 1969, Ser. No. 888,510
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **5 Claims**

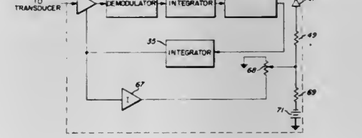
A display device for target position-finding apparatus of the type employing echo signals, which displays a true map-scale image of targets on a cathode ray tube screen. According to the invention, a color picture tube is used as the cathode-ray tube and its three color guns are respectively supplied with the echo signals from radially stationary, advancing and receding targets.



3,617,998
NOISE SIGNAL DETECTOR

Nathan Freedman, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 30, 1969, Ser. No. 837,630
Int. Cl. H04b *1/10, 11/00*
U.S. Cl. 340—5 R **7 Claims**



A receiver for use in a system in which randomly varying target-indicating signals from a transducer are detected in the presence of noise signals which may vary in amplitude between wide limits. Advantage is taken of the fact that a moving target, upon passing through the field of a transducer, will cause the root mean square value of the power of the signals received by the transducer to rise and fall independently of the noise power. Therefore, by establishing a threshold level for detection which rises and falls with changes in the root mean square value of the noise power, the existence of target indicating signals may be deduced when such a threshold level is exceeded.

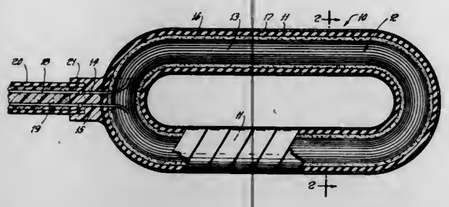
3,617,999
INTERNAL COIL MAGNETOSTRICTIVE TRANSDUCER

David E. Parker, Pawcatuck, and Thomas L. Beaudoin, Mystic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 21, 1969, Ser. No. 851,965
Int. Cl. H04r *15/00*
U.S. Cl. 340—11 **4 Claims**

An acoustic waterproof transducer of a thin magnetostrictive strip formed into a closed loop and having a pressure release material against one surface thereof. An electrically

conducting wire is continuously loop wound within said closed loop transversely and disposed in a waterproof jacket.

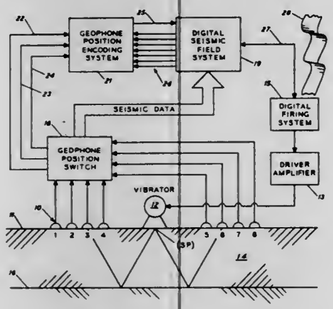


The entire structure is formed into a longitudinally extending loop transducer.

3,618,000
SYSTEM FOR GENERATING AND TRANSMITTING A POSITION IDENTIFICATION CODE TO IDENTIFY GEOPHONE LOCATION AND METHOD OF USING SAME

Henry T. Carruth, Jr., Houston, Tex., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 6, 1969, Ser. No. 874,668
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 DP **15 Claims**



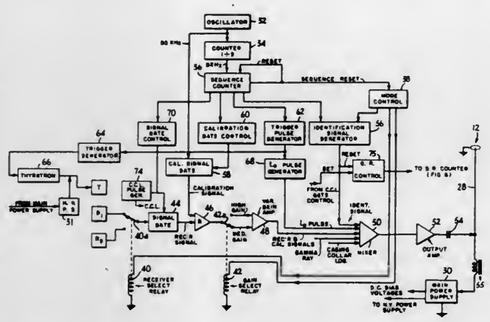
A binary position code—preferably an 18-bit binary digital code—is generated by means of a multicontact, compact geophone switch interconnected between an encoder and a series of geophones positioned at the earth's surface. In a preferred embodiment, a 7-bit subcode identifies the marker position of at least one lead or marker geophone of the series of geophones; while two 5-bit subcodes identify the gap spacing between two subsets of geophones, if any, should the seismic prospecting crew employ split spread shooting techniques. (In split spread shooting, two groups of geophones are separated by an in-line distance centered at the location of the energy source.) The 18 bits of information are then combined with three bits of control data. The result—a 21-bit digital word—is then recorded on magnetic tape on the header section as header information. To indicate gap spacing, the tape can be processed in a manner directing the subtraction of one 5-bit code from the other 5-bit code, the difference appearing in decimal notation on the data printout.

3,618,001
DOWNHOLE ACOUSTIC LOGGING CONTROL SYSTEM

Fred W. Zill, Houston, and Frank P. Kokesh, Clear Lake, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 25, 1968, Ser. No. 715,667
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 CM **6 Claims**

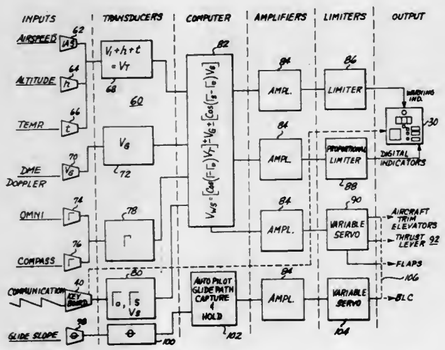
Apparatus for acoustically logging a borehole to obtain indications of the effectiveness of the cement between a casing and a borehole to prevent fluid communication, characterized by a downhole digital control system for repetitively energizing an acoustic transmitter and selectively coupling electrical signals developed by the receivers upon receiving transmitted acoustic energy to a signal channel. The signal channel is arranged to provide at least two degrees of amplification of the electrical signals in a sequence synchronized with the transmissions of acoustic energy from the transmitter. In a predetermined order, electrical signals from each receiver corresponding to different acoustic transmissions will be amplified to respective different degrees and coupled to a conductor for transmission to the surface. For the purpose of identifying the receiver and degree of amplification selected, the system provides, at preselected intervals, both an identifying pulse signal and a calibration signal of reference amplitude and frequency. All functions of the downhole system are controlled by a digital sequence counter and associated circuits which automatically select the receiver, the degree of amplification and relative time of occurrence of each signal during each sequence.



3,618,002
WINDSHEAR WARNING SYSTEM AND INDICATOR

William E. Stinson, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 2, 1970, Ser. No. 15,706
Int. Cl. B64d *45/00*
U.S. Cl. 340—27 R **10 Claims**

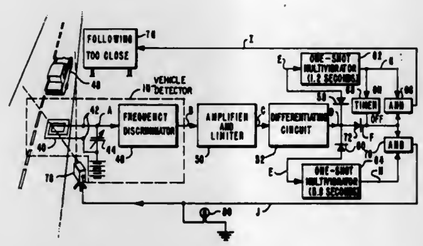


A flight control system and indicator to inform a pilot in advance if a potential windshear condition exists between the aircraft and the airport of intended landing. Current wind velocity and ground speed information from the airport vicinity and the velocity of the aircraft are used as inputs for electrically calculating a signal equal to windshear velocity potential value. This signal is continuously corrected by current input variations and displayed by the indicator to the pilot during his approach and descent. If this value persists as descent continues, it constitutes a quantitative warning of an imminent windshear.

3,618,003
VEHICLE INTERVAL DETECTION AND SIGNALING SYSTEM

Arthur N. Marshall, 5501 Kingsbury Road, Richmond, Va.

Filed Mar. 19, 1968, Ser. No. 714,214
Int. Cl. G08g *1/09*
U.S. Cl. 340—31 **10 Claims**

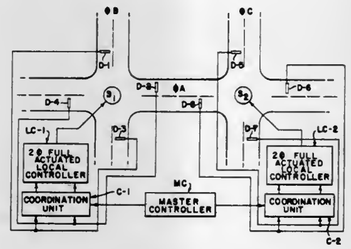


An output from an appropriate detector that senses the presence of a vehicle at a given point in a traffic lane activates a timed conditioning means which maintains one part of a coincident logic arrangement enabled for a predetermined fixed period of time after the vehicle has passed the given point. Another output from the detector indicating the arrival of another vehicle at the given point within the fixed period established by the conditioning means fully enables the coincident logic arrangement which then actuates a warning signal to caution the motorist in the following vehicle that the interval is unsafe or actuates an appropriate recorder, such as a camera, for identifying the vehicle and recording the event.

3,618,004
COORDINATION OF FULL ACTUATED TRAFFIC CONTROLLERS

Ralph M. Riddle, Jr., Moline, Ill., assignor to Gulf & Western Industries, New York, N.Y.

Filed Apr. 8, 1969, Ser. No. 814,407
Int. Cl. G08g *1/08*
U.S. Cl. 340—35 **11 Claims**

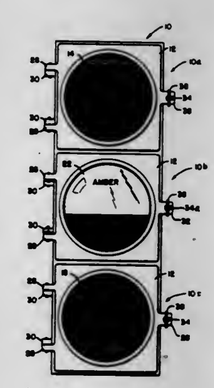


There is disclosed a coordination unit for coordinating the operation of a full actuated traffic controller in an interconnected signalized system. The controller serves to control a traffic signal which displays go, caution, and stop intervals to at least two traffic phases each having associated therewith traffic detector means for detecting traffic in that phase and developing a go interval initiating control signal in response to the detection of traffic and developing a go interval terminating control signal in the other phase or phases. Also, the controller includes control circuit means associated with each phase and comprising, go interval actuation means associated with each phase for commencing a go interval display to the associated phase, and go interval terminating means for terminating the go interval displayed upon removal of a said signal from the control circuit means. The coordination unit comprises means for cyclically timing successive background cycles having each a predetermined time duration; means for dividing the background cycle into at least two background cycle time intervals respectively associated with each of the phases; actuatable means responsive during one of the associated intervals for coupling one of the traffic detector means to an associated one of the control circuit means for the duration of the associated interval so that a control signal developed by the traffic detector means is applied to the control circuit means only during that interval; and, actuatable means responsive during the other associated interval for coupling the other traffic detector means to the associated control circuit means so that a said control signal developed by the other traffic detector means is applied to the other control circuit means only during the other associated interval.

3,618,005
TRAFFIC SIGNAL WITH SHUTTER MEANS

Wayne Emil Jensen, P.O. Box 325, Glenwood, Ill.

Filed Sept. 23, 1968, Ser. No. 761,547
Int. Cl. G08g *1/096*
U.S. Cl. 340—43 **20 Claims**



A traffic control signal or a conversion unit therefor having a shutter which is unrolled across the lens of an amber caution light when illuminated so as to progressively decrease its illuminated area in the direction of the red stop light, and thereby indicating the elapse of time until the red stop light is energized. The shutter is connected to a rotatable drum operated by a motor simultaneously energized with the amber light and a spring acts to reroll the unrolled shutter when the motor is deenergized with the lamp of the amber light.

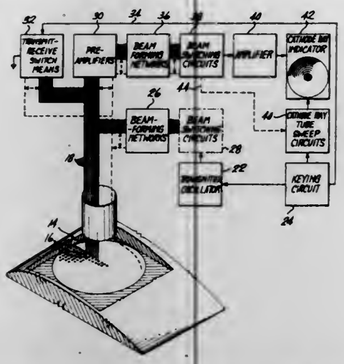
3,618,006
FLUSH-MOUNTED TRANSDUCER ARRAY SONAR SYSTEM

Charles P. Wright, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 13, 1966, Ser. No. 557,103
Int. Cl. G01s *9/68, 3/00*
U.S. Cl. 340—3 R **3 Claims**

1. In a high-speed watercraft having an immersed generally horizontal bottom surface, a sonar system including an array of electroacoustic transducers mounted in substantially horizontal coplanar relationship imposed on an area of said surface, with said transducers emplaced in orderly arrangement of substantially parallel rows which extend transversely to other substantially parallel rows, and with the successive transducers in said rows being at approximately quarter-wavelength spacings, energy transfer means, and beam-forming circuit means operable to connect said individual transducers to said energy transfer means through predetermined

different amounts of electrical delay so as to produce a directional pattern in the operation of said array, and to vary

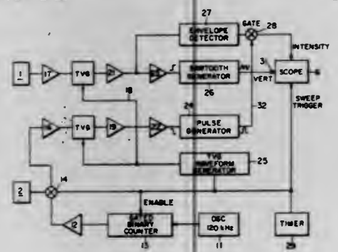


the amounts of delay so as to vary the angular direction of said pattern.

3,618,007
VERTICAL OBSTACLE PROFILING SONAR

Victor C. Anderson, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Nov. 18, 1969, Ser. No. 877,715
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R 10 Claims



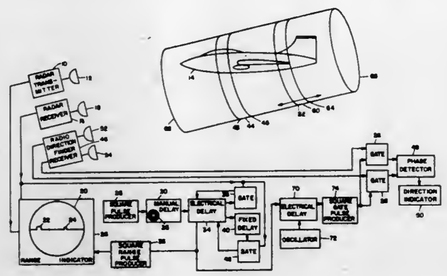
The sonar functions in a pulsed active-mode utilizing a projector to insonify a fan-shaped region of an ocean floor area in front of the submersible. Backscattered signal returns are received by two hydrophones having acoustic centers located in close proximity (about 0.35 inch) one to the other. Range is determined by elapsed time between transmission and reception. Direction in a vertical plane relative to the axis of the submersible is determined by the relative phase between the signal outputs of the vertically spaced hydrophones. The outputs are coupled to a signal processor employing a time-varying gain to compensate for beam-spreading losses and then to separate clipper amplifiers. The positive transition of one clipper output is used to reset a sawtoothed generator and the negative transition of the other clipper triggers a pulse generator. Combining the outputs of the sawtooth and pulse generators provides phase information proportional to the arrival angle of the return signal. When combined with range, the results can be displayed to provide a vertical and horizontal coordinate display for navigation purposes. An envelope detector is connected to one of the signal processor channels to intensity modulate the display for highlighting stronger returns.

3,618,008
ANTIGLINT RADIO DIRECTION FINDER

Neil C. Kern, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 15, 1969, Ser. No. 885,182
Int. Cl. G01s *9/02, 9/14*
U.S. Cl. 343—7.3 5 Claims

In radio direction finders of the type in which the direction of propogation of a pulse reflected from a target is indicated, errors occur due to glint. The glint is due to the fact that all reflective parts of the target are not at the same distance from the direction finder whereby the several radio echoes reflected from the same target arrive at the direction finder at different times and are vectorially added in the direction

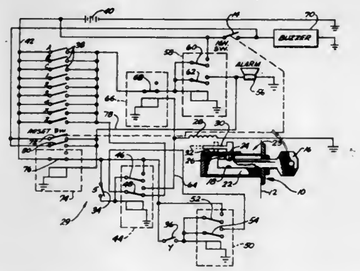


finder, causing incorrect indication of the direction to the target by the direction finder. The various errors of direction, due to glint, measured by direction finders is averaged out by applying a variable range gate to the waves received by the direction finder, whereby angle reflection measurements from various parts of the target are averaged out to give a true indication of direction of the target.

3,618,009
AUTOMOBILE SWITCH CONTROL AND ALARM SYSTEM

Joseph K. Lee, 10616 Bramblebush, Whittier, Calif.
Continuation-in-part of application Ser. No. 711,269, Mar. 7, 1968, now Patent No. 3,541,505. This application Nov. 10, 1969, Ser. No. 875,450

Int. Cl. B60r *25/00*
U.S. Cl. 340—64 12 Claims



An automobile antitheft system has an override mechanism for the ignition lock normally to prevent insertion of the ignition key into the lock. A number of pushbuttons located on the instrument panel are labeled to identify a secret code, and the pushbuttons are electrically coupled to the override mechanism to disable the mechanism when the proper code is selected. The pushbuttons are also electrically coupled to an alarm so that selecting an improper code activates the alarm.

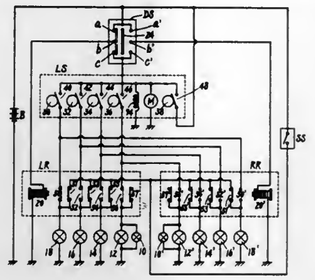
3,618,010
SEQUENTIAL TURN DIRECTION SIGNALLING SYSTEM FOR AUTOMOTIVE

Nagatoshi Suzuki, 356 Kugahara Otaku, Tokyo, Japan

Filed Aug. 2, 1968, Ser. No. 749,814
Int. Cl. B60q *1/38*
U.S. Cl. 340—67 1 Claim

According to the invented sequential direction signalling system, a plurality of turn direction signalling lamps are horizontally mounted on each side of the vehicle at one end

thereof and in each plurality, the first lamp to be illuminated on each occasion ;is always the same, viz., the extremely

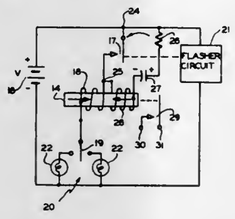


right lamp for left turn or the extremely left lamp for right turn.

3,618,011
COMPENSATED PILOT INDICATOR CIRCUIT FOR VEHICLE TURN SIGNAL SYSTEMS

Harry A. Leeder, Jr., Skaneateles, N.Y., assignor to R. E. Dietz Company, Syracuse, N.Y.

Filed Jan. 27, 1969, Ser. No. 793,933
Int. Cl. B60q *1/38*
U.S. Cl. 340—80 5 Claims

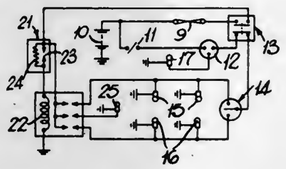


A pilot lamp circuit that indicates to a vehicle operator the direction of the turn he has signaled and also that all of the vehicle turn signal lamps are operable. The circuit includes a pilot relay having a winding in series with the signal lamps and adjusted so that it will not be actuated if one or more of the signal lamps has failed. Normal voltage variations are compensated for by an additional relay winding that is wound so that its current, which is proportional to the source voltage, produces a flux opposed to the main flux.

3,618,012
DIRECTION INDICATOR SYSTEMS FOR ROAD VEHICLES

Eric Shaw, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 10, 1969, Ser. No. 805,661
Claims priority, application Great Britain, Mar. 11, 1968, 11,691/68
Int. Cl. B60q *1/38*
U.S. Cl. 340—81 F 1 Claim

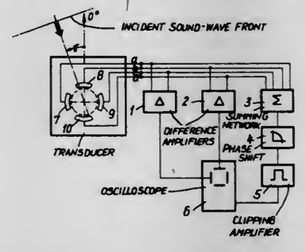


In a direction indicator system for a road vehicle a first flasher unit operates the direction indicator lamp through a direction indicator switch in the usual way, but a control switch is included in the circuit. This control switch has a normal position in which it does not affect the system at all, but an emergency position in which it breaks the circuit to the direction indicator switch and also completes a circuit including a second flasher unit and a relay. The second flasher unit then operates all the flasher lamps simultaneously through the relay to give the emergency signal.

3,618,013
TRANSDUCER FOR DETERMINING THE ANGLE OF INCIDENCE OF SOUND WAVES

Gunter Hans Ziehm, Kiel; Karl-Friedrich Triebold, Bremen, and Siegfried Franz Heinrich Drischel, Duisburg, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Continuation-in-part of application Ser. No. 777,806, Nov. 21, 1968, now Patent No. 3,496,527. This application Jan. 30, 1970, Ser. No. 7,054
Int. Cl. H04r *17/00*
U.S. Cl. 340—10 9 Claims

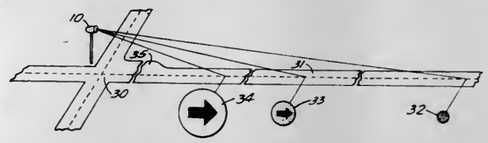


A transducer for converting sound vibrations into electrical signals for determining the angle of incidence of sound waves. The transducer is constructed in the shape of a hollow cylinder. It has four means, spaced at 90° intervals around the hollow cylinder, each of which produces an electrical signal that is dependent on mechanical vibrations of a portion of the hollow cylinder and being connected two by two in opposed series, each pair of which is sensitive to oscillations in only a limited angular region around the hollow cylinder, and throughout this angular region, the sensitivity of each pair is varied. The difference signals, formed from the signals produced by each two oppositely arranged means connected two by two, are thus made independent of the harmonics which are a function of the angle of incidence of the waves.

3,618,014
VARIABLE INDICATION CONTROL SIGNAL

Gunnar R. Ljungkull, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 27, 1969, Ser. No. 853,443
Int. Cl. B60g *1/00*
U.S. Cl. 340—112 11 Claims



A traffic signal, appearing from a distance as a simple warning light, converts progressively into an instructional signal as viewed during the approach.

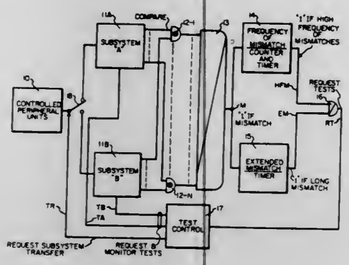
3,618,015
APPARATUS FOR DISCRIMINATING BETWEEN ERRORS AND FAULTS

Henry Peter Homonick, Ottawa, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 30, 1970, Ser. No. 51,256
Int. Cl. G08c *25/00*; H04m *3/08*
U.S. Cl. 340—146.1 20 Claims

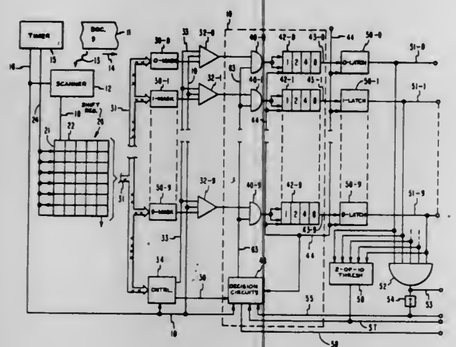
Signal points of duplicated subsystems are compared, to produce a mismatch if they differ. Since mismatches due to

errors caused by noise, etc. occur infrequently and at random, and are of short duration, relative to mismatches caused by actual faults; apparatus to discriminate between them comprises a high frequency of occurrence of mismatches unit, and an extended mismatch unit. The high frequency of occurrence unit includes a counter and timer to



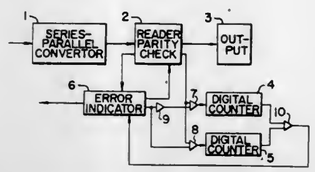
detect whether a given number of mismatches occur within a given time. The extended mismatch unit may comprise a capacitor connected to standard logic devices to charge during a mismatch via resistance within the logic devices, and to be short-circuited via a transistor in a logic device at other times.

3,618,016
CHARACTER RECOGNITION USING MASK INTEGRATING RECOGNITION LOGIC
Hein Van Steenis, Amstelveen, Netherlands, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,502
Claims priority, application Netherlands, Nov. 29, 1968, 6817194
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3 Y **20 Claims**



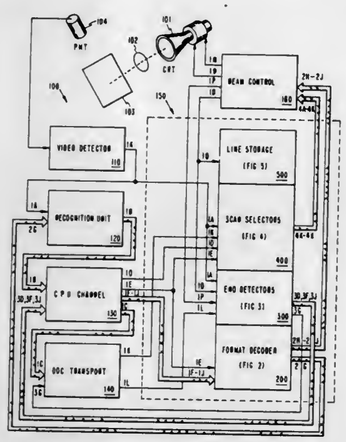
A graphic character is scanned and entered in a shift register. Combinatorial-logic masks detect respective video features from the shift register. Pulses from each mask advance separate counters. In a later decision cycle, a number of artificial pulses advance all counters simultaneously. When the first counter overflows, a number of further artificial pulses advance all counters. If one and only one counter overflows, the character is recognized; otherwise, the character is rejected. Either set of artificial pulses may be made variable.

3,618,017
DATA PROCESSING SYSTEM
Noboru Murayama, Saganihara-shi; Kinichi Yoshikawa, Kawasak-shi, and Kanji Kanai, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 23, 1969, Ser. No. 843,977
Claims priority, application Japan, July 25, 1968, 43/52114
Int. Cl. G08c *25/02*
U.S. Cl. 340—146.1 **2 Claims**



A data processing system wherein a receiver counts and stores the number of digits of one block of data received from the first digit thereof until an erroneous digit is detected; when said erroneous digit is detected, the output is prevented from being applied to an output medium while the retransmission of said one block of data from the first digit thereof is made; and when the number of digits retransmitted coincides with said first-mentioned number of digits, the outputs of the subsequent digits are applied to said output medium.

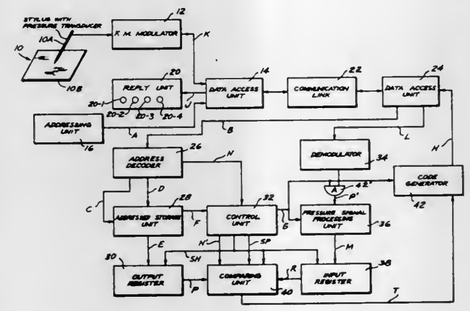
3,618,018
UNFORMATTED SCANNING IN A CHARACTER-RECOGNITION SYSTEM
David L. Johnston, and Paul E. Nelson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 2, 1969, Ser. No. 829,397
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3AH **18 Claims**



Scan-control apparatus responsive to a format word specifying boundaries of a document field to be scanned generates a series of search patterns for characters within the field. A "read" command causes a scanning beam to seek the intersection of horizontal and vertical boundaries contained in the format word. A line-search scan travels downward therefrom until black video is detected. A character-search scan then moves horizontally to establish the beginning of a character line. The first character is normalized, a recognition scan is initiated, and the vertical position of the line is digitally recorded. Reaching the format end-of-line boundary, or detection of a number of blank spaces, terminates the "read"

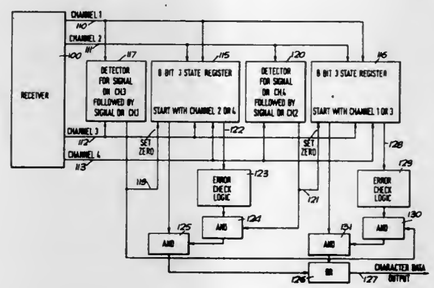
command. Further "load-format" and "read" commands cause the beam to seek the format word horizontal boundary and the recorded vertical position. The field is terminated when the vertical format word boundary is attained. Tests for document and read-window ends are provided. Several types of format words enhance the flexibility of the system.

3,618,019
SIGNATURE IDENTIFICATION BY MEANS OF PRESSURE PATTERNS
Samuel M. Nemirovsky, Rego Park; Jacob Sternberg, New York, and George Lieberman, New York, all of N.Y., assignors to Conversational Systems Corp., New York, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,467
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 R **8 Claims**



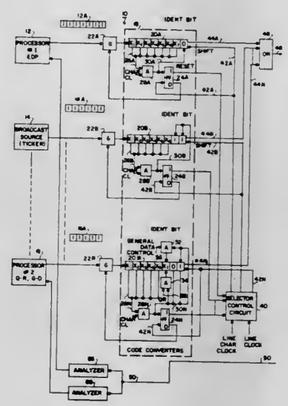
A system verifies signatures by converting the pressure patterns generated when a person writes his signature to binary coded combinations of signals which are then compared for similarity with previously recorded binary coded combinations of signals representing known signatures.

3,618,020
DATA TRANSMISSION SYSTEMS
Bernhard Dollman Parker, London, England, assignor to Decca Limited, London, England
Filed Apr. 9, 1970, Ser. No. 26,976
Claims priority, application Great Britain, Apr. 9, 1969, 18183/69
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **17 Claims**



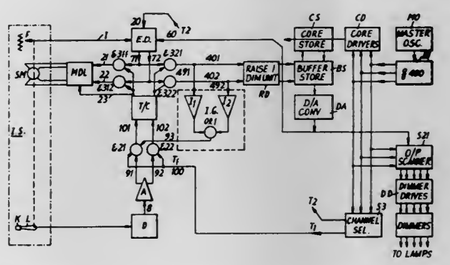
A data transmission system for binary form data has four transmission channels, even bits being transmitted on a first pair of channels and odd bits on a second pair. Between blocks (typically corresponding to alphanumeric characters) interblock indicators are transmitted alternately of different distinctive form, each interblock indicator being a transmission on typically, two channels selected as a combination which cannot occur during the blocks. The receiver has interblock indicator detectors to indicate an error, if after each character, a correct interblock indicator is not received.

3,618,021
DATA COMMUNICATION SYSTEM AND TECHNIQUE OF TAGING DATA OF DIFFERENT CLASSES
Emik A. Avakian, 92 Juana St., Crestwood, Tuckahoe, N.Y., and Murray Sumner, 704 Palmer Court, Mamaroneck, N.Y.
Filed Mar. 24, 1969, Ser. No. 809,530
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 **16 Claims**



A data communication technique particularly adapted for transmitting over a single channel or line information of two or more classes, such as information developed by multiple sources, on a time-shared basis. Code characters containing corresponding information units are converted to transmission characters having at least one additional data bit the state of which is controlled so as to identify the class from which the original code character was derived. Analyzer equipment at a receiving station senses the class-identifying bit and serves to reassociate all of the information units of the respective classes. The transmission system can be used in man-machine applications, monitoring applications, closed-loop control applications and over computer communications, etc.

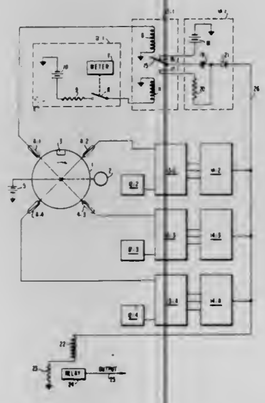
3,618,022
CONTROL APPARATUS
Anthony Leonard Isaacs, and John Victor James Corney, both of London, England, assignors to British Lighting Industries Limited, London, England
Filed Sept. 5, 1969, Ser. No. 855,688
Claims priority, application Great Britain, Sept. 6, 1968, 42,639/68
Int. Cl. G05b *1/00*
U.S. Cl. 340—149 **6 Claims**



Control apparatus for use at an operator-plant interface, for example for controlling stage-lighting equipment, having three signal stores of which the first and second give control signal outputs and the third serves either to set the signals in

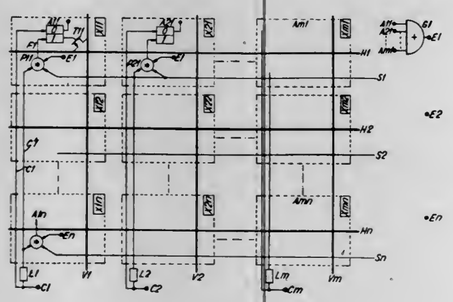
the first and second stores or to indicate the signal in the first or second stores. The third store may include a setting lever which serves for adjustment of the control signals and also indicates by its position the magnitude of those signals.

3,618,023
SYSTEM FOR COMBINING A PLURALITY OF PULSES INTO A SINGLE PULSE TRAIN
Theodore Parker, Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio
Filed May 17, 1968, Ser. No. 729,969
Int. Cl. H04q *9/00*
U.S. Cl. 340—150 **3 Claims**



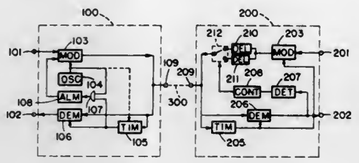
A system for receiving pulses from a plurality of devices which measure a quantity such as fluid flow and for storing separately the pulses from each such device in individual storage elements. The individual storage elements are sequentially interrogated to provide output pulses onto a common output line from the elements which are storing pulses.

3,618,024
ELECTRONIC MULTISELECTOR
Marc Jean Pierre Leger, Issy-Les-Moulineax; Claude Paul Henri Le Rouge, Maurepas Trappes, and Jacques Henri De Jean, Ris-Orangis, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 5, 1968, Ser. No. 788,114
Claims priority, application France, Dec. 12, 1967, 131,905
Int. Cl. H04q *3/00*
U.S. Cl. 340—166 R **3 Claims**



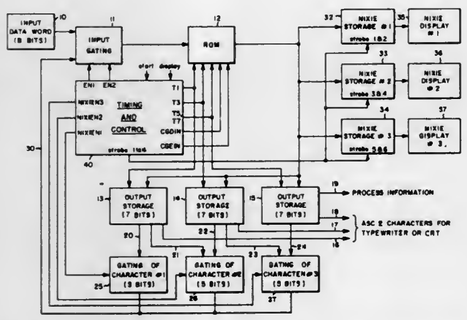
A switching matrix includes horizontal and vertical multiples having MOS field effect transistor cross-points. A bistable circuit at the cross-point remembers the busy or idle state of the cross-point. The cross-point is particularly well adapted for integrated or monolithic devices.

3,618,025
PULSE PHASE CONTROL APPARATUS FOR PULSE COMMUNICATIONS SYSTEMS
Atsushi Tomozawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Sept. 18, 1969, Ser. No. 859,056
Claims priority, application Japan, Sept. 20, 1968, 43/68498
Int. Cl. H04q *9/00*; **H04l** *5/14*
U.S. Cl. 340—170 **18 Claims**



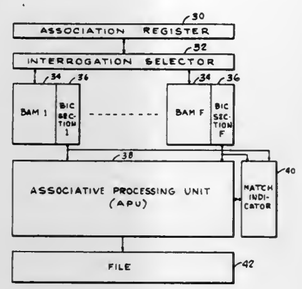
Pulse phase control apparatus for pulse communications systems including at least first and second stations is provided in accordance with the teachings of the present invention. According to the teachings of the present invention, the pulse phase control apparatus include a detector present in a first of such stations for detecting a condition thereat wherein pulses are transmitted from and received by the first station in time coincidence and an alarm circuit responsive to the detection of this condition for generating and transmitting a signal representative thereof to the second station. The second station includes a pulse transmitter for transmitting pulses to the first station which pulses have one of at least two predetermined phase relationships with pulses received at the second station and a variable phase circuit responsive to a received signal indicative of coincidence phase condition at the first station for changing the phase of the pulses transmitted from the second station from one predetermined phase relationship with respect to the pulses received at the second station to another. The pulse phase control apparatus according to the present invention thereby enables the simultaneous, bidirectional transmission of pulses between such at least first and second stations even though a common transmission path therebetween is relied upon.

3,618,026
CHARACTER GENERATOR
Frank H. W. Schoenwitz, Schaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 16, 1970, Ser. No. 19,980
Int. Cl. H01j *17/48*; **G06f** *5/02*
U.S. Cl. 340—172.5 **6 Claims**



A character generator comprising a read-only-memory which accepts an input data word of six bits and from its output generates code for a set of three ASCII letters for printout on a typewriter. The three ASCII letters code in turn are converted to the same three letters of NIXIE code, these ASCII output words being rerouted into the read-only-memory and the second output being in NIXIE code for providing visual readout on segmented indicators.

3,618,027
ASSOCIATIVE MEMORY SYSTEM WITH REDUCED REDUNDANCY OF STORED INFORMATION
Tse-yun Feng, Dewitt, N.Y., assignor to Research Corporation, New York, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,306
Int. Cl. G06f *15/00*
U.S. Cl. 340—172.5 **18 Claims**

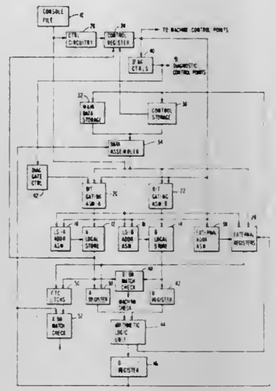


Disclosed is an associative memory system organized in a novel manner to reduce substantially redundancy of the stored information. The invented system operates on the descriptors (or tags) of information items which may also include other data stored in a secondary memory. Each of the descriptors is subdivided into a number of fields, each field storing a data element. The data elements of each field from all descriptors are stored in a basic associative memory (BAM) such that each BAM stores only data elements which are distinct from each other. Redundancy of data elements in a BAM is thus eliminated. The relationships between the data elements of the several fields of a descriptor are stored in a relation cube which may be in the form of an associative processing unit storing, like a conventional associative memory, words which correspond in number to the descriptors stored in the BAMs and consist of the same number of fields, but contain in the fields shorter codes representing the corresponding data elements. Alternatively, the function of the relation cube is carried out by a multidimension matrix of special storage elements in order to afford further reduction of storage redundancy. Each of the basic associative memories and, in some cases the matrix, may be decomposed into several distinct levels. The decomposition results in further elimination of redundancy.

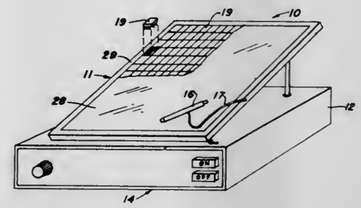
The invented associative memory system allows a variety of point and line searches, and allows for resolution of multiple responses by different types of ordered retrievals. Exemplary search, storage and retrieval procedures are described in detail.

3,618,028
LOCAL STORAGE FACILITY
Allen M. Johnson, Endicott, and Loyal D. Youngblood, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1970, Ser. No. 029,898
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **9 Claims**

A microdiagnostic processing system is combined in a computer system with a main storage memory for control and data words of bits and for providing signals indicative thereof, a control register connected to receive the signals indicative of control words and to execute the same, a processing unit for performing logical operations on signals indicative of such words and two local storage units for receiving, storing, and transmitting signals indicative of such words and connected to receive such signals from the main storage memory and from the processing unit and to transmit such signals to the main storage memory and the processing unit. The microdiagnostic system includes a local file providing a stored program of signals indicative of control and data words and connected to supply the signals to the control register and the local storage units and inhibit means under the control of the control register for disabling one only of the two local storage units from receiving signals for storage, so that different sets of signals may be selectively stored in the two local storage units.



3,618,029
DRAWING BOARD, A GRAPHICAL INPUT-OUTPUT DEVICE FOR A COMPUTER
Robert M. Graven, 1709 Shattuck Ave., Berkeley, Calif.
Continuation-in-part of application Ser. No. 644,756, May 25, 1967, now abandoned. This application May 1, 1970, Ser. No. 33,855
Int. Cl. G06f *3/00*; **G06k** *15/18*
U.S. Cl. 340—172.5 **7 Claims**

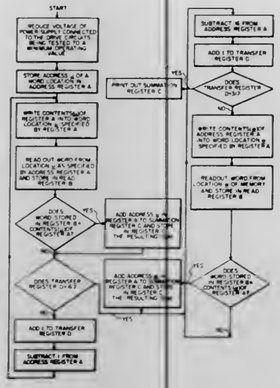


A two-dimensional matrix of semiconductors is arranged in ordered array as a flat, light-emitting and light-sensing device for input and readout of information from a computer. A penlight is used to activate the light-sensing semiconductors to achieve a graphical input. Operation of the device can be either incremental or random.

3,618,030
METHOD INCLUDING A PROGRAM FOR TESTING SELECTION MATRICES
James R. Creasy, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 4, 1970, Ser. No. 34,912
Int. Cl. G06f *11/00*; **G05b** *1/01*; **G11c** *7/00*
U.S. Cl. 340—172.5 **4 Claims**

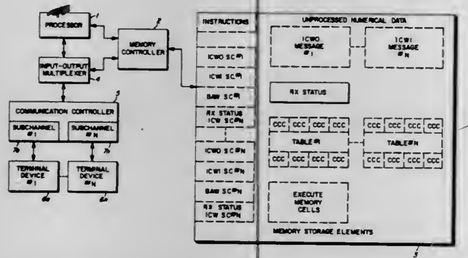
The usual equipments of computers can be used to respond to a program to provide data that indicates location of a fault in a selection matrix of an alterable memory being tested. The data required is obtained from the summation of the addresses that are also the locations of selected words of

the memory. Each different sum either indicates the exact fault, or designates that only a small number of certain com-



ponent parts associated with a designated word location needs to be tested.

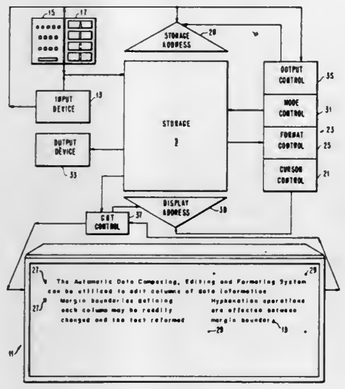
3,618,031
DATA COMMUNICATION SYSTEM
James A. Kennedy; Aldis Klavins, and Robert J. Koegel, all of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.
Filed June 29, 1970, Ser. No. 50,792
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **20 Claims**



A data communication system comprises a communications controller and a processor having fixed hardware which utilizes control characters stored in memory to detect the end of messages being received from a variety of terminal devices, to detect changes in message code sets and to perform a variety of other functions. This system can accommodate a wide variety of message code sets, message formats, bit rates and line disciplines without any modification of hardware in the controller and processor.

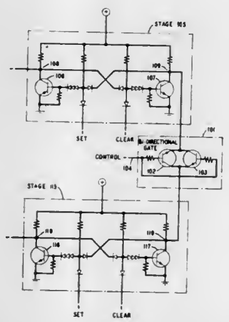
3,618,032
AUTOMATIC DATA COMPOSING, EDITING AND FORMATTING SYSTEM
Paul E. Goldsberry, and Jack Ward Simpson, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,285
Int. Cl. G06f *15/02, 15/40, 3/14*
U.S. Cl. 340—172.5 **30 Claims**

A data composing, editing and formatting system for use in business offices by typists and composers of business letters and documents. A cathode-ray tube display is utilized to display keyed data and data inputted by a secondary media reader in a manner analogous to the display of a page of typed data on a typewriter. Once the data is so inputted, additional data can be inserted at a point defined by the operator without any resulting loss of information, word integrity, columnar definition or paragraph designation. Additionally, data can be deleted and the data located down page from the deleted data will shift up page to fill in where the deleted data was located without loss of paragraph designation. Text modification controls further include data centering within defined margins, transfer of data from one page position to



another without loss of data or paragraph definition, automatic adjustment of the data to conform to new margin settings and a unique hyphenation operation. Once the data has been inputted and modified, it is transferred to a serial printer and/or a secondary media recorder for permanent recording. Special controls effect the optimum utilization of the serial printer by utilizing margin stop locations of the displayed data as well as tab stop location to define printer tabulation operations.

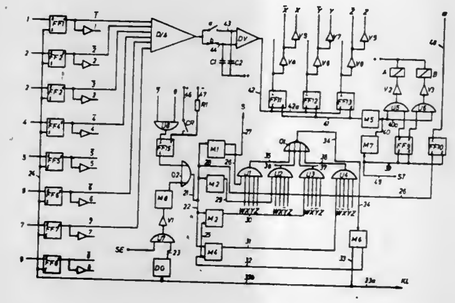
3,618,033
TRANSISTOR SHIFT REGISTER USING BIDIRECTIONAL GATES CONNECTED BETWEEN REGISTER STAGES
Walter R. Nordquist, Naperville, and Wing N. Toy, Glen Ellyn, both of Ill., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 26, 1968, Ser. No. 787,185
Int. Cl. H03k *21/00, 23/00*
U.S. Cl. 340—172.5 **6 Claims**



Shift register circuitry is disclosed in which bidirectional gates are connected between register stages in such a manner that data may be shifted in either direction through a gate to alter the state of either interconnected stage. By use of the bidirectional gates the shift register circuitry can store the logical AND or OR of the contents of the interconnected

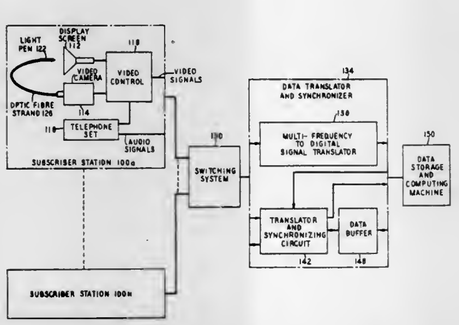
stages without employing additional complex control or steering circuitry intermediate the register stages. The shift register circuitry can also be used in various data processing shift and rotate functions in which a second register acts as intermediary for the shifting or rotation of data through a first register.

3,618,034
METHOD AND SYSTEM FOR CONTROLLING PRINTOUT ELEMENTS IN A PRINTOUT MECHANISM
Klaus Jorg Hecker, 6242 Schonberg/Uber, Kronberg, Germany
Filed Apr. 7, 1969, Ser. No. 813,996
Claims priority, application Germany, Apr. 5, 1968, P 17 74 093.1
Int. Cl. G04c *23/00;* **G05b** *19/32*
U.S. Cl. 340—172.5 **8 Claims**



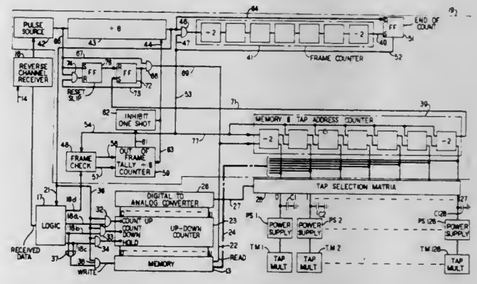
The printout of a first and second printout element to be activated consecutively is controlled by storing a corresponding first and second location dependent selection signal and obtaining the difference therebetween. The second printout element is then activated after a time period following activation of the first printout element which depends upon this difference in selection signals.

3,618,035
VIDEO-TELEPHONE COMPUTER GRAPHICS SYSTEM
Robert L. Simms, Jr., Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 17, 1969, Ser. No. 817,035
Int. Cl. G06f *3/14, 3/16*
U.S. Cl. 340—172.5 **11 Claims**



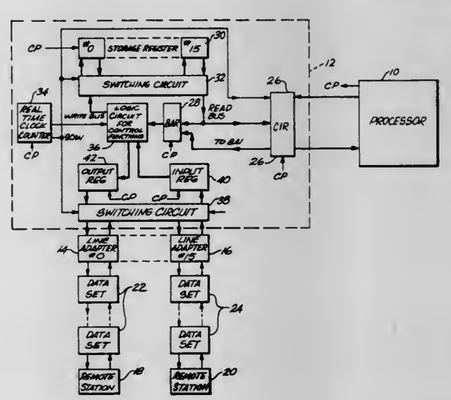
A system and method of employing a video-telephone station in conjunction with a remote time-shared computer for graphic display purposes including a fiber optic strand connecting a light pen to the video-telephone camera. The video-telephone camera is connected to the computer via a data translator and synchronizing circuit. The data translator translates video signals received from the station into digital signals for application to the computer, and also translates digital signals received from the computer into video signals for transmission to the station. The synchronizing circuit monitors the scanning phase of video signals received from the station and synchronizes therewith the video signals which are transmitted to the station.

3,618,036
INTERLACED COUNTING CIRCUITS
Robert L. Carbrey, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 18, 1968, Ser. No. 784,646
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **16 Claims**



A circuit is described for coordinating the addressing of a plurality of tap multipliers in a transversal filter, which is employed as a pre-equalizer. with a received data stream. The data stream updates information stored in a memory. The updated information is applied to the tap multipliers at a rate eight times the rate that the data stream updates the memory. A memory and tap address counter, operating at a rate that the information is applied to the taps is synchronized with the updating data stream by causing the address counter to slip one count for each cycle thereof.

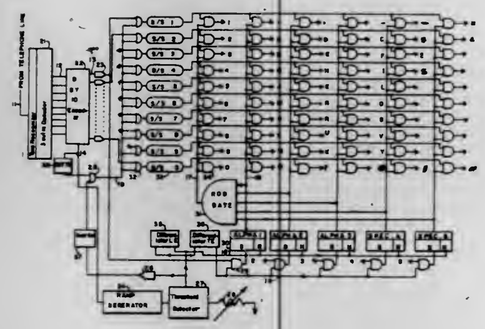
3,618,037
DIGITAL DATA COMMUNICATION MULTIPLE LINE CONTROL
James E. Wollum, Glendora, and Millard J. Arvig, San Gabriel, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 19, 1969, Ser. No. 859,536
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **12 Claims**



There is described a control unit for buffering a plurality of digital data communication lines with a data processor on a time-shared basis, where each communication line may be

operating with a different line discipline. All buffering functions for each communication line are under control of a stored word. The stored control words, together with each of the associated communication line adapter terminals, are continuously scanned and logic circuitry, in response to each control word when scanned, determines the status of the communication and modifies the control word if the status has changed. Timing functions for all communication lines are derived, also on a time-shared basis, from a single real-time clock. The processor can monitor each control word during each scan to change the status of the communication operation with the associated line and to sense interrupt conditions requiring attention.

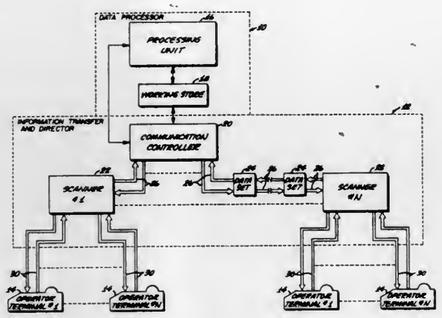
3,618,038
TELEPHONIC DATA TRANSMITTING SYSTEM
Edward S. Stein, 5717 Nevada Ave. N.W., Washington, D.C.
Filed Dec. 24, 1969, Ser. No. 887,915
Int. Cl. H04m *11/06*
U.S. Cl. 340—172.5 **6 Claims**



A data processing system comprising a telephone touch tone signaling set having a plurality of buttons thereon, an apparatus connected to the telephone system at the receiving end capable of being controlled by said touch tone signaling set according to the length of time that the buttons are pressed, to transmit alphanumeric data and programming data and a data processing mechanism for receiving said programming data and other data for processing the same. The apparatus is arranged to differentiate between short and long duration tones whereby a long duration tone is effective to select a group of alphanumeric data symbols, and a short duration tone is effective to cause the transmission of a particular one of the alphanumeric symbols to the data processing mechanism.

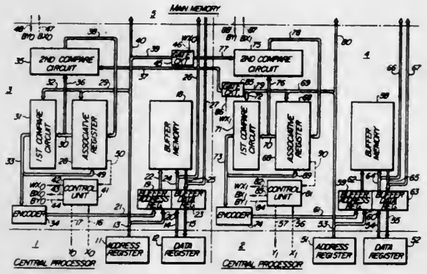
3,618,039
DATA COMMUNICATION SYSTEM INCLUDING AUTOMATIC INFORMATION TRANSFER CONTROL MEANS
John F. Baltzly; Donn E. Bernhardt; Edward H. Cabaniss, III, and Perry W. Penton, all of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.
Filed July 28, 1969, Ser. No. 845,398
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **6 Claims**

A data communication system for transferring messages between a plurality of remote terminals and a working store includes an information transfer and director. The information transfer and director selectively receives messages from the terminals, adds a message identifier to each message representing currency (software processing of message required), stores the messages in the working store, selectively tests for the presence of the message identifier in the messages previously stored, and inhibits the transmittal of messages from the terminals to the information transfer and



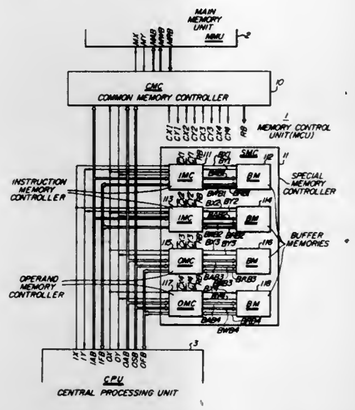
director when the number of previously stored messages exceeds a predetermined number.

3,618,040
MEMORY CONTROL APPARATUS IN MULTIPROCESSOR SYSTEM
Shoji Iwamoto, Kokubunji-shi, and Hisashi Horikoshi, Tachikawa-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 17, 1969, Ser. No. 858,639
Claims priority, application Japan, Sept. 18, 1968, 43/66915
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **10 Claims**



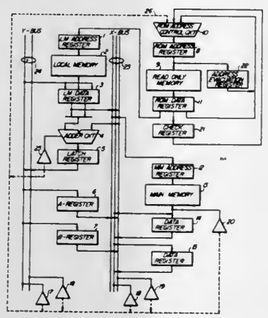
Information transferred from a main memory with energy block is stored in two high-speed buffer memories provided in two respective central processors, and the address signals of said information are held in a register. Upon access of one of said central processors to the main memory, address signals therefrom are compared with the address signal held in said register by a first compare circuit, and thus if there is any coincident address signal, then access to the buffer memory is permitted. When the other central processor effects "write-in" with respect to the main memory, an address signal forwarded by said other central processor is compared with the address signals held in said register by a second compare circuit, and thus if there is any coincident address signal, then the corresponding information is made invalid so as to avoid disagreement between the contents of the main memory and buffer memories.

3,618,041
MEMORY CONTROL SYSTEM
Hisashi Horikoshi, Tachikawa-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1969, Ser. No. 872,002
Claims priority, application Japan, Oct. 31, 1968, 43/79557
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **11 Claims**



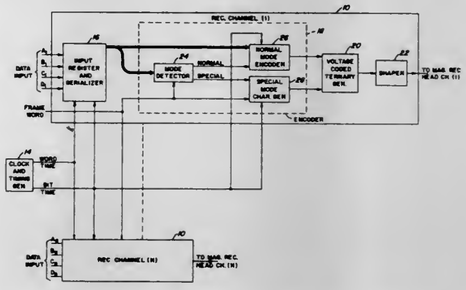
A memory control system for a data processor having a central processing unit, a main memory, a buffer memory operable with a speed several to more than 10 times the speed of the main memory, and a memory control unit for checking whether information at an address is transferred from the main memory and stored in the buffer memory. The memory control unit includes an instruction memory control section and an operand memory control section which can operate independently of each other so as to improve the processing ability of the data processor.

3,618,042
ERROR DETECTION AND INSTRUCTION REEXECUTION DEVICE IN A DATA PROCESSING APPARATUS
Ryoji Miki; Hiroshi Morita, and Toshihiko Odaka, all of Hatano-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1969, Ser. No. 872,285
Claims priority, application Japan, Nov. 1, 1968, 43/79324
Int. Cl. G06f *11/00, 11/10*
U.S. Cl. 340—172.5 **8 Claims**



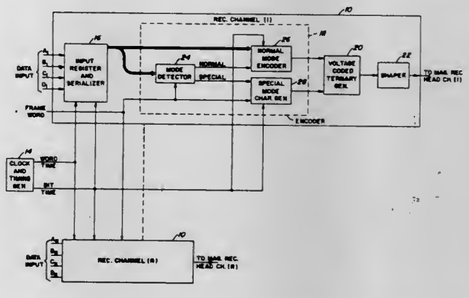
In a data-processing apparatus, the data-processing speed is remarkably reduced if the system is stopped from operation every time error operation occurs. This specification discloses a data-processing apparatus wherein when execution of an instruction is effected by means of several stages sequentially controlled, a register adapted for indicating whether the reexecution should be effected for each instruction when error operation occurs, whether the reexecution should be effected for each stage and whether the reexecution is impossible is successively set so that when error operation occurs, the reexecution sequence is started in accordance with the command of said register.

3,618,043
INFORMATION-HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA
John S. Whiting, Canandaigua, N.Y., assignor to General Dynamics Corporation
Filed Nov. 14, 1969, Ser. No. 876,981
Int. Cl. G06f *5/02*; **G05b** *13/02*; **G11b** *5/86*
U.S. Cl. 340—172.5 **10 Claims**



A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is described. Binary input information is encoded into a ternary signal for recording. That ternary signal has spectral properties which facilitate recording with extremely high bit-packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which make up the words, is also derived. The system includes means for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

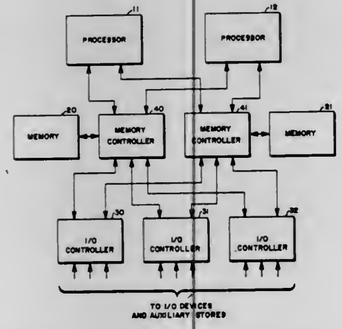
3,618,044
INFORMATION-HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA
Frederick B. Cupp, Monroe, N.Y., assignor to General Dynamics Corporation
Filed Nov. 14, 1969, Ser. No. 876,972
Int. Cl. G06f *5/02*; **G05b** *13/02*; **G11b** *5/86*
U.S. Cl. 340—172.5 **27 Claims**



A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is

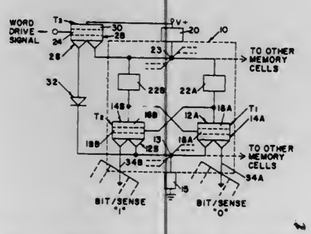
described. Binary input information is encoded into a ternary signal for recording. That ternary signal has spectral properties which facilitate recording with extremely high bit packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary-coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which make up the words, is also derived. The system includes means for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

3,618,045
MANAGEMENT CONTROL SUBSYSTEM FOR MULTIPROGRAMMED DATA PROCESSING SYSTEM
Donald J. Campbell, Lansdale, and William J. Heffner, Robesonia, both of Pa., assignors to Honeywell Information Systems, Inc.
Filed May 5, 1969, Ser. No. 821,811
Int. Cl. G06f 9/06
U.S. Cl. 340—172.5 **10 Claims**



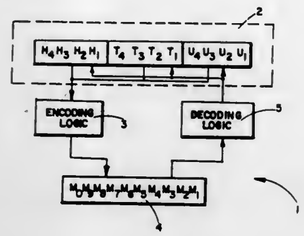
A multiprogrammed data processing system, wherein working storage space in which user programs are executed is also employed for executing certain portions of the operating system in providing the management control functions required to implement the multiprogrammed function of the data processing system.

3,618,046
BILEVEL SEMICONDUCTOR MEMORY CIRCUIT WITH HIGH-SPEED WORD DRIVER
Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,567
Int. Cl. G11c 11/40
U.S. Cl. 340—173 FF **10 Claims**



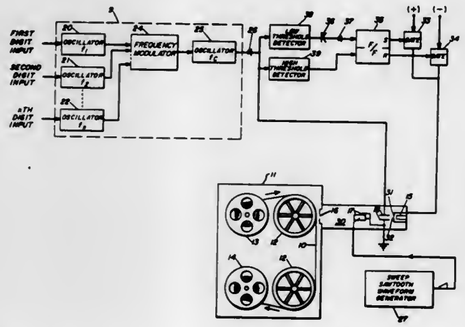
This disclosure relates to a semiconductor memory circuit wherein the word drive signal increases the power of the circuit as it enables selection. A high-speed word driver increases the speed of the storage element's response to the word drive signal. The increased power is achieved by effectively reducing an impedance in the collector power supply circuit upon the appearance of the word drive signal. The increased response speed is achieved by means of a parallel connection of the word drive signal directly to the storage elements of the memory circuit.

3,618,047
SYSTEM FOR THE COMPACT STORAGE OF DECIMAL NUMBERS
Theodore M. Hertz, Whittier, Calif., assignor to North American Rockwell Corporation
Filed Dec. 15, 1969, Ser. No. 885,165
Int. Cl. G06f 5/02
U.S. Cl. 340—172.5 **9 Claims**



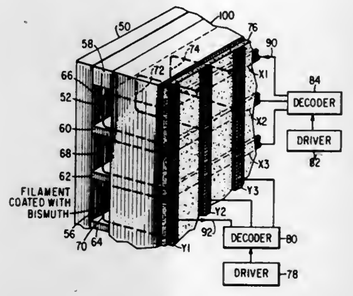
The system includes encoding logic which examines each bit of a decimal number to determine the number and position of high-valued digits, eight or nine, in the decimal number. Certain storage bit positions are allocated to the high-valued digits. The high-valued digits are not encoded in the normal sense. The logic state of the certain storage bit positions indicate value and position of the high-valued digits in the decimal number. The remaining digits of the decimal number are encoded and stored in the remaining bit positions. Decoding logic examines the stored bits of information to provide as an output the decoded decimal number.

3,618,048
RANDOM ACCESS LARGE-CAPACITY MEMORIES
Keith S. Pennington, Putnam Valley, N.Y., and William E. Glenn, Jr., Stamford, Conn., assignors to General Electric Company
Filed July 25, 1968, Ser. No. 747,586
Int. Cl. G11c 11/46
U.S. Cl. 340—173 **21 Claims**



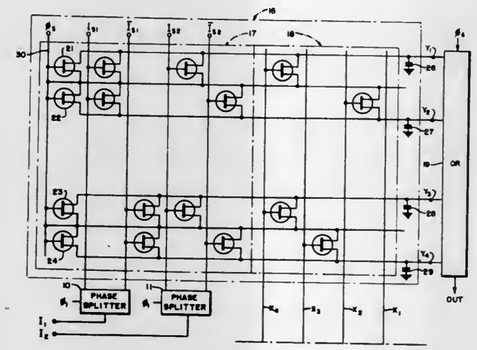
Information is recorded in digital form by employment of scanned radiation to produce frames of diffraction gratings on a recording medium, with modulation signals controlling spacing between grating lines. Recorded frames are then arranged in a matrix, and the resulting memory is interrogated by illuminating the desired frame with a beam of coherent light. Random access retrieval of data is accomplished by impinging light from the interrogated frames onto photodetecting means.

3,618,049
HOLOGRAM MEMORY
Juan J. Amodei, Levittown, Pa., and Reubens Mezrich, Hightstown, N.J., assignors to RCA Corporation
Filed Mar. 21, 1969, Ser. No. 809,137
Int. Cl. G11c 11/00
U.S. Cl. 340—173 **9 Claims**



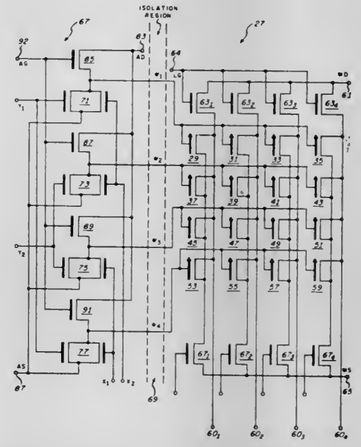
Each location in hologram memory comprises a thin film of a material such as bismuth which may be erased with a laser beam to thereby destroy the film and which may be restored by flash evaporating onto the same area a new film. The flash evaporation is performed by a very small heating element impregnated with metal at each location.

3,618,050
READ-ONLY MEMORY ARRAYS IN WHICH A PORTION OF THE MEMORY-ADDRESSING CIRCUITRY IS INTEGRAL TO THE ARRAY
Richard H. Heeren, Chicago, and Charles R. Winston, Deerfield, both of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed May 7, 1969, Ser. No. 822,521
Int. Cl. G11c 17/00, 11/40, 7/00
U.S. Cl. 340—173 SP **17 Claims**



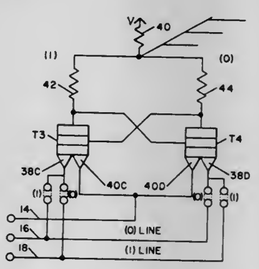
Two embodiments of read-only memory arrays arranged in columns and rows are disclosed in which, for each embodiment, one of a pair of accessing circuits is included as additional columns therein. The memory array includes a plurality of field-effect transistors positioned in selected patterns at intersections of rows and columns defining a matrix. Each transistor in a column is connected to be actuated in parallel by a column conductor, providing an ON impedance in their respective rows. A selected group of the columns are memory columns, in which the location of the transistors is selected in accordance with a desired information pattern to be read out. Further columns are access columns in which the transistors are located in selected different patterns to provide an ON impedance in all but a selected one of the rows in response to different switching signal patterns.

3,618,051
NONVOLATILE READ-WRITE MEMORY WITH ADDRESSING
Robert E. Oleksiak, Carlisle, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed May 9, 1969, Ser. No. 823,253
Int. Cl. G11c 11/40; H03k 3/29
U.S. Cl. 340—173 R **7 Claims**



Variable-threshold insulated gate field effect transistors are used as memory elements in an integrated circuit memory array. A word-select address decoder is junction isolated from the rest of the memory. Substrates of all memory transistors are kept at the same voltage level and gating means are used to switch suitable voltages to remaining drain and source electrodes of individual memory cells for READ-WRITE functions. Logic level output is available at separately gated bit lines.

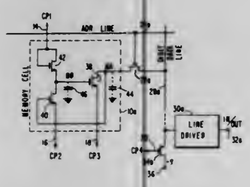
3,618,052
BISTABLE MEMORY WITH PREDETERMINED TURN-ON STATE
Thomas Kwei, Wappingers Falls, and Robert M. Meade, Wassaic, both of N.Y., assignors to Cogar Corporation, Utica, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,623
Int. Cl. G11c 11/40, 11/48
U.S. Cl. 340—173 FF **31 Claims**



This disclosure relates to a semiconductor memory arrangement wherein data is preset in a memory array so that there is no need for a supplementary memory, such as a read-only memory, to store the data to be preset. Each memory cell of the semiconductor memory array is predisposed to assume a specific information state upon each application of power thereto. By biasing memory cells in this manner, the desired information is available either upon initial operation or upon the restoration of power subsequent to any power lapse or upon a desired program reset. Hence, a semiconduc-

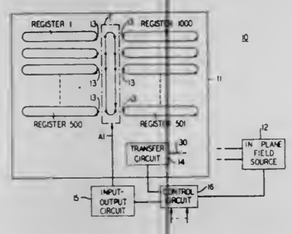
tor memory array is provided which is operable as a Read-Only memory and yet can also function as a Read/Write memory. By writing information into the cells of the array regardless of the initial information state thereof, a Read/Write memory operation is superimposed onto a functioning Read-Only memory.

3,618,053
TRAPPED CHARGE MEMORY CELL
James R. Hudson, Charlestown, and John G. Gregory, White Marsh, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,604
Int. Cl. G11c *5/02, 11/40, 7/00*
U.S. Cl. 340—173 R **12 Claims**



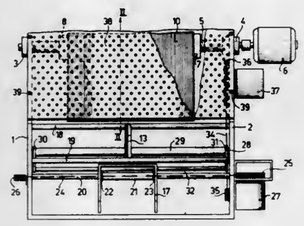
A memory cell comprised of three metal oxide semiconductive field effect transistors (MOSFET) coupled to the word address line and a digit data line of a binary digital memory array through a fourth metal oxide semiconductive field effect transistor. The cell is operated by three clocked supply potentials to allow the three MOSFETs to be selectively turned "on" and "off" enabling a charge to be trapped at one of the two circuit node capacitances. Also, the digit data line includes means for being precharged to a predetermined level during an initial portion of the read mode for providing nondestructive readout of the logic state of the memory cell. The memory cell includes a "refresh" mode of operation wherein the three phase clocked supply potential restores the charge state of the node capacitance having a charge thereon to a full charge thereby restoring any charge decay which would occur over long time intervals.

3,618,054
MAGNETIC DOMAIN STORAGE ORGANIZATION
Peter I. Bonyhard, Newark; Umberto F. Gianola, Florham Park, and Anthony J. Perneski, Martinsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 10, 1969, Ser. No. 875,338
Int. Cl. G11c *11/14, 21/00*
U.S. Cl. 340—174 TF **8 Claims**



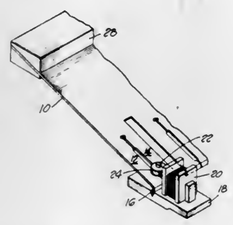
A single wall domain propagation arrangement herein includes magnetically soft overlay patterns which generate magnetic poles in response to reorienting inplane fields to move domains in propagation channels defined thereby. The arrangement is organized for high packing density and fast access by providing parallel recirculating bit channels to move consecutive binary word representations to a common recirculating channel. The common channel moves the word to a common read-write area. Information moves synchronously in the common channel, as well as in the parallel channels, permitting the return of information to the parallel channels with little logic circuitry.

3,618,055
FLEXIBLE DISC MAGNETIC MEMORY SURROUNDED BY A PERFORATED DRUM
Paul Antonius Ferdinand Van Acker; Wilhelmus Petrus Antonius Joosen, and Johan Adriaan Rietdijk, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,157
Claims priority, application Netherlands, Aug. 31, 1968, 6812450
Int. Cl. G11b *1/00*
U.S. Cl. 340—174.1 E **7 Claims**



A magnetic flexible disc memory where the discs are mounted on a rotatable shaft and are provided with apertures in their central areas. The rotating discs are surrounded by a perforated drum-shaped enclosure in order to provide a mechanical stabilization to the outer edges of the discs without the necessity for operation in a partial vacuum.

3,618,056
SPRING MOUNTING FOR FLYING MAGNETIC HEAD
Reinhard Hurlimann, Granada Hills, and Willard J. Opocensky, Glendale, both of Calif., assignors to The Singer Company
Filed Dec. 22, 1969, Ser. No. 887,414
Int. Cl. G11b *5/60, 21/20*
U.S. Cl. 340—174.1 E **2 Claims**

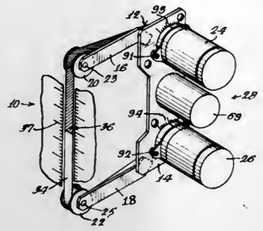


A mounting for urging a flying magnetic head into close proximity with a rotating magnetic medium. The mounting includes a bifurcated leaf spring with tips that are bent to engage a V-slot in the top surface of the transducer bearing pad. A vertical pin, extending from the top surface of the bearing pad, engages the slot between the tines of the bifurcated spring to prevent the disengagement of the transducer from the spring.

3,618,057
INSTRUMENT HAVING READOUT TAPE DRIVEN BY TWIN TORQUE RECEIVERS
Arthur J. Bromley, Lauderdale-By-The-Sea, Fla., assignor to McGraw-Edison Company
Filed May 26, 1969, Ser. No. 827,565
Int. Cl. G08c *19/00*
U.S. Cl. 340—198 **11 Claims**

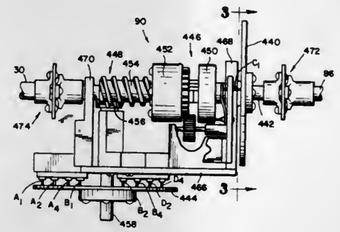
An electrical instrument of the readout tape type comprises two synchro torque receiver units arranged to drive two reels in unison with a readout tape supported by the two reels and adapted to move in indicating relationship with a calibrated scale. The two torque receivers are mechanically

interconnected by the tape so that the rotors are angularly displaced from their null positions to tension the tape with a constant force regardless of the angular input signal. A solenoid-operated synchronizing device resets the torque



receivers to a midpoint of travel when the synchro system is deenergized. Also, gears may be provided between the two rotor shafts to retain the relative positions of the rotors and prevent unwinding of the tape when the synchro system has been deenergized.

3,618,058
ALTITUDE-REPORTING ENCODER SYSTEM
Earl W. Springer, Box 22, Fairland, Ind.
Division of Ser. No. 739,406, June 24, 1968, Pat. No. 3,513,708.
Filed Mar. 30, 1970, Ser. No. 23,579
Int. Cl. G08c *19/20*
U.S. Cl. 340—204 **4 Claims**

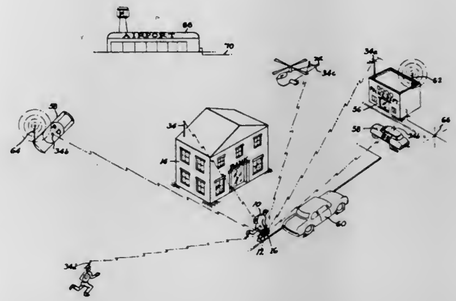


An altitude reporter comprising an altimeter, electro-optical means for tracking the position of the indicator of the altimeter, an encoder for registering the position of the indicator and providing pulse group series output corresponding to such a position, and means for operatively connecting the encoder to the electro-optical tracking means. This connecting means is effective, when the indicator moves in one direction, to operate the encoder to add increments of such movement and, when the indicator moves in the opposite direction, to operate the encoder to subtract like increments of movement. The encoder and the stepper motors which drive the encoder in response to electrical signals from the electro-optical means constitute a register.

3,618,059
ELECTRONIC DETECTION AND TRACING MEANS
Milton F. Allen, 551 E. College Ave., Decatur, Ga.
Filed June 19, 1968, Ser. No. 738,266
Int. Cl. G08b *5/22*
U.S. Cl. 340—224 **7 Claims**

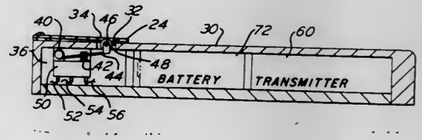
Electronic detection and tracing means including a tracing system embodying a miniature radio warning transmitter capable of being attached to a carrier such, primarily, as a package of money or other valuables within which it may be concealed, and the theft of which from a storage location may be anticipated, together with one or more radio-monitoring receives arranged remote from the package to detect unauthorized removal of the package, the escape route taken by the thief, and the location of the package and of the thief, the warning transmitter being controlled by means of a magnet concealed adjacent to the storage location to (automatically) broadcast from the package a continuous warning and detection signal when the package is removed from such location.

Upon receiving such signal, monitor receivers, located at the scene of the theft or stationed along likely escape routes,



provide an audible alarm, and may operate warning lights, cameras, coded alarms or the like. Such audible and visual alarms may continue until manually shut off so as to give continuous notice that the package has been removed or, in the case of more remotely located receivers, that the package had passed or come into range, even though no present signal was being received from the transmitter.

3,618,060
CASH DRAWER BURGLARY ALARM
Anthony A. Nina, Philadelphia, Pa., assignor to Electro-Nite Co., Philadelphia, Pa.
Filed May 19, 1969, Ser. No. 825,592
Int. Cl. G08b *13/14*
U.S. Cl. 340—224 **3 Claims**

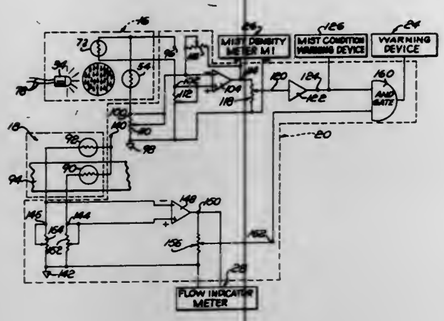


A cash drawer burglary alarm system wherein the removal from a cash drawer of a bill of currency lying between a plate with an opening therein and a switch biased to extend through the opening will cause an alarm to be actuated.

3,618,061
MONITORING APPARATUS FOR MONITORING THE DENSITY OF A MATERIAL CARRIED BY A FLUID AND THE FLOW OF THE FLUID
Joseph A. Livers, Roseville, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 30, 1969, Ser. No. 820,493
Int. Cl. G08b *19/00*
U.S. Cl. 340—236 **18 Claims**

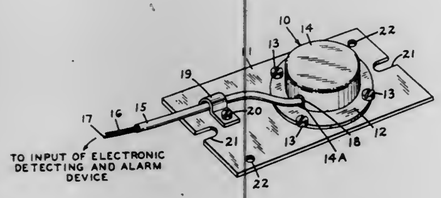
An improved monitoring apparatus for sensing the density of a material carried by a fluid in a conduit and the flow of the fluid to activate a warning device when the density of the material or flow of the fluid drops below a predetermined level. Such an improved monitoring apparatus includes means for sensing the density of the material carried by said fluid and is adapted to provide a signal proportional to the density to a circuit means and means for sensing the flow of the fluid for providing a signal dependent on the flow to the circuit means. The circuit means is adapted to receive these signals and is operable to activate the warning device when

either signal drops below a predetermined level. The means for sensing provides light to the conduit, a first sensor means



for detecting the light intensity and a second sensor for sensing the amount of light reflected by the material.

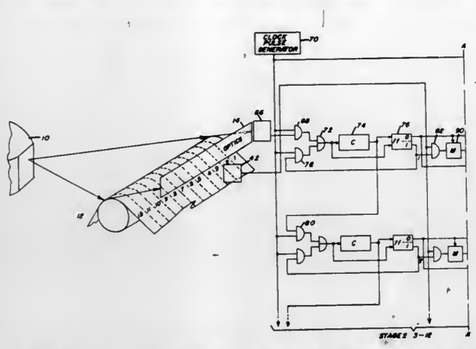
3,618,062
VAULT PROTECTION SYSTEM
Charles D. Ott, East Brunswick, N.J., assignor to American District Telegraph Company, Jersey City, N.J.
Filed Apr. 2, 1969, Ser. No. 812,689
Int. Cl. G08b *13/16*
U.S. Cl. 340—261 **10 Claims**



An electrical protection system of the acoustic type for bank vaults and like structures which provides means for collecting the sound from numerous points whereby adequate protection is provided for vaults of building block construction at far less expense than is possible under the prior art. The invention also permits operation at higher sensitivity levels while maintaining normal stability when used in conjunction with vaults of monolithic construction.

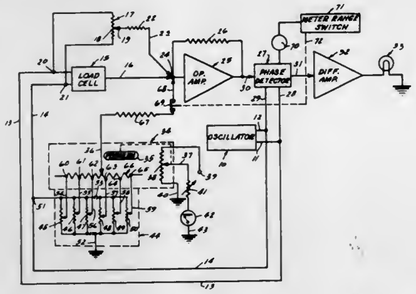
3,618,063
DEFECT INSPECTION APPARATUS
Robert F. Johnson, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,360
Int. Cl. G01n *21/30*
U.S. Cl. 340—259 **8 Claims**

A web-scanning system is disclosed which is responsive to indicate the clustering of web defects. Digital words containing bits which correspond to defect signals in the respective portions of the web are applied serially to an accumulator in such a way that a bit causes the accumulator count to increase; and absence of a bit causes the accumulator count to decrease. Weighting the amount of increase to decrease has



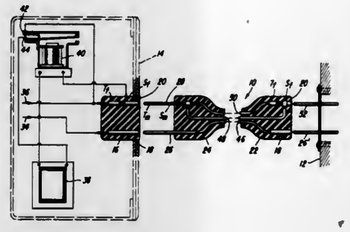
the effect of controlling the degree of clustering necessary to provide the aforesaid indication.

3,618,064
CRANE COMPUTER
Martin W. Hamilton, Arlington Heights, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Aug. 20, 1969, Ser. No. 851,606
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 **5 Claims**



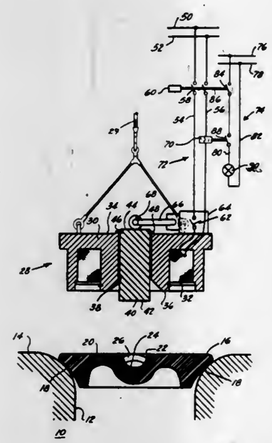
A crane load angle computer having a load cell to indicate the actual instantaneous load being sustained by a crane and for developing an electrical signal in response thereto. Means are also provided to develop an electrical signal which is indicative of the actual instantaneous angle of inclination of the crane, and means are provided to develop a signal indicative of the desired maximum loading of the crane at any specified angle. The circuit of the present invention combines the actual load signal with the instantaneous desired maximum signal at a specified angle and utilizes the resulting information to determine whether an alarm should be triggered. An angle potentiometer is provided which has a pair of resistor windings and associated movable contacts which are operated by a pendulum-type actuator. The contacts or wipers move along the respective resistors in accordance with the actual instantaneous angle of inclination of the crane. One of the angle resistors may have its output coupled directly to a meter so as to directly indicate the angle of the crane. The other angle resistor has a plurality of contacts spaced along the length thereof, and a series of potentiometers are coupled to each of these contacts. Each potentiometer provides an output signal which is indicative of the desired maximum loading of the crane at a specified angle which corresponds to the respective points of contact along the angle resistor. Therefore, as the pendulum-operated wiper moves along the resistor, it picks off the signal values which indicate the desired maximum loading at the respective angles of inclination. The alarm is triggered when this load-angle information exceeds a given relationship to the signal at the output of the load cell.

3,618,065
ANTITHEFT ALARM FOR APPLIANCES
Lucien H. Trip, Baltimore, and Michael J. Nusca, Ellicott City, both of Md., assignors to Trius Corporation, Ellicott City, Md.
Filed Nov. 4, 1969, Ser. No. 873,892
Int. Cl. G08b *13/14, 13/22*
U.S. Cl. 340—280 **10 Claims**



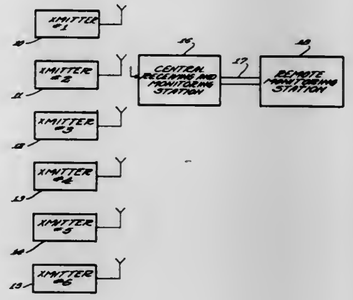
An antitheft alarm for appliances is provided consisting of a hold-in circuit which is completed through a special appliance cord and plug arrangement whereby a disconnection at either end causes a closed relay to drop out and sound an alarm.

3,618,066
ACTUATOR AND SIGNAL DEVICE FOR A LIFTING MAGNET
Harald Brommont, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed May 21, 1969, Ser. No. 826,398
Claims priority, application Germany, May 30, 1968, P 17 56 503.6
Int. Cl. G08b *21/00*
U.S. Cl. 340—282 **8 Claims**



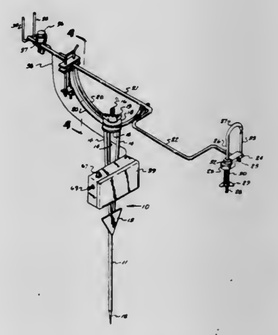
An electromagnet-lifting device employed to remove metallic charging hole covers includes a movable actuator member that has a length greater than the thickness of the magnet. When the bottom surface of the magnet is positioned on top of a charging hole cover the actuator is displaced upwardly relative to the magnet and closes a switch in the circuit to energize the magnet and engage the charging hole cover. A relay in the circuit closes a separate switch in another circuit to actuate a signal device that indicates the charging hole cover is engaged by the lifting device.

3,618,067
MOVEMENT DETECTOR
Donald P. DeVale, 9 S. Standish Road, Schaumburg, Ill., and Eugene F. Piraino, 386 Willow Road, Elmhurst, Ill., assignors to Donald P. DeVale and Eugene F. Piraino, part interest to each
Filed Nov. 4, 1969, Ser. No. 873,813
Int. Cl. B60r *25/10*; G08b *13/00*
U.S. Cl. 340—282 **3 Claims**



A motion detector for protecting items such as loaded trucks such as when parked in warehousing facilities which includes a transmitter affixed to the truck and which includes a tamperproof switch actuated by the truck frame or other portion such that if the truck is moved a given distance from its parked position or if the transmitter is removed from the truck an alarm will sound at a remote position which continuously monitors the output of the transmitter. The central monitoring position may simultaneously monitor a plurality of transmitters and may be interconnected with police or other remote monitoring authorities so as to assure continuous protection for the truck load.

3,618,068
COMBINATION FISHING POLE HOLDER AND SIGNALLING DEVICE
Clarence R. Sloan, 732 N. First Ave., Upland, Calif.
Filed Mar. 24, 1969, Ser. No. 809,612
Int. Cl. A01k *93/00*
U.S. Cl. 340—283 **5 Claims**

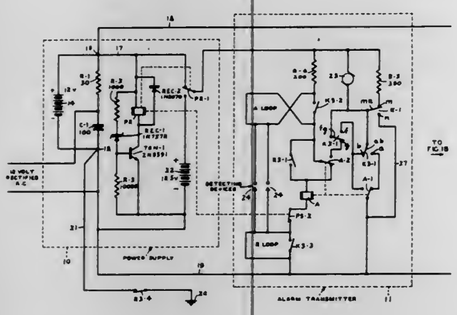


A fishing pole holder and alarm comprising a stake adapted to be inserted in the ground, a transverse pole support adjustably mounted on the stake, a switch carried by the outer end of the support, actuable upon depression of the pole, a visual and audible alarm connected to the switch, and a second switch for alternately actuating the visual or audible alarm.

3,618,069
MOTORIZED TRANSMITTER

Francis C. Evans, Staten Island, and Fred O. Johnson, Northport, both of N.Y., assignors to American District Telegraph Company, Jersey City, N.J.

Filed Oct. 31, 1968, Ser. No. 772,259
Int. Cl. G08b *13/02, 25/00;* **H02j** *9/04*
U.S. Cl. 340—292 **12 Claims**

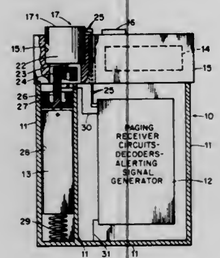


An electrical protection signaling system capable of producing alarm signals after the loss of the primary power supply. Signal interference caused by several transmitters operating simultaneously in the event of a power failure is avoided. A simplified circuit arrangement has been provided to permit operation of the system under electrical fault conditions and the need for manual rewinding of mechanically driven transmitters has been eliminated.

3,618,070
VIBRATORY ALERTING DEVICES

Sholly Kagan, East Natick, Mass., assignor to Bell & Howell Communications Company, Waltham, Mass.

Filed July 3, 1969, Ser. No. 839,034
Int. Cl. H04r *23/00*
U.S. Cl. 340—311 **15 Claims**



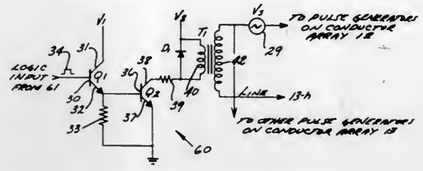
A vibratory alerting device is fitted with a linearly driven vehicle which causes the device to vibrate in unison with it when an alerting signal is received.

3,618,071
INTERFACING CIRCUITRY AND METHOD FOR MULTIPLE-DISCHARGE GASEOUS DISPLAY AND/OR MEMORY PANELS

William E. Johnson, and Larry J. Schmersal, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Jan. 19, 1968, Ser. No. 699,170
Int. Cl. G06k *15/18*
U.S. Cl. 340—324 **10 Claims**

An interface circuit and method for multiple-discharge gaseous display and/or memory panels utilizing the time characteristics of individual discharge units in a multiple-discharge panel to control the status of individual units without affecting the status of individual discharge units. A low-level voltage signal from an addressing logic system is

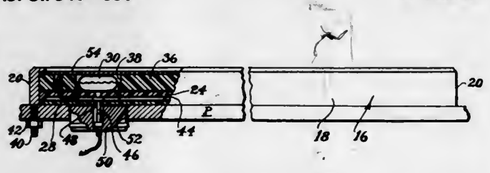


translated into a high-voltage unidirectional pulse which is added to a periodic alternating voltage at selected times to rapidly modify the charge storage at a selected discharge unit to control on and off states of selected discharge units.

3,618,072
THIN-LINE DIGICATOR DISPLAY

Bruce G. Kirkpatrick, Pompano Beach, and Rene F. De Groof, Fort Lauderdale, both of Fla., assignors to Discon Corporation

Filed Jan. 7, 1969, Ser. No. 789,443
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 **10 Claims**

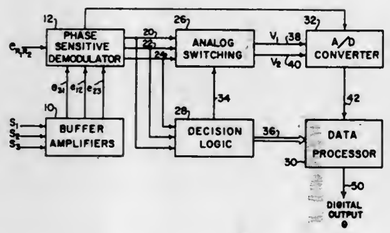


A thin, multisegment, incandescent lamp display which permits mounting of the device on the front surface of a control panel with no protrusions behind the front panel except wire or connecting terminations. Incandescent lamps with axially mounted filaments are directly viewed. The lamps are outside the apparatus on which the device is mounted and therefore do not contribute to internal heating.

3,618,073
SYNCHRO ANGLE CONVERTER

Stephen J. Domchick, Akron, and Howard M. Thomas, Canal Fulton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 23, 1970, Ser. No. 21,567
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **8 Claims**

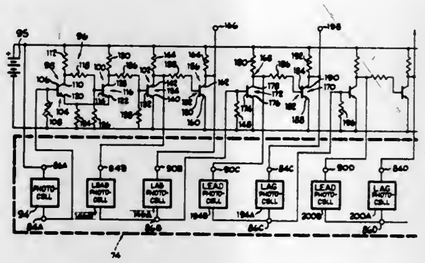


A synchro converter demodulates the stator signals, selects stator signal relationships indicative of a rotor-to-stator angular sector through logic switching, converts the selected signals in analog form to digital equivalents, and digitally processes the resultant signals to obtain an output representative of the synchro rotor-to-stator angular position.

3,618,074
OPTICAL ENCODER

John W. Brean, Cincinnati, Ohio, and Paul P. Stiedle, Little Rock, Ark., assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed Jan. 18, 1968, Ser. No. 698,739
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **5 Claims**



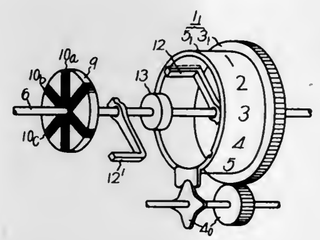
This application discloses an analog to digital shaft angle encoder of the photoelectric type.

The encoder utilizes a code disc having a plurality of coaxial tracks of alternate transparent and opaque sectors. The code disc is disposed between a light source and a photocell assembly which utilizes a separate photocell confronting the least significant track of the code disc and a pair of photocells confronting each of the more significant tracks of the code disc. Only one of the photocells of the more significant tracks of the code disc is selected by a chain of cascade inverter stages in accordance with the output of the preceding less significant track of the code disc. The encoder includes an electronics unit coiled upon a flexible strip and affixed within a common housing.

3,618,075
ANALOG-DIGITAL CONVERTER

Akira Kaida, Tokyo, Japan, assignor to Sakura Sokki Kabushikikaisha, Tokyo, Japan

Filed July 31, 1968, Ser. No. 749,217
Claims priority, application Japan, Sept. 7, 1967, 42/76811
Int. Cl. H03k *13/20;* **G08c** *9/04*
U.S. Cl. 340—347 AD **2 Claims**

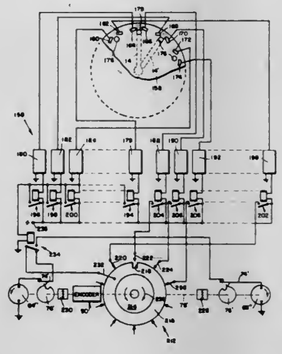


An analog-digital converter having a magnetic core, a plurality of windings wound on said magnetic core, said magnetic core being supplied with a multiphase alternating current to generate a rotating magnetic field, a magnetic path member disposed in opposite but spaced relation to said magnetic core and rotated in accordance with analog information, a detecting means for producing a pulse when said rotating magnetic field becomes aligned with said magnetic path member means for producing a reference pulse, and means for detecting the time difference between said pulse and reference pulse to convert analog information into digital information.

3,618,076
ALTITUDE REPORTER

Earl W. Springer, Box 22, Fairland, Ind.

Division of Ser. No. 739,406, June 24, 1968. Filed Nov. 6, 1969, Ser. No. 874,645
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **13 Claims**

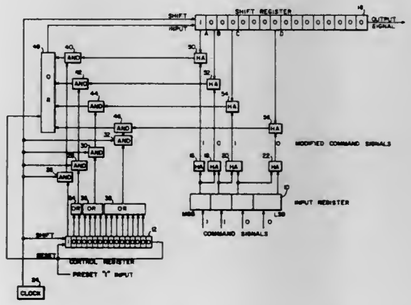


An altitude reporter comprising an altimeter, electrooptical means for tracking the position of the indicator of the altimeter first means including a register for registering the position of the indicator and providing pulse group series output corresponding to such a position, and second means for operatively connecting the first means to the electrooptical tracking means. This second means is effective, when the indicator moves in one direction, to operate the register to add increments of such movement and, when the indicator moves in the opposite direction, to operate the register to subtract like increments of movement. The tracking means is arranged so that it will, in no way, interfere with the free movement of the indicator of the altimeter. The system of the present invention, therefore, comprises a standard aircraft altimeter and means for reading the altimeter, which reading means is arranged so that it will, in no way, disturb or change the characteristics of the altimeter.

3,618,077
WALSH FUNCTION GENERATOR

Herbert L. Peterson, Hillcrest Heights, Md., assignor to The United States of America as represented by the Secretary of the Navy

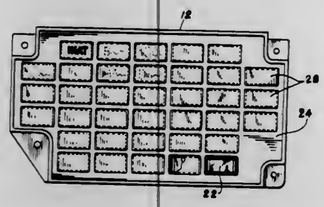
Filed July 24, 1970, Ser. No. 58,012
Int. Cl. G08c *9/00*
U.S. Cl. 340—348 **8 Claims**



A clock-driven generator which produces desired Walsh functions in response to binary number input command signals. These binary number input signals are modified to

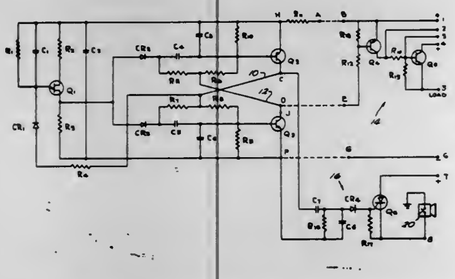
allow forward copying about the axes of symmetry of the Walsh functions as localized in a shift register, the serial output of which is the desired Walsh functions. Forward copying is accomplished by circuitry that includes half adders connected between the modified binary number input signals and the axes of symmetry of the shift registers and is controlled by a clock driven counter acting through AND gating circuitry.

3,618,078
ANNUNCIATOR
Samuel Wittman, and Marcell Wittman, both of RFD 1 Box 247 B, Bethlehem, Conn.
Filed May 6, 1968, Ser. No. 726,752
Int. Cl. G08b 5/00
U.S. Cl. 340—381 **4 Claims**



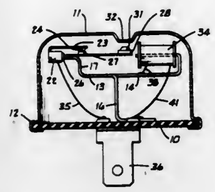
A multiple-signal annunciator which is compact in size and light in weight, comprising a relatively shallow, multiple-compartmented case having a printed circuit base, and a plurality of individually removable and replaceable lamp blocks pivotally mounted in said case and mechanically and electrically engaging said printed circuit.

3,618,079
SOLID STATE INTERRUPTER SYSTEM
Everett L. Denning, Jackson, Mich.; Dan Goor, Lexington; Frederick J. T. Dow, Billerica; Michael P. Greenberg, Winchester, Mass., and Poul H. Anderson, Jackson, Mich., assignors to Sparton Corporation, Jackson, Mich.
Filed June 20, 1968, Ser. No. 738,710
Int. Cl. G08b 3/00
U.S. Cl. 340—384 E **3 Claims**



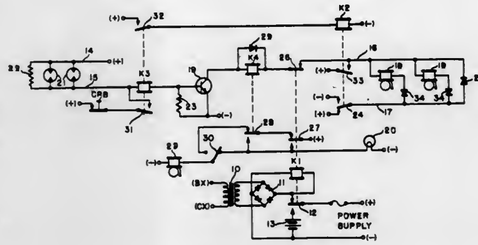
A solid state timing circuit of an interrupter system type utilizing a complementary pair of binary or square wave circuit, receiving pulses from a unijunction transistor oscillator to produce a pulsing square wave output. The pulse and square wave output may be used with a transistor switch circuit to operate a vehicle warning light system, for instance, and/or may be used in conjunction with a silicon controlled rectifier circuit for intermittently operating a vehicle horn. The silicon-controlled rectifier circuit utilizing the vibrating make and break contacts of a diaphragm-operated horn to switch the rectifier. Also, a short circuit protection circuit for the transistor switch circuit is disclosed.

3,618,080
LOW-ENERGY INPUT BUZZER
Cleon F. Frey, Sebastian, Fla., assignor to International Flasher Corporation, Bayamon, P.R.
Filed July 10, 1970, Ser. No. 53,827
Int. Cl. G08b 3/00
U.S. Cl. 340—396 **4 Claims**



A vibratory buzzer device having a relatively thin-gage metal, cup-shaped cover or housing which acts as a sounding surface when struck by a electromagnetically actuated vibrating reed which strikes the cover through a hard, electrically insulating hammer element, the cover thus being electrically insulated from the buzzer circuit.

3,618,081
CONDITION DETECTION AND ALARM SYSTEM
John T. Morrow, Old Greenwich, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.
Filed June 12, 1969, Ser. No. 832,741
Int. Cl. G08b 29/00
U.S. Cl. 340—409 **1 Claim**

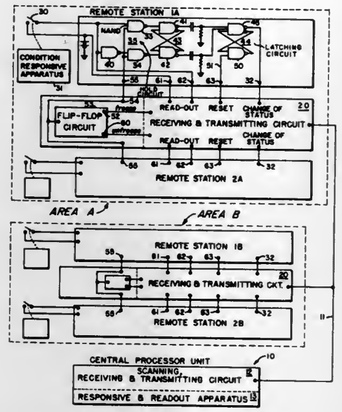


A condition detection and alarm system is disclosed having a normally inactive detector relay in series in a detection circuit with a normally open-circuited alarm sensing device that is connected in multiple with a resistor to permit supervising of the circuit. In response to actuation of the detector relay, an alarm circuit becomes energized for actuation of at least one alarm device. A single transistor switch is provided for supervising both the detection circuit and the alarm circuit, the detection circuit being supervised in a biasing circuit for the transistor, and the alarm circuit being supervised in the output circuit of the transistor. Failure of the transistor to provide an output is manifested as a trouble condition.

3,618,082
INFORMATION RETRIEVAL SYSTEM WITH A REMOTE STATION HOLD CIRCUIT TO PRESERVE A DOUBLE CHANGE IN STATUS
Roger J. Feulner, Mount Prospect, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 9, 1969, Ser. No. 814,702
Int. Cl. G08b 23/00, 29/00, 26/00
U.S. Cl. 340—413 **8 Claims**

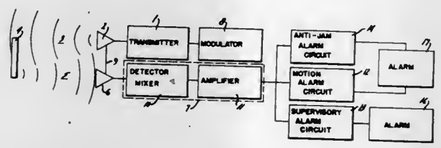
An information retrieval system having a central processor unit which is connected over a transmission circuit to a plurality of remote stations wherein the status of any one of the remote stations which has a change in status can be indicated

or read out at the central processor unit. Each remote station has means for preserving a second change in status signal at a



remote station until a first change in status is acknowledged by the central processor.

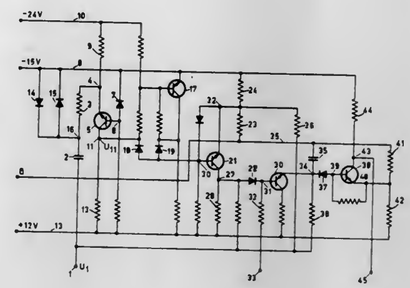
3,618,083
INTRUSION DETECTION APPARATUS HAVING ANTIJAMMING PROTECTION SYSTEM
Billy Burley; Frank S. Kett, Dallas; Geoffrey A. Young, Irving, and Paul I. Corbell, Dallas, all of Tex., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 10, 1969, Ser. No. 805,622
Int. Cl. G01s 7/36, 9/42; G08b 13/24
U.S. Cl. 343—5 PD **9 Claims**



This disclosure includes an intrusion detection system with a motion alarm which responds to a Doppler frequency signal. The motion-related Doppler frequency signals cover a predetermined frequency band and the alarm circuit is constructed to respond to all signals above a selected minimum amplitude within such band. A supervisory alarm is also provided which responds to a frequency higher than any frequency within such band. A jamming alarm circuit is provided which responds to a signal above a selected amplitude greater than the motion alarm selected amplitude and essentially independent of frequency.

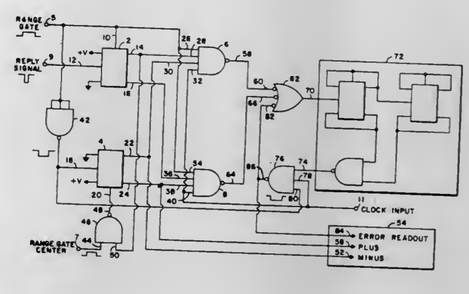
3,618,084
METHOD OF AND AN APPARATUS FOR ELIMINATING MISLEADING DOPPLER SIGNALS IN A DOPPLER RADAR SPEED-MEASURING SYSTEM
Rudolf Balsiger, Neuenhof, and Kurt Piechocki, Uster, both of Switzerland, assignors to Zellweger Ltd., Uster, Switzerland
Filed Nov. 25, 1969, Ser. No. 879,799
Claims priority, application Switzerland, Nov. 25, 1968, 17504
Int. Cl. G01s 9/44
U.S. Cl. 343—7 A **20 Claims**

Method and apparatus for eliminating misleading Doppler signals in a Doppler radar speed-measuring system in which a measured value derived from the doppler frequency is differentiated to detect portions of the Doppler frequency in excess of a given threshold value which varies with the detected speed, and timing means is provided for controlling the period of time of receipt of proper Doppler signals, the time



period of control also being varied in accordance with the measured speed.

3,618,085
ERROR DETECTOR FOR DIGITAL DME SYSTEMS
Thomas L. Hall, Ft. Wayne, Ind., assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Nov. 14, 1969, Ser. No. 876,619
Int. Cl. G01s 9/14, 9/56
U.S. Cl. 343—7.3 **6 Claims**

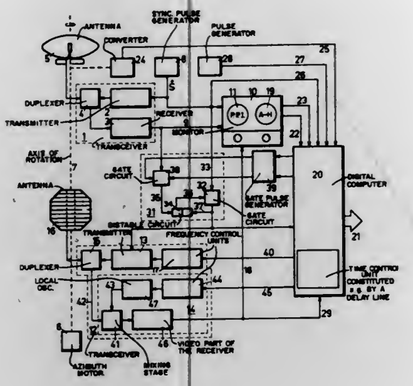


This invention relates to an error detector for distance-measuring radio equipment (DME) comprising digital means for detecting a reply signal arriving at any time during the range gate established by the DME system and generating a signal indicative of the amount and direction of displacement of the reply signal arrival from the range gate center.

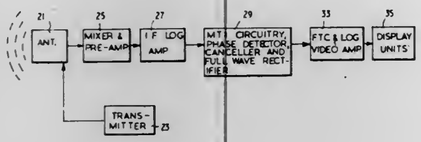
3,618,086
RADAR SYSTEM FOR THREE-DIMENSIONAL TARGET POSITION INDICATION
Cornelis Augustinus van Staaden, and Hendrik Teunis Huele, both of Hengelo, Netherlands, assignors to N. V. Hollandse Signaalapparaten, Hengelo (O), Netherlands
Filed Oct. 13, 1969, Ser. No. 865,609
Claims priority, application Netherlands, Oct. 18, 1968, 6814911
Int. Cl. G01s 9/02
U.S. Cl. 343—7.5 **7 Claims**

A radar system for three-dimensional target position indication, comprising on the one hand an antenna radiating a beam, wide in elevation, and on the other hand a frequency-dependent antenna radiating a pencil beam. The scanning plane of the second antenna is substantially coplanar to the beam plane of the first antenna. Furthermore, the system is provided with a device, which in response to given target

signals received by means of the first antenna releases the transmitter of the second antenna to perform a scan during each pulse transmitted in the beam plane of said first antenna.



3,618,087
ANTICLUTTER RADAR RECEIVER
Frank Edward Smith, and Frederick Reginald Cross, both of Ottawa, Ontario, Canada
Filed Jan. 26, 1970, Ser. No. 5,489
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **2 Claims**

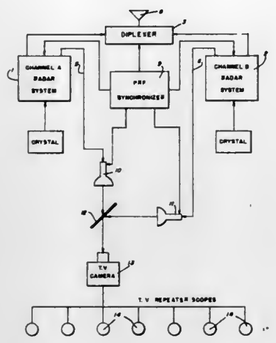


The application discloses an anticlutter signal-processing radar receiver used as an air traffic control radar.

The radar receiver uses a single receiving channel including an intermediate-frequency logarithmic amplifier which operates without loss of phase information in a received signal, and the intermediate frequency output of which is applied to a phase detector effective to produce a bipolar video signal. The channel also includes a canceller and a full wave rectifier, arranged to eliminate ground clutter from the processed input signal and a fast-time-constant circuit in conjunction with a logarithmic video amplifier effective to reduce rain clutter in the processed input signal which enables a target signal, occurring in rain clutter in a received signal, to be observed.

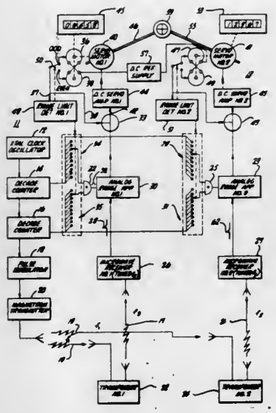
3,618,088
SECOND-TIME-AROUND ECHO IMMUNE RADAR SYSTEM
Thompson J. Simpson, Sr., Falls Church, Va., assignor to The United States Government as represented by the Administrator of the Federal Aviation Administration
Filed Feb. 26, 1970, Ser. No. 14,418
Int. Cl. G01s 7/06, 9/42
U.S. Cl. 343—7.7 **3 Claims**

A radar system for eliminating second-time-around echoes while simultaneously providing protection against radar "blind speed" problems. The invention provides two radar systems utilizing a common antenna and operating at two different frequencies and at two different pulse repetition rates.



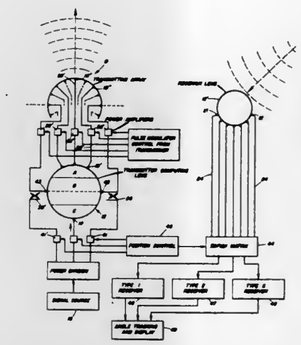
The video outputs from each system are combined to yield the target display.

3,618,089
RANGE AND TIME MEASURE SYSTEM
Robert B. Moran, Jr., Pasadena, Calif., assignor to Moran Instrument Corporation, Pasadena, Calif.
Filed Jan. 29, 1969, Ser. No. 794,937
Int. Cl. G01s 9/20
U.S. Cl. 343—13 R **17 Claims**



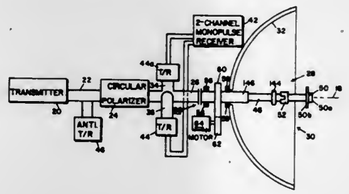
A precision range-measuring system combining digital and analog range-measuring techniques, operable on both a manual and automatic basis. The digital portion of the system is utilized to obtain the most significant digits of the range measurement and determines the amount of time delay after initiation of the range-measuring pulse before energization of the analog portion of the system. The analog portion is utilized to obtain the least significant digits of the range measurement. Readout of range information obtained by the system is provided by various means including direct display and a servo-plotting apparatus. Further refinements are incorporated to increase the accuracy of the analog portion of the system.

3,618,090
RADAR
John B. Garrison, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 5, 1960, Ser. No. 20,231
Int. Cl. G01s 9/02
U.S. Cl. 343—16 R **16 Claims**



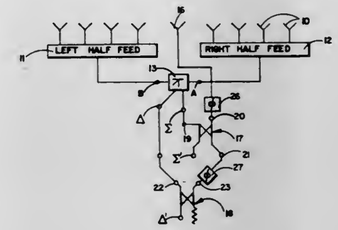
1. A radar comprising a spherical lens, wave-generating means, a plurality of feed means positioned adjacent the surface of said lens for applying the output of said wave-generating means at selected points on the surface of said lens, ans switching means for selectively connecting individuals of said feed means to said wave-generating means to transmit a beam of energy along an axis determined by the position upon the surface of said lens of the particular feed means selected.

3,618,091
CONICAL ANTENNA SYSTEM
Jesse L. Butler, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 10, 1961, Ser. No. 151,529
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M **24 Claims**



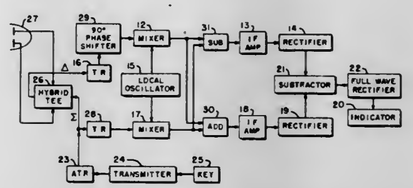
An antenna system comprising, in combination, antenna means radiating a single stationary beam pattern during transmission of energy said antenna means including means for receiving first and second overlapping beams within said first pattern, first and second transmission paths arranged to be energized upon reflections of said transmitted energy exclusively by signals in said first and second beams respectively, transmission means for coupling signals received by said antenna means to said transmission paths, and means for causing said overlapping beams to trace said directional pattern.

3,618,092
SIGNAL INJECTION APPARATUS FOR AVOIDING MONOPULSE ANOMALIES IN A MONOPULSE ARRAY
Douglas K. Walneo, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed May 23, 1969, Ser. No. 827,194
Int. Cl. G01s 9/22; H01q 21/00
U.S. Cl. 343—16 M **13 Claims**



In a monopulse microwave system, means for avoiding monopulse anomalies by the injection of a received microwave sample into the monopulse difference channel, whereby the signal level of the difference channel sidelobe response is maintained above that of the sum channel.

3,618,093
OBSTACLE DETECTION RADAR SYSTEM
Frank R. Dickey, Jr, Dewitt, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Mar. 14, 1963, Ser. No. 265,598
Int. Cl. G01s 9/06, 9/22, 9/42
U.S. Cl. 343—17.1 R **9 Claims**

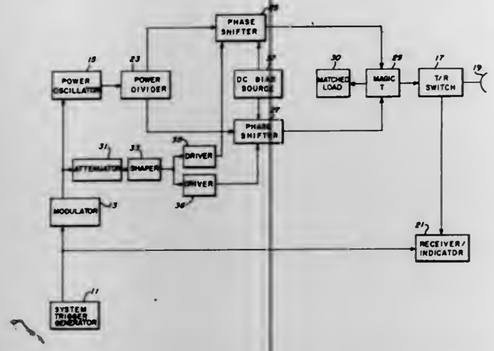


4. A radar receiver comprising: an antenna having two vertically displaced feeds; a hybrid tee having a first input connected one of said feeds, a second input connected to the other of said feeds, and two outputs, a 90° shifter coupled to one of said hybrid tee outputs; a first mixer coupled to said phase shifter; a second mixer coupled to the other of said hybrid tee outputs; a local oscillator coupled to said first and second mixers; a first subtractor coupled to said first and second mixers; an adder coupled to said first and second mixers; a first IF amplifier coupled to said first subtractor; a second IF amplifier coupled to said adder; a first rectifier coupled to said first IF amplifier; a second rectifier coupled to said second IF amplifier; and a second subtractor coupled to said first and second rectifiers.

3,618,094
RADAR FREQUENCY SPECTRUM CONTROL CIRCUIT
Harold R. Ward, Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 30, 1969, Ser. No. 872,611
Int. Cl. G01s 7/28
U.S. Cl. 343—17.1 **3 Claims**

A pulse radar system wherein the frequency spectrum of each transmitted signal is narrower than the frequency spectrum of each pulse of radio frequency energy produced by the system's power oscillator. The desired narrowing is accomplished by providing means for amplitude modulating the

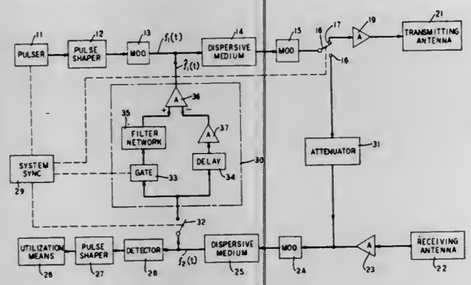
output signal from the system's power oscillator in such a way that substantially all of the radio frequency energy, except that which is generated during the main portion of each pulse, is inhibited from passing to the antenna.



3,618,095
AUTOMATIC EQUALIZER FOR CHIRP RADAR SYSTEM

Sidney Darlington, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 10, 1969, Ser. No. 875,335
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.2 PC **9 Claims**



In a Chirp radar system each dispersed signal pulse is diverted from the transmitter output power amplifier and antenna to the receiver where it is compressed by the receiver complementary dispersive line. The compressed pulse is processed, fed back to the transmitter dispersive line, and then conveyed to the transmitter output amplifier and antenna. By circulating and properly processing the pulse in the manner described, overall system distortions are substantially reduced.

3,618,096
METHOD AND APPARATUS FOR ELECTRONICALLY CAMOUFLAGING A MOVING MISSILE HAVING AN ACTIVE RADAR HOMING HEAD

Hellmuth Schoneborn, Assling, Germany, assignor to Messerschmitt-Bolkow-Blohm, Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Nov. 7, 1969, Ser. No. 874,818
Claims priority, application Germany, Nov. 26, 1968, P 18 10 977.8
Int. Cl. G01s *9/02*; **H04k** *3/00*
U.S. Cl. 343—18 E **10 Claims**

A method for electronically camouflaging a moving missile having an active radar homing head comprises utilizing a phantom transmitter, separate from the missile, to produce radar pulses having an operating wavelength differing only slightly from that of the radar homing head but having the same pulse recurrence frequency and a higher radiation power. The phantom transmitter is activated in advance of launching of the missile, and the radar homing head is activated after a predetermined flying time of the missile in a manner such that the transmission pulses from the phantom transmitter and those from the radar homing head arrive simultaneously at the target. The missile carries a receiver at

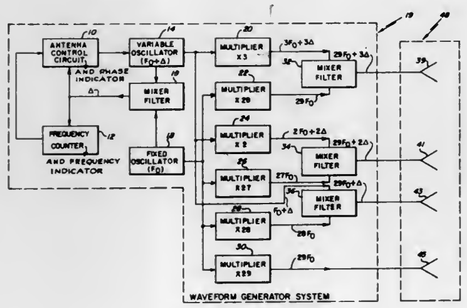


the rear end tuned to the transmission frequency of the phantom transmitter, and circuitry connected to said receiver whereby the homing head produces radar pulses responsive to radar pulses received from the phantom transmitter. The circuitry includes a delay member, a ramp voltage generator and a release circuit, which are connected with a modulator controlling the radar homing head transmission, and the operability of the radar homing head is controlled by an additional transmit-receive switch.

3,618,097
ANTENNA ARRAY SYSTEM

Willard W. McLeod, Jr., Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 17, 1963, Ser. No. 289,772
Int. Cl. H01q *3/26*
U.S. Cl. 343—100 SA **17 Claims**

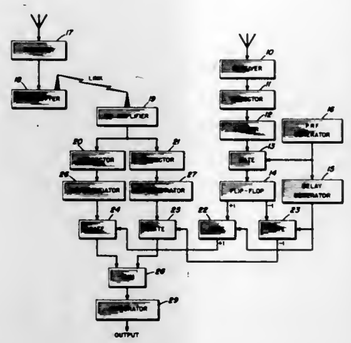


1. In combination:
first oscillator means for generating a first signal;
second oscillator means for generating a second signal;
means for obtaining frequency multiples of said first and second signals;
means for mixing predetermined multiples of said first signal with predetermined multiples of said second signal to derive a set of signals differing in frequency by an amount equal to the frequency difference between said first and second signals;
and means for varying the frequency of at least one of said first and second signals.

3,618,098
WIDE BAND DELAY LINE

Hilary H. Nail, Silver Spring, Md.

Filed Dec. 24, 1963, Ser. No. 333,230
Int. Cl. G01s *9/04*
U.S. Cl. 343—100 CL **8 Claims**

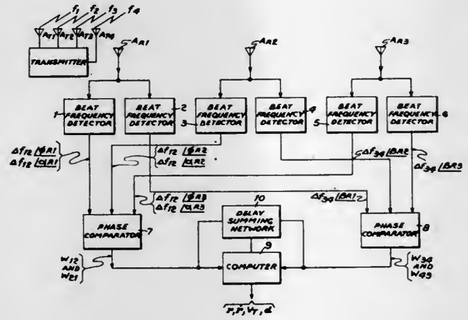


A triangulation-correlation system having an improved correlator using a wide range variable delay line and a multiplier capable of multiplying the wise band signals together.

3,618,099
MISS DISTANCE DETERMINING HYPERBOLIC SYSTEM

Frank H. Johnson, Ridgewood, N.J.

Filed Nov. 28, 1969, Ser. No. 880,603
Int. Cl. G01s *1/04*
U.S. Cl. 343—102 **10 Claims**



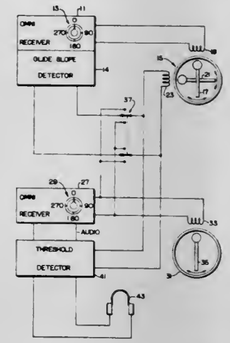
To determine continuously the minimum distance by which a first moving vehicle will travel past a second moving vehicle, there is transmitted from said second vehicle four frequencies, f_1, f_2, f_3 and f_4, which provide in space two sets of moving isophases which alternate direction of travel. A receiver at said first vehicle having three spaded antennas measures the velocity of the isophases as they sweep past said antennas by a phase comparison of the signals received at each antenna. The sum of the measured velocities corresponding to the alternating isophases and the measured velocity of the other isophases are coupled to a computer which determines therefrom the minimum miss distance.

3,618,100
AIRCRAFT RADIO NAVIGATION APPARATUS

Harold Adler, Huckleberry Hill, Lincoln, Mass.

Filed Feb. 10, 1969, Ser. No. 797,820
Int. Cl. G01s *1/16*
U.S. Cl. 343—107 **4 Claims**

The radio navigation apparatus disclosed herein facilitates perception by the pilot of an aircraft of passage through the intersection of preselected bearings relative to selected radio beacons. Deviation from one of the bearings is indicated on a first indicator having a pointer which swings laterally to indicate course deviation in conventional manner while departure from the second bearing is indicated on an indicator having a pointer which swings vertically and which crosses the pointer of the first indicator. The second indicator is

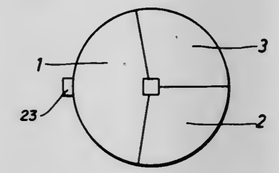


energized through a reversing switch which permits it to indicate progress relative to the intersection in the same manner for lateral locations of the respective radio beacon on either side of a course following the first bearing. Means are also provided for providing an audio signal, preferably the modulation of one of the received r.f. signals, as the intersection is passed.

3,618,101
COLLAPSIBLE PARABOLIC ANTENNA

Franz Emde, and Hans-Joachim Ludwig, both of Backnang, Wurttemberg, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm/Danube, Germany

Filed Aug. 27, 1969, Ser. No. 853,423
Claims priority, application Germany, Aug. 27, 1968, P 17 91 007.5
Int. Cl. H01q *15/20*
U.S. Cl. 343—705 **9 Claims**



A collapsible parabolic antenna for use with a communications satellite. Two 100° reflector segments are rotated laterally by torsion springs and moved axially by a coil spring, so as to be brought into proper position with respect to a fixed 160° segment. The moveable segments are held in place in back of the fixed segment by electromagnetic or pyrotechnic devices that can be actuated by remote control to release the moveable segments at the appropriate time.

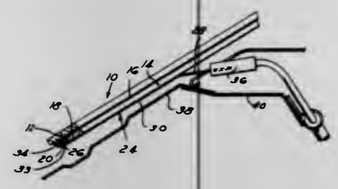
3,618,102
WINDSHIELD ANTENNA SYSTEM

Richard T. Dickason, Birmingham, and John A. Richardson, Harper Woods, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 9, 1970, Ser. No. 8,913
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **3 Claims**

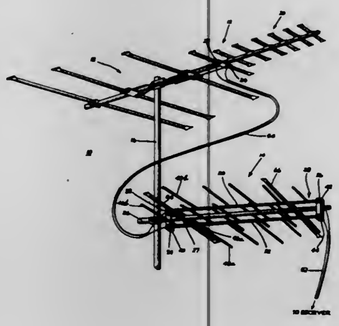
A windshield antenna system includes a first sheet of glass, a second sheet of glass having a cutout portion along one

edge thereof overlying the first sheet of glass and an interlayer of resinous material bonding the two sheets of glass together. A pair of antenna wires are adhered to the interlayer for most of their length but they do have free ends projecting outwardly from between the bonded glass sheets at the cutout portion of the second glass sheet. A conductive terminal, for terminating the antenna wires, has a body portion secured to the exposed surface of the second glass sheet so that a first end portion of the terminal extends over the



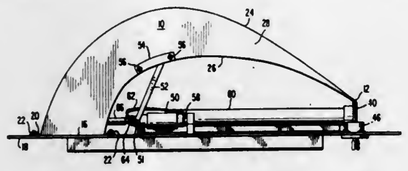
cutout portion of the second glass sheet. The antenna wires are wrapped about the first end portion of the terminal and the first end portion is deformed into the space formed by the cutout portion of the second glass sheet. Solder is placed on the antenna wires and the terminal to complete an electrical junction therebetween. A sealing material is placed over the junction. The second end portion of the terminal is bent away from the surface of the glass sheet and a connection is made to this end of the terminal for coupling the antenna to a radio receiver.

3,618,103
PLURAL ANTENNAS WITH IMPEDANCE MATCHING TO COUPLE TO SINGLE LEADIN
Robert S. Ringland, Burlington, Iowa, assignor to Antennacraft Company, Burlington, Iowa
Filed Oct. 24, 1969, Ser. No. 869,131
Int. Cl. H01q *21/00*
U.S. Cl. 343—727 **10 Claims**



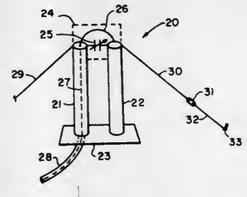
An antenna array including a narrow band antenna tuned to a particular frequency and a transmission line type broadband antenna having a frequency response range which includes the frequency of the narrowband antenna. The transmission line of the broadband antenna is serially coupled between the narrowband antenna and reception apparatus. A parasitic element of a predetermined length is positioned at a predetermined point along the transmission line of the broadband antenna and serves to peak the frequency of the narrowband antenna thereby to pass signals from the narrowband antenna to the reception apparatus with minimum attenuation.

3,618,104
BROADBAND CORNUCOPIA-TYPE ANTENNA SYSTEM
Lawrence V. Behr, Greenville, N.C., assignor to Multronics Inc., Rockville, Md.
Filed Feb. 26, 1968, Ser. No. 708,252
Int. Cl. H01q *9/00, 1/36, 1/48*
U.S. Cl. 343—745 **5 Claims**



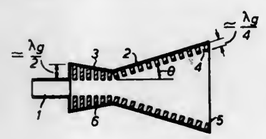
The present invention describes a broadband, low-profile circularly polarized antenna, primarily for airborne applications which has a substantially omnidirectional radiation characteristic in the horizontal plane. The form factor of the antenna comprises a cornucopia-shaped element having an arcuate surface which is defined by a plurality of polynomial line segments and which diverges from one terminal end to the other.

3,618,105
ORTHOGONAL DIPOLE ANTENNAS
Warren B. Bruene, and Ross L. Bell, both of Dallas, Tex., assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed Mar. 6, 1970, Ser. No. 17,239
Int. Cl. H01q *21/26*
U.S. Cl. 343—747 **15 Claims**



A drooping dipole antenna having a center combination supporting mast and indicator balun structure with the drooping dipoles electrically close to the ground and part of the guy support system for the antenna effective primarily in the skywave mode of operation, but also producing a useful vertically polarized surface wave component with the droop of the dipole elements. Further, with two of these antennas colocated in an orthongonal configuration and the two antennas substantially at right angles sufficient mutual isolation is advantageously attained that the two input terminals are connectable simultaneously to two transmitters, two receivers, or one transmitter and one receiver.

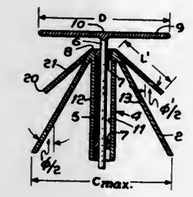
3,618,106
ANTENNA FEED SYSTEMS
Geoffrey H. Bryant, Ilford, England, assignor to The Plessey Company Limited, Ilford, England
Filed Nov. 10, 1969, Ser. No. 875,164
Claims priority, application Great Britain, Nov. 15, 1968, 54427/68
Int. Cl. H01g *13/02;* **H03n** *7/38;* **H01g** *13/06*
U.S. Cl. 343—772 **7 Claims**



An antenna feeder comprising a corrugated waveguide which affords on its inner surface a plurality of corrugated

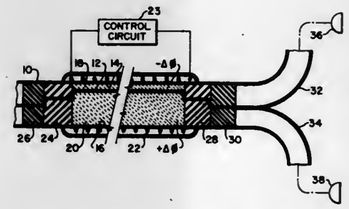
grooves in which the depths of successive grooves of the waveguide differ from each other so that the reflected impedance at the entrance of the grooves increases progressively from a low impedance afforded at the entrance of a groove at one end of the waveguide to a required higher impedance afforded at the entrance of a groove of the other end of the waveguide.

3,618,107
BROADBAND DISCONE ANTENNA HAVING AUXILIARY CONE
William M. Spanos, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 9, 1970, Ser. No. 17,652
Int. Cl. H01q *13/00*
U.S. Cl. 343—773 **10 Claims**



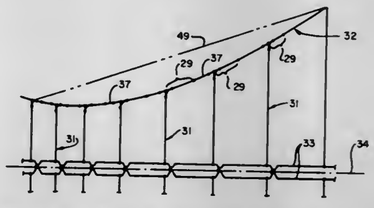
A broadband discone antenna arrangement for improving the elevation pattern of the basic discone antenna at frequencies many times the antenna cutoff frequency. An auxiliary conical element is added to the basic discone arrangement coaxially positioned between the main cone and the disc element. The inner surface of the outer conductor of the coaxial transmission feed line, which line passes through the main cone, is continuous with the outer surface of the auxiliary cone at its apex; while the outer surface of the coaxial line's outer conductor is continuous with the inner surface of the main cone. The auxiliary cone slant height is chosen just above cutoff at the frequency where pattern improvement is desired. The flair angle of the auxiliary cone is chosen greater than 60° while the main cone flair angle is less than 60° in order to minimize antenna size and optimize the pattern at the higher frequencies.

3,618,108
COMPACT ELECTRICALLY STEERABLE TRACKING ANTENNA FEED SYSTEM
Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,416
Int. Cl. H01q *13/00*
U.S. Cl. 343—778 **6 Claims**



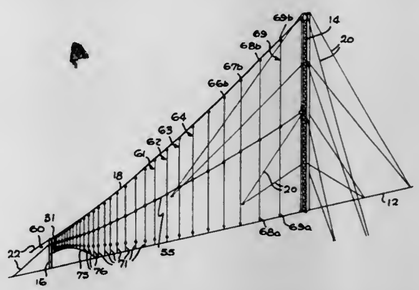
Described is an electrically steerable tracking antenna feed system employing a pair of ferrite phase shifters, one of which produces positive phase shift and the other of which produces negative phase shift with increasing applied magnetic field. The ferrite phase shifters, arranged in side-by-side relationship in a bifurcated wave guide, are surrounded by a common electromagnet.

3,618,109
ANTENNA CONSTRUCTION WITH EFFECTIVELY EXTENDED RADIATOR ELEMENTS
William L. Werner, Cupertino, Calif., assignor to Granger Associates, Palo Alto, Calif.
Filed July 23, 1968, Ser. No. 746,845
Int. Cl. H01q *11/10, 1/16, 1/20*
U.S. Cl. 343—792.5 **4 Claims**



An antenna construction supported atop a support tower by means of booms and cables, the cables carrying the end portions of a number of radiator elements extending laterally from an axis defined by one of the booms. The end portions of the radiator elements are turned to be disposed along the length of the cables so as to electrically enlarge the effective size of the radiating array. In one embodiment, end portions of the radiating elements constitute structurally supporting portions of the cables, whereas in another embodiment the cable comprises a unitary continuous strand. The radiators can provide either L-shaped or T-shaped end portions.

3,618,110
MINIMUM-HEIGHT DIPOLE-TYPE VERTICALLY POLARIZED LOG-PERIODIC ANTENNA
Gerald Eldon Solberg, San Carlos, Calif., assignor to Technology For Communications International, Mountain View, Calif.
Filed July 7, 1969, Ser. No. 839,196
Int. Cl. H01q *11/10*
U.S. Cl. 343—792.5 **11 Claims**

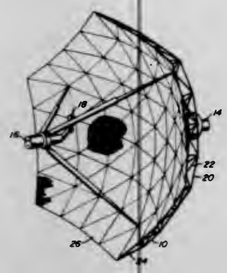


A vertically polarized log-period antenna of the dipole type is disclosed, in which the top ends of all the dipole elements are directly coupled to the antenna's main support catenary. The antenna's feed line is used to perform a structural support function, so as to reduce the structural load which has to be supported by the main catenary. Consequently, a catenary with reduced sag is used, thereby reducing the maximum height of the main support tower.

3,618,111
EXPANDABLE TRUSS PARABOLOIDAL ANTENNA
Desmond H. Vaughan, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Apr. 28, 1967, Ser. No. 634,700
Int. Cl. H01q *15/20*
U.S. Cl. 343—840 **21 Claims**

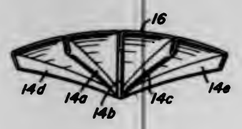
This invention relates to an expandable truss paraboloidal antenna structure in which the truss structure of the reflector

comprises hinged struts that form interconnecting, hinged, triangular truss modules that are aligned in two geometric planes with the struts terminating at junctions on the inner



and outer surfaces of the paraboloidal shaped structure. The combination of hinge struts is packaged in a compact unit and then is deployed by being automatically unfolded outwardly by spring means in certain of the hinges.

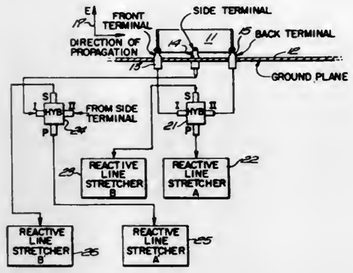
3,618,112
RADOME AND METHOD OF MAKING SAME
Robert J. Grove, Coronado, and Merrill M. Reeder, Spring Valley, both of Calif., assignors to General Dynamics Corporation
Filed Mar. 23, 1970, Ser. No. 21,569
Int. Cl. H01q 1/42
U.S. Cl. 343—872 **11 Claims**



A radome is described which is formed from resin-impregnated glass, quartz, or other fiber sheets which are folded to provide longitudinally extending radial ribs. The folds are formed by means of a tool made up of several sector-shaped members. These members are matched along one edge and the sheet, while pliable, is formed into double thickness folds between adjacent ones of the members. The sector shaped members are clamped together as each fold is made to provide the ribs.

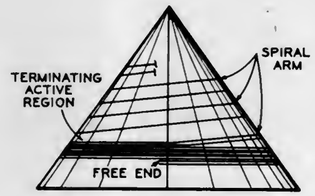
3,618,113
METALLIC STRUCTURE WITH COUPLED NETWORK TO REDUCE BACK SCATTERING
Andrew Alford, 299 Atlantic Ave., Boston, Mass.
Continuation of application Ser. No. 516,373, Dec. 27, 1965, now abandoned. This application Apr. 29, 1970, Ser. No. 31,825
Int. Cl. H01q 1/50
U.S. Cl. 343—885 **6 Claims**

The invention suppresses undesired radiation from objects having more than one dimension that is a significant fraction of a wavelength of energy exchanged with nearby radio antennas. Such a structure might be a hollow cylinder of height and transverse dimensions (diameter, if circular) that are a substantial fraction of a wavelength supported above and insulatedly separated from a ground plane by four terminals in space quadrature. At least two independently adjustable reactances are connected to the cylinder at points which are separated at some distance in the direction of wave propagation. If waves are expected to arrive from any direction, then a minimum of three independent reactances are required,



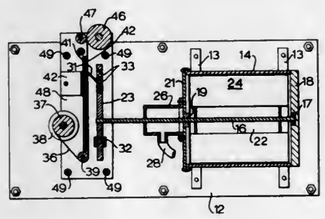
although four can be used, for example, one connected to each of the terminals in space quadrature.

3,618,114
CONICAL LOGARITHMIC-SPIRAL ANTENNA
Frederick J. Dietrich, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio
Filed Dec. 16, 1968, Ser. No. 784,015
Int. Cl. H01q 1/36
U.S. Cl. 343—895 **11 Claims**



The invention is for an antenna of the conical logarithmic-spiral class. Specifically there is disclosed a means of utilizing a terminating active region to reduce the overall size of such an antenna by a factor of two without significantly modifying the antenna characteristics. Reference is made to the claims for a legal definition of the invention.

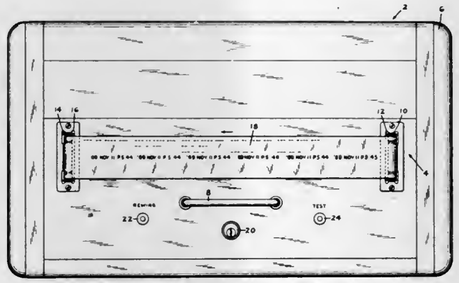
3,618,115
TERRAIN PROFILE RECORDER
Komad Parsazad, Attarzadh Street No. 83 1st Floor, Teheran, Iran
Filed July 17, 1969, Ser. No. 842,453
Int. Cl. G01c 7/04; G01d 9/38
U.S. Cl. 346—7 **7 Claims**



An instrument for simultaneously measuring the slope and distance traversed by a vehicle as an aid in determining the profile of the terrain over which a vehicle is driven, having particular utility in highway construction. A beam mounted parallel to the direction of travel of a vehicle carries a pen.

The beam is weighted so that it is parallel to the direction of travel and is horizontal. The pen marks chart paper which is advanced in proportion to the distance the vehicle moves and which is horizontal when the vehicle is level and tilts as the vehicle tilts. The pen marking the chart thus records the slope of the terrain and distance travelled. Damping means prevents overtravel of the pen or uneven terrain.

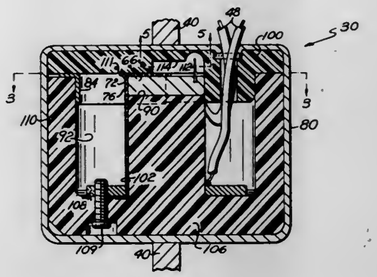
3,618,116
SIGNAL-RECORDING UNIT
Anthony C. Jr. LaMartina, Massapeque, N.Y., and Floyd L. Malmborg, Brookfield Center, Conn., assignors to American District Telegraph Company, Jersey City, N.J.
Filed July 7, 1969, Ser. No. 839,553
Int. Cl. G08b 25/00
U.S. Cl. 346—59 **12 Claims**



A recorder for recording signals at a central station transmitted to said central station from remote stations, the recorder including a housing, tape supply and takeup spools, motors for feeding the tape and driving the takeup spool, a plurality of signal-receiving means each having means for receiving signals from a remote station, means on the signal-receiving means for recording signals received thereby on the tape, means for recording the date and time on the tape that the signal is received, means for feeding the tape while signals are being received and for continuing such feed for a predetermined time thereafter, and means for supplying current to the feeding and driving motors from an alternating current source when such source is available and from a direct current source when the alternating current source fails.

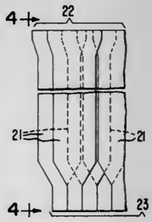
3,618,117
CRASH SENSOR AND RECORDER
Hermann Kaiser, Detroit, Mich., assignor to Eaton Yale & Towne Inc., CLeveland, Ohio
Continuation-in-part of application Ser. No. 753,948, Aug. 20, 1968, now Patent No. 3,552,768. This application Apr. 7, 1969, Ser. No. 814,132
Int. Cl. B60r 21/08; G01p 13/00
U.S. Cl. 346—7 **26 Claims**

An improved sensor assembly for actuating a vehicle safety apparatus upon the occurrence of an accident includes a mass which is urged against an energy-absorbing stop by a plurality of resiliently yieldable contact fingers with sufficient force to prevent movement of the mass to an actuated position due to vehicle braking and the encountering of abnormal road conditions. The restraining effect that each of the spring fingers exerts against the mass is predetermined and the spring fingers are disposed around the mass so that upon the occurrence of an accident, the mass will move to its actuated position for any accident having a magnitude equal to or greater than a predetermined minimum magnitude over a wide range of directions of impact. A scribe is located on the mass and is operable to record an indication of the movement of the mass from its initial position. When an impact of a predetermined minimum magnitude or greater occurs, the mass moves against the influence of the contact fingers. This movement of the mass causes the contact fingers to engage a fixed contact while the scribe provides an indication of the



direction and magnitude of the impact. The engagement of the contact fingers and the fixed contact completes a circuit for effecting operation of the vehicle safety apparatus.

3,618,118
ELECTROGRAPHIC WRITING HEAD OF PLURAL PRINTED CIRCUIT CONSTRUCTION
William A. Lloyd, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed July 28, 1969, Ser. No. 845,359
Int. Cl. G01d 15/06; H05k 1/14, 3/20
U.S. Cl. 346—74 ES **3 Claims**

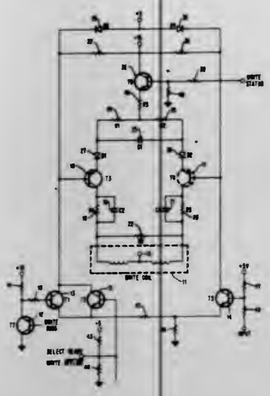


An electrographic writing head is disclosed which employs a plurality of elongated flexible printed circuit boards each supporting thereon a portion of an array of closely spaced electrographic styli. Each circuit board is tapered from a wide end to a relatively narrow end. The narrow ends of the boards are arranged in side-by-side coplanar relation to define the exposed styli electrodes, whereas the wide ends of the boards contain the terminals for connecting to electrical connector assemblies, such wide ends being arranged in non-coplanar overlapping relation to accommodate connector assemblies.

3,618,119
COMPENSATION IN A MAGENTIC WRITE CIRCUIT
Juan A. Rodriguez, Boulder, Colo., assignor to Storage Technology Corporation, Boulder, Colo.
Filed Mar. 13, 1970, Ser. No. 19,156
Int. Cl. G11b 5/02, 5/44
U.S. Cl. 346—74 M **8 Claims**

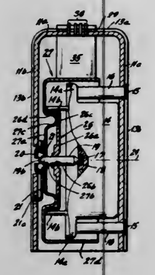
In a magnetic tape recording system, the write driver circuit has write compensation which drives the write coil with current which is initially high and which has an exponentially decaying waveform from the high current level to a lower current level. The write compensation is used with phase-encoded write current signals which have short duration transitions and longer duration transitions. The write compensation circuit includes a resistance-capacitance network having a time constant such that the exponential decay from the

high current level to the lower current level is not completed during the short duration transitions in the write current



signal so that the current through the write coil is initially higher after a longer transition than after a short transition.

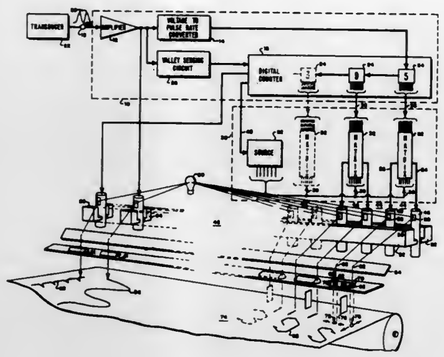
3,618,120
MAGNETIC DRUM ASSEMBLY
Richard B. Hanbicki, Princeton Junction, N.J., assignor to Madatron Corporation, Rocky Hill, N.J.
Continuation-in-part of application Ser. No. 731,421, May 23, 1968, now abandoned. This application May 15, 1969, Ser. No. 829,850
Int. Cl. G01d *15/12;* **G11b** *5/48, 5/76*
U.S. Cl. 346—74 MD **10 Claims**



A compact, lightweight magnetic drum assembly driven by synchronous motor means. The motor and drum assembly are respectively supported by separate mounting plates. A shaft for rotatably mounting the drum assembly is supported in a recess provided in the drum assembly mounting plate. The drum assembly is rotatably mounted upon the shaft. The rotor assembly is directly mounted upon and secured to the drum assembly so that the two components effectively form one rotating assembly. One of the mounting plates adjustably receives a magnetic head assembly, the adjustability allowing proper alignment of the magnetic heads relative to the magnetic surface of the drum as well as providing the proper air gap therebetween.

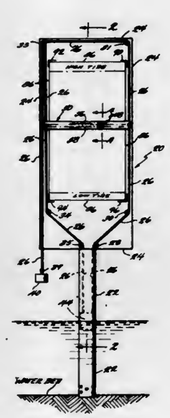
3,618,121
ALPHANUMERIC PRINTER
Fritz Baur, Denver, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 26, 1964, Ser. No. 392,233
Int. Cl. G01d *9/42*
U.S. Cl. 346—109 **3 Claims**

This invention relates to a printing apparatus for printing a plurality of alphanumeric characters on a light-sensitive paper. A digital voltmeter and a character generator provide waveforms indicative of an input signal to a plurality of pairs of galvanometers. A pair of light beams are reflected by each



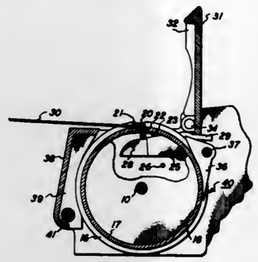
pair of galvanometers onto the paper to form each character. A lens having cylindrical and hemispherical portions is provided to focus each pair of beams onto the paper.

3,618,122
TIDE INDICATING AND RECORDING DEVICE
Anthony Maschak, 40 Torre Place, Yonkers, N.Y.
Filed June 26, 1970, Ser. No. 50,080
Int. Cl. G01f *23/08;* **G01d** *9/26*
U.S. Cl. 346—72 **10 Claims**



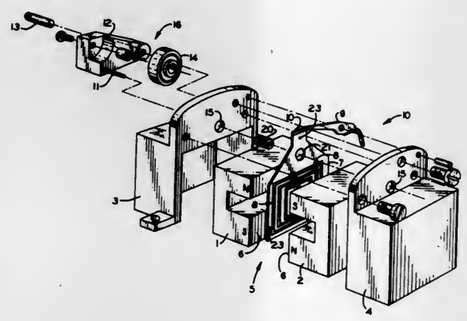
A device for indicating and/or recording the rise and fall of liquids, such as tides, comprises a backing member made of ferromagnetic material and disposed in a vertical plane with a magnetic marker movably held against the backing member by magnetic forces. The marker is operatively connected through a marker carrier to an actuating system including pulleys, weight means and float means with the float means being disposed so as to rise and fall with changing water levels to raise and lower the marker carrier. The marker carrier is provided with an undulating generally horizontally extending path receiving the marker and designed to impart horizontal and vertical movement components to the marker in step-by-step fashion with each changing tide, whereby such movements may be translated into a graph or chart on recording paper providing a visual indication and record.

3,618,123
FACSIMILE DRUM CONVEYOR
Gerald A. Buddendeck, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 26, 1968, Ser. No. 786,919
Int. Cl. G01d *15/28;* **H04n** *1/08*
U.S. Cl. 346—138 **2 Claims**



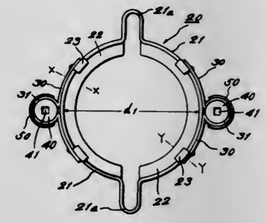
Apparatus suitable for conveying sheets of various dimensions past a scanning station in a facsimile transceiver in which a longitudinally extending bar is resiliently biassed radially inwardly of a rotatable drum member to a normal position engaging the leading edge of a sheet between a projecting lip on the bar and a portion of the drum periphery. A resiliently biassed wiper bar extending longitudinally along the drum periphery holds a sheet tautly against the drum periphery at the scanning station as the drum is rotated. An access door over the drum when opened beyond a predetermined position permits attachment or removal of a sheet from the drum by pivoting a cam to engage the bar member as the drum is rotated to a predetermined position of rotation.

3,618,124
FACSIMILE TRANSDUCER
Robert H. Dreisbach, Fort Wayne, and Russell L. South, New Haven, both of Ind., assignors to The Magnavox Company, Ft. Wayne, Ind.
Filed Apr. 18, 1969, Ser. No. 817,510
Int. Cl. G01d *15/20;* **H04n** *1/24*
U.S. Cl. 346—141 **12 Claims**



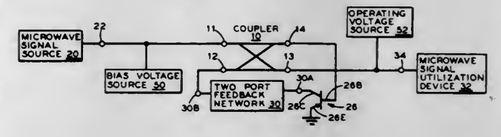
The disclosure describes an improved facsimile writing head of the moving coil type and particularly relates to an arrangement for providing a moving coil structure having low friction positioning and bearing surfaces and for providing mechanical damping of undesired oscillations and vibrations of the structure.

3,618,125
DEFLECTION YOKE
Koji Yabase, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1970, Ser. No. 30,455
Claims priority, application Japan, Apr. 23, 1969, Apr. 23, 1969, Apr. 23, 1969, Apr. 24, 1969; 44/37226, 44/37227, 44/37228, 44/37989
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **8 Claims**



A deflection yoke for a television receiver set wherein a ring insulating cover having spring means is mounted on an outer periphery of an enlarged edge of a horizontal deflection coil of saddle shape and a rotary corrective magnet is mounted on the cover.

3,618,126
MICROWAVE SIGNAL AMPLIFIER WITH FEEDBACK
Carl W. Gerst, Skaneatles, and Thomas L. Sly, Clay, both of N.Y., assignors to Anaren Microwave, Inc., Syracuse, N.Y.
Filed May 8, 1969, Ser. No. 822,974
Int. Cl. H03f *3/60, 1/36;* **H01p** *5/14*
U.S. Cl. 330—53 **10 Claims**

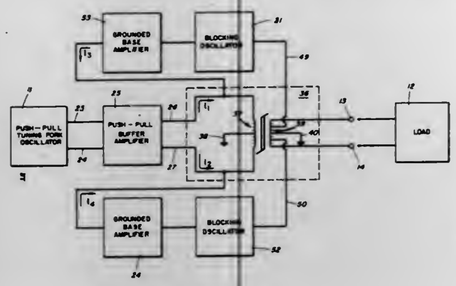


A microwave signal amplifier includes a common emitter transistor amplifier for transmitting a microwave signal from a source of microwave signals to a microwave utilization device. The transistor is connected in series with a phase shifting means between one output port and one input port of a four-port quadrature coupler. The input microwave signal is received at the other input port and the amplified microwave signal is transmitted from the other output port of the coupler.

3,618,127
RADIATION-HARDENED PULSE-PRODUCING SYSTEM
Eric K. Pritchard, Adelphi, Md., assignor to the United States of America as represented by the Secretary of the Navy.
Filed July 18, 1969, Ser. No. 843,119
Int. Cl. H03b *5/04*
U.S. Cl. 331—54 **6 Claims**

A radiation-hardened pulse-producing system having an oscillator, a buffer amplifier and a saturable core transformer for producing output pulses. Current feedback loops from the output winding of the transformer to the input winding of

the transformer, including blocking oscillators, insure at least a predetermined time delay between output pulses will be



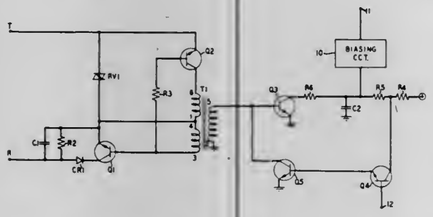
maintained if the system is subjected to a radiation environment.

3,618,128

TWO-WAY SIGNALING CIRCUIT EMPLOYING A COMMON OSCILLATOR HAVING A FEEDBACK TRANSFORMER TOY PROVIDING DC ISOLATION BETWEEN SIGNAL SOURCES

George P. Houcke, Rumson, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 19, 1969, Ser. No. 825,624
Int. Cl. H03b *5/00*
U.S. Cl. 331—60 **2 Claims**



Two-way signaling between a line loop and local terminals is accomplished by directly applying the line loop signals to an oscillator to alternatively turn on and turn off the oscillator and by applying the local terminal signals across the secondary winding of a transformer whose primary winding is in the oscillator feedback circuit to modify the reflected impedance across the primary winding and thus alternatively turn on and turn off the oscillator. The loop signals are recovered by a circuit coupled to the secondary winding and the local signals are applied to the loop by a circuit coupled to the primary winding to provide duplex signaling and, by virtue of the transformer, direct current isolation.

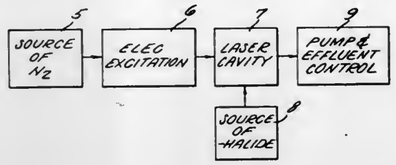
3,618,129

LASER EMPLOYING SELECTED CYANOGEN HALIDES AS LASING GASES

Casper J. Ultee, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 27, 1969, Ser. No. 811,700
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **1 Claim**

A gas laser utilizes essentially vibrationally excited nitrogen or carbon monoxide as an energizing gas and, through resonant collisions with a lasing gas, transfers the energy to the lasing gas, preferentially to an upper laser energy level. The lasing gas is a cyanogen halide including BrCN, ClCN or FCN, which is preferably introduced directly into the laser cavity free of prior excitation so as to avoid molecu-



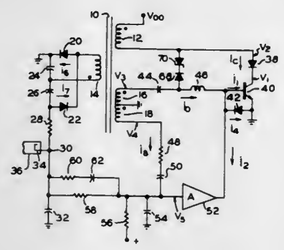
lar decomposition. Laser energy at wavelengths between 5 and 10 microns is produced.

3,618,130

HIGH EFFICIENCY REGULATED OSCILLATOR CIRCUIT HAVING A SUBSTANTIALLY SINUSOIDAL WAVEFORM

Valdis E. Garuts, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed July 28, 1969, Ser. No. 845,217
Int. Cl. H03b *3/02*; **H03k** *3/30*
U.S. Cl. 331—109 **18 Claims**



A regulated oscillator circuit for producing a predetermined high voltage output employs a switching transistor for supplying current to a high-voltage transformer and for receiving feedback current from the same high-voltage transformer. A diode is placed in series between the switching transistor and the transformer primary such that the transistor conducts substantially no current at times during predetermined half-cycles of oscillator operation. However, the transistor is switched by feedback to an on condition during each nonconducting half-cycle whereby it will deliver current to the transformer in a zero voltage condition. The period during which current is delivered to the transformer is determined by a control circuit which turns off the transistor at a selected time during each cycle of operation in accordance with the output level produced. A voltage doubler circuit is driven by the transformer and provides a DC output level.

3,618,131

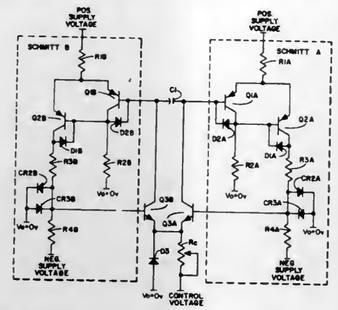
VOLTAGE CONTROLLED OSCILLATOR

Lawrence Garde, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 4, 1970, Ser. No. 86,880
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 **10 Claims**

A self-starting voltage controlled oscillator having a frequency which is a linear function of its control voltage and which uses two identical trigger circuits with a single capacitor connecting an input terminal of each trigger circuit to an input terminal of the other trigger circuit. Each trigger circuit may be a bistable Schmitt trigger. A pair of feedback loops connect the outputs from each trigger to its input. The other output from each trigger circuit controls a switch to change the capacitor charging signal path as the states of the triggers

change. The frequency of the oscillator is also a linear function of the capacitor value or of the resistor connected between the control voltage and the switch. The oscillator may be used in a phase lock loop circuit to lock on to and



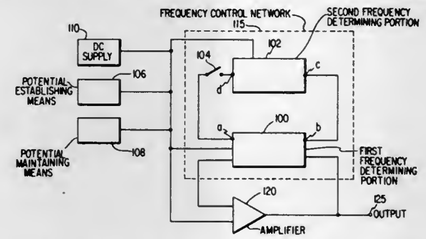
control the frequency and phase of an incoming signal from a read head used with a magnetic recording apparatus. It may also be used in any application where a controllable oscillator is required.

3,618,132

FREQUENCY SHIFT OSCILLATOR WHICH AVOIDS THE GENERATION OF TRANSIENTS

William Frederick Hingston, Cherry Hill, N.J., assignor to RCA Corporation

Filed May 23, 1969, Ser. No. 827,188
Int. Cl. H04l *27/12*
U.S. Cl. 331—179 **7 Claims**



A frequency shift oscillator includes a first frequency-determining circuit whereby the oscillator normally functions at a first frequency. A second circuit having input and output terminals is arranged to be switched between predetermined points in the first circuit, shifting the frequency of the oscillator to a second frequency. The predetermined points in the first circuit and the input-output terminals of the second circuit are all maintained at substantially the same constant potential irrespective of whether or not the second circuit is switched between the predetermined points in the first circuit, avoiding the generation of transients which would otherwise occur upon the switching of the second circuit in and out of the first circuit.

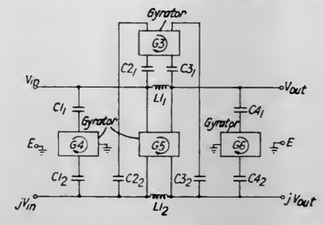
3,618,133

SYMMETRICAL POLYPHASE NETWORKS UTILIZING CONSTANT REACTANCES

Michael John Gingell, Sawbridgeworth, England, assignor to International Standard Electric Corporaton, New York, N.Y.

Filed May 20, 1969, Ser. No. 826,149
Claims priority, application Great Britain, June 7, 1968, 27,161/68
Int. Cl. H03h *7/44*
U.S. Cl. 333—24 **19 Claims**

Symmetrical polyphase networks are disclosed comprising N single-phase networks each including a constant reactance, i.e, a reactance whose value remains constant with changes in the frequency of the signal applied thereto. Due to the use of this constant reactance (controlled constant current source, such as properly connected and controlled transistors, or impedance transformers), the polyphase network responds differently to input signals of negative and positive frequencies (a positive frequency is a counter-clockwise sequence of vectors representing polyphase input



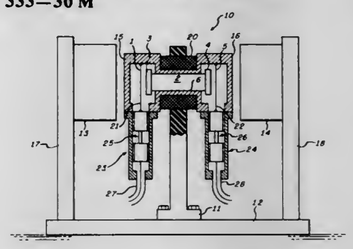
signals and a negative frequency is a clockwise sequence of vectors representing polyphase input signals). Also the polyphase network has a different insertion loss characteristic depending on the sequence of the polyphase input signals.

3,618,134

HIGH-FREQUENCY FERRIMAGNETIC DELAY DEVICE

Alan B. Smith, Lincoln, Mass., assignor to Sperry Rand Corporation

Filed Jan. 12, 1970, Ser. No. 2,010
Int. Cl. H03h *7/30*, *9/30*
U.S. Cl. 333—30 M **7 Claims**



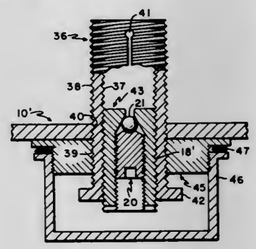
A microwave signal transmission device incorporating an axially magnetized cylindrical yttrium iron garnet rod operates over a broad frequency band as a two port, continuously adjustable, delay device with minimum insertion loss. Broad band operation is achieved by the use of quarter-wave plates of yttrium aluminum garnet crystal cut between principal crystallographic axes and bonded to the input and output ends of the rod.

3,618,135

VARIABLE CAPACITOR OF THE LOCKING TYPE

Carroll E. Weller, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

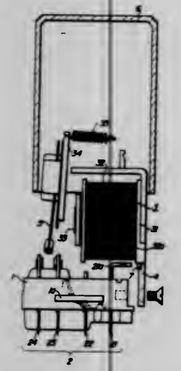
Filed Feb. 6, 1970, Ser. No. 9,220
Int. Cl. H01p *7/06*; **F16b** *39/06*, *39/284*
U.S. Cl. 333—83 R **3 Claims**



The invention here disclosed is a variably positioned capacitance or susceptance element of particular utility in tuning striplines and cavities excited in the TEM mode. It is characterized by a bushing having an expansible segmented fore portion which projects through an aperture in the wall of

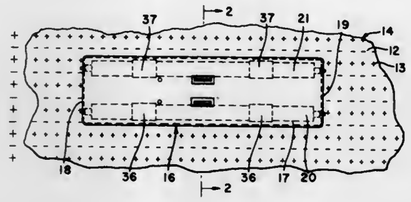
the device being tuned, together with a locking screw arranged to force the segments into the edges of said aperture, thereby to assure favorable electrical characteristics and a secure lock of the setting of capacitance or susceptance.

3,618,136
ELECTROMAGNETIC RELAY
Teizo Fujita, 3-34, Naka, Tezukayama, Sumiyoshi-ku, Osaka, Japan
Filed Jan. 27, 1970, Ser. No. 6,177
Claims priority, application Japan, July 19, 1969, 44/69002
Int. Cl. H01h *50/02*
U.S. Cl. 335—202 **3 Claims**



An electromagnetic relay so constructed that the internal electrical connection can be attained incident to assembly of the relay, by previously performing a soldering operation at one place for one terminal end of a coil or at a total of two places for both terminal ends of the coil.

3,618,137
MOVABLE MAGNETIC COUPLING
Raymond C. Bassett, 54 Holiday Drive, and William R. Chesnut, 37 Laurel Place, both of Caldwell, N.J.
Filed Feb. 2, 1970, Ser. No. 7,885
Int. Cl. H01f *7/20*
U.S. Cl. 335—285 **20 Claims**



A movable magnetic coupling comprising a magnetized surface and a magnetized, movable rotor magnetically adhered to the surface, the surface having parallel, magnetic fields of alternate polarity which magnetically interact with similar, parallel magnetic fields of alternate polarity on the movable rotor, the magnetic interaction constantly aligning the rotor in a continuously parallel orientation with respect to a reference line in the surface yet permitting free translational movement of the rotor both by rotation about its axis and by sliding parallel to its axis without substantial magnetic resistance.

DESIGNS

NOVEMBER 2, 1971

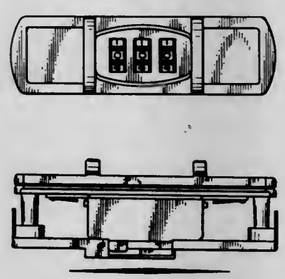
222,523
PAIR OF SKI GOGGLES
Terry J. Simpkins, Dublin, Ohio, and James P. Soroos, New Haven, Conn., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed July 13, 1970, Ser. No. 23,917
Term of patent 14 years
Int. Cl. D2— *03*
U.S. Cl. D2—234



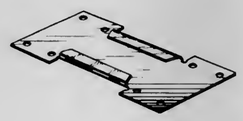
222,524
ELECTRIC SPOTTING BRUSH FOR CLEANERS
John Jedora, 33 Cedar N., Timmins, Ontario, Canada
Filed Mar. 13, 1970, Ser. No. 21,890
Term of patent 14 years
Int. Cl. D4— *02*
U.S. Cl. D4—14



222,525
COMBINATION LUGGAGE LOCK OR THE LIKE
Samuel J. Holtzman, 8201 Symphony Drive, Baltimore, Md. 21208
Filed Aug. 5, 1970, Ser. No. 24,317
Term of patent 14 years
Int. Cl. D8— *03*
U.S. Cl. D8—129



222,526
SNUBBER PLATE
William A. Meier, Roselle, Ill., assignor to Signode Corporation
Filed Mar. 27, 1970, Ser. No. 22,079
Term of patent 14 years
Int. Cl. D8— *03*
U.S. Cl. D8—229



222,527
BRACKET FOR USE WITH LIFESAVING EQUIPMENT
Theodore Ziaylek, Jr., P.O. Box 292, Yardley, Pa. 19068
Filed Mar. 11, 1969, Ser. No. 16,186
Term of patent 14 years
Int. Cl. D8— *08*
U.S. Cl. D8—247



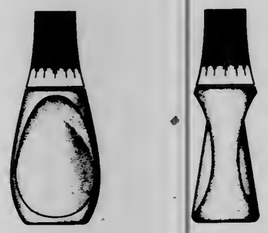
222,528
SPINNER NUT
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed May 8, 1970, Ser. No. 22,891
Term of patent 14 years
Int. Cl. D08—*10*
U.S. Cl. D8—273



222,529
BOTTLE
Jonathan A. Terner, 17 Cornell St., Scarsdale, N.Y. 10583
Filed Sept. 25, 1970, Ser. No. 25,190
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



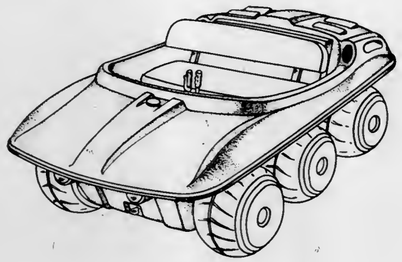
222,530
LIQUID DISPENSING BOTTLE
Warren J. Luedtke, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Nov. 20, 1970, Ser. No. 26,097
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—144



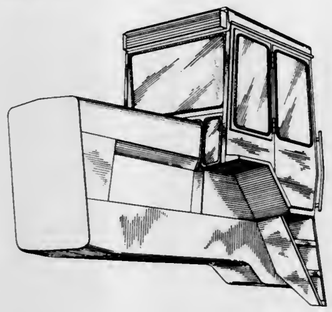
222,531
RETAIL FOOD MARKET
Howard Cooper, Suite 7707, John Hancock Center, Chicago, Ill. 60611
Filed Mar. 19, 1970, Ser. No. 21,972
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



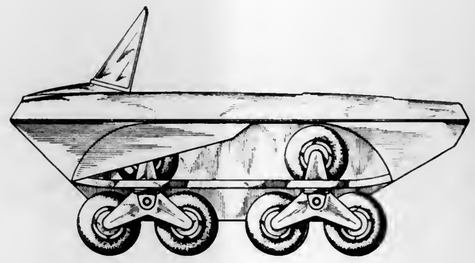
222,532
ALL-TERRAIN VEHICLE
Robert W. Temple, Boulder, Colo., assignor to Hitco
Filed Aug. 20, 1970, Ser. No. 24,604
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3



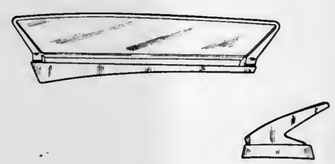
222,533
TRACTOR BODY
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 21, 1970, Ser. No. 24,624
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



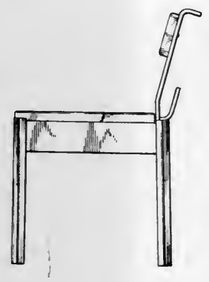
222,534
VEHICLE
John P. Forsyth and Robert W. Forsyth, Upland, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Sept. 14, 1970, Ser. No. 24,982
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3



222,535
VEHICLE ROOF-TOP REAR VIEW MIRROR HOUSING
William W. Toy, Bloomfield Hills, and Lynn H. Hodge, Detroit, Mich.; said Toy assignor to Lewis G. Harmon, Birmingham, Mich.
Filed July 22, 1969, Ser. No. 20,421
(Filed under Rule 47(a) and 35 U.S.C. 116)
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



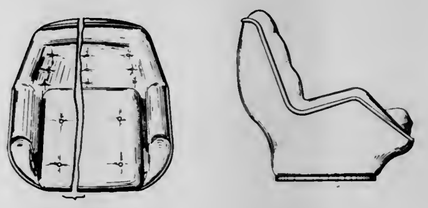
222,536
CHAIR
Frederick Clive Hunter and John Sidney Webb, Banbury, England, assignors to Design Furniture Limited, Banbury, England
Filed June 4, 1970, Ser. No. 23,302
Claims priority, application Great Britain Apr. 17, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



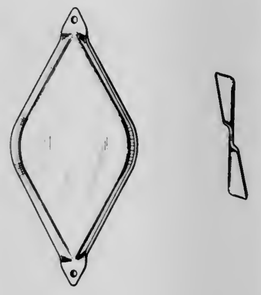
222,537
SEAT
Marilyn Lewis, Beverly Hills, Calif., assignor to Hamburger Hamlets, Inc.
Filed Dec. 15, 1969, Ser. No. 20,495
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—8



222,538
CHAIR
Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne S.A., Montreuil-sous-Bois, France
Filed Oct. 8, 1969, Ser. No. 19,454
Claims priority, application France Apr. 28, 1969
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—11



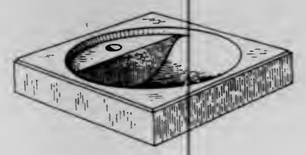
222,539
FISH LURE SPINNER
Dennis A. Visger, Box 93, New Albin, Iowa 52160
Filed June 1, 1970, Ser. No. 23,245
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



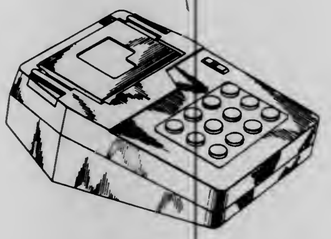
222,540
FOOT VALVE
John F. Campbell, Fergus, Ontario, Canada, assignor to GSW Limited—GSW Limitee, Toronto, Ontario, Canada
Filed June 8, 1970, Ser. No. 23,361
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



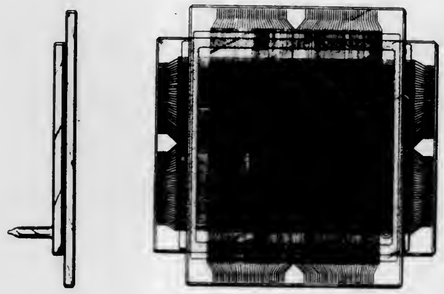
222,541
LAVATORY
Kay L. Ruggles and Norman J. Van Skyhawk, Salt Lake City, Utah, assignors to American Standard Inc., New York, N.Y.
Filed Nov. 12, 1968, Ser. No. 14,384
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



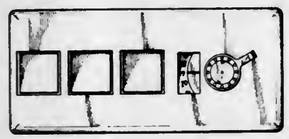
222,542
TEACHING MACHINE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed Aug. 27, 1970, Ser. No. 24,720
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D25—1



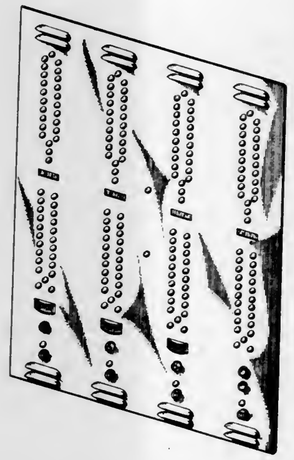
222,543
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Harold J. Hoehn, 2255 Haven Wood Drive, Toledo, Ohio 43614
Filed Sept. 9, 1969, Ser. No. 19,075
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—5



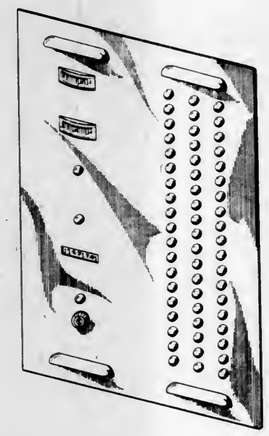
222,544
REMOTE CONTROL UNIT FOR DISPENSING APPARATUS
Fritz Gallati, Zurich, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland
Filed July 31, 1970, Ser. No. 24,244
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



222,545
ELECTRIC MULTIPLE INDICATOR PANEL FOR A PNEUMATIC TUBE SYSTEM
Herbert Kalendar, Miami, Fla., assignor to Advance Metal Products, Inc., Miami, Fla.
Filed Sept. 10, 1970, Ser. No. 24,908
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



222,546
ELECTRIC INDICATOR PANEL FOR A PNEUMATIC TUBE SYSTEM
Herbert Kalendar, Hallandale, Fla., assignor to Advance Metal Products, Inc., Miami, Fla.
Filed Sept. 10, 1970, Ser. No. 24,909
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



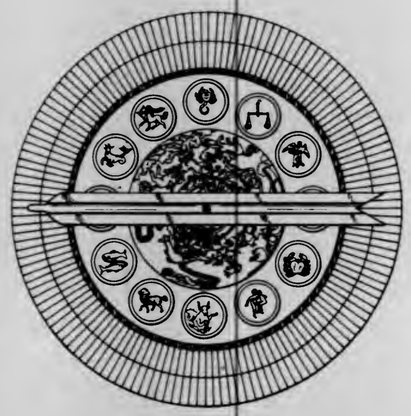
222,547
STEREOPHONIC HEAD SET
Bernard Kantor, South Farmingdale, N.Y., assignor to Stanton Magnetics, Inc., Plainview, N.Y.
Filed Aug. 24, 1970, Ser. No. 24,655
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



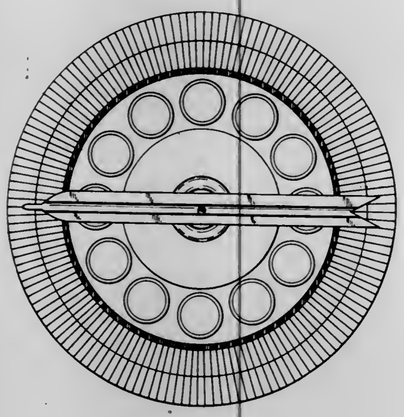
222,548
STATUETTE OR SIMILAR ARTICLE
Abbot Lutz, New York, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Nov. 9, 1970, Ser. No. 25,867
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



222,549
SPINNING INDICATOR DEVICE
Frank J. Faltico, Jr., 524 W. Surf St., Chicago, Ill. 60657
Filed Apr. 22, 1970, Ser. No. 22,560
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



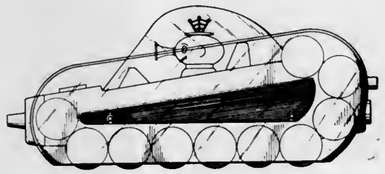
222,550
SPINNING INDICATOR DEVICE
Frank J. Faltico, Jr., 524 W. Surf St., Chicago, Ill. 60657
Filed Apr. 22, 1970, Ser. No. 22,561
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



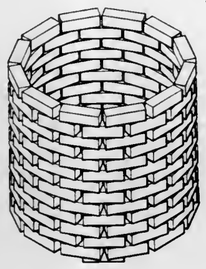
222,551
TOY VEHICLE TRACKWAY
Eijiro Tomiyama, % Tomy Kogyo Co., Ltd., 10, 9, 7-chome, Tateishi Katsushika-ku, Tokyo, Japan
Filed Apr. 22, 1970, Ser. No. 22,568
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



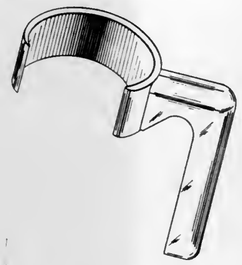
222,552
PUSH TOY
Charles H. Hardin, Daniel F. Krause, and Arnold E. Brown, Nashville, Tenn., assignors to Kusan, Inc., Nashville, Tenn.
Filed Sept. 9, 1970, Ser. No. 24,891
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



222,553
PLANTER
Gerald V. Robinson, Box 94, Kimball, Minn. 55353
Filed July 28, 1970, Ser. No. 24,184
Term of patent 14 years
U.S. Cl. D35—3



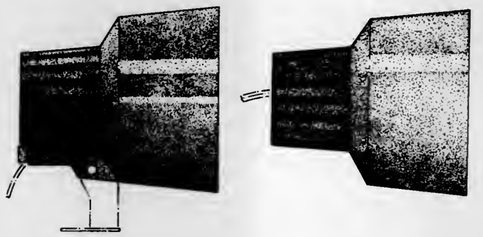
222,554
CAN HOLDER
Glen R. Cockrum, R.R. 1, Box 1342, Granite City, Ill. 62040
Filed Apr. 16, 1970, Ser. No. 22,465
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—21



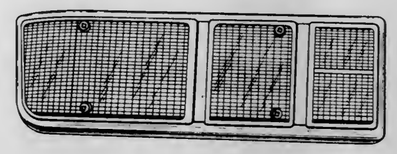
222,555
HOUSING FOR TABLE LAMP
Lodovico Magistretti, Via Conservatorio 20, Milan, Italy
Filed Aug. 12, 1970, Ser. No. 24,447
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



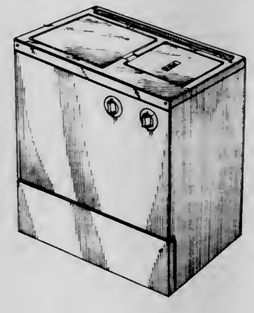
222,556
FLOODLIGHT OR THE LIKE
William R. Mattson, Gloucester, and Ruth G. Petersen, Medfield, Mass., assignors to Sylvania Electric Products
Filed Sept. 9, 1970, Ser. No. 24,904
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20



222,557
LENS FOR VEHICLE TAIL LAMP
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, Hauts-de-Seine, France
Filed Aug. 3, 1970, Ser. No. 24,261
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



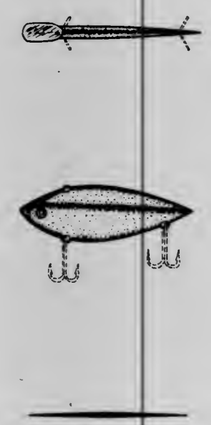
222,558
LAUNDRY MACHINE
Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Dec. 18, 1969, Ser. No. 20,564
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—1



222,559
WASTE RECEPTACLE OR THE LIKE
Mary D. Nichols, 1251 Campbell Circle, and Beatrice D. Patrinely, 1551 Boulevard, both of Jacksonville, Fla. 32207
Filed May 28, 1970, Ser. No. 23,201
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D49—35



222,560
FISHING LURE
John C. Boucher, Jr., 9543 Weatherwood, Houston, Tex. 77055
Filed July 22, 1970, Ser. No. 24,072
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



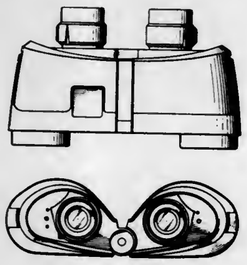
222,561
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Original design application Mar. 25, 1968, Ser. No. 11,179, now Patent No. 216,331, dated Dec. 16, 1969. Divided and this application June 3, 1969, Ser. No. 17,483
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



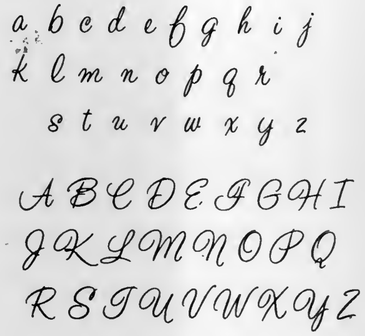
222,562
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Original design application Mar. 28, 1968, Ser. No. 11,179, now Patent No. 216,331, dated Dec. 16, 1969. Divided and this application June 3, 1969, Ser. No. 17,503
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



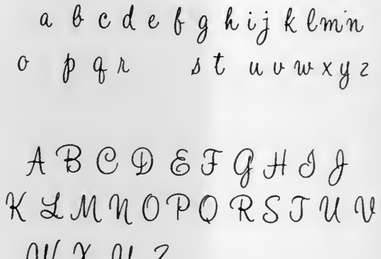
222,563
BINOCULAR
Paul R. Maguire, Los Angeles, Calif., assignor to David P. Bushnell, Altadena, Calif.
Filed Feb. 16, 1970, Ser. No. 21,442
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D57—1



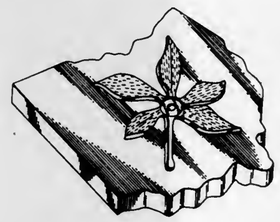
222,564
FONT OF TYPE
William Sandwick, Cleveland, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Feb. 2, 1970, Ser. No. 21,195
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12



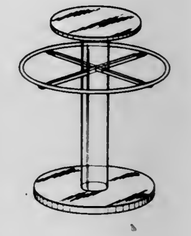
222,565
FONT OF TYPE
William Sandwick, Cleveland, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Feb. 2, 1970, Ser. No. 21,196
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12



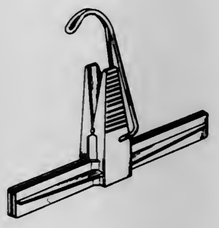
222,566
BASE FOR A PEN DESK SET OR SIMILAR ARTICLE
Harold A. Dunn, Franklin County, Ohio (3237 McKinley Ave., Columbus, Ohio 43204)
Filed Feb. 18, 1970, Ser. No. 21,500
Term of patent 7 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



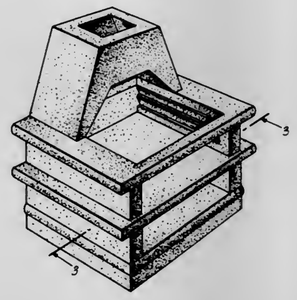
222,567
GARMENT DISPLAY FIXTURE
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Mar. 23, 1970, Ser. No. 22,004
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—8



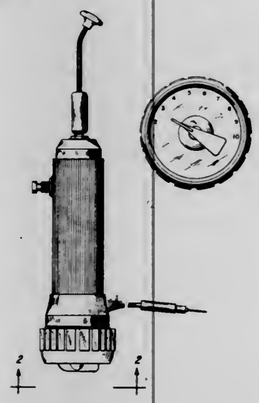
222,568
CLOTHES HANGER
Stewart S. Battles, Box 907, Galesburg, Ill. 61401, and Oscar N. Brown, Rock Island, Ill. (601 3rd Ave., Moline, Ill. 61265)
Filed Aug. 5, 1970, Ser. No. 24,325
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D80—8



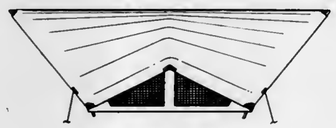
222,569
BARBECUE
Ralph A. Ford, Westtown, N.Y., assignor to Valley Cast Concrete, Inc., Westtown, N.Y.
Filed Aug. 12, 1970, Ser. No. 24,462
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



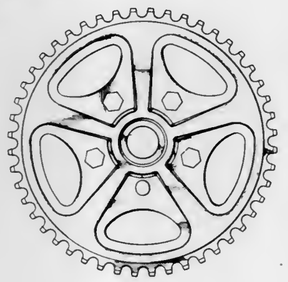
222,570
ELECTRICAL NERVE STIMULATOR
Blair A. Rowley and Ross D. Young, Columbia, Mo., assignors to Institute of Bioengineering Research Incorporated
Filed Feb. 12, 1970, Ser. No. 21,406
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



222,571
TENT
Charles R. Gretz, Jacksonville, Fla., assignor to Terraquatics, Inc.
Filed Jan. 2, 1970, Ser. No. 20,754
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 10, 1984, has been disclaimed
Int. Cl. D21—*05*
U.S. Cl. D88—3



222,572
CHAIN SPROCKET FOR A BICYCLE
Keizo Shimano and Norio Sato, both % Shimano Industrial Co., Ltd., 77, 3-cho, Oimatsucho, Sakai, Osaka, Japan
Filed Apr. 23, 1969, Ser. No. 16,866
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—17



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2D DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Nelson, James E., 3,616,813.
AB Bonnierforetagen: *See—*
Stal, Sture Walter, 3,617,055.
Abbott Laboratories: *See—*
Massie, Adrian B., 3,616,898.
Mattoon, Richard W.; and Macy, Lowell R., 3,617,299.
Abe, Zenmon; Furuhata, Yoshio; and Kato, Yasuo, to Kabushiki Kaisha Hitachi Seisakusho. Modulator with reactance element having nonlinearity. 3,617,943, Cl. 332-52.
Ablah, George J.; and Townsend, James B. Wire cutting article. 3,616,535, Cl. 30-40.1
Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument capable of generating musical tone signals simulating the sounds of a wind instrument. 3,617,604, Cl. 84-1.22
Adams, Bob R. Floating utility light. 3,617,733, Cl. 240-26.
Adams, Charles T.: *See—*
Jenkins, John W.; and Adams, Charles T.,3,617,511.
Middleton, Roy; and Adams, Charles T.,3,617,789.
Addressograph-Multigraph Corporation: *See—*
Di Giulio, Albert J.; and Naujokas, Frank B., 3,616,718.
Adickes, Cecil F., to Tonka Corporation. Combination toy vehicle and holding means therefor. 3,616,571, Cl. 46-202.
Adler, Harold. Aircraft radio navigation apparatus. 3,618,100, Cl. 343-107.
Adler, Karl; and Ducommun, Georges, to Biviator S.A. Automatic parking-time indicator. 3,616,644, Cl. 58-143.
Aebi, Hans: *See—*
Martin, Henry; Aebi, Hans; and Ebner, Ludwig,3,617,249.
AEG-Elotherm GmbH: *See—*
Grosskopf, Rudolf E., 3,617,680.
Aerodyne Controls Corporation: *See—*
Tetrault, Leonard P., 3,617,664.
Aerojet-General Corporation: *See—*
Kromrey, Robert V., 3,617,416.
Lampert, Bernard B., 3,617,400.
Aeronca, Inc.: *See—*
Weise, Carl A., 3,616,648.
Aga Aktiebolag: *See—*
Bjork, Nils Arvid Norman, 3,617,106.
Agfa-Gevaert Aktiengesellschaft: *See—*
Kampfer, Helmut; and Verhille, Karel Eugene, 3,617,270.
Muller, Hermann, 3,617,118.
Ohlschlager, Hans; Riester, Oskar; Kampfer, Helmut; Lohmer, Karl; and Kuffner, Karl, 3,617,296.
Agnew, Patrick William, to Precision Hydraulics Limited. Copy milling device. 3,617,024, Cl. 251-3.
Agthe, Ralph; and Merminod, Charles, to Societe Anonyme Conrad Zschokke. Apparatus for laying coating of resinous material. 3,617,423, Cl. 156-575.
Aguilar, Andres; and Gerke, Gerald E., to United States of America, Air Force. Pallet puller for heavy equipment. 3,616,952, Cl. 214-372.
Ahlgrim, Michael: *See—*
Kandler, Joachim; Mietens, Gerhard; and Ahlgrim, Michael,3,617,343.
Ahlstrom, A., Osakeyhtio: *See—*
Aremaa, Toivo Ensio, 3,616,904.
Ainslie, Dianne B.; and Crapsey, Arthur H., to Eastman Kodak Company. Cartridge. 3,617,013, Cl. 242-197.
Airtex Products: *See—*
Phillips, Claude F., 3,617,157.
Akerman, Emanuel: *See—*
Pomper, Seymour; and Akerman, Emanuel,3,617,306.
Aktiebolaget Electrolux: *See—*
Lindgren, Nils Kauri, 3,617,784.
Aktiebolaget Karlstads Mekaniska Werkstad: *See—*
Ingermarsson, Gosta Ingemar, 3,616,660.
Aktiengesellschaft Brown, Boveri & Cie: *See—*
Brandt, Armand, 3,617,838.
Aktieselskabet Thunes Mekaniske Vaerksted: *See—*
Hundseid, Narve, 3,617,444.
Albert, Donald J., to Eastman Kodak Company. Vacuum paper feeder. 3,617,048, Cl. 271-26.
Albiswerk Zurich A.G.: *See—*
Landis, Peter, 3,617,692.
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Csicsery, Sigmund M., to Chevron Research Company. Hydrocracking catalyst comprising a layered clay- type crystalline aluminosilicate component, a group VIII component and gold, process using said catalyst. 3,617,489, Cl. 208-60.
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Furst, Stefan, to Reiners, Walter, Peter-Nonnenmuhlen-Allee. Warp knitting machine. 3,616,657, Cl. 66-84.

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Gantz, George M.; Mackey, E Scudder; and Mayhew, Raymond L., to GAF Corporation. Coating compositions comprising a celloid and a polyoxyalkylene ether of a monohydric alcohol containing more than two alkyl side chains. 3,617,292, Cl. 96-114.5

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Garland, Theodore F., to Garland Manufacturing Company. Floatation pump device. 3,617,146, Cl. 415-7.

Garrison, John B., to United States of America, Navy. Radar. 3,618,090, Cl. 343-16.

Garuts, Valdis E., to Tektronix, Inc. High efficiency regulated oscillator circuit having a substantially sinuosidal waveform. 3,618,130, Cl. 331-109.

Garzon, Ruben D., to I-T-E Imperial Corporation. Current zero anticipating circuit for asymmetric waves. 3,617,906, Cl. 328-150.

Garzon, Ruben D., to I-T-E Imperial Corporation. Current zero anticipating circuit. 3,617,907, Cl. 328-150.

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Inklaar, Petrus Adam, to Vasco Industries Corporation. Method of manufacturing improved meat products of the sausage type and composition therefor. 3,617,307, Cl. 99-109.

Inland Steel Company: *See—*
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Irish, Carleton D., to Bell Telephone Laboratories, Incorporated. Method and apparatus for circuit module testing by comparison of a fluorescent image with a standard pattern. 3,617,744, Cl. 250-71.

Irving, William F.; and Klein, Walter F., to International Business Machines Corporation. Magnetic copying apparatus with inertia control feature. 3,617,648, Cl. 179-100.2

Isaacs, Anthony Leonard; and Corney, John Victor James, to British Lighting Industries Limited. Control apparatus. 3,618,022, Cl. 340-149.

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Ishida, Seiichi; Kamuro, Yasuo; Takano, Tadayoshi; and Iwata, Takashi, to Fujisawa Pharmaceutical Co., Ltd., and Nisson Chemical Industries Co., Ltd. Compositions and methods for controlling plant growth. 3,617,245, Cl. 71-76.

Ishige, Sadao: *See—*
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Ishikawa, Kazuo; and Yamashita, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Degaussing device for color television receiver. 3,617,800, Cl. 315-8.

Ishikawa, Ken Y.; and Johnson, Charles R., to North American Rockwell Corporation. Spectrum analyzer with variable normalizing means and means for indicating the degree of normalization. 3,617,882, Cl. 324-77.00e

Ishikawa, Masaoki: *See—*
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Jackson, Richard Robert. Humifified respiratory tube and method. 3,616,796, Cl. 128-212.

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Jaffe, Joseph, to Chevron Research Company. Jet fuel production. 3,617,487, Cl. 208-59.

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Janning, John L., to National Cash Register Company, The. Method of accurately doping a semiconductor material layer. 3,616,527, Cl. 29-571.

Janssen, Hermann W.; and Mooring, James F., to Dresser Industries, Inc., mesne. Dual detector compensated density well logging system. 3,617,746, Cl. 250-83.3

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Johnson, Duane M., to United States of America, Navy. Ignition transfer composition comprising fuel, oxidizer and fluoroelastomer. 3,617,403, Cl. 149-19.

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Jones, Gary D., to Illinois Water Treatment Co. Layered ion exchange process. 3,617,558, Cl. 210-35.

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Jones, Howard W. H., to Consolidated Paper (Bahamas) Limited. Refiner control. 3,617,006, Cl. 241-21.

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Jones, James R., Jr. Paired cable cutters and method of using same. 3,616,717, Cl. 83-39.

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Kahn, Robert D., to Fedtro, Inc. Rectifier for extending the life of light bulbs. 3,617,766, Cl. 307-146.

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Kalopissis, Gregoire; and Bugaut, Andree, to L'Oreal. Basic dyes for use in coloring hair. 3,617,163, Cl. 8-10.

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Kehl, Joseph D., to Motorola, Inc. Accessory connector. 3,617,985, Cl. 339-92.

Kehrig, John. Foldaway sawhorse. 3,616,873, Cl. 182-155.

Keith, Carl D.; Haley, Alfred J., Jr.; and Baker, Kenneth D., to Engelhard Minerals & Chemicals Corporation. Gold plating. 3,617,452, Cl. 204-46.

Keller, Elbert Gerald, to Leach Corporation. Data acquisition system. 3,616,692, Cl. 73-189.

Kelley, Dale T.; Smith, Billy E.; and Wilson, Richard W., to Motorola Inc. Method and apparatus for the evaporation of chromium-silver. 3,617,348, Cl. 117-71.

Kelley, Joseph G.; and Hargreaves, Robert A., to United States of America, Air Force. Simplified Schlieren system. 3,617,130, Cl. 356-107.

Kelly, Joe T.: *See—*
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Kelly, La Verne S.: *See—*
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Kendall Company, The: *See—*
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Kennedy, James A.; Klavins, Aldis; and Koegel, Robert J., to Honeywell Information Systems Inc., mesne. Data communication system. 3,618,031, Cl. 340-172.5

Kennedy, Ray L., to Tel-E-Lect, Inc. Actuator mounting assembly for telescopic parts. 3,616,728, Cl. 92-51.

Kent, Raymond C., to Armstrong Cork Company. Spray-on coating composition. 3,617,321, Cl. 106-186.

Ker Shaw, Stuart Walter; and Penrice, Peter John, to International Nickel Company, Inc., The. Nickel-chromium-tantilum alloys. 3,617,262, Cl. 75-171.

Kern, Neil C., to Motorola, Inc. Antiglint radio direction finder. 3,618,008, Cl. 343-7.3

Kernighan, Brian W.; and Lin, Shen, to Bell Telephone Laboratories, Incorporated. Method of minimizing the interconnection cost of linked objects. 3,617,714, Cl. 235-150.

Kerst, Al F., to Monsanto Company. Methods of scale inhibition. 3,617,576, Cl. 210-58.

Kesselring, Fritz, to Siemens Aktiengesellschaft. Current-limiting switch employing low temperature resistor. 3,617,807, Cl. 317-11.

Kester, Harold O., to Eagle Construction Corporation, The. Method and apparatus for handling material. 3,617,094, Cl. 302-14.

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Kilgour, Alfred E.; and Harlow, James H., to Allis-Chalmers Manufacturing Company. Variable closing resistor. 3,617,765, Cl. 307-93.

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Kimemotive Corporation: *See—*
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Kimura, Katuhiro; Kaneko, Yoichi; and Kamimura, Masao, to Hitachi, Ltd. Solid state oscillator. 3,617,935, Cl. 331-107.

Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying paper. 3,617,335, Cl. 117-36.2

Kinder, Floyd A., to United States of America, Navy. Head coupled missile aiming device. 3,617,015, Cl. 244-3.14

King, James Ely, Jr.; and Jones, Sidney Theodore, to Jefferson Chemical Company, Inc. Suppression of coke formation in a thermal hydro- carbon cracking unit. 3,617,478, Cl. 208-48.

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King, Thomas M., to Monsanto Company. Method of inhibiting scale formation. 3,617,577, Cl. 210-58.

Kingma, Ynte J.; and Vaneldik, Jan Frederik, to Canadian Patents and Development Limited. Microwave impedance matching system. 3,617,953, Cl. 333-17.

Kinney, William C., to Itek Corporation. Process for forming a series of masters in register. 3,617,267, Cl. 96-1.

Kinross, Rupert I.; and Mudd, Lionel T., to Communications Patents Limited. Television receiving apparatus. 3,617,624, Cl. 178-5.8

Kirkpatrick, Bruce G.; and De Groof, Rene F., to Discon Corporation. Thin line digicator display. 3,618,072, Cl. 340-336.

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Kiseley, Viktor Sergeevich: *See—*
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Kitaev, Nikolai Andreevich: *See—*
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Kittrell, James R., to Chevron Research Company. Catalytic hydrocracking process. 3,617,498, Cl. 208-80.

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Klass, Donald L.; and Landahl, Carl D., to Northern Natural Gas Company, mesne. Separation of nitrogen and methane containing gas mixtures. 3,616,607, Cl. 55-16.

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Knight, Larry E.; and Perry, Clyde W., to Atlantic Richfield Company. Method of plugging a water-producing formation. 3,616,856, Cl. 166-288.

Knollman, Dieter J. H., to Bell Telephone Laboratories, Incorporated. Multifrequency oscillator employing solid state device switching for frequency selection. 3,617,646, Cl. 179-90.

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Kobayashi, Isamu, to Sony Corporation. Integrated transistor with a polycrystalline contact to a buried collector region. 3,617,826, Cl. 317-235.

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Kobayashi, Yoshio: *See—*
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Kobe, Clyde M.: *See—*
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Koch, Ulrich, to Ottensener Eisenwerk GmbH. Apparatus for orienting rims of wheels for automotive vehicles. 3,616,985, Cl. 228-18.

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Koennecke, Wolfgang; and Strickler, Reinhold, to Flughafen Frankfurt am Main Aktiengesellschaft Fulghafen. Rail switches for pallet conveyor systems. 3,616,892, Cl. 198-78.

Kohl, Otto A. Animal feed. 3,617,298, Cl. 99-2.

Kohler, Oskar; and Rosler, Wulff, to Gewerkschaft Eisenhutte Westfalia. Scraper chain conveyors. 3,617,092, Cl. 299-43.

Koizumi, Yutaka, to Kabushiki Kaisha Ricoh. Developer replenishing means for an electrostato- graphic apparatus. 3,616,969, Cl. 222-162.

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Komori, Tooru, to Kabushiki Kaisha Suwa Seikosha. Date and day correcting device for a calendar timepiece. 3,616,641, Cl. 58-58.

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Koppensteiner, James V.; and Bakalik, Joseph J., to GTE Automatic Electric Laboratories, Incorporated. Tool for extracting printed circuit cards from card files. 3,617,083, Cl. 294-15.

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Korom, Arpad, to Gesellschaft zur Forderung der Forschung an der Eidg. Techn. Hochschule. Electronic circuit arrangement with at least one integrated electronic circuit utilizing constant current sources in connection with galvanic coupling between transistor stages coupled with each other in lieu of high ohmic resistors. 3,617,778, Cl. 307-303.

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Kostelecky, Premysl; Hlavaty, Vladislav; Havlas, Jiri; and Rydlo, Jaromir, to Elitex, Zavody textilniho strojirenstvi. Device for the automatic fastening of supply yarn tubes of various diameters and for their changing in textile machines. 3,617,011, Cl. 242-130.

Kostylev, Alexandr Dmitrievich: *See—*
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Kramer, Dieter, to Zundapp-Werke Gesellschaft mit beschrankter Haftung. Suspension arrangement for two wheeled motor vehicle. 3,616,870, Cl. 180-32.

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Krause, Gerhard, to Fernseh GmbH. Arrangement for controlling the recording of signals on magnetic storage devices. 3,617,652, Cl. 179-100.2

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Kristek, Ladislav; Svizela, Antonin; and Hampl, Ivo, to Prerovske strojirony, narodni podnik Prerov. Arrangement for classifying of liquid suspensions and of solid materials. 3,616,905, Cl. 209-310.

Kristiansen, Henry, to Interelectric Sachseln A.G. Current-collecting device for small commutating machines. 3,617,785, Cl. 310-236.

Kroehs, Alfred R., to Alpha Metals, Inc. Preform loader. 3,616,510, Cl. 29-203.

Kromrey, Robert V., to Aerojet-General Corporation. Honeycomb structures. 3,617,416, Cl. 156-173.

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Krzyzanowski, Robert A., to Milprint, Inc. Carton with reclosable corner portion. 3,616,987, Cl. 229-17.

Kuchek, Henry A., to Dow Chemical Company, The. Method of coating magnesium and magnesium alloy articles. 3,617,350, Cl. 117-71.

Kudelski, Stefan. Automatic sensitivity regulating device. 3,617,777, Cl. 307-293.

Kuehne, Heinz; Dietze, Manfred; and Hauer, Franz, to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen. Polycondensation apparatus. 3,617,225, Cl. 23-285.

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Kulbachny, Vasily Gavrilovich: *See—*
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Kurauchi, Noritaka; and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Induction radio system for vehicles. 3,617,890, Cl. 325-51.

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Kurtzig, Arjeh J.; Le Craw, Roy Conway; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Iron borate ($FeBo_3$) devices. 3,617,942, Cl. 332-7.51

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Lahey, William E.; Somers, Duane A.; and Daniels, Edward S., to TRW Inc. Projectile guide for telescoped ammunition. 3,616,752, Cl.

Laing, Randolph Neil. Method for casting large monolithic concrete structures. 3,616,649, Cl. 61-35.

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Lake, William H., to General Electric Company. Highly loaded fluorescent lamp particularly for D.C. operation. 3,617,792, Cl. 313-109.

La Martina, Anthony C., Jr.; and Malmborg, Floyd L., to American District Telegraph Company. Signal recording unit. 3,618,116, Cl. 346-59.

La Masters, George D., to Borg-Warner Corporation. Vapor control valve. 3,616,783, Cl. 123-136.

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Lamfers, Benard: *See—*
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Lamort, Pierre, to Etablissements E. & M. Lamort Fils. Refining apparatus, chiefly for screening paper pulp. 3,617,008, Cl. 241-88.

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Lampert, Bernard B., to Aerojet-General Corporation. Nitrocellulose-based solid rocket propellant containing a carbamate plasticizer. 3,617,400, Cl. 149-2.

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Landau, Adela: *See—*
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Landis, Peter, to Albiswerk Zurich A.G. Thermally controlled apparatus cell. 3,617,692, Cl. 219-210.

Landsman, Emanuel: *See—*
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Landsman, Irving; and Landsman, Emanuel. Automobile safety system. 3,617,073, Cl. 280-150.

Lang, Robert E.: *See—*
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Langman, Cyril A. J., to Dow Chemical Company, The. Dip coating process for preparing cellulose ether capsule shells. 3,617,588, Cl. 264-25.

Lapeyre, James M., to Laitram International, Inc. Archimedean screw type cooker conveyor. 3,616,747, Cl. 99-405.

Laridon, Urbain Leopold; and Delzenne, Gerard Albert, to Gevaert-Agfa N.V. Photopolymerisation of ethylenically unsaturated organic compounds employing an oxido-oxiazole photo- polymerizable coated element and method of using. 3,617,279, Cl. 96-35.1

Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugh Karel, to Gevaert-Agfa N.V. Photopolymerisation of ethylenically unsaturated organic compounds. 3,617,280, Cl. 96-35.1

Larkin, Sam. Electrode-moving and pressure-applying mechanism of welding apparatus in automatic machinery as for making wire mesh or the like. 3,617,678, Cl. 219-56.

Larson, Robert A., to Boston Cutting Die Company. Cutting die system. 3,616,720, Cl. 83-691.

Larson, Walter F. Power driven road sweeper with laterally and angularly adjustable brush. 3,616,477, Cl. 15-82.

Laser Link Corporation: *See—*
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Lash, Joseph F., to General Motors Corporation. Engine stopping control for an air motored engine baancing system. 3,616,686, Cl. 73-116.

Laskowski, Edward L., to General Electric Company. Delay line circuit for sequentially flashing photoflash lamps. 3,617,763, Cl. 307-41.

Lassen, Flemming; and Lassen, Per. Arrangement for the illumination of objects placed underneath or on shelves. 3,617,729, Cl. 240-2.

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Laukhuff, Otto, to Laukhuff, August. Wind generator for musical instruments, in particular pipe organs, and a sound damper therefor. 3,616,721, Cl. 84-355.

Laurenty, Francois, 1/2 to C.O.C.E.I.S.A. Evaporators having hollow, platelike, vertical heat transfer elements and overhead nozzles. 3,616,835, Cl. 159-13.

Lavedan, Louis J., Jr., to Sperry Rand Corporation. Waveguide partially formed of a flexible member for obtaining uniform minimal pressure contact with a load therein. 3,617,960, Cl. 333-95.

Laverty, Richard C., to MSL Industries, Inc. Stud supporting tool. 3,616,514, Cl. 29-283.

Lawes, Bernard Charles; and Mathre, Owen Bertwell, to Du Pont de Nemours, E. I., and Company. Process for detoxifying cyanide waste waters. 3,617,582, Cl. 210-63.

Lawson, John B.; and Dangel, Stephen C., to Robison Rayon Company, Inc. Yarn package pressure controller for yarn winding apparatus. 3,617,009, Cl. 242-18.

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Le Blanc, John R., to Alton Box Board Company, and Monsanto Company. Corrugated fiberboard. 3,617,429, Cl. 161-133.

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Lee, Don N., to Computer Test Corporation. Differential switching system for switching low level signals. 3,617,771, Cl. 307-242.

Lee, Joseph K. Automobile switch control and alarm system. 3,618,009, Cl. 340-64.

Lee, Sung Ki, to Hooker Chemical Corporation. Metalizing substrates. 3,617,320, Cl. 106-162.

Lee, Wing-Kai: *See—*
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Leger, Marc Jean Pierre; Le Rouge, Claude Paul Henri; and De Jean, Jacques Henri, to International Standard Electric Corporation. Electronic multiselector. 3,618,024, Cl. 340-166.

Leghorn, George R. Continuous centrifugal casting of tube using liquid mold. 3,616,842, Cl. 164-84.

Legood, Peter; and Billson, Reginald Richard, to Cotton, William, Limited. Straight bar knitting machines. 3,616,659, Cl. 66-88.

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Lehnhoff, Richard N., to General Motors Corporation. Alternator under-frequency detecting circuit. 3,617,856, Cl. 322-24.

Leiber, Heinz, to Teldix G.m.b.H. Inlet valve for anti-locking brake control system. 3,617,098, Cl. 303-21.

Leininger, Robet I.; and Falb, Richard D., to United States of America, Health Education and Welfare. Nonthrombogenic plastic surfaces and preparation thereof. 3,617,344, Cl. 117-47.

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Lewis, Edward F., to Du Pont de Nemours, E. I., and Company. Foamed polylactam buoyant belt. 3,616,475, Cl. 9-340.

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Pachurka, Sylvestre, to Societe dite S.A. Materiels Industries. Apparatus for the continuous checking of overhead contact lines feeding electrically driven Railroad vehicles. 3,616,683, Cl. 73-71.5

Pacific Vegetable Oil Corporation: *See*—
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Padilla, John Arthur, to Cleveland Bridge and Engineering Company, Limited, The. Friction welder. 3,616,980, Cl. 228-2.

Page, Charles E.; and Andersen, Gustavo A., to Hazeltine Corporation. Light collection and detection apparatus comprising plural light sensors so spaced that the composite response is independent of source position. 3,617,752, Cl. 250-209.

Pagel, Armin B., to Eastman Kodak Company. Method and apparatus for automatically focusing film projectors. 3,617,119, Cl. 352-140.

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Pan American Petroleum Corporation: *See*—
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Paoli, Thomas L.; and Ripper, Jose E., to Bell Telephone Laboratories, Incorporated. Method for pulse-width modulating semiconductor lasers. 3,617,932, Cl. 331-94.5

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Paracurd S.A.: *See*—
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Paradysz, Robert E.; and Smith, Warren L., to Bell Telephone Laboratories, Incorporated. Beat frequency generator using two oscillators controlled by a multi-resonator crystal. 3,617,923, Cl. 331-43.

Paris, Hugh P. Concrete batchor plant and double-end loading transit mixer. 3,617,031, Cl. 259-165.

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Parker, David E.; and Beaudoin, Thomas L., to United States of America, Navy. Internal coil magnetostrictive transducer. 3,617,999, Cl. 340-11.

Parker, Theodore, to Marathon Oil Company. System for combining a plurality of pulses into a single pulse train. 3,618,023, Cl. 340-150.

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Parry, Margaret G.: *See*—
Parry, Robert D.,3,616,902.

Parry, Robert D., deceased0 (by Parry, Margaret G.; executrix), to O. K. Partnership. Card storage transfer and positioning device for use in conjunction with card retrieval apparatus. 3,616,902, Cl. 209-80.5

Parsazad, Komad. Terrain profile recorder. 3,618,115, Cl. 346-7.

Pascal, Yves Andre: *See*—
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Pascual, Carlos Manuel: *See*—
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Patchett, Philip L., to Bendix Corporation, The. Roll clutch starter drive with shock absorber. 3,616,700, Cl. 74-7.

Patel, Chandra K. N.; and Van-Tran, Nguyen, to Bell Telephone Laboratories, Incorporated. Far infrared wave generator or mixer. 3,617,764, Cl. 307-88.3

Patton, George Allen, to AMP Incorporated. Electrical junction means. 3,617,612, Cl. 174-59.

Patton, George Allen, to AMP Incorporated. Terminal junction interconnection system. 3,617,983, Cl. 339-98.

Patton, Lawrence Alfred. Container stuffing sleeve. 3,616,957, Cl. 220-1.5

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Paulson, John Rene, to Sesame Industries Limited. Tape applicator. 3,617,422, Cl. 156-552.

Pauwels, Maurice P., to Bendix Corporation, The. Caliper housing retaining spring key. 3,616,879, Cl. 188-73.6

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Peck, Harry T.; and Schneider, Harold W., to Gifford-Hill Pipe Company. Means for forming gasket grooves in concrete pipe spigots. 3,616,500, Cl. 25-39.

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Shiba, Keisuke; Hinato, Masanao; Misu, Hiroshi; and Sawahara, Masao, to Fuji Photo Film Co., Ltd. Photographic silver halide emulsion. 3,617,295, Cl. 96-126.

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Southwick, Kenneth J., to Pyro-Magnetics Corporation. Apparatus for the destruction of refuse. 3,616,768, Cl. 110-8.
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LaVallee, Theodore R., to Eaton Yale & Towne, Inc. Method of operating a press over a 4 to 1 range of stroking rates. Re. 27,219, 11-2-71, Cl. 310—95.
McMinn, Robert E., and C. C. Dougherty, Jr., to Black, Sivalls & Bryson, Inc. Method and apparatus for the treatment of liquids. Re. 27,210, 11-2-71, Cl. 55—170.
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337	3,616,470	273	3,617,223	267	3,616,577	23.3	3,616,661	210	3,616,718	157	3,616,750
348	3,616,471	284	3,617,224	281	3,616,580	180	3,616,662	620	3,616,719	220	3,616,751
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.1	3,617,165	313	3,617,228	36	RE.27,215	70	3,616,666		3,617,599	73	3,616,755
	3,617,166	365	3,617,229	126	3,616,584	285	3,616,667		3,617,601	76	3,616,756
.2	3,617,167	24– 81	3,616,497	168	3,616,583	71– 1	3,617,235	.1	3,617,600	79	3,616,757
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	3,617,173	55	3,616,502	663	3,616,590	35	3,617,241	434	3,616,722		3,616,763
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74	3,617,181	193	3,617,230	17	3,616,596	90	3,617,248	176	3,616,729	104	3,617,319
	3,617,182	203	3,616,509	19	3,616,597	120	3,617,249	94– 50	3,616,730	162	3,617,320
85	3,617,184		3,616,510	32	3,616,598	121	3,617,250	95– 1	3,616,732	186	3,617,321
93	3,617,183		3,616,511	41	3,616,599		3,617,251	10	3,616,731	213	3,617,322
	3,617,185	205	3,616,512	48	3,616,600		3,617,252	11	3,616,733	308	3,617,323
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115.5	3,617,187	283	3,616,514	66	3,616,602	200	3,616,669	.5	3,616,735	108– 51	3,616,766
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.6	3,617,190		3,616,550	103	3,616,604	237	3,616,671	37	3,616,737		3,616,768
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.3	3,617,192	430	3,616,519	164	3,616,609	427	3,616,675		3,616,741	114– .5	3,616,772
	3,617,194	441	3,616,520	165	3,616,611	481	3,616,676		3,616,742		3,616,773
	3,617,195	446	3,616,521	170	RE.27,210	73– 26	3,616,678	96– 1	3,617,265		3,616,774
	3,617,196	458	3,616,522	178	3,616,610	27	3,616,677		3,617,266	54	3,616,775
	3,617,197	472.7	3,616,523	193	3,616,612		3,616,679		3,617,267	76	3,616,776
	3,617,198	492	3,616,524	227	3,616,613	40.7	3,616,680	.5	3,617,268	235	3,616,777
.4	3,617,199	560	3,616,525	274	3,616,627	64.4	3,616,681		3,617,271	117– 1.7	3,617,324
118	3,617,200	568	3,616,526	278	3,616,615	67.7	3,616,682	.7	3,617,269		3,617,325
120	3,617,201	571	3,616,527	294	3,616,614	71.4	RE.27,218		3,617,270	12	3,617,326
127.6	3,617,202	572	3,616,528	306	3,616,616	.5	3,616,683	3	3,617,272	18	3,617,327
128	3,617,203	594	3,616,529	307	3,616,617		3,616,684	22	3,617,273	21	3,617,328
130.1	3,617,204	599	3,616,530	337	3,616,618	84	3,616,685	27	3,617,274	27	3,617,329
137	3,617,205	612	3,616,531	338	3,616,619	116	3,616,686	29	3,617,275	33.3	3,617,330
	3,617,206	625	3,616,532	354	3,616,620	133	3,616,687		3,617,276		3,617,331
139	3,617,207	626	3,616,533	367	3,616,621	151	3,616,688		3,617,277	.5	3,617,332
142	3,617,208		3,616,534	376	3,616,622	154	3,616,689	33	3,617,278	35	3,617,333
159	3,616,472	30– 40.1	3,616,535	440	3,616,623	172	3,616,690	35.1	3,617,279	36.1	3,617,334
172	3,616,473	31– 46	3,616,536	472	3,616,624	178	3,616,691		3,617,280	.2	3,617,335
173	3,617,211	32– 71	3,616,537	483	3,616,625	189	3,616,692	40	3,617,281		3,617,410
175	3,617,213	33– 62	3,616,538	56– 7	3,616,626	194	3,616,693	59	3,617,282	37	3,617,336
178	3,617,210	71	3,616,539	297	3,616,628	423	3,616,694	60	3,617,283		3,617,337
9– 1	3,616,474	76	3,616,540	329	3,616,629	438	3,616,695	66	3,617,284		3,617,338
340	3,616,475	141	3,616,541	330	3,616,630	441	3,616,696	82	3,617,285	38	3,617,339
12– 20	3,616,476	34– 5	3,616,542	400	3,616,631	505	3,616,697	84	3,617,286		3,617,340
13– 13	3,617,595		3,616,543	57– 36	3,616,632	514	3,616,698		3,617,287	46	3,617,341
31	3,617,596	9.5	3,616,544	140	3,616,633	74– 5.2	3,616,699	90	3,617,288		3,617,342
15– 82	3,616,477	133	3,616,545		3,616,634	7	3,616,700	94	3,617,290	47	3,617,343
93	3,616,478		3,616,547	157	3,616,635	44	3,616,701	95	3,617,289		3,617,344
104.3	3,616,479	217	3,616,546	58– 23	3,616,636	50	3,616,702	100	3,617,291	51	3,617,345
120	3,616,483	233	3,616,548		3,616,637	87	3,616,703	114.5	3,617,292	56	3,617,346
159	3,616,480	35– 9	3,616,549		3,616,638	89.15:	3,616,704	124	3,617,293	69	3,617,347
180	3,616,484	35	3,616,551	28	3,616,639	.22:	3,616,705		3,617,294	71	3,617,348
244	3,616,481	36– 7.3	3,616,552	50	3,616,640	200	RE.27,211	126	3,617,295		3,617,349
250.42:	3,616,485	37–110	3,616,553	58	3,616,641	230.17:	3,616,706	140	3,617,296		3,617,350
321	3,616,482	40– 31	3,616,554	125	3,616,642	245	3,616,707	98– 99	3,616,743	75	3,617,351
16– 87.2	3,616,486	52	3,616,555	127	3,616,643	410	3,616,708	115	3,616,744	76	3,617,352
150	3,616,487	97	3,616,556	143	3,616,644	473	3,616,709		3,616,745		3,617,353
17– 11	3,616,488	138	3,616,557	59– 78	RE.27,216	527	3,616,710	99– 2	3,617,297		3,617,354
42	3,616,489	152.1	3,616,558	60– 1	3,616,645	75– .5	3,617,253		3,617,298	93.31:	3,617,355
18– 5	3,616,490	42– 1	3,616,559	39.28:	3,616,647	3	3,617,254		3,617,299	95	3,617,356
	3,616,491		3,616,561	226	3,616,648	9	3,617,255	9	3,617,300	97	3,617,357
13	3,616,496	78	3,616,562	255	3,616,646	36	3,617,256	48	3,617,301	105.2	3,617,358
20	3,616,492	43– 22	3,616,563	61– 35	3,616,649	46	3,617,257	56	3,617,302	107.2	3,617,359
	3,616,493		3,616,564	42	3,616,650	60	3,617,897	83	3,617,303		3,617,360
26	3,616,494		3,616,565	72.3	3,616,651	126	3,617,258	86	3,617,304	122	3,617,361
30	3,616,495	46– 51	3,616,566	62– 11	3,616,652	131	3,617,259	91	3,617,305		3,617,362
21– 2	3,617,178	78	3,616,567	58	3,616,653	170	3,617,260	96	3,617,306	130	3,617,363
77	3,617,214	86	3,616,568	65–134	3,617,231	171	3,617,261	109	3,617,307	132	3,617,364
23–154	3,617,209	90	3,616,569	267	3,617,232		3,617,262	118	3,617,308		3,617,365
167	3,617,212	120	3,616,570	307	3,617,233		3,617,263	138	3,617,309	135.1	3,617,366
182	3,617,215	202	3,616,571	337	3,617,234		3,617,264	140	3,617,310	161	3,617,367

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before November 29, 1971.

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Chairman, Committee on Enrollment.

Oct. 13, 1971.

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3,315,543, Anderson and Conroy, METHOD OF MAKING BAND SAW BLADE, filed Mar. 17, 1971, U.S. Ct. of App., 1st Cir., Mass. (Boston), Doc. 71–1081, *Contour Saws, Inc.* v. *L. S. Starrett Company*. Same, filed Mar. 17, 1971, U.S. Ct. of App., 1st Cir., Mass. (Boston), Doc. 71–1082, *Contour Saws, Inc.* v. *L. S. Starrett Company.*

3,316,582, Johnston and Higginbotham, VISCOUS LIQUID DAMPING DEVICES, filed Feb. 28, 1968, D.C., N.D. Ind. (South Bend), Doc. 4160, *Ridge Products, Inc.* v. *Clark's Discount Department Store*. Stipulation of dismissal filed without prejudice, Jan. 6, 1970.

3,327,745, Meece and Dew, TREE CUTTER DEVICE, filed Oct. 2, 1968, D.C., N.D. Fla. (Tallahassee), Doc. TCA–1443, *Harrington Mfg. Co., Inc.* v. *Idas B. White*. Judgment for defendant, Feb 24, 1971.

3,330,406, R. H. Taub, COLLAPSIBLE DISPLAY BIN, filed Apr. 20, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c941, *Charles Kirshbaum and Ethel Taub* v. *GTE Sylvania Inc.*

3,334,752, P. R. Matravers, DUAL MEDIA FILTER ELEMENT, filed Apr. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1032, *The Carborundum Co.* v. *Purolator Inc.*

3,337,394, White and Buchanan, FOIL TYPE GRAINAGE APPARATUS FOR PAPER MAKING MACHINES, filed Mar. 10, 1971, D.C., N.D.N.Y. (Utica), Doc. 71–CV–114, *Johnson Foils Inc.* v. *Huyck Corp.*

3,350,733, D. C. Hanna, CAR WASHING DEVICES, filed Feb. 9, 1968, D.C., E.D.N.Y. (Brooklyn), Doc. 68–C–137, *Daniel C. Hanna* v. *Trans-World Car Systems, Inc. and Howard E. Grant*. Consent judgment for injunction, Mar. 18, 1971.

3,353,478, S. Hopkins, WASTE COLLECTING AND COMPACTING UNIT, filed Mar. 11, 1970, D.C., E.D. La. (New Orleans), Doc. CA–70–582, *Trash Masters Corp. and Stephen Hopkins* v. *Sears, Roebuck & Co.* Ordered and decreed, dismissed by joint motion of parties, Feb. 9, 1971.

3,357,561, Schmid and Anderson, ROOF DRAIN, filed May 17, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71525, *Zurn Industries Inc.* v. *Barrett-Rupp Inc. and Jay R. Smith Mfg. Co.*

3,358,619, H. E. Pareira, KITCHEN UTENSILS FOR HANDLING AND DISPENSING ICE CREAM AND THE LIKE, filed Apr. 23, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–995–AAH, *Herbert E. Pareira* v. *United States Consumer Products, Inc.*

3,361,150, J. E. Horner, WATER CONDITIONING CONTROL SYSTEM, filed May 20, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–979–FW, *Universal Interloc, Inc.* v. *Magna Corporation*. Consent judgment, plaintiff is owner of patent, defendant has infringed. Settlement agreement of May 17, 1966 is valid. All defendant's counterclaims and all claims are dismissed with prejudice, Apr. 9, 1971.

3,372,493, L. Birch, ANTIQUED PAINTING ON WOOD AND BY-THE-NUMBER SYSTEM OF MAKING THE SAME, filed Mar. 12, 1968, D.C., S.D.N.Y., Doc. 68–C–1047, *Avalon Manufacturing Corp.* v. *The Art Award Co., Inc.* Order dismissing action for lack of prosecution without prejudice, Mar. 19, 1971.

3,377,716, A. R. Schmoyer, METHOD OF AND APPARATUS FOR TEACHING THE OPERATION OF A KEYBOARD CONTROLLED MACHINE OR INSTRUMENT, filed June 2, 1971, D.C. Md. (Baltimore), Doc. 71–598–H, *Arthur R. Schmoyer and Don S. Wenger* v. *International Music Corporation and Clark Music Centers.*

3,385,649, C. M. Hicks, CANDLE PACKAGE AND METHOD OF MAKING CANDLE, filed Mar. 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c665, *Charles M. Hicks* v. *Chicago Candle Corporation.*

3,389,236, L. A. Guthart, VIBRATION ACTUATED CONTACT SWITCH, filed Nov. 5, 1970, D.C.N.J. (Newark), Doc. C–1485–70, *Alarm Device Manufacturing Co., etc.* v. *On-Guard Corporation of America et al.* Consent judgment for permanent injunction, Apr. 22, 1971.

3,390,652, N. K. Morris, HAND HELD AND OPERATED SEWING MACHINE, filed Sept. 19, 1968, D.C.N.J. (Trenton), Doc. 943–68, *Nathan K. Morris, doing business as N. K. Morris Manufacturing Company* v. *Spencer Gifts, Inc., a subsidiary of M.C.A. Inc. and Bernard Barber*. Order of dismissal without prejudice, Mar. 23, 1971.

3,390,893, O. F. Maclaren, STRUCTURES FOR FOLDING BABY CARRIAGES, CHAIRS, AND THE LIKE, filed Apr. 28, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C–1971–199, *Owen Finlay Maclaren and Miron Charles Bell* v. *Genesee Plastic Company, Inc.*

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, filed Apr. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1026, *Advance Transformer Co.* v. *Sears, Roebuck & Co. and Litton Industries Inc.*

3,395,790, J. A. Smith, APPARATUS FOR SETTING HAIR, filed May 4, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1078–JWC, *Clifton C. Cottrell, trustee* v. *Morris-Flamingo, Inc.*

3,396,460, J. D. Wetmore, METHOD OF MAKING A CONNECTION, filed Apr. 21, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71–764, *Raychem Corp.* v. *Sigmaform Corp.*

3,404,334, C. L. Marshall, COLOR TELEVISION TEST APPARATUS, filed Jan. 11, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71–C–21, *Cecil L. Marshall* v. *Radio Corporation of America.*

Certificates of Correction for the Week of Nov. 9, 1971

D. 218,944	3,566,790	3,579,266	3,585,186
D. 219,958	3,567,120	3,579,425	3,585,479
D. 220,906	3,568,091	3,579,459	3,585,524
3,362,918	3,569,747	3,579,524	3,585,860
3,395,150	3,569,981	3,579,607	3,586,054
3,473,110	3,570,227	3,580,123	3,586,231
3,492,393	3,570,620	3,580,745	3,586,293
3,518,303	3,571,494	3,581,082	3,586,302
3,524,679	3,571,607	3,581,132	3,586,425
3,546,356	3,571,783	3,581,141	3,586,743
3,551,092	3,571,932	3,581,149	3,586,862
3,555,629	3,572,390	3,581,220	3,586,947
3,557,958	3,572,874	3,581,617	3,586,973
3,558,517	3,572,973	3,581,908	3,587,003
3,561,949	3,573,303	3,582,090	3,587,373
3,562,276	3,573,313	3,582,137	3,587,689
3,562,521	3,573,652	3,582,389	3,588,225
3,564,220	3,574,195	3,582,390	3,588,764
3,564,243	3,574,662	3,582,723	3,589,643
3,564,572	3,575,050	3,582,906	3,591,794
3,565,048	3,575,980	3,583,288	3,593,282
3,565,367	3,576,423	3,583,915	3,594,271
3,565,820	3,576,952	3,584,284	3,595,920
3,566,013	3,577,169	3,584,814	3,597,424
3,566,116	3,578,509	3,584,955	
3,566,199	3,579,137	3,585,140	

Disclaimers

Reissue No. 26,881.—*Roland E. Kreibich, Harlan G. Freeman,* and *Gene F. Baxter,* Seattle, Wash., and *Karl F. Kumli,* Chico, Calif. METHOD OF PRODUCING AN ORTHO-DIRECTED PHENOLIC RESIN BY CONDENSING PHENOL AND HCHO IN THE PRESENCE OF A BIVALENT METAL ION AND THEN ADDING RESORCINOL, AND THE RESULTANT PRODUCT. Patent dated May 19, 1970. Disclaimer filed July 29, 1971, by the assignee, *Weyerhaeuser Company.*

Hereby enters this disclaimer to claims 1–7 of said patent.

3,473,110.—*James Theodore Hardin,* Lambertville, and *Rodger Thomas Lovrenich,* Temperance, Mich. ELECTRONIC CONDUCTOR DETECTOR AND INDICATOR. Patent dated Oct. 14, 1969. Disclaimer filed July 25, 1969, by the assignee *Eltra Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to June 11, 1985.

3,595,631.—*Irwin Broverman,* Orange, Conn. COMPOSITE ALUMINUM ALLOY. Patent dated July 27, 1971. Disclaimer filed Apr. 20, 1971, by the assignee, *Olin Corporation.*

Hereby disclaims all that portion of the term of the patent subsequent to Apr. 4, 1984.

Disclaimer and Dedication

3,582,896.—*Sigmund Silber,* Elizabeth, N.J. METHOD OF CONTROL FOR A DATA PROCESSOR. Patent dated June 1, 1971. Disclaimer and dedication filed Aug. 2, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby disclaims and dedicates to the Public the portion of the term of the patent subsequent to Dec. 1, 1987.

Dedications

Plant Pat. No. 1,504.—*Roy L. Byrum,* Richmond, Ind. ROSE PLANT. Patent dated July 31, 1956. Dedication filed Sept. 21, 1971, by the assignee, *Joseph H. Hill Company.*

Hereby dedicates its entire interest in the said patent to the Public of the United States.

Plant Pat. No. 1,566.—*Roy L. Byrum,* Richmond, Ind. ROSE PLANT. Patent dated Feb. 12, 1957. Dedication filed Sept. 21, 1971, by the assignee, *Joseph H. Hill Company.*

Hereby dedicates its entire interest in the said patent to the Public of the United States.

Plant Pat. No. 1,774.—*Sidney Reece* and *Roy L. Byrum,* Richmond, Ind. ROSE PLANT. Patent dated Nov. 25, 1958. Dedication filed Sept. 21, 1971, by the assignee, *Joseph H. Hill Company.*

Hereby dedicates its entire interest in the said patent to the Public of the United States.

Plant Pat. No. 1,886.—*Roy L. Byrum,* Richmond, Ind. ROSE PLANT, Patent dated Dec. 8, 1959. Dedication filed Sept. 21, 1971, by the assignee, *Joseph H. Hill Company.*

Hereby dedicates its entire interest in the said patent to the Public of the United States.

Plant Pat. No. 2,626.—*Roy L. Byrum,* Richmond, Ind. ROSE PLANT. Patent Dated Apr. 26, 1966. Dedication filed Sept. 21, 1971, by the assignee, *Joseph H. Hill Company.*

Hereby dedicates its entire interest in the said patent to the Public of the United States.

Patents Available for Licensing or Sale

D. 184,807. CHAPEL ALTAR RAIL UNIT. Cecile Farrand, 1261 Hoover, Apt. 3, Menlo Park, Calif., 94025.

2,716,558. CARRYING AND ROLLING TRANSPORT DEVICE. Anna K. Sullivan, 4077 W. 3rd St., Room 225, Los Angeles, Calif., 90020.

3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Poinclanna Drive, Martinez, Ga., 30907.

3,296,733. FISHING LURE. Robert E. McLean, 5517 Cedar, Raytown, Mo., 64133.

3,521,903. FLEXIBLE SAFETY GUARD. Dwight Rister, 809 E. Mills Ave., Indianapolis, Ind., 46227.

3,541,362. ELECTROMAGNETIC GENERATORS. Robert Proulx. Correspondence to: Southwest International, Inc., P.O. Box 374, Albuquerque, N. Mex., 87103.

3,550,570. FLOW CONTROL SYSTEM. Harry M. Reid, 4159 Buena Vista Bldg., Dallas, Tex., 75204.

3,580,408. RECEPTACLE DISPOSAL CONTAINER ADAPTER. Augustus L. Newton. Correspondence to: Walter G. Finch, 1501–1503 Fidelity Bldg., Baltimore, Md., 21201.

3,589,658. STABILIZER FOR GARBAGE CANS AND THE LIKE. Elmer L. Kopfman, 743 3rd St., Colusa, Calif., 95932.

3,595,452. LOAD CARRYING RACK. Bernard M. Anderson, 135 E. Clay St., Monmouth, Oreg., 97361.

3,596,297. MODULAR FURNITURE. Herbert James, 207 W. 22nd St., Lorain, Ohio, 44052.

3,597,768. HOLDING TANK FOR MOBILE VEHICLE. Arthur W. Wofford, 324 Willis Ave., Rio Linda, Calif., 95673.

3,598,272. SELF OPENING BOTTLE CAP. Jose A. Bustamante. Correspondence to: Sheldon I. Cohen, Pennsylvania Building, Washington, D.C., 20004.

3,599,258. COMBINATION HANDS-AND-FEET SWIMMING FINS. Steve A. Murawski. Correspondence to: Sherman Levy, Suite 635, Washington Bldg., 15th St. and New York Ave. NW., Washington, D.C., 20005.

3,611,703. WATCH FOR INDICATING TIME OF TWO GEOGRAPHIC ZONES. Jean-Louis E. Borel, Synchron, S.A., Moladiere 71, 200 Neuchatel, Switzerland.

The following 2 patents are offered by: J. Roderick Jarrett, Jarrett & Runner, Suite 1410, Security Bank Bldg., Fresno, Calif., 93721.

3,421,249. FISH HOOK.

3,413,749. COMPARTMENTED FISH LURE.

The following 3 patents are offered by: M. L. Forsyth, 345 S. State St., Suite 101, Salt Lake City, Utah, 84111.

3,603,419. COMBINATION COVER AND TRAILING SLEIGH FOR TRACTION SNOW VEHICLES.

3,583,662. MECHANISM FOR RELEASABLY ATTACHING OBJECTS TO A KITE STRING.

3,572,037. EXTERNAL COMBUSTION ENGINE.

3,542,366. COMBINATION WHEELED VEHICLE SLOPING TRACK, LOOP AND SCORING MAT.

General Electric Company is prepared to grant non-exclusive licenses under the following 63 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent may be addressed to: General Electric Company, Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,561,500. WIRE FORMING APPARATUS AND METHOD.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Metallurgical Products Dept., General Electric Company, Box 237–GPO, Detroit, Mich., 48232.

3,598,447. CUTTER BITS AND BLOCKS FOR MINING MACHINES.

Applications for licenses under the following 7 patents may be addressed to: General Electric Company, Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 4684. Attn: Patent Counsel.

3,500,083. NOISE EXCITATION SUPPRESSION MOTOR MOUNTING SYSTEM.

3,515,919. STATOR ASSEMBLY FOR SINGLE PHASE INDUCTION MOTOR.

3,562,902. METHOD FOR TRANSFORMING AND TESTING OF ELECTRICAL COILS IN AN INDUCTIVE DEVICE.

3,573,686. MAGNETIC SWITCH.

3,573,698. THERMOSTAT CONTROL MECHANISM.

3,579,788. APPARATUS FOR COMPRESSING LAMINATED CORES.

3,590,293. DYNAMOELECTRIC MACHINE HAVING A STATIONARY ASSEMBLY OF THE PERMANENT MAGNET TYPE.

Applications for sublicenses under the following 25 patents may be addressed to: General Patent Counsel, General Electric Co., 570 Lexington Ave., New York, N.Y., 10022.

3,124,675. PHOTOELECTRIC TAPE READER.

Re. 26,212. ELECTROSTATIC RECORDING HEAD.

3,172,611. TAPE REELER.

3,185,911. CONTROL CIRCUIT FOR TAPE DRIVE MECHANISM.

3,261,566. TAKEUP FOR ACCOMMODATING SLACK AND TENSION VARIATIONS.

3,265,900. TAPE READER WITH INPUT CLIPPING CIRCUIT INCLUDING PHOTOSENSITIVE MEANS.

3,269,626. ADJUSTABLE SUPPORT FOR PRESSURE FIXING ROLLERS.

3,293,495. CONTROL CIRCUITS.

3,295,497. ELECTROSTATIC RECORDERS.

3,314,360. INFORMATION TRANSFER SYSTEM HAVING PLURAL STAGE MEMORY.

3,316,836. ELECTROSTATIC PRINTING SYSTEM HAVING MEANS TO MAKE PLURAL COPIES.

3,319,050. INFORMATION TRANSFER SYSTEM.

3,323,700. WEB DRIVING SYSTEM WITH DRIVING, BRAKING AND MOTION SENSING UNITS ADJACENT EACH MARGIN OF THE WEB.

3,335,322. CHARGE HEAD ARRAY FOR ELECTROSTATIC PRINTING SYSTEM.

3,347,481. TAPE TRANSPORT METHOD.

3,362,325. ELECTROSTATIC PRINTER EMPLOYING BELT TYPE STENCIL THRU WHICH IONS ARE DEPOSITED.

3,372,400. ELECTROSTATIC RECORDER WITH PLURAL ELECTRODES AND BIASED MASK.

3,389,381. COMMUNICATION SYSTEM.

3,400,656. ELECTROSTATIC DUPLICATOR FOR REPRODUCING AN IMAGE FROM ELECTRICAL CHARGE RETAINING INK PARTICLES FIXED IN PLACE.

3,405,857. COMBINED READER-REELER WITH VARIABLE TENSION WEB CONTROL.

3,439,650. INFORMATION TRANSFER AND INK PARTICLE REFINING SYSTEM.

3,458,655. HIGH SPEED PRINTING SYSTEM FOR CONVERTING INFORMATION SIGNALS INTO LEGIBLE REPRESENTATIONS.

3,481,775. ELECTROSTATIC PRINTING MEDIA.

3,489,325. CONTROL SYSTEM WITH MULTICHAMBER VACUUM UNIT FOR REGULATING LATERAL WEB ALIGNMENT.

3,550,792. INK PARTICLE RESERVOIR.

Applications for licenses under the following 29 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,051,818. ELECTRIC RANGE WITH SPILL-PROOF COOKING SURFACE.

3,177,334. OVEN DOOR WINDOW.

3,177,335. THERMOSTAT PROBE FOR COMBINED UHF AND INFRARED ENERGY COOKING OVEN.

3,293,394. TEMPERATURE RESPONSIVE CONTROL DEVICE WITH SNAP ACTING SWITCH.

3,315,121. CROSSED-FIELD ELECTRIC DISCHARGE DEVICE.

3,321,605. ELECTRONIC OVEN.

3,377,562. MAGNETRON DEVICE HAVING A COOLING ARRANGEMENT AND CAPACITIVELY COUPLED OUTPUT CIRCUIT.

3,388,231. ELECTRONIC HEATING APPARATUS AND MICROWAVE COUPLING STRUCTURE AND TRANSMISSION LINE THEREFOR.

3,413,516. CROSSED-FIELD DISCHARGE DEVICES AND OSCILLATORS AND AMPLIFIERS INCORPORATING THE SAME.

3,421,115. MICROWAVE COUPLING STRUCTURE AND TRANSMISSION LINE.

3,439,144. ELECTRONIC OVEN.

3,443,150. CROSSED-FIELD DISCHARGE DEVICES AND MICROWAVE OSCILLATORS AND AMPLIFIERS INCORPORATING THE SAME.

3,445,784. ULTRA-HIGH FREQUENCY CONTROL AND POWER SUPPLY SYSTEMS.

3,456,151. CROSSED-FIELD DISCHARGE DEVICE AND COUPLER THEREFOR AND MICROWAVE CIRCUITS INCORPORATING THE SAME.

3,458,753. CROSSED-FIELD DISCHARGE DEVICES AND COUPLERS THEREFOR AND OSCILLATORS AND AMPLIFIERS INCORPORATING THE SAME.

3,458,755. CROSSED-FIELD DEVICE AND MICROWAVE CIRCUITS INCORPORATING THE SAME.

3,459,921. ELECTRIC AND ELECTRONIC OVEN WITH A HEATED DOOR STRUCTURE.

3,459,994. CROSSED-FIELD DISCHARGE DEVICE AND IMPROVED MAGNETIC POLE STRUCTURES THEREFOR.

3,493,709. SPIRAL ANTENNA FOR ELECTRONIC OVEN.

3,497,656. ELECTRONIC RANGE.

3,510,724. CROSSED-FIELD DISCHARGE DEVICE AND MEANS FOR BALANCING THE RF ANODE-CATHODE VOLTAGES THEREOF.

3,511,958. ELECTRONIC OVEN INCLUDING MICROWAVE COUPLING STRUCTURE AND FOLDED CAVITY FILTERS THEREFOR.

3,529,114. TWO-POSITION PHASE-MATCHING DEVICE FOR ELECTRONIC OVENS.

3,536,878. ELECTRONIC HEATING APPARATUS INCLUDING MICROWAVE COUPLING STRUCTURE AND FILTERS THEREFOR.

3,551,735. CROSSED-FIELD DISCHARGE DEVICES AND OSCILLATORS AND AMPLIFIERS INCORPORATING THE SAME.

3,559,094. LOW VOLTAGE A.C. MAGNETRON.

3,584,255. CROSSED-FIELD DISCHARGE DEVICE.

3,586,826. SURFACE HEATING UNIT WITH A REMOVABLE SUPPORT.

3,587,557. SELF-CLEANING GAS OVEN.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 19, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-08-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-24-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	2-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-24-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-06-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-25-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-28-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	7-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-10-70

Expiration of patents: The patents within the range of numbers indicated below expire during November 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,692,987 to 2,695,997, inclusive
Plant Patents..... Numbers 1,312 to 1,327, inclusive

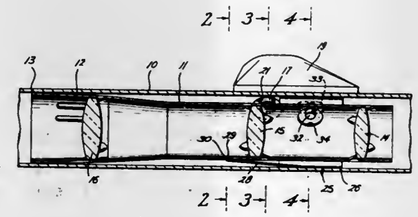
REISSUES

NOVEMBER 9, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,222
ERECTOR SUPPORT FOR TELESCOPE SIGHTS

William R. Weaver, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.
Original No. 3,429,634, dated Feb. 25, 1969, Ser. No. 457,438, May 20, 1965. Application for reissue Feb. 16, 1970, Ser. No. 1,993
Int. Cl. G02b *21/00, 23/00, 7/00*
U.S. Cl. 350—54 **7 Claims**

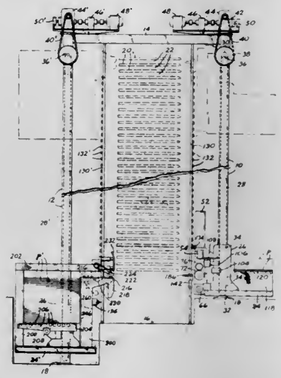


The present invention pertains to an improved support structure for an erector system in a telescopic firearm sight including a simplified pivot and simplified spring mechanism. The pivot includes an enlarged end on the erector tube (in which the erector lens system is located) for mating with the surface bore wall of the telescope barrel, thereby forming a circular pivot for radially pivoting the erector tube and which allows slidable, longitudinal movement of the erector tube, as well. The spring mechanism radially secures and biases the erector tube with respect to the telescope barrel at a longitudinal position from the pivot, providing a first force component that biases the windage control means and a second force component that biases the elevation control means. Described embodiments of the spring mechanism include a compressible, flat length portion having an end turned inwardly to engage a slot on the erector tube and having its other end stressed against the telescope barrel by a securably releasable connection. One embodiment also includes an arcuate section that partly surrounds the erector tube and contacts the telescope barrel bore at a location more than circumferentially half-way around the bore from the location of the flat length portion.

27,223
PRESS LOADER AND UNLOADER

Victor R. Nelson, 2700 SW. Summit Drive, Lake Oswego, Oreg. 97034
Original No. 3,390,792, dated July 2, 1968, Ser. No. 599,552, Dec. 6, 1966. Application for reissue Jan. 26, 1970, Ser. No. 889,760
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 R **16 Claims**

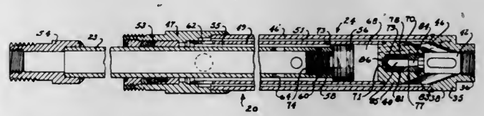
Hot press panel loading and unloading apparatus having indexing mechanisms associating the spaces between panel press platens with panel loading mechanism and panel unloading mechanism for moving the latter mechanisms stepwise to succeeding platen openings. The unloading and loading mechanisms operate simultaneously to unload a pressed panel from one platen opening while a pre-pressed panel is being loaded into the next adjacent



platen opening from which a pressed panel has just previously been unloaded.

27,224
FLUID FEED LINES

John T. Parrett, Benton Harbor, Mich., assignor to Koehring Company, Milwaukee, Wis.
Original No. 3,318,199, dated May 9, 1967, Ser. No. 499,464, Oct. 21, 1965. Application for reissue Apr. 16, 1969, Ser. No. 824,008
Int. Cl. F15b *11/08;* **F16l** *27/12*
U.S. Cl. 91—462 **8 Claims**



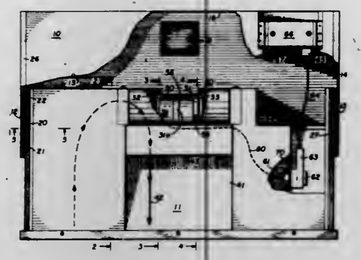
A reciprocable fluid feed line for conveying fluid either to or from a remote load including a first tube having a second tube telescopically received therein with a piston on the end of the inner tube, there being provided passageways through the tubes to pressurize the side of the piston tending to retract the tubes, and a vent for the side of the piston which if pressurized would tend to extend the tubes.

27,225
FLOW CONTROL FOR VENTILATING HOOD

James E. Stalker, Dallas County, Tex., assignor to Home Metal Products Company, Plano, Tex.
Original No. 3,387,431, dated June 11, 1968, Ser. No. 426,782, Jan. 21, 1965. Application for reissue May 26, 1969, Ser. No. 835,287
The portion of the term of the patent subsequent to May 3, 1983, has been disclaimed
Int. Cl. B01d *46/00*
U.S. Cl. 55—470 **19 Claims**

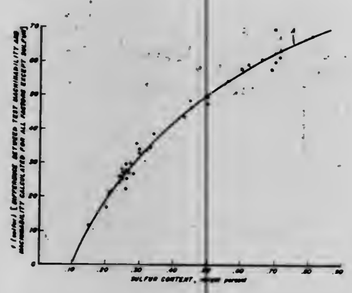
A ventilating kitchen hood including a casing in the form of a rectangular polyhedron with a short wide

front opening and having a drawer slidable through the front opening. The drawer has an intake port extending across a portion of the bottom panel and includes



duct structure having an air filter therein. A fan mounted within the casing draws air into the drawer, through the air filter and out of the casing.

27,226
FREE-MACHINING AUSTENITIC STAINLESS STEELS
Arthur Moskowitz, Curtis W. Kovach, and Ralph G. Wells, Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.
Original No. 3,437,478, dated Apr. 8, 1969, Ser. No. 455,863, May 14, 1965. Application for reissue Jan. 8, 1970, Ser. No. 6,606
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 P **4 Claims**

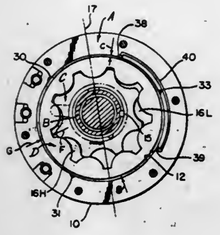


This invention relates to chromium-nickel austenitic stainless steels having improved physical properties, most notably, significantly improved machinability. Specifically, it has been found that steels of this type containing up to 0.50% carbon, from about 0.25 to about 0.45% sulfur, from about 2.0 to about 7.0% manganese, from about 16 to about 30% chromium, from about 5 to 26% nickel, and wherein the manganese-to-sulfur ratio is about at least 8 to 1, are vastly improved with respect to machinability without impairing the corrosion resistance of the alloy to the expected extent at the achieved level of machinability. Optional elements that may be included in the alloy are silicon up to about 3%, molybdenum up to about 4%, zirconium up to about 1%, copper up to about 4%, selenium, tellurium or lead up to about 0.5% each, columbium, tantalum or titanium up to about 2.0% total, nitrogen up to about 0.35%, and phosphorus up to about 0.50%.

27,227
PERMEABLE CEMENTING COMPOSITION AND METHOD
Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Original No. 3,428,121, dated Feb. 18, 1969, Ser. No. 597,521, Nov. 29, 1966. Application for reissue Feb. 25, 1970, Ser. No. 14,251
Int. Cl. C04b *7/02;* **E21b** *33/13, 43/02*
U.S. Cl. 166—276 **18 Claims**

The invention relates to a method of and composition for the treatment of an incompetent formation penetrated by a well bore to prevent the movement of sand particles from the formation to the well bore during recovery of the formation fluids by forming a [slurry] *treating composition* of sand, cement and water in a hydrocarbon carrier oil, injecting the [slurry] *treating composition* into the formation under pressure, permitting the cement to set and form a permeable barrier [film] between the formation and well bore and recovering fluids from the formation through the formed permeable cement barrier.

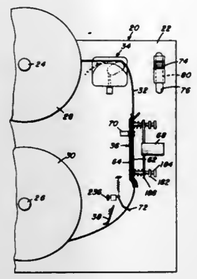
27,228
PRESSURE BALANCED BEARING LOADS IN HYDRAULIC DEVICES
Robert Wesley Brundage, 2809 Wakonda Drive, Belnor, Mo. 63121
Original No. 3,427,983, dated Feb. 18, 1969, Ser. No. 553,995, May 31, 1966. Application for reissue Jan. 21, 1970, Ser. No. 4,558
Int. Cl. F01c *1/04, 21/02*
U.S. Cl. 418—71 **22 Claims**



A bearing support system for a hydraulic device in which the clearance between the bearing surfaces is greater than normal, i.e. between 0.0015 to 0.010 inch per inch of diameter. Hydraulic fluid is supplied at a pressure to the bearing clearance at a plurality of spaced places. Other places on the bearing surface spaced from the high pressure places are in communication with the low pressure of the hydraulic device, whereby the hydraulic fluid flows through the bearing clearance from the places of high pressure to places of low pressure.

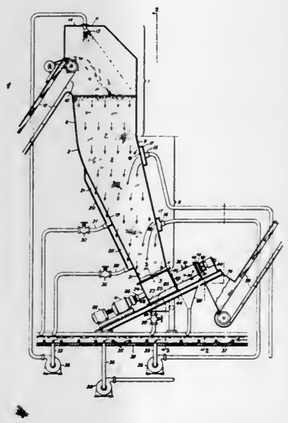
27,229
MOTION PICTURE APPARATUS WITH AUTOMATIC REWIND
John D. Mitchell, Kenneth W. Thomson, and Morris E. Brown, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original No. 3,240,550, dated Mar. 15, 1966, Ser. No. 218,492, Aug. 20, 1962. Application for reissue Aug. 19, 1969, Ser. No. 853,571
Int. Cl. G03b *23/00*
U.S. Cl. 352—124 **9 Claims**

An automatic rewind device is provided in a motion picture apparatus which includes a film-tension sensing device. The film is fed along a path from a supply reel, to which the end of the film is attached, to a take-up reel. Upon reaching the end of the film an increase in film tension causes the sensing device, through a mechanical linkage, to uncouple the take-up reel from a drive shaft



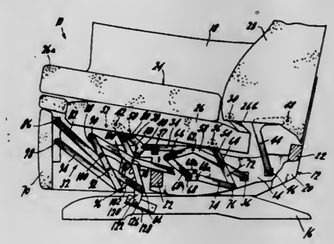
and couple the supply reel thereto to effect rewind. Near the completion of the rewind operation a sensor adjacent the film path senses the passage of a leader end of the film to uncouple the drive shaft from the supply reel and couple it to the take-up reel.

27,230
JUICE EXTRACTION APPARATUS
John Farmer, Honolulu, Hawaii, assignor to Ward Foods, Inc., New York, N.Y.
Original No. 3,432,344, dated Mar. 11, 1969, Ser. No. 408,944, Nov. 4, 1964. Application for reissue Feb. 5, 1970, Ser. No. 13,225
Int. Cl. C13d *1/10, 1/12, 1/04*
U.S. Cl. 127—3 **23 Claims**



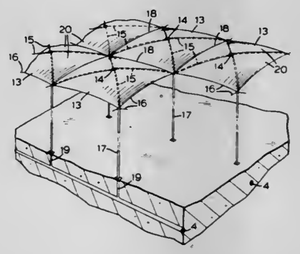
Apparatus for extracting juice from disintegrated juice-containing material including a hopper having a lower part inclined toward a side and tapered toward its bottom, a plurality of vertically spaced injectors for injecting diluent liquid into the top and on to the upper side of the inclined portion of the hopper, a valved outlet on the lower side of the inclined portion for and spaced below each injector, and a multi-barrelled screw press at a bottom of the hopper for positively withdrawing the material therefrom, each barrel having an annular orifice variable in area by a plug shiftable axially on the related screw shaft, and interconnected means for shifting the plugs and equalizing the pressures in the barrels.

27,231
RECLINING AND ROCKING CHAIR
Peter S. Fletcher, 200 NW. 15th St., Delray Beach, Fla. 33444
Original No. 3,339,972, dated Sept. 5, 1967, Ser. No. 431,013, Feb. 8, 1965. Application for reissue Oct. 22, 1968, Ser. No. 782,495
Int. Cl. A47c *1/02*
U.S. Cl. 297—259 **12 Claims**



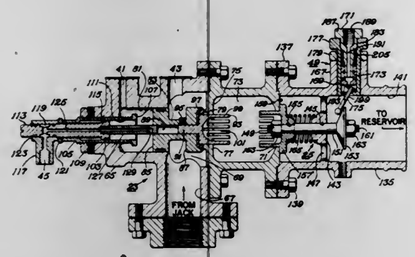
A reclining chair having means for mounting a seat, back-rest and leg rest for reclining movement in an arm frame and having further means for mounting the arm frame on a base for rocking movement on that base. And further including means responsive to reclining movement to lock out or prevent rocking movement and means responsive to rocking movement to lock out and prevent reclining movement.

27,232
AIR SUPPORTED SHELTER
Terence Wyndham McLorg, 34 Thorncrest Drive, Islington, Ontario, Canada
Original No. 3,391,504, dated July 9, 1968, Ser. No. 622,708, Mar. 13, 1967. Application for reissue May 22, 1970, Ser. No. 39,878
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **9 Claims**



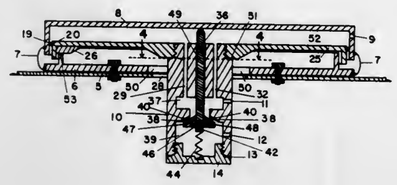
The invention relates to an air supported shelter for sheltering a large ground area from the elements. The shelter may be permanent, for covering a city for example, or temporary, for covering an exhibition ground or sports arena. The shelter consists of a reinforced flexible, translucent, membrane spanning the area and supported by internal area pressure. Air outlets are provided at the tops of the domed membrane sections, and fresh air is drawn or pumped into the enclosed space from its periphery, this air generally rising and passing into the atmosphere via the outlets.

27,233
HYDRAULIC ELEVATOR CONTROL SYSTEMS
Everett E. Johnston, Newark, Tex., assignor to Esco Elevators, Inc., Fort Worth, Tex.
Original No. 3,438,398, dated Apr. 15, 1969, Ser. No. 629,520, Apr. 10, 1967. Application for reissue Apr. 13, 1970, Ser. No. 28,158
Int. Cl. B66b *1/24, 5/04*
U.S. Cl. 137—608 2 Claims



Hydraulic elevator control system maintains down-speed essentially constant for all elevator loads. Device positively responsive to fluid flow through down-control valve controls a metering valve to regulate fluid flow in a down-control valve bleed line to regulate the degree of opening of the down-control valve main flow aperture.

27,234
HYDRAULIC LIFTING DEVICE WITH WEIGHT ESTIMATOR
Alois J. Smieja, Nehalem, Oreg. 97131
Original No. 3,456,749, dated July 22, 1969, Ser. No. 750,976, Aug. 7, 1968. Application for reissue Apr. 2, 1970, Ser. No. 25,306
Int. Cl. G01g *5/04, 19/10*
U.S. Cl. 177—146 12 Claims



A hydraulic lifting device, with a large diameter minimum travel piston sleeve, used for balancing or estimating loads in trucks, trailers or places where small clearances are involved and no stationary scales are available to prevent hazardous over-loading or over-balancing. A check valve limits the travel of the piston sleeve and closes a pressure chamber so that a stable pressure reading or signal can approximate the load or balance this device is lifting.

PATENTS

GRANTED NOVEMBER 9, 1971

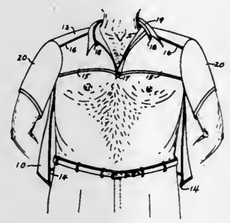
GENERAL AND MECHANICAL

3,618,138
NECKTIE PROTECTOR
Louis Retzkin, 24 Holly Lane, Port Chester, N.Y. 10573
Filed Mar. 2, 1970, Ser. No. 15,456
Int. Cl. A41d *27/12*
U.S. Cl. 2—46 3 Claims



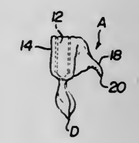
A tie bib for the protection of conventional four-in-hand ties against food spillage and spotting is provided by the present invention. The tie bib, which has convergent sides and generally resembles the shape of a four-in-hand tie, is constituted of a front panel with rearward folding flaps which form a sheath when they are folded back against the tie by means of the front panel. The force exerted by the folded flaps and the convergent edges of both the bib and the tie, keeps the two in proper relative position with respect to each other.

3,618,139
SHIRT
Adolph C. Hugin, 7602 Boulder St., North Springfield, Va. 22151
Filed June 17, 1970, Ser. No. 47,092
Int. Cl. A41b *1/00*
U.S. Cl. 2—115 9 Claims



A shirt-type garment comprising a full waist-length back panel having a width substantially around the back from between armpits, a front united to the rear panel along the top thereof and having a width to close across the chest and a length adjacent to the armpits. Sleeves extend from the shoulder-armpit sides of the front and rear panel. The front may comprise a pair of front panels, each secured at the arm sides thereof to one of the sleeves and having means for detachably securing together the other sides thereof to form a neck opening with the back panel.

3,618,140
SCARF HAT
Barbara L. Goldfarb, 30165 Stellamar Drive, Birmingham, Mich. 48010
Filed May 25, 1970, Ser. No. 40,230
Int. Cl. A42b *5/00*
U.S. Cl. 2—207 3 Claims

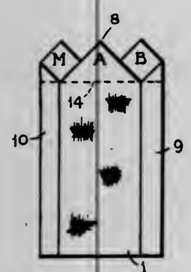


A scarf hat composed of a substantially rectangular thin sheet of fibrous material, which corner portions are successively folded, stitched and gathered together around a longitudinal pliable filler insert, which provides and retains the shape of the finished scarf hat having substantially the appearance of a bonnet.

3,618,141
STIFFENED FABRIC ARTICLE AND METHOD OF MANUFACTURE
George H. Collingwood, Hopewell, and Gene C. Weedon and Robert C. Winckhofer, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 727,325 and Ser. No. 727,327, both May 7, 1968. This application Apr. 29, 1969, Ser. No. 820,331
Int. Cl. D03d *13/00, 15/02*
U.S. Cl. 2—236 12 Claims

Stiffened fabric articles useful as garment liners are provided, comprised of multi-constituent yarn elements unidirectionally combined therein in the direction of desired stiffness in said fabric article; said multi-constituent yarn elements being spun from at least two different polymeric materials whose melt temperatures differ by at least 10° C. such that, in a given element, a first fiber-forming polymeric material defines a matrix and a second higher melting polymeric material is dispersed therein in the form of discontinuous fibrils, said matrix comprising at least about 50 percent by weight of the element and having a lower melting point than said dispersed fibrils; and said fabric article having been heat-treated at a temperature in the range above the melting point of the matrix but below the melting point of the dispersed fibrils such that the desired unidirectional degree of stiffness is imparted thereto, and whereby fabric strength and appearance are retained. The multi-constituent yarn elements are present in the fabric as individual yarn or fill elements in combination with other materials, or are present in a mechanically blended fiber or yarn with other materials.

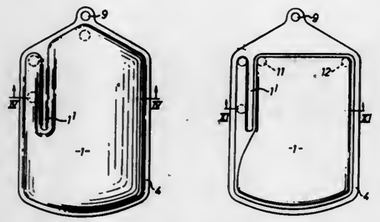
3,618,142
ARTICLE OF PERSONAL WEAR AND ADORNMENT SIMULATING A POCKET HANDKERCHIEF AND METHOD OF MAKING IT
Rudolph H. Bruni, 2024 Park Ave. 23220, and Frances B. Gillie, 4806 Suecia Drive 23231, both of Richmond, Va.
Filed Jan. 15, 1970, Ser. No. 3,091
Int. Cl. A41b *15/00*
U.S. Cl. 2—279 7 Claims

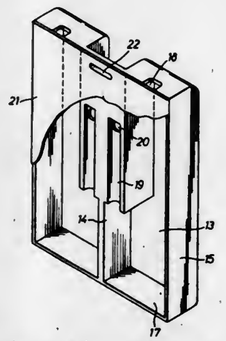


An article simulating a pocket handkerchief for wear in the breast pocket of a coat, and the method of making it. The top corners of three rectangular sections of decorative fabric, are first individually folded to form central peaks and the folds are temporarily secured at and along their overlapping coincident transverse edges. Then the side edges of a center one of the sections thus formed are stitched respectively to a side edge each of the two end sections, to form a unitary flat main portion. A rectangular one-piece fabric lining of about the same size as the main portion, is stitched along one side edge to the main portion, along a line determined by the aforesaid overlapping transverse edges. The stitching thus formed does not pass through the main part of the several sections and does not appear in the completed article. The united main portion and lining are then folded along a vertical line through the tip of the central section, with the "wrong" surfaces of these parts facing outwardly, and the vertical superposed side edges are stitched together to form a side seam which is trimmed. The tubular item thus formed is then turned inside out so that the "right" surface of the lining is outward. Next, the tubular item is adjusted so that the aforesaid side seam is superposed over a vertical line through the tip of the center section, then flattened and stitched transversely along and through the bottom edges. The article is completed by turning it inside out thus exposing the "right" side of the main portion. As worn, the center section faces forwardly and is flanked by parts of the two side sections and with all three peaked portions exposed. All stitches are concealed. A rectangular piece of stiffening material may be used inside the finished article, which may be made of silk sections and lining of the same or different patterns and colors. When worn as intended, the invention presents an extremely neat, attractive and pleasing appearance.

3,618,143
DISPENSING CONTAINERS
Ronald Poppleton Hill, Willerby, Harry Hodds, Hull, and John Michael Fulks Braddock, Ham, Richmond, England, assignors to Reckitt & Colman Products Limited, Hull, England
Filed May 9, 1969, Ser. No. 823,438
Claims priority, application Great Britain, May 29, 1968, 25,821/68
Int. Cl. E03d *9/02, 9/03*
U.S. Cl. 4—228 3 Claims

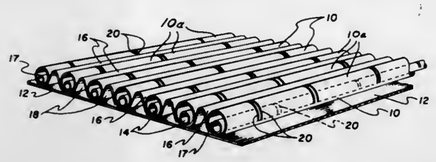
A container for water dispersable treatment material for use in flushable water cisterns comprising two members, each with its marginal edge in a common plane and at least one of which is shaped to form part of a hollow body, joined edge-to-edge to form a main compartment divided into an adjacent elongated compartment open at its operative lower end to the main compartment a port opening into the main compartment at its uppermost point in operative position of the container, and at least one port opening into the elongated compartment at a point





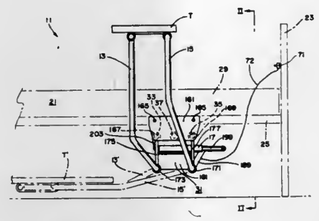
lower than and spaced a vertical distance from said first mentioned port in said operative position, in arrangement such that when placed in a water cistern water may enter and fill the container and then on emptying the cistern there will be a discharge of water and dispersable material through the lower port on uncovering of the uppermost port.

3,618,144
CUSHIONING ASSEMBLY
George C. Frey, Manhattan Beach, and Thaddeus W. Staniec and Charles M. Willis, Los Angeles, Calif., assignors to North American Rockwell Corporation
Filed Mar. 6, 1969, Ser. No. 804,864
Int. Cl. A47c *23/02*
U.S. Cl. 5—247 18 Claims



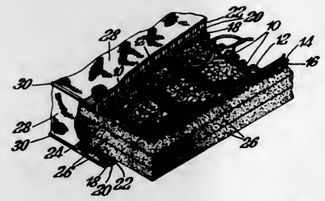
A pad for use in cushions, mattresses chairs, or other padding arrangements, providing a soft, deformable support, having one or more layers of parallel flexible tubes; each elongated tube being partially cut or slit across the axis of the tube for controlling resiliency and flexibility. The tubes are held in mutually spaced relationship by being affixed to a sheet of flexible material.

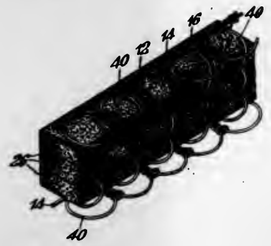
3,618,145
POWERED TABLE FOR HOSPITAL BED
James M. Rowe, Rte. 1, Newcastle, Box 56–C, Forrest City, Ark. 72335
Filed July 10, 1970, Ser. No. 53,866
Int. Cl. A47b *23/00*
U.S. Cl. 5—332 10 Claims



An electrically powered hydraulically driven retractable table. A table intended to be mounted on a hospital bed and is constructed so the patient, presumably being physically unable to ambulate, may easily stow the table or return it to a usable position. The table surface is constantly maintained in a horizontal position, i.e., in a usable position, in a stowed position, and when traveling from one position to the other.

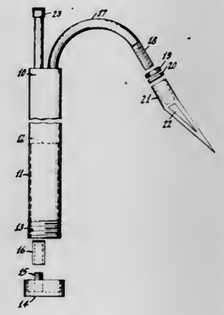
3,618,146
BORDER STABILIZER
Robert M. Ferdinand, New York, N.Y., assignor to The United States Bedding Company, Englander Division, St. Paul, Minn.
Filed Apr. 24, 1969, Ser. No. 818,925
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—351 15 Claims





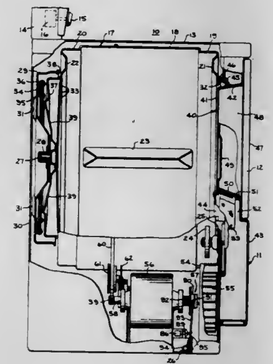
A border stabilizer for inner spring mattresses, cushions, etc. is provided in a resilient foam strip inserted between adjacent convolutions of each of the coils in a peripheral row of coils in the spring assembly.

3,618,147
MULTIPURPOSE BOAT-FISHING IMPLEMENT
Richard L. Gaskill, 220 Chestnut, Runnemede, N.J. 08078
Filed May 26, 1970, Ser. No. 40,613
Int. Cl. B25f *1/00*; B65g *7/12*
U.S. Cl. 7—1 H 7 Claims



The implement is a combination boat-hook and fishing gaff comprising a pole having a threaded hollow handle at one extremity and at least a crook provided with a threaded end at the other extremity for mounting a selected one of a plurality of appliances including one with a blunt tip, when the implement is used as a boat-hook, and one with a pointed tip, when the implement is used as a fishing gaff. A cap, used to close the hollow extremity of the pole, has at least one threaded stud on which to mount a non-selected appliance for storage within the hollow pole handle.

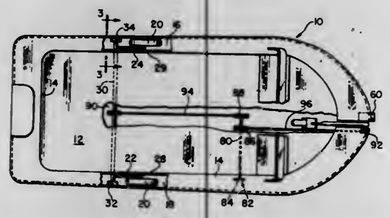
3,618,148
HEAT SHRINK METHOD OF FACILITATING THE DISPOSAL OF TRANSFER AGENT
Laddie A. De Pas, Louisville, Ky., assignor to General Electric Company
Filed Nov. 24, 1969, Ser. No. 879,032
Int. Cl. D06l *1/08*; D06f *35/00*
U.S. Cl. 8—158 3 Claims



In connection with a method of cleaning soil from fabrics by tumbling together the fabrics, a quantity of liquid and a quantity of transfer agent and subsequently separating the soiled transfer agent from the fabrics, an improved method is provided to facilitate the disposal of

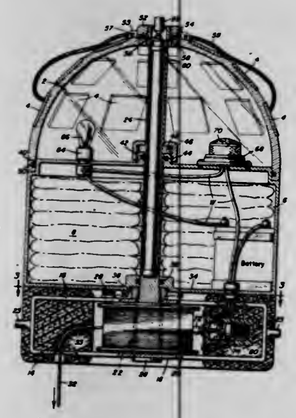
the transfer agent whereby the soiled segregated transfer agent is heat shrunk to reduce its volume and to cause at least partial adherence between at least some of the pieces of transfer agent.

3,618,149
PLEASURE BOAT WITH RETRACTABLE WHEELS
Arnold E. Christensen, 6818 Bentley Road, Puyallup, Wash. 98371
Filed Nov. 24, 1969, Ser. No. 879,303
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **4 Claims**



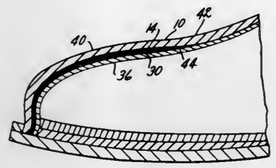
A boat having integral rear wheels for transporting the boat on land with a tow vehicle is disclosed. The rear wheels are retractable out of sight when the boat is water borne. The boat also has a bow wheel used in conjunction with the two rear wheels for transporting the boat into and out of the water once disconnected from the tow vehicle. Means is provided for retracting the rear wheels and bow wheel from a single position within the boat.

3,618,150
BEACON BUOY MARKER CONTAINING LIFE-SAVING AND SIGNALING DEVICES
James V. Anselmi, 16 Essex St., Deep River, Conn. 06417
Filed Mar. 4, 1969, Ser. No. 804,085
Int. Cl. B63b *21/52*
U.S. Cl. 9—8.3 E **4 Claims**



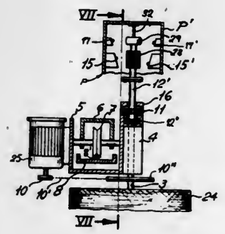
A buoy for marking the location of a sunken craft. The buoy contains lifesaving and signaling equipment. An automatically inflatable raft can be removed by a survivor and a blinking light is turned on during the twilight and nighttime to signal a rescuer. A number of light reflecting plates reflect sunlight during the daytime to produce a daytime signaling device.

3,618,151
METHODS OF STIFFENING A SHOE COMPONENT
Karl V. Becker, Boxford, Mass., assignor to USM Corporation, Boston, Mass.
Continuation-in-part of application Ser. No. 867,642, Oct. 30, 1969. This application Sept. 15, 1970, Ser. No. 72,410
Int. Cl. A43d
U.S. Cl. 12—146 D **10 Claims**



The method of stiffening a selected area of a shoe component in which an open fabric of interwoven threads is assembled with the area to be stiffened, molten synthetic polymeric material is flowed around the threads, through openings between the threads and into wetting engagement with the area to be stiffened of the shoe component and the polymeric material is cooled to form a cellular layer of hardened polymeric material in which the cells are the spaces kept free from polymeric material by the threads. A liner may be pressed into adhesive engagement with the polymeric material in heated tacky condition at the free surface of the open fabric.

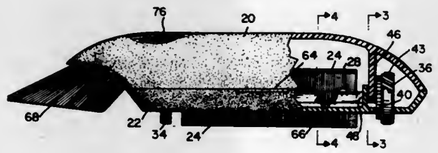
3,618,152
DRIVING MECHANISM FOR SCRUBBING BRUSHES OF VEHICLE-WASHING STATIONS
Uberto Capra, Vicenza, Italy, assignor to Ceccato & C. S.p.A., Vicenza, Italy
Continuation-in-part of applications Ser. No. 814,261, Apr. 8, 1969, and Ser. No. 874,355, Nov. 5, 1969. This application June 29, 1970, Ser. No. 50,751
Claims priority, application Italy, June 28, 1969, 18,880/69
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **6 Claims**



The shaft of a scrubbing brush suspended from a carriage displaceable across or alongside the path of a vehicle to be scrubbed, journaled in a pivotally mounted housing so as to swing in a plane transverse to the direction of carriage motion, is coupled by way of a speed-reversing transmission with a knurled roller mounted on another shaft journaled in the same housing, this roller co-operating with a friction surface parallel to the carriage track to move the carriage in a predetermined direction on being urged against that surface by a thrust exerted upon the brush as it contacts the vehicle. Owing to the interposition of the speed-reversing transmission,

the carriage motion is codirectional with the peripheral motion at its point of contact with the vehicular surface to be scrubbed, with resultant intensification of the cleaning action.

3,618,153
HAND-HELD LITTER-COLLECTING DEVICE WITH COOPERATING FIXED AND ROTATED BRUSHES
John H. Coult, 1 Leland Road, Natick, Mass. 01760
Filed Nov. 13, 1969, Ser. No. 876,235
Int. Cl. A47l *11/00*
U.S. Cl. 15—41 **20 Claims**



This disclosure depicts a litter collecting device having a fixed brush extending from an end of a housing therefor adapted for cooperation with a cylindrical brush mounted within the housing and driven by a friction drive train. The device is configured to nest comfortably in the open grip of a user's hand and embodies a number of novel structures.

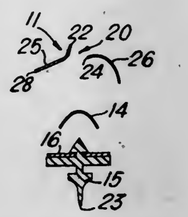
3,618,154
BRUSH
Joseph C. Muhler, Indianapolis, Ind., and Paul C. Clark and James A. Ford, Sturgis, Mich., assignors to Indiana University Foundation, Bloomington, Ind., and Plastek Company, Sturgis, Mich., fractional part interest to each
Filed Feb. 2, 1970, Ser. No. 7,891
Int. Cl. A46b *15/00*
U.S. Cl. 15—167 **8 Claims**



An improved brush formed of plastic comprises a base and a plurality of bristles molded integrally with the base, the said base and bristles having incorporated therein up to about 30% by weight of an abrasive material. The bristles are provided in a plurality of cylindrical clusters, with the bristles in each cluster being tapered from wide bases to relatively narrow tips. By tapering the bristles from relatively wide bases to relatively narrow tips, large numbers of such integrally molded brushes can be reliably manufactured in a short period of time due to the superior metering of plastic material into the tapered bristle-forming cavities in the mold.

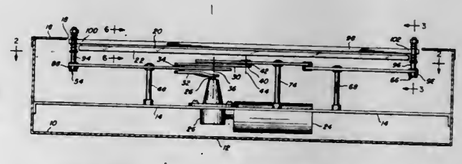
3,618,155
WINDSCREEN WIPER BLADES
Peter Mower, Whitton, Twickenham, England, assignor to Trico Products Corporation, Buffalo, N.Y.
Filed June 20, 1969, Ser. No. 835,123
Claims priority, application Great Britain, June 21, 1968, 29,700/68
Int. Cl. B60s *1/32*
U.S. Cl. 15—250.42 **2 Claims**

A windscreen wiper blade having a longitudinal slot separating the leading portion of the blade harness from the trailing portion. The trailing edge of the leading portion extends outwardly from the blade edge a greater distance than the leading edge of the trailing portion. Thus the airstream flowing over the windscreen is deflected so that a portion of the airstream is directed into



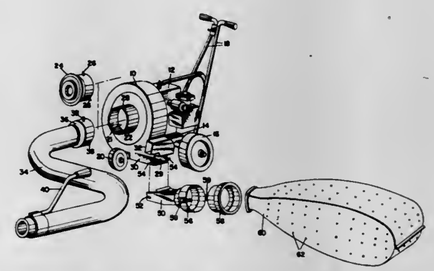
a space immediately behind the rubber and turbulence in the area behind the trailing portion of the blade is minimized. This reduces the tendency occurring at high vehicle speeds to lift the blade away from the windscreen.

3,618,156
POWER WIPER FOR REAR VIEW MIRRORS
Ben L. Riggs, Rte. 2, Box 87–B, Chandler, Ariz. 85224
Filed Aug. 17, 1970, Ser. No. 64,214
Int. Cl. B60s *1/44*
U.S. Cl. 15—250.29 **5 Claims**



A power wiper for rear view mirrors in which a wiper blade operates in rectilinear and oscillatory motion over the surface of a substantially rectangular mirror and the wiper blade is actuated by a motor having a shaft continuously rotatable in one direction; lever arms and bearings are operable by said motor shaft and coupled to opposite ends of the wiper blade for creating oscillatory action thereof relative to the surface of the mirror.

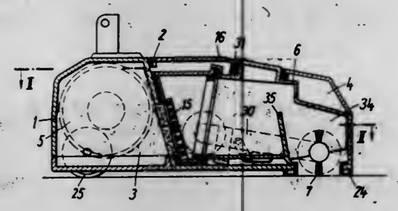
3,618,157
YARD CLEANING MACHINE
Charles S. Bassin, 87 Primrose Drive, Longmeadow, Mass. 01106
Filed Dec. 8, 1969, Ser. No. 882,929
Int. Cl. A47l *5/14*
U.S. Cl. 15—330 **1 Claim**



A blower apparatus for maintaining lawn and related areas which is convertible to a vacuum apparatus by the

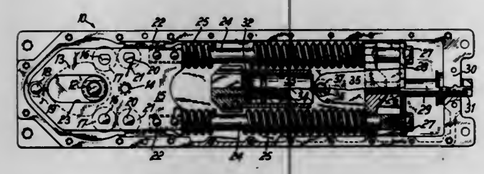
substitution of a hose or a vacuum snout for a protective cover at the air inlet of the fan housing and by the connection of a refuse collection bag or transfer hose at the air outlet of the fan housing, the fan or blower housing being rotatable about the impeller axis so as to locate the air outlet in any desired position of rotative adjustment.

3,618,158
FLOOR CLEANING APPARATUS
Peter Wörwag, Stuttgart, Germany, assignor to Progress-Elektrogerate Mauz & Pfeiffer, Stuttgart-Botnang, Germany
Filed June 8, 1970, Ser. No. 44,408
Claims priority, application Germany, June 6, 1969, P 19 28 713.9
Int. Cl. A47l 5/32
U.S. Cl. 15—332 **17 Claims**



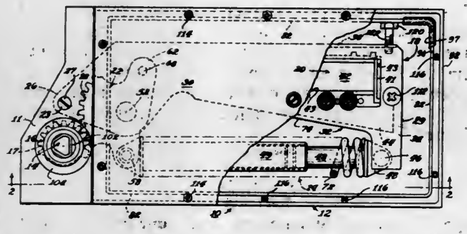
A floor cleaning apparatus with a cleaning tool, for instance, a motor driven sweeping roller, and with a detachable dust collecting container, the inlet opening of which is adapted to be connected with a tool receiving compartment while the outlet opening of said dust collecting container is adapted to be connected with the suction opening of a suction device, the dust collecting container for collecting sweep-up dust and the suction dust collecting container being interchangeable while the inlet opening of said suction dust collecting container forms an opening for receiving a suction hose or the like, said suction dust collecting container being closed with regard to the apparatus compartment containing the tool.

3,618,159
DEVICE FOR CLOSING DOORS AND THE LIKE
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Firma Dorkin & Mankel KG, Ennepetal-Voerde, Germany
Filed Sept. 11, 1969, Ser. No. 856,975
Claims priority, application Germany, Sept. 13, 1968, P 17 84 743.7
Int. Cl. E05f 3/22
U.S. Cl. 16—55 **9 Claims**



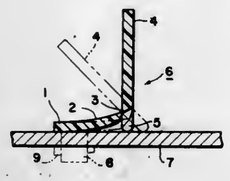
A door closer and the like. Elongated housing means has spaced ends. Slide means is longitudinally slidable in the housing in the region of one of the ends between an operative and an inoperative position. Shaft means is connected with the slide means and can be connected with a door so as to move the slide means to its operative position when the door is opened. A pair of transversely spaced rods are coupled to the slide means for movement with the same and extend towards the other end of the housing. Biasing spring means permanently urges the slide means to its inoperative position. A cross-head is mounted on the ends of the shafts adjacent the other end for movement with the shafts. A dashpot having a stationary and a movable component is mounted intermediate the shaft for damping movement of the slide member to its inoperative position. Connecting means connects the cross-head with the movable component of the dashpot.

3,618,160
DOOR CONTROL UNIT
David H. Ellis, West Chicago, Ill., assignor to Rixson Inc., Franklin Park, Ill.
Filed Oct. 16, 1969, Ser. No. 867,031
Int. Cl. E05f 3/20
U.S. Cl. 16—55 **30 Claims**



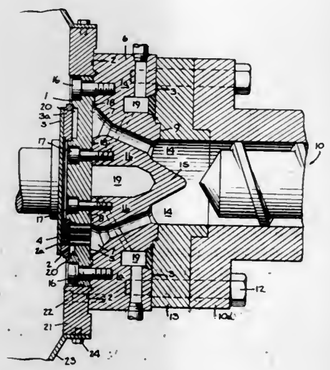
A door control unit adapted for installation in shallow floors or frames and wherein a cartridge comprising a hydraulic door checking mechanism, a driven member and a spring actuator may be removed from the housing of the door control unit without removing the door from the spindle.

3,618,161
HINGE MECHANISM WITH SPRING ACTION
Takamitu Nozawa, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan
Filed Apr. 29, 1969, Ser. No. 820,245
Claims priority, application Japan, Sept. 25, 1968, 43/69,657
Int. Cl. E05d 7/00
U.S. Cl. 16—150 **3 Claims**



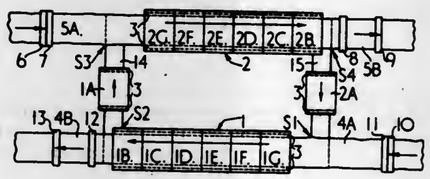
A hinge mechanism consisting of a flexible and resilient member of two main portions which are connected through a thin boundary layer with a first of said portions projecting toward the second beyond the boundary layer line so that when the edge of the second is attached to a base member and the first portion is swung upwardly, the projection biases the first portion open.

3,618,162
PLASTIC PELLETIZER UNDERWATER PELLETIZING HEAD
Hans R. Scharer, Wallingford, and Donald C. Chase, Orange, Conn., assignors to USM Corporation, Boston, Mass.
Filed Oct. 2, 1969, Ser. No. 863,151
Int. Cl. B29f 3/02, 3/04, 3/08
U.S. Cl. 18—1 B **9 Claims**



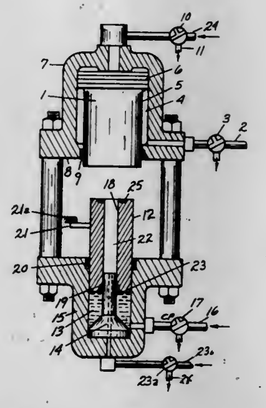
A plastic pelletizer underwater pelletizing head has a pellet plate support constructed to support the pellet plate against bending under the force of the plastic, by providing for screwing the pellet plate to the support by screws arranged on the inside of the pellet plate's annular series of plastic extrusion holes as well as on the outside of this series of holes, and constructed to shield the pellet plate from plastic pressure throughout its generally central area.

3,618,163
APPPARATUS FOR CURING ELONGATED ARTICLES
Hugh Lorain Folkes, St. Leonard's-on-Sea, England, assignor to Dunlop Holdings Limited, Birmingham, England
Original application Nov. 4, 1966, Ser. No. 592,131. Divided and this application Aug. 5, 1969, Ser. No. 862,568
Claims priority, application Great Britain, Nov. 10, 1965, 47,594/65
Int. Cl. B29c 3/02; B29h 5/20; B29b 5/22
U.S. Cl. 18—2 F **15 Claims**



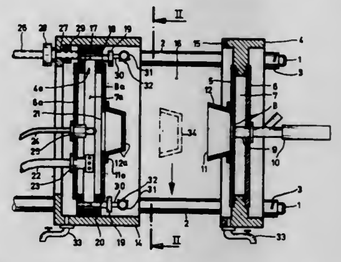
A curing press for elongated articles having a series of press units which successively engage successive portions of the article and move it and a unit of the press while they are in engagement through the press while the press units apply compressive force and heat to successive portions of the article. The article and the press units in engagement therewith are moved through the press in a stepwise manner and each portion of the article has compressive force applied to it while it is stationary.

3,618,164
ISOSTATIC PRESS
Norman Rietmann, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.
Filed May 25, 1970, Ser. No. 40,290
Int. Cl. B30b 5/00, 11/00
U.S. Cl. 18—5 H **10 Claims**



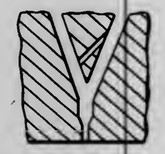
A hydraulic press in which the pressure chamber for isostatic molds and liquid comprises an annular piston having its lower end telescoped over a stationary piston. The upper end of the annular piston is held in sealing engagement with the main piston which pressurizes the liquid and the molds by forcing the annular piston down over the stationary piston.

3,618,165
MOLDING MACHINE FOR HANDLING EXPANDIBLE PLASTICS
Hans Ulrich Hauser-Lienhard, Zurich, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Zurich, Switzerland
Filed Feb. 25, 1969, Ser. No. 802,017
Claims priority, application Switzerland, Mar. 19, 1968, 4,037/68
Int. Cl. B29d 27/00
U.S. Cl. 18—5 P **4 Claims**



A molding machine for handling expandible plastics and forming molded articles comprises a movable and a fixed mold carrier frame each carrying one mold half. The movable mold carrier frame is mounted within a movable cover member which can be moved in sealing contact with the other mold carrier frame to form a closed steam and water space around the closed mold. Means are provided to adjust the position of said mold carrier frame mounted within the movable cover member with respect to the cover member in mold opening and closing direction, so as to compensate the varying constructional height of different molds to be used in the machine.

3,618,166
SPINNERETS FOR THE MANUFACTURE OF COMPOSITE FIBER FILAMENTS
Satoshi Ando and Yusaku Tanaka, Osaka-shi, and Fumimaro Ogata, Nishinomiya-shi, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Original application Sept. 27, 1965, Ser. No. 490,448, now Patent No. 3,458,390, dated July 29, 1969. Divided and this application Sept. 4, 1968, Ser. No. 770,881
Int. Cl. B29f *3/10*
U.S. Cl. 18—8 SC 2 Claims



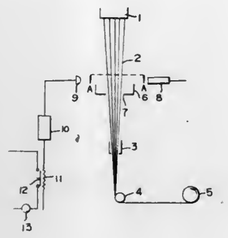
A spinneret has two channels for the separate conveyance of molten spinning materials, and the channels are separated by a partition wall beyond which the separate spinning materials are joined in side by side relation. The partition wall has a conducting passage for entry of one of the materials into the other so that an interengaged projection is formed by one material into the other at the joining surface of the materials.

3,618,167
APPARATUS FOR THE MELT EXTRUSION OF LINEAR FIBER-FORMING OR FILM-FORMING THERMOPLASTIC POLYMERS
Hans-Joachim à Brassard and Heinz-Josef Jütten, Oberbruch, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Feb. 28, 1969, Ser. No. 803,300
Claims priority, application Germany, Mar. 2, 1968, P 17 10 621.7
Int. Cl. D01d *3/00*
U.S. Cl. 18—855 8 Claims



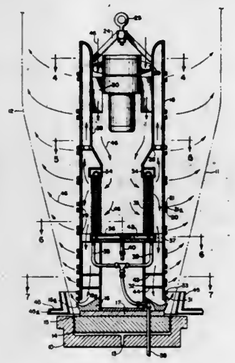
Apparatus for the extrusion of a high molecular weight, linear, thermoplastic polymer melt into filaments, yarns, ribbons, foils and the like, said apparatus including a nozzle plate in which each spinning or extrusion aperture is encircled on the outlet face of the plate by a reentrant groove meeting with the inner wall surface of the aperture at an acute angle to form a sharp or pointed ridge, preferably at an apex angle of less than 45°.

3,618,168
APPARATUS FOR DETECTING BROKEN YARN IN SYNTHETIC FIBER SPINNING
Eitaro Mukai, Yasuhiro Murase, Mitsuru Kusama, Misturu Yamasaki, Takayuki Takasago, and Tatsumi Tanabe, Ehime-ken, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Apr. 1, 1969, Ser. No. 811,979
Claims priority, application Japan, Apr. 9, 1968, 43/23,858
Int. Cl. D01d *7/00*
U.S. Cl. 18—8 R 2 Claims



Apparatus for detecting breakage of continuous filament yarn including a yarn receiving device disposed between a spinneret and a guide roller, and a photoelectric detector disposed adjacent the yarn receiving device to detect yarn accumulated thereon. The guide roller has a stopper rod extending from a flange to stop rotation of the guide roller when yarn builds up on the guide roller to contact the stopper rod. Broken yarn upstream of the guide of the guide roller is accumulated on the yarn receiving device and detected by the photoelectric detector, and breakage of yarn downstream of the guide roller builds up on the guide roller to contact the stopper rod and stop rotation of the guide roller thereby releasing tension on yarn upstream of the guide roller to permit the yarn to accumulate on the yarn receiving device and be detected by the photoelectric detector.

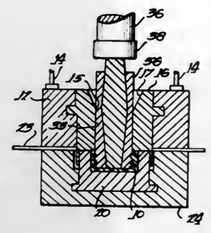
3,618,169
MANUFACTURE OF PLASTIC FILM
John B. Coast, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,693
Int. Cl. B29d *7/04, 7/24*
U.S. Cl. 18—14 A 12 Claims



A molten plastic film is extruded through a circular die upward over a diffuser having a plurality of rows of omniradially directed orifices through which a gaseous coolant is directed against the interior of the extruded plastic tube. The gaseous coolant is directed along substantially the entire length of the molten portion of the extruded tube.

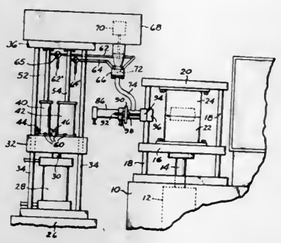
3,618,170
APPARATUS FOR MOLDING PLASTIC CLOSURES
Edward W. Owens, Palatine, Ill.
(4702 Valley Ridge Court, Toledo, Ohio 43614)
Filed July 14, 1969, Ser. No. 841,208
Int. Cl. B29c *11/00;* B29d *1/00;* B29f *1/14*
U.S. Cl. 18—30 WM 8 Claims

In a method for pressure molding plastic materials, a strip of deformable plastic is extruded over a mold cavity. A predetermined piece of the extrudate is cut from the strip and formed in the mold under pressure by means of a collapsible core and bushing assembly which forms the plastic at relatively low pressure in conjunction with the forming surface of a mold cavity.



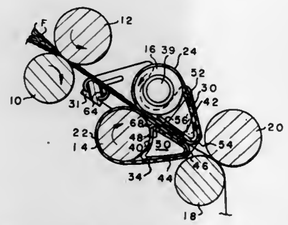
The collapsible core assembly includes a slidably movable actuator and mating thread-forming portions which engage such actuator whereby adjacent end portions of said forming portions are forced apart at first end portions, and approach each other and are readily released from a molded piece at opposed second end portions.

3,618,171
APPARATUS FOR INJECTION MOLDING PROPORTIONED LIQUID SYNTHETIC THERMOSETTING RESINS
Robert F. Zecher, Huntingdon Valley, Pa., assignor to Hull Corporation, Hatboro, Pa.
Filed Aug. 5, 1969, Ser. No. 847,677
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 AR 1 Claim



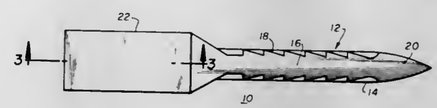
Liquid synthetic thermosetting resin and hardener are metered separately in predetermined proportions to a mixer for intimate blending and then immediate injection into a mold.

3,618,172
DRAFTING CRADLE
Edward L. Crenshaw, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Jan. 5, 1970, Ser. No. 546
Int. Cl. D01h *5/60*
U.S. Cl. 19—245 2 Claims



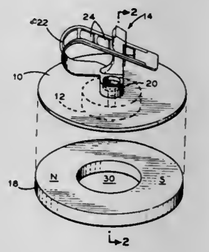
A drafting cradle with an apron supporting surface which has an opening therein to allow fibers trapped under the apron to be readily removed.

3,618,173
BUNDLING STRAP
Richard S. Schwartz, Union Township, Union County, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 10, 1970, Ser. No. 27,372
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB 14 Claims



The bundling strap of the invention is an incrementally adjustable strap having a plurality of teeth positioned in at least one longitudinal edge thereof for engagement with at least one detent placed within a longitudinal passage extending through a head member formed as a portion of the overall strap. A two component strap body portion having teeth in an overlying portion is prevented from touching the articles to be bundled by the protective underlying portion. The longitudinal passage through the head permits the strap head to lie in close contact to and conform generally to the shape of the articles to be bundled. By the choice of the number and positioning of the detents placed within the head member, the number of incremental positions at which the strap may be locked may be greatly increased.

3,618,174
MAGNETIC FASTENER
Herbert Schainholz, 316 Locust St., Teaneck, N.J. 07666, and Peter Katz, 18 Locust Place, Livingston, N.J. 07039
Filed Feb. 4, 1970, Ser. No. 8,655
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 2 Claims

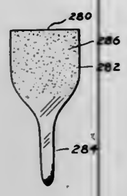


A quick detachable fastener for attaching articles to sheet material has an annular ring magnet and armature with a centrally disposed guide post for mating with the annular ring to maintain the armature and magnet ring in proper alignment, and a clamp attached to the armature for securing thereto an article to be mounted, the sheet material being held between the armature and magnet by the magnetic attraction therebetween.

3,618,175
VISUAL AID
Charles H. Lindberg, 2038 NE. 123rd, Seattle, Wash. 98125
Continuation-in-part of application Ser. No. 571,367, Aug. 8, 1966. This application Dec. 23, 1968, Ser. No. 786,336
Int. Cl. A44b *21/00, 19/00*
U.S. Cl. 24—73 R 4 Claims

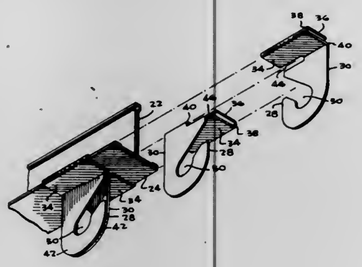
This invention relates to an inexpensive, easily handled and easily stored visual aid which can be used to give a

three dimensional appearance. The invention comprises a mesh and upright supports for supporting the mesh. Also,



there is a flexible tab to assist in positioning a picture or an object in front of or back of the mesh to assist in giving the three dimensional effect.

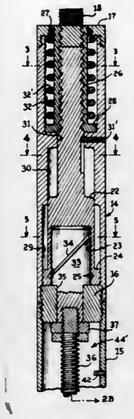
3,618,176
HANGER CLIP
Cedric L. Barnes, 2753 Fort Scott Drive, Arlington, Va. 22202
Filed Oct. 1, 1970, Ser. No. 77,200
Int. Cl. A44b *13/00*; E04b *5/52*; B42f *13/00*
U.S. Cl. 24—84 **9 Claims**



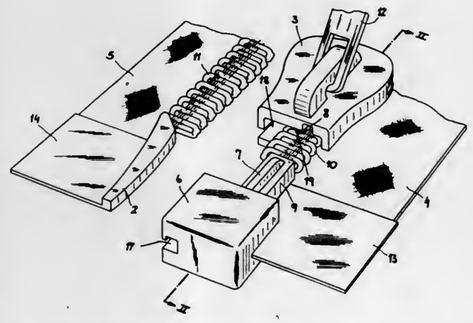
A hanger clip comprising first and second mating portions having overlapping slot and plate components which are respectively positioned on opposite sides of the lower flange of a beam and axially moved toward each other for abutting frictional engagement to provide a resultant attachment of the clip to the beam purely by manual manipulation with the components being frictionally held in position to be retained on the beam.

3,618,177
CABLE RELEASE MECHANISM
Richard G. Wood, 3665 E. County Road, Apt. 5, Odessa, Tex. 79760
Filed Aug. 24, 1970, Ser. No. 66,349
Int. Cl. E21b *31/00*
U.S. Cl. 24—201 R **10 Claims**

A mechanism for releasably supporting objects which are vertically disposed therefrom, comprising a housing from which there depends a plunger and a releasably coupling. The mechanism is supported by the plunger while the lower extremity of the coupling engages the object which is to be releasably supported. The plunger is connected to a mandrel by a grooved cam which cooperates with a pair of steel balls in a manner to convert reciprocal rectilinear motion of the plunger into intermittent rotational motion so as to cause rotation of the mandrel which in turn is unscrewed from the coupling. Interposed between the mandrel and the grooved cam is a second grooved cam which is engaged by a pin in a manner to produce an extremely high initial torque after several initial cycles of reciprocating rectilinear motion is imparted into the plunger.



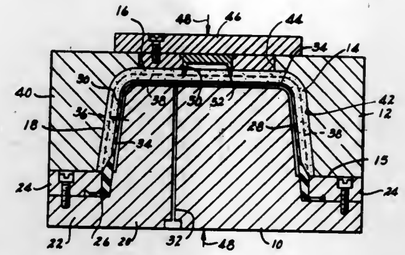
3,618,178
SEPARABLE SLIDE FASTENER
Harry Hansen, Copenhagen-Valby, Denmark, assignor to Lysta A/S, Copenhagen-Valby, Denmark
Continuation-in-part of application Ser. No. 730,409, May 20, 1968. This application May 22, 1970, Ser. No. 39,629
Int. Cl. A44b *19/12, 19/38*
U.S. Cl. 24—205.11 F **7 Claims**



A separable slide fastener has at its starting end an insert block with a ribbed protrusion which snugly mates with a grooved passage in a slider to hold the two relative to each other in an ideal aligned fastening position. The protrusion extends about halfway into the slider and prevents this slider from twisting around or becoming cocked on the protrusion.

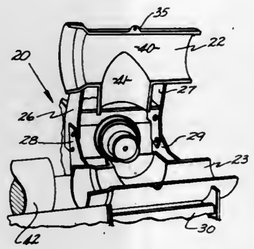
3,618,179
HOLE-FORMING ATTACHMENT FOR POWDER PRESS
Warren Gregory Anderson, New Orleans, La., and Curtis Wayne Ogren, Louisville, Ky., assignors to American Standard Inc., New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,846
Int. Cl. B28b *7/06, 7/18, 7/32*
U.S. Cl. 25—27 **5 Claims**

An isostatic powder press for forming toilet tanks or other articles having holes formed therethrough. One of the die mechanisms in the press is provided with an annular sleeve which moves into the powder during the compaction stroke to entrap the powder and form a hole



through the finished article. The hole is formed without stressing the compacted article, thus minimizing the tendency for cracks to occur adjacent the hole during the glazing and firing periods.

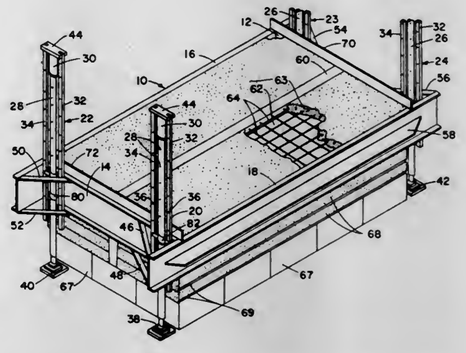
3,618,180
APPARATUS FOR MAKING BRANCHED CONDUITS
John F. Rogers, Morehead, Ky., assignor to Lee Clay Products Company, Clearfield, Ky.
Original application Nov. 28, 1967, Ser. No. 686,156, now Patent No. 3,499,067, dated Mar. 3, 1970. Divided and this application July 18, 1969, Ser. No. 870,987
Int. Cl. B28b *21/42*
U.S. Cl. 25—30 R **4 Claims**



A method of manufacturing a branched tubular conduit having connecting passageways from a plurality of tubular sections of plastic material which includes pressure welding an end of one tubular section to a side of a second tubular section and simultaneously forming an opening in the side between the section hollows. A length of uncured clay pipe is extruded, an end of the length is cut off to form a main section and a spur section and the spur end is configurated to the main section side. The sections are then aligned in a supporting mold having an inner wall defining a tubular surface which is laterally intersected by another tubular surface for supporting the configurated spur end adjacent the main section side. A first mandrel is introduced into the hollow of the main section and a second mandrel having a cutting edge is then forced into the spur section to weld the spur section to the main section side while simultaneously forming an opening in the side to provide the branched conduit.

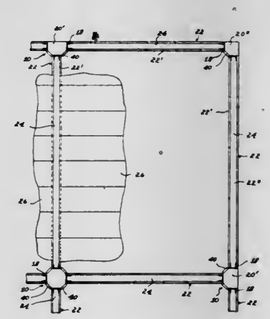
An apparatus for manufacturing the branched tubular conduit which includes a mold for supporting the main section adjacent the spur section end, a mandrel positionable within the main section for supporting the main section in the mold during pressure welding of the spur thereto and a second mandrel movable into the mold for pressure welding the spur section to the main section side while simultaneously forming an opening in the side between the section hollows.

3,618,181
METHOD AND APPARATUS FOR CASTING CONCRETE AND OTHER SETTABLE MATERIALS
Martin E. Veale, 1719 W. Cameron, Tulsa, Okla. 74127
Filed Mar. 25, 1969, Ser. No. 810,208
Int. Cl. B28b *7/22*
U.S. Cl. 25—41 K **2 Claims**



A method and apparatus are provided by which concrete or similar castable material can be formed in a vertical stack using a single frame. The initial slab or form is poured onto a platform with or without re-enforcing steel lying thereon. When the initial slab has been poured within the surrounding frame or mold and at least partially set, the frame is elevated a predetermined distance, a suitable bond breaking agent such as, for example, a cardboard sheet, having the approximate dimensions of the previous slab, is placed over the top of the latter, re-enforcing steel placed thereon and the concrete pouring step repeated. The freshly poured concrete is smoothed out by the use of vibrators, trowels and leveling bars. The casting frame may be so constructed as to form two or more molded forms while said frame is at one horizontal position.

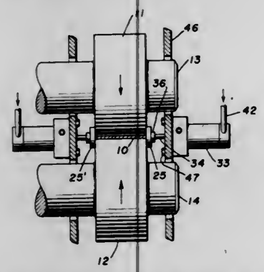
3,618,182
MEANS FOR PRODUCING CONCRETE FRAMEWORKS FOR BUILDINGS
Raymond A. Burkland, 225 Beechwood Ave., Trenton, N.J. 08618
Continuation-in-part of application Ser. No. 655,129, July 21, 1967. This application Mar. 12, 1969, Ser. No. 815,514
Int. Cl. B28b *7/06*
U.S. Cl. 25—131 A **10 Claims**



A configurative arrangement of vertically self-propelled concrete molding units for concurrently molding all the concrete columns and lateral connecting beams or floors

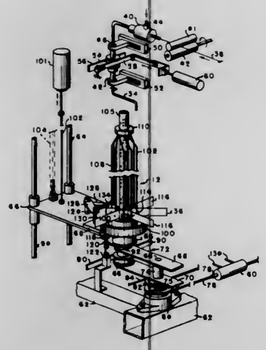
of a building framework and then successively molding the concrete floors beginning with the top floor, or the bottom floor; the molding units having means for impressing horizntal corrugations or indentations in the wet concrete of the columns, and motor driven means carried by one or all the molding units for engaging the indentations in the columns after hardening of the concrete for effecting coordinated vertical movement of all the molding units in either direction.

3,618,183
INSERT PRESSURE CONTROLLER
Paul M. Funk and John R. Bauer, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.
Filed Feb. 11, 1970, Ser. No. 10,532
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 3 Claims



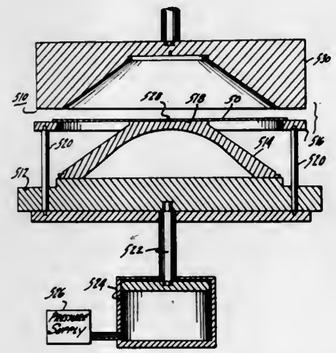
An apparatus for holding and adjusting the position of a wear disc in a stuffer box crimper. The apparatus maintains a bearing surface in contact with outer annular lateral-portions of a pair of crimping rolls, said apparatus including a disc member formed with a bearing surface thereon, means for urging said member into engagement with the lateral-portions of the rolls, and means for rotating the disc member about an axis running parallel to the nip of the rolls.

3,618,184
METHOD TO PRODUCE A HIGH BULK YARN PACKAGE
Larry N. Pearce and Grady H. Sanders, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Nov. 18, 1968, Ser. No. 776,534
Int. Cl. D02g 1/00; D06p 7/00
U.S. Cl. 28—75 WT 3 Claims



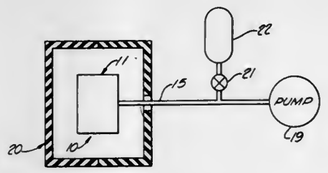
Method to produce a dyed yarn package with qualities similar to that of a skein dyed yarn package. The method incorporates a novel spindle onto which, preferably, high bulk yarns are wound under very little tension to provide a compact but loose yarn package which is amenable to efficient bulking and dyeing.

3,618,185
OVAL LOUDSPEAKER BASKET AND METHOD OF MANUFACTURING SAME
Aldo L. Coen, Chicago, Ill., assignor to RCA Corporation
Original application June 5, 1967, Ser. No. 643,473, now Patent No. 3,497,928. Divided and this application Feb. 12, 1969, Ser. No. 810,075
Int. Cl. B21d 31/04
U.S. Cl. 29—6.1 4 Claims



A method of manufacturing an oval loudspeaker basket employing expanded metal techniques. A flat blank of material is pierced (e.g. punched) to form a central annular region, a peripheral oval flange and a network of concentric webs, radial interconnecting webs and concentric slots. The annular portion is displaced from the peripheral portion between a pair of die members, expanding the webs to form generally diamond-shaped openings in the expanded basket.

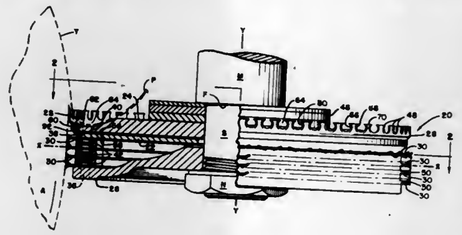
3,618,186
METHOD OF MAKING VACUUM CAPACITORS
Herman E. Krefft, Matawan, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,956
Int. Cl. H01g 13/00
U.S. Cl. 29—25.41 7 Claims



The disclosure includes a method of processing a vacuum device such as a vacuum capacitor so as to increase its useful life under conditions of superimposed direct current, far beyond the present state of the art. Vacuum capacitors, when used as DC blocking capacitors in RF circuits, slowly degrade in voltage capability. The degradation becomes apparent when DC or DC plus RF voltages are applied to the capacitor. The present disclosure solves

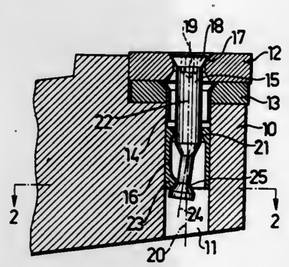
the degradation problem by applying an alternating voltage to the capacitor electrodes in the presence of an inert gas at low pressure and hermetically sealing the capacitor without the removal of adsorbed gas.

3,618,187
TIRE PEELING DEVICE
Wayne Emil Jensen, Homewood, Ill. (P.O. Box 325, Glenwood, Ill. 60425)
Filed Mar. 13, 1969, Ser. No. 806,856
Int. Cl. B23d 71/00; B26d 1/12
U.S. Cl. 29—79 20 Claims



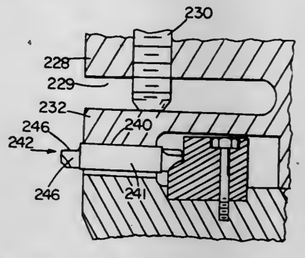
Tire peeling device having axially spaced rows of circumferentially spaced teeth about its periphery, the upper row comprising cutting teeth generally parallel to the axis on which the device rotates and having embossed and/or sharpened diverging side edges which with their outer edges peel the old rubber tread from a worn tire carcass as it is rotated thereagainst on an axis generally perpendicular to the axis on which the device rotates. The other rows of teeth buff the peeled surface of the tire carcass to a texture for effective bonding of new rubber tread thereto. Both the buffing and cutting teeth constitute sheet metal segmented blades removably held between annular plates, the upper one having an annular concave surface which directs the peeled tread off the device to a receiving waste container.

3,618,188
CLAMPING MEANS FOR AN INSERT IN A TOOL HOLDER
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandviken Jernverks Aktiebolag, Sandviken, Sweden
Filed Nov. 28, 1969, Ser. No. 880,567
Claims priority, application Sweden, Nov. 29, 1968, 16,286/68
Int. Cl. B26d 1/00
U.S. Cl. 29—96 9 Claims



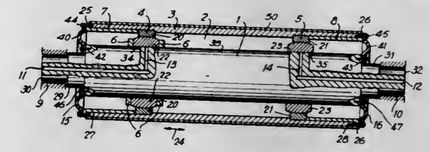
An insert is clamped in a tool holder by means of a pin rotatable in an aperture in the tool holder, which pin is, in part, eccentric with respect to the aperture and can be brought into contact with a fixed abutment so as to exert a lever action against the cutting insert.

3,618,189
GEAR MAKING
Alexander D. F. Moncrieff, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.
Filed July 28, 1969, Ser. No. 845,380
Int. Cl. B26d 1/00, 1/12
U.S. Cl. 29—103 9 Claims



Generating gear tooth profiles with tool having cutting portion with a leading face provided with clearance relief relative to a reference plane, a profile generating cutting edge bordering the leading face, and a cutting tip for fillet forming; and a mounting portion having a transverse axis parallel to a cutter axis when the tool is installed.

3,618,190
UNIFORM PRESSURE ROLLER FOR TEXTILE UTILIZATION
Julius Vernazza, Wahlheim, and Karl Grafen, Landgraben, Germany, assignors to H. Krantz, Aachen, Germany
Filed Oct. 31, 1969, Ser. No. 872,946
Int. Cl. B21b 13/02
U.S. Cl. 29—116 AD 4 Claims

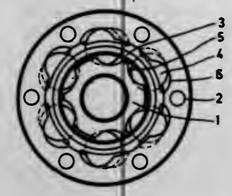


The disclosure describes a roller for exerting uniform pressure over the length thereof, particularly applicable to textiles, having a central core and a cylindrical shell enclosing the core, with an annular space separating the two. The shell is supported on the core by a two ring bearing assembly with spherical cooperating surfaces, one of said assemblies being movable on the core, while the other is secured against axial movement.

3,618,191
METHOD OF PRODUCING THE LONGITUDINAL GROOVES IN A SYNCHRONOUS SWIVEL JOINT
Walther Willimek and Erich Aucktor, Offenbach, and Sobhy Labib Girguis, Troisdorf, Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Germany
Filed Nov. 20, 1969, Ser. No. 878,329
Claims priority, application Germany, Nov. 21, 1968, P 18 10 177.4
Int. Cl. B21h 1/12; B23p 11/00, 13/04
U.S. Cl. 29—148.4 R 4 Claims

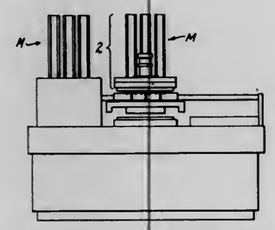
There is disclosed a process of producing a synchronous swivel joint of the kind having two joint members each with longitudinal grooves of which the grooves of one joint member are paired with those of the other member. In such a joint, balls are located in the pairs of grooves and transmit torque between the members and the members are axially displaceable so that the balls are displaced along the grooves towards the ends thereof. First

the grooves of the members are conventionally machined and hardened and then they are lapped over an area ex-



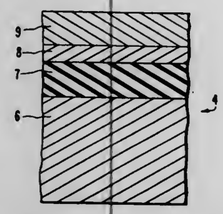
tending outwards from the center of the grooves towards the ends of the grooves to ensure accurate operation of the assembled joint.

3,618,192
UNIFORM COMPONENT RECEIVING AND DISPENSING MECHANISM
Fred H. Hoffken, Springfield, Pa., assignor to Essington Metal Works, Inc., Essington, Pa.
Filed Nov. 26, 1969, Ser. No. 880,244
Int. Cl. H01r *43/00*; B23g *7/10*
U.S. Cl. 29—203 B **14 Claims**



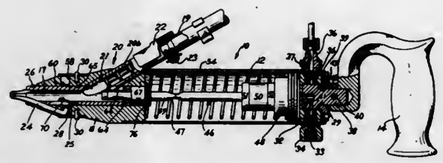
A magazine for receiving a supply of uniform, electronic components, such as resistors, or the like; means associated with said magazine for facilitating the loading of components thereinto; means for facilitating the dispensing of the components from the magazines; and an extractor, cooperating with said last mentioned means for withdrawing the components from the magazine, one at a time, and transferring them to a mechanism which inserts the components into a printed circuit board, for incorporating the components in selected circuits printed on said board.

3,618,193
GOLD-COATED REFLECTOR
Norman C. Anderson and James T. Gaspar, San Carlos, Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed Jan. 8, 1969, Ser. No. 789,751
Int. Cl. B32b *15/04*; F21v *7/22*
U.S. Cl. 29—195 **9 Claims**



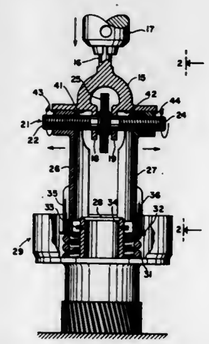
A gold-coated reflector comprising a metallic substrate, an oxide diffusion barrier overlaying said metallic substrate, a layer of refractory metal deposited on said diffusion barrier, and a layer of gold deposited on said layer of refractory metal.

3,618,194
TIRE STUD GUN
Gaylord B. Haviland, Maineville, Ohio, assignor to Big Four Automotive Equipment Corporation
Filed Feb. 24, 1969, Ser. No. 801,714
Int. Cl. B23q *7/10*
U.S. Cl. 29—212 T **6 Claims**



A tire stud gun having interchangeable insert tube assemblies for accommodating different sizes of tire studs. Indexing means for permitting one stud at a time to enter the main longitudinally disposed hole within the insert tube assembly are associated with actuator means in the tire stud gun.

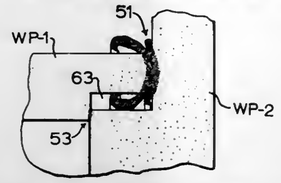
3,618,195
CLUTCH DRUM SPRING COMPRESSOR
Hobson J. Elmore, Jr., 214 Ridgeway Drive, Gulfport, Miss. 39501, and William F. Elmore, 707 Windsor Drive, Birmingham, Ala. 35209
Filed June 20, 1969, Ser. No. 835,190
Int. Cl. B23p *19/04*
U.S. Cl. 29—227 **2 Claims**



A clutch drum spring compressor adapted for use in assembling or disassembling automatic transmission parts formed of a supporting body adapted to be fitted into a drill press chuck and which has brace parts depending from a turn buckle assembly thereon and adapted to be laterally adjusted to fit against the spring plate that is to be forced downwardly against the action of the spring and to allow for easy removal for replacement of the snap retaining ring. The spring plate is contacted by four projections carried on the brace members and the brace members held against lateral displacement on the turn buckle screw by flat surface engagement with corresponding flat surfaces of the main body support.

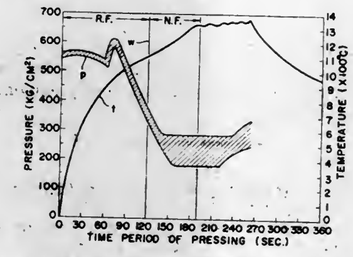
3,618,196
FLASH TRAP FOR FRICTION WELDING
Edward J. Sluetz, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 7, 1969, Ser. No. 839,415
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **9 Claims**

A flash trap situated between a major weld and a minor weld produced between two weld members which are friction or inertia welded together. The trap comprises a radial void into which the flash from the major weld can expand. The opposite end of the void is closed



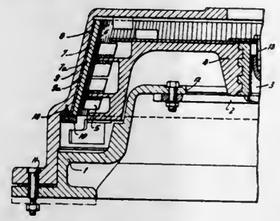
by the minor weld which is performed utilizing such parameters as to produce no flash therefrom.

3,618,197
BUTT-WELDING LARGE-DIAMETER STEEL BARS
Yoshinori Ito, Nishinomiya-shi, Japan, assignor to Sumitomo Metal Industries Ltd., Kitahama, Higashi-ku, Osaka, Japan
Filed Sept. 24, 1969, Ser. No. 860,771
Claims priority, application Japan, Sept. 25, 1968, 43/69,608
Int. Cl. B23k *31/02, 35/38*
U.S. Cl. 29—494 **2 Claims**



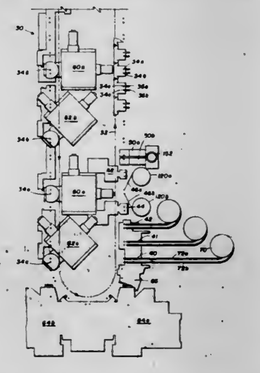
A process for butt-welding large-diameter steel bars having diameters of at least 30 mm., comprising the steps of applying a sufficient pressure to two pieces of a steel bar in abutting relationship for pressure welding, while heating the parts to be joined to the welding temperature with a sufficiently strong reducing hydrocarbon-oxygen flame for deposition of carbon on the steel surfaces, switching this reducinig flame over to a neutral flame, and then continuing the pressure application with a reduced pressure.

3,618,198
ASSEMBLY OF INTERFITTING ELEMENTS INCLUDING AT LEAST ONE HARD-TO-MACHINE PART
Ewald Schmeja, Dachau, and Walter Glomp, Lochham, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich-Allach, Germany
Filed May 13, 1969, Ser. No. 824,088
Claims priority, application Germany, May 16, 1968, P 17 50 593.0
Int. Cl. B23p *3/00, 25/00*
U.S. Cl. 29—458 **4 Claims**



A hard-to-machine part, such as a cast liner for the housing of a grinding mill, is provided with an adhering layer of moldable polymeric material forming a smooth contact surface to bear upon a coacting surface of a supporting member, such as a mill housing.

3,618,199
AUTOMATED METHOD AND SYSTEM FOR FABRICATING SEMICONDUCTOR DEVICES
Lewis C. King, Dallas, Gerald A. Yearsley, Garland, Anthony L. Adams, Dallas, Marion I. Simmons, Richardson, and Eugene G. Altenburger and Billy P. Yager, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 30, 1969, Ser. No. 837,843
Int. Cl. B01j *7/00, 17/00*
U.S. Cl. 29—569 **17 Claims**



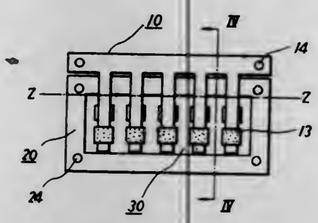
An automatic method and system for packaging discrete semiconductor devices such as transistors is described. The system includes a chassis for indexing a plurality of chucks past a series of work stations. The work stations include three wire loading stations for loading flat-headed lead wires in the chucks, a glass loading station for placing a glass ring around the necks of the lead wires, a series of heaters for heating the glass rings, a pair of molding stations for molding the heated glass rings around the necks of the lead wires to form a header, an alloy station for placing the semiconductor devices in a predetermined orientation on the head of one of the lead wires, and a series of automatic bonding stations for connecting the base and emitter contacts of the semiconductor devices to the heads of the other lead wires.

The overall system is controlled by a digital computer. Stations are provided for detecting the absence of a lead wire, the absence of a glass ring, or the absence of a transistor device. The system also detects failure of any one of the bonder stations and terminates operation of the system. The computer is programmed to provide shift registers which define each index position of the chassis and logic signals are shifted through the shift register to continually locate any chuck which is defectively loaded so as to prevent the successful completion of a header assembly. The computer then disables each subsequent station as the defectively loaded chuck is positioned at the respective station.

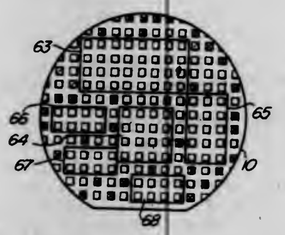
3,618,200
METHOD OF MANUFACTURING CHIP-SHAPED PASSIVE ELECTRONIC COMPONENTS
Masao Matsuo, Takarazuka, and Hiroshi Tomiwa, Osaka, Japan, assignors to Matsuo Electric Company, Limited, Osaka-fu, Japan
Filed Apr. 17, 1970, Ser. No. 29,413
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 **5 Claims**

An improved method of manufacturing an electronic component wherein a plurality of elements are formed on

the ends of a plurality of elongated conductive members. The elements and conductive members are then electrically connected to terminals carried by a frame, and the resultant structure is then enclosed by a resin after an adhesive sheet has been placed on one side of the frame to protect the terminals. Thereafter the adhesive sheet is removed to expose the terminals and the individual completed components are removed from the frame.



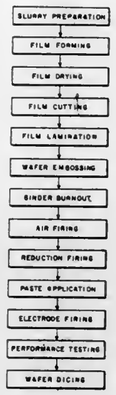
3,618,201
METHOD OF FABRICATING LSI CIRCUITS
Tsugio Makimoto and Minoru Nagata, Kodaira-shi, Akira Masaki, Hatano-shi, and Masaharu Kubo, Hachioji-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 17, 1969, Ser. No. 799,710
Claims priority, application Japan, Feb. 19, 1968, 43/10,612
Int. Cl. B01j *17/00*; H01l *7/00*
U.S. Cl. 29—574 **7 Claims**



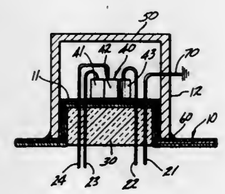
A method of fabricating LSI circuits, which comprises testing unit cells formed in a semiconductor wafer to select qualified unit cells, sectionalizing the qualified unit cells into block regions each including a suitable number of qualified unit cells, and applying a previously prepared fixed metalization pattern mask onto each block region to achieve interconnection between the unit cells contained in said each block region, thereby establishing a plurality of LSI circuits of different types on the single semiconductor wafer.

3,618,202
CERAMIC CHIP ELECTRICAL COMPONENTS
James P. Callahan, Woodland Hills, Calif., and Richard A. Stark, Des Plaines, Ill., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Continuation-in-part of application Ser. No. 625,459, Mar. 23, 1967. This application May 12, 1969, Ser. No. 823,667
Int. Cl. B01j *17/00*; H01j *5/00*
U.S. Cl. 29—580 **37 Claims**

The disclosure presents a miniature ceramic chip capacitor primarily for use in hybrid integrated circuits. The capacitor electrodes are external and coplanar, being separated by a recess in the ceramic body. A pattern of grooves defining a number of capacitors and their electrode surfaces is embossed or formed on one surface of a green ceramic film usually having a plastic binder. An electrode is applied to the coplanar electrode surfaces of the matured ceramic body such as an electrode paste by a printing operation. PN-junction dielectric layers can be formed, if desired, beneath the electrode surfaces by alloying and thermal reoxidation.

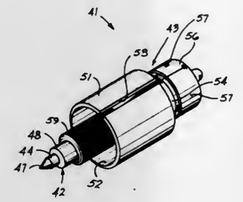


3,618,203
METHOD OF MAKING A GLASS OR CERAMIC-TO-COMPOSITE METAL SEAL
Michael J. Pryor, Woodbridge, Conn., assignor to Olin Mathieson Chemical Corporation
Filed Aug. 25, 1969, Ser. No. 852,775
Int. Cl. C03c *27/02*; C21d *1/26*; H01l *1/10*
U.S. Cl. 29—588 **14 Claims**



A composite metal product, glass or ceramic-to-metal seals using the composite, and the method of making these products. The composite has the properties of a low coefficient of expansion, approximating that of the glass or ceramic, good thermal conductivity, and fine grain size in the annealed condition. This is achieved by cladding an alloy having a low coefficient of expansion on either side of a low carbon steel core having a thermal conductivity of at least 20 B.t.u./sq. ft./ft./hr./° F. The thickness of the cladding on either side of the core not exceeding 33⅓% of the total thickness of the composite. The low carbon steel core contains up to 0.20% carbon and preferably up to 0.15% carbon and has a grain size of no more than 0.045 mm. after annealing of the composite. The composite is cold rolled at least 70% and preferably at least 80%, it is then annealed between about 1330° F. and 1600° F. and preferably between about 1500 F. and 1600° F., for no longer than 30 minutes and then rapidly cooled to room temperature. The heat-up rate must be faster than 100° F. per minute and preferably faster than 250° F. per minute. The seal is made by forming a cup shaped header having apertures, out of the composite. Electrical conductors are then inserted through the apertures and the cup is then filled with glass or ceramic to seal the conductors in place.

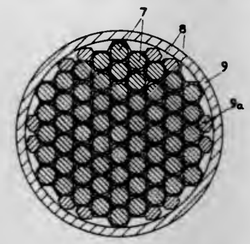
3,618,204
METHODS OF ASSEMBLING ELECTRICAL COMPONENTS
Thomas A. La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Nov. 19, 1969, Ser. No. 878,017
Int. Cl. G01r *4/00*; G05f *4/00*; H01h *4/00*
U.S. Cl. 29—593 **4 Claims**



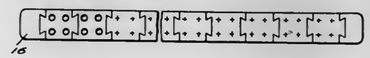
A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders at a first work station has the leading end of an insulated wire extending from a supply of wire welded thereto at a second work station, after which the first part is indexed to a third work station without severing the wire extending from the first part to the supply. At the third work station a portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable through a fourth and a fifth work station to a sixth work station. At the sixth work station a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped. At a seventh work station the trailing portion of the wire is welded to a metal cap which is secured to the second part and the strength of the weld is tested, whereafter the electrical component is advanced to a last work station and tested electrically and then sorted.

3,618,205
METHOD OF FABRICATING A COMPOSITE SUPERCONDUCTING WIRE
Anthony Clifford Barber, Lichfield, Laurence Reginald Hawtin, Birmingham, and Peter Harlow Morton, Solihull, England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England
Original application Apr. 18, 1968, Ser. No. 722,475. Divided and this application June 6, 1969, Ser. No. 857,245
Claims priority, application Great Britain, Apr. 27, 1967, 19,378/67
Int. Cl. H01v *11/00*; B23p *17/00*
U.S. Cl. 29—599 **7 Claims**

An electrical conductor having superconducting properties comprising a plurality of continuous superconductor elements each having a mean thickness of less than 25 microns, and electrical insulation material electrically insulating substantially all of the elements one from another, from 0 to 30 percent by weight of the conductor being constituted by electrically conductive noncoductive non-superconductor material.

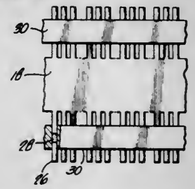


3,618,206
PROCESS FOR THE PRODUCTION OF SUPERCONDUCTIVE METALLIC CONDUCTORS
Paul Gubler, Dornach, Gundolf Meyer, Fislisbach, Jean-Marie Rayroux, Baden, and Hansueli Schurch, Dornach, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Mar. 28, 1969, Ser. No. 811,478
Claims priority, application Switzerland, Apr. 5, 1968, 5,197/68
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **10 Claims**



A process for producing a superconductive metallic conductor having a strip-shaped form in which a plurality of rods of superconductive material are introduced into bores in press blocks made of a stabilizer material. These blocks are then pressed out into continuous lengths having a substantially rectangular profile. A first group of these lengths is then drawn or rolled to provide a first group of profiled wires having ribs along opposite sides, a second group of these lengths is similarly worked to provide a second group of profiled wires having grooves along opposite sides, and the wires of the first and second groups are then joined together in alternation and in side-by-side relation such that the ribs and grooves interconnect. The joined together lengths are then worked again to establish the final profile of the conductor.

3,618,207
METHOD OF MANUFACTURING STRIP CONNECTORS
Robert H. Sand, La Mirada, and Cecil W. Libby, Sierra Madre, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Continuation of application Ser. No. 608,931, Jan. 12, 1967. This application Sept. 2, 1969, Ser. No. 860,148
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 R **4 Claims**



A method of assembling a plurality of contacts in a configuration such as a strip connector. The steps of the

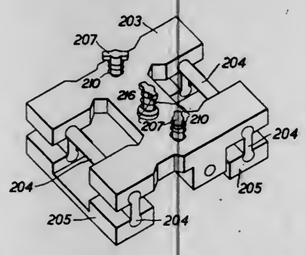
method call for stamping or milling the multiple contact configuration from a blank of contact material, molding a connector housing about the contacts while they are still attached to the body of contact material and thereafter shearing the finished connector away from the body of contact material. In one variation the milled contacts are pins which are inserted into tubular connectors or sockets which are then secured to the pins by means of mechanical crimping. Thereafter the molding step is undertaken to form a connector housing about the plurality of crimped pin-socket combinations. The finished connector is then sheared from the body of contact material as before.

3,618,208
FRUIT KNIFE
Richard B. Cronheim, 7 Upper Barnes, St. Louis County, Mo. 63124
Filed June 24, 1969, Ser. No. 836,076
Int. Cl. A47j *17/04*
U.S. Cl. 30—24 **1 Claim**



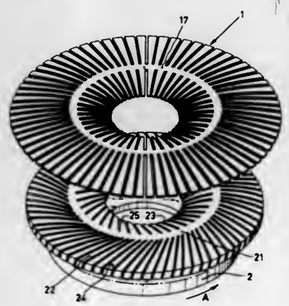
A fruit knife adapted especially for preparation of citrus fruits having a handle, a blade projecting coaxially from said handle and with each of its side edges being serrated throughout substantially the extent thereof; said blade being angulated at its end remote from the handle, at an angle within the range of 16 to 24 degrees to the plane of the major portion of the blade. The free end edge of said blade is arcuated, being endwise convex, and sharpened to define a cutting portion of greater extent than the width of said blade.

3,618,209
DRIVE SYSTEM FOR CONTROLLING MOTION OF THE SHAVING ELEMENTS OF AN ELECTRIC SHAVER
Giancarlo Battigalli, Milan, Italy, assignor to Mistrelettrica S.R.L., Milan, Italy
Filed Mar. 7, 1969, Ser. No. 805,172
Claims priority, application Italy, Mar. 8, 1968, A 13,694/68
Int. Cl. B26b *19/26*
U.S. Cl. 30—43.3 **5 Claims**



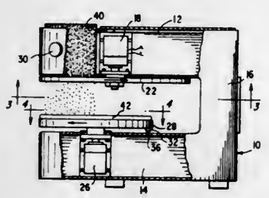
A drive system for controlling the motion of the shaving elements of an electric shaver, consisting of a mechanical oscillator unit operating as an articulated parallelogram.

3,618,210
DRY-SHAVING APPARATUS HAVING A DEFORMABLE CURVED SHEAR PLATE
Frans Zuurveen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 665,850, Sept. 6, 1967. This application July 18, 1969, Ser. No. 849,553
Claims priority, application Netherlands, Sept. 13, 1966, 6612851
Int. Cl. B26b *19/16*
U.S. Cl. 30—43.6 **10 Claims**



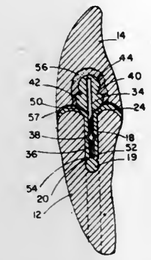
A dry shaver having a thin, resilient shear plate that is formed into a partial toroid and has a plurality of hair-receiving apertures, a cutter which moves about substantially the entire surface of the shear plate, and means for maintaining the cutting surface in pressure contact therewith.

3,618,211
CHEESE SHREDDER AND SPREADER DEVICE FOR PIZZA PIES AND THE LIKE
Henry H. Gibbs, 3010 Rice Ave., Pueblo, Colo. 81005
Filed Dec. 5, 1969, Ser. No. 882,442
Int. Cl. A01j *21/00*
U.S. Cl. 31—6 **5 Claims**



A cheese shredder and spreader device for use in making pizza pie and the like, comprising a substantially C-shaped frame with a circular or disk-like shredder disposed adjacent the upper portion of the C-frame with a wedge shaped opening for holding cheese therein to be shredded by said disc member, and a lower platform for holding the pizza dough, said lower platform being disposed below said shredder and adapted to receive the shredded cheese therefrom, with means for rotating said shredder and for rotating said lower platform for one turn only to spread a predetermined and uniform amount of cheese and the like on the dough disposed on the lower platform.

3,618,212
DENTAL PROSTHETIC CONSTRUCTION
Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y. 11217
Filed Nov. 19, 1969, Ser. No. 878,101
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **22 Claims**

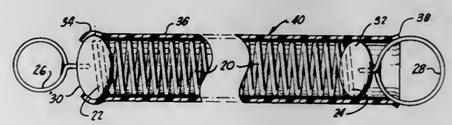


Apparatus and method for securing a dental prosthetic structure, such as a false tooth, crown or the like, to a patient's tooth stub or jawbone and comprising the drilling of a bore in the tooth stub or jawbone, placing a preformed hollow sleeve having a closed distal end, an open proximal end and an internally bowed intermediate portion, into said bore, forming a saddle conformal with the configuration of said tooth stub including said sleeve as an integral part thereof, positionally securing said saddle with respect to said tooth stub, placing the lower spring portion of an intermediate joinder member within the hollow sleeve, the spring portion having a bowed intermediate part which is urged into said bowed intermediate portion of said sleeve to thereby positionally secure said intermediate joinder member with said prepared tooth stub, the upper portion of said joinder member having an anchoring protuberance thereon, forming a prosthetic structure with an opening in the bottom thereof with the bottom peripheral configuration conformal with that of the prepared tooth stub, and securing said prosthetic structure to said prepared tooth stub by cementing said anchoring protuberance within said opening in said prosthetic structure.

3,618,213
DENTURE LINERS
Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 567,856, July 26, 1966, and Ser. No. 650,259, June 30, 1967, and a division of application Ser. No. 654,044, July 5, 1967. This application Apr. 27, 1970, Ser. No. 32,447
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **3 Claims**

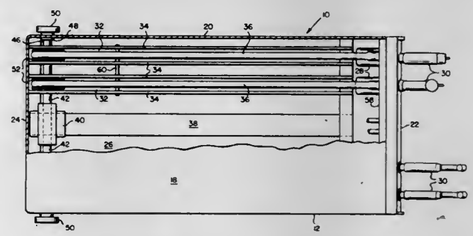
A process for preparing hydrophilic cross-linked polymers and products prepared thereby, said process comprising admixing in a solvent-free system in the presence of a free radical, vinyl polymerization catalyst and reacting a major amount of a water-soluble polymerizable monoester of an olefinic acid having at least one substituted functional group with a minor amount of a polymerizable diester of one of said olefinic acids having at least two esterifiable hydroxyl groups. The novel products include a solid friable foam which can be disintegrated to powder. Shaped bodies can be prepared in the form of articles which can be cast with or without additives such as fragrances, medicinals, flavors, chemicals and the like, which are gradually released from the article when it is wetted in water or alcohol. Liquid casting syrups adapted to be polymerized in situ with or without additives can be formed and can be used for example in preparing denture liners. The casting syrups can be prepared in water to yield a polymer soluble in alcohol which is suitable for formation of hydrophilic coatings as by spray, dip, casting and the like.

3,618,214
COILED WIRE SPRING APPLIANCES FOR USE IN ORTHODONTICS
Maclay M. Armstrong, 1306 N. 175th, Suite 106, Seattle, Wash. 98133
Continuation of application Ser. No. 634,029, Apr. 17, 1967, which is a continuation-in-part of application Ser. No. 504,679, Oct. 24, 1965, and a continuation of application Ser. No. 835,882, June 9, 1969, all now abandoned. This application May 4, 1970, Ser. No. 33,151
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **31 Claims**



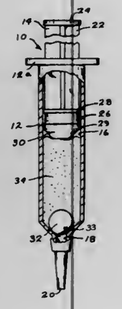
An orthodontic spring applicance to replace rubber or latex elastic bands for application of corrective intermaxillary forces to teeth. The appliance includes several coaxial coil springs secured together at their ends and having a protective flexible sheath therearound. A pair of eyelets are secured at opposite ends of the assembly for engagement with hooks on orthodontic arch wires, brackets, etc. One or more of the coaxial springs may be wound with initial tension, or may be wound as a compression spring to regulate the force delivered by the assembly upon elongation.

3,618,215
DENTAL EQUIPMENT STAND
Bruce A. Hopkins, West Lebanon, N.H., and Walter P. La Force, Penfield, and John J. Valeska, Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed May 18, 1970, Ser. No. 38,030
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **9 Claims**



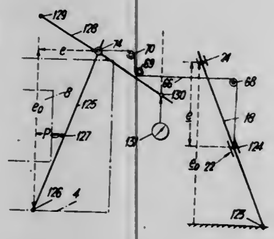
Disclosed is a dental equipment stand with a manual retraction system. The stand comprises a horizontally oriented housing having an open bottom and a slide member movable in the housing from the front to rear, the utility lines in the housing are looped about the slide for supporting the lines within the housing. Pulling on any one utility line moves the slide to the front of the housing allowing the line to sag through the open bottom. The slide is manually moved to the rear of the housing to draw the sagging portion of the lines back into the housing through the open bottom.

3,618,216
PROCESS AND APPARATUS FOR MIXING AND DISPENSING DENTAL PLASTER
Charles G. Jaeger, 1955 Bronson Drive, Minneapolis, Minn. 55432
Filed May 12, 1970, Ser. No. 36,514
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 11 Claims



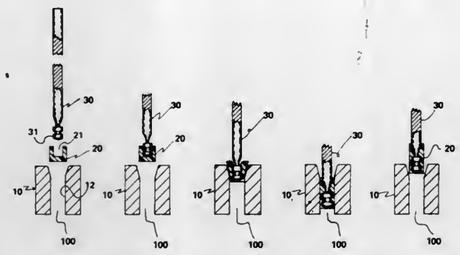
A dental plaster mixing and dispensing device consisting of a syringe formed from a tough impact plastic resistant material such as plastic having a plunger mounted for sliding movement therein, a combined mixing and valve element, e.g. a steel ball positioned in the syringe and adapted when the syringe is in an upright position to seal an outlet.

3,618,217
SCALE VARIATION CONTROLLING MECHANISMS
Edgar Hynes Thompson, 79 Park Road, London, W. 4, England
Filed Feb. 20, 1970, Ser. No. 13,017
Claims priority, application Great Britain, Feb. 28, 1969, 10,907/69
Int. Cl. B43l *13/00*; G01c *11/00*
U.S. Cl. 33—20 D 10 Claims



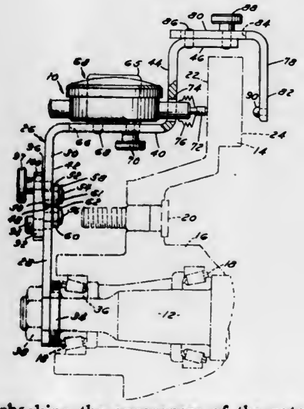
A scale variation controlling mechanism for a photogrammetric plotter for use in interpreting aerial photographs. The mechanism comprises a plotting table, a holder for a drawing member which is to draw a plan on the plotting table, first and second relatively movable tables mounted on a common carriage and which support two photographs showing a region of overlap, means connecting the relatively movable tables to the holder, a stereoscopic viewing system for viewing the region of overlap on the photographs, means for relatively adjusting the viewing system and each of the relatively movable tables independently so as to provide at least a part of a correction of any tilt of each photograph with respect to the horizontal and of any difference in the height of the two stations from which the photographs were taken.

3,618,218
PROCESS FOR MEASUREMENT OF INACCESSIBLE SMALL DIAMETER BORES
Rano J. Harris, Sr., 1945 Carolyn Sue Drive, Baton Rouge, La. 70815
Filed Oct. 21, 1969, Ser. No. 868,097
Int. Cl. G01b *3/00*
U.S. Cl. 33—174 R 11 Claims



A method for the accurate, precise and rapid measurement of relatively inaccessible openings of small internal diameter, including especially capillary size openings. In taking a measurement, a segment of thermoplastic material of cross-section somewhat larger than the diameter of the opening or bore to be measured is fitted upon a male member, is forced into and compressed within the internal opening to be measured, the thermoplastic material thereby taking the external shape and size of the opening. The thermoplastic material, while in place, is heated, preferably above its softening point, set, and then withdrawn from the said opening. Measurement ex situ of the outside diameter of the withdrawn segment of thermoplastic material, because of the retention by the latter of the size and shape of the internal opening, permits highly accurate and precise measurement of the inaccessible internal opening.

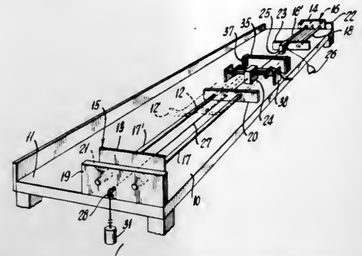
3,618,219
GAGE
James P. Kelly, Farmington, Mich., assignor to A. G. Davis Gage & Engineering Co., Hazel Park, Mich.
Filed Oct. 15, 1969, Ser. No. 866,580
Int. Cl. G01b *3/38*
U.S. Cl. 33—181 AT 12 Claims



A gage for checking the squareness of the rotor of a disc brake to the spindle axis and also for checking the parallelism of the two faces of the rotor.

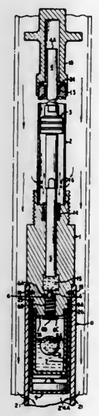
The frame which mounts the gage has a resilient portion which is made rigid while checking squareness of the rotor relative to the spindle axis, and is released while checking parallelism of the two faces of the rotor.

3,618,220
SKI-MOUNTING BENCH
Ferman G. Skelton, P.O. Box 172, Stowe, Vt. 05672
Filed Nov. 20, 1969, Ser. No. 878,307
Int. Cl. B23f *1/32*
U.S. Cl. 33—189 24 Claims



The invention contemplates ski-mounting bench or the like structure which incorporates mechanism whereby, for each ski or pair of skis placed on the device, a simple initial action responds to the probed overall length of the ski or skis to automatically determine the longitudinal center of the ski or skis. The apparatus includes means for thereafter clamping the skis with reference to the bench and to a center-identifying structure, so that all basic binding layout and mounting operations can proceed with the skis in centered array.

3,618,221
BOREHOLE SURVEY MEANS AND CORE SAMPLE ORIENTING MEANS
John Brian Robinson, Sutherland, New South Wales, Australia, assignor to Joint Coal Board, Sydney, New South Wales, Australia
Filed Jan. 14, 1969, Ser. No. 791,060
Claims priority, application Australia, Jan. 19, 1968, 32,455/68
Int. Cl. E21b *47/02*
U.S. Cl. 33—205.4 11 Claims

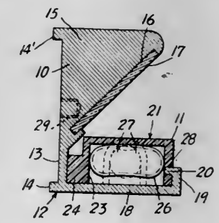


Means are provided for determining the horizontal direction (azimuth) and angle from the vertical (inclination) of a borehole at or near its bottom. To do this a tube of gellable liquid and a reservoir of a second liquid which can initiate gelling of the first liquid are assembled and lowered with the drill string. The liquids are separated by a valve and a magnetic float floats in the first liquid. The valve is opened, when required, by varying the pressure on the drilling liquid and the first and second liquids are allowed to mix. Gelling occurs and the magnetic float is "frozen" in the gel.

Examination of the float and meniscus later enable the inclination and azimuth of the hole to be determined.

By using appropriate datum marks on the various components, the core strata can be orientated.

3,618,222
DUAL SPIRIT LEVEL UNITS WITH SIMULTANEOUS VISION
Seymour A. Ostrager, Bronx, N.Y., assignor to Miracle Instrument Co., New York, N.Y.
Continuation of application Ser. No. 670,943, Sept. 27, 1967. This application Dec. 10, 1969, Ser. No. 880,493
Int. Cl. G01c *9/24*
U.S. Cl. 33—211 2 Claims

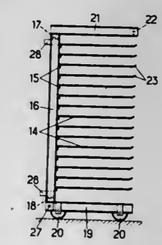


A spirit level unit in the form of an assemblage, comprising a body part supporting a spirit casing, having two spirits arranged at right angles to each other and the body part supporting a mirror for simultaneous reading of both spirits of said casing.

3,618,223
PROCESS FOR PATENTING HOT-ROLLED STEEL WIRE IN A FLUIDIZED BED
Hans Geipel and Eckehard Förster, Oberhausen, and Wilfried Heinemann, Dinslaken, Germany, assignors to Huttenwerk Oberhausen AG, Oberhausen, Germany
No Drawing. Filed July 17, 1970, Ser. No. 55,991
Claims priority, application Germany, July 25, 1969, P 19 37 918.1
Int. Cl. F26b *5/00*; F27d *9/00*
U.S. Cl. 34—9 5 Claims

A fluidized bed used in the patenting of steel wire and comprising a unidirectional flow of gas entraining a mass of zirconium-silicate particles of substantially spherical shape and 0.1 mm. mean diameter in an elongated conduit is driven with a power density of 700 to 4000 m·kp./sec. per square meter of conduit cross-section.

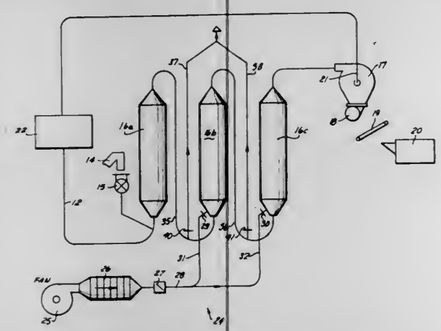
3,618,224
PROCESS AND APPARATUS FOR PRODUCING DRIED FRUITS
François Duc, "La Sabatiere," 24 Bergerag, France
Filed June 30, 1970, Ser. No. 51,262
Claims priority, application France, Nov. 4, 1969, 6937910; Apr. 30, 1970, 7015861
Int. Cl. F26b *19/00*
U.S. Cl. 34—12 6 Claims



The invention relates to improvements in the techniques for drying fresh fruits. A unitary multiple tray

structure is provided as well as a corresponding unitary multiple baffle structure. The two are designed to intermesh whereby the baffles close off various boundaries of the respective trays and the assembled pair of structures is then tiltable to a position whereby the trays assume a vertical position to have fruit dropped thereinto with the baffles serving to guide the fruit and to maintain it in a single layer relative to each tray.

3,618,225
APPARATUS FOR AIR DRYING TOBACCO
Francis J. Ballard, Jr., Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed June 15, 1970, Ser. No. 46,294
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 A **10 Claims**



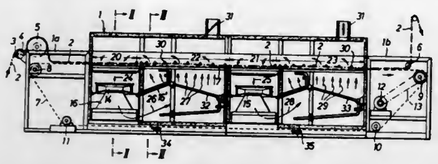
A closed system is provided for drying tobacco by heated circulating air. The tobacco is initially introduced into the system in the path of the heated air. A plurality of heating chambers are in the system through which the air-conveyed tobacco is dried. When the tobacco has reached the desired degree of drying, it is removed from the system beyond the heating chambers. The system also provides for the recirculation and reconditioning of the air in order that it is at the desired temperature and moisture content at the point of introduction of the tobacco. The heated air supply at the location of the heating chambers is supplemented in order to increase the drying efficiency and the tobacco through-put of the system. The supplemental heated air supply includes a bleed for air between chambers which is thereafter replenished by the supplemental heated air system. In this manner, the temperature of the air is increased at this location in the system between chambers.

ERRATUM

For Class 34—68 see:
Patent No. 3,618,230

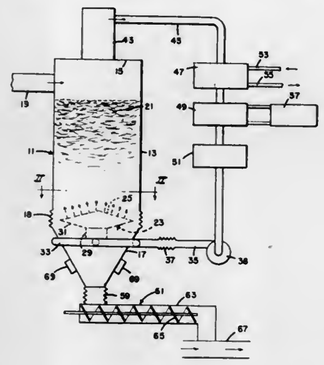
3,618,226
APPARATUS FOR CONTINUOUSLY DRYING WEB MATERIAL, ESPECIALLY TEXTILE MATERIAL
Rolf Goldenberg, Erich Hilgeroth, and Alfons Schrader, Remscheid-Lennep, Germany, assignors to Maschinenfabrik Friedrich Haas & Co., Remscheid-Lennep, Germany
Filed Oct. 24, 1969, Ser. No. 869,163
Int. Cl. F26b *13/12*
U.S. Cl. 34—156 **17 Claims**

Apparatus for continuously drying web material, especially textile material, in which the material is fed onto an elongated air-permeable conveyor moving in longitudinal direction and in which at least at one longitudinal portion of the conveyor air is passed in downward direction through the conveyor and the web superimposed thereon so that the web will adhere to the conveyor to be transported thereby in longitudinal direction, in which at least in another longitudinal portion of the conveyor



adjacent to the one portion air is passed in upward direction through the conveyor and the superimposed web so that the latter is lifted from the conveyor, and in which means are provided above the other portion of the conveyor for limiting movement of the web away from the conveyor.

3,618,227
PARTICLE DRYING APPARATUS
James Harry Breakell, Swarthmore, and Edwin L. Nicholson, Springfield, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed Mar. 26, 1970, Ser. No. 22,950
Int. Cl. F26b *3/16*
U.S. Cl. 34—164 **6 Claims**

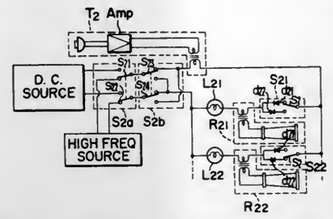


Apparatus for continuous drying of particles as they move through a tank by gravity and counter-current to a flow of heated, dry gas delivered under pressure through a distributor positioned within the tank, in spaced relationship with the walls thereof. The distributor has a conical, perforated top wall which facilitates the free flow of particles relative thereto and distributes the heated, dray gas as a plurality of diverging streams. Means are provided for vibrating the lowermost end of the tank, including the gas distributor, to minimize bridging of particles between the tank and the gas distributor.

3,618,228
QUESTIONEE'S RESPONSE DETECTION AND COMMUNICATION
Masami Koizumi, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 19, 1969, Ser. No. 851,329
Claims priority, application Japan, Aug. 24, 1968, 43/60,802
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 R **3 Claims**

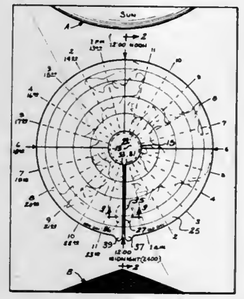
A questionee's response detection and communication system wherein a device for displaying and/or recording

the response of each of the questionees is electrically connected to a questionee's response selection switch consisting of a pair of rectifier elements connected in back-to-back relation and a selection switch for selecting either of said rectifier elements and to a polarity change-over



switch which is adapted to be selectively connected to a DC source and to change over the polarity thereof. AC may be selectively passed through a circuit in which a transmitter on the side of said polarity change-over switch is electrically coupled to a receiver provided for each of said questionee's response selection switches.

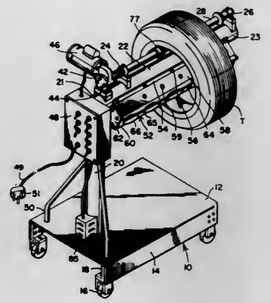
3,618,229
DEVICE FOR TEACHING GEOGRAPHY, TIMES AND DATES
Melvin J. Frost, 253 N. Fraser Drive, Mesa, Ariz. 85201
Filed June 30, 1969, Ser. No. 837,554
Int. Cl. G09b *29/00*
U.S. Cl. 35—44 **8 Claims**



A base member of plane or spherical surface and bearing time indicia has axed thereto but spaced therefrom a sheet or hollow spherical element of translucent flexible material slitted so that a rotatable cartographic member of similar form can be moved continuously in one rotational direction outside of or interleaved between the transparent member and the base member. A hub element for the flexible transparent member which is anchored to the base member provides circumferential tracks for the rotatable cartographic member both outside and inside the transparent member so that the cartographic member can be rotated selectively in the inner or outer position with respect to the transparent member, the transparent member being flexible and slotted but not rotatable.

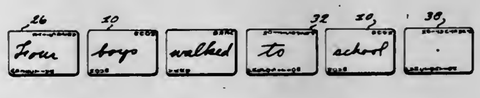
3,618,230
TIRE DRYING AND CONDITIONING MACHINE
Phillip M. Wilson, Hartford, Ill. (133 Whitelaw Ave., Wood River, Ill. 62095)
Filed Aug. 21, 1970, Ser. No. 65,883
Int. Cl. F26b *25/00*
U.S. Cl. 34—68 **10 Claims**

A tire drying machine has a horizontal platform on which is a vertical post carrying an axially horizontal stationary cylindrical body. A motor driven shaft is carried by the body in an elevated position and revolves tires axially mounted on the body. A housing carried by the body supports heating lamps exposed to interiors of tires



revolving with the shaft. A motor driven fan may circulate cooling air through the housing. Guide members on the shaft keep the tires from wandering axially while revolving.

3,618,231
EDUCATIONAL GAME
Helen G. Nason, 615 E. Broad St., Statesville, N.C. 28677
Filed June 3, 1970, Ser. No. 43,139
Int. Cl. G09b *19/00*
U.S. Cl. 35—35 J **13 Claims**

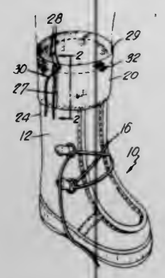


An educational sentence building game for teaching grammar with a deck of cards, each card having a plastic coated writing surface on which is displayed the name of a part of speech or the word "punctuation," and is otherwise substantially blank. A marking instrument, such as a grease pencil, and preferably a different colored marking instrument for each player, is provided for erasably marking on the writing surface of each card as it is selectively played a word that is the same part of speech as displayed thereon or a punctuation mark in the case of the cards on which the word "punctuation" is displayed. The game is played by players in turn selecting a card and writing a word or punctuation mark thereon in accordance with the part of speech or word "punctuation" displayed thereon, and playing the card in relation to previously played cards to build or complete a grammatically correct sentence.

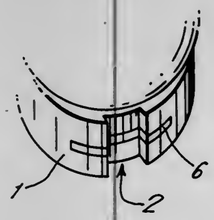
3,618,232
SLEEVED BOOT
Michael Shnuriwsky, 547 45th Ave., Ville La Salle, Quebec, Canada
Filed Apr. 24, 1970, Ser. No. 31,647
Claims priority, application Canada, Feb. 19, 1969, 75,372
Int. Cl. A43b *3/00*
U.S. Cl. 36—1.5 **11 Claims**

A boot having a relatively stiff upper terminating in a foot receiving mouth opening and a flexible tubular sleeve having one end secured about said mouth opening and

movable from a retracted position embracing the boot to an extended position above the boot and a closure preferably in the form of a drawstring on the other end of the sleeve.



3,618,233
ARRANGEMENT CONCERNING SKI BOOTS
Nils Eie, Tennisveien 6, Slemdal, Oslo 3, Norway
Filed Nov. 12, 1969, Ser. No. 875,712
Int. Cl. A43b
U.S. Cl. 36—2.5 3 Claims



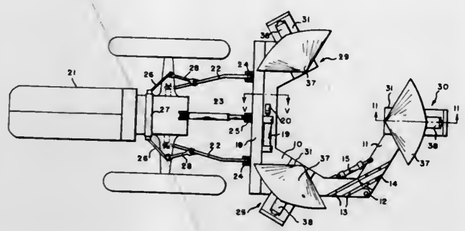
A ski boot is provided with a vertically extending groove at the rear edge of the heel, which is intended for cooperation with a fixed upstanding element on a ski, the upper free end of which fixed element is tapered so that the heel can be downwardly engaged on the element and automatically placed in correct position thereon.

ERRATUM

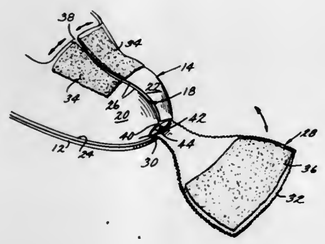
For Class 36—2.5 B see:
Patent No. 3,618,235

3,618,234
EXCAVATING AND TRANSPLANTING APPARATUS FOR TREES AND THE LIKE
Gary G. Bates, Austintown, Ohio
(9735 Harrison Road, Romulus, Mich. 48174)
Filed Mar. 4, 1969, Ser. No. 804,131
Int. Cl. A01g *23/06*
U.S. Cl. 37—2 R 5 Claims

A machine for digging and lifting trees and shrubs with a mass of earth about their root systems. In a first embodiment a generally L-shaped frame is slideably attached along one leg to a vertical frame which is in turn secured to a tractor, lift truck, or other vehicle. A pair of curved tapered blades are slideably mounted on housings secured to opposite ends of the leg of said frame which is attached to the vertical frame. A third blade is carried on a housing mounted on the free end of a horizontal subframe which is pivotally connected to the free end of the second leg of the L-shaped frame. Double-acting hydraulic cylinders are mounted within each of the housings and connected to the baldes to force the blades into and out of the ground. Grooved vertical rails are provided on the housings and guide wheels running in the grooves of the rails are provided on the blade supports. The housings may also be provided with stake driving attachments. In the second illustrated embodiment a C-shaped frame is provided and this frame is pivotally connected at one corner to a vertical subframe which is slideably mounted on a second vertical frame which in turn is attached to a tractor or other vehicle. A curved, tapered blade is slideably carried by a housing at each of the free ends of the C-shaped frame. A third blade is carried by a housing mounted at the center of the intermediate leg of the C-shaped frame. Pins moving in slots in the housings and the face of the blades guide the blades along their desired path of travel. In each embodiment the blades when forced into the ground form a cone-like confinement for the root system of the tree and, when the apparatus is lifted, the tree or shrub is lifted from the ground with its roots and with a mass of earth.

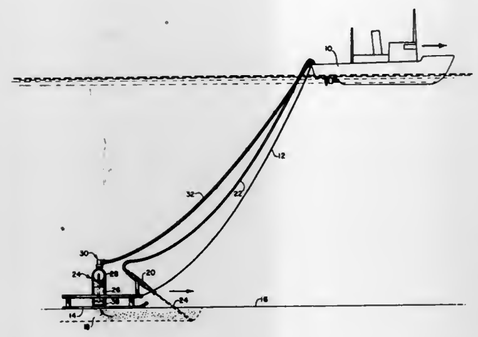


3,618,235
ADJUSTABLE FOOTWEAR
George R. Cary, Jr., 1411 Elconore St., New Orleans, La. 70115
Filed Jan. 19, 1970, Ser. No. 4,077
Int. Cl. A43b *23/26*
U.S. Cl. 36—2.5 B 11 Claims



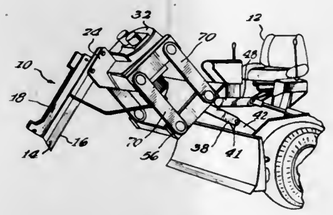
An orthopedic shoe, or other footwear, is provided with a toe covering which includes sections that are laterally adjustable and easily fixed in any given position of adjustment. The toe covering is split along a mid-line of the shoe to form two lateral sections that can be adjusted towards and away from the shoe mid-line; and a tongue-like element is secured to a forward part of the shoe to overlap the two lateral covering sections and to maintain the sections in desired adjusted positions. Infinite adjustment is available by the use of Velcro fastening surfaces (see U.S. Pat. 2,717,437) placed on the top of the covering sections and on the underside of the tongue-like element which overlaps the sections to maintain an adjustment.

3,618,236
APPARATUS FOR DIGGING AN UNDERWATER TRENCH
James D. Pipkin, 1700 Destrehan Ave., Harvey, La. 70058
Filed May 19, 1969, Ser. No. 827,481
Int. Cl. E02f *3/88*
U.S. Cl. 37—63 5 Claims



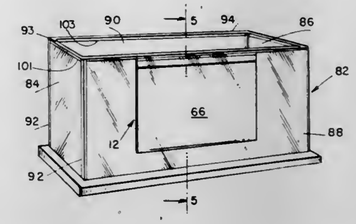
The combination of a towing ship and a towed underwater trench digging apparatus, and a suction and discharge mechanism mounted on said towed digging apparatus for sucking up and discharging the debris of digging to one side of a trench as it is dug, and the method of removal of digging debris in underwater trench digging with approximately little or no discharge conduit for any depth of water.

3,618,237
UNDERGROUND CABLE LAYING IMPLEMENT
Charles J. Davis, Wichita, Kans., assignor to J. I. Case Company
Filed Nov. 3, 1969, Ser. No. 873,152
Int. Cl. E02f *5/02*; F16l *1/00*
U.S. Cl. 37—98 4 Claims



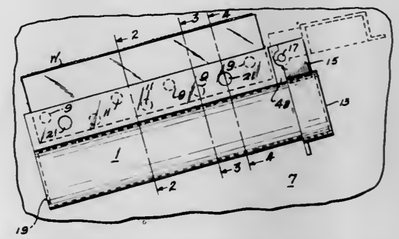
A vehicle supported implement which has an elongated, thin, flat blade fixed to an oscillating mechanism carried by a support. The blade is rapidly reciprocated to form a deep, narrow, continuous slit and supports a cable guide to simultaneously lay a continuous length of cable along the bottom of the slit. The support is isolated from a frame on the vehicle by torque cushioning elements each including an elastic member bonded to an inner member which is connected to each end of links extending between the frame and the support. Each elastic member is fixedly secured to either the frame or the support so that the elastic members absorb the reciprocal movement of the support and substantially isolate the frame from the support.

3,618,238
AQUARIUM TANK DISPLAY HOLDER
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Hawthorne, Calif.
Filed Aug. 19, 1969, Ser. No. 851,380
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R 7 Claims



An aquarium tank having a pair of parallel opposing transparent end walls and a pair of parallel opssing transparent side walls, and a bottom wall, in combination with a wrapper adapted to be removably mountable to the inside surface of one of the walls and being visible therethrough, said wrapper formed of a blank foldable to define an open envelope having opposing front and rear sides joined by interconnecting end flaps contiguous with and defined from said front side, a stripe of adhesive provided on the face of said front side to removably mount the wrapper to an aquarium wall.

3,618,239
RAILWAY CAR DEFECT CARD HOLDER
James J. Hennessy, Jr., Chambersburg, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.
Filed Nov. 24, 1969, Ser. No. 879,083
Int. Cl. G09f *3/18*
U.S. Cl. 40—19 4 Claims

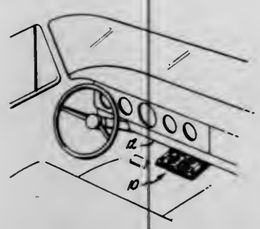


A defect card holder for application to a railway car comprising a hollow body of plastic material and having a substantially flat wall, there being a mounting plate embedded in and secured to the body flat wall and projecting far enough beyond it to lie flat against the surface of a car wall for welding the plate to the car wall without injuriously heating the plastic body.

3,618,240
ROUTE MAP AND FEATURE DISPLAY DEVICE FOR MOVING VEHICLES
Charles Pelin, Box 75, Eastsound, Wash. 98245
Filed Sept. 5, 1967, Ser. No. 665,349
Int. Cl. G09f *11/24*
U.S. Cl. 40—42 5 Claims

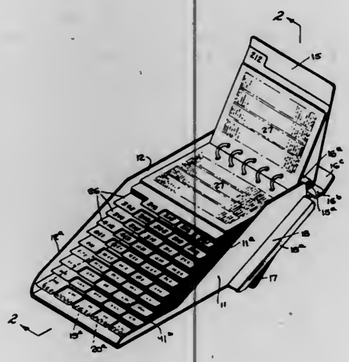
A route map and feature display device for use in a moving vehicle, including an information strip carrying information the distance scale of which changes along its length, feed and take-up means for holding the strip,

means for displaying information exposed on the strip between the feed and take-up means, and drive means for advancing the strip progressively as a function of distance traveled. The drive means which varies the strip



drive speed as a function of vehicle speed includes means responsive to the strip scale changes to change the drive ratio accordingly. An elongated flexible drive cable permits moving the display unit into different viewing positions when in use.

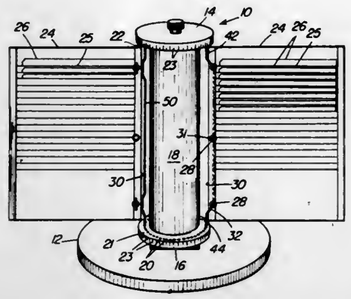
3,618,241
MULTIPLE RING LOOSELEAF BINDER
Wald Doty, Haddonfield, N.J., and George F. Drewel, Springfield, Pa., assignors to Buchan Loose Leaf Records Company, Clifton Heights, Pa.
Filed Feb. 20, 1969, Ser. No. 801,013
Int. Cl. B42f *13/20*
U.S. Cl. 40—104.14 **6 Claims**



A console-mounted looseleaf ring binder assembly having a plurality of horizontally arranged binders disposed in evenly spaced parallel rows in a case with each binder located at individual ones of a like plurality of separate stepped-back positions or levels in such manner that their looseleaf sheets extend therefrom in substantially flat horizontal disposition.

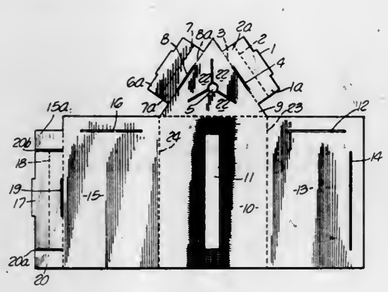
3,618,242
DOCUMENTARY DISPLAY UNIT AND MOUNTS USED THEREWITH
Henry V. Ivory, Chatham, N.J., assignor to Boorum & Pease Company, Brooklyn, N.Y.
Filed Jan. 23, 1970, Ser. No. 5,220
Int. Cl. G09f *11/06*
U.S. Cl. 40—104.18 **7 Claims**

There is disclosed a document display and storage unit and a hinge rod for pivotally mounting a document thereon. The unit includes a pair of spaced support members having corresponding holes to receive the hinge rods bearing the documents. The hinge rods have means for passing through and securing the documents such that the documents are coplanar with the hinge rods and the inner



edge of the documents do not extend inwardly beyond the document's pivot axis, thus permitting compact mounting of the documents on the units with freedom to rotate the documents for access to both sides thereof.

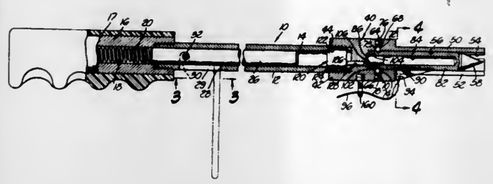
3,618,243
ORNAMENTAL LIGHT COVERING
Robert L. Bauder, 11664A Chandler, North Hollywood, Calif. 91601
Filed Apr. 22, 1968, Ser. No. 723,151
Int. Cl. G09f *13/04*
U.S. Cl. 40—131 R **1 Claim**



An ornamental light cover used in conjunction with Christmas light strings formed from a cardboard blank which is folded and interlocked into a triangular configuration and then placed over each light on the string. Each cover comprising a printed front surface bearing a letter or symbol and used to spell out a greeting or other messages as desired by the user. The front is darkly printed and the symbol remains blank so that the light will shine through.

3,618,244
METHOD FOR FIRING PROJECTILES UNDERWATER
Allan S. Johnson, 845 W. 16th St., Costa Mesa, Calif. 92627
Continuation-in-part of application Ser. No. 700,816, Jan. 26, 1968. This application Feb. 10, 1969, Ser. No. 798,061
Int. Cl. F41c *27/00*; **F41f** *1/00*
U.S. Cl. 42—1 L **7 Claims**

A unique and improved method and apparatus for firing or launching projectile underwater. The method utilizes a weapon or gun in which standard blank cartridges are used for firing or discharging the projectile. The method includes the step of fitting a water tight sleeve onto the blank cartridge, enclosing a body of air; loading the projectile such as a spear into the weapon from the muzzle end; and loading the cartridge with the water tight sleeve into a bore behind the projectile. The invention is particularly adapted for spear guns for underwater use using blank cartridges. The sleeve referred to enclosing



air, excludes water allowing underwater loading and provides for sufficient power that desired launching velocity and accuracy of the spear are realized. The apparatus is improved in that a breech member is provided to receive the cartridge which is eccentrically pivoted to the receiver with the pivot axis about the bore in the breech so that the breech member is rotated upwardly for loading thereby facilitating practice of the method underwater.

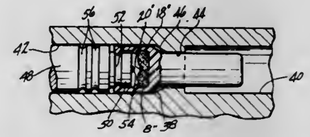
3,618,245
DEVICE FOR BALANCING GUNS
Gene M. Pruonto, 124 E. 1st Ave., Altoona, Pa. 16602
Filed Mar. 3, 1969, Ser. No. 803,566
Int. Cl. F41c *21/00, 23/00*
U.S. Cl. 42—1 R **7 Claims**



The invention relates to the problem of balancing guns, particularly shotguns so that a person owning several guns can give them all the same weight and balance them to give the same feel for all guns. The structure of the invention is such that a balancing weight can be applied to any gauge of shotgun whether it be single barrel, double barrel, or the so-called over-under type. The weight devices of the invention cen be adjustably secured anywhere along the length of the gun barrel, or barrels and/or in the bore of the gun stock in order to provide a balance point for any gun which will be the same balance point for all other shotguns in a shooter's collection. The invention is particularly important for trap and skeet shooting where it has been found that switching from one gun to another, where the guns have different balance points, affects the aim and skill of the shooter in a deleterious manner.

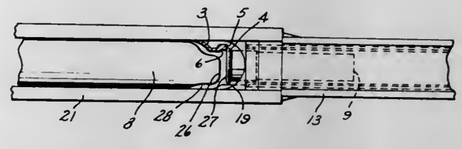
3,618,246
FIRING CHAMBER FOR CASELESS CARTRIDGE
William B. Woodring, Stony Creek, Conn., assignor to Olin Corporation
Original application May 7, 1968, Ser. No. 727,164. Divided and this application Feb. 4, 1970, Ser. No. 8,637
Int. Cl. F41c *11/00, 15/00*; **F42b** *7/06*
U.S. Cl. 42—16 **1 Claim**

A cased cartridge for firearms in which the cartridge casing is expelled through the muzzle along with the projectile or projectiles to provide the advantages of caseless ammunition in a cased round. A system for chambering such a cased cartridge is disclosed, which system includes a bolt assembly having a nose portion of reduced diameter. The cartridge case is formed from resilient plastic material and includes a rearwardly open pocket containing a propellant charge and a primer. The pro-



pellant pocket includes an annular skirt projecting beyond the propellant charge into which skirt projects the bolt assembly nose. The bolt assembly nose interlockingly engages the skirt to permit extraction of an unfired round, but does not hinder expulsion of the casing through the muzzle if the round is fired. Cooperating shoulders are formed on the firing chamber and casing to position the cartridge for firing.

3,618,247
"SHORT THUMBING" TWO-STEP ABUTMENT FOR FEED LATCHES
Adolph L. Nelson, Detroit, Mich., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Sept. 4, 1969, Ser. No. 855,317
Int. Cl. F41c *25/00, 25/08*
U.S. Cl. 42—17 R **3 Claims**

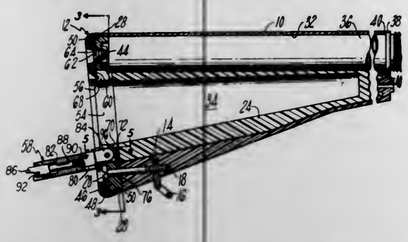


A novel feed latch for use in firearms. Two abutments are provided on the latch bar instead of the usual single abutment. The object is the elimination of a jamming condition caused by "short thumbing" a shotshell into the magazine tube. "Short thumbing" generally describes the careless or inadvertent error of improperly loading a magazine tube so the shell fails to engage with the feed latch abutment. This allows the shotshell to "float free" in the receiver, and very often jam between the shell carrier and the breech block carrier. The present invention contemplates placing a second step on the feed latch which will engage a "short thumbed" shotshell that had never engaged the first abutment. The two-step latch can be adapted to a variety of feed systems due to its overall universality and particularly because it will not interfere with or directly influence the feeding operation of the firearm.

3,618,248
BUTTSTOCK ASSEMBLY WITH A LATCHABLE DOOR FOR A COMPARTMENT FORMED THEREIN
Henry A. Into, Rocky Hill, Conn., and John K. Jorczak, Springfield, Mass., assignors to Colt's Inc., Hartford, Conn.
Filed June 13, 1969, Ser. No. 833,000
Int. Cl. F41c *23/00*
U.S. Cl. 42—71 R **8 Claims**

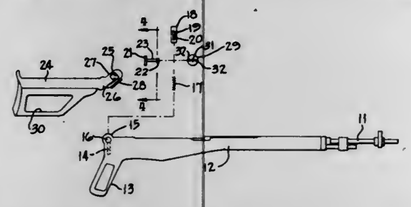
A buttstock assembly is provided with a stowage compartment in the buttstock and a removable butt plate hav-

ing a latchable door providing access to the compartment. The butt plate is a composite member having a resilient



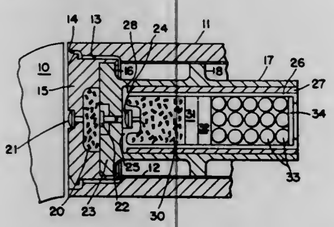
butt surface and a metal latch keeper embedded within its interior for cooperating with a slidable cartridge-operated latch detent on the door.

3,618,249
PIVOTALLY MOUNTED STOCK FOR FIREARMS
Andrew J. Grandy, North Hills, Pa., assignor to the United States of America as represented by the Secretary of the Army
Filed Aug. 1, 1969, Ser. No. 846,769
Int. Cl. F41c *23/00*
U.S. Cl. 42—73 **2 Claims**



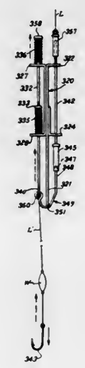
A lightweight low recoil rifle having a stock member pivotally mounted on ear portions of a recessed pistol grip member containing means for locking the stock as a longitudinal rearward extension of a barrel supporting forepart and another folded position 180° therefrom with the stock extending forwardly along the barrel in which a recessed handle portion of the stock is in a readily accessible location substantially overlying the firearm center of gravity.

3,618,250
LAUNCHING ARRANGEMENT FOR SUB-CALIBER PROJECTILES
Andrew J. Grandy, North Hills, Pa., assignor to the United States of America as represented by the Secretary of the Army
Filed Aug. 15, 1969, Ser. No. 850,462
Int. Cl. F41c *21/10*; F42b *5/14*
U.S. Cl. 42—77 **2 Claims**



Arrangement for launching sub-caliber cartridges from existing weapons while maintaining the weapon capable of its normal use. A sub-caliber cartridge is positioned within a traveling barrel from which it is separated subsequent to joint initial travel through a portion of a launching tube. Separate propellant charges are provided to obtain an initial launching pressure and a subsequent separation pressure within the launch tube.

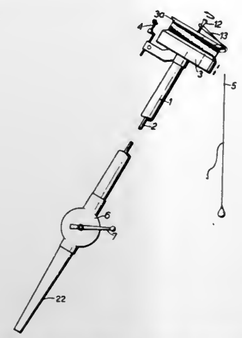
3,618,251
FISH CATCHING INSTRUMENTALITY
Vincent B. Hodshire, 2701 NE. Adams St., Peoria, Ill. 61603
Filed Nov. 13, 1969, Ser. No. 876,330
Int. Cl. A01k *83/00*
U.S. Cl. 43—15 **13 Claims**



A fish catching instrumentality including a novel releasable retaining mechanism for releasing a movable fish engaging member in response to a fish biting bait on a fishhook including a frame and a trigger member that releasably engages a free-floating lever fulcrumed on the frame surface and loosely pivotally connected at an end to the fish engaging member. In one form of the invention, the fish engaging member is a spear and the fishhook is secured on the trigger member, so that when a fish bites, the free-floating lever is disengaged from the trigger member and resilient means drives the spear into the fish. In another form, the fishhook is associated with the fish engaging member and when the fish bites, the free-floating lever is disengaged from the trigger member, and resilient means biases the fish engaging member upwardly to sink the fishhook into the fish. A third form includes a free-floating lever loosely pivotally engaged at one end to the fish engaging member, with the other end engageable with a detent on the frame and releasable therefrom upon movement of the trigger member.

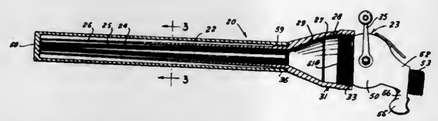
3,618,252
FISHING RODS
Benjamin Bocking, South Lowestoft, and Roy Gerald Catchpole, Lowestoft, England, assignors to Ness Point-Investments Limited, Lowestoft, England
Filed Aug. 21, 1969, Ser. No. 851,913
Claims priority, application Great Britain, Aug. 21, 1968, 40,058/68
Int. Cl. A01k *89/00*
U.S. Cl. 43—20 **7 Claims**

The invention relates to a fishing rod and reel which comprises a rod and spool, the spool being disposed on the end of the rod remote from the handle of the rod, the spool being coaxial with the longitudinal axis of the rod and mounted for rotation relative to the rod by winding gear located at the handle of the rod, there being a



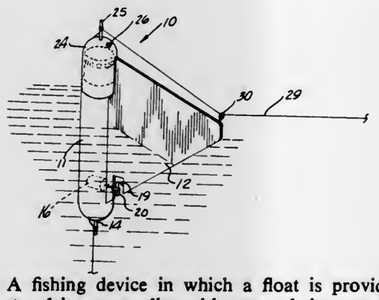
line guide on the rod adjacent a line-carrying cavity of the spool.

3,618,253
FISHING APPARATUS
Marshall R. Edwards, P.O. Box 42, Gonzales, La. 70737, and David M. Edwards, P.O. Box 825, Willis, Tex. 77378
Filed Mar. 2, 1970, Ser. No. 15,598
Int. Cl. A01k *87/04, 87/06, 97/08*
U.S. Cl. 43—26 **24 Claims**



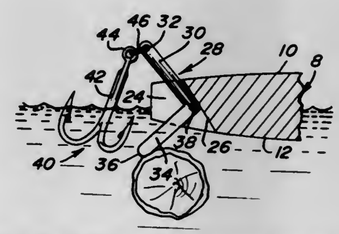
A collapsible fishing rod comprising telescoping tapered tubular sections through which a fishing line passes from a reel mounted in substantial alignment with the passageway through the rod. For storage the hollow handle of the fishing rod is removed and placed over the collapsed telescoped rod sections and made fast. In one embodiment, the rod is provided with reel seat means variably offset from the axis of the rod in order that various types of reels may be secured thereon in substantial alignment with the opening through the tubular rod.

3,618,254
FISHING DEVICE
Bruce Myers, 2400 Magnolia, South Daytona, Fla. 32021
Filed May 1, 1970, Ser. No. 33,658
Int. Cl. A01k *97/00*
U.S. Cl. 43—26.1 **5 Claims**



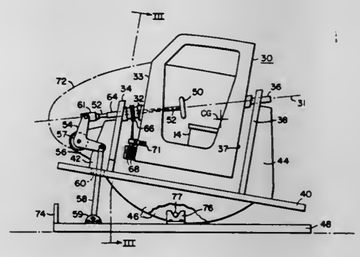
A fishing device in which a float is provided with a motor-driven propeller with power being supplied to the propeller by solar cells. A sail is secured to the fishing device to provide steerability and for offsetting the wind effect on the device. The fishing device supports a fish line with hooks, lures and the like and maintains the line at the desired fishing location.

3,618,255
FISHING PLUG
Millard H. Granger, Sr., 74 Post St., Newport News, Va. 23601
Filed Mar. 3, 1970, Ser. No. 15,976
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.42 **9 Claims**



A buoyant plug having a line attaching eye at its forward or leading end and having its rearward or trailing end bifurcated. The bifurcated end provides a pair of furcations and an intervening vertical kerf or notch which opens through the dorsal and ventral surfaces, respectively, and has an oblique angled stop shoulder. The furcations serve to mount a bellcrank whose upper arm has its rear end pivotally linked to the shank of a treble hook. The rounded terminal end of the lower arm provides a cam, which serves as a trigger when contacting obstructions and trips the upper arm and hook, whereby the then suspended hook can clear the obstructions and thereafter return to its normal position.

3,618,256
TOY AIRCRAFT DEVICE
Frank E. Monks, 1503 Broadview Drive, Bettendorf, Iowa 52722
Filed July 10, 1970, Ser. No. 53,744
Int. Cl. A63h *3/52*
U.S. Cl. 46—15 **5 Claims**



A toy device for simulating the attitudes of a vehicle in flight. The device comprises a cockpit structure for accommodating at least one child, the device employing a base structure having a curved bottom surface which permits the child to position the cockpit in any attitude of elevation (i.e., level flight, ascent or descent) within the limits of the curved bottom surface. A second embodiment of the invention further includes means for suspending the cockpit in a manner to permit rotation

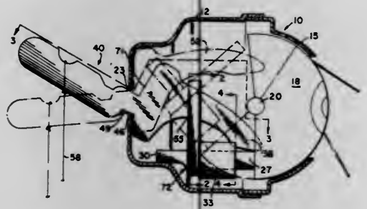
thereof about a longitudinal axis of the cockpit that is inclined from the front to the rear of the cockpit. The curved base structure and the rotation about the inclined axis permits the cockpit to assume the three basic attitudes of a vehicle in flight, namely, elevating, turning and banking.

3,618,257

MANUALLY AND AUTOMATICALLY OPERABLE SLEEPING DOLL EYE UNIT, PARTICULARLY FOR PUPPETS

William Leibowitz, Flushing, and Frank De Lise, Staten Island, N.Y., assignors to Dollac Company, Division of Jacoby-Bender, Inc., Woodside, N.Y.

Filed Dec. 21, 1967, Ser. No. 692,504
Int. Cl. A63h *3/40*
U.S. Cl. 46—169 A **10 Claims**



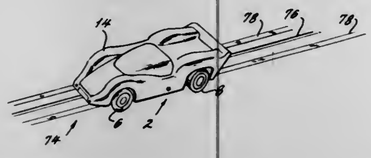
This invention relates to eyes for toys and particularly to an eye for use with puppets, which can open and close automatically in the usual manner or be actuated manually. Such an eye is particularly advantageous for use with puppets. A particular constructional feature is the provision of a lever carried by the rear shell of a conventional eye unit of the sleeping type which coacts with a bracket carried by the eyeball. The lever is manually actuatable as by a string or rod for rotating the eyeball to closed position and has a lost motion connection with the bracket so that the eyeball may be weight actuated in the usual manner for automatic opening and closing.

3,618,258

SLOT CAR HAVING IMPROVED FRAME AND ELECTRICAL PICK-UP

Charles William Clark, 1238 Watts, University City, Mo. 63130

Filed Jan. 15, 1970, Ser. No. 2,984
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 **21 Claims**



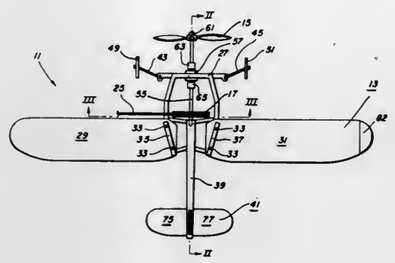
A slot car having a frame comprised of two side rails traversed at their ends by tubular journals which receive front and rear wheel axles. The rear axle carries a spur gear which meshes with a pinion gear or the drive shaft of a motor. The motor is nestled between the side rails such that its drive shaft is oblique to the rear axle. A guide arm hinges to the frame about a transverse hinge pin, and at its forward end is provided with a pin which engages the slot in the track on which the car runs. The guide arm further carries a dielectric cross bar at its forward end and the cross bar has a pair of contactors which engage electrified rails in the track. The contactors may be blades, U-shaped shoes, or metallic bristles. The body of the car is mounted to permit flexure of the frame.

3,618,259

REMOTELY POWERED FLYING DEVICE

Voorhis F. Wigal, 909 Highland, Jackson, Tenn. 38301

Filed Nov. 9, 1970, Ser. No. 87,974
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 **15 Claims**



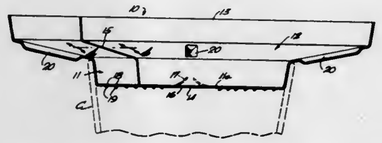
A toy airplane that develops lift as it propels itself in a forward direction so as to become airborne. The airplane or air frame is remotely powered through an endless belt reaching from a motor positioned on the ground to the air frame. The ground based motor rotatably drives a large diameter pulley which is coupled to a smaller diameter pulley on board the air frame. The small diameter pulley rotatably drives a propeller through a journaled shaft. The rotating propeller develops sufficient thrust to move the air frame in a forward direction. The endless belt, being extremely small in cross section, e.g., cotton sewing machine thread or monofilament fishing line or the like, is kept taut by centrifugal force acting thereon as the air frame tends to fly a straight course but is restrained by the endless belt to follow a circular path. The device includes structure for remotely varying the speed of the propeller so that the air frame may be remotely maneuvered and controlled in flight. The maneuvers including, but not limited to, landings and takeoffs.

3,618,260

WEED-INHIBITING AND WATERING ATTACHMENT DEVICE FOR POTTED PLANTS

Robert T. Convey, Jr., 1030 Andora Ave., Coral Gables, Fla. 33146

Filed Apr. 2, 1970, Ser. No. 25,049
Int. Cl. A01g *9/02*
U.S. Cl. 47—32 **10 Claims**



A substantially rigid, thin, plate-like device having a central opening for passage of a plant stem and having a short frusto-conical center portion adapted to be friction-fitted within the upper end of the pot for attaching the device in place, is described. The bottom of the frusto-conical portion, in addition to the central plant stem open-

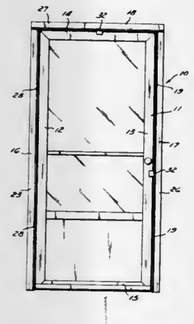
ing, is provided with a plurality of sidewardly-extending openings permitting the flow of water therethrough while at the same time minimizing the possibility of weed growth. The frusto-conical center portion merges into a peripheral extension portion operative to collect rain and or sprinkler water for moistening the pot soil.

3,618,261

PRE-HUNG DOOR ASSEMBLY

Richard L. Torbett, Gnadenhutten, Ohio, assignor to Harvard Industries, Inc.

Filed May 27, 1970, Ser. No. 41,037
Int. Cl. E06b *3/32*
U.S. Cl. 49—380 **6 Claims**



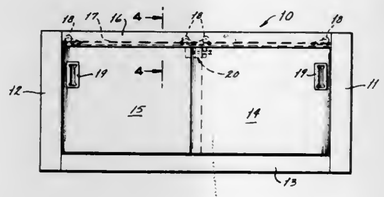
A preassembled door having an outer frame which consists of a top Z-bar or header and side Z-bars and having a door hinged to one of the side Z-bars. The other side Z-bar is connected to the door by severable fastening members and is spaced from the door by removable spacer members. The side Z-bars are fixed at their upper ends to the header by tabs which project downwardly from the header and by strips of pressure-sensitive tape which extend around the intersection of the outside surfaces of the portions of the top Z-bar and the side Z-bars which form lintel and jamb surfaces for the door.

3,618,262

BY-PASSING DOOR CLOSER

Albert P. Tuhro, St. Louis, Mo., assignor to Southern Equipment Company, St. Louis, Mo.

Filed Mar. 13, 1970, Ser. No. 19,291
Int. Cl. E05d *15/06*
U.S. Cl. 49—404 **3 Claims**



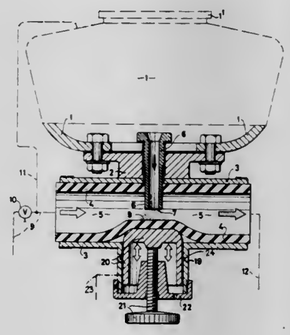
Door closing means for by-passing doors on cabinets, closets, storage chests and the like in which at least a pair of doors movable in by-passing relation are resiliently urged into closed positions by a common closing device which operates to allow either door to be moved to open position.

3,618,263

SANDBLASTING INSTALLATION

Per Torsten Weijsenburg, Solna, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 28, 1969, Ser. No. 794,522
Int. Cl. B24c *3/04*
U.S. Cl. 51—8 **8 Claims**



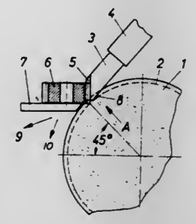
A sand and air mixing chamber in a sandblasting installation has a sand feed tube extending thereinto from above and a bottom portion, which is vertically adjustable towards and away from the lower outlet end of said feed tube.

3,618,264

BURRING DEVICE FOR TOOTHED WORKPIECES

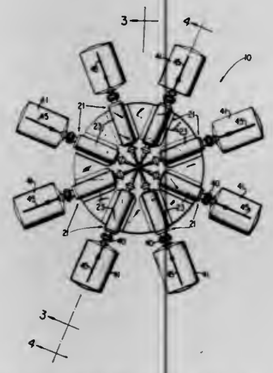
Günter Holl, Kemptener-Strasse 29, Lindau (Bodensee), Germany

Filed Dec. 3, 1968, Ser. No. 780,772
Claims priority, application Germany, Feb. 19, 1968, P 16 52 799.4
Int. Cl. B23f *19/12*
U.S. Cl. 51—95 GH **3 Claims**



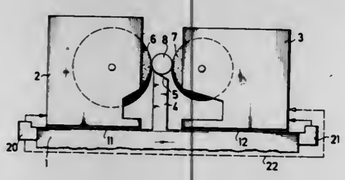
This invention relates to a burring device for toothed workpieces, such as gear wheels or the like, of the kind comprising a profiled rotary tool having a cutting action and the axis of which is disposed horizontally, a support table for the workpiece to be burred, and an abutment for the workpiece.

3,618,265
FINISHING MACHINE FOR METAL SURFACES
Paul B. Croop, Ilion, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Jan. 8, 1969, Ser. No. 789,894
Int. Cl. B24b *5/00*
U.S. Cl. 51—111 15 Claims



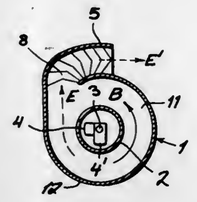
A machine for finishing the surface of a bolt body or the like wherein the bolt body is indexed axially through a plurality of positions and in each position the surface is subjected to a finishing operation to produce a finish which can be termed a "damaskeen" finish. The finishing operation is carried out by a number of abrasive rods mounted in rotating spindles with the spindles being positioned for reciprocating movement in directions radially or perpendicularly to the bolt body. A rotating drive shaft acts through cam means to reciprocate the spindles according to a predetermined pattern. The drive shaft is also connected through a drive arrangement which intermittently rotates a gear held against axial movement and threadedly engaged with an index spindle so that the index spindle which grips the bolt body is indexed axially in step-wise movements.

3,618,266
CENTERLESS CIRCULAR GRINDER
Erich Rotzoll, Hannover-Kirchrode, Germany, assignor to Herminghausen-Werke GmbH, Hannover, Germany
Filed Mar. 14, 1969, Ser. No. 807,361
Claims priority, application Germany, Mar. 14, 1968, P 16 52 066.4
Int. Cl. B24b *5/18*
U.S. Cl. 51—103 R 5 Claims



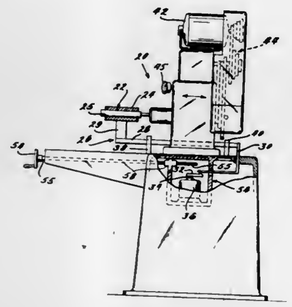
Improved centerless circular grinder assembly, control mechanism, drive, and method of operation for high output grinding in which the basic units (grinding wheel, regulating wheel and workholder) are controllably movable with relation to each other during grinding to permit high radial removals of material to smaller finished workpiece diameter.

3,618,267
TUMBLING MACHINE WITH AUTOMATIC DISCHARGE
Ernst Huber, 30 Lagernstrasse, 8037 Zurich, Switzerland, and Simon Jacot, 10 Mazzinistrasse, 2540 Grenchen, Switzerland
Filed Apr. 14, 1970, Ser. No. 29,105
Claims priority, application Switzerland, May 2, 1969, 6,865/69
Int. Cl. B24b *31/06*; B01f *11/00*
U.S. Cl. 51—163 9 Claims



A vessel with an annular treatment chamber, resiliently and nonrotatably supported on a platform, is set in wobbling motion by a reversibly rotatable, eccentrically weighted central shaft whereby a mass of mobile parts in the chamber is agitated to circulate along the circumference of the vessel in a direction conforming to the sense of shaft rotation. An outlet port, disposed tangentially in a wall of the treatment chamber, leads to a discharge duct which receives the treated parts only when the sense of rotation is in the direction of divergence of the outlet port from the treatment chamber; the discharge duct may include a screening section for the separation of larger and smaller parts, with return of either fraction to the treatment chamber.

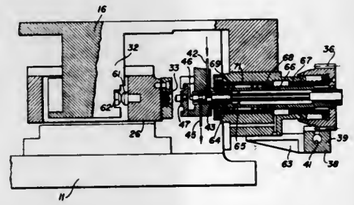
3,618,268
STROKE POSITION CONTROL MEANS
Joseph Sunnen, 400 S. Warson Road, Ladue, Mo. 63124
Filed Sept. 4, 1969, Ser. No. 855,212
Int. Cl. B24b *49/16*
U.S. Cl. 51—165 R 15 Claims



An apparatus for adjusting by shifting the position of reciprocation of a reciprocating member relative to a stationary member, such as by shifting the position of a rotating and/or reciprocating working member or of a workpiece being honed thereby to correct for inaccuracies in the surface being honed. The subject apparatus includes

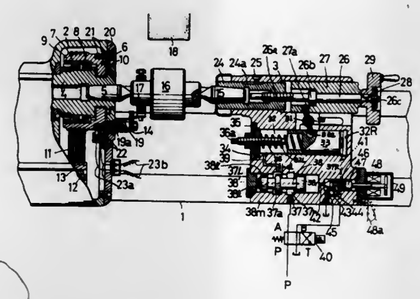
means for sensing the instantaneous load and changes therein required to to rotate the honing head and for producing therefrom control signals which are used to indicate and/or to operate means that shift or relocate the position of the stroke pattern of one member relative to the other in a direction to compensate for load variations sensed and to correct the inaccuracies that caused the load to vary.

3,618,269
GRINDING MACHINE
Edward G. Robillard, Cherry Valley, Herbert R. Uhtenwoldt, Worcester, and Paul A. Leppanen, Gardner, Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed Aug. 1, 1969, Ser. No. 846,901
Int. Cl. B24b *49/08*
U.S. Cl. 51—165.9 5 Claims



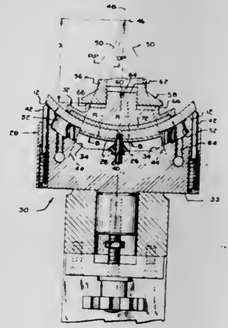
This invention relates to a grinding machine and, more particularly, to apparatus for finishing surfaces of revolution by the abrasive process, wherein the forces between the abrasive wheel and the workpiece are maintained at accurately-determined levels.

3,618,270
LATHE WITH TORQUE RESPONSIVE PRESSURE ADJUSTMENT
Tsuyoshi Kolde, Kariya-shi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan
Filed June 19, 1970, Ser. No. 47,796
Claims priority, application Japan, July 3, 1969, 44/52,973
Int. Cl. B24b *5/02*; B23b *19/02*
U.S. Cl. 51—237 8 Claims



A device for supporting a workpiece between a head stock center and a tail stock center comprises an electric gauge responsive to the cutting resistance of the workpiece, a control circuit to convert the output of the electric gauge into an electrical output, means to apply fluid pressure to the tail stock center and an electro-fluid pressure converting means responsive to the output from the control circuit to vary the fluid pressure applied to the tail stock center in accordance with the variation in the cutting resistance whereby to apply holding pressure commensurate with the cutting resistance to the workpiece by the tail stock center.

3,618,271
MULTIFOCAL LENS MANUFACTURING PROCESS AND APPARATUS
Paul Martiros, Cherry Valley, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Sept. 15, 1969, Ser. No. 857,784
Int. Cl. B24b *19/00*
U.S. Cl. 51—277 15 Claims



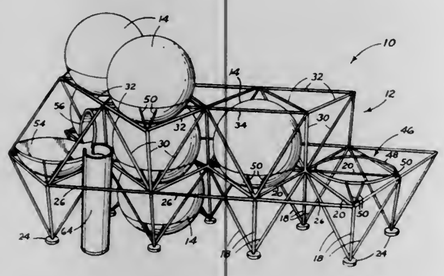
Multifocal lenses formed of one-piece molded or pressed meniscus lens blanks. An optically finished surface of a curvature desired for near-vision fields of the lenses is produced on a substantial portion of one unfinished side of each of a number of the blanks with a straight cliff-like line of division separating the optically finished and unfinished portions of said sides of the blanks. With referencing from the finished portions of the blanks, they are multiply blocked and revolved about an axis radially spaced from their finished portions a distance equal to a radius of curvature desired upon the unfinished portions less an amount equal to a practical minimum of height to which the cliff-like lines of division are to be reduced. Grinding and polishing to the minimum height of the lines of division during such revolution finishes the blanks. Blocking is performed with an aligning and holding fixture wherein the blanks are supported by their near-vision fields.

3,618,272
PROCESS FOR LAPPING HYPOID GEARSETS
Thomas J. Whalen, Detroit, and Roy L. Van Alsten, Redford Township, Wayne County, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Original application Oct. 8, 1965, Ser. No. 494,246, now Patent No. 3,462,251, dated Aug. 19, 1969. Divided and this application Sept. 19, 1968, Ser. No. 788,355
Int. Cl. B24b *1/00, 3/00*
U.S. Cl. 51—281 5 Claims

Gear teeth of automotive hypoid gear sets are lapped with an aqueous base lapping composition. The lapping composition is applied continuously while driving one

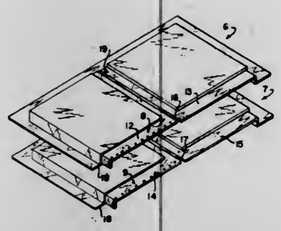
member of the gear set and braking the other member. An inexpensive and non-hazardous aqueous solution is used to remove lapping composition after the lapping operation.

3,618,273
BUILDING CONSTRUCTION
George M. Crandall, Portland, Oreg., assignor to Geonetics, Inc., Portland, Oreg.
Filed July 2, 1969, Ser. No. 838,427
Int. Cl. E04h *1/12, 9/06*
U.S. Cl. 52—79 **13 Claims**



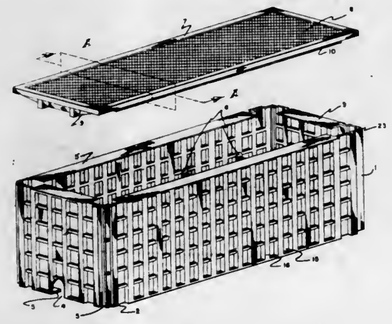
A building including elongated structural members joined to one another to form a lattice structure defining interconnected and adjoining tetrahedral frames. Modular space enclosures are supported on the lattice structure. The tetrahedral frames are disposed in multiple levels. A first series of enclosures are supported on one level of frames while a second series of enclosures are supported on a higher level of frames. The enclosures may be substantially spherical and the lower extremities of the enclosures in the second series nest between the upper extremities of the enclosures in the first series.

3,618,274
VARIABLE DIMENSION DOOR LINER PANEL
Harold E. Vickerman, Milwaukee, Wis., assignor to The General Tire & Rubber Company, Akron, Ohio
Filed Jan. 16, 1970, Ser. No. 3,325
Int. Cl. B61d *17/18*
U.S. Cl. 52—98 **4 Claims**



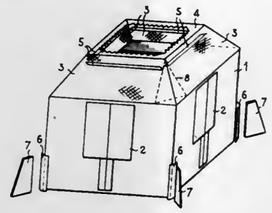
A door liner, such as would be employed on railroad refrigerator cars is formed of two half panels which are fabricated in the same mold and may be joined in a lap joint splice along a horizontal center line of the panel. The lap joint splice is provided by complementary, offset, lap joint edges, with each half panel overlapping part of the offset lap joint edge of the other. The half panels have center channels along their vertical center lines, the channels having a central offset to divide the channels into two levels. In order to vary the width of the door liner, each half panel is sawed into two quarter panels along the offset in the center channels, thus forming lap joint edges which may be overlapped and joined as with the horizontal lap joints to form the full door liner.

3,618,275
COLLAPSIBLE HOUSING FOR ELECTRICAL GOODS
Louis Ance, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.
Filed Nov. 12, 1969, Ser. No. 875,985
Int. Cl. B65d *7/12, 7/28, 7/46*
U.S. Cl. 52—169 **16 Claims**



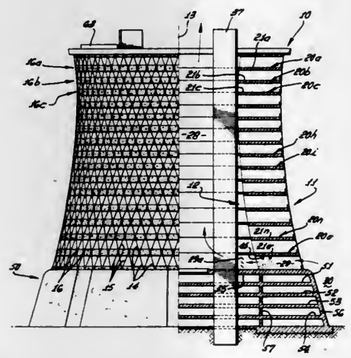
Disclosed herein is a housing, which is essentially a box adapted for containing electrical apparatus while both box and the apparatus are buried in the ground during service. The instant housing is a weather-resisting container adapted for ready assembly and disassembly by a sole workman, this knockdown feature being advantageous in that it facilitates shipment of the housing from place to place with a minimum of occupied volume. Making up the housing are two rectilinear pieces of plastic material, each having a series of slots aligned along one terminal portion thereof and a corresponding series of upstanding aligned T-shaped protuberances disposed along an opposite terminal portion, the longitudinal dimension of the uppermost portion of the T-shaped protuberances being larger than the largest dimension of the slots. Each of the pieces of plastic have a transverse groove running parallel to those terminal portions possessing the slots and T-shaped protuberances. Both of the plastic pieces are configured into a right-angle shape by bending along the transverse groove and juxtapositioned one to another wherein the T-shaped protuberances of one such piece are aligned with the slots of a second plastic piece, the sidewalls of the slots mechanically engaged in the perpendicular shank portions of the T-shaped protuberances. Additionally, there are disposed on both surfaces opposite from the first-mentioned aligned T-shaped protuberances additional T-shaped protuberances disposed at predetermined locations between those terminal portions possessing the slots and first-mentioned T-shaped protuberances. These act in concert with a plurality of U-shaped spacer bars possessing elongated apertures at terminal portions thereof by being removably engaged with the last-mentioned T-shaped protuberances. In service, a weather-proof splice case, having therein at least two insulated electrical conductors in electrical and mechanical connection, is placed on the spacer bars with the insulated electrical conductors being let out through an opening in the bottom of one of the sidewalls of the housing.

3,618,276
BALLOON-LAUNCHING STRUCTURE
René R. Vielle and René Chevallier, Courbevoie, France, assignors to Sonectro Societe d'Entreprises Generales et Electroniques
Filed May 4, 1970, Ser. No. 34,097
Claims priority, application France, May 27, 1969, 6917471
Int. Cl. E04d *13/00*
U.S. Cl. 52—173 **12 Claims**



A structure which shelters a balloon during launch preparation time and has a gate in each wall, openwork windbreaks on the roof and lateral deflectors at the corners.

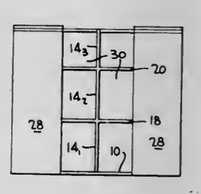
3,618,277
HYPERBOLOID BUILDINGS
Terrance J. Waters, 33560 Mulholland Highway, Malibu, Calif. 90265
Filed Oct. 10, 1969, Ser. No. 865,248
Int. Cl. E04b *1/34*
U.S. Cl. 52—175 **16 Claims**



A building comprises outer and inner frameworks having vertical axes which approximately coincide, the frameworks being spaced from one another and at least one is generally hyperboloidal; and modular means interconnects the frameworks at different elevations. No supporting columns are required, and the building is extremely stable and lends itself to extensive use of prefabricated structural elements.

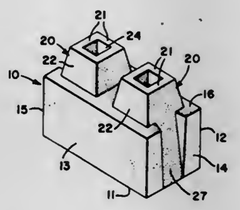
3,618,278
MULTIPLE STORY MULTIPLE UNIT BUILDING
William J. Mouton, Jr., P.O. Box 10515, New Orleans, La. 70121, and Will A. Stacy, 604 Mansfield Road, Silver Spring, Md. 20910
Filed May 8, 1970, Ser. No. 35,656
Int. Cl. E04f *11/00;* **E04h** *1/04*
U.S. Cl. 52—185 **10 Claims**

A multiple story multiple unit building in which each unit is constructed of predominantly rectangular precast semi-lightweight structural concrete panels which preferably are prestressed, of uniform thickness, and free of any openings or apertures, whereby they may readily be formed by generally accepted conventional concrete precasting practice in a continuous casting or extrusion operation and without the need for incorporating special joint constructions or connecting means in the respective panels. Each unit comprises at least several relatively parallel multi-story walls which are formed by monolithic wall panels extending continuously from end to end of the unit. Each of the upper floors is comprised by a pair of monolithic floor panels, each coextensive in width with the unit and extending between and supported on the wall panels, the two floor panels of each floor being relatively spaced apart longitudinally of the unit to provide an opening which receives a prefabricated multi-story utility capsule or core containing the various kitchen, bathroom,



heating, air conditioning, electrical and other equipment. Monolithic rigid stabilizer panels coextensive in height with the building unit, are located at either end of the unit in spaced apart relation to provide a multi-story window and doors openings, and are fixedly connected to the respective wall panels and floor slabs to impart lateral stability to the unit. The roof also with the width of the building and spanning all of the walls thereof to be supported on the upper edges of said walls. The interconnections between the various panels and slabs may be simply achieved by conventional expansion bolts, without necessity for provision of special joint configurations or inserts for connecting purposes. Precast unitary stair flights extending diagonally between the base slab and walls as well as directly between the walls during the erection thereof as well as thereafter.

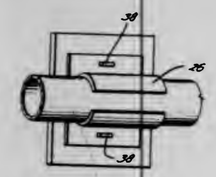
3,618,279
BUILDING BLOCK
True F. Sease, R.R. 3, Airhill Road, Brookville, Ohio 54309
Continuation of application Ser. No. 801,437, Feb. 24, 1969. This application Oct. 26, 1970, Ser. No. 84,189
Int. Cl. E04b *2/20;* **E04c** *1/10*
U.S. Cl. 52—227 **10 Claims**



A building block having male and female portions adapted to hold a series of blocks in interconnecting relation, with or without the use of mortar, which can be established with a minimum requirement of labor skill in a minimum of time. Each block includes a body having substantially flat top and bottom surfaces with vertical

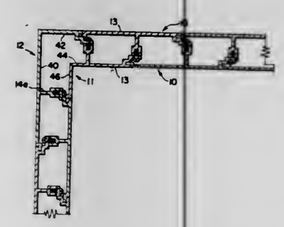
sides and having hollow truncated pyramidal projections of rectangular cross sections extending through the central portion of the block from the bottom wall to a position substantially equal to one half the height of the body and a cavity within the body which extends upwardly from the bottom surface to receive one of the projections from a lower course of blocks. A tie rod, a wire clip, or tie cables may also be used to hold the blocks in place.

3,618,280
BUILDING STRUCTURE
Ruble G. Langston, College Station, Tex., assignor to Hanover Modular Homes International Inc., College Station, Tex.
Filed July 22, 1969, Ser. No. 843,632
Int. Cl. E04h *1/12*; **E04b** *2/58*
U.S. Cl. 52—309 **9 Claims**



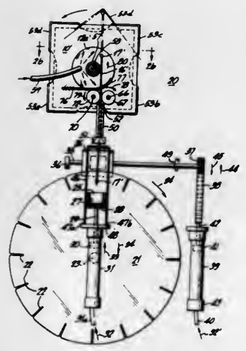
A building structure which can be made in modular units with each unit having a welded pipe frame and both interior and exterior surfacing materials secured to the frame by acrylonitrile butadiene styrene clips having a C-shaped portion to engage the pipe frame and a flat surface to be bonded directly to the surfacing materials or to nailing boards to which the surfacing materials may be secured.

3,618,281
PANEL CONSTRUCTION
Arnold E. Hill and Howard G. Hill, both of 130 Hogarth Ave., Toronto, Ontario, Canada
Filed Feb. 2, 1970, Ser. No. 7,920
Int. Cl. E04c *1/10, 1/12, 2/46*
U.S. Cl. 52—404 **4 Claims**



A generally T-shaped prefabricated wall panel. The crossbar of the T has an offset portion at one end and a pair of limbs at the other end which define a continuous groove. An outwardly projecting third limb is connected to one limb which defines a part of the groove. The end of the upstanding member of the T opposite the crossbar has a pair of branches which define a continuous groove. Two like wall panels are joined by inserting the offset portion of one panel into the groove defined by the pair of limbs of the other panel. When the panels are so joined, their crossbars are in the same plane. A third like panel is connected to the first two panels by contacting the third limb of the third panel to the groove defined by the pair of branches of any one of the other two panels, then screwing or spot welding the contacting surfaces together. When the third panel is so connected, its crossbar defines a wall parallel to and spaced apart from the wall defined by the crossbars of the first two panels.

3,618,282
PACKAGING APPARATUS AND METHOD
Herbert Hagel, Mountainside, and Zsolt T. Vigh, Woodbridge, N.J., assignors to National Musical String Company, New Brunswick, N.J.
Filed Jan. 21, 1970, Ser. No. 4,621
Int. Cl. B65b *43/04, 63/00*
U.S. Cl. 53—21 FW **16 Claims**



Method and apparatus for forming and filling packages. The packages are formed of two thin sheets, preferably rectangular and sealed to one another along their peripheries. One of the sheets is provided with a substantially large centrally located opening. Strings or string like devices having a characteristic of resiliency are loaded into the package by directing a jet of air under pressure into the package opening to slightly inflate the package which is rotatably supported in a free-wheeling manner. The forward end of the resilient string or string like member is fed in a linear fashion into the package through the opening which causes the package to rotate substantially about its central axis as a result of the introduction of the string. The feeding of the string is terminated as soon as the rearward end of the string lies above the region defined by the opening whereby the string is released to "snap" in to the package such that the string lies in the package in a coiled manner and presses outwardly against the marginal seal of the package. The contents of the package are completely sealed by sealing the marginal region defined by the package opening to the other sheet forming the package. Method and apparatus for forming the package, filling the package and finally, sealing the package are described herein.

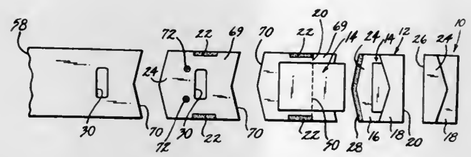
3,618,283
METHOD FOR STERILE PACKAGING OF ARTICLES
Francis C. Moore and Leon R. Perkinson, Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
Continuation-in-part of application Ser. No. 788,480, Jan. 2, 1969, which is a continuation-in-part of application Ser. No. 725,826, May 1, 1968. This application Nov. 4, 1969, Ser. No. 873,786
Int. Cl. B65b *55/14, 55/18*
U.S. Cl. 53—21 FC **26 Claims**

A quantity of solution having a known concentration of one of a group of antiseptic agents is sealed together with the article to be sterilized in a flexible, air-tight container; and then the article and container are worked so that the antiseptic solution saturates the exposed surfaces of the article and contacts the entire interior surface of the container. The entire package is then heated



to a temperature in the range 120° F. to 212° F. for a period of three to twenty-four hours, depending on the agent used, and sufficient to kill all bacteria, fungi, and spores in the package.

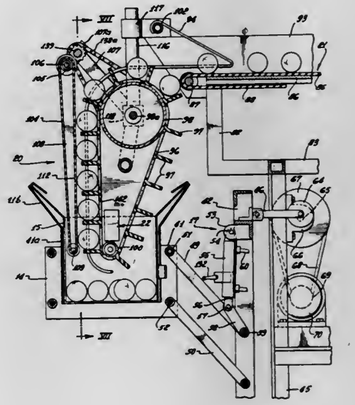
3,618,284
METHOD FOR MAKING ENVELOPE CONTAINING RETURN ENVELOPE STRUCTURE
Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.
Filed Mar. 23, 1970, Ser. No. 21,926
Int. Cl. B65b *35/50, 61/26, 63/04*
U.S. Cl. 53—23 **15 Claims**



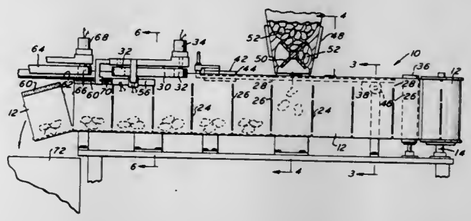
An envelope assembly comprising a main envelope and a return envelope structure contained in said main envelope and made from two continuously moving webs of sheet material. A partially folded return envelope structure which includes a return envelope and one or more attached coupons is cut from one web and positioned on an associated main envelope blank cut from the other web and moving in synchronism therewith. The main envelope blank and the return envelope structure are simultaneously folded onto themselves along at least one common fold line and associated marginal portions of the blank are connected in face-to-face relation to form a main envelope pocket containing the return envelope structure. The name and address of the recipient is imprinted on the return envelope through a window in the main envelope. The return envelope may be of open-side or open-end type.

3,618,285
METHOD FOR FILLING BOXES WITH A PRESELECTED QUANTITY OF DISCRETE ARTICLES
Kenneth F. Russell, Pomona, Calif., assignor to Brogdex Company, Pomona, Calif.
Original application July 13, 1967, Ser. No. 653,239, now Patent No. 3,492,779, dated Feb. 3, 1970. Divided and this application June 2, 1969, Ser. No. 862,543
Int. Cl. B65b *35/00, 5/08, 57/00*
U.S. Cl. 53—26 **4 Claims**

A method for filling a box with a preselected aggregate number of articles or a preselected aggregate weight of articles utilizing a vertical feed conveyor having a bottom article release end received within a box being filled to minimize the distance a released article falls to the bottom of the box or to a layer of articles already deposited in the box. The box is raised to enclose the release end of the vertical feed conveyor and as each article is deposited in the box it is counted. At a preselected intermediate count of articles the box is incrementally lowered a selected vertical interval to provide space for additional articles. In a second example of the invention, the weight of each article as it is placed in the box is sensed and upon reaching a preselected intermediate weight, the box is incrementally lowered a selected vertical interval. Means are provided for shaking the box during the filling operation to settle and closely arrange the articles in the box.

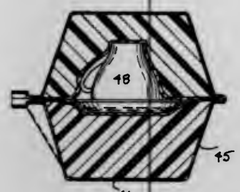


3,618,286
BAG FILLING, SEALING AND SEPARATING SYSTEM
Hercules Membrino, 1934 Arch St., Philadelphia, Pa. 19103
Filed June 8, 1970, Ser. No. 44,186
Int. Cl. B65b *43/00*
U.S. Cl. 53—29 **11 Claims**



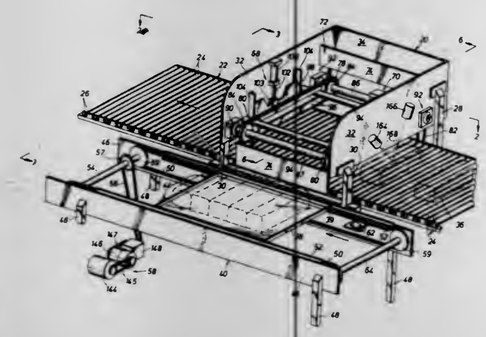
Thermoplastic bags formed in a strip, the bags being separated from each other in the strip by lines of seal and severance, each of these lines having at least one unsevered interruption therein, these interruptions forming connections between the bags, and systems for filling, sealing and separating the bags from each other, such systems including means for conveying the strip of bags below a filling hopper and then past a heat sealing means where the filled bags are sealed prior to separation from each other.

3,618,287
FOAM PACKAGING METHOD
Cavas M. Goghai, Cambridge, Mass., Charles R. Sperry, Providence, R. I., and Henry A. Hill, Watertown, Awbrey C. Laws, Cambridge, Philip B. Wainwright, Squantum, Peter A. Latham, Newburyport, and Paul E. Brefka, Southboro, Mass., assignors to Synectics Development Corporation, Cambridge, Mass.
Filed Oct. 14, 1969, Ser. No. 866,209
Int. Cl. B65b *17/00, 23/00, 33/00*
U.S. Cl. 53—36 2 Claims



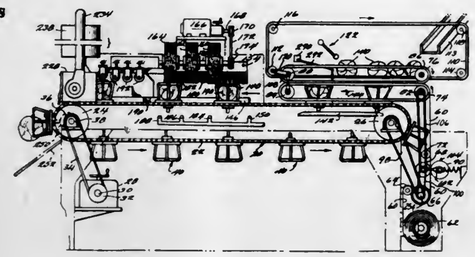
System for packaging materials, especially those of a fragile nature which is readily adapted for operation at the point of sale. Includes the packaging apparatus, method and novel package per se. Employs controlled foamed in place cellular material surrounding the item to be packaged. Package is formed of two segments. Apparatus includes a readily controllable filling mechanism for inserting foam precursor materials into the package segments.

3,618,288
AUTOMATIC TRAY LOADING APPARATUS
Ronald L. Thornton, Portland, Oreg., and David D. Leahy, Corpus Christi, Tex., assignors to Clayton Specialties, Inc., Corpus Christi, Tex.
Filed May 1, 1970, Ser. No. 33,787
Int. Cl. B65b *57/06, 57/20*
U.S. Cl. 53—55 23 Claims



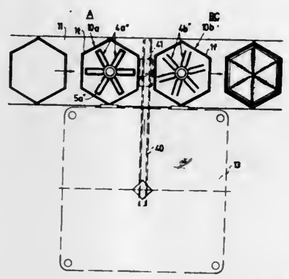
In one exemplar form, an automatic chain driven transfer apparatus for moving packaged bakery products temporarily arrested on a continuously moving power free roller conveyor transversely to the direction of conveyor movement to a loading tray spaced adjacent the transfer apparatus and parallel to the moving conveyor. A loading tray is automatically indexed to its proper position by the action of a controlled tray conveyor, the operation of which is controlled by the transfer apparatus control circuit.

3,618,289
AUTOMATIC WRAPPING APPARATUS
Fritz Wach, Robert A. Stratton, and Lawrence G. Cook, Yuma, Ariz., assignors to Wastron Developments, Incorporated, Yuma, Ariz.
Filed Jan. 31, 1969, Ser. No. 795,407
Int. Cl. B65b *11/54, 41/16, 49/06*
U.S. Cl. 53—64 30 Claims



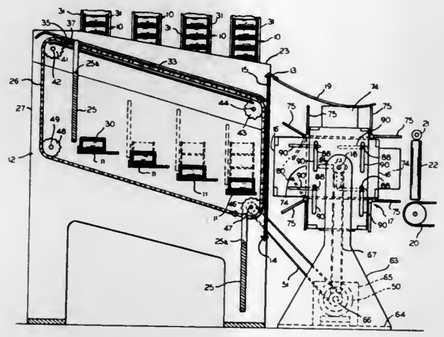
Apparatus for automatically wrapping articles with flexible material and for sealing the wrapping material after the article has been fully wrapped. Means for receiving the articles to be wrapped are mounted on an endless conveyer and the wrapping material is automatically supplied adjacent to the receiving means so that the articles drop onto severable portions of the wrapping and therewith into the receiving means. The partially wrapped articles are then passed under brushes which force the wrapping material down onto the surface of the article following which the wrapping is sealed by a series of heated rollers and a heated chamber. The wrapped article is then released from the receiving means and the process is repeated. A cam assembly which controls the feed of the wrapping material is operative to stop the feed thereof if the supply of the articles to the receiving means is interrupted.

3,618,290
MEANS FOR FEEDING TETRAHEDRAL PACKAGES INTO A TRANSPORT CONTAINER
Johan Vilhelm R. Delme, Lund, Sweden, assignor to AB Tetra Pak, Lund, Sweden
Original application Aug. 24, 1967, Ser. No. 663,362, now Patent No. 3,495,377, dated Feb. 17, 1970. Divided and this application May 8, 1969, Ser. No. 862,540
Claims priority, application Sweden, Sept. 23, 1966, 12,815/66
Int. Cl. B65b *35/32, 35/56*
U.S. Cl. 53—142 9 Claims



Apparatus to feed tetrahedron shaped packages into a transport container that is substantially symmetrical about a central vertical axis. The transport container is preferably hexagonal and the apparatus includes a tetrahedron holder which has two spaced apart legs through which one of the transverse seals of the tetrahedron package projects to support the container. The holder is hinged to allow the holder to drop downward to allow the tetrahedrons to drop into the transport container.

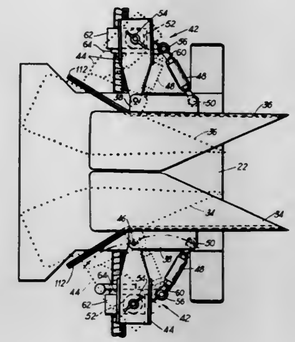
3,618,291
WRAP-AROUND PACKAGING APPARATUS
Charles H. Krebs, 321 Cowesett Ave., West Warwick, R.I. 02893
Filed Dec. 8, 1969, Ser. No. 883,033
Int. Cl. B65b *11/38, 35/50;* B65g *57/11*
U.S. Cl. 53—159 21 Claims



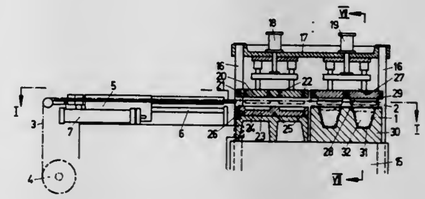
Wrap-around packaging apparatus including an accumulator station for articles to be packaged, such as cans, a series of gravity chutes to supply cans to tiered shelves in the accumulator station. A conveyor having a pusher flight depending therefrom has a downwardly inclined run conforming to the elevations of the tiered shelves and drives the flight in a downwardly inclined direction to stack the cans on the rearwardmost shelf on top of those on the next forwardly spaced shelf and pushes the stacked cans into a blank carried by a blank guide at the front of the accumulator station. A rotatable packaging unit is disposed in front of the blank guide and has diametrically opposed back-up members backing up a blank and articles to be stacked as pushed against said back-up member. Folders are carried by the packaging unit and are actuated by the back-up member to fold the blank about the article. The packaging unit is rotated in steps of 90° with a dwell at each step, and positions the package into a horizontal position where the lid is folded over the top of the package and then into a vertical position where the back-up member actuated by the pusher ejects the package past folding plows, folding and sealing the lid to the side and front of the package.

3,618,292
GUIDE MECHANISM FOR PACKAGING MACHINE
Robert E. Rademacher, Richmond, Va., assignor to AMF Incorporated
Filed Dec. 10, 1969, Ser. No. 883,960
Int. Cl. B65b *39/00*
U.S. Cl. 53—257 9 Claims

In a packaging apparatus wherein a succession of open bags are provided at a packaging station and pusher means engage articles to be packaged and insert them into said open bags, a guide mechanism for said apparatus, which comprises opposed guide members, means pivotally mounting said guide members for movement towards and away from the packaging station, means modifying said pivotal mounting means such that movement of the guide member tips towards each other is limited during the movement of the guide members towards and away from the packaging station.



3,618,293
MACHINE FOR SEALING CONTAINERS WITH COVERS MOLDER FROM SYNTHETIC PLASTIC SHEET
Horst Loewenthal, Tiengen, Germany, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed July 25, 1969, Ser. No. 845,007
Claims priority, application Switzerland, July 31, 1968, 11,456/68
Int. Cl. B65b *7/28, 3/02*
U.S. Cl. 53—296 2 Claims

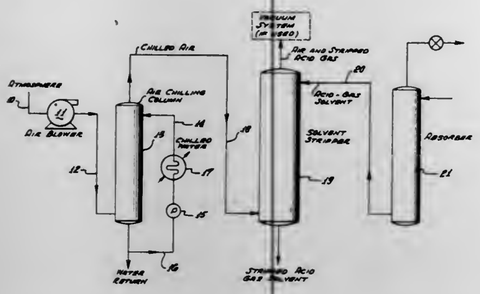


Thermoplastic sheeting is moved to a first work station at which a length of the sheet is molded into covers and then to a second adjacent work station at which the filled containers are covered with the freshly molded covers, which heating elements immediately weld to the containers.

3,618,294
METHOD FOR REDUCING THE WATER CONTENT OF REFINERY COLUMN STRIPPING GASES
Robert N. Tennyson, Anaheim, Calif., assignor to The Fluor Corporation Ltd., Los Angeles, Calif.
Filed Apr. 18, 1969, Ser. No. 817,334
Int. Cl. B01d *53/26*
U.S. Cl. 55—29 10 Claims

Moisture absorption in hygroscopic physical solvents for acid gases regenerated by stripping with air or inert

gas, is reduced by preliminarily contacting the stripping gas with chilled water to lower significantly the moisture

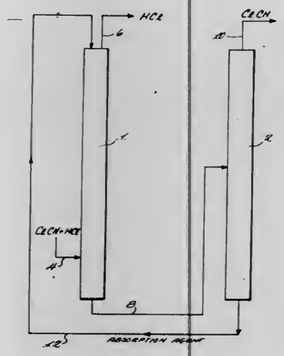


content of the gas and correspondingly the presence of moisture in the solvent undergoing acid gas stripping.

3,618,295
PROCESS FOR THE SEPARATION OF CYANOGEN CHLORIDE AND HYDROGEN CHLORIDE

Friedhelm Geiger, Offenbach am Main, Theodor Lüssling, Grossauheim, and Wolfgang Weigert, Offenbach am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Nov. 14, 1969, Ser. No. 876,736
Claims priority, application Germany, Nov. 19, 1968, P 18 09 607.6
Int. Cl. B01d *53/16*
U.S. Cl. 55—71 10 Claims



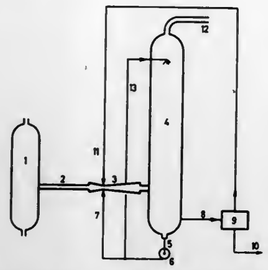
A mixture of cyanogen chloride and hydrogen chloride is separated by means of organic liquid in which the cyanogen chloride is absorbed but in which the hydrogen chloride is insoluble.

3,618,296
METHOD FOR THE SEPARATION OF CARBON FROM SYNTHESIS GAS UNDER HIGH PRESSURE

Werner Auer, Heidelberg, Heinz Hauser, Limburgerhof, and Walter Knobloch, Mannheim, Germany, assignors to Texaco Development Corporation, New York, N.Y.

Filed July 18, 1969, Ser. No. 843,008
Int. Cl. B01d *47/00*
U.S. Cl. 55—93 3 Claims

Synthesis gas obtained by partial oxidation of liquid hydrocarbons at high pressure and containing entrained by-product carbon and metal salts is contacted with separately introduced streams of acidic carbon-containing water and alkaline clear water in a contacting device in

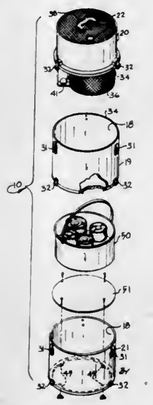


which the gas stream is accelerated prior to introduction of the aqueous streams.

3,618,297
VACUUM PICKUP APPARATUS

James C. Hamrick, Matthews, N.C., assignor to Jet Line Products, Inc., Matthews, N.C.

Filed July 22, 1969, Ser. No. 843,364
Int. Cl. B01d *50/00*
U.S. Cl. 55—216 16 Claims



A vacuum pickup apparatus in which a stream of air and entrained material flowing into an expansion and material collection chamber strikes a concave surface flow obstruction and is divided into two portions directed on oppositely turning courses of flow for dissipation of the kinetic energy of the inflowing air and entrained material by impingement of the portions first against the obstruction and then against each other within the chamber. The capacity of the material collection chamber may be varied by selective arrangement and interconnection of three housing members included in the vacuum pickup apparatus.

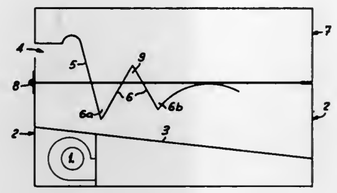
3,618,298
SYSTEM FOR PURIFYING A PARTICLE-LADEN GASEOUS STREAM

Jacques Curchod, Mont-sur-Rolle, Switzerland, assignor to Curchod Baeriswyl & Cie S.A., Rolle, Switzerland

Continuation-in-part of application Ser. No. 781,905, Dec. 6, 1968. This application Apr. 6, 1970, Ser. No. 26,041
Claims priority, application Switzerland, Apr. 26, 1968, 6,192/68
Int. Cl. B01f *3/04*
U.S. Cl. 55—226 7 Claims

An installation for purifying a particle-laden gas stream comprises an enclosure partially fillable with

liquid to a certain level when the installation is at rest. An inlet and outlet are located above that level and the outlet co-operates with suction means for drawing a gaseous stream. A deflector having a lower surface below said certain level is located between the inlet and outlet so as to direct a gas stream on to the liquid approximately perpendicular to the surface thereof. A saw-tooth baffle

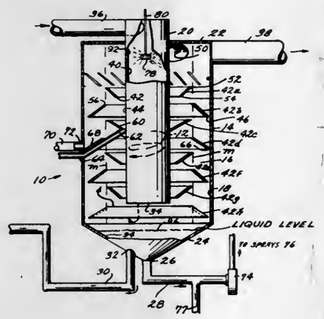


follows the deflector and the or each lower edge of the baffle downstream of the deflector is sucessively higher than the lower surface of the deflector. The baffles may be at least partially fixed to a movable cover to ease cleaning of the installation. Two sets of deflectors and baffles may be placed converging together in V formation to increase the area of contact of the gas with the liquid.

3,618,299
GAS CLEANING APPARATUS

Daniel B. Vincent, 2608 Watrous Ave., Tampa, Fla. 33609

Filed Apr. 1, 1969, Ser. No. 812,467
Int. Cl. B01d *47/06*
U.S. Cl. 55—236 4 Claims

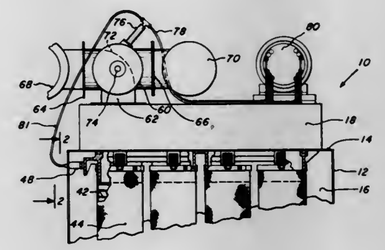


Exhaust gases containing entrained particles are led centrifugally, and downwardly in a cylindrical vessel provided with a liquid spray. Passing out of the lower end of the first vessel, the gases travel up the annulus between that vessel and a larger cylindrical vessel. The annulus is provided with frusto-conical baffles wet by liquid sprays and serve to change direction of gas flow and to throw liquid with entrained particles toward the inner and outer walls of the annulus where falling films result. The liquid for the upper few baffles is preferably water and for the lower baffles, thin liquor. Two adjacent intermediate baffles extend to the respective sidewalls for draining the fresh water washing zone.

3,618,300
DUST COLLECTION

Josef Pausch, Hopkins, Minn., assignor to Aerodyne Machinery Corporation, Hopkins, Minn.

Continuation of application Ser. No. 619,868, Mar. 1, 1967, which is a continuation of application Ser. No. 372,242, June 3, 1964. This application Dec. 2, 1968, Ser. No. 781,702
Int. Cl. B01d *46/04*
U.S. Cl. 55—273 2 Claims

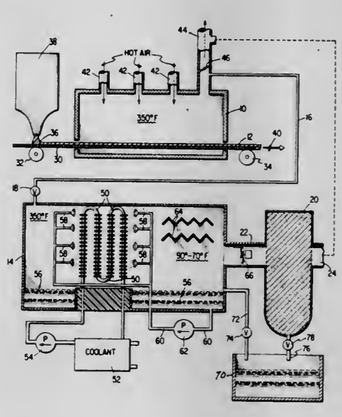


A dust filtering system in which the flexible porous filtering surface is supported on a skeletal frame, and in which the skeletal frame is resiliently mounted so that vibrational movement imparted thereto may be transmitted in a relatively undampened condition to all portions of the porous filtering surface.

3,618,301
PROCESS AND APPARATUS FOR REMOVING AIR POLLUTANTS FROM OVEN-STACK EMISSIONS

Norman J. Handman, Cherry Hill, N.J., assignor to Clermont Engineering Company, Incorporated

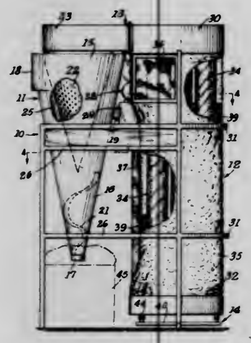
Filed Mar. 11, 1969, Ser. No. 806,155
Int. Cl. B01d *47/06*
U.S. Cl. 55—89 4 Claims



A system for preventing hot noxious vapors, comprising aerosols of organic materials emanating from an oven in a manufacturing process, from polluting the atmosphere through oven-stack emissions comprises a spray chamber, finned cooling coils disposed within the spray chamber, and a mist eliminator communicating with the spray chamber. Hot gases emanating from the oven are cooled by the finned coils to provide a two-phase liquid condensate in the spray chamber. The finned coils are sprayed by the two-phase condensate, at high pressure,

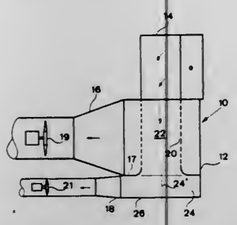
to scrub and clean the finned coils of accumulated tars and to agglomerate the aerosols in the spray chamber. Any aerosols emanating from the spray chamber are filtered by the mist eliminator.

3,618,302
UNITARY PORTABLE AIR CLEANER
Milan S. Cornett, Walnut, Calif.
(P.O. Box 567, San Dimas, Calif. 91773)
Filed Oct. 17, 1969, Ser. No. 867,145
Int. Cl. B01d *46/04, 50/00*
U.S. Cl. 55—278 **3 Claims**



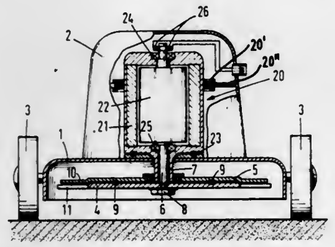
An air cleaner that embodies a closed system comprising a centrifugal dust separator with an internal spark arrester constituting a pre-cleaner, and an after filter that recirculates the air discharged from the pre-cleaner and which further cleans said recirculated air before directing said cleaned air to the inlet of the centrifugal dust separator.

3,618,303
GUIDE SEPARATOR HOUSING FOR SEPARATING AIR CHARGED WITH IMPURITIES
Ernst Nagel, Weisslingen, Switzerland, assignor to LUWA AG., Zurich, Switzerland
Filed Feb. 24, 1969, Ser. No. 801,719
Claims priority, application Switzerland, Feb. 23, 1968, 2,686/68
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **6 Claims**



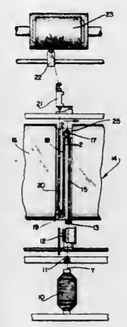
There is disclosed a guide housing for, conducting or transporting air which is charged or contaminated with impurities, such as dust or fibers. The inventive guide housing possesses a housing body member having an approximately cylindrical or spiral-shaped cross-section. This housing body member further incorporates an inlet opening, a discharge opening as well as a discharge connecting piece or stud which communicates with the discharge opening and is tangentially directed with respect to the housing body member. Furthermore, the housing body member is equipped with means for generating a spin or spiral flow within the housing body member. According to an important aspect of the inventive guide housing the discharge connecting piece or stud extends opposite to the direction of deflection of the spin-flow generating means in order to produce an aerodynamic reduction of the cross-section. Moreover, according to an important aspect of the invention, the effective flow cross-sectional area of the discharge connecting piece or stud is reduced to a fraction of the actual cross-sectional area thereof, to thereby enable discharge of air and fiber accumulations even larger than the effective flow cross-sectional area.

3,618,304
LAWN MOWER
Eckhard Hundhausen, Betzdorf (Sieg), Germany, assignor to Wolf-Gerate GmbH, Betzdorf (Sieg), Germany
Filed July 7, 1970, Ser. No. 52,957
Claims priority, application Germany, July 15, 1969, P 19 36 010.2
Int. Cl. A01d *35/26*
U.S. Cl. 56—16.9 **9 Claims**



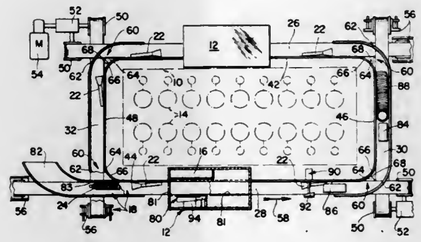
The specification describes a lawn mower with coaxial blades counter rotating about a vertical axis and driven respectively by the stator and rotor of an electric motor. A hollow shaft emanating from the stator is fixed to one blade while also functioning to circumscribe a second shaft emanating from the rotor, which is fixed to the second blade.

3,618,305
YARN TREATING APPARATUS AND METHOD
Richard G. Hilbert, Smithfield, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation of application Ser. No. 676,751, Oct. 20, 1967. This application Aug. 1, 1969, Ser. No. 849,258
Int. Cl. D01h *13/26*
U.S. Cl. 57—34 HS **14 Claims**



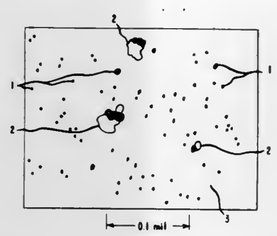
A method of processing yarn and, more particularly, for producing false twisting yarn. An advancing strand of yarn is passed through a heater and substantially reverses direction across at least one cool guide before the heated yarn passes through a false twist spindle. Also disclosed is a guide pin apparatus about which the yarn is passed.

3,618,306
BOBBIN PICKUP
Earl R. Fenstermacher, North Kingstown, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Nov. 25, 1969, Ser. No. 879,857
Int. Cl. D01h *9/10*
U.S. Cl. 57—53 **26 Claims**



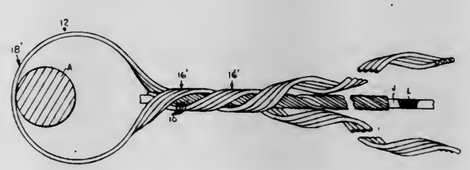
A bobbin handling apparatus for a self-tending spinning frame includes tenders which move back and forth along spinning stations and stop, as required, to service the stations. For example, the tenders doff filled bobbins, and then donn and thread-up empty bobbins. A belt conveyor encircles the spinning frame and has upper runs for carrying empty bobbins to the tenders and lower runs for receiving filled bobbins from the tenders. The empty bobbins are normally spaced from each on the conveyor. Each tender is provided with a bobbin receiver alongside the conveyor. When the receiver is operated to an active position for receiving an empty bobbin, it by-passes any bobbin (or a string of bunched bobbins) alongside, and when a bobbin is not alongside it moves to a position for receiving a bobbin from the conveyor, the bobbin causing the receiver to close and the bobbin is moved into the tender.

3,618,307
ACRYLIC FIBERS AND PROCESS FOR PREPARING THE FIBERS
Imre M. Jonkoff, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 14, 1968, Ser. No. 775,794
Int. Cl. C08f *3/76;* **C10m** *1/44;* **D02g** *3/02*
U.S. Cl. 57—140 R **14 Claims**



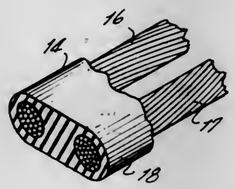
Textile fibers of synthetic acrylonitrile polymer having dispersed throughout the cross section of the fiber a salt of a partial ester of phosphoric acid with a monoalkyl ether of a polyoxyalkylene glycol; said salt being present in the amount of about 0.05% to about 3% by weight of the polymer to reduce waste in fiber processing operations and to provide a yarn of the fibers having improved quality. Also, the process for preparing the above fibers.

3,618,308
DUAL LAYER LINE ENGAGING DEVICE
Jess C. Little, Chagrin Falls, Ohio, assignor to Textron, Inc., Cleveland, Ohio
Continuation of application Ser. No. 748,502, July 29, 1968. This application Dec. 22, 1969, Ser. No. 883,678
Int. Cl. D07b *1/06;* **F16l** *3/00*
U.S. Cl. 57—145 **28 Claims**



A line gripping device having an underlying set of preformed helical wires applied over the line, and a gripping member having helically formed wires grippingly engaging this underlying set of wires. The gripping member is provided with means for engaging an anchoring device.

3,618,309
MULTI-ELEMENT RIBBON-TYPE HOIST CABLE
Ralph E. Walsh, Long Branch, N.J., assignor to Breeze Corporations, Inc., Union, N.J.
Filed Apr. 22, 1970, Ser. No. 30,805
Int. Cl. D07b *1/16, 1/22, 1/06*
U.S. Cl. 57—153 **8 Claims**

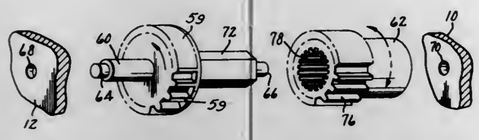


A cable assembly for winches and hoists in which two or more wire ropes are encased in an elastomer jacket in the form of an elongated ribbon. Various types of wire rope and jackets for specific requirements are disclosed.

3,618,310
CLOCK TIMER WITH SLEEP SWITCH
Charles A. Balchunas, Hopkinton, Mass., assignor to General Electric Company
Filed Apr. 15, 1970, Ser. No. 28,574
Int. Cl. G04b *11/00*
U.S. Cl. 58—21.155 **6 Claims**

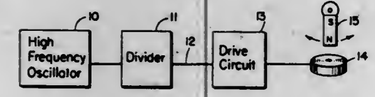
A "sleep switch" mechanism for a clock timer wherein a unique friction clutch mechanism is positioned between a continuously rotated gear of the clock timer and a manually movable sector gear of the clock timer. The sleep friction clutch mechanism comprises two parts, a hollow pinion having internally molded flexible teeth, and a continuously rotated hexagonal shaft upon which the hollow

pinion rides so that a sliding friction clutch results from the interaction between the internal teeth of the pinion



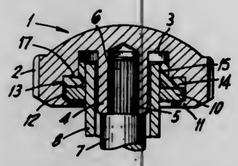
and the hexagonal shaft when the sector gear is manually moved into engagement with the pinion gear.

3,618,311
SYNCHRONIZED HOROLOGICAL SYSTEM
Leo Wiesner, Kew Gardens, and Eugene R. Keeler, Suffern, N.Y., assignors to Timex Corporation
Continuation-in-part of abandoned application Ser. No. 807,293, Mar. 14, 1969. This application Jan. 13, 1970, Ser. No. 2,586
Int. Cl. G04c *3/04*; H02k *33/18*; H03k *3/08*
U.S. Cl. 58—28 **19 Claims**



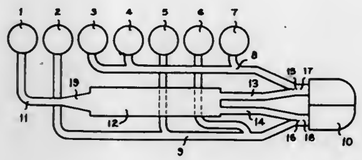
A horological instrument includes a high frequency time base, preferably a piezoelectric crystal oscillator. The frequency of the oscillator is reduced by dividing circuits. The output of the dividing circuits synchronizes an independent circuit which drives a low frequency oscillator. Preferably the system includes a single coil carried by the low frequency oscillator, which is a balance wheel and which moves through magnetic fields of alternative polarities.

3,618,312
WATCH CROWN
William W. Macchia, Naugatuck, and Cyril F. Seymour, Middlebury, Conn., assignors to Timex Corporation
Filed Apr. 29, 1969, Ser. No. 820,190
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 B **3 Claims**



A watch crown for a waterproof watch includes a metal or plastic crown body having an interior cavity. A tubular pendant protruding from the bezel portion of the case of the watch is adapted to fit within the cavity of the crown body. Waterproof sealing is obtained by the use of a molded elastic gasket which is held in place in the crown by a ring which is fixed to the crown body. The gasket, in cross-section, has a flat washer-like portion and, integral thereto at the inner diameter of the washer, a raised flange-like portion having an arcuate inner face.

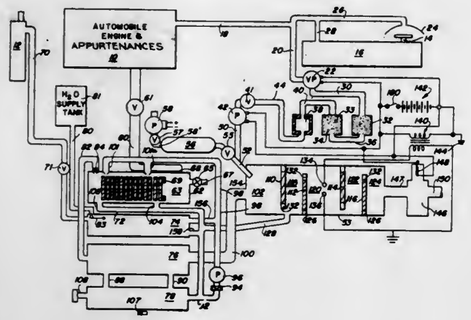
3,618,313
METHOD OF AND APPARATUS FOR SUPERCHARGING AN INTERNAL COMBUSTION ENGINE
Gottlieb Zehnder, Kirchdorf, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Aug. 21, 1969, Ser. No. 851,939
Claims priority, application Switzerland, Sept. 11, 1968, 13,853/68
Int. Cl. F02b *37/00*
U.S. Cl. 60—13 **4 Claims**



A method of supercharging a multi-cylinder internal combustion engine wherein the exhaust gases from the cylinders supply the inlet to the supercharger partly in pulsed operation and partly in constant-pressure operation.

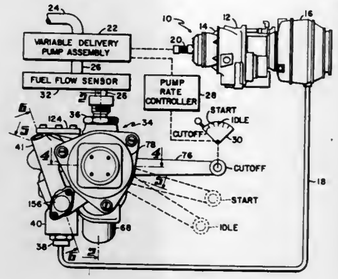
A receiver is located between one cylinder and the supercharger, the remaining cylinders are combined in at least two groups of at least two cylinders each, the exhaust gases from each group flow via an exhaust pipe to a junction with a gas outlet pipe from the receiver, and they then pass through a mixer tube to one inlet of the supercharger.

3,618,314
METHOD AND MEANS TO CONTROL AIR POLLUTION FROM MOTOR VEHICLES AND MOTOR VEHICLE ENGINES
LeRoy J. Krebs, 2928 N. Milwaukee Ave., Chicago, Ill. 60618
Filed Apr. 9, 1970, Ser. No. 26,856
Int. Cl. F01n *3/04, 3/14*
U.S. Cl. 60—30 L **6 Claims**



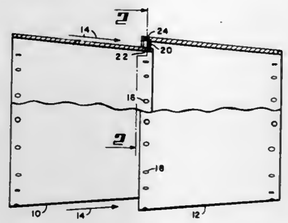
An antipollutant device associated with a motor vehicle to control the vehicle emissions to atmosphere, not only the emissions from the exhaust port of the motor but also fuel and oil evaporative emissions. The evaporative emissions are collected in a collector unit and the motor exhaust port emissions filtered and treated, and particulate matter collected and gases burned.

3,618,315
EMERGENCY FUEL FLOW CONTROL DEVICE FOR A GAS TURBINE ENGINE
Paul A. Avery, Shelton, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Feb. 19, 1970, Ser. No. 12,718
Int. Cl. F02c *9/06*
U.S. Cl. 60—39.28 **10 Claims**



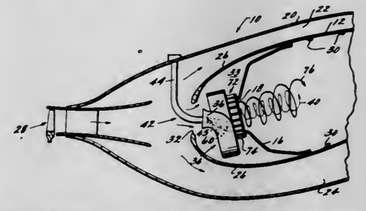
The disclosure illustrates an emergency flow control device for use in the fuel control system of a gas turbine engine. The flow control device comprises a housing having a pair of low resistance flow paths which receive the output of a variable delivery pump and provide a discharge to the gas turbine engine. A bistable solenoid operated bypass valve is positioned in the first flow path to selectively block and permit flow. A sleeve-type metering valve is positioned in the second flow path and rotated by a manually operated lever to provide a variable area orifice. A diaphragm operated throttling valve element is positioned upstream of the metering valve element. Pressure connections to the upstream and downstream side of the metering valve element are connected to the diaphragm. The throttling valve element maintains a constant pressure differential across the metering valve when the bypass valve element blocks flow through the second flow path. The bypass valve element is responsive to a condition where a controller for the variable output pump is inoperative and places the pump in a maximum delivery condition. In addition, a cutoff valve is provided in the outlet to pass flow to the engine only when a control input is provided. A manual control input from the operator lever and a solenoid input each operate to place the cutoff valve element in an open or closed position.

3,618,316
ARRANGEMENT FOR SPACING COMBUSTOR CAN SLEEVES
Charles R. Taylor, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Apr. 23, 1970, Ser. No. 31,270
Int. Cl. F23r *1/10*
U.S. Cl. 60—39.65 **4 Claims**



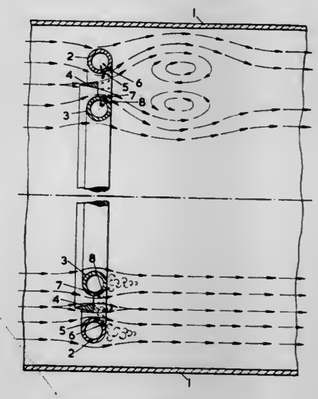
A combustion chamber liner is comprised of two telescoping combustor sections, the leading edge of the downstream section overlapping the trailing edge of the upstream section. The overlapping combustor sections are each provided with radially aligned equally spaced matching holes. Spacer pins are fitted in and secured by plug welding to the holes in the trailing edge of the upstream section. Small button-like projections on the pins snap into the matching holes in the downstream section.

3,618,317
FUEL DELIVERY APPARATUS
Thomas L. Du Bell, Cincinnati, Ohio, assignor to General Electric Company
Filed Apr. 17, 1969, Ser. No. 817,075
Int. Cl. F02c *1/00*; F02g *1/00*
U.S. Cl. 60—39.65 **8 Claims**



An improvement for apparatus of the type adapted to premix air and fuel or carburet air prior to introduction thereof as a vortical flow into the primary zone of a combustor; the improvement comprises a fuel collection or control surface disposed about and defining the vortical flow outlet of the apparatus together with means for generating a secondary flow of air into the combustion chamber about the collection surface to provide positive and controlled introduction of fuel to the combustor over a wide range of operating conditions.

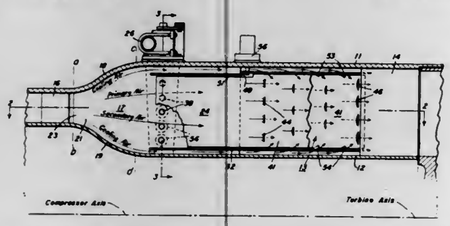
3,618,318
COMBUSTION DEVICES
William Dean Bryce, Farnham, Surrey, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed June 4, 1969, Ser. No. 830,259
Claims priority, application Great Britain, June 10, 1968, 27,394/68
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.72 **6 Claims**



Two concentric annular tubes are mounted co-axially within an afterburner duct with an annular flow splitter disposed between them. Two circumferential rows of holes are drilled in the downstream quadrants of the tubes (relative to flow through the duct) which face each other. The application of suction to the tubes acts through the holes on the boundary layer of flow over the tubes to move the respective separation points further downstream

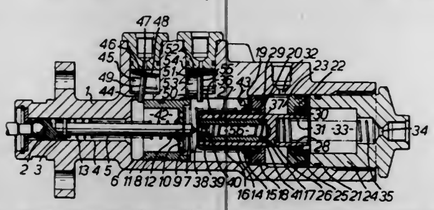
and thus deflect the flow to cause recirculation patterns. A similar effect can be obtained by blowing from suitably shaped apertures in the tubes. The tubes may alternatively be straight and arranged transversely across a duct with their respective axes parallel.

3,618,319
MAIN COMBUSTION SYSTEM AND COMBUSTION PROCESS
Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company
Filed Aug. 2, 1966, Ser. No. 569,626
Int. Cl. F02g *3/00*
U.S. Cl. 60—39.02 **14 Claims**



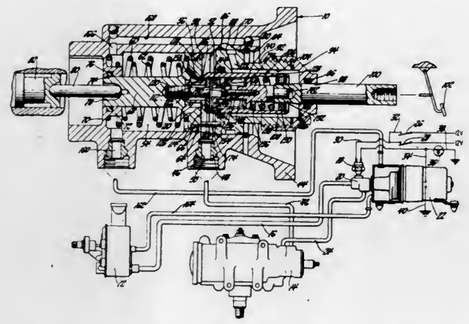
Improved construction for the combustion of fuels in a combustion system, as for example a gas turbine, is described wherein means are provided for accurately metering the incoming primary air flow in relation to changes in metered fuel inputs whereby a relatively constant equivalence ratio for the fuel-primary air mixture may be maintained, and wherein secondary air is isolated in ribbon-like radially-directed flows parallel to and interleaved with the primary air-fuel mixture for controlled cooling of the turbine nozzle partitions and/or of the combustion products. The metering means for the primary air flow automatically control the amount of air in the primary air streams in inverse relation to the amount of air in the secondary air streams.

3,618,320
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES
Brian Ingram, Warwickshire, England, assignor to Girling Limited, Birmingham, England
Filed Mar. 10, 1970, Ser. No. 18,039
Claims priority, application Great Britain, Mar. 28, 1969, 16,377/69
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 **9 Claims**



A power-operated tandem master cylinder includes first and second pressure spaces located respectively between a main piston and a secondary piston, and between the secondary piston and a closed end of the cylinder bore in which the pistons work. The secondary piston comprises a telescopic assembly of which the length increases progressively as the secondary piston is advanced in the cylinder bore under the influence of pressure fluid in the first pressure space. This maintains at a substantially constant minimum, the distance between an axial extension carried by the main piston and the adjacent end of the secondary piston with which the axial extension engages upon failure of at least the first pressure space.

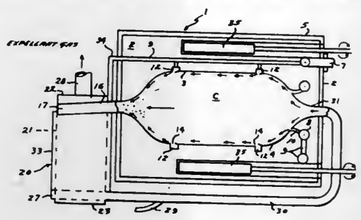
3,618,321
HYDRAULIC BRAKE BOOSTER ASSEMBLY
James H. Moran, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 15, 1970, Ser. No. 54,929
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 **3 Claims**



An open center type hydraulic brake booster providing three distinct brake apply effort versus master cylinder pressure relationships while applying the brakes. A valve member cooperates with a power piston forming a flow restrictor between the open center oil pressure chamber and a return passage through the piston, all within a booster housing. The valve is mounted for actuation by the push rod against the force of a biasing spring. Initial brake applying movement of the pedal push rod moves the valve to further restrict flow of pressure through the return passage developing an apply pressure upon the working face of the power piston moving the master cylinder push rod providing the first apply effort-master cylinder pressure relationship. Continued movement of the pedal push rod engages a spring biased rod pad with a protrusion on the power piston and a parallel force transference occurs, this being the second brake effort-apply pressure relation. A portion of the force on the master cylinder push rod is applied by the fluid pressure on the power piston and a portion is mechanically applied through the pedal push rod and the pad biasing spring to the piston. Upon further movement, the pedal push rod sufficiently compresses the biasing spring engaging the pad and the push rod completing a direct mechanical connection to the power piston. This establishes the third brake effort-apply pressure relationship. The rod pad is secured by an adjusting screw providing for establishing the second relationship as desired. Also the hydraulic booster housing contains a passage connecting the return side of the power piston with a rod end of the valve. The pressure and rod ends of the valve have substantially equal areas cancelling the effect of pressure pulses received in the open center pressure chamber.

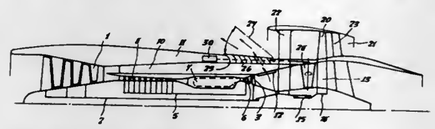
3,618,322
CAVITY REACTOR WITH EXTERNAL SEPARATION
Hans J. P. von Ohain, Dayton, Ohio, and Melvin R. Keller, Pittsburgh, Pa., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Jan. 13, 1970, Ser. No. 2,599
Int. Cl. G21d *5/00*
U.S. Cl. 60—203 **5 Claims**

A cavity reactor propulsion system having a cylindrical cavity formed in a moderator body with a critical quantity of fissionable material in a powdered state admitted to the cavity and with gaseous hydrogen injected through small nozzles along the wall of the cavity with no appreciable centrifugal force field within the cavity. The hydrogen gas plus the entrained material are drawn to a vortex type separator wherein the fissionable material is removed from the hydrogen gas and returned to the



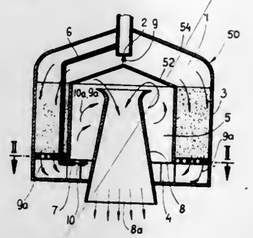
reaction cavity with the clean hydrogen gas being discharged through a conduit which is adapted to be connected to a rocket nozzle.

3,618,323
COMBINED FAN TURBINE FLOW CONTROL AND THRUST REVERSING MEANS
Peter Richard Needham, Filton, Bristol, England, assignor to Rolls-Royce Limited, Derby, England
Filed Sept. 8, 1969, Ser. No. 855,848
Claims priority, application Great Britain, Sept. 14, 1968, 43,822/68
Int. Cl. F02k *1/20, 3/02*
U.S. Cl. 60—228 **6 Claims**



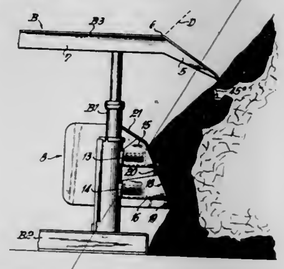
Apparatus for reversing the thrust of an aft fan engine consists of a ring of pivotable vanes which can be pivoted to close off the flow through the fan-driving turbine simultaneously with the opening of thrust reversing outlets in the engine casing upstream of the vanes. The fan will windmill in the mainstream and provide additional drag on the aircraft eliminating the need for fan-thrust reversers.

3,618,324
APPARATUS FOR DECOMPOSITION OF A FLUID MONERGOL FOR RUNNING A ROCKET MOTOR
German Munding, Bad Friedrichshall, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany
Filed Sept. 23, 1968, Ser. No. 767,906
(Filed under Rule 47(b) and 35 U.S.C. 118)
Claims priority, application Germany, Sept. 23, 1967, P 16 26 066.5
Int. Cl. F02k *9/02*
U.S. Cl. 60—258 **10 Claims**



A method for the decomposing of a fluid Monergol in order to run a gas generator especially for rocket motors comprises dividing the fluid Monergol mass into a plurality of separate Monergol partial masses, separating one of the masses catalytically in an atomized state, and mixing another of the Monergol partial masses in an atomized state with the hot decomposed gases of the first Monergol partial mass so as to thermally decompose the second fluid Monergol partial mass.

3,618,325
HYDRAULIC SUPPORT SYSTEMS FOR MINE WORKINGS
Max Kuhn, Bochum-Langendreer, Gunter Bell, Hornebburg, and Willy Watermann, Dortmund-Berghofen, Germany, assignors to Klockner-Werke AG, Duisburg, Germany
Filed Jan. 22, 1970, Ser. No. 4,930
Claims priority, application Germany, Jan. 23, 1969, G 69 02 441
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **3 Claims**



A three frame assembly for an advancing roof support, each frame having a pit prop and a roof engaging cap. A shield is common to the three frames and is secured to the two outer frames for movement with the same. The shield prevents packing material from entering between the frames and is contoured for this purpose. The center frame may advance and subsequently the two end frames together with the shield advances. The roof engaging cap for each frame inclines downwardly at an angle generally parallel to the angle of rest of the packing material.

3,618,326
RESIN ANCHORED REINFORCED BRITTLE STRUCTURES
William Herbert Montgomery, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 638,551, May 15, 1967. This application Oct. 24, 1969, Ser. No. 869,246
Int. Cl. E21d *20/00*
U.S. Cl. 61—45 B **3 Claims**



Expansion shell rock bolts are more firmly anchored in rock drill holes by using an ambient-temperature-setting resin to flow around and anchor parts of the shell

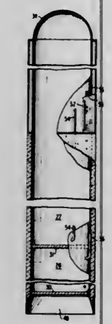
to each other and to the rock while protecting from moisture loss or oxidative change. The resin is supplied in a package having at least two compartments, each containing part only of a thixotropic resin system; which is preferably over-catalyzed so that thorough mixing is not necessary. The packages have compartmental seals which are opened prior to insertion, with preferably some pre-mixing, at least some mixing occurring in the package as the package is placed in the hole in the rock, and additional mixing on discharge of the resin from the package as a bolt is placed into the hole in the rock. The package material is dead fold, and non-resilient so as to be compressed beyond the bolt. The shell is then expanded, with the thixotropic characteristics of the resin holding the resin in place around the expansion shell. The expansion of the shell gives immediate anchorage, and the later hardening of the resin gives a delayed but more permanent anchorage.

The same package is useful in anchoring to masonry and concrete.

3,618,327
CAISSON STRUCTURE AND PIER CONSTRUCTION METHODS

Joseph P. Frein and Thomas Kinter, Boise, Idaho, assignors to Morrison-Knudsen Company

Filed Nov. 15, 1968, Ser. No. 776,222
Int. Cl. E02d 5/00, 5/20, 23/00
U.S. Cl. 61—46 29 Claims



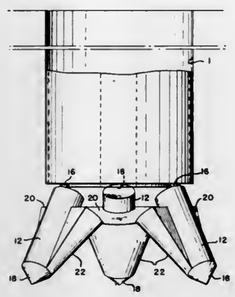
Methods for over-water construction of bridge piers, and the like, especially adapted for use at deep-water, shallow-overburden sites utilizing a unitary full-depth caisson which is prefabricated off site. Floatation and ballast chambers in the caisson facilitate movement to location, accurate placement on site, and initial sinking. A plurality of full-depth caissons are interlocked longitudinally during on-site assembly to produced a pier of desired cross-sectional configuration. Lengths of individual caissons are selected to conform to subterranean support topography. A weight distribution block is cast-anchored to the caissons.

3,618,328
BEARING SUPPORT FOR PILING

Takeo Nojima, Chiba-ken, Japan, assignor to Jupitor Corporation, Seattle, Wash.

Filed Jan. 5, 1970, Ser. No. 559
Int. Cl. E02d 5/54
U.S. Cl. 61—53.68 9 Claims

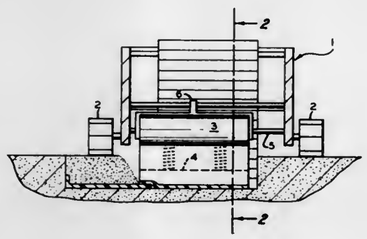
A piling support for the lower end of pilings includes a plurality of tubular leg portions pivoted at their upper ends to the lower end of the piling and positioned equidistantly around the lower end of the piling, the legs having compacting means associated therewith, and means for (1) locking the legs together while the pile is being driven in the ground the desired distance and for (2) unlocking the legs, thereby allowing the legs to spread as the piling is further driven into the ground. The compacting means are half-conical sections attached to each of the legs and extending substantially the length thereof, the outer peripheral surfaces of the conical sections facing inwardly and sloping outwardly relative to the vertical axes of the legs moving from the lower ends of the legs upwardly.



3,618,329
METHOD FOR INSTALLING SUBSOIL MOISTURE BARRIER

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 19, 1969, Ser. No. 851,397
Int. Cl. E02f 5/10; E03b 1/00
U.S. Cl. 61—72.6 4 Claims



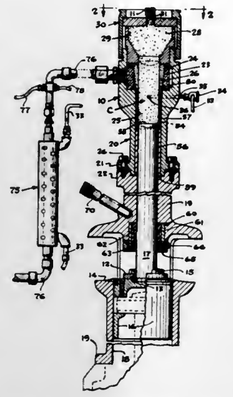
A method of installing a subsoil moisture barrier of water-impervious plastic material is disclosed with apparatus for its continuous installation.

3,618,330
SOLIDIFIED GAS FILTER

Robert C. Hardt, Chicago Heights, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Sept. 12, 1968, Ser. No. 759,419
Int. Cl. F25j 1/00, 3/00
U.S. Cl. 62—10 6 Claims

An apparatus and method of filtering solid gas particles from a gas stream wherein a liquefied gas such as liquid carbon dioxide is flashed into a closed chamber to form gas and a particulate snow-like material and some of the solid material is subsequently employes as a porous filter for the gas to separate the solid matter. The amount of said material employed as a filter is regulated to provide a constant pressure drop for the gas across the filter.

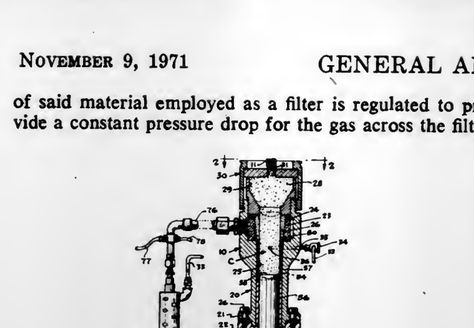


The particulate solidified gas material after being filtered is subsequently compressed into pellets.

3,618,331
HYDROGEN MANUFACTURE USING CENTRIFUGAL COMPRESSORS

Calvin S. Smith and William J. McLeod, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 665,106, Sept. 1, 1967. This application May 17, 1968, Ser. No. 736,520
Int. Cl. F25j 3/00, 3/08
U.S. Cl. 62—11 7 Claims



A process for manufacturing hydrogen for use in a high pressure plant employs centrifugal compressors within the following steps in one preferred embodiment:

(1) steam reforming of hydrocarbons to produce an effluent gas comprising H_2, CO_2 and CO;

(2) shift conversion of CO in the effluent from step (1) to produce an effluent gas comprising H_2 and CO_2;

(3) centrifugal or turbocompression of the step (2) effluent gas mixture comprising H_2 and CO_2 to above about 900 p.s.i.g.;

(4) lowering of the temperature of the CO_2–H_2 mixture to below about 0° F. to condense and separate a portion of the CO_2;

(5) absorbing CO_2 remaining in the hydrogen-rich gas using a physical absorbent;

(6) catalytic methanation of residual CO_2 and CO in the effluent from the absorption step (5) to obtain purified hydrogen;

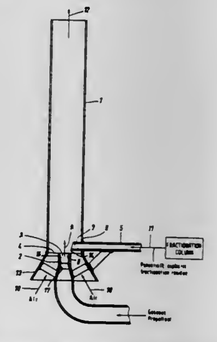
(7) use of the purified hydrogen in a hydroconversion process; and

(8) recovery of heat from the hydroconversion process to generate steam which is used as a driving medium for the centrifugal compression of step (3).

3,618,332
EVAPORATION OF POTENTIALLY EXPLOSIVE RESIDUE OF OXYGEN CONTAINING GAS FRACTIONATION PROCESS

Lothar Setzpfandt, Munich, and Josef Stockner, Baierbrunn, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed July 16, 1968, Ser. No. 745,218
Claims priority, application Germany, July 19, 1967, L 57,024
Int. Cl. F25j 3/08
U.S. Cl. 62—18 5 Claims

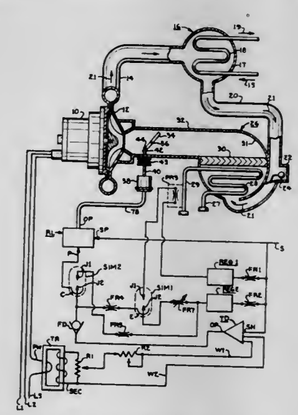


Low-boiling point liquids are evaporated in an evaporating stream formed by entraining ambient air in a jet of propellant gas. The liquid to be evaporated is atomized by injection into the jet and an aerosol is thereby formed. The atomized liquid is continuously evaporated in the thus formed aerosol stream by heat derived from the change of enthalpy of the ambient air and propellant gas.

3,618,333
FLUIDIC CONTROLS FOR REFRIGERATION APPARATUS

Niels E. Pedersen, Milwaukee, and Otto R. Munch, West Allis, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

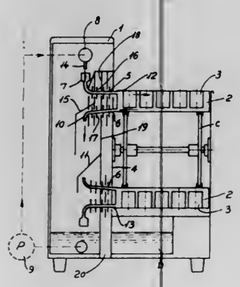
Filed Apr. 2, 1970, Ser. No. 25,072
Int. Cl. F25b 41/04
U.S. Cl. 62—217 9 Claims



A temperature responsive fluidic resistor monitors the temperature of chilled water flowing to a load from an

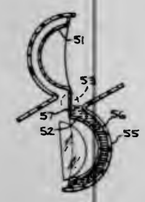
evaporator of an electric motor driven refrigeration apparatus. The fluidic resistor in response to temperature change controls the output of a fluidic amplifier, which output is interconnected to a pneumatic relay. The relay controls a fluid motor which positions throttling mechanism to regulate the flow of refrigerant gas from the evaporator to the compressor to maintain a desired temperature of chilled water to the load.

3,618,334
CONTACT FREEZING APPARATUS
Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark
Filed Feb. 26, 1970, Ser. No. 14,588
Claims priority, application Denmark, Feb. 27, 1969, 1,097/69
Int. Cl. F25c *1/10*
U.S. Cl. 62—345 **8 Claims**



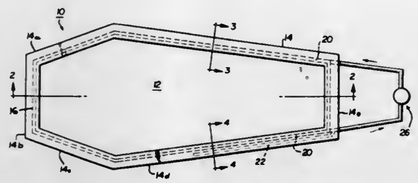
In a contact freezing apparatus elongated freezing elements are arranged side by side in the form of an endless band and are provided with inlet and outlet means extending through a slot of the same general shape as the endless band into a cabinet, in which means are provided for circulating a freezing medium through each freezing element via said inlet and outlet means.

3,618,335
AUTOMATIC ICEMAKER
Daniel N. Toma, Louisville, Ky., assignor to General Electric Company
Filed Sept. 17, 1969, Ser. No. 858,712
Int. Cl. F25c *1/10*
U.S. Cl. 62—349 **2 Claims**



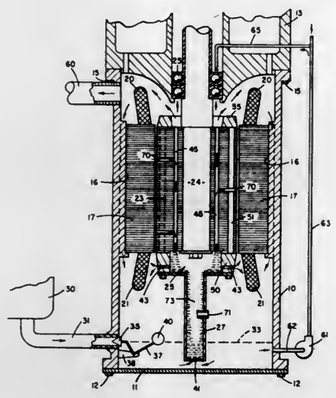
An automatic icemaker of the type including a rotatable mold containing cavities in which a measured charge of water is frozen and from which ice pieces are heat released for gravity discharge by the warming action of a subsequent charge of water. The mold is so designed that during rotation thereof the subsequent water charge is first confined in direct contact with all of the mold walls from which ice pieces are to be released and is thereafter transferred to mold cavities for the freezing thereof. In one embodiment of the invention, the subsequent charge is transferred to the same mold cavities from which ice pieces have been released by its warming action. In another embodiment, the mold comprises two sets of cavities and the water used to heat release ice pieces from one set is thereafter transferred to the other set of cavities.

3,618,336
COOLED COFFIN STRUCTURE
James R. Palma, 1502 Curry Road, Schenectady, N.Y. 12306
Filed May 21, 1970, Ser. No. 39,267
Int. Cl. F25d *23/06*
U.S. Cl. 62—451 **2 Claims**



A coffin is provided having a hollow side wall and opening along said side wall inside of said coffin connected to an air circulating unit adapted to introduce air into the hollow side wall and continuously recirculate the air over and around a corpse disposed in the coffin by means of the hollow side wall and the spaced openings to dissipate odor and to slow decomposition of the corpse inside the coffin.

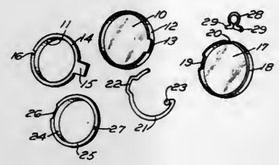
3,618,337
HERMETIC REFRIGERATION COMPRESSOR
Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 22, 1970, Ser. No. 48,360
Int. Cl. F25b *31/00*
U.S. Cl. 62—505 **5 Claims**



The lower end of the casing of the vertically mounted hermetic compressor unit is formed with an oil sump to which liquid refrigerant is supplied. The liquid oil-refrigerant mixture is elevated from the sump by a lift tube fixed to and depending from the motor rotor. During operation of the motor, a rotational vortex is formed in the tube and the liquid mixture is passed upwardly through axially extending passages in the rotor and is dispensed on the upper

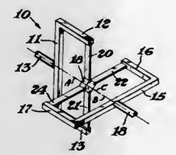
and lower end turns of the stator windings. Suction is applied to the casing above the motor for removal of refrigerant vapor.

3,618,338
LOCKET HAVING WIRE ELEMENT FURNISHING A HINGE AND CATCH MEMBER
Alfred Eugene Sauer, Warwick, R.I. assignor to B. A. Ballou & Co., Incorporated, East Providence, R.I.
Filed Oct. 19, 1970, Ser. No. 81,641
Int. Cl. A44c *15/00*
U.S. Cl. 63—19 **3 Claims**



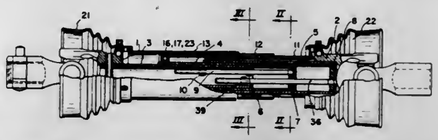
A locket having a novel hinge construction. The locket comprises a front case having a peripheral flange formed with a notch, a front case field piece fitted therein, having a tongue received in the notch and a female catch opening, a back case having a peripheral flange formed with a notch through which the tongue also extends, a recess that constitutes a ring anchorage, a hinge wire formed as a segment of a circle greater than 180° fitted in the back case, with an offset portion thereof located where the notches meet, an outturned end portion constituting a male catch, and a back case field piece press fitted in the back case to secure the hinge wire. The back piece has a notch in alignment with the notch in the back case and a slot which accommodates the male catch. When the front and back cases, with the field pieces therein, are assembled, the tongue is bent over the offset portion of the hinge wire. A ring having opposed shoulders is anchored to the back case by positioning the shoulders between the peripheral flange of the back case and the back case field piece, projecting through the recess in the peripheral flange. In a modification the ring is formed as an integral part of the hinge wire.

3,618,339
UNIVERSAL JOINT
Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 30, 1970, Ser. No. 7,129
Int. Cl. F16d *3/62*
U.S. Cl. 64—12 **5 Claims**



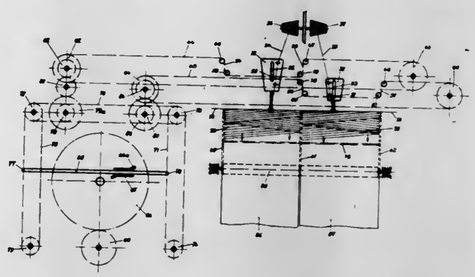
A universal joint is prepared without bearings and having flexing members at right angles to each other whose major cross-sectional dimension is parallel to the axis of rotation of the shafts.

3,618,340
TELESCOPING UNIVERSAL JOINT SHAFT
Hubert Geisthoff, Donrath, and Heinrich Welschof, Geber, Germany, assignors to Jean Walterscheld KG, Lohmar, Germany
Filed July 29, 1970, Ser. No. 59,308
Claims priority, application Germany, Aug. 28, 1969, P 19 43 837.0
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **5 Claims**



A shaft for transmitting torque between two universal joints comprises three telescoping tubular shaft members axially moveable with respect to each other and enclosed by three telescoping protective tubular members also axially moveable. Stop means are provided on the inner and outer tubular shaft members engageable with portions of the intermediate tubular shaft member for limiting its axial movement. The intermediate protective tube member is journaled on the intermediate shaft member with both intermediate members being moveable together.

3,618,341
WARP KNITTING MACHINE
Engelbert Ehrlich, Floha, Saxony, and Bertram Frenzel, Wolfgang Neubert, Friedrich Schattauer, and Wolfgang Wunsch, Karl-Marx-Stadt, Germany, assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany
Filed Apr. 13, 1970, Ser. No. 27,889
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 **7 Claims**

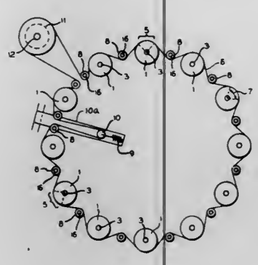


In a warp knitting machine in which a preformed weft is fed to a knitting zone in which warp yarns are knit thereinto, the improvement comprising means for feeding at least two preformed wefts side by side through the knitting zone and thereby forming a corresponding two longitudinal strips of fabric.

3,618,342
DEVICE FOR THE FEED OF ELASTOMER THREADS, PARTICULARLY IN CIRCULAR KNITTING MACHINES
Günter Wurm, Wuppertal-Sudberg, Germany, assignor to Glanzstoff AG, Wuppertal, Germany
Filed May 21, 1969, Ser. No. 826,324
Claims priority, application Germany, May 28, 1968, P 17 60 504.8
Int. Cl. D04b *15/50*
U.S. Cl. 66—132 T **4 Claims**

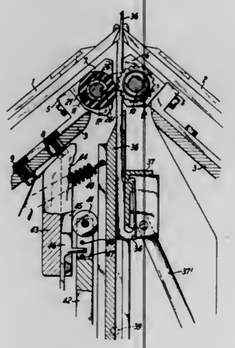
Device adapted for feed of elastomer threads from a plurality of rotatable bobbins, especially adapted for

circular knitting machines, characterized by a common belt or band bobbin-drive means and braking means, which are constructed and coupled in such a way that in



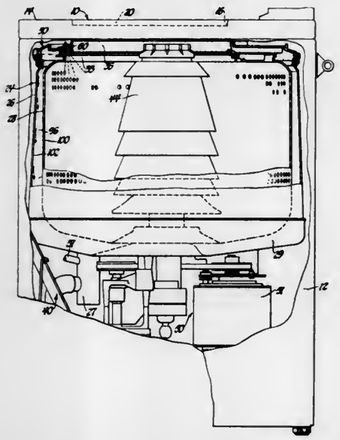
rotation of the bobbins they yield equal circumferential velocities of the elastomer thread windings on respective bobbins.

3,618,343
FABRIC DRAW-DOWN MECHANISM FOR FLAT KNITTING MACHINES
Karl Essig, Reutlingen, Germany, assignor to H. Stoll & Company, Reutlingen, Germany
Filed Dec. 5, 1969, Ser. No. 882,686
Claims priority, application Germany, Dec. 6, 1968, P 18 13 052.4
Int. Cl. D04b *15/88*
U.S. Cl. 66—149 **16 Claims**



In a flat knitting machine for the production of shaped knitted goods having three-dimensional portions, a fabric drawdown mechanism is arranged directly beneath the needle beds. The mechanism includes a draw-down roller composed of peripherally toothed roller components of relatively small axial dimensions mounted on a first rotatable shaft and spaced apart by annular recesses through which draw-down hooks can pass, the roller components being driven by the first shaft through an adjustable yieldable drive whereby they can slip circumferentially about the first shaft when a predetermined loading is exceeded. Cooperating with the draw-down roller is a composite counter pressure roller composed of individual rollers of reduced axial dimension, these rollers adjustably bearing against driving discs which are secured on a second rotary shaft and disposed between the rollers, whereby the rollers rotate together with the second shaft so long as the resistance does not exceed a predetermined maximum value. The draw-down hooks during their passage through the annular recesses between the roller components are deflected to bear against the counter pressure rollers so as to prevent the new knitting looped in the hooks from being disengaged therefrom by the rotating roller components.

3,618,344
CLOTHES WASHER HAVING A DIVERGING WATER CONTAINER FOR SUDS CONTROL
Robert E. Hoffman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1970, Ser. No. 55,814
Int. Cl. D06f *29/00, 39/08*
U.S. Cl. 68—23.5 **4 Claims**

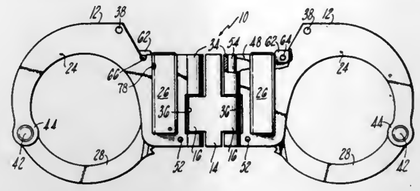


A domestic clothes washer has a pair of nested and spaced tubs one of which (water container) is imperforate to retain the washing fluid, the other of which (spin basket) is perforated and rotatable to centrifuge the washing fluid from clothes being washed therein. A preipheral fill system includes a fill tube circumscribing the top of the nested pair of tubs. The fill tube has slots to provide a circumferential series of sprays, a portion of which enters the space between the tubs for flushing suds therefrom prior to rinsing. The sidewall of the water container diverges downwardly from the cylindrical sidewall of the spin basket as an aid in flushing suds from the space between the tubs.

3,618,345
DOUBLE-HINGE HANDCUFF ASSEMBLY
Hollis B. Smith, Island Pond, Vt., assignor to Essex Lock & Manufacturing Company, Inc., Island Pond, Vt.
Filed Feb. 9, 1970, Ser. No. 9,521
Int. Cl. E05b *25/00*
U.S. Cl. 70—16 **8 Claims**

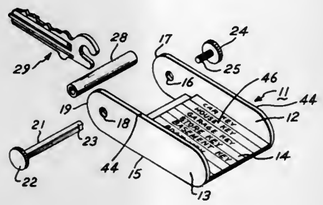
A double-hinge handcuff assembly comprises a central hinge block and a pair of substantially identical lockable cuffs pivotally connected to the block. Each cuff is constructed of a folded one-piece sheet metal body member of generally U-shaped, cross-sectional configuration having a pair of spaced confronting side walls and an integral arcuate connecting portion forming a hinge knuckle for connecting the cuff to the hinge block. Each cuff is further provided with a curved shackle movable between open and closed positions and pivotally connected to the side walls for movement therebetween. A lock assembly

securely mounted on the confronting wall portions adjacent the hinge connection includes a rotatable key-operated tumbler plug and a shackle lock drum connected



thereto by a lost-motion connection. The drum is adapted for coaxial rotation with the plug and includes peripheral locking teeth rotatable into locking engagement with the shackle for retention thereof in its closed position.

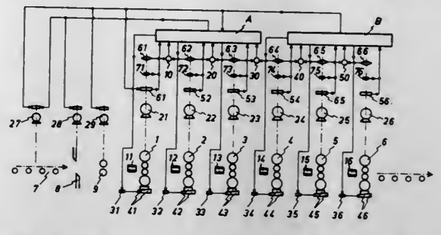
3,618,346
KEY HOLDER AND KEY
David H. Humphrey, G.P.O. Box 2226, San Juan, Puerto Rico 00936
Filed July 22, 1970, Ser. No. 57,223
Int. Cl. A47g *29/10;* **E05b** *19/04*
U.S. Cl. 70—408 **9 Claims**



An improved key holder and a novel key designed for use with the improved key holder. The novel key includes a conventional shank portion and a head portion having opening means including a hole and a groove therein, with the groove extending from the hole to the outer margin of the head portion and with the width of the narrowest part of the groove being less than the diameter of the hole. The improved key holder includes a resilient tube which extends through the hole in the key when the key is held in the key holder. A bar extends through the tube and normally prevents keys from being added to or removed from the tube because the combined maximum dimension of the bar and tube, even when the tube is radially compressed, is greater than the width of the narrowest part of the groove. However, when it is desired to add or remove a key from the key holder, the bar is withdrawn from the tube to permit the tube to be radially compressed to an extent that the key may be pulled or passed over the tube.

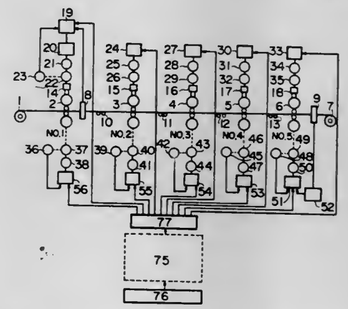
3,618,347
METHOD OF OPERATING A HOT STRIP-FINISHING TRAIN WHEN A LEADING END OF STRIP TO BE ROLLED HAS BEEN STUCK
Johann Krausz, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Mar. 2, 1970, Ser. No. 15,338
Claims priority, application Austria, Apr. 1, 1969, A 3,182/69
Int. Cl. B21b *37/00*
U.S. Cl. 72—5 **11 Claims**

An automatic control system to prevent damage when a leading end of a strip has been stuck in a hot rolling mill train. The system operates to sever the strip before the first stand or between the first and second stands, to reverse the roller bed and scale breaker, to maintain



rotation of the stands succeeeding the location of the stuck portion and to open the rolls of stands preceding the location of the stuck portion.

3,618,348
METHOD OF CONTROLLING ROLLING OF METAL STRIPS
Tohru Arimura, Masamoto Kamata, and Morio Saito, Kawasaki-shi, Kanagawa-ken, and Terumi Okamoto, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Fukuyama-shi, Hiroshima-ken, Japan
Filed May 16, 1969, Ser. No. 825,354
Claims priority, application Japan, May 21, 1968, 43/33,741
Int. Cl. B21b *37/02, 37/06, 37/08*
U.S. Cl. 72—7 **14 Claims**

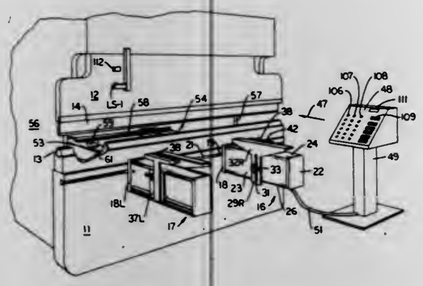


In a method of rolling a metal strip, a predetermined pattern for varying with time the roll peripheral speed that can maintain the strip tension at a constant value is stored in a computer, the variation in the roll opening is detected by said pattern or a tension meter or strip gauge meter on the delivery side of a rolling mill or a load cell mounted on the rolling mill or combinations thereof, and the preliminary control of the variation with time of the roll peripheral speed is effected by the detected variation in the roll opening so as to compensate for the variation in the strip gauge. In rolling a metal strip composed of a number of welded metal bands of different gauges, said pattern is predetermined with regard to the variation of the strip gauge at the welds, so as to maintain the strip tension always a constant value.

3,618,349
GAUGING SYSTEM FOR PRESSES
Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.
Filed Mar. 26, 1969, Ser. No. 810,697
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **18 Claims**

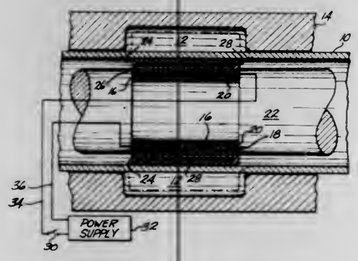
Two gauge assemblies mounted in front of the forming tools of a press brake, and two assemblies in back of the forming tools, incorporate pneumatic cylinders to drive

gauge carriages facilitating automatic programmed control and positioning of gauges. The front gauge cylinders are hydraulically slave to each other, as are the rear gauge cylinders for synchronized movement, with flow control for rate of movement, and chain and sprocket coupling of cylinders to gauge carriages for travel multiplication. Control of the gauges is accomplished by means of a



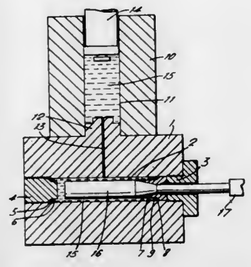
rotary encoder mounted on one gauge housing of both the front and rear units which is constantly measuring the position of the gauge in use thru electrical impulses generated in direct proportion to the gauge travel and sent to a digital electronic controller that employs counting circuits to shut off solenoid valves in the gauge assemblies when coincidence is reached with the desired pre-selected gauge dimensions.

3,618,350
REUSABLE TOOLING FOR ELECTROMAGNETIC FORMING
Walter H. Larrimer, Jr., and John E. McFarland, Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 15, 1969, Ser. No. 885,228
Int. Cl. B21d *26/14*
U.S. Cl. 72—56 **10 Claims**



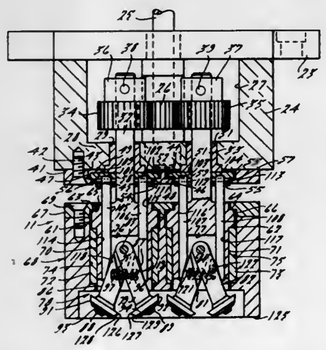
An electrically conductive and deformable metallic structure of wire braid, wire mesh, metallic fabric, or the like bonded to or imbedded within an elastomeric material. When subjected to an intense varying magnetic field, the metallic structure forceably deforms and the elastomeric material transmits the deforming force to a workpiece forming it into an adjacent die. Upon removal of the magnetic field, the elastomeric material restores the metallic structure to its original configuration. An electrical power supply and an electromagnetic coil selectively generates a magnetic field and restraining members or a mandrel prevents destructive deformation of the magnetic coil.

3,618,351
HYDROSTATIC EXTRUSION
Peter John Thompson, St. Anne's-on-Sea, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Apr. 24, 1969, Ser. No. 819,027
Claims priority, application Great Britain, May 3, 1968, 21,188/68
Int. Cl. B21c *23/02*
U.S. Cl. 72—60 **7 Claims**



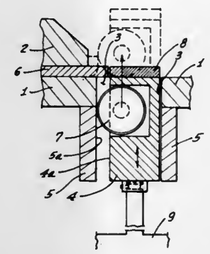
The disclosure relates to a process for extruding a billet through a die by subjecting the billet to the pressure of hydraulic liquid in a container and by application of a direct mechanical loading on the billet such as by application of a drawing load on the extruded length of the billet. A die having a conical orifice is employed and as the rear end of the billet passes through the die the stresses required for extrusion of the end of the billet through the die gradually decrease. Thus during extrusion of the rear end of the billet through the die the pressure in the liquid can be gradually reduced until when the rear end of the billet passes out of the die the liquid pressure is reduced to a low pressure and a blast of pressurised liquid from the die is avoided.

3,618,352
CUTOFF TOOL AND METHOD
George Mink, 13130 Geoffrey, Warren, Mich. 48026
Filed May 19, 1969, Ser. No. 825,605
Int. Cl. B21d *3/02, 31/02*
U.S. Cl. 72—71 **8 Claims**



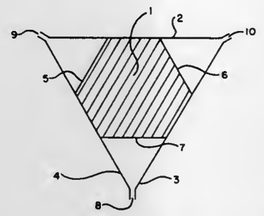
An apparatus and method for cutting off and upsetting projections of one member for fixing such member to another member. The apparatus includes pairs of cutting heads that are rotatably supported and which are additionally pivotal for movement into engagement with the projections to be cut for cutting and upsetting such projections.

3,618,353
METHOD FOR WELDING TWO SHEET METAL EDGES
Werner Meyer, Hannover, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Feb. 10, 1969, Ser. No. 798,085
Claims priority, application Germany, Feb. 8, 1968, P 16 52 819.1
Int. Cl. B21d *7/02*
U.S. Cl. 72—220 **3 Claims**



For edge-to-edge welding of two metal sheets, one of them is bent up (folded) along the edge by a roller.

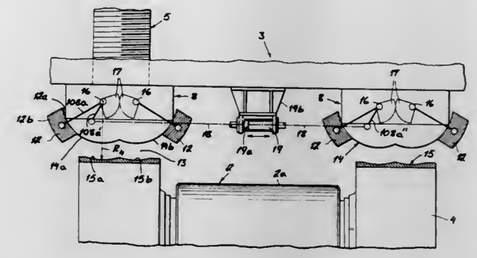
3,618,354
METHODS AND APPARATUS FOR METAL ROLLING
Ali Bindernagel, Dusseldorf-Gerresheim, and Werner Demny, Dusseldorf-Oberkassel, Germany, assignors to Friedrich Kocks, Dusseldorf, Germany
Filed May 6, 1970, Ser. No. 34,982
Int. Cl. B21b *13/10, 13/12*
U.S. Cl. 72—224 **4 Claims**



A wire or rod reduction mill having three-roll stands wherein first the workpiece is reduced to an equilateral triangular shape, then a non-equilateral hexagonal shape and finally rolled on rolls having curved non-circular grooves.

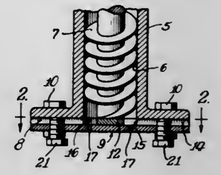
3,618,355
ROLLING MILL AND SYSTEMS FOR FACILITATING THE INTERCHANGE OF ROLLING-MILL ROLLS
Walter Brahm, im Mulheim (Ruhr), and Peter Zens and Theodor Josef Sevenich, Dortmund, Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Germany
Filed July 18, 1969, Ser. No. 843,129
Claims priority, application Germany, July 19, 1968, P 17 52 817.5; Mar. 19, 1969, P 19 13 771.4
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **21 Claims**

A rolling-mill system in which at least two rolling-mill rolls are provided, between the threaded gap-adjusting spindle and the bearing blocks of the rolls, with a thrust-bearing structure and a spacer block swingable or shiftable from between the thrust bearing and the journal bearings of the rolls to free the latter for replacement. The roll-changing arrangement comprises a carriage supporting a pair of rolls adjacent the rolling-mill stand and shiftable in the rolling direction into alignment axially



with the roll-accommodating openings of the stand, and an insertion carriage engageable with one end of the rolls for supporting same and feeding the rolls axially into the stand.

3,618,356
EXTRUDING APPARATUS
Joseph R. Sagmuller and John F. Joyce, Columbus, Ohio, assignors to National Standard Company, Niles, Mich.
Filed Sept. 5, 1969, Ser. No. 855,587
Int. Cl. B21c *23/00*; D01d
U.S. Cl. 72—262 **7 Claims**

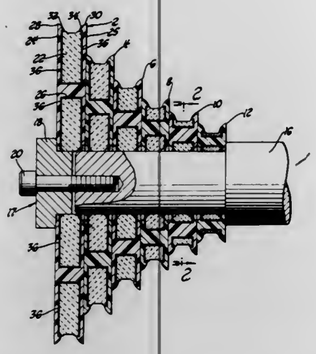


An extruding apparatus embodying die means for effecting the extrusion of an extrudable material into a plurality of elongated articles at a uniform rate.

3,618,357
COMPOSITE CAPSTAN ASSEMBLY
Duane H. Beninga, Arvada, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Apr. 30, 1970, Ser. No. 33,235
Int. Cl. B21c *1/02*
U.S. Cl. 72—289 **7 Claims**

A capstan comprising a ceramic ring having a plurality of openings therethrough and having bonded to each of the side walls thereof a ring of another material having greater crack resistance than that of the ceramic ring and having a greater outside diameter than that of the ceramic ring such that the rings of other material provide radially outwardly extending annular flanges on each side of the ceramic ring, at least the inner surface of each of the rings of other material being an organic resin which extends through said openings thereby providing a unitary organic resin body which is mechanically interlocked with the ceramic ring. In the preferred embodiment the rings of other material are formed entirely of organic resin and the ceramic ring has a thin layer of metal thereon to increase the bond strength between the ceramic ring and the resin. An assembly of such composite capstans of decreasing diameter provides a stepped-cone draw block for wire drawing which has

optimum wear resistance along with optimum resistance to breakage and yet which can be manufactured simply and at a low cost. In the event there is breakage of the

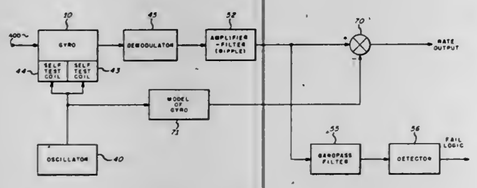


ceramic ring, the mechanical interlock with the resin body inhibits disintegration of the ceramic ring from centrifugal force even at high rotary speeds.

3,618,358
CONTINUOUS SELF-TEST INERTIAL APPARATUS

John C. Dendy, Phoenix, and Carl D. Griffith and Everett R. Tribken, Scottsdale, Ariz., assignors to Sperry Rand Corporation

Filed Dec. 30, 1968, Ser. No. 787,890
Int. Cl. G01c *25/00*
U.S. Cl. 73—1 9 Claims



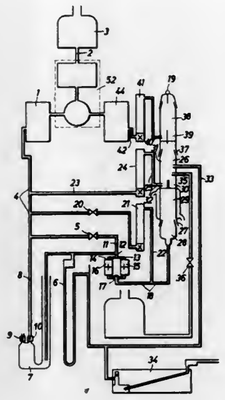
Continuous self-test apparatus for inertial devices having a sensitive element wherein the sensitive element is continuously exercised to provide a composite signal representative of the effects of exercising the sensitive element and the normal operation of the device in which the output signal is representative of the normal operation of the device.

3,618,359
OLFACTOMETER

Rudolf Randebrock, 32 Dusternatwiete, 2 Garstedt, Bezirk, Hamburg, Germany, and Otto Neese, Hamburg, Germany; said Neese assignor to said Randebrock

Filed Aug. 1, 1969, Ser. No. 846,700
Claims priority, application Germany, Aug. 6, 1968, P 17 98 003.9
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 6 Claims

The olfactometer includes a perfume source for holding a perfume sample and one or more rarefying devices, with connections thereto from a metered air supply for rarefying the perfume with air, connected to the outlet side of the perfume source. The perfume is diluted until the perfume impression thereof can then be determined in dependence of the concentration and the threshold value. The perfume source and the or each rarefying device are interconnected by capillary tubes to form a single combination and this combination is so connected to the olfactometer casing that all or the various sections there-

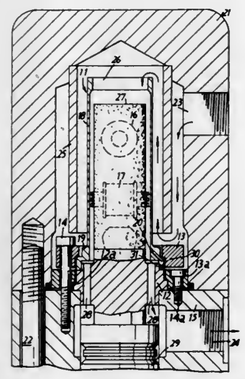


of can be removed with ease and replaced by uncontaminated sections so that a new perfume can be tested in the knowledge that there will be no residual perfumes to contaminate it.

3,618,360
TRANSDUCERS SUITABLE FOR USE IN MEASURING THE DENSITY OF OR THE PRESSURE OR A PRESSURE DIFFERENCE IN FLUIDS

Ian F. M. Curtis, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Aug. 28, 1969, Ser. No. 853,915
Claims priority, application Great Britain, Aug. 30, 1968, 41,645/68
Int. Cl. G01n *9/00, 29/02;* G01f *1/00*
U.S. Cl. 73—32 35 Claims



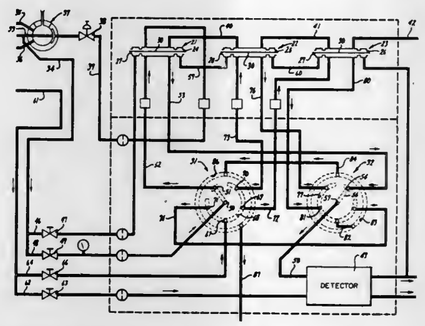
A transducer for measuring fluid density or pressure or pressure difference has a hollow cylindrical body with integral circuit flanges at one end. The flanges overlap axially of the body to provide an elastically flexible connection

therebetween. In use, the body is set into vibration while in contact with fluid so that the frequency of the vibration is affected by the density or pressure or pressure difference in the fluid. One of the flanges establishes a node at the corresponding end of the hollow body, and the other flange enables the hollow body to be mounted on a supporting structure without interfering with the node-forming flange.

3,618,361
METHOD AND APPARATUS FOR DETERMINING GAS PERMEABILITY OF FILM

Thomas M. Stephens, Menlo Park, and James A. McNulty, Belmont, Calif., assignors to Dohrmann Instruments Company, Mountain View, Calif.

Filed Mar. 2, 1970, Ser. No. 15,324
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 9 Claims



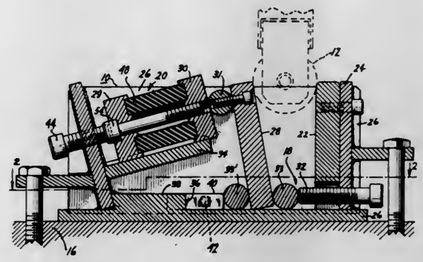
A method and apparatus for determining the permability of membranes using a multiplicity of permeable cells. The upstream compartments are connected in series and are supplied with a continuous stream of permeable gas. Two valve means are operatively associated to direct carrier gas through a selected one of the downstream compartments and through a detector and simultaneously, a purge gas is directed through the non-selected cells by shifting the operative positions of the valves, purge gas may be directed through the formerly selected compartment while carrier gas is directed through the formerly non-selected compartment. Means for bypassing the downstream compartments is provided in the valves. Each valve is preferably of a rotary type and includes sealing means formed of an annular groove around the valve switching ports with a continuous stream of carrier gas flowing therein. In a preferred embodiment of the cell assemblies, the membrane is retained and sealed between the upstream and downstream compartments using springs which urge the mating wall of one of said compartments toward the other compartment mounted on a spring floated base.

3,618,362
PROGRAMMING MEANS FOR SHOCK TESTING MACHINES

Gilbert F. Hill, Skaneateles, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jan. 2, 1970, Ser. No. 17
Int. Cl. G01n *3/08*
U.S. Cl. 73—12 16 Claims

A shock programmer for use with shock testing apparatus wherein a striker member which may be on the underside of a movable specimen-supporting carriage, is adapted to be decelerated in a desired manner by engagement with a force resisting channel which channel has an elastomeric spring means, or other suitable energy absorbing means, arranged so that the energy of the impacting striker member is imparted simultaneously to the channel and the elastomeric spring means. The reaction force can be adjusted, as required to obtain a desired shock pulse, by adjustment of the shape of the tapered

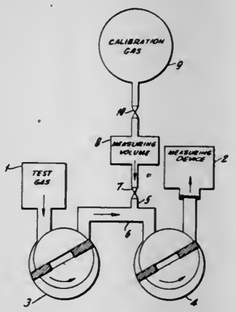


impact channel and selection and/or adjustment of the characteristics exhibited by the energy absorbing-storing means.

3,618,363
CALIBRATION ARRANGEMENT FOR AN APPARATUS FOR MEASURING THE GAS CONTENT OF MATERIAL

Thaddaus Kraus, Vaduz, Liechtenstein, assignor to Balzers Patent- und Beteiligungs-Aktiengesellschaft, Balzers, Liechtenstein

Filed Apr. 6, 1970, Ser. No. 25,937
Claims priority, application Switzerland, Apr. 8, 1969, 5,397/69
Int. Cl. G01n *7/14*
U.S. Cl. 73—1 A 4 Claims



An arrangement for the quantitative analysis of gases which are liberated from the gas source includes a pump system connected to the source, to collect the gas to be analyzed, a gas collecting space connected to the pump system discharge, and a device for inserting measured amounts of calibration gas, from a source thereof, into the gas collecting space. The pump system comprises a two-stage or multi-stage pump system, with the stages being interconnected by connection lines. The calibrating gas insertion device is connected into the connecting line between two successive pump stages.

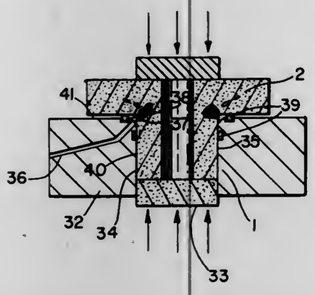
3,618,364
METHOD AND APPARATUS FOR TESTING POWDERED COMPACTS

Ivor Hawkes, Lyme, N.H., assignor to Creare Inc., Hanover, N.H.

Filed Sept. 2, 1969, Ser. No. 854,589
Int. Cl. G01m *3/26*
U.S. Cl. 73—37 9 Claims

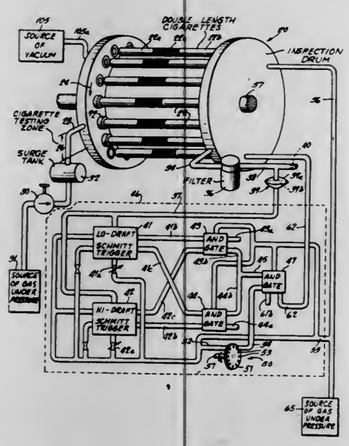
A method and apparatus for testing unsintered compacted powder articles for structural flaws by passing a fluid under pressure into regions of the article where

flaws are most likely to occur. The fluid can be applied under a constant standard pressure or a variable pressure which is increased up to the standard pressure such that flawed articles fail and unflawed articles remain intact. The standard pressure is established empirically for a given compact in relationship to the maximum pressure that can be applied without producing failure to unflawed



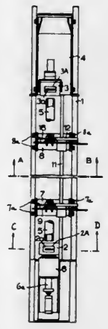
compacts made from the same composition and by the same method. The compact during test is clamped in a jig adapted so that fluid pressure can be applied to predetermined regions where flaws are suspected and so designed that the compressive clamping force is not applied in opposition to the tensile force on the flaw region generated by the fluid.

3,618,365
CIGARETTE AND FILTER INSPECTION SYSTEM
Colin S. McArthur, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Co., Winston-Salem, N.C.
Filed Jan. 26, 1970, Ser. No. 5,592
Int. Cl. G01m *3/04, 3/26*
U.S. Cl. 73—45.1 **15 Claims**



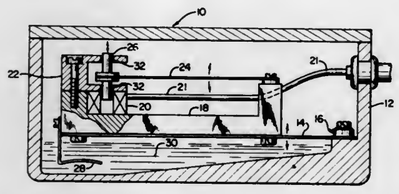
Cigarette and filter inspection apparatus comprising means for applying a test pressure individually to cigarettes or filters in a high-speed manufacturing line and fluidic means for sensing the level of the pressure flow in each and supplying a reject signal when the flow level is above or below an acceptable range. The fluidic means comprises both a high and a low level pressure-sensing Schmitt trigger and two and-gates, each of which receives one output from each Schmitt trigger and has one of its outputs mutually feeding a third and-gate whose other input is a synchronized pulse timed with the application of a test pressure pulse. Thus, when the level of the pressure flow in a given cigarette or filter is outside an acceptable range, the output of the appropriate Schmitt trigger will shift, shifting the output of the corresponding and-gate and when coincident with a synch pulse, shifting the output of the third and-gate to actuate a memory or reject means. The system automatically resets itself after each testing.

3,618,366
APPARATUS FOR TESTING OF PIPES OR THE LIKE
Kurt Pauls, Langenfeld, and Hans Brauer, Leichlingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany
Filed Jan. 15, 1970, Ser. No. 3,034
Int. Cl. G01n *3/12*
U.S. Cl. 73—49.5 **8 Claims**



A testing apparatus for pipes wherein the testing heads which engage the end portions of a pipe during testing with a fluid are insertable into the chambers of aligned stationary or indexible supports and are provided with sealing rings which engage the circumferences or the end faces of pipes during testing. The positions of sealing rings and fluid conveying passages in the testing heads are selected in such a way that the parts which support and clamp intermediate portions of pipes during testing require minor adjustments when a larger-diameter pipe is tested after a smaller-diameter pipe or vice versa.

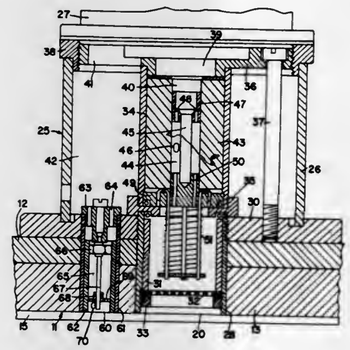
3,618,367
VIBRATION PICK-UP DEVICE
Marcellus S. Merrill, 335 Colorado Blvd., Denver, Colo. 80206
Filed Jan. 22, 1970, Ser. No. 4,804
Int. Cl. G01n *24/00*
U.S. Cl. 73—71.4 **10 Claims**



Apparatus for balancing rotatable bodies, such as automotive vehicle wheels, characterized by an electromagnetic pick-up device including a pair of cantilevered springs providing a double spring suspension, one being

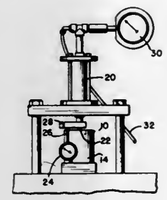
supported by the other, and including suitable damping means, the construction being such that the signal output has non-linear characteristics with change in frequency.

3,618,368
METHOD AND INSTRUMENT FOR DETERMINING THE MOISTURE CONTENT AND/OR TEMPERATURE OF MOVING MATERIAL
Gerhard Lesemann, Hannover, Germany, assignor to Sina AG fur Instrumentierung und Automatik, Zurich, Switzerland
Filed Sept. 3, 1969, Ser. No. 854,938
Claims priority, application Switzerland, Sept. 6, 1968, 13,427/68
Int. Cl. G01n *25/64*
U.S. Cl. 73—73 **16 Claims**



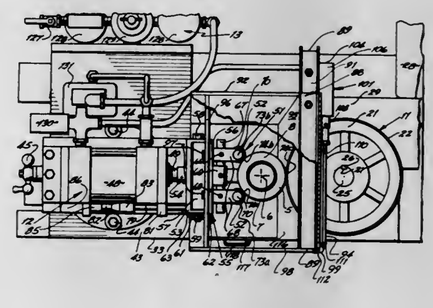
A method and apparatus for measuring the moisture content of a moving material by using a moisture sensing device which supplies an electrical output signal as a function of the value of the moisture being determined. A cover of non-hydroscopic, thermally insulating material is fixedly disposed so as to be slightly spaced from the surface of the moving material. The cover is provided with means for causing the atmosphere passing between the cover and the surface of the material to be drawn off and moved past, and into contact with, the moisture sensing device. The atmosphere, before being moved past the moisture sensing device, is first brought into contact with a temperature varying device for permitting the temperature of the atmosphere to be selectively varied.

3,618,369
APPARATUS AND METHOD FOR TESTING ROCK
William H. Hamilton and Howard J. Handewith, Jr., Seattle, Wash., assignors to Lawrence Manufacturing Company, Seattle, Wash.
Filed Apr. 21, 1970, Ser. No. 30,373
Int. Cl. G01n *3/42*
U.S. Cl. 73—81 **15 Claims**



A method for testing rock for its resistance to boring in which a specimen of the rock is fixed on a bearing surface and is stressed with a tool until the specimen exhibits deformation after which the amount of the permanent deformation is measured as is the force which effected the deformation. The invention comprises applying a predetermined force at a predetermined rate or varying rate to the specimen and measuring the resultant arbitrary deformation, as well as applying an increasing force at a predetermined rate or varying rate to the specimen until a predetermined deformation is realized. The invention also comprises novel apparatus for testing rock to determine its resistance to boring with which apparatus can be practiced the inventive methods.

3,618,370
GLASS CONTAINER TEST APPARATUS
Roger D. Dubble, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Oct. 14, 1969, Ser. No. 866,183
Int. Cl. G01d *21/00*
U.S. Cl. 73—88 R **9 Claims**

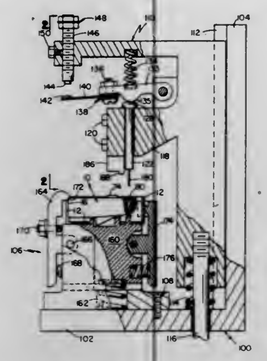


Test apparatus particularly adapted to determine the presence of blemishes or flaws or defects in the side wall of a glass container, which blemishes adversely affect the strength of the side wall. The test apparatus includes, in preferred form, a drive wheel of sufficient width to engage the container's side wall from shoulder to heel at one point on its periphery, and a yoke having an idler roller on each arm of sufficient length to engage the side walls from shoulder to heel at a second and a third point on its periphery, the three points being disposed about the container's periphery such that the container may be gripped therebetween during testing. Further, the test apparatus includes a device to control the force exerted on the container and a device to control the duration of container revolution at that force. Thus, the apparatus functions by controlled rotation of the glass container about its center axis for a preselected period while subjecting the side wall to a preselected and constant external load.

3,618,371
METHOD AND APPARATUS FOR TESTING RESILIENT STRUCTURES
Frank S. Martin, Wenham, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 21, 1969, Ser. No. 852,046
Int. Cl. G01n *3/00*
U.S. Cl. 73—100 **3 Claims**

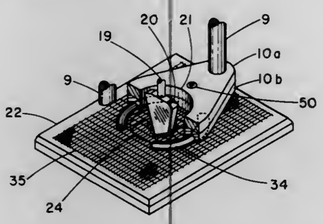
Apparatus for testing a web section which connects two spaced members of an integral molded resilient structure includes a support constructed to receive the structure so that the connecting web is free to flex under the influence of a stressing force. A testing head which includes a probe for engagement with at least one of the spaced members is inserted for movement toward the

support so that the probe will engage that member and flex the web. Movement of the probe relative to the



testing head is sensed and provides an indication of the structural integrity of the web.

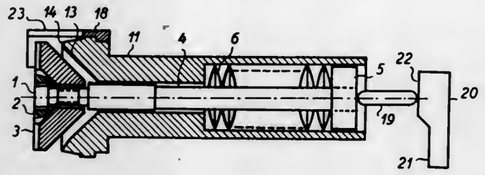
3,618,372
METHOD AND APPARATUS FOR TESTING THE PENETRATION RESISTANCE OF REINFORCED SHEET MATERIAL
Daniel H. Beckstrom, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1970, Ser. No. 17,722
Int. Cl. G01n *33/34*
U.S. Cl. 73—102 **2 Claims**



A method and device for measuring the penetration resistance of sheet materials, particularly reinforced sheet materials of the nature of woven or nonwoven fabrics and tissue papers. The method is characterized by holding the strength members of the sheet material which extend in one planar direction in a peripheral area bonding the zone through which a penetrating element is urged while permitting the strength members of the sheet material which extend in the other planar direction to be substantially free. The apparatus for the purpose includes a resilient gripping device which is, together with the penetrative probe, urged by a single means to the sheet material test sample.

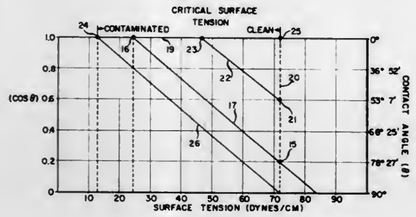
3,618,373
YARN GRIPPER FOR YARN-TESTING MACHINES AND THE LIKE
Albert Peisl, Uster, and Gerold Roos, Esslingen, Switzerland, assignors to Zellweger Ltd., Uster, Switzerland
Filed Oct. 8, 1969, Ser. No. 864,831
Claims priority, application Switzerland, Nov. 8, 1968, 16,677/68
Int. Cl. G01n *3/04*
U.S. Cl. 73—103 **9 Claims**

A yarn gripper for yarn-testing machines and the like, for testing individual yarn lengths in stages, includes a first gripping jaw having a conical gripping surface and a second gripping jaw having a hollow surface complementary to the surface of the first gripping jaw, the two gripping jaws being coaxial and axially displaceable relative to each other. The yarn enters an annular gap tangentially of the conical gripping surfaces in the direction of



a tangent to the conical surface and without any sudden changes in direction. The end face of the second gripping jaw may be designed to function directly as a yarn-guide, and adjustable guide means can be provided to enable the size of the loop inside the annular gap to be varied.

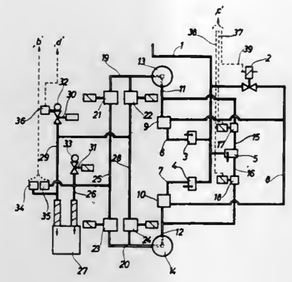
3,618,374
METHOD FOR MEASURING SURFACE CLEANLINESS
Robert N. Miller, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 24, 1969, Ser. No. 809,726
Int. Cl. G01n *13/02, 19/02*
U.S. Cl. 73—104 **4 Claims**



A surface cleanliness measuring technique which is practicable in a field or paint shop environment and which provides a quantitative evaluation of the extent to which unwanted contamination has been removed from a surface. The relation between the critical surface tension of a water droplet of constant volume and the droplet contact angle is established for a desired surface material, and this relation is correlated with the droplet diameter to enable the critical surface tension of the surface material to be determined by measuring the diameter of a water droplet of predetermined volume disposed on the surface.

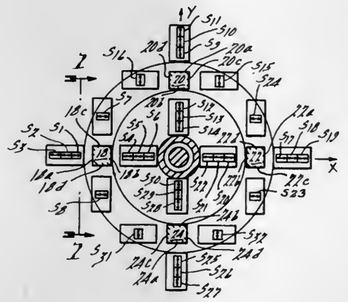
3,618,375
TEST APPARATUS FOR THE AIR BELLOWS SUSPENSION IN A VEHICLE HAVING A CURVILINEAR RESPONSIVE CONTROL SYSTEM
Hans Pollinger, Munich, and Franz Meir, Nuremberg-Mogeldorf, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany
Filed Dec. 12, 1969, Ser. No. 884,610
Claims priority, application Germany, Dec. 18, 1968, P 18 15 366.7
Int. Cl. G01l *5/22*
U.S. Cl. 73—116 **12 Claims**

A vehicle is provided with a control system for pumping air from the air bellows supporting one side of the vehicle body to the air bellows supporting the other side of the vehicle body in response to curvilinear or rectilinear travel of the vehicle to maintain the vehicle at its proper angle of inclination. The test apparatus disclosed herein enables the testing of this control system while the vehicle



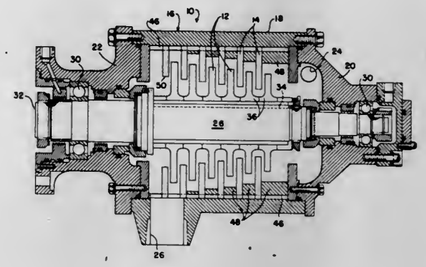
is stationary. The test apparatus simulates tilting of the vehicle and also simulates a measuring voltage in response to this tilting. The proper operation of the various control valves in response to these simulated voltages is then indicated on a number of indicators.

3,618,376
MULTIAXIAL LOAD CELL
Eugene R. Shull, Detroit, and Robert P. Nichols, Mount Clemens, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 19, 1969, Ser. No. 886,610
Int. Cl. G01l *5/16*
U.S. Cl. 73—133 **11 Claims**



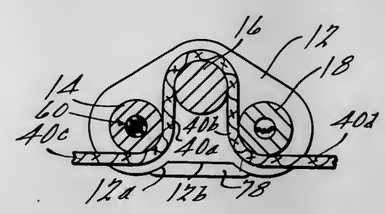
A triaxial load cell comprising a upper load receiving platform portion of generally disc shape, a lower internally threaded rim portion, a plurality of circumferentially spaced column portions of square cross section integrally interconnecting the outer periphery of the upper platform portion and the rim portion, an insert member threadably received within the rim portion, and a plurality of strain gages secured to the side faces of the column portions. The invention cell, when used in impact testing of automotive steering columns, is interposed between the hub of the steering wheel and the steering column shaft with the steering wheel hub threadably secured to the upper face of the platform portion and the usual external splines on the upper end of the steering column shaft engaging with internal splines on the transducer insert member.

3,618,377
TAPERED FLUID DYNAMOMETER
Dnard E. Barker, La Mesa, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Apr. 1, 1970, Ser. No. 24,779
Int. Cl. G01l *3/20*
U.S. Cl. 73—134 **11 Claims**



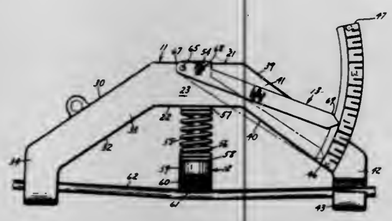
A dynamometer which has a housing provided with a fluid inlet and outlet and enclosing a set of interleaved stator and rotor disks. The disks are fabricated with work holes, the radius of a circle intersecting the centers of said holes gradually increasing from the disks on the inlet side of the housing to the disks on the outlet side to provide a cone shaped centrifugal flow of fluid through the dynamometer.

3,618,378
SEAT BELT TRANSDUCER
Eugene R. Shull, Detroit, and Robert P. Nichols, Mount Clemens, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 2, 1969, Ser. No. 863,281
Int. Cl. G01l *5/12*
U.S. Cl. 73—144 **9 Claims**



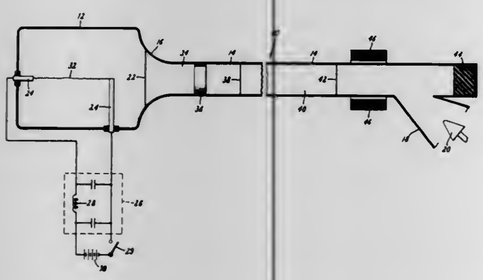
A transducer for measuring seat belt loads comprising two end plates and three parallel spaced bars extending rigidly between the end plates and arranged in an isoceles triangular pattern; the transducer is arranged on the belt with the plane of the first and third bars generally parallel to the plane of the entering and exiting belt portions. The belt enters under the first bar, then passes upwardly over the second bar and then passes downwardly and exits under the third bar so that, upon loading of the belt, the first and second bars are forced apart by the belt tension and the edge face of each end plate opposite the second bar is strained in proportion to the belt load. This strain is sensed and transduced into an electrical readout signal by strain gage means secured to the strained edge faces of the end plates.

3,618,379
TENSIOMETER
Abraham Allen Lipton, Rock Ridge, Mamaroneck, N.Y. 10543
Filed Oct. 31, 1969, Ser. No. 872,845
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 **1 Claim**



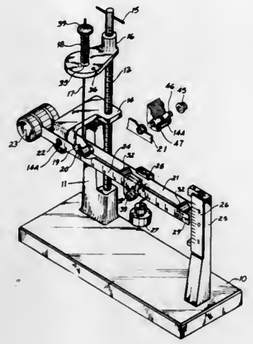
A device for comparing tension in stressed cables and wires including a frame element having first and second arms, the extremities of which engage a wire to be tested at a pair of spaced points along the wire, a central portion of the frame element supporting a resiliently urged plunger which selectively bears against a segment of the wire positioned between the arms, a scale fixed with respect to one of the arms, a pointer pivotally mounted on said frame element at one end thereof and having a free second end cooperating with the scale, pin means interconnecting movement of the plunger and the pointer, whereby the pointer may be used as a lever to position the plunger relative to said segment.

3,618,380
CONTINUOUS DISCHARGE DRIVER FREE-PISTON SHOCK TUNNEL
Charles H. Marston, Berwyn, and Walter R. Warren, Jr., Levittown, Pa., assignors to General Electric Company
Filed Nov. 5, 1968, Ser. No. 773,601
Int. Cl. G01n *9/00*
U.S. Cl. 73—147 **10 Claims**



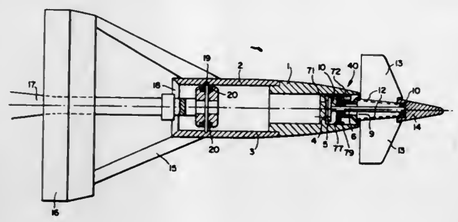
A continuous discharge, non-reflected shock tunnel capable of generating a short duration large scale, high velocity, high density gas flow. The apparatus consists of a gas filled driver chamber in which a high energy capacitor bank is discharged to raise the pressure in the driver, rupture a diaphragm and propel a piston down a connected smaller diameter tube thereby causing a shock wave to develop in front of the piston which compresses and accelerates a test gas within the tube. The capacitor discharge is maintained while the piston is moving to sustain a high gas pressure behind the piston so that it does not decelerate. The test gas then flows through an expansion nozzle to act upon a test body.

3,618,381
SPRING TESTER
Richard E. Beger, 1220 Sunset Ave., Point Pleasant, N.J. 08742
Filed Nov. 24, 1969, Ser. No. 879,340
Int. Cl. G01l *1/04*
U.S. Cl. 73—161 **2 Claims**



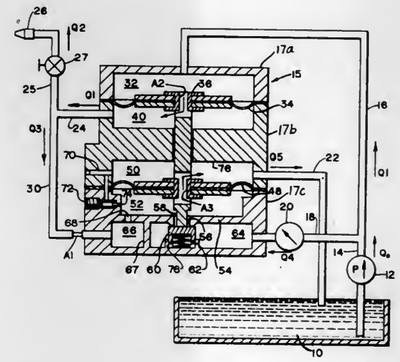
A spring tester employing a beam balance biased away from balance by the spring under test. The pivot of the balance is supported by a lateral extension from an upright positioned adjacent the beam. A tension plate is supported by a vertical screw thread which is itself supported by the upright. The spring under test is held by the tension plate when testing compressional springs or by a hook attached to the tension plate when testing springs under tension. The weights and the position on the beam of the weights which are needed to balance the beam biased by the spring determine the force exerted by the spring. Known displacements of the springs are made by adjusting the height of the tension plate and measuring relative positions of same and thereby the force per unit displacement of the spring may be measured.

3,618,382
FLIGHT MEASURING INSTRUMENT
Peter Partzsch, Friedrichshafen-Manzell, Germany, assignor to A. G. Dornier, Friedrichshafen (Badensee), Germany
Filed June 19, 1970, Ser. No. 47,829
Int. Cl. G01c *23/00*
U.S. Cl. 73—178 R **3 Claims**



This invention relates to a device for simultaneously measuring the angle of incidence, angle of sideslip, flight path and flying speed of an aircraft which comprises a body, a rotatable nose portion mounted on the body and having propeller blades thereon, a tail assembly mounted on the body, a universal joint mounted in the body in the center of gravity of the device and connecting the body with a support, means at the universal joint for determining angles of rotation between the support and the body in two orthogonal directions, means in the body for determining the number of revolutions and speed of rotation of the nose portion, means for measuring acceleration, and means for correlating the measured values for acceleration, angle of incidence and angle of sideslip whereby the acceleration vector is determined.

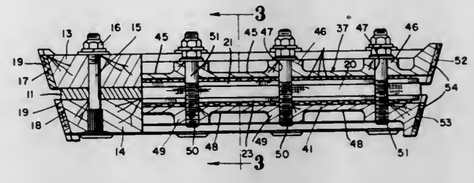
3,618,383
RECIRCULATING FLUID SUPPLY SYSTEM WITH FLOW MEASURING MEANS
Eugene F. Holben, Haddonfield, N.J. (% Grinnell Corp., 260 W. Exchange St., Providence, R.I. 02901)
Continuation-in-part of application Ser. No. 786,594, Dec. 24, 1968. This application Nov. 13, 1969, Ser. No. 876,498
Int. Cl. G01f *5/00*
U.S. Cl. 73—203 **21 Claims**



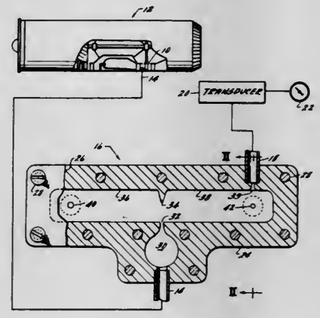
A recirculating fluid supply system includes a control device for controlling flow in a by-pass portion of the system to provide a measure of the rate of delivery to diesel engine fuel injectors, burners, or other fluid-consumption equipment. A pump supplies fluid from a reservoir to a main conduit and to the by-pass conduit. Fluid is withdrawn from the main conduit through a branch conduit to fluid consuming equipment. The main conduit returns unused fluid to the reservoir. A control device, which is responsive to the rate of fliud flow in the main conduit on both sides of the branch conduit, controls the rate of flow in the by-pass conduit. Fluid flow in the by-pass conduit is supplied to the main conduit at a suitable point whereby fluid flow through the by-pass conduit into the main conduit is at a rate equal to the rate of fluid flow from the main conduit to the fluid consumption equipment. In this manner, a measure of the fluid added through the by-pass conduit is a measure of the fluid consumed.

3,618,384
BELT SPLICE FOR V-PULLEY DRIVE
Harry Bierlein, Edinburg, Ind., assignor to Reliance Electric Company, Cleveland, Ohio
Filed Feb. 5, 1970, Ser. No. 8,920
Int. Cl. F16g *5/00, 13/02*
U.S. Cl. 74—234 **6 Claims**

A splice for a longitudinally- and transversely-flexible belt body for use with a V-pulley power transmission device in which the belt must be transversely stiffened, the splice consisting of four identical splice plates of rectangular cross-section rivetted, in registering pairs, to the opposite surfaces of the opposite end regions of the belt body, a pair of splice blocks, each formed with a cavity to receive the splice plates on one surface of the belt, and a plurality of headed screws penetrating one of said blocks and threadedly engaging the other to clamp the blocks to the belt with the splice plates confined within the block cavities.



3,618,385
FLUIDIC TEMPERATURE SENSOR
Lonny R. Kelley, Ballston Lake, N.Y., and Forbes T. Brown, Cambridge, Mass., assignors to General Electric Company
Filed June 30, 1966, Ser. No. 562,450
Int. Cl. G01k *11/22*
U.S. Cl. 73—339 **5 Claims**

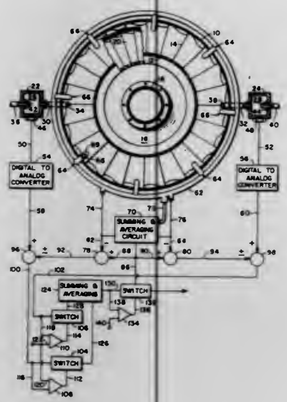


The disclosure shows a temperature sensor for obtaining a measurement of the temperature of a hot gas stream entering the turbine of a gas turbine engine. The sensor comprises a power nozzle which is connected to the hot gas stream of the engine. The fluid stream discharged from this nozzle impinges on a V-shaped divider spaced outwardly therefrom. The divider causes the power stream to alternately pressurize elongated chambers on opposite sides thereof. These chambers are vented by vents having a combined area approximately one-half the area of the nozzle. An output pressure signal is derived from one of the chambers. The rate at which this pressure signal varies gives an accurate measurement of the temperature of the hot gas stream in the turbine engine. A transducer is employed to provide an analog readout of the measurement.

3,618,386
FLUIDIC TEMPERATURE SENSOR AVERAGING SYSTEM
Jay I. Black, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed June 10, 1970, Ser. No. 44,979
Int. Cl. G01k *3/06, 11/22*
U.S. Cl. 73—340 **6 Claims**

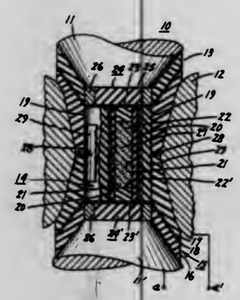
Simplified fluidic temperature sensor assembly for measuring average turbine inlet temperature of a gas turbine engine. The system comprises a pair of fluidic

oscillators positioned at the inlet to a turbine nozzle of a gas turbine engine. The output from the oscillators is modified in proportion to the difference in signal between thermocouples adjacent the oscillators and the signal re-



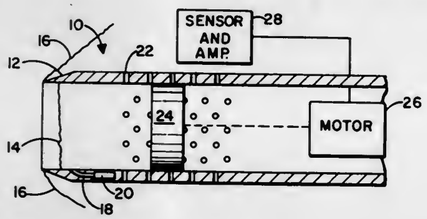
flecting an average temperature produced by a thermocouple harness assembly. A device is provided in the system to switch out the output of the oscillators and use the thermocouple harness output when a failure is indicated in both of the fluidic oscillators.

3,618,387
MONITORING MEANS FOR TEMPERATURE AND PISTON STROKE IN SUPERPRESSURE APPARATUS
Robert H. Wentorf, Jr., Schenectady, N.Y., assignor to General Electric Company
Filed Jan. 2, 1970, Ser. No. 136
Int. Cl. G01k *7/16, 13/00*
U.S. Cl. 73—343 R **3 Claims**



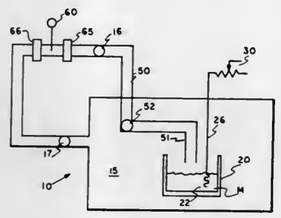
A simple device for monitoring temperatures and piston stroke in a high pressure, high temperature apparatus is disclosed. In a "belt-type" apparatus a metal wire is looped around the reaction vessel, the ends of the wire are twisted together and extended through the surrounding gasket assembly so as to make electrical contact with the surface of the die. Electrical leads are attached to the die and to the punch, which is in turn in electrical contact with the heater tube (indirectly heated cells) or the material to be subjected to the high pressure, high temperature process (direct heating). By employing either D.C. or low frequency A.C. electrical measuring means, the electrical resistance between the wire loop and the heater tube (or electrically conducting charge) may be measured. This electrical resistance changes as a function of the temperature within the reaction cell. By employing high frequency A.C. current measuring means, the electrical capacity between the die and a metallic gasket may be measured. Its value will depend upon the gasket material located therebetween and the separation distance between the metallic gasket and the die. By the latter described measuring means the stroke of the piston (electrically connected to the intermediate metallic gasket) may be monitored.

3,618,388
CONTROL APPARATUS
Raymond E. Rose, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 5, 1969, Ser. No. 821,821
Int. Cl. G01l *7/00*
U.S. Cl. 73—388 **10 Claims**



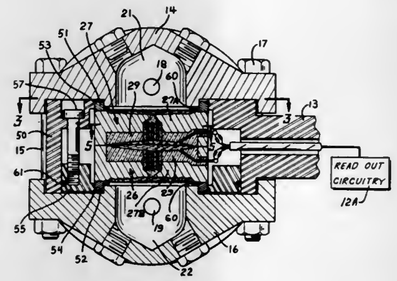
The method of and apparatus for measuring free stream static pressure of a fluid at both subsonic and supersonic speeds, regardless of the shape of the vessel to which the apparatus is attached, wherein the static pressure is measured within a hollow tube through which the fluid passes. The position of normal shock within the tube is controlled by varying the size or number of the outlets in the tube. The free stream static pressure is thus determined by utilizing known relationships between the actual free stream static pressure and the measured static pressure for that approximate speed. The approximate speed is measured by a separate sensor which may be a part of or separate from the tube.

3,618,389
APPARATUS AND METHOD FOR DETECTING A VACUUM AND THE QUALITY THEREOF
David H. Martin, 820 Merrie Road, Raleigh, N.C. 27606
Filed Sept. 22, 1969, Ser. No. 859,733
Int. Cl. G01l *7/00*
U.S. Cl. 73—388 **8 Claims**



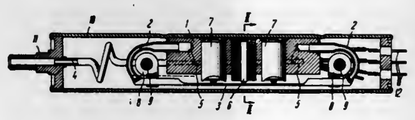
Apparatus and method for determining the gas pressure and/or quality of a vacuum comprising a vacuum source, a thermally insulated container under the influence of the vacuum, thermal sensors associated with said insulated container and a medium in said container to be thermally sensed. Thermal sensing of the medium is directly related to the removal of vapor from the medium. After the medium is sensed, corresponding saturated vapor pressures are obtained from standard tables and plotted along a linear graph of saturated vapor pressure versus air pressure to predict the quality of the vacuum system, i.e. vapor removal ability of the vacuum system.

3,618,390
DIFFERENTIAL PRESSURE TRANSDUCER
Roger L. Frick, Minneapolis, Minn., assignor to Rosemount Engineering Company, Eden Prairie, Minn.
Filed Oct. 27, 1969, Ser. No. 869,657
Int. Cl. G01l *9/12, 13/06*
U.S. Cl. 73—398 C **22 Claims**



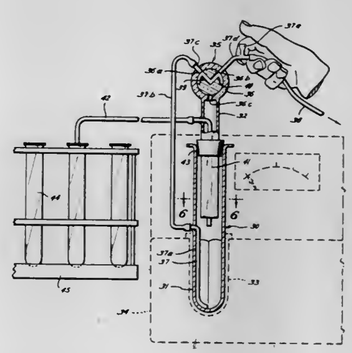
A differential pressure transducer of the capacitor type utilizing isolation diaphragms for sensing the differential pressure directly, and having a central chamber with a sensing diaphragm in the central chamber. The central chamber is filled with oil or a suitable liquid which transmits pressure from the isolation diaphragms to the sensing diaphragm. The sensing diaphragm forms a capacitor plate, and the walls of the chamber adjacent to the sensing diaphragm also form capacitor plates. The pressures are transmitted to the sensing diaphragm through the oil so that only differential pressure is sensed between the two isolation diaphragms. The sensing diaphragm and its chamber are made so that any excessive pressure causes the sensing diaphragm to bottom out against its mounting chamber surfaces. The unit is made extremely stable, by using a relatively massive metal housing with a glass center portion fused thereto, and depositing the metallic capacitor plate material right onto the glass surfaces which form the sensing chamber.

3,618,391
PRESSURE TRANSDUCER
Ilia Yakovlevich Rivkin, Ulitsa Marshala Tukhachevskogo 38, korpus 2, kv. 47, and Evgeny Vasilievich Ovcharov, Novye Cheremushki, kvartal 206, korpus 102, kv. 21, both of Moscow, U.S.S.R.
Filed Nov. 14, 1969, Ser. No. 876,828
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **5 Claims**



A pressure transducer comprising a pair of identical pressure tubes having stationary ends mounted on a common base member and into which fluid under pressure which is to be measured can be supplied. The movable ends of these pressure tubes are connected by a resilient connecting member, whereby the tension of this resilient connecting member is varied by the deformation of these pressure tubes under the action of the pressure of the fluid supplied into them. The transducer also comprises means for generating mechanical oscillations of the resilient connecting member and for converting such oscillations into an electromotive force.

3,618,392
LIQUID HANDLING APPARATUS
Harry A. Echols, 2410 Wordsworth, Houston, Tex. 77025
Continuation-in-part of application Ser. No. 574,879, Aug. 11, 1966, which is a continuation-in-part of application Ser. No. 483,564, Aug. 30, 1965. This application Feb. 12, 1968, Ser. No. 706,751
Int. Cl. G01n *1/10*
U.S. Cl. 73—421 R **2 Claims**

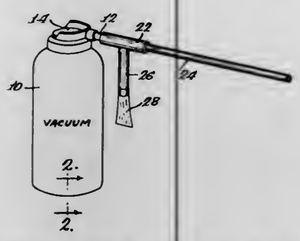


A self-evacuating cuvette having a small tube extending longitudinally along one side thereof between an opening in its lower end adjacent the bottom of the cuvette and level above the viewing area of the cuvette. At the upper level, the small tube extends laterally to a second opening in its other end outside of the cuvette. A tubular portion of the small tube connects at one end with its lateral extent thereof to provide a third opening in its other end. When the second opening is connected with a source of suction, and third opening is closed, as by a person's thumb, liquid may be suctioned out of the cuvette. In one modification of the cuvette, there is a check valve in the lateral extent between the second opening therein and the intersection therewith of the tubular portion to prevent back flow into the cuvette. In another modification of the cuvette, a means is provided for automatically pouring a sample into the cuvette.

3,618,393
GAS SAMPLING APPARATUS AND METHOD
Andrew H. Principe, 5824 N. Newark, Chicago, Ill. 60631, and Emmett P. Glynn, Rte. 1, Lemont, Ill. 60439
Filed Feb. 27, 1969, Ser. No. 802,880
Int. Cl. G01n *1/24*
U.S. Cl. 73—421.5 R **8 Claims**

Apparatus and method for taking samples of suspect gases, such as the breath of alveolar or deep lung air of drunk driving suspects and drugged race horses, gaseous products of combustion from suspected arsons and from explosions, air polluted by commercial exhausts, etc., and the facilitating scientific analysis thereof for example

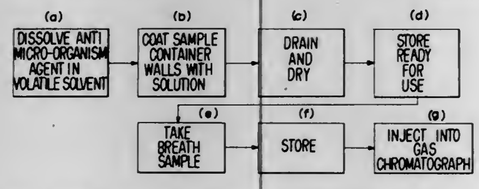
by gas chromatographic methods; characterized by a sample securing device comprising an evacuated canister having an inlet, a valve controlling said inlet and accommodating selective intake of gas into said canister, and a septum in said canister accommodating hypodermic extraction of gas from said canister.



3,618,394
METHOD AND APPARATUS FOR PRESERVING BREATH SAMPLES

James R. Penton, Oakland, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 24, 1969, Ser. No. 836,070
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R 9 Claims

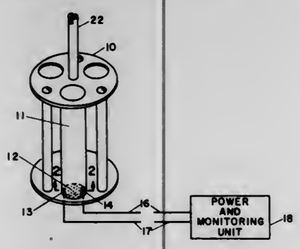


A breath sample suspected of containing volatile organic material, such as alcohol, capable of being degraded by metabolic activity of micro-organisms such as bacteria present in the breath, is captured in a container which also contains an anti-micro-organism agent for terminating or substantially delaying the activity of the micro-organisms, thereby preserving the organic material in the breath.

3,618,395
TABLET DISINTEGRATION APPARATUS

Guido W. Melliger, 9 Country Lane, % Welsh, Mendham, N.J. 07945

Filed Apr. 9, 1970, Ser. No. 26,896
Int. Cl. G01n *19/00*
U.S. Cl. 73—432 10 Claims

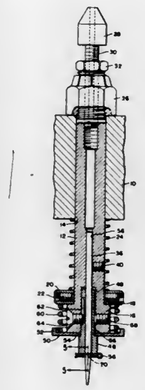


This invention provides an improvement in a tablet disintegrating apparatus, by providing a plurality of opposed spaced electrodes at the base of the tablet containing tubes. In the operation of the apparatus an electric field is set up between the electrodes. The presence of a tablet disturbs this electric field, which disturbance actuates a recording device such as a timer. The conventional reciprocating vertical motion of the apparatus (in an aqueous bath) causes the tablet to disintegrate. At the end point of the tablet disintegration, the undisturbed flow of current between the electrodes stops the recording device, noting the interval of time for tablet disintegration.

3,618,396
DETECTION OF HOLES IN A WORKPIECE

Denis Julien, Limoilou, Quebec, Canada, assignor to Valcartier Industries, Inc., Courcelette, Quebec, Canada

Filed June 3, 1970, Ser. No. 42,956
Int. Cl. B07c *5/00*
U.S. Cl. 73—432 13 Claims



A method and apparatus for detecting the presence of a relatively small hole in a workpiece, such as a bullet casing, by passing a slender detect pin through the hole. If the hole is obstructed or non-existent, the pin abuts the workpiece which terminates, prematurely, advancement of the pin. A sensing device is provided and is responsive to premature termination of the pin advancement to control a machine performing various operations on the member. Absence of the hole in the member is employed to stop the machine and enables the defective workpiece to be removed. Additionally, the device includes a safety feature by which, in the event that the slender, fragile pin breaks, the breakage will be sensed also to stop the machine. This enables the broken pin to be replaced and insures that the damaged pin will not permit any defective workpiece having no hole to pass through the detecting station to subsequent operating stations in the machine.

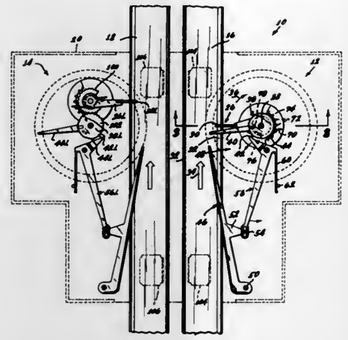
3,618,397
SPEEDOMETER FOR TOY VEHICLES

Denis V. Bosley, Palos Verdes Peninsula, Derek J. Gay, Redondo Beach, Harvey W. LaBranche, Palos Verdes Peninsula, and Toshio Yamasaki, Gardena, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 26, 1969, Ser. No. 880,243
Int. Cl. G01p *3/12*; A63f *9/14*
U.S. Cl. 73—488 9 Claims

Apparatus for indicating the speed of toy vehicles moving along a track comprising an impulse vane which is biased by a spring to a position over the track, so that the speed of a toy vehicle hitting the vane determines how far it will be pivoted against the spring force. The vane turns an indicator wheel with a pointer extending therefrom which moves over a scale to indicate the speed of

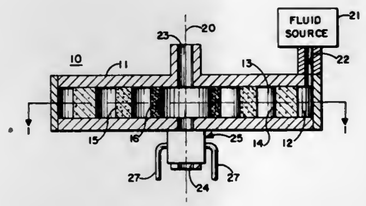
the vehicle. A pawl which engages ratchets on the indicator wheel retains it at the furthest position to which it has been moved by the vane. A resetting lever is positioned uptrack from the vane so it is hit by a vehicle prior to the vehicle hitting the vane, the resetting lever releasing the indicating wheel from the pawl, so the pointer returns to a zero position. A track section over which the vane extends is banked towards the vane to make sure that both wide and narrow vehicles hit approximately the same portion of the vane, to increase accuracy.



3,618,398
FLUID VORTEX DEVICE

Walter M. Posingies, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 7, 1970, Ser. No. 1,106
Int. Cl. G01p *3/26*
U.S. Cl. 73—505 9 Claims

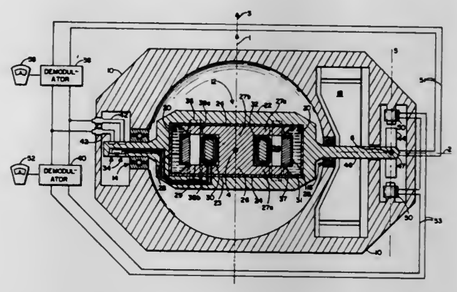


Fluid vortex apparatus comprising a housing enclosing a vortex chamber, a primary coupling element surrounding the vortex chamber, a central fluid outlet from the vortex chamber, and secondary coupling means located within the vortex chamber between the primary coupling element and the central outlet. The primary coupling element is structured to introduce fluid into the vortex chamber so that it has substantially no rotational velocity with respect to the chamber housing, fluid within the vortex chamber acquiring a rotational velocity with respect to the housing in response to input stimulii. The secondary coupling means modifies any rotational flow pattern within the vortex chamber so as to produce a characterized time-varying rotational flow pattern in the fluid outlet. A sensor in the outlet produces a signal indicative of the rotational velocity of flow about the axis of the outlet, thereby resulting in a characterized response to the input stimulii.

3,618,399
ANGULAR RATE SENSOR

Vernon H. Aske, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of application Ser. No. 785,256, Dec. 19, 1968. This application Oct. 20, 1969, Ser. No. 867,450
Int. Cl. G01c *19/42*; G01p *3/26*
U.S. Cl. 73—505 3 Claims

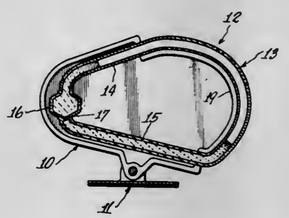


An apparatus for measuring angular velocity about one or more axes comprising an angular accelerometer rotated so that the angle between its sensitive axis and a measurement axis varies with time. This relative motion causes the angular accelerometer to experience a time-varying angular rate, i.e., acceleration, about its sensitive axis, with a component of its output indicative of the rate existing about the measurement axis. The output of the fundamental device is demodulated by appropriate means to select the desired component.

3,618,400
GRADE AND ACCELERATION-DECELERATION INDICATING DEVICE

Walter E. Hull, R.D. 4, Box 67, Cortland, Ohio 44410

Filed May 5, 1969, Ser. No. 821,768
Int. Cl. G01p *15/00*
U.S. Cl. 73—515 11 Claims

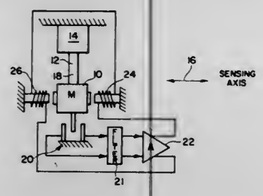


A device adapted to be mounted on a vehicle for indicating the grade of terrain being traversed and for indicating the instantaneous rate of acceleration and deceleration of such vehicle. The device comprises an elongated conduit containing a liquid whose level within the conduit is responsive to gravity and to the inertial forces of acceleration and deceleration. Such inertial forces raise and lower the level of the liquid relative to a reference point, depending upon the direction of force application, an amount proportional to such forces.

In series with the liquid-containing conduit is a radially enlarged chamber adapted to be completely filled with the indicating liquid, but short of overflowing, when the vehicle is at rest on a level surface at which time the

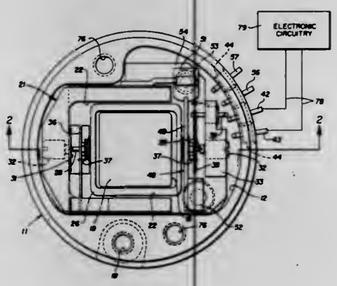
liquid level coincides with the reference point. The chamber aforesaid, as a result of its relatively large cross-sectional size, functions to increase the change of level of the indicating liquid under the application of an inertial force in one direction over the change of liquid level under the application of an equal but oppositely applied inertial force.

3,618,401
ACCELEROMETER
Michael R. Lacey, Sherman Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Continuation-in-part of application Ser. No. 607,727, Jan. 6, 1967. This application Aug. 25, 1969, Ser. No. 852,694
Int. Cl. G01p *15/02*
U.S. Cl. 73—517 **6 Claims**



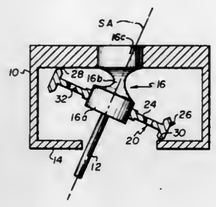
A pendulous accelerometer sensing mass which is elastically constrained against translation in an X-Y plane and rotationally constrained in the X-Y plane by a servo mechanism, adapted to sense acceleration in the X direction, in which the anisoelastic torques and the cross coupling or vibropendulous rectification torques, in the presence of an acceleration in the X-Y plane at an angle to the X axis, compensate each other.

3,618,402
SENSING MECHANISM FOR LINEAR SERVO ACCELEROMETER
Heino Kase, Walnut Creek, Calif., assignor to Systron-Donner Corporation, Concord, Calif.
Continuation of application Ser. No. 559,166, June 21, 1966. This application Sept. 23, 1969, Ser. No. 861,227
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 **2 Claims**



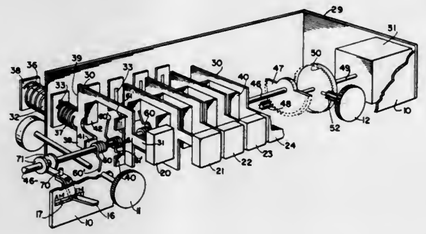
Sensing mechanism for linear servo accelerometer having a body with a surface and with a magnet and a yoke mounted on the surface to form an air gap of a substantially constant width between the magnet and the yoke through which magnetic lines of flux pass. A force coil is disposed in the air gap and is in the form of a closed loop lying in a plane with an opening extending therethrough in a direction perpendicular to the plane. Means is provided exterior of the maget for pivotally mounting the force coil about an axis lying in the plane in the coil. The magnet extends through the opening in the coil and has a substantially planar surface which is generally parallel to and in relatively close proximity to the plane. A conducting non-magnetic element is secured to the force coil for movement with the force coil and a pick-off coil is mounted on the surface of the body for sensing the position of the conducting element. The sensing mechanism is very compact and small in size.

3,618,403
STOP ASSEMBLY FOR A GYROSCOPE
Donald J. Bilinski, Randolph Township, Dover, and Richard F. Cimera, Fairfield, N.J., assignors to The Singer Company, New York, N.Y.
Filed Mar. 3, 1969, Ser. No. 803,907
Int. Cl. G01c *19/18*
U.S. Cl. 74—5 **6 Claims**



A stop assembly for a gyroscope having a unitary mass member rotated by means of a drive shaft and connected to the shaft by means of a flexible connection member to permit universal tilting movement between the mass member and the shaft member. A stop means is mounted with respect to a least one of the members and is adapted to engage another of the members to stop the tilting movement after a predetermined amount thereof.

3,618,404
TUNING MECHANISM
Harold Tyzack, Schiller Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of application Ser. No. 821,580, May 5, 1969. This application July 6, 1970, Ser. No. 56,138
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.37 **16 Claims**

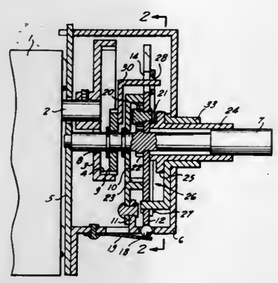


The push-button mechanism for operating the tuner of an AM/FM radio receiver includes five push-buttons for selecting ten stations, five AM stations and five FM stations. An axially moveable tuner control shaft has ten wire springs, two for each push-button, wound thereabout, with the ends extending in opposite directions on the same side of the shaft. When a push-button is depressed, a vertical shaft positioning tab engages one or both of the extensions of one of the two springs associated with the push-button in a direction to cause the spring

to more tightly grip the shaft, thereby rotating the shaft and the spring together to select the station indicated by the vertical position of the spring on the shaft.

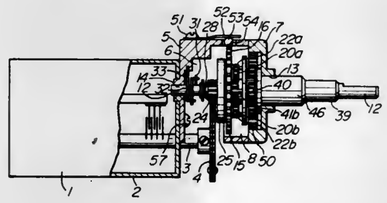
When the shaft is rotated to a position corresponding to a station to be subsequently selected by a particular push-button, the push-button may be pulled out; and memory reset tabs on the push-button slide engage one or both of the spring extensions in a direction to cause the spring to be released from the shaft to rotate the spring to a vertical position without rotating the shaft. Return of the push-button slide mechanism to a center position then permits the spring to tightly grip the shaft in this new position.

3,618,405
STATION SELECTING MECHANISM
Teruzo Ishida, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1970, Ser. No. 29,442
Claims priority, application Japan, May 1, 1969, 44/34,236
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.52 **11 Claims**



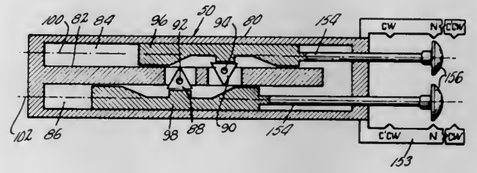
A station selecting mechanism, particularly well adapted for UHF reception, provides for detented coarse tuning and for fine tuning within the detented setting, the coarse tuning being accomplished through a gearing arrangement driven by a detented member and the fine tuning being accomplished by means of a cam acting on a lever carried by the detented member.

3,618,406
UHF TUNER
Etsuzo Mohri, Osaka, and Toshio Hayakawa, Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 12, 1970, Ser. No. 63,118
Claims priority, application Japan, Aug. 14, 1969, 44/64,606
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.54 **2 Claims**



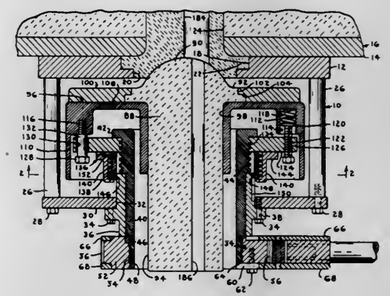
A UHF tuner comprising a main switch-over shaft to switch channels, a disk secured to the main switch-over shaft and formed with radially spaced peripheral notches or indentations, against which a ball is forced as the main switch-over shaft is rotated, a member coupled with a rotor shaft, coupling members integrally having gears and pins eccentric with respect to said gears, and a fine adjustment sleeve mounted on the main switch-over shaft and provided at one end with a gear, wherein the coupling members are inserted through respective openings formed in the disk, the eccentric pins of the coupling members extend within respective openings formed in the member, and the gears of the coupling members mesh with the gear of the fine adjustment sleeve.

3,618,407
REMOTELY CONTROLLED ROTARY INPUT SIGNAL MEANS
Armand F. Amelio, Yonkers, N.Y., assignor to United Aircraft Corporation, East Hartford, Conn.
Original application Sept. 23, 1968, Ser. No. 761,644, now Patent No. 3,521,448, dated July 21, 1970. Divided and this application Nov. 6, 1969, Ser. No. 871,245
Int. Cl. F16h *27/02*
U.S. Cl. 74—88 **13 Claims**



A remotely controlled rotary input signal means comprising a regular polygon mounted for rotation and a selectively contoured cam member translatable in opposite directions with respect to the polygon and contoured so as to lock the polygon in neutral position when centered and so as to cause the polygon, and the shaft attached to the polygon, to rotate two increments in one direction as the cam member is moved leftwardly and then back to center, or to cause the polygon to rotate two increments in the opposite direction as the cam member is translated rightwardly and then back to center.

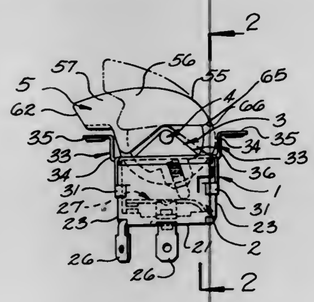
3,618,408
DEVICE FOR MOVING VALVE MEMBER AXIALLY AND ANGULARLY
Christ Koseff, 525 Carolina St., Gary, Ind. 46402
Filed Feb. 3, 1970, Ser. No. 8,331
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **16 Claims**



A device for moving a closure body such as a valve stopper axially into a seated position, then rotatively to position the valve stopper at a select angular position,

comprising a cylindrical member which is rotatably supported in a frame. The cylindrical member is threaded at one end for engaging thereon a ring collar which is axially movable thereover when the cylindrical member is rotated by drive means connected to the other end thereof. Ring collar supports and carries therewith the closure body. When the axial limit of ring collar is reached, ring collar locks with the cylindrical member and rotates therewith for placement thereof at the select angular position. When the cylindrical member is reversed in rotation, a clutch element is provided to restrain the ring collar from rotating therewith and travels on the threads of the cylindrical member in the opposite axial direction to release the closure body from its seated position.

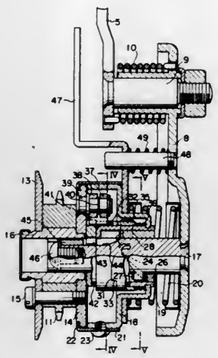
3,618,409
SAFETY SWITCH
Ralph W. Shifley, Normandy, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Sept. 30, 1969, Ser. No. 862,368
Int. Cl. F16h *21/54*
U.S. Cl. 74—102 **7 Claims**



In a standard rocker type "on-off" switch, a switch lever is provided which is asymmetrical with respect to the pivot axis, with an accessible projection in the direction of the "off" position greater than in the direction of the "on" position with respect to the pivot axis, so that the switch is most readily moved to the "on" position by grasping sides and lifting up of the projetcion of the lever in the "off" direction, a relatively difficult manpulation, and is readily moved to the "off" position by pressure against the lever.

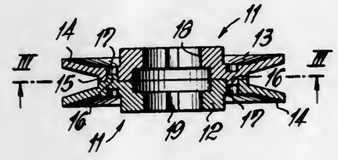
3,618,410
EXPOSED CHANGE SPEED GEAR MECHANISM FOR BICYCLE
Masashi Nagano, Sakai, Japan, assignor to Shimano Kogyo Kabushiki Kaisha, Osaka, Japan
Filed May 8, 1970, Ser. No. 35,757
Claims priority, application Japan, May 26, 1969, 44/40,870
Int. Cl. F16h *9/24, 11/06*
U.S. Cl. 74—217 B **4 Claims**

An exposed change speed gear mechanism for a bicycle, of the type in which to effect changeover of the speed ratio a driving chain is moved from one to another of different sized sprockets by translative displacement of a jockey sprocket, characterized in that said displacement of the jocky sprocket is caused by a rotational- and rectilineal-motion mechanism, and between a power transmission member rotated through the driving chain and a driven member of said rotational- and rectilineal-motion mechanism, there are arranged in series a one-way clutch means, and a pair of clutch means for transmitting respective forward and backward rotation of said power transmission member to said one-way clutch means, each of said pair of clutch means being adapted to be automatically brought out of engagement when having been rotated through a



predetermined angle under the engaged condition thereof, whereby the speed change can be effected by back-pedalling operation.

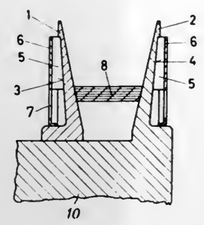
3,618,411
PULLEY
Willy Rottweiler, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 4, 1969, Ser. No. 882,100
Claims priority, application Germany, Dec. 7, 1968, P 18 13 427.5
Int. Cl. F16h *55/46*
U.S. Cl. 74—230.11 **12 Claims**



Two identical pulleys halves are mirror-symmetrically arranged relative to each other and each comprises an annular hub portion having an annular axial projection on its inner end face, and a flange portion projecting outwardly from the hub portion and with the respective flange portions axially inclined in direction away from each other. The annular projections are abuttingly connected to each other and together define an outer circumferential surface which is located intermediate and within the confines of the two flange portions and has at least one flat facet whose general plane is at least substantially parallel with the axis of the pulley.

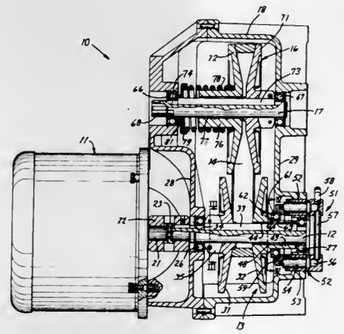
3,618,412
V-BELT SPEED CONVERTER
Albert Schmid, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland
Filed Feb. 13, 1970, Ser. No. 11,138
Claims priority, application Switzerland, Feb. 25, 1969, 2,805/69
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **6 Claims**

A V- or cone belt-speed converter of the type wherein one cone pulley disc of each cone belt pulley disc is axially displaceable, and wherein the cone pulley discs, viewed in axial direction, are provided with blades or vanes at the side surfaces of the cone belt pulley discs. These



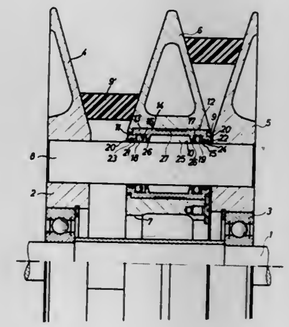
vanes are directed outwardly for the purpose of generating an at least approximately radially extending air current which is directed over the side surfaces.

3,618,413
VARIABLE SPEED TRANSMISSION
James L. Cherpes, Kalamazoo, Mich., assignor to Clausing Corporation, Kalamazoo, Mich.
Filed Apr. 6, 1970, Ser. No. 25,892
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 A **11 Claims**



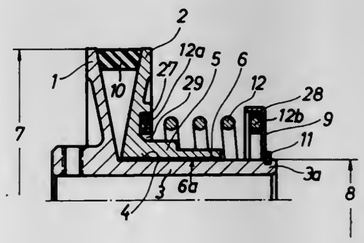
A variable speed transmission having an input shaft coaxially aligned with a driving motor and supported adjacent its opposite ends by antifriction bearings. The input shaft has an adjustable pulley assembly nonrotatably secured thereto, which pulley assembly includes a fixed pulley half secured to the shaft and a movable pulley half slideably mounted on the shaft for rotation therewith and for movement toward and away from the fixed pulley half. The movable pulley half is connected to a suitable actuator for adjustably axially moving same. The fixed pulley half has a split hub which clampingly engages both the shaft and a driving key for providing additional support for said key. The driving key extends the full length of both pulley halves to further stabilize the assembly and minimize hammering between the moveable pulley half and the key upon starting, stopping or reversing of the drive means. The adjustable pulley assembly drives a belt which drives a spring-tensioned pulley assembly mounted on an output shaft. The driving and driven pulley assemblies and the input and output shafts are preferably constructed of aluminum to minimize inertia.

3,618,414
VARIABLE V-BELT TRANSMISSION
Robert Ruprecht, Aichelberg, Kreis Esslingen (Neckar), Germany, assignor to Ernst Heinkel Aktiengesellschaft, Stuttgart-Zuffenhausen, Germany
Filed Oct. 27, 1969, Ser. No. 869,587
Claims priority, application Germany, Oct. 25, 1968, P 18 05 102.0
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **12 Claims**



The reciprocable flange of an endless variable V-belt transmission is axially movably mounted on a series of axially parallel guide rods by means of a plurality of roller bearing elements pairwise accommodated and retained in axially spaced circumferential grooves of a one-piece hub member fixedly mounted in the reciprocable flange.

3,618,415
ADJUSTABLE PULLEY
Robert Ruprecht, Raidwangen, Kreis Nurtingen, and Heinrich Grimm, Aichelberg, Kreis Esslingen (Neckar), Germany, assignors to Ernst Heinkel Aktiengesellschaft, Stuttgart-Zuffenhausen, Germany
Filed Nov. 17, 1969, Ser. No. 877,397
Claims priority, application Germany, Nov. 15, 1968, P 18 09 065.8
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **13 Claims**

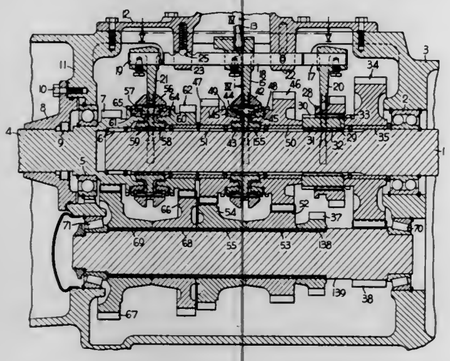


A stationary flange is fixed on a shaft which has an outer cylindrical surface and a reciprocable flange is mounted on the shaft for axial movement away from the stationary flange against a biassing force. The reciprocable flange has an inner peripheral surface which spacedly surrounds the outer cylindrical surface of the shaft and a liner of a self-lubricating slidable plastic material is confined between and in contact with both of the surfaces.

ERRATUM

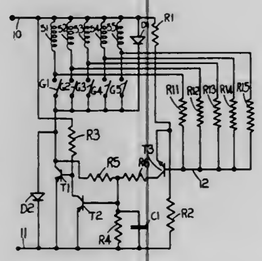
For Class 74—234 see:
Patent No. 3,618,384

3,618,416
MULTIPLE SPEED TRANSMISSION
Donald W. Longshore, New Berlin, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 2, 1970, Ser. No. 274
Int. Cl. F16h *3/08*
U.S. Cl. 74—333 **10 Claims**



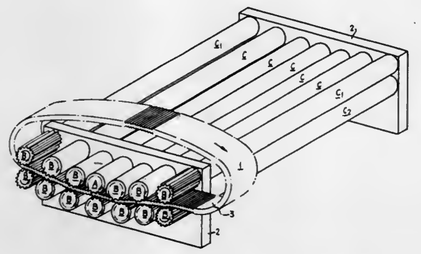
A multiple speed transmission having a shift mechanism for operating a combination clutch sleeve and gear to selectively operate the transmission in forward and reverse.

3,618,417
VEHICLE TRANSMISSION MECHANISM INCORPORATING GEAR RATIO INTERLOCK
Robert Hulme Brown, Kingston-upon-Thames, England, assignor to C.A.V. Limited, London, England
Filed Oct. 7, 1969, Ser. No. 864,507
Claims priority, application Great Britain, Oct. 15, 1968, 48,843/68
Int. Cl. H01h *47/32;* **F16h** *3/08*
U.S. Cl. 74—365 **2 Claims**



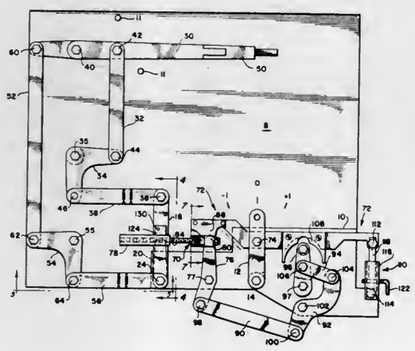
This invention relates to a transmission mechanism for a road vehicle and of the kind which includes a multi-ratio gear box and in which the ratios are selected by energisation of one of a number of solenoids the solenoids being controlled respectively by switches. With this system it is essential to ensure that two switches are not closed at once and for this purpose there is associated with the solenoid windings respectively a plurality of resistors which are connected to a common point the potential of which relative to the junction between a pair of series resistors will be low when only one of the switches is closed and will be high when two of the switches are closed, there being provided a transistor in series with the switches and a further transistor which senses the voltage at said point the arrangement being that when the further transistor conducts the first transistor will be rendered non-conductive thereby to deenergise the solenoids.

3,618,418
BELT DRIVE
Frank Victor Henry Chittenden, Mountnessing, England, assignor to Ilford Limited, Ilford, England
Filed Aug. 24, 1970, Ser. No. 66,414
Int. Cl. F16h *1/04, 55/04;* **F16g** *1/28*
U.S. Cl. 74—422 **7 Claims**



This application describes an endless positive-drive toothed belt which is characterized in that it is composed of a flexible plastics material and has on at least one face a series of rack teeth, the belt being of such a degree of rigidity that, when used for transmitting drive as a moving rack from a driving pinion member to a driven pinion member, the length of the belt between driving and driven pinion members co-operating therewith maintains a path dictated by the physical characteristics of the belt and the location of the said members, which path is substantially unaffected by gravitational forces on the belt.

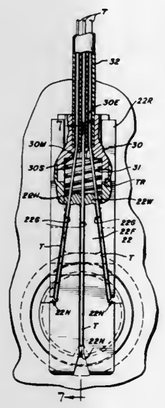
3,618,419
GAIN CONTROL DEVICE
Max Maroshick, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Sept. 30, 1969, Ser. No. 862,276
Int. Cl. G05g *11/00;* **B64c** *13/30*
U.S. Cl. 74—479 **17 Claims**



A gain control device is provided for use in a failure correction control system in which the device receives two mechanical input signals during failure-free operation of

the control system, and combines these signals to produce an output. The device includes two independent force transmission means which can comprise a series of pivotally connected levers. Each force transmission means includes an input element that receives a separate input signal which is transmitted to a whiffletree that is mounted for pivotal and translational movement relative to a frame. The whiffletree normally transmits a signal that is proportional to the sum of both input signals through a first force transmission channel which connects an output member and the whiffletree. If a jam failure occurs in one of the input signals, shift means are provided to connect the whiffletree and the output member through a normally disengaged second channel that increases the gain of the unfailed signal and transmits the resulting full authority signal to the output member. Output adjusting means are provided for varying the relative locations of the output member and the whiffletree and hence for varying the location of the range of movement of the output member to insure that a proper range of output is available after the failure. The device also includes disconnect failure accommodation means which releasably engage the whiffletree to prevent pivotal movement of the whiffletree after a disconnect failure has occurred and to thus cause the output member to move through its full range of movement.

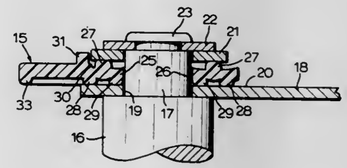
3,618,420
MECHANICAL REMOTE CONTROL APPARATUS
Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, Conn., assignors to Casco Products Corporation, Bridgeport, Conn.
Filed Jan. 7, 1970, Ser. No. 1,177
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 M **16 Claims**



Mechanical remote control apparatus for transmitting universal movement utilizes a flexible control line containing three cables trained between a control unit swivel bearing and a controlled unit swivel bearing. The control line has a guide sheath of nylon plastic having a set of three guide passages extending in parallel lengthwise relation. For complex control line paths such as in remote outside rear view mirror systems for automobiles, the guide sheath is of oblong section to provide preferential bending in one plane and the guide passages are disposed in a common longitudinal plane determined by the major bend axis of the oblong section.

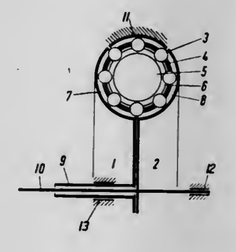
The swivel bearing units include a segmented pivot ball structure, a right angle cable guide bracket, a common adaptor and bias spring for anchoring the sheath in endwise compression and snap-fit connections for molded plastic parts.

3,618,421
TELEPHONE RINGER CAM
Tadeusz Pecak, London, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Mar. 13, 1970, Ser. No. 19,316
Int. Cl. F16h *53/00*
U.S. Cl. 74—567 **6 Claims**



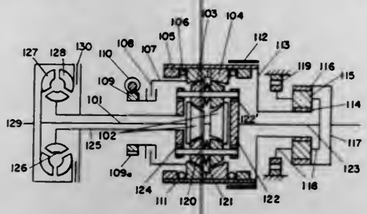
A cam for varying the loudness of telephone ringers by limiting clapper travel, said cam being made of resilient material with a series of spaced apart ridges extending from either side to abut upon adjacent mounting surfaces and compensate for the variations in torque which result from cumulative tolerance variations and differing cam positions.

3,618,422
ROLLER WORM GEAR ARRANGEMENTS
Helmut Körner, 12 Wichernstrasse, D–3340 Wolfenbuttel, Germany
Filed Mar. 30, 1970, Ser. No. 29,327
Claims priority, application Germany, Apr. 2, 1969, P 19 16 923.4
Int. Cl. F16h *1/16, 5/22, 37/06*
U.S. Cl. 74—665 GD **8 Claims**



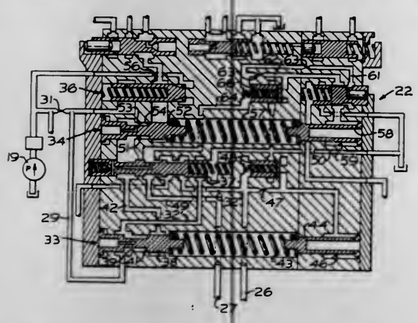
A roller worm gear arrangement is disclosed. The arrangement comprises a rotatable input shaft around the periphery of which a plurality of rotatable bodies are disposed in a carrier, the rotatable bodies are disposed at equal spacings and are in tangential contact with the periphery of the input shaft. The arrangement is provided with a plurality of co-axial output shafts, which are transversely orientated with respect to the input shaft and on each of which a respective helical gear wheel is mounted. Each helical gear wheel is mounted to rotate with the respective output shaft and is disposed in meshing relationship with the rotatable members carried on the carrier. The arrangement is such that in operation rotation of the input shaft causes the rotatable bodies to circulate in a planetary path thereby rotating each of the helical gear wheels and the respective output shafts.

3,618,423
TRANSMISSION
Walter V. Chery, 744 Alden St., Meadville, Pa. 16335
Continuation-in-part of applications Ser. No. 662,397, Aug. 22, 1967, and Ser. No. 727,937, May 9, 1968, now Patent No. 3,516,305. This application June 8, 1970, Ser. No. 44,570
Int. Cl. F16h *15/50, 47/08*
U.S. Cl. 74—688 22 Claims



A planetary friction type torque converter in combination with an overrunning clutch and a set of planetary gears. The combination results in a wide continuous multiplication of speed range between output and input.

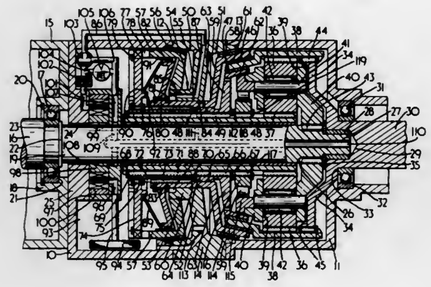
3,618,424
TRANSMISSION CONTROL SYSTEM
Kenneth F. Golan, Pekin, and Shairyl I. Pearce, East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 2, 1969, Ser. No. 854,598
Int. Cl. B60k *33/00*; F16d *25/062*; F16h *57/10*
U.S. Cl. 74—753 4 Claims



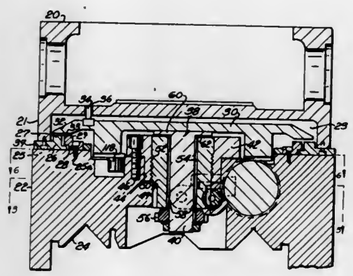
A planetary transmission having a series of fluid operated clutches and brakes, which are engaged and disengaged through a selector valve to change drive ratios, has means for modulating and sequencing the fluid pressures applied to the clutches and brakes to effect smooth shock free shifting. Basic control of the pressure at any of the clutches and brakes is effected by a single valve complex upstream from the selector valve while supplementary individual modulation means are provided downstream from the selector valve at one or more of the clutches or brakes to optimize performance during specific shifts.

3,618,425
CHANGE-SPEED GEARING
Axel Charles Wickman, 69 S. Washington Drive, St. Armands Key, Sarasota, Fla. 33577
Filed July 23, 1969, Ser. No. 843,972
Claims priority, application Great Britain, July 26, 1968, 35,754/68
Int. Cl. F16d *67/04*; F16h *5/18*
U.S. Cl. 74—781 5 Claims

A change-speed gearing suitable or automobiles or boats has a planetary gear train including a power input member, a power output member, and a reaction member. Two ratio selectors are provided for selecting planetary ratio by holding the reaction member against rotation and for selecting unit ratio by locking the reaction member to a rotary component of the gear train. The ratio selectors each include a pair of friction-engaging members with complementary friction-engaging surfaces. In at least one of the pairs of members the members are movable axially in opposite directions into operative and inoperative positions in which they engage and disengage with their respective friction-engaging surfaces. Axial bias means are provided for moving the pairs of members into the operative and inoperative positions.

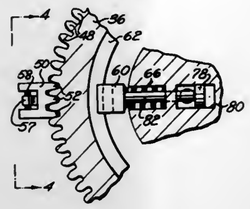


3,618,426
TURRET AND LOCKING MECHANISM
John Fisher, Aurora, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Oct. 21, 1969, Ser. No. 868,111
Int. Cl. B23b *29/32*
U.S. Cl. 74—824 20 Claims



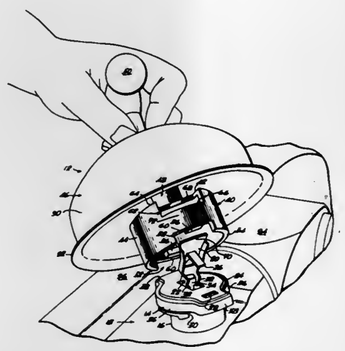
A machine tool includes a mechanism for locking an indexible turret in a predetermined position about an axis of rotation with respect to a slide. The mechanism includes first and second coupling members adjacently located and which are moved relatively upon indexing of the turret. A third coupling member is located adjacent the first and second coupling members and is operable to prevent relative movement of the first and second coupling members by simultaneously engaging the first and second coupling members to thereby simultaneously position and lock the turret. Rotation, release and locking of the turret is effected without axial movement of the turret.

3,618,427
LOCATING MEANS FOR INDEXING TABLE
Harry Schoepe, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Oct. 21, 1969, Ser. No. 868,112
Int. Cl. B23b *29/32*
U.S. Cl. 74—824 23 Claims



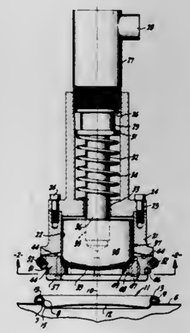
An improved mechanism for locating and locking a turret of a machine tool which is indexible about an axis of rotation with respect to a slide includes first and second toothed members located on the turret and slide respectively. Located adjacent the first and second toothed members is a third toothed member operable to engage with the first and second members to accurately locate the first toothed member with respect to the second toothed member to thereby accurately position the turret. A locking member is located adjacent the first and second toothed members and operable to engage with and lock the first and second toothed members against relative movement therebetween after the first and second members have been positioned by the third member to thereby lock the turret in position. Rotation, release, positioning and locking of the turret is effected without axial movement of the turret.

3,618,428
AUTOMOBILE RADIATOR CAP TOOL
Charles Dennis Phipps, 5990 SW. 111th St., Miami, Fla. 33143
Filed June 29, 1970, Ser. No. 50,830
Int. Cl. B25b *29/00*; B67b *7/44*
U.S. Cl. 81—3.1 R 7 Claims



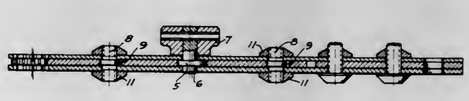
This disclosure concerns a small hand tool adapted for use in removing an automobile radiator cap and particularly for use in removing a cap from the radiator of an overheated automobile engine safely and without hazard of injury to the user by boiling hot fluids from the engine cooling system. The tool is provided with socket structure adapted to fit over the radiator cap and permit removal thereof, it includes a deep bowl-like shield having a rim portion flared downwardly over the socket structure for deflecting hot liquids from a radiator away from the user, and includes a T-shaped handle for manipulation of the tool.

3,618,429
DRUM CAP REMOVING TOOL
Joseph E. Froeliger, 1967 Gillchrist Ave., Stockton, Calif. 95205
Filed Sept. 3, 1969, Ser. No. 854,936
Int. Cl. B67b *7/00*
U.S. Cl. 81—3.2 5 Claims



A tool for removing a cap from a drum has a base with a central aperture along the axis of which a plunger is moved. From the sides of the plunger a plurality of jaws having sharp ends move radially outward to bite into the annular wall of the cap. A spring resists the jaw movement. The plunger end is a die to abut the central part of the cap and stretch and deform the cap material between the jaws and the plunger thus pulling the cap wall out from a retaining bead on the drum. The jaws can tip slightly for cap disengagement.

3,618,430
CYCLOIDAL WRENCH
Robert L. Wieck, Amarillo, Tex., assignor to Mason & Hanger-Silas Mason Co. Inc.
Filed July 17, 1970, Ser. No. 55,914
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.3 3 Claims



A cycloidal wrench adapted to rotate a driven element in a given direction or in the reverse thereof, comprising two spaced and fixed reactive cam plates and between them an orbital cam drive plate to which orbital motion is imparted by an eccentric cam on a drive shaft projected through the reactive cam plates. The reactive cam plates are formed with tooth or "point" faced apertures aligned with a point faced aperture in the orbital cam drive plate. These apertures are adapted to receive the point carrying head of the said driven element, and the cam plates have at last one drive point more than those of the driven element head. Two or more restraining studs, passing through enlarged aperture in the orbital cam drive plate and carried by the fixed reactive cam plates, hold the orbital cam plate in parallel constraint while a relationship

is maintained such that the opposing drive points on both the orbital and reactive cam plates align with the apices of the driven element.

3,618,431

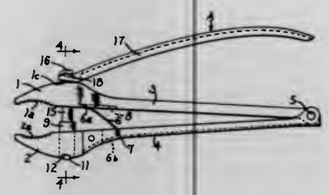
EASY GRIP TOOL

Raymond B. Nockleby, Rte. 1, Kalispell, Mont. 59901

Continuation-in-part of application Ser. No. 850,915, Aug. 18, 1969. This application June 25, 1970, Ser. No. 49,861

Int. Cl. B25b *7/04*

U.S. Cl. 81—329 **8 Claims**



A hand tool usable to grip items firmly and further usable as a hand vise is made up of two gripping jaws having serrated faces opposing each other, the jaws having extensions thereon hinged to ech other at their ends remote from the jaws. The lower one of the jaws has a rectangular socket therein to receive an interiorly threaded sleeve which is pivoted to the lower jaw so that it can rock in the socket. A bolt with a rectangular head threads into the sleeve and extends through an aperture in the other jaw so that the rectangular head of the bolt is above that jaw. A handle fits on the bolt and has a rectangular seat therein to receive the bolt head and turn the bolt when the handle is turned. The jaws are urged apart by a known type of spring.

3,618,432

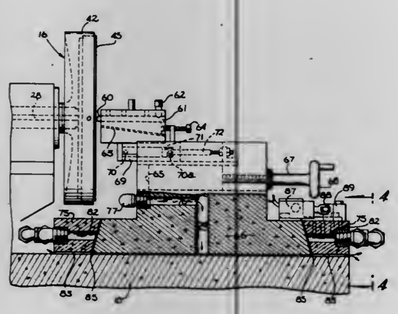
VIBRATION-FREE LATHE

Leonard A. Briese, Los Angeles, Calif., assignor to Wescal Industries, Inc., El Segundo, Calif.

Filed Mar. 17, 1969, Ser. No. 807,602

Int. Cl. B23b *3/00, 13/00*

U.S. Cl. 82—2 **12 Claims**



A novel lathe construction enables a smooth, mirror-like surface to be machined by the lathe. The design is especially suited to products requiring an extremely smooth surface, for example memory discs for computers.

3,618,433

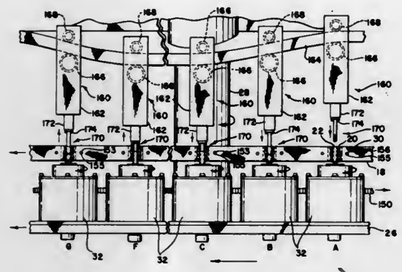
MACHINING APPARATUS AND SYSTEM

George Horst Reinemuth, Secane, Pa., and Mark Joseph Connor, Wilmington, Del., assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.

Filed July 2, 1969, Ser. No. 838,605

Int. Cl. B23b *13/04*

U.S. Cl. 82—2.7 **14 Claims**



An apparatus and system particularly suited for machining grooves in the outer surfaces of cylindrical workpieces. The apparatus disclosed includes a rotary turret on which is mounted a plurality of rotary cutting heads. The workpieces are fed to the turret by an endless flexible member provided with workpiece holders at spaced points therealong. The flexible member is trained about the turret at a location above the cutting heads and turret mounted rams function to move the workpieces into and out of the cutting heads during turret rotation.

3,618,434

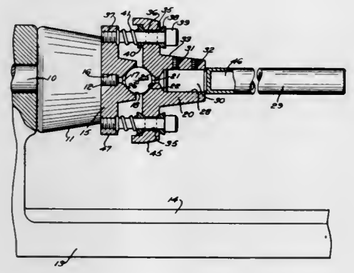
MACHINE ALIGNMENT BAR

Francis Gerard Nault, Warwick, R.I., assignor to Gentool Inc.

Filed Nov. 17, 1969, Ser. No. 877,211

Int. Cl. B23b *25/06*

U.S. Cl. 82—45 **5 Claims**



An assembly for aligning the guiding surfaces of a machine with a rotatable member for alignment in two right-angular planes with respect to the axis of the rotatable member by means of a bar holder which is universally mounted with respect to a base about a center between the holder and the base and with an arcuate surface on the bar holder whose center of radius is the center of point of swing between the holder and the base.

3,618,435

PROCESS AND DEVICE FOR THE RETARDATION OF WIRE CUTTINGS AFTER SAMPLING SHEARS

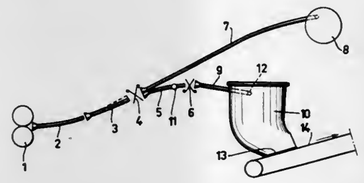
Karl Sten Olof Forsberg, Smedjebacken, and Hans Erik Gedin, Ludvika, Sweden, assignors to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed Apr. 3, 1969, Ser. No. 813,067

Claims priority, application Sweden, Apr. 9, 1968, 4,763/68

Int. Cl. B26d *7/06*

U.S. Cl. 83—27 **6 Claims**



This invention relates to a process and a device for the retardation of wire cuttings which move forward at high speed and come from the first and last end cut off from a hot wire rod from a rolling mill, the cut ends being cut off into short pieces in piece cutting shears ("toggle shears"). The pieces are guided tangentially into a cylindrical or slightly conical drum in such a way that the pieces cut off follow a spiral path along the inner jacket surface of drum until retardation has taken place when the pieces fall down to an opening at the bottom of the drum.

3,618,436

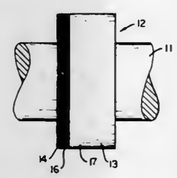
BRUSH SURFACED ANVIL FOR ROTARY SHEET-CUTTING EQUIPMENT

Donald A. Brown, P.O. Box 2042, Anderson, Ind. 46011

Filed Aug. 25, 1969, Ser. No. 852,743

Int. Cl. B26d *1/56, 7/20*

U.S. Cl. 83—37 **1 Claim**



Linearly moving corrugated fiberboard sheet is supported on a rotating anvil using a polyurethane sleeve and a brush sleeve mounted side-by-side on the anvil shaft, the brush being of densely packed bristles to support the sheet directly behind the location of knives mounted on a rotating shaft and piercing the sheet, the brush accommodating entry of the knives into the brush during piercing without damage to either the knives or the brush, and serving as the exclusive support for the sheet at the knives.

3,618,437

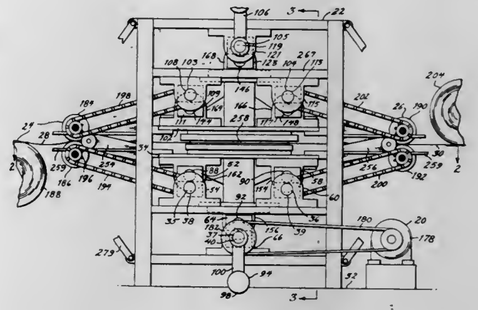
MACHINE FOR AND PROCESS OF DIE-CUTTING

Rene D. Colinet, 4902 N. 13th St. 19141, and William I. Bulmash, 6600 N. 11th St. 19126, both of Philadelphia, Pa.

Filed Sept. 8, 1969, Ser. No. 855,905

Int. Cl. B26d *1/56;* **B23d** *25/10*

U.S. Cl. 83—37 **14 Claims**



Die and backer, constantly facing each other, travel in circular paths which bring them close to each other with sheet material sandwiched between, all traveling at the same speed in the same direction, and then together to effect a contour cut. The two sides of the backer may be somewhat relatively dephased to produce a rocking component of motion and a rocking cut. Specific preferred structure includes shafts in sets of three and transmission of motion from below the sheet material to above it by pairs of lever arms attached to rollers in roller guides.

3,618,438

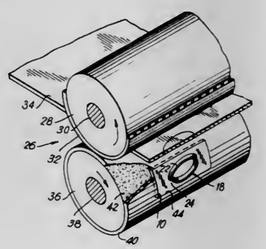
CUTTING

Walter A. Simson, New York, N.Y. (230 Beverly Road, Scarsdale, N.Y. 10538)

Filed Nov. 6, 1968, Ser. No. 773,816

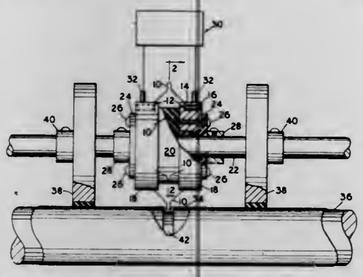
Int. Cl. B26d *1/56*

U.S. Cl. 83—117 **17 Claims**



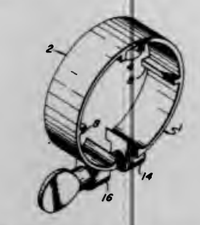
Cutting die comprising flat table cutting edge with curvilinear sides extending upwardly of a thin, flexible base and methods for producing and utilizing same.

3,618,439
FILM-PERFORATING DEVICE
Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Newark, N.J.
Filed June 1, 1970, Ser. No. 42,227
Int. Cl. B26d *7/10*
U.S. Cl. 83—171 **10 Claims**



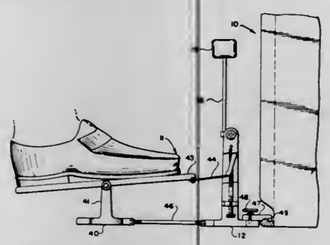
A rotary film-perforating device is provided with a plurality of Nichrome or other metallic needles which are electrically heated by current flowing through the needles so that the heating effect is concentrated in the needles which perform the perforating operation.

3,618,440
LIGATURE FOR SINGLE REED WOODWIND MUSICAL INSTRUMENT
Jackie Leo Ratterree, 347 E. Loma Vista, Tempe, Ariz. 85281
Filed Mar. 16, 1970, Ser. No. 19,934
Int. Cl. G10d *9/02*
U.S. Cl. 84—383 **1 Claim**



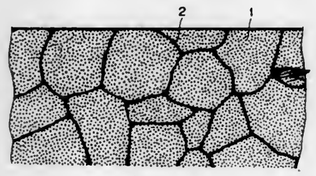
An improved ligature is disclosed which is spaced from both mouthpiece and reed to permit freer vibration of both mouthpiece and reed resulting in richer, darker, mellower tones and more even tones throughout the various registers of the instrument.

3,618,441
DOUBLE ACTING DRUM PEDAL
John A. Fearns, 42 Hickory St., Norwich, Conn. 06851
Filed Oct. 21, 1969, Ser. No. 868,121
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 **5 Claims**



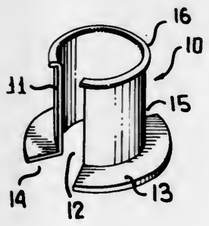
A double acting bass drum pedal has a beater mounted on a horizontal shaft with there being an arm also mounted on said shaft but offset from the rotary axis thereof and directed downwardly toward an end of a rockably mounted pedal. A flexible strip connects the arm to the end of the pedal so that rocking of the pedal in either direction will rotate the shaft in one direction to bring the beater into the drum beating position.

3,618,442
VIBRATING PLATES FOR SOUND INSTRUMENTS AND METHOD OF MANUFACTURING THE SAME
Genichi Kawakami, Hamakita-shi, Japan, assignor to Nippon Kakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Continuation-in-part of application Ser. No. 580,803, Sept. 20, 1966. This application Oct. 13, 1969, Ser. No. 866,027
Claims priority, application Japan, Sept. 25, 1965, 40/58,570
Int. Cl. C08j *1/14;* **G10d** *15/00*
U.S. Cl. 84—452 **15 Claims**



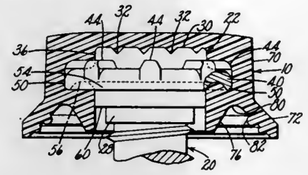
A vibrating plate for sound instruments comprising a plurality of foamed granules of a thermoplastic resin and a boundary layer of a thermosetting resin adhering said foamed granules together to form an integral structure.

3,618,443
SNAP-IN GASKET HOLDER
Donald F. Fitzner, 6361 Isleta Blvd. SW., Albuquerque, N. Mex. 87105
Filed July 15, 1969, Ser. No. 841,874
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 **1 Claim**



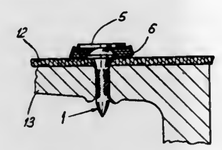
This disclosure relates to a gasket holder which is useable to hold a gasket in place relative to a machine element by being passed through a bolt receiving opening in the gasket and being snapped into the internally threaded bore into which the bolt is to be threaded. A principal feature of the holder is the resilient construction thereof which permits it to be readily snapped into place and wherein, when released, it will retain its position. A further feature of the holder is the useability of a single holder for several sizes of bolts.

3,618,444
CORROSION RESISTANT FASTENERS
Wilfred Kay, West Caldwell, and Louis Oestereicher, Teaneck, N.J., assignors to USM Corporation, Boston, Mass.
Filed May 16, 1969, Ser. No. 825,335
Int. Cl. F16b *23/00*
U.S. Cl. 85—9 **4 Claims**



A corrosion resistant fastener comprising a metallic portion having a threaded shaft and a retaining head. A plastic head is retained securely in position on the metallic portion by flanged retaining means associated with the metallic retaining head. The plastic head has a skirt which is urged into weather sealing engagement with the surface of a member into which the fastener is inserted, by the metallic retaining head.

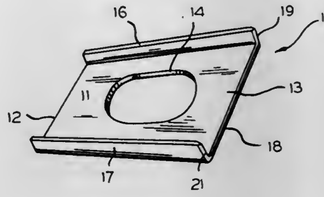
3,618,445
NAIL ASSEMBLY FOR A CORROSION-PROOF FASTENING ATTACHMENT
Manfred Hartmann, Frastanz, and Kurt Schmid, Altenstadt, Austria, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Sept. 10, 1969, Ser. No. 856,615
Claims priority, application Germany, Sept. 17, 1968, P 17 75 730.1
Int. Cl. F16b *15/02*
U.S. Cl. 85—10 E **4 Claims**



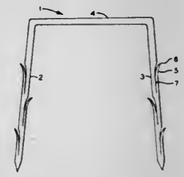
A nail assembly is formed of an axially extending shank with a driving point at one end and a head extending transversely from the shank at the other, a plastically deformable washer fitted on the shank, and a metallic plate member integrally secured to and extending laterally from the nail head. The nail assembly is used in fastening material in a corrosion-proof manner, such as wall or roof coverings, which is secured to a hard structural material and where the nail assembly is inserted by means of an explosive driven setting tool. When inserted the plate member forces the washer against the material being secured forming a seal for the opening made by the nail. In the inserted position only the plate member and the washer are exposed and they are formed of materials which prevent the development of any corrosion.

3,618,446
WOOD FASTENERS
Hugh Black, Downers Grove, Ill. (Liner Cove Road, P.O. Box 556, Waynesville, N.C. 28786)
Continuation-in-part of application Ser. No. 756,844, Sept. 3, 1968. This application Feb. 26, 1970, Ser. No. 14,561
Int. Cl. F16b *15/00*
U.S. Cl. 85—11 **2 Claims**

Wood fasteners having body sections comprising converging peripheral resilient side walls. The body section includes an elongated hole therein. The elongated hole provides maintaining means for retaining the fasteners on a carrier. The hole further provides expansion space for wood displaced as the fastener is driven into abutting wood sections which are being joined together therewith. Displaced wood acts in conjunction with the hole to lock the wood and fastener together.



3,618,447
DETERIORATION FASTENERS
Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Sept. 15, 1969, Ser. No. 857,681
Int. Cl. F16b *15/00, 15/06*
U.S. Cl. 85—49 **2 Claims**



Fastening apparatus are disclosed which embody one or more legs having upwardly and outwardly projecting barbs which provide resistance to withdrawal after insertion in the material to be fastened. By fabricating the fasteners from polymeric materials which undergo decomposition in ultraviolet light, the fasteners have a predictable life.

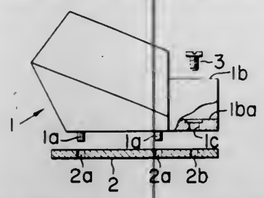
3,618,448
HIGH EXPLOSIVE CARTRIDGE
Robert W. Heinemann, Rockaway Township, N.J. (147 Elm St., Dover, N.J. 07801)
No Drawing. Filed June 9, 1969, Ser. No. 831,765
Int. Cl. C06d *1/08;* **F42d** *1/08, 5/00*
U.S. Cl. 86—20 **7 Claims**

A process for the low pressure deposition of high explosive charges in specific configurations under actual warfare conditions in the field.

3,618,449
VIEWFINDER MOUNTING ON SINGLE-LENS REFLEX CAMERAS
Kenji Hiruma and Sadanao Ando, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 23, 1969, Ser. No. 860,234
Claims priority, application Japan, Oct. 3, 1968, 43/86,407; Dec. 6, 1968, 43/106,339
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 **4 Claims**

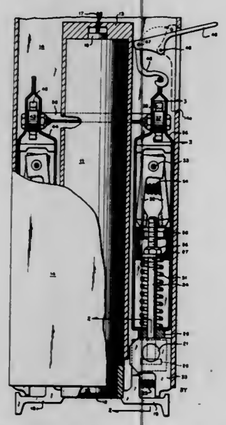
A viewfinder for single-lens reflex cameras upon which a penta-roof type reflecting mirror may be mounted through a mounting member without providing edges along the side walls of the mirror for mounting. The main body of the mirror may be correctly positioned relative to the camera body and the mirror is securely held in posi-

tion at the portions exterior of the main body of the mirror so that no force is directly applied to the reflecting



mirror upon mounting, thereby eliminating the distortion thereof.

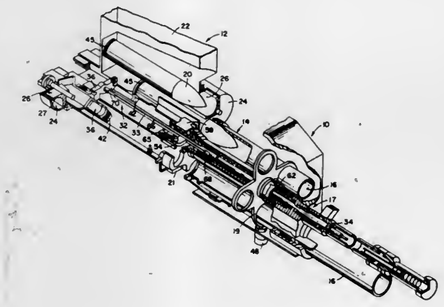
3,618,450
TAKE-UP LATCH MECHANISM
Henry Fink, Jr., Torrance, and Curtis B. Anderson, Mission Viejo, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 26, 1970, Ser. No. 14,374
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 R **6 Claims**



A latch mechanism for positively securing a sonobuoy launching container inserted generally upward in an aircraft-mounted lanucher tube. A pair of latches at opposite sides of the tube opening are spring-urged inwardly to engage the exposed end of the container when inserted. Each latch is connected to one end of a rod, the other end being threaded for selective engagement by a correspondingly threaded collet pivotally connected to launcher tube structure. A collet ring, movable along the length of the rod by a stirrup, is drawn upward urging the collet into locking engagement with the rod. The stirrup is spring-biased downward and is urged upward by a manually-operated lever. Thus, the container is first drawn into the tube to a predetermined force, then the collet ring engages the collet causing it to grip the rod and positively secure the container.

3,618,451
LOADER MECHANISM FOR AN AUTOMATIC ROCKET LAUNCHER
Arthur A. Smith, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 3, 1969, Ser. No. 873,338
Int. Cl. F41f *3/04, 9/00*
U.S. Cl. 89—1.804 **7 Claims**

A loader mechanism for loading a plurality of rockets into an open breech high rate automatic launcher while simultaneously launching a second plurality of rockets. The launcher is an automatic high rate, open breech launcher fed by a four cylinder revolver which generates rotary reciprocating motion. The loader mechanism loads a pair of rockets in a pair of the cylinders of the revolver while a second pair of rockets are fired from a second pair of cylinders of the revolver. Two rounds are loaded and two rounds are fired each half cycle. A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chambers with the launch tubes while the second hydraulic cylinder actuates the loading mechanism for performing the loading function, reciprocates the revolver to seal and align the firing chambers with the launching tubes, retracts the revolver to break the seal between the tubes and revolver chambers. A pulsing switch operated by revolver motion serves to actuate the pair of solenoid valves to actuate the hydraulic cylinders.

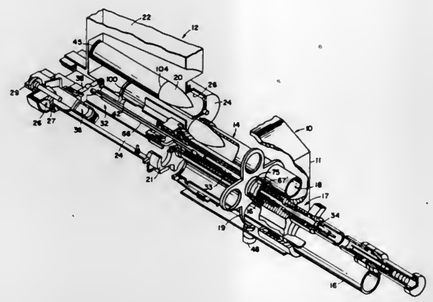


The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.) is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

3,618,452
OBTURATING MECHANISM FOR AN AUTOMATIC ROCKET LAUNCHER
Arthur A. Smith, Peter L. Green, and Corbet M. Cornelison, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Nov. 3, 1969, Ser. No. 873,417
Int. Cl. F41f *3/04, 9/00*
U.S. Cl. 89—1.804 **7 Claims**

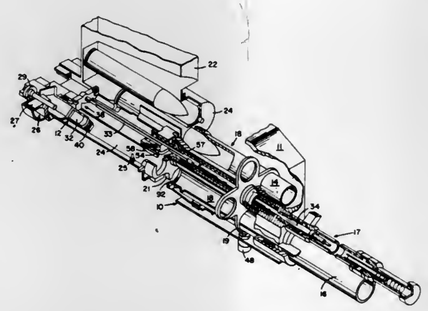
A rocket launcher having a four barrel revolver from which a pair of rockets are fired while, simultaneously, a second pair is loaded therein in launching position. Mechanism is provided for obturating and deobturating the four barrel revolver into two launcher tubes to accomplish sealing between two of the revolver cylinders and the two launch tubes.

The launcher is an automatic high rate, open breech, dual tube launcher fed by a four cylinder revolver which generates rotary reciprocating motion. Two rounds are loaded and two rounds are fired each half cycle. A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chamber with the launching tubes while the second hydraulic cylinder performs the loading operation, reciprocates the revolver into obturating position to seal and align the firing chambers with the launching tubes, and retracts to clear the seals and latch the rounds being loaded into the revolver chamber. A pulsing switch operated by revolver motion serves to actuate the hydraulic cylinders.



The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.) is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

3,618,453
OPEN BREECH HIGH RATE AUTOMATIC ROCKET LAUNCHER
Corbet M. Cornelison, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 3, 1969, Ser. No. 873,418
Int. Cl. F41f *3/04, 9/00*
U.S. Cl. 89—1.804 **7 Claims**



An open breech, high rate, automatic, rocket launcher provided with a pair of launching tubes and a four chamber revolving and reciprocating revolver. The revolution of the revolver allows two chambers to be aligned with the launching tubes while the other two chambers are being loaded. The reciprocating motion of the revolver allows it to move forward to seal and align the firing chambers with the launching tubes, then to move back to clear the seals and latch the rounds being loaded into the loading chambers. The revolver is then free to rotate 90° to repeat the cycle.

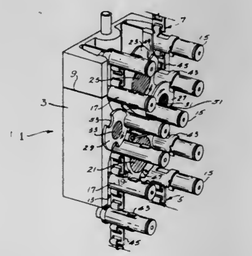
The motions are accomplished using linear hydraulic actuators with variable orifice end snubbers to control the acceleration and deceleration at each end of the strokes to prevent exceeding the structural limitations of the rockets, to maintain control of rocket position and to limit exciting vibrations which would degrade the accuracy of the launch. The rotation cylinder controls the angular position of the revolver by means of a modified 90° half sine wave cam track (peak of the sine wave) mounted on the revolver assembly. The linear stroke of the hydraulic cylinder is thus converted to a 90° of rotating motion of the revolver. The same 90° arc being used clockwise then counter-clockwise for each succeeding cycle of the launcher's operation.

A ram-retract cylinder located on the center line of the revolver controls the loading of the new rounds, moving the revolver forward to seal with the launch tubes at the beginning of the ram stroke and releasing the revolver to spring back from the seals at the end of the stroke, and depressing a plurality of firing switches in sequence to obtain the maximum firing interval possible while the chambers are sealed to the launching tubes.

The return or retract stroke is rapidly accomplished to provide time for the loader assembly located on its extreme rear to properly engage the new rounds for the next cycle and to prevent jamming of the mechanism.

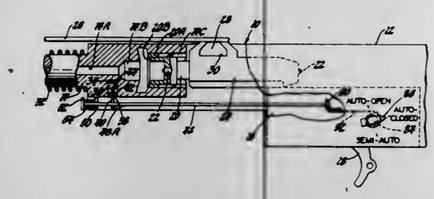
The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.) is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

3,618,454
TWO-DIRECTION AMMUNITION TRANSFER MECHANISM
James R. Christenson, Creve Coeur, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Sept. 30, 1969, Ser. No. 862,377
Int. Cl. F41d *9/00*
U.S. Cl. 89—33 BB **8 Claims**



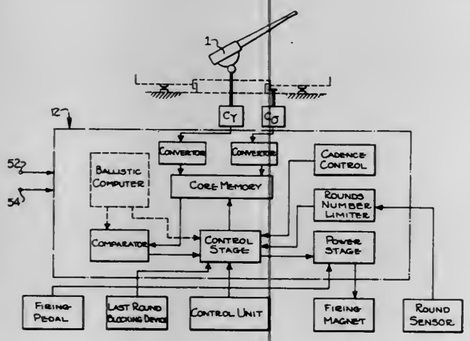
In a linkless, flexible armament system having a conveyor for transporting live rounds from an ammunition magazine to a gun and spent cartridge cases and dud rounds from the gun to a storage container, a mechanism is provided for permitting ready separation of the conveyor loop into two halves without physically disconnecting or breaking the conveyor chain.

3,618,455
MANUAL OPEN- AND CLOSED-BOLT WEAPON FIRE CONTROL WITH AUTOMATIC HEAT RESPONSIVE OVERRIDE
Roy D. Plumer, Santa Barbara, and Harold Shrout, Goleta, Calif., assignors to General Motors Corporation, Detroit, Mich.
Filed July 25, 1969, Ser. No. 844,926
Int. Cl. F41d *11/02, 11/20*
U.S. Cl. 89—132 3 Claims



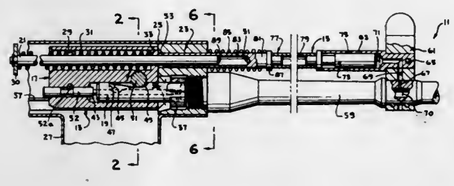
A fire control system for an automatic firearm capable of being manually set to selectively provide automatic closed-bolt operation, automatic open-bolt operation and semiautomatic closed-bolt operation. The firearm can be set to these modes of operation by moving a mode-selector knob located on the exterior of the firearm. The knob moves a cam which cooperates with sear parts to set the mode of operation. A heat sensing device is positioned in the barrel of the firearm near the firing chamber to sense the temperature of the barrel and when this temperature reaches a point at which cook-off of a cartridge is incipient a mechanism is actuated to automatically switch the firearm to its automatic open-bolt mode of operation. The firearm is capable of firing caseless ammunition.

3,618,456
FIRING ZONE LIMITING APPARATUS
Gunter Mindel, Dusseldorf, Germany, assignor to Rheinmetall G.m.b.H., Dusseldorf, Germany
Filed Sept. 2, 1969, Ser. No. 854,545
Claims priority, application Germany, Sept. 12, 1968, P 17 28 222.3
Int. Cl. F41d *11/02*
U.S. Cl. 89—134 7 Claims



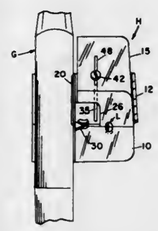
A firing zone limiting apparatus for a laterally and vertically adjustable weapon which is provided with lateral angle and elevation angle coders by means of which the contours of blocked areas can be fed into a store of an electronic control system which controlls the action of the firing magnet of the weapon.

3,618,457
ROTARY AND SLIDING FIREARM BOLT WITH ETERNAL CAM
Arthur Miller, 1602 Myrtlewood, Costa Mesa, Calif. 92626
Filed Nov. 25, 1969, Ser. No. 879,848
Int. Cl. F41d *5/06*
U.S. Cl. 89—185 17 Claims



A firearm comprising a bolt having an external cam and a bolt carrier having a cam follower drivingly connected thereto for cooperating with the cam. The cam follower is mounted for rotation relative to the bolt carrier so that it can roll along the external cam. The firearm may also include a push rod assembly includnig a push rod and a guide rod having end portions mounted in slidable, telescoping relationship.

3,618,458
SHELL RETRIEVER DEVICE FOR SHOTGUNS
Gene M. Pruonto, 124 E. 1st Ave., and Robert G. Cummings, 233 E. Crawford Ave., both of Altoona, Pa. 16602
Filed July 15, 1969, Ser. No. 841,720
Int. Cl. F41c *21/00*
U.S. Cl. 89—33 SF 9 Claims

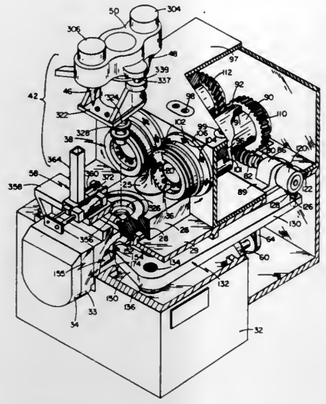


The invention features a transparent housing attachable to a shotgun or other weapon at the shell ejection slot and open to the slot to receive empty shells as they are expelled by the gas blast and by mechanical action of gun discharge. The housing of the invention is contrived to catch shells and spin them, lodging them in the housing in compact side by side relation. Thus, a small housing can receive a plurality of shells neatly laid side by side with their axes parallel to the gun axis.

3,618,459
GEAR MAKING
Alexander D. F. Moncrieff, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.
Filed Aug. 8, 1969, Ser. No. 848,599
Int. Cl. B23f *23/04*
U.S. Cl. 90—1 10 Claims

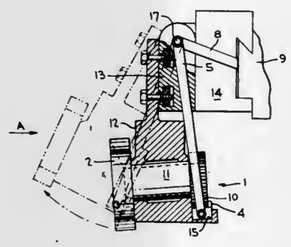
Loading and unloading workpieces in gear making apparatus having workpiece support adjacent a cutter, with a pair of workpiece holders mounted on a carrier for

oscillation with respect to the support and further with respect to a workpiece supply station, the carrier inter-



mittently undergoing rotation about and movement along its own axis.

3,618,460
DEVICE FOR MACHINING SURFACES OF ARTICLES WITH ROTATING CUTTING TOOL
Veniamin Markovich Braslavsky, Ulitsa Michurina 40, kv. 14, Sverdlovsk, U.S.S.R.
Filed Mar. 26, 1969, Ser. No. 810,730
Int. Cl. B23d *13/02*
U.S. Cl. 90—54 3 Claims

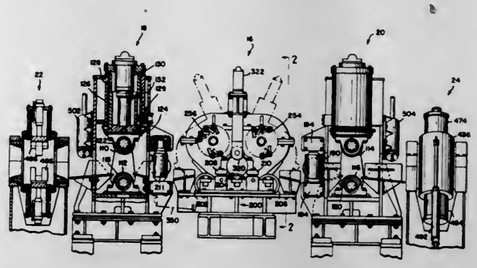


In a planer for cutting curvilinear profiles with a rotating cutter incorporating a mechanism for coordinating the angular motion of the cutter with its translational movement in the direction of feed. The device can be utilized for machining the surfaces of a curvilinear profile on machine tools.

3,618,461
PROCESS OF MACHINING A METAL IN CONTACT WITH A COMPOSITION OF CHLOROFLUORO- AND NITROALKANES
Murray Borton Parker, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 9, 1970, Ser. No. 1,812
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 C 6 Claims

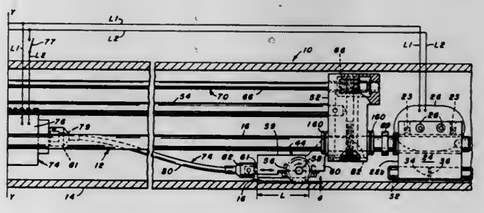
The process of machining a metal in contact with a cutting fluid comprising trichlorofluoromethane or 1,1,2-trichloro-1,2,2-trifluoroethane and from about 0.5 percent to 15 percent by weight of a nitroalkane having 1 or 2 carbon atoms.

3,618,462
BILLET CHIPPER
Werner W. Eibe and Richard W. Tepel, Pittsburgh, Pa., assignors to Blaw-Knox Company, Pittsburgh, Pa.
Original application June 14, 1968, Ser. No. 737,042, now Patent No. 3,496,831, dated Feb. 24, 1970. Divided and this application Dec. 4, 1969, Ser. No. 882,264
Int. Cl. B23c *3/00*
U.S. Cl. 90—11 R 6 Claims



A billet chipper having a pair of rotating cutting heads arranged to be selectively moved into a working position for removing defects from a billet moved past a chipping station. One of the cutting heads is adapted to remove defects from the billet as the billet is moved in one direction past the chipping station and the other of the cutting heads is adapted to remove defects from the billet as it is moved in the opposite direction past the chipping station. The billet chipper is also provided with mechanism for clamping the billet securely during chipping so as to prevent vibration thereof as a result of the forces developed by the cutting heads.

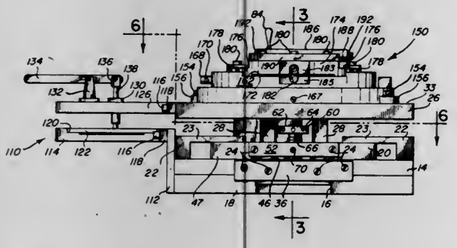
3,618,463
NOTCHING APPARATUS
Wayne L. Briney, North Irwin, and William L. Zemberry, Swissvale, Pa., assignors to United States Steel Corporation
Filed Oct. 3, 1969, Ser. No. 863,559
Int. Cl. B23c *1/20, 3/30*
U.S. Cl. 90—12 22 Claims



This invention relates to notching apparatus for forming reference standard notches in workpieces for use as a reference standard in the inspection of metal products, such as pipe, bar, plate and the like, for internal discontinuities therein by ultrasonic eddy current, fringe flux systems, and the like. The notching apparatus for forming a reference notch of predetermined depth in a workpiece has a base frame positioned in a notch forming position with respect to the workpiece preparatory for the forming of the notch. A slide frame is reciprocable on the base frame and magnetic gripping means are on the base frame and are engageable with the workpiece to secure the apparatus with respect to the workpiece in the notch forming position. Notching means are reciprocable on the slide frame toward and

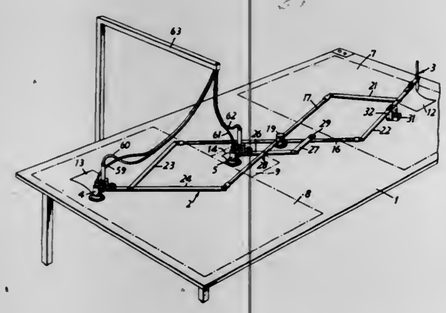
away from the workpiece. Drive means are on the slide frame, are connected to the notching means and are utilized for causing cutting movement of the notching means. Reciprocating drive means on the slide frame are connected to th notching means and cause the notching means to cut the notch to the predetermined depth.

3,618,464
DUPLICATOR
Roger J. Michaud, Sr., Garden Apartments, Apt. 22–D, Manchester, Conn. 06040
Filed Dec. 4, 1969, Ser. No. 881,992
Int. Cl. B23d 7/08; B23b 39/06
U.S. Cl. 90—13 R **15 Claims**



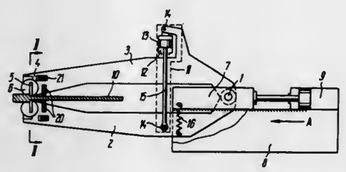
Apparatus for pattern copying utilizes a template mounted within a base under a carrier which is movable thereover. The carrier, which has a stylus projecting downwardly into the template, may support a workpiece on its upper surface, and it is restricted against angular and axial movement relative to the base. Both the template and the stylus may be mounted in removable drawers, and the machine may include drilling and universal assemblies, the latter of which permits adjustment of the lateral and angular position of the workpiece mounted upon the carrier.

3,618,465
CUTTING DEVICE
Michel Brochard, 14 Rue des Reculettes, 75 Paris XIII, France
Filed Feb. 10, 1970, Ser. No. 10,141
Int. Cl. B23c 1/16; B43l 13/10
U.S. Cl. 90—13.1 **6 Claims**



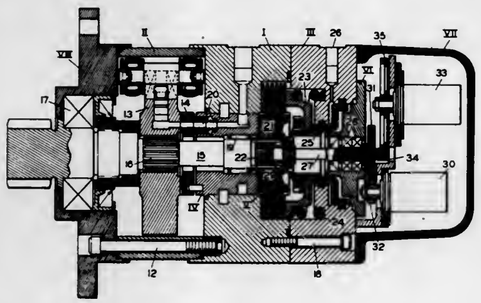
Apparatus for cutting out sheet material has a follower member for following curves and patterns of the shape to be cut, a principal cutter member positioned to move in a first cutting zone, coupling means linking the principal cutter member to the follower member such that the principal cutter member is constrained to reproduce a shape followed by the follower member, and an auxiliary cutter member positioned to move in a second cutting zone distinct from the first cutting zone, the auxiliary cutter member being controlled by the coupling means such that it is constrained to describe a shape which is similar to the shape described by the principal cutter member, but on a reduced scale.

3,618,466
DEVICE FOR ELIMINATING FLASH FROM WELD SEAMS OF BUTT-JOINTED STRIPS IN A BUTT WELDER
Jury Mikhailovich Nedodaev, Rogozhskyval 15, kv. 23; Boris Adolfovich Ryss, M. Kolkhoznaya ploschad 1, kv. 138; and Samuil Grigorievich Molchadsky, N. Cheremushkinskaya ulitsa 50, korpus 1, kv. 23, all of Moscow, U.S.S.R.
Filed Mar. 16, 1970, Ser. No. 19,843
Int. Cl. B23d 1/14
U.S. Cl. 90—24 F **3 Claims**



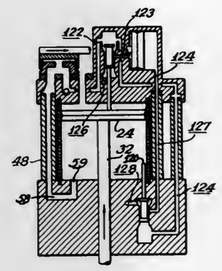
A device for eliminating flash from the weld seams of metal strips in a butt welding machine, wherein provision is made for pivotable levers mounted on a common pivot pin and adapted to conjointly turn in a vertical plane, the vacant ends of said levers carrying cutting tools arranged one above the other, the strip being cleaned passing therebetween; and supporting rollers mounted on both sides of the cutting tools and adapted to be in constant contact with the surface of the strip under treatment, the line of contact of said rollers lying on the same straight line as the cutting edge of the tool.

3,618,467
HYDRAULIC MOTOR UNIT ARRANGEMENT
Jacques Faisandier, Chatillon-sous-Bagneux, France, assignor to Societe d'Applications des Machines Motrices S.A., Issy les Moulineaux, France
Filed June 3, 1969, Ser. No. 829,969
Claims priority, application France, June 6, 1968, 153,966
Int. Cl. F01b 25/04; F16d 25/00
U.S. Cl. 91—1 **8 Claims**



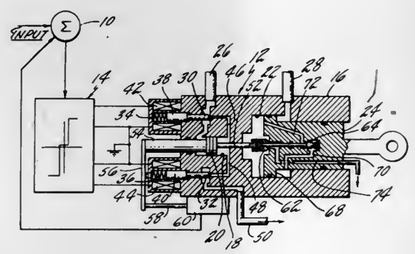
A hydraulic motor unit constituted by the assembly of three main sub-units connected by generally plane faces. The central sub-unit containing the rotor is disposed between the disc-brake sub-unit and the sub-unit containing the non rotary parts of the supply and exhaust system.

3,618,468
RECIPROCATING AIR MOTOR EXHAUST ASSEMBLY
Richard K. Gardner, Montpelier, and Wilbert G. Kautz, West Unity, Ohio, assignors to The Aro Corporation, Bryan, Ohio
Filed June 24, 1969, Ser. No. 836,037
Int. Cl. F01l 25/06
U.S. Cl. 91—306 **2 Claims**



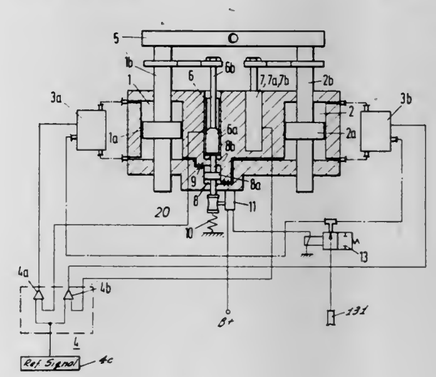
A reciprocating piston air motor with a pilot piston operated slide valve that admits air alternately to opposite ends of the drive cylinder of the air motor through separate straight air passages which also serve as exhaust passages. The position of the drive piston is sensed by stems extending from spool valves positioned at opposite ends of the drive piston cylinder chamber. The spool valves control the supply and exhaust to the pilot piston, thereby controlling the slide valve and consequently pressure to the drive piston.

3,618,469
SOLENOID OPERATED ACTUATOR SYSTEM
Donald F. Wills, Suffield, and Ronald E. Falk, Bristol, Conn., assignors to Chandler Evans Inc., West Hartford, Conn.
Filed Sept. 19, 1968, Ser. No. 760,817
Int. Cl. F15b 13/16, 15/17
U.S. Cl. 91—361 **19 Claims**



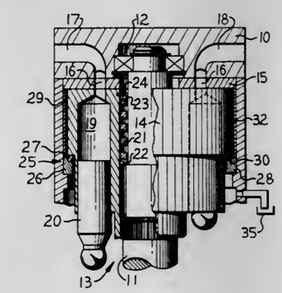
A stable, proportional control system having an actuator characterized by a first stage comprising an integrating pilot piston, the flow of operating fluid to the pilot piston chamber being controlled by opposed solenoid operated valves. The solenoid operated valves are responsive to amplifying and switching circuitry having an accurately controlled deadband, the switching circuitry being responsive to command signals and pilot piston position feedback signal. The pilot piston, via a suitable linkage, controls the operation of valves which control the delivery of operating fluid to a second stage in which is disposed a load connected, differential area slave piston.

3,618,470
DEVICE FOR SUPERVISING ELECTRO-HYDRAULIC ACTUATORS
Alfred Mueller, Bremen, Hans-Joachim Stemmildt, Neerstedt, and Eckhard Renner, Achim, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH
Filed June 10, 1970, Ser. No. 45,155
Claims priority, application Germany, June 25, 1969, P 19 32 066.2
Int. Cl. F15b 11/22
U.S. Cl. 91—411 R **12 Claims**



A dual cylinder drive with pistons operating a common output actuator and individual feedback control in follower operation as to an electrical input. Any pressure differential between the cylinders is used to generate a control operation tending to equalize the pressure for similar relative piston positions. In case of excess pressure difference, the drive is shut down.

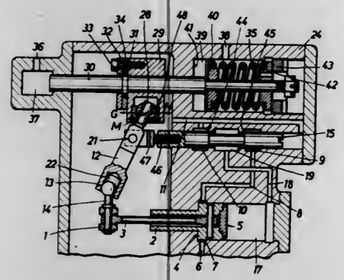
3,618,471
HYDRODYNAMIC THRUST BEARING FOR AXIAL PISTON-TYPE PUMP OR MOTOR
Allyn J. Hein and Gilbert Tribley, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 21, 1969, Ser. No. 851,896
Int. Cl. F04b 1/20
U.S. Cl. 91—485 **8 Claims**



An axial piston-type pump or motor has a hydrodynamic thrust bearing arrangement disposed between the housing and cylinder barrel thereof. Such bearing arrangement comprises a bearing holder and a bearing ring mounted in circumferential counterbores formed in the housing and bearing holder, respectively. A cylindrical spacer sleeve is disposed between the bearing holder and a port plate to aid in positively maintaining the integrated

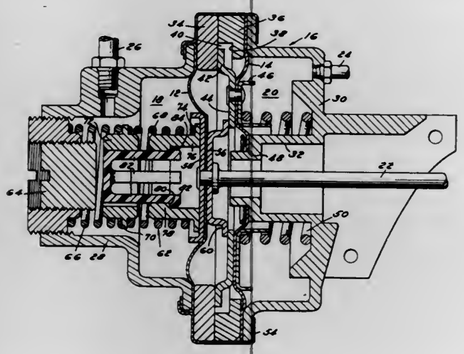
structures in their correct positions. A fluid passage is defined between the spacer sleeve and the cylinder barrel to communicate lubricating fluid to the thrust bearing.

3,618,472
DEVICE FOR ADJUSTING THE STROKE VOLUME IN A SWASH PLATE, AXIAL PISTON MOTOR OR PUMP
Hans Knaak, Rheydt, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchen-Gladbach, Germany
Filed Feb. 9, 1970, Ser. No. 9,641
Claims priority, application Germany, Dec. 5, 1969, P 19 61 908.0, P 19 08 234.9
Int. Cl. F01b *3/00, 13/04;* **F04b** *1/26*
U.S. Cl. 91—506 **11 Claims**



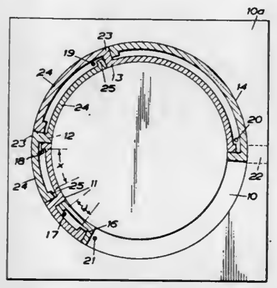
The tilting angle of a swash plate in a fluid pump or motor is adjusted by a piston articulated to the plate and position controlled by a servo valve which, in turn, is operated by a plunger coupled to the swash plate by a single control lever. The connecting lever is connected to swash plate and plunger so that one of the connecting points can undergo three dimensional motion in relation to the respective other one.

3,618,473
MULTISTAGE DIAPHRAGM VACUUM SERVO
Gerald R. Miller, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 2, 1970, Ser. No. 7,490
Int. Cl. F01b *19/02*
U.S. Cl. 92—48 **2 Claims**



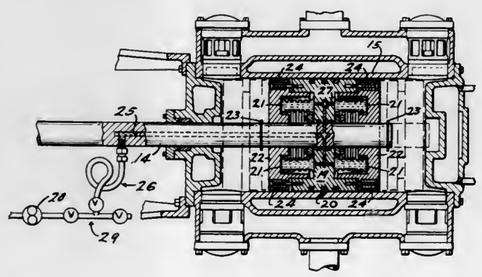
A housing contains two axially spaced vacuum actuated flexible diaphragms each spring biased towards the other and controlling movement of a force transmitter secured to one of the diaphragms, the spring assembly biasing the one diaphragm including two springs of different preloads and a spring retainer that is located between the two springs and of a construction providing two stage operational movement of the one diaphragm in one direction in response to vacuum changes.

3,618,474
MULTIPLE PISTON INCREMENTAL RAMS
Richard Ward, Worsley, England, assignor to Wm. Park & Co. Forgemasters Limited, Wigan, England
Filed June 10, 1969, Ser. No. 831,960
Claims priority, application Great Britain, June 14, 1968, 2,866/68
Int. Cl. F01b *31/12;* **F15b** *11/18*
U.S. Cl. 92—5 **12 Claims**



A multiple piston incremental ram as used for machine tool positioning or a digital to analogue converter is characterised in that the pistons work in an arcuate chamber. The pistons are of S or Z shape so that they hook on one another in an interconnected series and conveniently have a central part which seals slidingly on the walls of the chamber. The chamber can be annular or helical and the output can be visual or mechanical. Actuating ports are provided between the various central parts and a resetting port is also provided. Conveniently the chamber and pistons are both of plastics material the pistons being formed of a thermally softening plastics material strip.

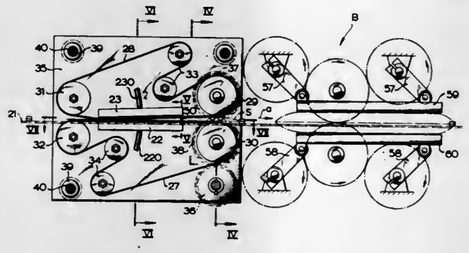
3,618,475
LOAD CONTROLLING DEVICE FOR COMPRESSORS
Earl R. Sauder, Mount Vernon, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.
Filed June 1, 1970, Ser. No. 41,881
Int. Cl. F01b *31/14*
U.S. Cl. 92—60.5 **5 Claims**



The invention is a fluid compressor load controlling device having an expandable piston within a cylinder. A collapsible bellows in communication with a pressurized

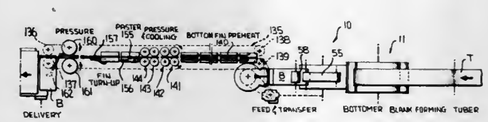
fluid source varies in volume with the amount of fluid present in the bellows. This correspondingly varies the size of said piston and inversely the volume of said cylinder thereby varying the compression load on the fluid compressor.

3,618,476
APPARATUS FOR OPENING FLATTENED TUBES OF FLEXIBLE SHEET MATERIAL
Fritz Achelpohl, Wulfekuhle, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany
Filed Aug. 27, 1968, Ser. No. 755,707
Claims priority, application Germany, Sept. 1, 1967, P 16 11 701.4
Int. Cl. B31b *1/00*
U.S. Cl. 93—8 **3 Claims**



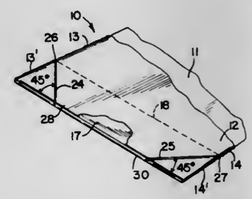
The superimposed layers of the ends of flattened flexible tubes used in bag making are first separated gradually by suction means operating on the opposite sides of the folded tubes adjacent the ends thereof and are thereafter opened rapidly. The suction means comprise either suction tables which can be moved apart during stationary periods in step-conveyance of the tubes, or where the tubes are conveyed continuously, counter-rotating suction rollers or belts. After initial separation of the layers the tubes are passed to a subsequent station where the ends are rapidly opened completely.

3,618,477
METHOD OF AND APPARATUS FOR MANUFACTURING BAGS
Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,710
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 SB **25 Claims**



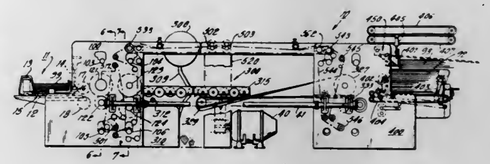
This disclosure relates to a process of and apparatus for manufacturing bags of the type having a gusseted body and a bottom which includes a pair of bottom panels and a fin transverse thereto by conveying each bag along a linear first path with its bottom leading and its fin in an upstanding position, transferring the bag to a second conveyor by rotating the bag at least ninety degrees and while being conveyed along a second path subjecting the fin, whose inner surfaces carry heat-activatable adhesive, to an elevated temperature sufficient to render the adhesive tacky and flowable, and thereafter subjecting the fin to regulated pressure along a predetermined area as the temperature decreases to bring the inner surfaces of the fin into intimate contact whereby the still flowable adhesive fills pinholes and the like prior to the setting of the adhesive. Thereafter grooved chill rolls cool the adhesive to its setting temperature during which period the fin is continually subjected to regulated pressure until the adhesive has set.

3,618,478
THREE DIMENSIONAL BAG WITH REINFORCED BOTTOM AND METHOD OF FORMING SAME
Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 31, 1969, Ser. No. 846,536
Int. Cl. B31b *49/04;* **B65d** *31/10, 33/00*
U.S. Cl. 93—35 SB **7 Claims**



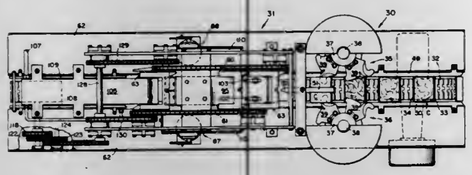
A side sealed, gusseted bottom plastic bag and the method of forming the same wherein the bottom forming seams are reinforced by providing diagonal flat seals inwardly from the junction area of the gusset inner fold line and the side seal lines, to the gusset outer fold lines with the side seals connecting the ends of the gusset walls to the side walls being continued to the outer gusset folds, so as to relieve the stress at the junction point when the bag is filled and the bottom opened out into square or rectangular form.

3,618,479
AUTOMATIC POSITIONER FOR HOLD-DOWN MEANS
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co. Inc., Brooklyn, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,621
Int. Cl. B31b *1/58, 1/98, 3/60*
U.S. Cl. 93—36.3 **4 Claims**



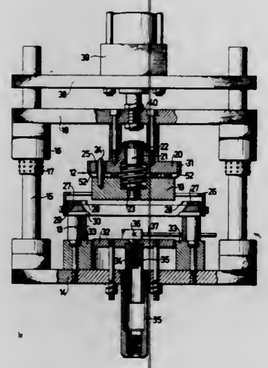
Apparatus for producing a folded tubular box from a box blank is provided with power driven means for adjusting the folding elements to operate on different size box panels. As the tubular boxes are produced, they are underfed into a stack and periodically a pile of boxes at the top of the stack is removed. While the boxes are in the stack, a hold-down means provides a downward force on the glue joint region connecting the inwardly folded panels of the box. A differential gearing unit interconnects the hold-down means with the power driven means for adjusting the folding sections so that as the apparatus is adjusted for different size boxes, the hold-down means is automatically positioned to apply a downward pressure at the joint region.

3,618,480
APPARATUS AND METHOD FOR CLOSING AND SEALING CARTONS
Ezra E. Theys, San Mateo, and Hugh B. Morse, San Jose, Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Original application Feb. 17, 1969, Ser. No. 799,783, now Patent No. 3,587,411. Divided and this application June 12, 1970, Ser. No. 57,863
Int. Cl. B31b *1/04, 1/54, 3/26*
U.S. Cl. 93—49 R 4 Claims



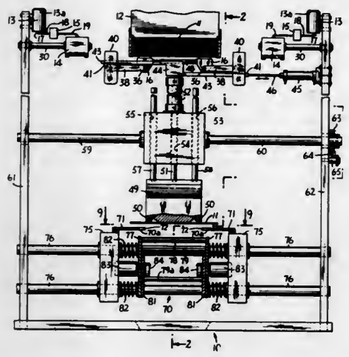
An apparatus comprises folding and sealing stations for progressively folding adhesively treated carton flaps into superimposed relationship and for sealing the flaps together. The folding may be occasioned by a horizontally disposed tucker wheel positioned on each side of the carton for folding three minor flaps and a plow bar for folding a cover flap over the afore-mentioned minor flaps. The carton is then conveyed to the sealing station whereat a nozzle means moves along with the carton to discharge heated air onto juxtaposed portions of the carton flaps. Means are then provided for compressing the flaps together. A second embodiment incorporates the nozzle means into the tucker wheel to perform the folding and sealing steps substantially simultaneously.

3,618,481
APPARATUS FOR ERECTING CARTONS
Rune G. A. Odenhagen, Malmo, Sweden, assignor to AB Akeriund & Rausing, Lund, Sweden
Filed Feb. 2, 1970, Ser. No. 7,681
Claims priority, application Sweden, Feb. 12, 1969, 1,890/69
Int. Cl. B31b *1/46, 1/64, 3/74*
U.S. Cl. 93—51 R 11 Claims



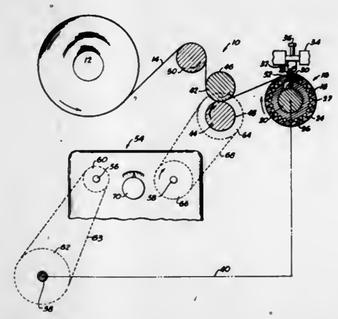
An apparatus for erecting tray-like cartons having a marginal flange extending outwardly from the upper edge thereof in which the blanks are first subject to a preforming stage, then to an erecting stage and finally a stage for pressing the flange outwards to the desired position.

3,618,482
TRAY FORMING METHOD AND APPARATUS
Paul F. Bowman, 500 Northern Parkway, Ridgewood, N.J. 07450
Filed June 16, 1969, Ser. No. 832,933
Int. Cl. B31b *1/44*
U.S. Cl. 93—51 18 Claims



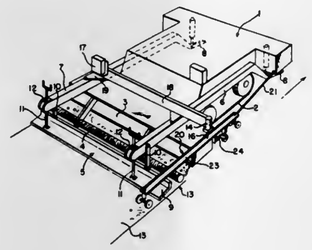
An "in-line" hydraulically or electrically operated tray forming apparatus is provided for folding paperboard blanks comprising a hopper for holding the paperboard blanks, a glue dobbing apparatus for applying controlled quantities of adhesive to the blank while the blank is in the hopper, a mandrel for removing the glued blank from the hopper and for urging the glued blank into a die cavity within which the blank is progressively folded into a tray.

3,618,483
APPARATUS FOR REGULATING WINDOW PATCH LENGTH ON ENVELOPE AND BAG MACHINERY
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smith Machine Company, Inc., Duncansville, Pa.
Filed Apr. 17, 1970, Ser. No. 29,529
Int. Cl. B31b *1/82, 23/14;* B65c *1/00*
U.S. Cl. 93—61 A 8 Claims



Window patch cutting apparatus includes a pair of web pull rolls and a vacuum roll. The vacuum roll has a series of suction ports along the periphery and a patch cutting knife blade extending radially outwardly therefrom. The patch cutting knife blade on the vacuum roll severs window patches from a web when it moves into cutting relation with a fixed patch cutting knife blade positioned adjacent to the vacuum roll as the vacuum roll rotates relative to the fixed knife blade. The web pull rolls are drivingly connected to each other for rotation at substantially the same periphery speed and are spring loaded to frictionally engage the patch material therebetween. The web pull rolls are connected to and driven by a variable speed drive mechanism. The variable speed drive mechanism is in turn drivingly connected to a portion of the envelope machine and is driven at machine speed in fixed ratio with the main drive shaft and other components of the envelope machine. The variable speed drive mechanism controls the peripheral speed of the web pull rolls and thus, controls the length of the window patch cut by the patch cutter knife, blades. An increase in the speed of the web pull rolls increases the length of the patch cut and conversely, a decrease in the speed of the web pull rolls reduces the length of the window patch. The speed of the web pull rolls can be increased or decreased while the envelope machine is running. The vacuum roll is driven at machine speed and the unsevered end of the window patch material slides on the surface of the vacuum roll until a portion is cut by the cutting knives.

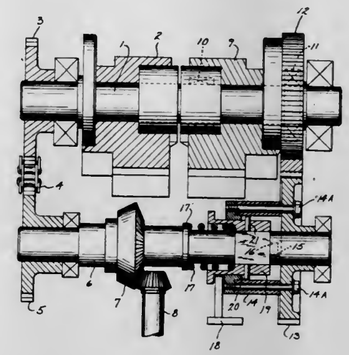
3,618,484
TRAVELING GRADE CONTROLLER
George E. Long, Rte. 2, Box 382, Monroe, Wash. 98272
Filed Sept. 11, 1969, Ser. No. 857,059
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 R 11 Claims



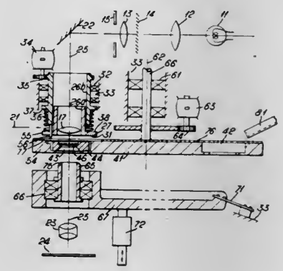
A device for providing a grade reading at any given instant along a given course for a grade sensing unit of a traveling machine, such as a paving machine. An elongated grade follower arm or beam, vertically adjustable at both ends, is towed independently or by the traveling machine providing a grade reference point in contact with the grade sensor device of the machine. One end of the arm or beam is controlled for elevation from a known datum such as the surface just prepared. The opposite end of the arm is controlled by a slope sensing device mounted on the elongated grade follower arm and is raised and lowered to maintain a desired slope between the opposite ends of the frame. The slope controller may be programmed according to a desired profile to obtain a vertical curve of close tolerance, for instance, in a paved highway.

3,618,485
ECCENTRIC SHAKER FOR EARTH COMPACTING APPARATUS
Joachim Hermann, Munich, Germany, assignor to Wacker Werke KG, Munich, Germany
Continuation-in-part of application Ser. No. 790,960, Jan. 14, 1969. This application Nov. 16, 1970, Ser. No. 89,691
Claims priority, application Germany, Jan. 15, 1968, P 17 08 553.9
Int. Cl. E01c *19/30*
U.S. Cl. 94—48 2 Claims

The eccentric shaker for earth compacting has two eccentric bodies mounted on the eccentric supporting shaft on which one body is fixedly mounted and which is driven by a chain drive and disposed parallel to the control shaft, while the oppositely operating eccentric body is rotatably mounted upon the eccentric shaft and driven by a toothed gear transmission, the toothed gear of which is rotatably journalled upon the control shaft and forms a housing having two oppositely disposed control tracks at the upper end and two oppositely disposed abutment cams at the bottom which cooperate with two oppositely disposed abutment cams upon an axially movable sleeve on the control shaft which is spring biased against the toothed gear and non-rotatably mounted on the control shaft by means of a multiple wedge element by way of a collar, a stud and a control device.



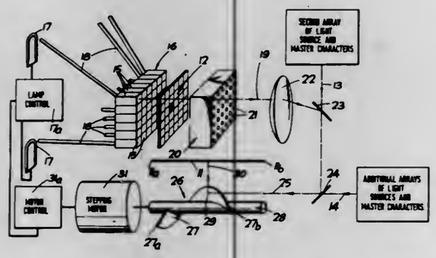
3,618,486
OPTICAL PROJECTORS
Brian Box English and Richard David Whyman, Edinburgh, Scotland, assignors to Ferranti, Limited, Hollinwood, England
Filed Aug. 12, 1970, Ser. No. 63,050
Claims priority, application Great Britain, Aug. 12, 1969, 40,274/69
Int. Cl. B41b *15/12*
U.S. Cl. 95—4.5 6 Claims



An optical projection system for projecting onto a sheet of photopaper the image of any selected one of an assortment of characters or other symbols in transparencies carried in bezel members (frames) around the rim of a magazine disc. The disc is rotatable stepwise to bring the selected symbol onto the optical axis of the projector, and a device is provided for lifting the associated bezel

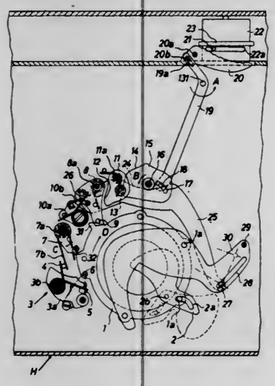
member upwards from the disc to bring the selected symbol into a more precise location both as regards the object plane and the optical axis of the system.

3,618,487
PHOTOCOMPOSING APPARATUS
Josef Maria Herbert Tiefenthal, Reigate, Surrey, and Howard Raymond Baylis, East Grinstead, Sussex, England, assignors to The Monotype Corporation Limited, London, England
Filed June 24, 1969, Ser. No. 835,958
Claims priority, application Great Britain, July 1, 1968, 31,252/68
Int. Cl. B41b *21/26*
U.S. Cl. 95—4.5 **5 Claims**



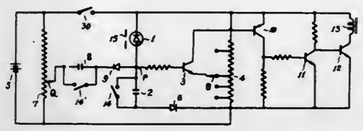
In the photocomposition of print characters a succession of print characters are projected optically on to a film using a helical reflecting surface which is rotated so that the reflected path moves progressively across the film. A plurality of lights selectively illuminate the required characters at the right instants as the reflected path moves across the film.

3,618,488
PHOTOGRAPHIC APPARATUS WITH BUILT-IN EXPOSURE CONTROLLING MEANS
Gunter Fauth, Unterhaching, Horst Guthke, Munich, and Willi Schulz, Schwenningen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 11, 1970, Ser. No. 45,486
Claims priority, application Germany, June 27, 1969, G 69 25 597.6
Int. Cl. G01j *1/00*
U.S. Cl. 95—10 C **10 Claims**



An exposure control which adjusts the shutter and the diaphragm of a photographic camera as a function of scene brightness employs a moving-coil instrument whose needle is movable in response to changes in scene brightness and can be engaged by a scanning member which thereby adjusts the diaphragms by way of two levers. The shutter has a rotary carrier for several blades and an impeller which can propel the carrier to thereby move the blades to open positions. The extent of such movement of the carrier determines the exposure time and is controlled by an arresting lever which is pivotable by the carrier and then strikes against the face of one of two cooperating timer cams the other of which is coupled to one of the levers. The faces on the timer cams are inclined in such a way that the positions of the levers, as selected by the scanning member, cannot be changed when the rotating carrier causes the arresting lever to strike against the one timer cam.

3,618,489
AUTOMATIC EXPOSURE TIME CONTROL FOR CAMERAS
Taiichi Akiyama, Okayashi, Japan, assignor to Kabushiki Kaisha Yashica, Tokyo-to, Japan
Filed June 24, 1970, Ser. No. 49,422
Claims priority, application Japan, June 30, 1969, 44/51,946
Int. Cl. G03b *7/04, 9/62*
U.S. Cl. 95—10 C **10 Claims**

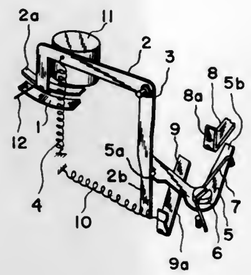


An apparatus for automatically determining exposure time in a camera which has a shutter which is opened to start an exposure and closed to terminate the exposure. A photosensitive element and a timing capacitor are connected in series to form a timing circuit with the charging of the timing capacitor taking place according to the intensity of light impinging on the photosensitive means. A switching circuit is triggered by the trigger voltage which forms the output of the timing circuit, and an automatic shutter-closing mechanism is actuated by the switching circuit to close the shutter and terminate the exposure when the trigger voltage of the timing circuit is reached. The voltage with which the timing capacitor is charged continuously increases as time elapses, and after a given voltage level is reached a voltage regulator responds automatically to this level for reducing the rate at which the voltage at the timing capacitor increases.

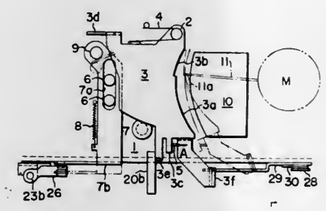
3,618,490
AMMETER POINTER ARRESTER FOR SINGLE REFLEX CAMERA EXPOSURE METERS
Akio Okamoto, Osaka-shi, and Syotaro Inagaki, Okazaki-shi, Japan, assignors to Minolta Camera Kabushiki Kaisha
Filed Oct. 13, 1969, Ser. No. 865,896
Claims priority, application Japan, Oct. 19, 1968, 43/91,390
Int. Cl. G03b *7/12*
U.S. Cl. 95—10 C **3 Claims**

A device for arresting a pointer of an ammeter for an exposure meter, which is interlocked, by actuation of an

automatic diaphragm controlling mechanism, to the preset diaphragm aperture so that the pointer is arrested and released by means of the pointer arresting device in accordance with the shutter release in a single reflex camera.



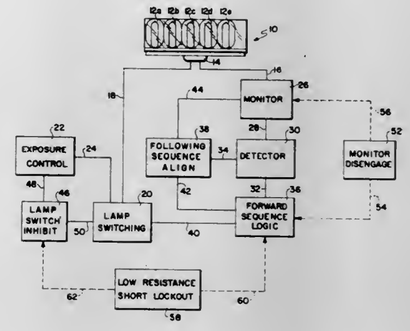
3,618,491
AUTOMATIC EXPOSURE ADJUSTMENT MECHANISM
Akio Furukawa, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Nov. 28, 1969, Ser. No. 880,746
Claims priority, application Japan, Nov. 29, 1968, 43/104,100
Int. Cl. G03b *7/14, 9/16*
U.S. Cl. 95—10 C **1 Claim**



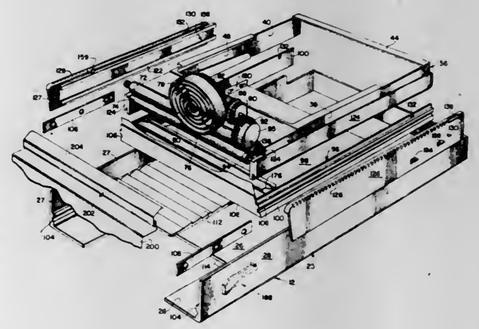
An automatic exposure adjustment mechanism wherein when the brightness of a subject to be photographed is higher than a predetermined level, the displacement of a shutter speed switching member is so controlled through an exposure meter pointer that a shutter may be actuated for a high speed exposure, whereas when the brightness of the subject is low, the displacement of said switching member is so increased that the shutter may be actuated for a low speed exposure and simultaneously the aperture diaphragms may be opened. A programmed shutter simple in construction may be easily provided and the exposure range may be further widened as compared with the conventional shutter wherein the shutter speed is constant while only the aperture is variable.

3,618,492
FLASH PHOTOGRAPHIC SYSTEM
Seymour Ellin, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 30, 1969, Ser. No. 872,644
Int. Cl. G03b *15/00;* **H04g** *1/24*
U.S. Cl. 95—11.5 **32 Claims**

A photographic flash exposure system operative to sequentially ignite individual flashlamps within an array of flashlamps. The system automatically passes a monitoring current through each of the flashlamps during each exposure cycle to derive alignment signals. These alignment signals function to align a flashlamp sequencing circuit to bypass inoperative flashlamps.

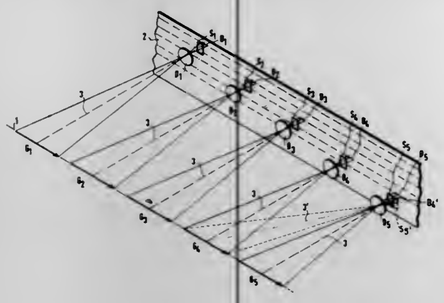


3,618,493
PHOTOGRAPHIC APPARATUS
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed May 4, 1970, Ser. No. 34,181
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 **34 Claims**



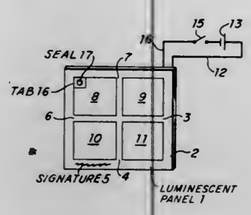
A self-developing camera comprising a film transport and processing system including a pair of pressure applying rollers rotatable to advance a film unit therebetween and distribute a processing liquid within the film unit, a film feeding device for moving a film unit from exposure position into the bite of the rollers and a drawer adapted to be reciprocated manually to operate the film feeding device and tension a spring drive for rotating the rollers. The drawer is designed to transport a film unit to a storage position following distribution of the processing liquid and provide an expandable, light-free environment for the film unit during movement thereof. The camera also includes an exposure system which is preset, prior to exposure, by manual movement of the drawer.

3,618,494
METHOD AND APPARATUS FOR PHOTOGRAPHING RAPIDLY MOVING BODIES
Peter Bettermann, Monchen-Gladbach, and Henning Dechow, Wittlaer, near Dusseldorf-Kaiserswerth, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed July 17, 1968, Ser. No. 745,616
Claims priority, application Germany, July 28, 1967, R 46,601
Int. Cl. G03b 35/08
U.S. Cl. 95—18 5 Claims



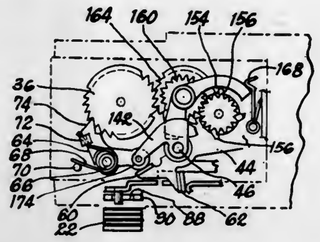
A method and an apparatus for photographing rapidly moving bodies, especially projectiles or the like, in which the rapidly moving body is imaged on a moving film strip by means of several picture-taking optical systems which are arranged along the trajectory of the body, the film velocity being so chosen that the ratio of the velocity of the body to the velocity of the film substantially corresponds to the optical image ratio of the optical systems to avoid relative movement between image and film, and the optical systems being so arranged and directed that the intervals between the points of the trajectory of the body sighted by the individual optical systems and the velocity of the projectile determine the desired picture frequency.

3,618,495
MULTIPLE IMAGE CAMERA
Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.
Filed June 5, 1969, Ser. No. 830,775
Int. Cl. G03b 17/24, 35/08
U.S. Cl. 95—18 1 Claim



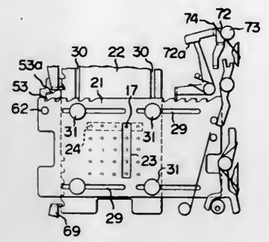
This disclosure is directed toward a multiple image camera for simultaneously producing four photographs of a subject positioned in front of the camera upon a standard film format and includes a novel luminescent panel positioned adjacent the focal plane of the camera for producing white borders surrounding each of the four images photographed upon the film at the focal plane.

3,618,496
AUTOMATIC FLASHCUBE ADVANCING MECHANISM
George Irwin, 1747 Elmwood Drive, Highland Park, Ill. 60037
Continuation-in-part of application Ser. No. 816,951, Apr. 17, 1969. This application Oct. 7, 1969, Ser. No. 864,375
Int. Cl. G03b 1/14, 1/62, 15/04
U.S. Cl. 95—31 FM 7 Claims



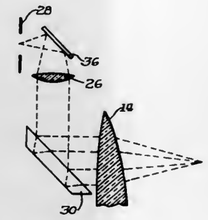
A camera construction including a housing holding a length of film having spaced apart perforations used for locating successive frames in the film. The film advancing mechanism is associated with a flash lamp socket which holds a lamp having a plurality of flash bulbs whereby a fresh bulb can be moved to picture taking position simultaneously with the movement of a succeeding film frame to the picture taking position. The drive means for the lamp comprise a drive gear and associated clutch. Detents are formed on a member which is associated with the drive gear, and a finger engages the detents to stop rotation of the bulb socket before completion of the film advancing movement whereby a bulb will be precisely positioned irrespective of the degree of film movement necessary for properly locating a succeeding film frame.

3,618,497
APERTURE SETTING DEVICE FOR USE IN COMPOUND PHOTOGRAPHIC CAMERA
Hisanori Ataka, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 14, 1969, Ser. No. 824,511
Claims priority, application Japan, May 16, 1968, 43/33,070
Int. Cl. G03b 19/02, 27/42
U.S. Cl. 95—36 R 2 Claims



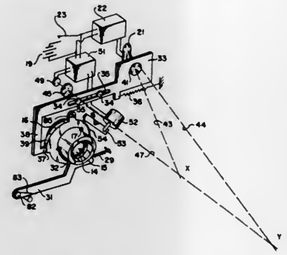
An aperture setting device for a compound photographic camera wherein each of a first and second movable plates, arranged so as to move at right angles relative to each other, has an elongated slot formed at a right angle relative to the movements. The intersection of these elongated slots forms an aperture; and when the first movable plate is displaced to its end of movement, it actuates the pawl for the second movable plate so as to advance it by one step or row while the first movable plate, which has been prevented from the reverse motion, is returned to its initial position. The aperture formed by the slots corresponds to one of apertures formed immediately behind the objective lens. Each of the movable plates is returned to its initial position by actuating elements from the exterior of the camera so as to release a member in engagement with the plate.

3,618,498
CHROMATIC RANGEFINDER
Hans J. Eppinger, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed July 23, 1970, Ser. No. 57,600
Int. Cl. G03b 3/00
U.S. Cl. 95—44 C 3 Claims



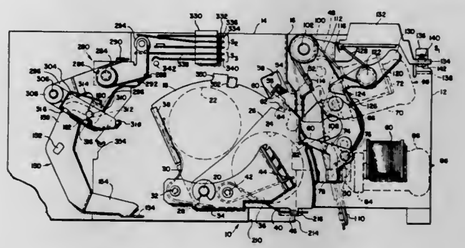
Disclosed is an improvement in an optical rangefinder system for a camera having a reflex type viewfinder and a focusable variable focal length lens, the system providing a superimposed image viewing system by interposing in the optical path of the lens a single parallel planar surfaced mirror coated on the rear surface to be totally reflecting and on the front surface with a dichroic material to reflect to the viewfinder a first chromatic component of an image and to transmit to the reflecting surface remaining chromatic components of the image, which latter surface reflects the image into the viewfinder in coincidence with the first chromatic component as a neutral color of a subject in the image when the objective is in focus on the subject and out of coincidence so as to generate color fringing of the subject in the image when the objective is out of focus on that subject.

3,618,499
CAMERA WITH COORDINATED APERTURE AND FOCUS ADJUSTMENT MEANS
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 4, 1969, Ser. No. 813,459
Int. Cl. G03b 3/00
U.S. Cl. 95—45 5 Claims



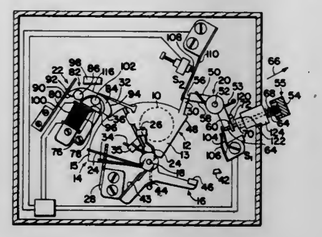
A camera having both focusing and lens aperture adjustments is provided with a coordinating mechanism for automatically varying the lens focus adjustment as a function of the lens aperture adjustment, so as to insure maximum depth of field. In a preferred embodiment of the invention, this mechanism is incorporated in a camera provided with an automatic rangefinder lens focusing system, so that when the traverse of the rangefinder fails to detect a subject at a close distance, the lens is then adjusted to its shortest hyperfocal setting compatible with the concurrent adjustment of lens aperture.

3,618,500
PHOTOGRAPHIC EXPOSURE CONTROL SYSTEM WITH AUTOMATIC COCKING MECHANISM
Lawrence M. Douglas, Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 30, 1969, Ser. No. 837,672
Int. Cl. G03c 7/00
U.S. Cl. 95—53 34 Claims



A mechanism for automatically cocking the spring loaded elements of an exposure control mechanism following a photographic exposure. The mechanism utilizes a motion transferring member which moves reciprocally and in correspondence with a motion driven reciprocable cocking arm. A switch actuator member is operative to respond to the movement of one element of the exposure mechanism to permit energization of the motor and is repositioned to a standby status for de-energizing the motor by mechanical interaction with the motion transferring member.

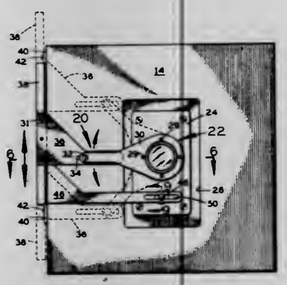
3,618,501
PHOTOGRAPHIC EXPOSURE CONTROL APPARATUS
Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation of application Ser. No. 688,176, Dec. 5, 1967. This application Nov. 19, 1969, Ser. No. 871,673
Int. Cl. G03b 9/26
U.S. Cl. 95—60 9 Claims



A photographic exposure control mechanism which includes two exposure influencing blades. The movement of the blades is governed by an electromagnetically controlled latch. The latch is capable of releasably retaining one blade against movement while permitting movement of the other blade. A resilient member extends from the other of the blades and operates during blade return to advance the latch from its position associated with blade release to its blade retaining position, where it is capable of holding one blade against movement. During exposure,

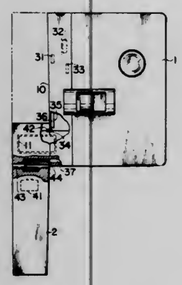
the other of the blades is released to terminate the exposure. Thereafter, the blades are returned to their initial positions where they are reset for further operation.

3,618,502
DEVICE FOR ADJUSTING DIAPHRAGM OF CAMERA
Gerald C. Congrove, 1481 S. Ocean Blvd., Pompano Beach, Fla. 33062
Filed Aug. 5, 1969, Ser. No. 847,583
Int. Cl. G03b *5/02, 9/02, 17/12*
U.S. Cl. 95—64 R **7 Claims**



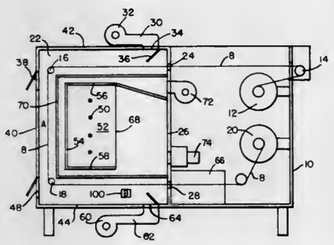
A device for adjusting the diaphragm control of a process camera from a position remote from the lens assembly of the camera so as to provide better access for making the adjustments. The device includes a scale mounted for movement relative to a lens board of the camera and readily accessible for viewing. An indicator can be moved relative to the scale and also moves with the scale. The scale and the indicator are respectively coupled to the lens assembly and the diaphragm control by arm linkages which permit movement of the lens assembly of the camera without relative movement between the scale and the indicator. Relative movement between the scale and indicator rotates the diaphragm control to any desired setting of the diaphragm.

3,618,503
MOVIE CAMERA
Yoshizo Ikegami and Saichiro Ohashi, Nishinomiya-shi, Hyogo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan
Filed Aug. 21, 1969, Ser. No. 851,916
Claims priority, application Japan, Aug. 23, 1968, 43/60,389
Int. Cl. G03b *17/04*
U.S. Cl. 95—86 **4 Claims**



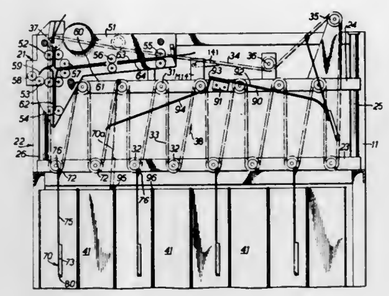
A rotatable grip is mounted on a camera body and carries an electrical contact to be brought into contact with a stationary contact on the camera body only when the grip is moved to extended picture taking position to close the electrical circuit of the automatic exposure control. Another movable contact is provided on the grip to be brought into contact with a second contact on the camera body only when the grip is moved to the retracted position to close an electrical circuit for checking the capacity of the storage cell in the camera.

3,618,504
OPTICAL DEVELOPMENT PROCESS AND APPARATUS
Richard A. Fotland, Lyndhurst, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated
Filed Oct. 9, 1968, Ser. No. 766,160
Int. Cl. G03d *13/00*
U.S. Cl. 95—89 **9 Claims**



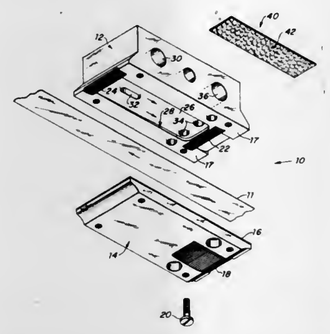
An apparatus for rendering visible, the faintly visible or entirely invisible latent image produced by photographic exposure of a free radical film to a small dose of radiation; the apparatus being adapted to process the film by dry means only.

3,618,505
AUTOMATIC PHOTOGRAPHIC APPARATUS
Charles W. Clark, Maidenhead, Berkshire, England
Filed Nov. 20, 1968, Ser. No. 777,323
Claims priority, application Great Britain, Nov. 20, 1967, 52,751/67
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 D **3 Claims**



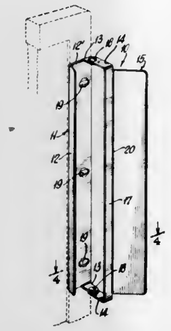
Automatic development apparatus for dipping a sheet of exposed photo-sensitive sheet material successively into liquids contained in a number of process tanks. The sheet is contained in a carrier which is attached to conveyor means such as a chain which imparts to the carrier a movement such that as the carrier is withdrawn from the process tanks it is drawn up the wall of the tank and over the edge of the tank to wipe excess liquid from the carrier.

3,618,506
RAPID PHOTOGRAPHIC PROCESSOR
Samuel Kitrosser, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed June 26, 1969, Ser. No. 836,894
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **11 Claims**



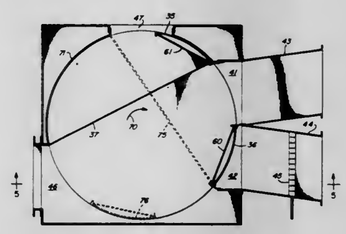
A self-threading continuous flow photographic processing system consisting of alternately located roller pairs and chemical treating modules. The roller pairs drive the film through the chemical treating modules and into a film dried. Each chemical treating module has a narrow tapered processing chamber with resilient lip seals at the film entrance and exit. The tapered processing chamber is located above the film path and has fluid ingress means and fluid egress means to supply photographic processing reagents to develop the film. The lip seals and a surface tension contact seal set up between the film being processed and the tapered chamber result in a relatively spill-proof chamber.

3,618,507
APPARATUS FOR THE VENTILATION OF MOVING VEHICLES
William J. Rakocy, Clifton, N.J., assignor to Ronson Corporation, Woodbridge, N.J.
Filed Dec. 8, 1969, Ser. No. 882,890
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.12 **2 Claims**



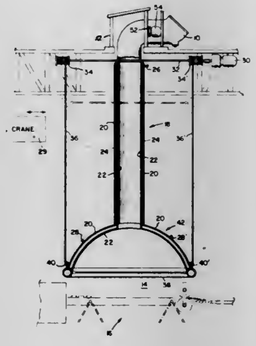
The present invention relates to a new type of apparatus to ventilate moving vehicles such as helicopters, by directing a stream of air into the confines of the vehicle. The amount and direction of this air is controlled by moving the attachment which consists of a wind direction plate and fastening means, through an infinite number of selectively variable positions.

3,618,508
AIR MIXING APPARATUS
Richard D. Tutt, Tucson, Ariz., assignor to Krueger Manufacturing Company
Filed Feb. 27, 1970, Ser. No. 15,042
Int. Cl. F24f *13/04*
U.S. Cl. 98—38 **6 Claims**



A pair of discs mounted in spaced apart relation are mounted for rotation about an axis and are enclosed within a box structure. The enclosure includes openings for receiving inlet air to be mixed and an outlet opening for the mixed air; the enclosure also includes a vent opening for returning or "dumping" undelivered conditioned air to the conditioning system. A plurality of baffles are mounted between the discs and are positioned to open and close the various openings in the enclosure in accordance with the angular position of the discs.

3,618,509
COLLAPSIBLE VENTILATION SYSTEM
John A. Nichols, Canton, Mass., assignor to Mill Industries, Inc.
Filed Aug. 13, 1970, Ser. No. 63,501
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 **13 Claims**



A collapsible ventilation system for ventilating or exhausting an air space wherein the system has an inflat-

able and collapsible duct secured in communicating relationship to an exhaust duct located above the air space. A drum and cable arrangement driven by at least one motor is connected to the lower portion of the inflatable duct for raising and lowering the duct, and means are provided for supplying air to the duct to inflate it into position. Preferably, heated air is used to prevent undesirable condensation in the duct when used in a relatively cooler ambient atmosphere.

3,618,510

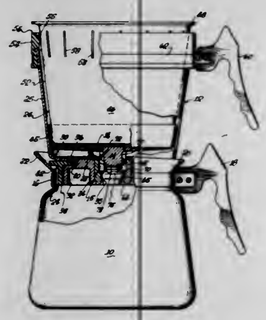
INFUSION APPARATUS

Frederick Merrill Varney, 3036 Platten Drive, Fairfax, Va. 22030

Filed Mar. 11, 1970, Ser. No. 18,503

Int. Cl. A47j *31/043*

U.S. Cl. 99—302 **39 Claims**



A filter-equipped brewing receptacle containing heated water and ground coffee seats on a boiler receptacle in which the water has been heated and when the coffee is brewed to the desired degree, steam in the boiler receptacle is condensed to create a vacuum to draw the brew through the filter and through an initially closed valve into the lower boiler receptacle. The brewing receptacle is made in two separate sections one of which is manually movable downward to open the valve to start the filtration step. The movable section may be an auxiliary container in the brewing receptacle or the bowl of the brewing receptacle may be movable relative to a brewing bowl base.

3,618,511

CONVEYOR COMPRESSION CAGE

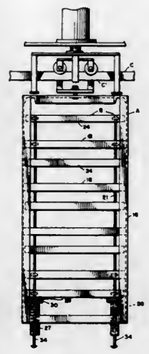
Will C. Matthews, Park Forest, Ill., assignor to Armour and Company, Chicago, Ill.

Filed Aug. 25, 1970, Ser. No. 66,847

Int. Cl. B30b *7/02*

U.S. Cl. 100—194 **9 Claims**

An outer cage frame mounted for travel on a conveyor rail or provided with wheels for conveying on floors is provided with spaced screen shelves and encloses an inner slidably-related frame having spaced presser screens, with spring means urging the presser screens toward the shelves, power means being provided to open spaces between the presser screens and shelves for loading



and unloading the shelves while energizing the springs, and also effective for releasing the spring energy for moving the inner frame to compress objects loaded onto the screen shelves.

3,618,512

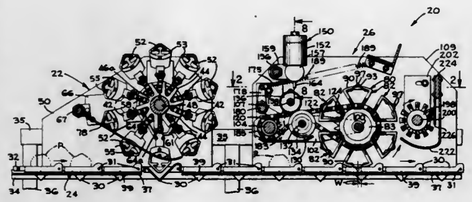
APPARATUS FOR MARKING POTATOES OR THE LIKE

Arthur F. Kalmar and Harold J. Mumma, Riverside, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed June 13, 1967, Ser. No. 645,799

Int. Cl. B44b *5/00*

U.S. Cl. 101—5 **2 Claims**



A potato is permanently marked by being passed beneath a rotatable marking wheel which has attached at its periphery a plurality of spaced groups of needles arranged in patterns forming identifying indicia to be applied to the potato. Ink is applied to the tips of the needles by a transfer roller and is introduced into the outer cortical cell tissue of the potato by the needles which pierce the outer corky periderm layer.

3,618,513

PRINTING MECHANISM INCLUDING RESILIENTLY BIASED ROTATABLE-TYPE WHEELS

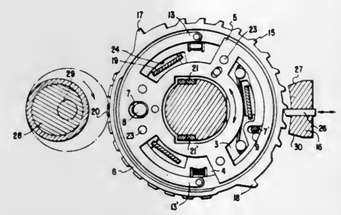
Gerhard Merker, Braunschweig, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany

Filed Dec. 18, 1969, Ser. No. 886,153

Claims priority, application Germany, Dec. 20, 1968, P 18 15 930.3, Oct. 14, 1969, P 19 51 731.8

Int. Cl. B41j *1/28*

U.S. Cl. 101—91 **14 Claims**



A printing mechanism having a plurality of type wheels mounted on a common shaft. Each of the type wheels is resiliently mounted for movement in the radial direction and an impression roller is arranged to contact the outer periphery of the type wheels. An arresting device is provided to keep the type wheels aligned after they have been set. The arresting device is a plurality of reciprocating members that engage the type wheels and hold them in place. These reciprocating members may be either a single pin that engages special teeth in a portion of the periphery of the type wheels, or they may be an arrangement with two claws which engage in recesses between the type on the type wheels. In the former, the type wheels are resiliently biased by springs mounted within the wheels themselves, and in the latter they are biased by springs mounted in the arresting device.

3,618,514

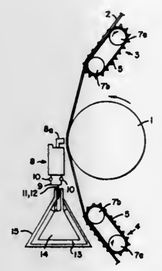
APPARATUS FOR PRODUCING INCREMENTAL MOVEMENT, PARTICULARLY FOR MOVING A PRINT HAMMER MODULE PARALLEL TO PRINT LINE

Alexander Nyman, Dover, and Robert H. Curtiss, Wayland, both of Mass., assignors to Mohawk Data Sciences Corporation, Hirkimer, N.Y.

Filed June 24, 1969, Ser. No. 835,998

Int. Cl. H02k *41/02*; B41j *9/04*

U.S. Cl. 101—93 C **14 Claims**



Apparatus within a printer for incrementally moving a hammer module parallel to a line on which characters are being printed. The hammer module is carried across the paper by a coil which moves within a track extending parallel to the print line and formed by parts of pole pieces arranged to provide magnetic fields spaced along and extending across the track in alternating opposite directions. A U-shaped ceramic permanent magnet encloses portions of a pole piece of one polarity while portions of the pole piece of the other polarity surround the outside surface of the U-shaped magnet. Energization of the coil in alternate directions causes the hammer module to move in successive increments.

3,618,515

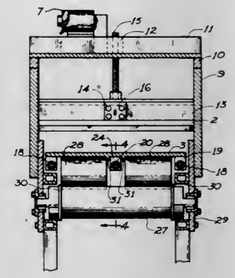
PLANOGRAPHIC SCRAPER BAR PRINTING PRESS

Thomas A. Schofield, 628 W. Canfield, Detroit, Mich., and Arthur T. Schofield, 7000 Oakes Road, Brecksville, Ohio

Filed May 18, 1970, Ser. No. 38,014

Int. Cl. B41l *17/04*

U.S. Cl. 101—130 **15 Claims**



A planographic scraper bar printing press suitable for fine art prints including a motor for driving the printing bed, such motor being positively connected to such bed with a ball screw and ball nut arrangement; a pyramid set of hollow bed support rollers; a motorized scraper bar adjustment; a pressure sensitive switch to shut off such bar motor at a predetermined scraper bar pressure; and switching means to automatically shut off the bed drive motor when the scraper bar reaches the end of the printed paper.

3,618,516

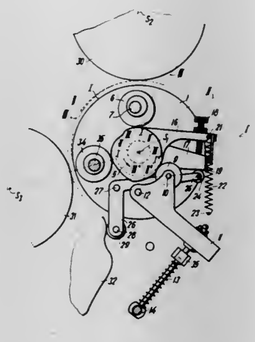
SUPPORT FOR OFFSET CYLINDERS OF PRINTING MACHINES

Josef Jurny, Sebranice, Czechoslovakia, assignor to Adamovske Strojirny, narodni podnik, Adamov, Czechoslovakia

Filed Aug. 4, 1969, Ser. No. 847,083

Int. Cl. B41f *7/04, 13/36*

U.S. Cl. 101—218 **8 Claims**

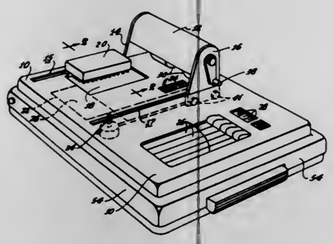


Offset cylinders of printing cylinders are mounted rotatably on a shaft, provided at both ends with formed discs with equally shaped circumferences. The shaft is supported in the sidewalls of the machine by sets of adjustable rollers bearing against said formed discs. At one end of said shaft is fixed a sleeve and mounted pivotably a lever provided with means for adjustment of their relative position. Control cam means are provided, acting on said lever pivotably mounted on the shaft, adjusting the position of said formed discs with respect to their supporting rollers and thus also the position of the offset cylinder with respect to the form cylinder and pressure cylinder.

3,618,517
CREDIT CARD VERIFICATION APPARATUS AND SYSTEM

Davies Allport, La Jolla, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Jan. 9, 1970, Ser. No. 1,631
Int. Cl. B41f 3/04; G06k 7/02; H04q 3/70
U.S. Cl. 101—269 4 Claims

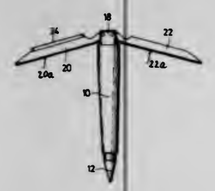


A credit card verification system is provided whereby credit cards may be quickly checked at their point of use to determine whether a particular card is valid, or whether it has been invalidated because of loss, for example, or because of nonpayment; and also which may be checked to determine whether or not the term for which a card was issued has expired. The verification apparatus and system to be described is one in which the expiration date of the card is checked by pneumatic means, in a simple adjustable unit which may, for example, be attached directly to the card imprinter at the point of use; and in which a serial number coded on the card by means, for example, of embossments, is read, likewise by pneumatic means, and the resulting signals are compared in an electronic system with signals stored in the system and which are indicative of the invalid cards. The electronic system may be located at the point of use of the cards, or at a central station.

3,618,518
MARKING UTENSIL

Herbert Rigoni, Am sommerberg 171, 7731 Fischbach, Germany

Filed July 6, 1970, Ser. No. 52,191
Claims priority, application Germany, July 7, 1970, G 70 22 145.3
Int. Cl. B41k 1/42; B43k 29/00
U.S. Cl. 101—333 10 Claims

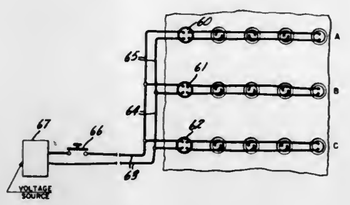


A barrel has a front end provided with marking means such as a nib of a pen or an analogous means. Connected to the rear end of the barrel is a pair of carrier arms which may separately pivot about an axis normal to the elongation of the barrel between an inoperative position in which they both extend lengthwise of the barrel in parallelism with one another and an operative position in which they both extend transversely to the elongation of the barrel. A stamp is provided on one of the arms and an ink pad is provided on the other of the arms on such surfaces of the arms that the stamp will contact the ink pad when the arms are in their inoperative position. A friction cap removably surrounds the arms when the latter are in inoperative position.

3,618,519
TIMED SEQUENCE BLASTING ASSEMBLY FOR INITIATING EXPLOSIVE CHARGES AND METHOD

George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Dec. 23, 1968, Ser. No. 786,213
Int. Cl. F42d 1/06
U.S. Cl. 102—22 3 Claims



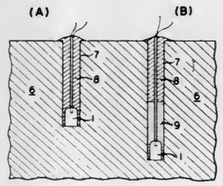
A blasting assembly for timed sequence blasting is provided in which a blasting cap and an electronic timing device are interconnected for detonating a series of explosive charges in sequence. The timing device includes a pulse discharge circuit and a silicon-controlled rectifier which, in combination, receive, store, and then after a predetermined delay, permit current to flow to the blasting cap and detonate it and any explosive charges associated with it.

A method for a timed delay blasting is also provided, in which an electrical charge is established and temporarily stored in a timing device, and released to a blasting cap after a predetermined delay.

3,618,520
METHOD OF CRACKING CONCRETE

Masafumi Hamasaki, and Noriaki Nakashima, both of Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1969, Ser. No. 796,445
Int. Cl. F42d 1/08
U.S. Cl. 102—23 5 Claims



Method of cracking concrete particularly useful for removing obsolete or unnecessary concrete structures in urban area which comprises drilling a borehole in concrete, filling thus drilled hole with a combustible composition mainly comprising a metallic reducing agent and an oxidizer, tamping thus filled borehole securely and igniting said combustible composition to crack the concrete.

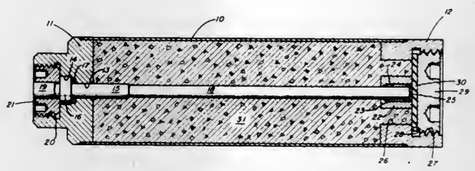
3,618,521
PROPELLANT GAS GENERATOR

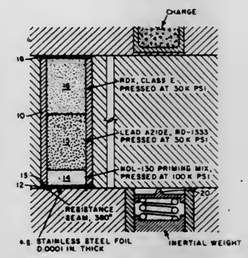
Louis J. Montesi, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 7, 1969, Ser. No. 839,494
Int. Cl. F42b 9/18; C07c 79/10
U.S. Cl. 102—39 5 Claims

An elongate substantially cylindrical-shaped housing substantially filled with a large volume of propellant and having

disposed along the longitudinal axis thereof a fast burning, metal clad insensitive explosive line for initiating the propellant along the entire length of the longitudinal axial line in microsecond time.



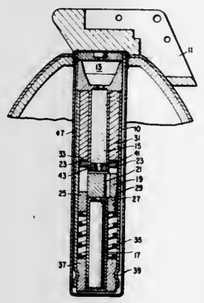


contact with the metal diaphragm and other explosives necessary for the desired output characteristics.

3,618,522
DUAL SAFETY GRENADE FUZE

John E. Henderson, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Filed Sept. 29, 1969, Ser. No. 861,851
Int. Cl. F42c 15/36
U.S. Cl. 102—64 10 Claims



This invention relates to a dual safety time delayed fuze, useful, for example, in conventional grenades, and particularly to a biased barrier between the pyrotechnic delay charge and the fuze ignitor charge. The barrier contains a flash-hole which is normally held out of alignment with the fuze powder train by a barrier latch. Upon ignition of the delayed charge, a heat motor, activated by the burning of the charge, expands against the barrier latch, displacing it, thereby allowing the biasing element to drive the barrier flash-hole into alignment with the delay and the ignitor. The barrier flash-hole may optionally contain a lead charge to insure ignition of the fuze.

3,618,523
STAB-ELECTRIC DETONATOR

Richard L. Hiquera, Stresau, and H. F. Richard, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

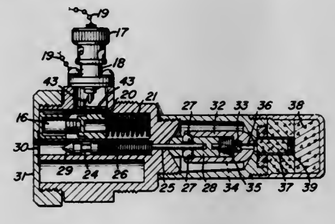
Filed May 6, 1970, Ser. No. 34,931
Int. Cl. F42c 19/12
U.S. Cl. 102—70.2 A 12 Claims

A detonator which can be initiated by either electrical or mechanical stimulii and which is safe against premature initiation until the fuze of which it is a component has been fired. The detonator consists of a length of tubing closed at

3,618,524
ELECTRICAL DELAY ARMING ALWAYS IMPACT FUZE

Aaron S. Berlin, Wilmington, Del., and Vincent C. Little, Fallston, Md.

Filed Sept. 4, 1968, Ser. No. 757,298
Int. Cl. F42c 11/00, 15/40, 19/12
U.S. Cl. 102—70.2 R 11 Claims

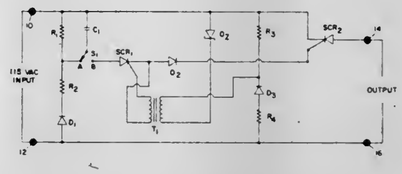


A fuze, method, and system for arming munitions for low altitude delivery wherein the energy source for arming the fuze is self-contained within the mechanism and utilized subsequent to release of the munition from the delivery means.

3,618,525
ELECTRICAL CIRCUIT FOR CONTROLLING THE TIME DURATION OF CURRENT APPLICATION TO AN EXTERNAL LOAD

Fred A. Fritz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

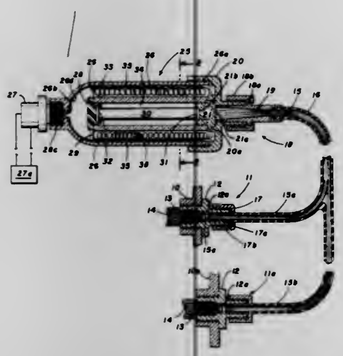
Filed Jan. 13, 1969, Ser. No. 790,623
Int. Cl. F42c 11/06, 11/00, 15/40
U.S. Cl. 102—70.2 R 5 Claims



This is an electrical circuit for time limiting the application of current to an external load. A charging network is fed by alternating current having a capacitor charged through resistance means and a diode when a switching element is positioned conductive between the capacitor and resistance means. A pulsing network is fed by the alternating current which network has a transformer, resistance means, diode and Zener diode providing a pulse to a first silicon controlled

rectifier on the half-cycle when the switching element is positioned nonconductive between the capacitor and the resistance means and is positioned conductive between the capacitor and the first rectifier. A second silicon controlled rectifier receives the potential of the capacitor through the first rectifier in its conducting state which in turn allows the second rectifier to conduct and thus permit the capacitor to discharge through said second rectifier to the external load to be controlled. This circuit is particularly adapted to the firing of electrically activated delay blasting caps without arcing when using high voltage.

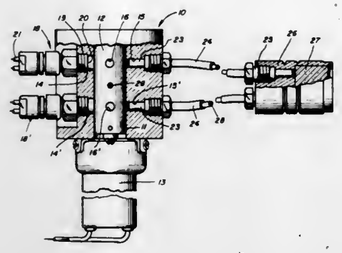
3,618,526
PYROTECHNIC PUMPED LASER FOR REMOTE ORDNANCE INITIATION SYSTEM
Robert L. Baker, Granada Hills, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 26, 1969, Ser. No. 861,395
Int. Cl. F42b *5/08*
U.S. Cl. 102—70.2 **6 Claims**



A bundle of fiber-optic strands extends to a plurality of detonator assemblies each mounted on an individual ordnance having a portion responsive to coherent light for detonating the ordnance. The opposite end of the fiber-optic bundle is connected to a "one shot" pyrotechnic actuated laser apparatus. The apparatus includes a tubular outer case, the inner surface of which is coated with a pyrotechnic material, coaxially positioning a laser material having an oppositely disposed, totally reflective surface and a partially transparent mirror surface. An external high-voltage source is coupled to a squib, operatively disposed in the pyrotechnic coating, to initiate a pulsed flash within the casing. The flash pumps the lasing material, creating a burst of coherent light to be transmitted via the fiber-optic bundles to detonate the remotely disposed ordnances. A highly reliable ordnance initiation system results that is impervious to external electromagnetic radiation and does not have circuit deficiencies inherent in electrical ordnance initiation systems.

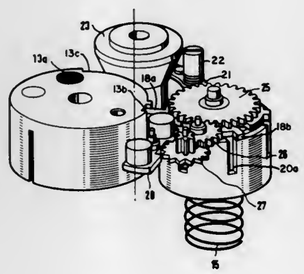
3,618,527
SAFETY AND ARMING DEVICE
Earl E. Kilmer, College Park, Md., assignor to the United States of America as represented by the Secretary of the Navy
Filed Dec. 23, 1968, Ser. No. 786,133
Int. Cl. F42c *15/40, 15/34, 15/00*
U.S. Cl. 102—76 R **8 Claims**

A safety and arming device having a mild detonating explosive fuze train of insensitive heat resistant explosives for centrally detonating a very large explosive charge and being separated in a safe, unarmed position from an initiating



detonator by an electrically actuated normally out-of-line interrupter.

3,618,528
SAFETY ARRANGEMENT FOR FUSES FOR NONSPINNING PROJECTILES, MORE PARTICULARLY ROCKET PROJECTILES
Josef Muller, Schramberg-Sulgen/Wurttemberg, Germany, assignor to Gebruder Junghans G.m.b.H., Schramberg/Wurttemberg, Germany
Filed May 8, 1970, Ser. No. 35,654
Claims priority, application Germany, May 10, 1969, P 19 24 025.6
Int. Cl. F42c *15/24*
U.S. Cl. 102—78 **7 Claims**

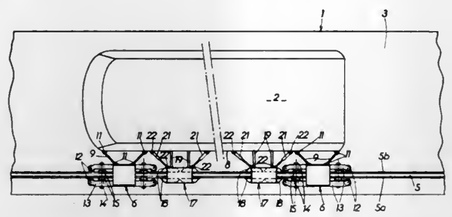


A safety apparatus for projectile fuses which includes a primer carrying swing slide and an inertia weight. A stop sleeve surrounds and cooperates with the inertia weight to control its movement, with the controlled movement of the inertia weight in turn controlling the movement of the swing slide from a safe to an armed position.

3,618,529
TRACKED AIR-CUSHION VEHICLE OR LIKE MACHINE POWERED BY LINEAR INDUCTION MOTOR
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France
Filed Dec. 11, 1968, Ser. No. 782,801
Claims priority, application France, Apr. 29, 1968, 149,968
Int. Cl. B61b *13/04*; **B60l** *9/00*
U.S. Cl. 104—23 FS **2 Claims**

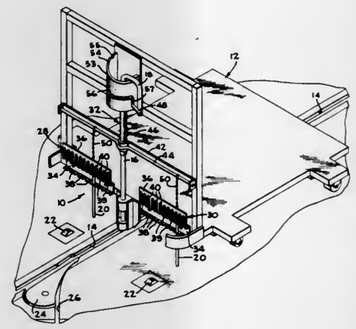
A tracked air-cushion vehicle powered by a linear induction motor whose armature is incorporated in a laterally offset, upward extension of the guideway over which the body

portion of said vehicle moves at a distance from said extension, said body portion carrying, in outside projection, the in-



ductor of said motor and a guiding device engaging the opposite faces of said extension.

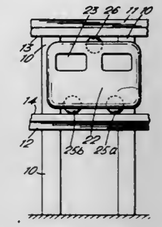
3,618,530
SWITCH ACTUATING APPARATUS FOR TOW TRUCKS
Horace M. Swartz, Doylestown, Pa., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 29, 1969, Ser. No. 888,696
Int. Cl. B61l *13/02*; **B65g** *17/12*
U.S. Cl. 104—88 **8 Claims**



A switch actuating apparatus for use in a tow truck system includes two vertically slotted and horizontally notched probe mounting members disposed on either side of the tow pin of a conveyor truck to uniquely guide and position the probes. The probes cooperate with said slots and notches so as to swing forwardly when contacted from the rear, and are connected to a probe lifting device which is vertically movable between a raised inoperative position and a lowered operative position. The handle for the probe lifting device is located adjacent the tow pin handle and both are mounted in a handle housing whereby when the tow pin is raised the probes are necessarily raised, and when the probes are lowered the tow pin must also be lowered.

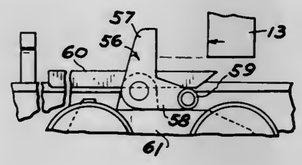
3,618,531
TRANSPORTATION SYSTEM
Willi Eichholz, Gr. Hakenstrasse 48, 56 Wuppertal-Barmen, Germany
Filed May 28, 1968, Ser. No. 732,636
Int. Cl. B61b *5/02*; **E01b** *25/08*
U.S. Cl. 104—121 **1 Claim**

A transportation system including vehicles running in a substantially continuous row between two parallel guide surfaces by means of lower and upper wheels engaging said upper and lower guide surface but being freely movable with respect thereto. The lower wheels serve for supporting and steering the vehicles and at least one upper wheel serves for controlling the appropriate inclination of the vehicle with regard to the guide surface. A guide surface may be provided with a guide track separating at bifurcations. A feeler associated with the vehicle engages the guide track, so that the



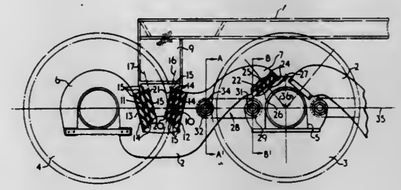
vehicle will follow the one or the other branch of the guide surface at a bifurcation.

3,618,532
CONVEYOR SYSTEM
Merle E. Clewett, Bushey Heath, and James A. Cornish, Isleworth, both of England, assignors to American Can & Cable Company, Inc., New York, N.Y.
Filed June 16, 1969, Ser. No. 833,369
Int. Cl. B65g *17/42*; **B61j** *1/12*
U.S. Cl. 104—172 S **6 Claims**



A conveyor system including a first load supporting track and a second load supporting track with an intermediate transfer portion. A powered conveyor is provided in association with the first and second tracks. A plurality of carriers are provided. Each of the carriers has a first dog that is in position for normal engagement with the pusher member of the conveyor and a second dog that is normally not in carrier pushing position. Means are provided at the transfer portion for moving the second dog into carrier transferring position.

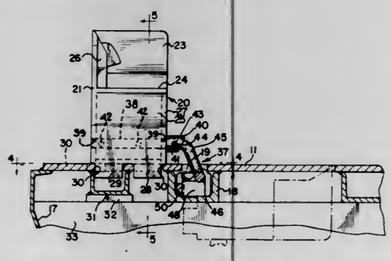
3,618,533
ELASTOMERIC RAILWAY VEHICLE SPRING SUSPENSION
Archie J. Hirst, Leicester, England, assignor to The Dunlop Company Limited, London, England
Filed Oct. 15, 1969, Ser. No. 866,456
Claims priority, application Great Britain, Oct. 19, 1968, 49,697/68
Int. Cl. B61f *3/10, 5/08, 5/10*
U.S. Cl. 105—195 **8 Claims**



A railway vehicle having three pairs of wheels of which the axles are supported by axle boxes, and a suspension for the wheels comprising, for the axle box of each wheel of the center pair of wheels, a pair of oppositely extending equalizing beams, each beam being connected to the central axle box by means of a resilient pad located between two abutment faces associated respectively with the beam and the

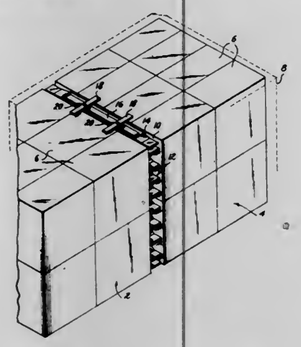
central axle box, the beams extending in the longitudinal direction of the vehicle and the ends of the beams remote from the central axle box being connected respectively to the adjacent one of the axle boxes of the two other wheels on the same side of the vehicle, and rubber springs supporting the vertical load of the suspended part of the vehicle from the equalizing beams and acting to transmit the longitudinal traction and braking forces between the wheels and the suspended part of the vehicle, the rubber springs being positioned so as to distribute the vertical load of the suspended part of the vehicle in a required proportion between the wheels.

3,618,534
CONTAINER BRACKET ARRANGEMENT FOR RAILWAY CAR
Harold E. Gramse, Chicago Heights, and Bradford Johnstone, Blue Island, both of Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Dec. 8, 1969, Ser. No. 883,059
Int. Cl. B61d *45/00*
U.S. Cl. 105—366 D **9 Claims**



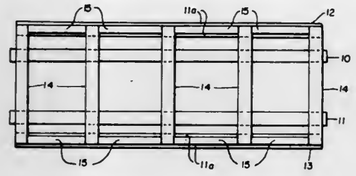
A railway car readily interchangeable for container and trailer-on-flat-car operations is provided with a container bracket arrangement having a plurality of slots in the deck of the car which permits container brackets to be longitudinally adjusted to accommodate different length containers carried by the car. The container brackets are movable into nonoperating positions within apertures which extend transversely of the slots when the car is utilized for trailer operation. The brackets are also provided with arms connected at one end with slider elements positioned in the slots and the other ends of the arms are adjustably connected to the container bracket by means of latch elements which permit the container brackets to be adjusted transversely of the slots for accommodating different width containers.

3,618,535
SUSPENDED LOAD SPACER
Ronald D. Hees, Plymouth, Mich., assignor to Narad, Inc., Wayne, Mich.
Filed July 26, 1968, Ser. No. 747,988
Int. Cl. B61d *45/00*
U.S. Cl. 105—369 B **7 Claims**



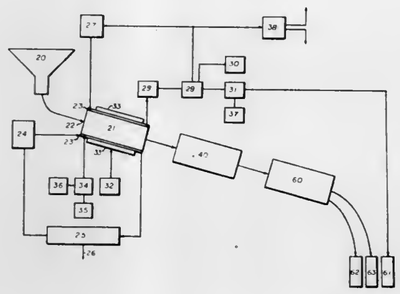
A spacer for filling spaces, in a freight shipping vehicle or container, between spaced stacks of articles of freight, and being in the form of a lightweight expandable honeycomb structure, expandable in a vertical direction in the space between stacks and suspended therein by means engaging the tops of stacked articles.

3,618,536
CRATING SYSTEM FOR SHEET MATERIAL OR THE LIKE
James W. McCracken, Leechburg, Pa.
Filed Oct. 14, 1969, Ser. No. 866,324
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **5 Claims**



A substantially rectangular crate is provided for sheet material or the like having spaced-apart parallel bottom rails, a pair of ledge rails outside the bottom rails and parallel thereto, crosspieces extending between the ledge rails across the bottom rails and fixed thereto, support members on the ledge rails extending between the crossmembers, the tops of said crossmembers and support members being generally in the same plane. Metal bindings are inserted over the bottom rails, under the ledge rails and around a stack of sheets on the crate with a laminated paper angle between the binding and the edge of the stack.

3,618,537
SOLID WASTE DISPOSAL SYSTEM
John C. Bogue, 101 Ocean Ave., Santa Monica, Calif., and Robert I. Sarbacher, 1036 S. 1st St., Arcadia, Calif.
Filed Dec. 15, 1969, Ser. No. 884,990
Int. Cl. F23g *5/02*
U.S. Cl. 110—8 R **12 Claims**

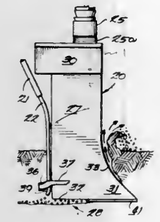


A high-temperature furnace is disclosed which is equipped with several stages in which a rotating magnetic field rotates the magnetic components of the waste material to be incinerated. Gas jets protect the combustion chambers from excessive heat and assist in the tumbling of nonmagnetic materials in the combustion chambers. Each combustion chamber is further equipped with a liquid jacket for additional cooling. The fuel injected into the combustion chambers consists in part of finely divided oxidizable metal dispersed in a liquid. Control of all components of this waste disposal system rests in a computer which monitors the overall operation of the system and adjusts the controls for optimum operating efficiency.

ERRATUM

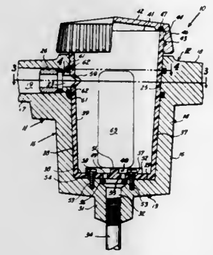
For Class 110—14 see:
Patent No. 3,618,540

3,618,538
APPARATUS FOR APPLYING FERTILIZERS BENEATH SOIL
Leonard M. Brannan, 3008 Paddock Road, Omaha, Nebr.
Filed Feb. 2, 1970, Ser. No. 7,478
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **2 Claims**



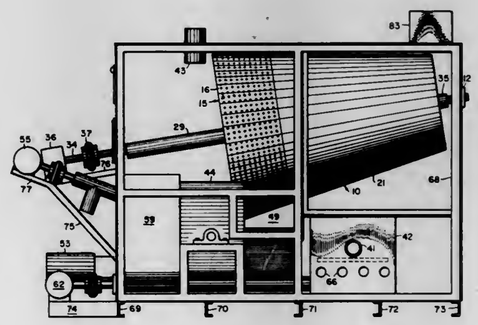
An improved plow knife is disclosed for introducing a dry fertilizer and anhydrous ammonia in a common band at a predetermined depth beneath the surface of the soil being treated. The shank of the plow, which is generally vertical, is hollow to permit flow of dry fertilizer through it under gravity. The dry fertilizer is deposited through the heel of the knife in a band at the base of the channel cut by the knife. The toe of the plow is located forward of the leg of the shank, and the contour of the leading edge is continuously smoothly curved from the toe to a location on the shank near the surface of the soil. The entire leading edge is flat over a width of about seven-eighths of an inch, with beveled side edges so that when the plow is embedded and pulled, a ribbon of dirt is forced upwardly along the smoothly curved, flat surface and above the soil level in a rolling, upward and forward motion to remove any debris such as corn stalks and husks from the soil above the surface where it is readily discarded from the knife and does not interfere with operation. A conduit for liquid ammonia is affixed to the back of the blade and side moldboards are located at the side of the shank to gather dirt from the sides of the channel and move it over the band of ammoniated fertilizer.

3,618,539
DEVICE FOR SUPPLYING PLANT FOOD TO PLANT ROOTS
Jay S. Daniels, 5901 Crown Lane, Des Moines, Iowa
Filed Jan. 19, 1970, Ser. No. 3,722
Int. Cl. A01c *23/02*
U.S. Cl. 111—7.4 **3 Claims**



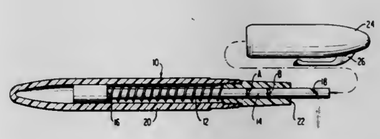
The plant root feeding device includes a body structure for receiving a cup-shaped container for a water-soluable plant food. The container is yieldably mounted in and secured to the body structure with an open end projected outwardly from the body structure and closed by a fluidtight cover. The container has an inlet opening adjacent the upper end of its sidewall and an outlet in the bottom wall thereof. The inlet opening is in fluid registration with a controlled water passage means in the body structure and is of a configuration to direct water circumferentially about the container for a spiral flow about the plant food and through the outlet into a ground-inserting nozzle that is attached to the body structure.

3,618,540
INTEGRATED WASTE-CONVERSION EQUIPMENT
Harvey M. Wenger, and Norman E. Archer, both of Holland, Mich., assignors to Wals, Inc.
Filed Mar. 16, 1970, Ser. No. 19,609
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **6 Claims**



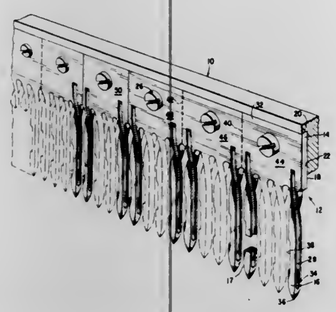
A machine for converting waste material. The machine includes a drier with provision for burning the gaseous discharge produced by the drying process. Dried and partially dried material is recirculated in a rotative drum subject to heat to maintain a workable consistency in the material. Some of the dried material is utilized as fuel, or is otherwise reduced to ashes.

3,618,541
METHOD OF TENSIONING THREAD ON A SEWING MACHINE
Arthur E. Shryock, 1415 Amelia Ave., Findlay, Ohio
Filed Oct. 13, 1969, Ser. No. 867,119
Int. Cl. D05b
U.S. Cl. 112—1 **5 Claims**



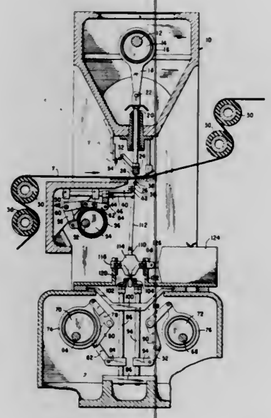
A tension balancer having a spring-biased indicator with appropriate indicia and means to attach to the thread of a sewing machine. The tension balancer permits the exact adjustment of the proper balance of tension between the needle thread and bobbin thread to provide a perfect stitch. The method of using the tension balancer requires the operator to attach the spring-biased plunger in turn to either the bobbin thread or the needle thread and kinematically adjust the sewing machine to provide the appropriate dynamic tension.

3,618,542
MULTINEEDLE UNIT
Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,332
Int. Cl. D05c *15/10*; D05b *85/00*
U.S. Cl. 112—79 R 23 Claims



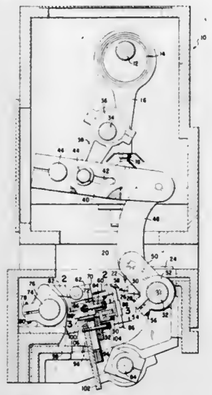
A ganged tufting needle unit having a multiplicity of parallel needles formed integral with a common holder which includes a pair of reference surfaces and is adopted to be accurately attached as a unit to a needle bar of a tufting machine. The holder is divided into standardized sections by score lines at predetermined needle intervals along its length so that if one or more needles should break the section including the broken needles can be separated from the remainder of the unit and a standard replacement unit may be readily substituted therefor. Also disclosed is a latch needle unit and a yarn guide unit having the same features as the tufting needle unit. A method for manufacturing the different units from a metal strip comprising a series of die pressing, punching and grinding steps is described.

3,618,543
PATTERN MECHANISM FOR TUFTING MACHINES
Bernard H. Wittler, Rossville, Ga., assignor to The Singer Company, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,426
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 A 6 Claims



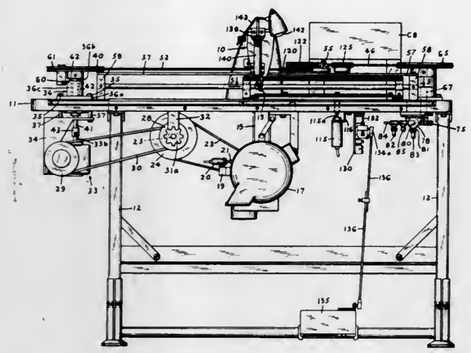
This disclosure relates to tufting machines and, in particular, to tufting machines for producing high-low-pattern pile fabrics and includes a looper means for selectively forming the length of the pile loops and selector means for initiating selective movement of the looper means.

3,618,544
CONVERTIBLE TUFTING MACHINES
Charles W. Watkins, Soddy, Tenn., assignor to The Singer Company, New York, N.Y.
Filed Nov. 3, 1970, Ser. No. 86,415
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R 9 Claims



A convertible tufting machine for producing long-nap or shag-type pile fabrics of varying length or for producing pile heights of standard or conventional pile heights including an adjustable, transfer-type looper mechanism for producing the shag pile tufted fabrics and which can be adjusted for operation as a standard tufting machine.

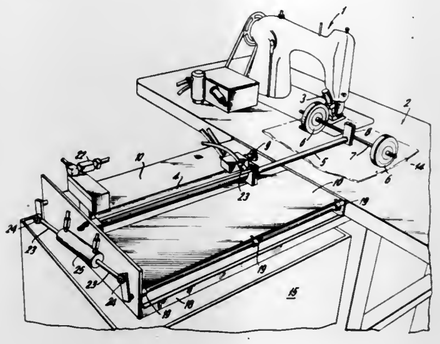
3,618,545
SEWING MACHINE FOR AUTOMATIC CONTOUR STITCHING
Robert L. Kosrow, Hoffman Estates, Ill., assignor to Union Special Machine Company, Chicago, Ill.
Filed Aug. 14, 1969, Ser. No. 850,189
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 18 Claims



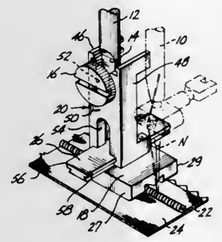
This invention relates to apparatus associated with the stitching mechanism of a sewing machine for automatically feeding the fabric or work to be sewn through the stitching zone in a manner to sew a line of stitching along a predetermined contour which is not a straight line.

3,618,546
GARMENT STACKING APPARATUS
Harold Preston, Irvington, N.J., assignor to Automated Components, Inc., Roselle Park, N.J.
Filed Apr. 1, 1970, Ser. No. 24,563
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 2 Claims

This disclosure describes an apparatus for removing garments from a sewing machine after the sewing operation has been completed and stacking the garments thus removed in a predetermined place. Once the garment passes the sewing portion of the sewing machine, a sensor may be provided to activate means to remove the garment from the sewing machine and which also may activate means to sever the thread. The garment is then brought onto a pair of doors which when opened allow the garment to fall through and be deposited in a stack which can then be conveniently moved for further operations.

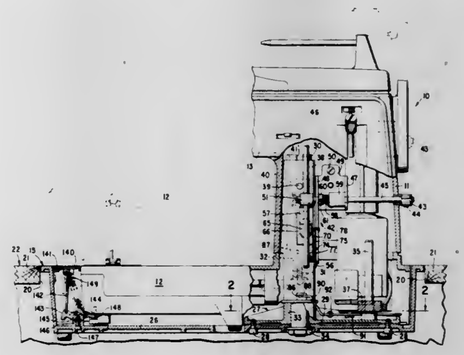


3,618,547
ZIPPER FOOT ATTACHMENTS
Robert B. Howell, 2115 Madrona Point Drive, Bremerton, Wash.
Continuation-in-part of application Ser. No. 764,453, Oct. 2, 1968, and a continuation-in-part of 764,518, Oct. 2, 1968, and a continuation-in-part of 678,742, Oct. 27, 1967, now Patent No. 3,473,498, dated Oct. 21, 1969, which is a continuation-in-part of application Ser. No. 501,066, Oct. 22, 1965, now Patent No. 3,349,736, dated Oct. 31, 1967, which is a continuation-in-part of application Ser. No. 975,486, July 28, 1965, now Patent No. 3,342,151, dated Sept. 19, 1967.
This application Oct. 27, 1969, Ser. No. 869,836
Int. Cl. D05b *29/12*
U.S. Cl. 112—240 6 Claims



The foot component has a front end which is spaced rearwardly of the needle. Channellike guide means are provided at such front end for twisting the zipper teeth as they pass therethrough into an attitude which will result in the zipper teeth adjacent the needle being properly oriented for close-to-the-teeth sewing. No pressure is applied to the zipper tape in the region of the needle. This enables the operator to exert a slight amount of tension on the zipper tape and the material to which it is being sewn, in opposition to the pressure forces of the foot and the advancing force of the advancing mechanism, for maintaining the tape and material substantially straight while it is being sewn.

3,618,548
MULTIPLE HEIGHT-ADJUSTING MECHANISMS FOR TUBULAR-BED-SEWING MACHINES
Russell A. Fritts, Phoenix, Md., assignor to The Singer Company, New York, N.Y.
Filed Apr. 10, 1970, Ser. No. 27,279
Int. Cl. D05b *75/00*
U.S. Cl. 112—258 5 Claims

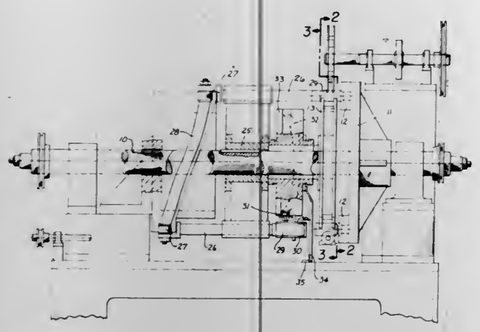


A mechanism for raising or lowering a sewing machine relatively to a support base selectively to orient the machine for sewing tubular or flat work. Adjustment of the machine elevation is accomplished by providing a manually operable lifting mechanism that resiliently supports the sewing machine in an elevated position. The mechanism includes a lift spring disposed in a vertical tubular member secured to the support base for operably coacting in a controllable manner with a mating sleeve secured to the sewing machine frame thereby permitting the operator to place the machine in the desired sewing position. One form of manual control of the lifting mechanism includes a manually influenced locking finger carried on one of the mating parts for register with any one of a plurality of discrete elevations. Another form disclosed provides a friction shoe to permit selection of an infinite variety of selected sewing machine levels. Also disclosed is a hinged auxiliary work support which extends the work-supporting surface in the sewing machine elevation for sewing flat work and which is automatically lowered when the sewing machine is shifted into an elevation for facilitating the sewing of tubular articles.

3,618,549
REROUNDING MECHANISM FOR A ROTARY DOMER
Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio
Filed Jan. 19, 1970, Ser. No. 3,737
Int. Cl. B21d *51/26*
U.S. Cl. 113—7 R 7 Claims

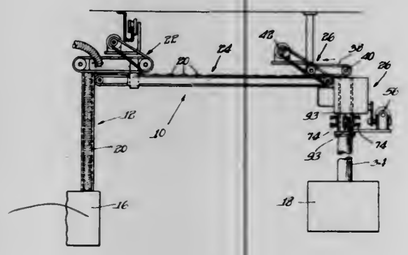
A conventional rotary domer, or base-forming machine, having a spider for carrying a number of female dies and a number of articles to be formed by said female dies, said spider being secured to a shaft, and a male die-carrying spider also secured to said shaft and having one die for each female die being carried by said first-named spider, and having means for reciprocating the respective male dies during a partial revolution of the shaft, is provided with a bushing telescopingly embracing each male die, and separate means for reciprocating said bushings. The separate means is arranged to advance each bushing before the respective male die advances, to reround the article to be formed and to align it properly with the respective male and female dies. The several bushings may be retracted after the respective male dies have entered the respective articles and before the respective males have completed their advance, or they may

be retracted concurrently with the respective male dies, or they may be retracted after the respective male dies have



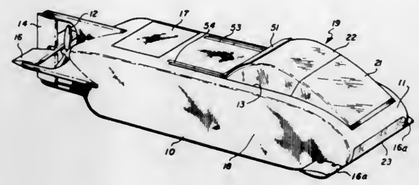
been retracted, and thus serve as strippers for stripping the articles from the respective male dies.

3,618,550
METHOD AND APPARATUS FOR CONTROLLING THE SUPPLY IN A CAN END PROCESSING SYSTEM
Wallace W. Mojden, Palos Heights, and Norman J. Chivas, Naperville, both of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.
Continuation-in-part of application Ser. No. 825,096, Apr. 16, 1969, now Patent No. 3,545,631, which is a continuation-in-part of application Ser. No. 703,303, Feb. 6, 1968, now abandoned. This application Jan. 26, 1970, Ser. No. 5,540
Int. Cl. B21d *43/16*
U.S. Cl. 113—113 C **20 Claims**



Control apparatus for use in a can end handling system of the general type having one or more pair of successive work stations, each provided by a first and a second can end processing machine, with said machines being linked by conveyor means of the type including a trough through which a continuous stream of can ends are supplied from one machine to the other. The trough includes a vertically disposed section at which point said apparatus operates. The control apparatus includes means to engage and retard the flow of can ends through said trough in order to produce a gap in said continuous stream. Associated with the trough in the area of said gap, there are provided monitoring means for detecting the level of the can ends in said gap. Said monitoring means include first and second sensing units which detect the level of can ends at axially spaced locations in said gap, and adjust the output of said first machine and the rate of consumption of said second machine so that neither an oversupply, nor an undersupply of can ends of said second machine occurs.

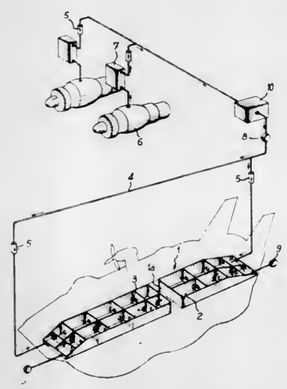
3,618,551
DUAL POSITION CANOPY FOR UNDERWATER CRAFTS
John M. Deslierres, Rolling Hills, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Oct. 7, 1969, Ser. No. 864,429
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 A **4 Claims**



A nonwatertight underwater craft capable of carrying a diver wherein the hull has a high silhouette when the diver is sitting and converts to a low silhouette when the diver is in a prone position. The craft has a bubble type canopy that is positioned in an opening on the upper deck. The canopy is hinged connected at its forward end and the diver can rotate the canopy downward into the hull. Behind the canopy is mounted a closure plate that is hinged at its aft end to the hull allowing the plate to rotate forward to a horizontal position whenever the canopy is lowered to close the opening and thereby optimize the streamlining and minimize drag when the canopy is lowered.

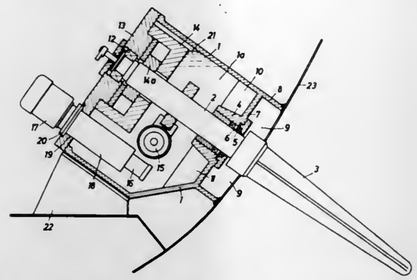
This invention relates to an underwater craft and, more particularly, to small nonwatertight and flooded underwater crafts that are capable of carrying at least one diver in a wet suit with air tanks and breathing apparatus.

3,618,552
VEHICLE ADAPTED TO BE SUPPORTED BY A CUSHION OF FLUID
Andre Grihangne, Paris, France, assignor to Societe d'Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D. M., Paris, France
Filed Nov. 29, 1968, Ser. No. 780,011
Claims priority, application France, Dec. 5, 1967, 130,975
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **6 Claims**



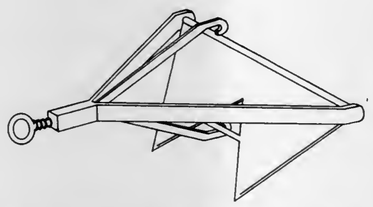
A vehicle adapted to be supported by a cushion of fluid, particularly air, and having incorporated therein a plurality of chambers or buoyancy tanks adapted to be filled with a gas under pressure and means for filling the chambers with such gas in order to render the vehicle buoyant.

3,618,553
DRIVING SYSTEM FOR SHIPS STABILIZERS
Heinz-Gunter Ehluss, Tornesch Holstein, Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft, Hamburg Und Kiel, Hamburg, Germany
Filed Jan. 9, 1970, Ser. No. 1,641
Int. Cl. B63b *39/06, 43/06*
U.S. Cl. 114—126 **5 Claims**



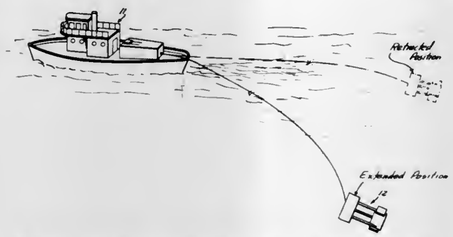
An hydraulic-driving system for a nonretractable fin of a ships' stabilizers includes a housing joined to the inside of the ship's hull with bearings for the fin shaft and hydraulic-driving means. The housing includes a space for a charge of hydraulic oil and the housing wall facing the fin is arranged to be bathed by sea water so as to cool the oil.

3,618,554
BOAT- OR SHIP-TYPE ANCHOR
Lowell Lloyd Patten, 2360 E. 21st South St., Salt Lake City, Utah
Filed June 16, 1969, Ser. No. 833,819
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 R **1 Claim**



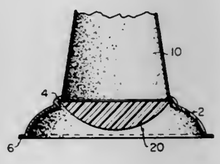
A fluke-type marine-mooring anchor is disclosed as assembled from mechanical elements with a means of quick conversion from a folded, restrained condition to an open, working condition.

3,618,555
CONTROLLED DIVERSION APPARATUS
Raymond E. Kelly; Charles B. Jones, and William P. Frost, all of Panama City, Fla., assignees to the United States of America as represented by the Secretary of the Navy
Filed July 6, 1970, Ser. No. 52,350
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **10 Claims**



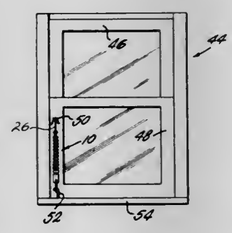
A hydrodynamic tow system is disclosed as including a tow cable means with a selectively positioned diverter mechanism at the distal end thereof. The diverter mechanism includes a movable control surface thereon and an actuation mechanism therefor which is connected to said tow cable and is responsive to tensional variations therein to move said control surface.

3,618,556
TRAFFIC CONES AS SAFETY DEVICES IN ROAD TRAFFIC
Erich Dittrich, Bremen, Germany, assignor to Titan Plastics Corporation, New York, N.Y.
Filed Apr. 14, 1970, Ser. No. 28,384
Claims priority, application Germany, Apr. 24, 1969, G 69 17 029.2
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **7 Claims**



A traffic cone is made up of a base piece and an inflatable flexible toppiece which is attached to the base and can be inflated to the shape of a cone, the toppiece being made of luminescent or reflective material for use as a safety device in road traffic.

3,618,557
SELF-ENERGIZING BURGLAR ALARM
Henry H. Merriman, 751 W. Washington, Jackson, Mich.
Filed Nov. 12, 1969, Ser. No. 875,874
Int. Cl. G08b *13/08*
U.S. Cl. 116—86 **5 Claims**

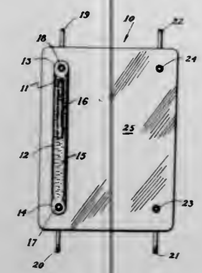


A self-energizing alarm, particularly suitable as a burglar alarm, consisting of an elongated flexible bellows having attachment means at each end, and an audible signal-producing reed communicating with the interior of the bellows. The opposite ends of the alarm are connected to window, door structure, or the like, having relative movable components whereby movement of these components produces extension of the bellows and an audible signal. In an embodiment of the invention the bellows are preformed to intermittently operate with a snap action to produce an intermittent signal.

3,618,558
UNSAFE CONDITION INDICATOR FOR FROZEN FOOD CHESTS
Barry Tepfer, 19 Milburn St., Rockville Center, N.Y.
Filed May 1, 1970, Ser. No. 33,782
Int. Cl. G01k *1/02*
U.S. Cl. 116—114.5 **1 Claim**

A card having mounted thereon a transparent waterproof tube containing a liquid solution and a short indicator rod. The card is placed in a freezing unit until the liquid, with the

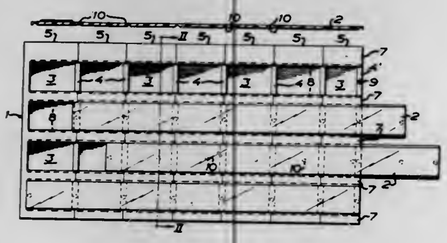
rod within it, freezes. The card is then inverted in the freezer unit. When the temperature of the unit rises above the melting point of the liquid, the indicator rod will fall indicating an unsafe condition.



3,618,559
DISPENSER PREFERABLY FOR MEDICAL PREPARATIONS

Kjell Moe, Stocksund, Sweden, assignor to Enèqvist & Holme Farmacevtiska AB, Stockholm, Sweden

Division of Ser. No. 793,047, Jan. 22, 1969, abandoned. Filed May 20, 1970, Ser. No. 38,944
Int. Cl. G09f *9/00*
U.S. Cl. 116—121 4 Claims



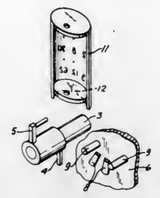
A dispenser for medical preparations has a body with several spaces or compartments therein, and at least one cover which is movable stepwise relative to the dispenser body so that the spaces or compartments which are delimited from each other are uncovered one after the other. The dispenser which can be replenished time and again with doses of medical preparations has time indications at each space or compartment and a holder for a card showing the prescribed dosage.

3,618,560
SWITCH/INDICATOR ACTUATOR ASSEMBLY

Masatsugu Aoki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 20, 1970, Ser. No. 38,970
Claims priority, application Japan, May 29, 1969, 44/49802
Int. Cl. H03j *1/02*
U.S. Cl. 116—124.1 12 Claims

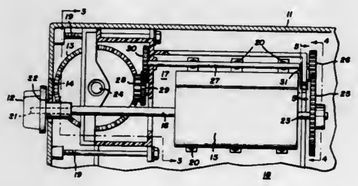
An actuator for a switch and/or indicator comprises a shaft rotatably passing through a wall and having a flexible nodal switching arm attached thereto, the shaft being operatively connected to a switch and/or indicator or the like. The wall through which the shaft passes is provided with a plurality of spaced nodes projecting therefrom into the path of movement of the nodal switching arm past which said nodal arm can move as a result of the bending of said arm, and is further provided with stop members engageable with said arm beyond said nodes. The construction is exceptionally well adapted for use in a multiband tuning device provided with a tuning shaft, the shaft of this assembly being rotatably mounted on the tuning shaft and being operatively connected both to a band-selection switch and to an indicator.



3,618,561
TUNER ASSEMBLY FOR A TELEVISION RECEIVER

Robert J. Wallis, Syracuse, and Clinton O. Woodard, Jr., Clay, both of N.Y., assignors to General Electric Company

Filed Mar. 21, 1969, Ser. No. 809,192
Int. Cl. H03j *1/02*
U.S. Cl. 116—124.1 3 Claims

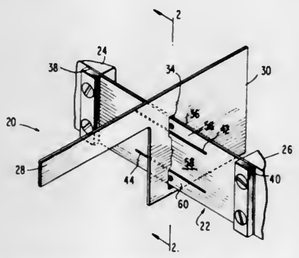


An improvement in a channel tuner assembly for a television receiver of the type including a tuner having a rotary channel selector shaft interconnected by drive train means to a channel indicator member. The improvement comprises providing yieldable means, such as a spring or the like, adjacent the drive train means to normally urge driving engagement between the indicator member and the tuner shaft, but being yieldable to permit temporary disengagement of the indicator member from the tuner shaft and movement independently thereof. With this improved arrangement, the channel indicator member can be more easily calibrated with the tuner than has previously been possible.

3,618,562
PIVOTAL MOUNTING

Virgil Erbert, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed June 9, 1970, Ser. No. 44,743
Int. Cl. G01d *13/22*
U.S. Cl. 116—136.5 16 Claims

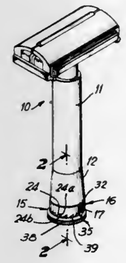


A pointer mounting arrangement including a support formed from a thin resilient sheet member pivotally connected with a thin sheet pointer member. The thin sheet pointer is provided with an aperture or notches in a portion thereof for pivotal connection with corresponding portions in the thin sheet support member to provide a sensitive, accurate, rugged, inexpensive and easily manufactured precision mounting arrangement.

3,618,563
MANUAL TALLY DEVICE

Michael B. Singer, 1150 Park Ave., New York, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,187
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 18 Claims

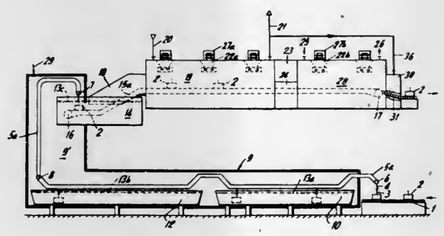


This device is for manually tallying the number of times an occurrence happens or some operation is accomplished. The device comprises an assembly of two relatively coaxially slidable and rotatable parts having complementary rotated means and being biased together axially by magnetic means. One use of such an assembly is to tally the number of shaves obtained with one blade of a safety razor.

3,618,564
DEVICE FOR THE CONTINUOUS PRODUCTION OF LEAD PLATES FOR STORAGE BATTERIES

Horst Herne Dungs; Otto Jache; Gunter Piske; Karl-Heinz Landfried, and Karl-Heinz Knak, all of Budingen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed Nov. 3, 1969, Ser. No. 873,427
Claims priority, application Germany, Nov. 2, 1968, P 18 06 588.8
Int. Cl. B05c *11/00*
U.S. Cl. 118—66 8 Claims

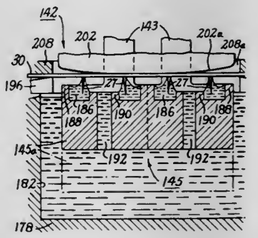


A device for the continuous production of lead plates for storage batteries includes a conveyor for moving the plates within a cabinet through a series of treatment containers and chambers including a washing tub, an impregnation tub, a drying chamber and a cooling chamber. The materials are treated in the drying and cooling chambers with an inert gas atmosphere and the plates are moved through these chambers while they are hanging or standing on hangers or arranged in a vertical position within the cabinets. The dryer for the negative plates has an inlet portion with a receiving opening or orifice which is immersed below the surface of the fluid of one of the washing or impregnation tubs to provide a sealing of this chamber against the escape of the inert gas. The cooling chamber and the drying chamber are located directly adjacent one another but separated by an air lock permitting passage of the plates or the cabinets containing them through the lock with automatic sealing. Preferably at the outlet of the drying chamber or cooling chamber an air lock is installed which is provided with baffle doors which are openable by contact of the cabinets therewith. The air lock chamber is provided with means for directing an inert gas into the chamber and for delivering the gas from the chamber. The outlet door is located so that it is hinged with its top edge at a level lower than the bottom edge of the inlet door to the chamber. The individual drying and cooling chambers employ the same inert gas for heating and cooling purposes, the gas being delivered in a closed cycle through heat exchangers which operate upon the gas to provide the desired temperature for the respective cooling and drying chambers.

3,618,565
APPARATUS FOR DIPPING INTRACUTANEOUS INJECTORS

Arthur S. Taylor, Spring Valley, and Ellsworth R. Sandhage, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 641,639, May 26, 1967, Pat. No. 3,246,647. Filed Sept. 16, 1969, Ser. No. 871,047
Int. Cl. B05c *3/02*
U.S. Cl. 118—421 4 Claims



A coating device includes a dipper having an annular bath section having a recessed inner wall which defines a drain opening. Means reciprocate the dipper between a charging location within a reservoir and an elevated applying station.

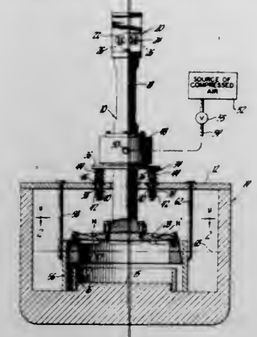
3,618,566
APPARATUS FOR METAL WETTING LINERS

James B. Walker, Almont, and Raymond S. Amala, Oak Park, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 450,043, Apr. 22, 1965, Pat. No. 3,505,103. Filed Aug. 27, 1969, Ser. No. 853,296
Int. Cl. B05c *3/05*
U.S. Cl. 118—429 7 Claims

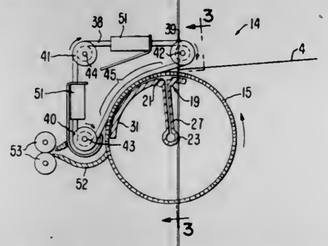
A sonic vibratory apparatus for wetting the outer surface of a ferrous metal article located in a bath of molten nonferrous metal, and including an elongated bar, one end of which supports a pair of counterrotating air driven vibrators. A flexural member is carried by the other end of the bar and is

connected to a flat annular ring having a planar surface which serves as a radiator surface. A source of compressed



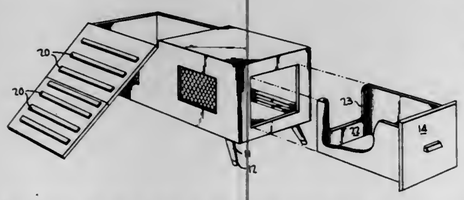
air is provided for driving the vibrators at a resonant standing wave frequency of the flexural member.

3,618,567
APPARATUS FOR DEVELOPING LATENT ELECTROGRAPHIC IMAGES WITH LIQUID INK
Raymond L. Levy, Santa Clara, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Sept. 15, 1969, Ser. No. 858,044
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **6 Claims**



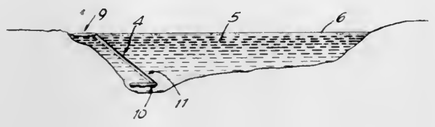
An electrographic developer is disclosed which includes an ink pervious development electrode structure having a development surface over which an electrographic recording web bearing latent electric charge images to be developed is disposed. Liquid ink is forced through the ink pervious electrode structure against the image bearing surface of the recording web for developing the latent charge image pattern. The development electrode can take the form of a plate, a roller or a continuous belt. In the case of the continuous belt or roller, ink is forced through the ink pervious electrode structure from the inside and the recording web is pressed into engagement with the outer surface of the electrode structure.

3,618,568
PET HOUSE
Earl W. Breeden, 832 Grayson Ave., Waynesboro, Va.
Filed Mar. 6, 1970, Ser. No. 17,224
Int. Cl. A01k *01/00, 67/00*
U.S. Cl. 119—19 **5 Claims**



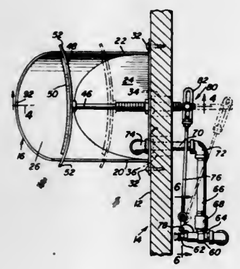
Pet house in the form of an attractive piece of furniture which can be readily opened to a pet house usable in a person's living quarters.

3,618,569
DEVICE FOR TRANSFERRING HEAT FROM ONE PORTION OF A WATER RESERVOIR TO ANOTHER
Stephen C. Baer, P.O. Box 445, Corrales, N. Mex.
Filed July 17, 1969, Ser. No. 852,959
Int. Cl. A01k *7/00*
U.S. Cl. 119—73 **1 Claim**



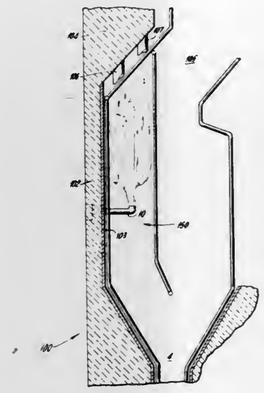
This invention relates to a device for melting surface ice on a water tank and in particular to a device for maintaining water tanks, such as stock tanks, ice free during the cold months. The device consists of a continuous loop having a hollow interior and filled with volatile liquid which can be circulated through the loop by convection. The loop has two enlarged ends being connected together by a straight portion which is insulated to prevent heat loss in transferring the heat-conveying liquid from one end of the loop to the other.

3,618,570
AUTOMATIC ANIMAL WATERING DEVICE
Procopio M. Chavez, 102 Camino Dos S.W., Albuquerque, N. Mex.
Filed Dec. 4, 1969, Ser. No. 882,191
Int. Cl. A01k *07/00*
U.S. Cl. 119—75 **11 Claims**



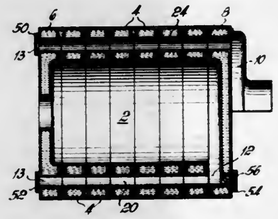
A water container for livestock defining an upwardly and forwardly opening and inclined throat. A water inlet is provided for the container and a normally closed inlet valve is provided for the inlet. Further, the inlet valve includes an actuator while the upper portion of the container includes a pressure plate guidingly supported from the container for horizontal shifting forward toward and rearward away from the forward upper marginal edge of the throat. Means is provided yieldingly urging the pressure plate toward a forwardmost limit position spaced rearwardly from the forward edge of the throat and motion transmitting means is operatively connected between the pressure plate and the actuator for opening the valve in response to rearward movement of the pressure pad from its forward limit position as a livestock animal inserts his snout or nose down into the forwardly and upwardly inclined throat of the container.

3,618,571
PROCESS AND APPARATUS FOR BURNING SULPHITE LIQUOR
Karl-Heinz Wirths, Munich, Germany, assignor to L & C Steinmuller G.m.b.H., Gummersbach, Germany
Filed Mar. 13, 1970, Ser. No. 19,309
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 C **6 Claims**



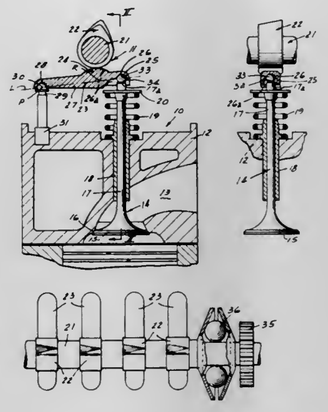
Sulphite liquor, for example, magnesium bisulphite liquor is burned in a combustion chamber which forms part of a steam generator. The burning of the liquor is accomplished at pressures of between 5 to 25 atmospheres excess pressure and at a temperature of about between 80° and 100° C. The combustion chamber should preferably have constant height dimensions with a depth of at least 1.5 and at the most 5 meters. The combustion chamber is charged in quantities so as to correspond to a specific cross sectional load of between 3×10^6 to 5×10^6 kcal./m.^{2}h.

3,618,572
SECTIONAL BOILER
Kurt Erich Nauert, Walldorf, Germany, assignor to Strebelwerk, G.m.b.H., Manheim, Germany
Filed Nov. 7, 1969, Ser. No. 874,832
Claims priority, application Germany, Nov. 15, 1968, P 18 09 073.8
Int. Cl. F22b *7/12*
U.S. Cl. 122—225 R **3 Claims**



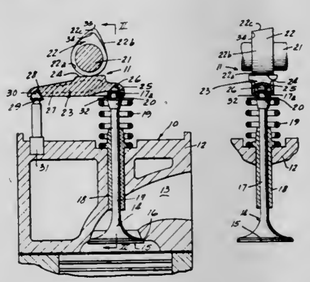
A sectional boiler burning fluid fuels comprises a core combustion chamber and forward and return flue passages forming concentric jackets surrounding the combustion chamber. The flue passages are interconnected only in the front section of the boiler and are radially bounded by inner and outer concentrically arranged water compartments which are connected to forward and return flow connecting pipes. The respective flue passages are separated from each other by radial passages which connect the water compartments. Baffles are positioned in the flue passages to further increase the heat transfer transmission therein.

3,618,573
VARIABLE CAM AND FOLLOWER ASSEMBLY
Clifford H. Allen, Chesterland, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed May 28, 1969, Ser. No. 828,474
Int. Cl. F01l *1/34, 1/18*
U.S. Cl. 123—90.18 **5 Claims**



An adjustable cam and follower assembly effective to vary timing, amount of lift and duration of lift of engine valves and the like wherein the cam has an axially and radially varying contour and the follower has a large radius cam-contacting surface. The cam contour is generated by a grinding wheel of equal radius to the cam follower radius. The cam follower is free to tilt on said contour and maintain straight or curved line contact throughout the entire range of adjustment of the assembly. The cam contour extends across a wide axial plane while the cam follower surface is cylindrical with its surface generated from a centerline, and is free to tilt about a longitudinal axis for maintaining line contact with the cam while at the same time is free to rock about a second axis to follow the lift function of the cam.

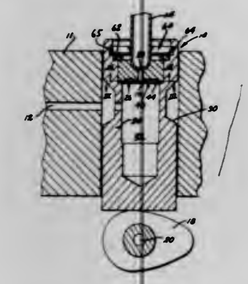
3,618,574
VARIABLE CAM AND FOLLOWER ASSEMBLY
Merlin J. Miller, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 28, 1969, Ser. No. 819,627
Int. Cl. F01l *1/34, 1/18*
U.S. Cl. 123—90.18 **7 Claims**



An adjustable cam and follower assembly capable of varying cam timing, amount of lift and duration of lift wherein the cam has an axially and radially varying contour and the follower has the a flat cam engaging face free to rock and maintain line contact with the cam contour throughout its entire range of adjustment. The assembly is particularly useful in operating internal combustion engine poppet valves where it can be made sensitive to engine speed to achieve op-

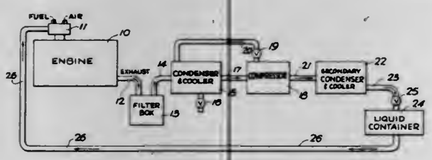
timum flow of exhaust and intake for each engine condition thereby minimizing pollutants in engine exhaust and preventing dilution of fuel intake with residues.

3,618,575
METERING MECHANICAL TAPPET
David L. Coates, and Ronald R. Erickson, both of Muskegon, Mich., assignors to Johnson Products, Inc., Muskegon, Mich.
Filed Aug. 28, 1969, Ser. No. 853,741
Int. Cl. F01m 9/10; F01l 1/14
U.S. Cl. 123—90.35 **6 Claims**



A mechanical tappet utilizing a precision metering of oil from a reservoir to the pushrod seat through a disc on which the seat sits. The seat is permanently maintained in engagement with the disc by means of an O-ring held against the seat by a snap-in annular ring. Because of the resilience of the O-ring, it is possible for the seat to rotate with respect to the disc even though no axial separation is possible.

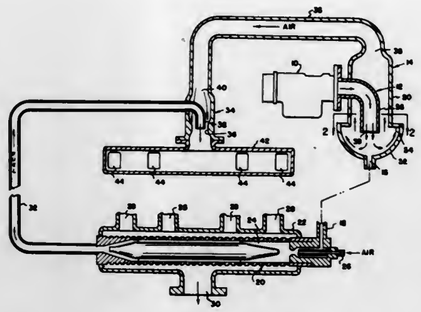
3,618,576
RECIRCULATING EXHAUST GAS SYSTEM FOR INTERNAL COMBUSTION ENGINES
Paul F. Dixon, 1601 Chattanooga Ave., Youngstown, Ohio
Filed May 18, 1970, Ser. No. 38,103
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A **5 Claims**



A recirculating exhaust gas system for internal combustion engines includes a filter for solids, a condenser and cooler, a compressor and a secondary condenser and a liquid container, all in a closed circuit connecting the exhaust outlet of an internal combustion engine with the air and fuel inlet thereof. Solids and water are removed from the exhaust gas and the remaining gaseous products are condensed to a liquid and recycled to the engine along with new fuel and air supplies.

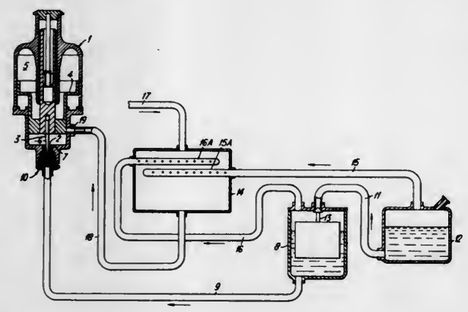
3,618,577
SEPARATOR FOR FUEL-AIR INDUCTION SYSTEM
Norman T. Shaw, La Mesa, Calif., and William A. Engstrom, North Muskegon, Mich., assignors to Continental Motors Corporation, Muskegon, Mich.
Filed Apr. 11, 1968, Ser. No. 720,589
Int. Cl. F02m 31/00, 33/00
U.S. Cl. 123—122 AC **2 Claims**

A separator for a specialized fuel-air induction system in which a fuel-air mixture formed in a standard carburetor is introduced into the separator to remove substantially all the air from the fuel, the separated fuel then being directed to a retort heat exchanger arranged within the exhaust manifold of the internal combustion engine to dry-vaporize the fuel, which is then remixed with the air conducted from the separator and introduced into the cylinder intake ports of the engine, the improved separator comprising a housing having a vertical cylindrical chamber provided with an air outlet at



its upper end and a fuel outlet at its lower end, with a fuel-air mixture inlet conduit extending inwardly through the sidewall of the housing and terminating in a downwardly directed inlet opening disposed in a lower portion of the chamber hemispherically formed for improved separation of the fuel and air, and the inlet conduit being adapted for connection to a carburetor disposed laterally of the separator housing.

3,618,578
MOTOR VEHICLE FUEL SYSTEMS
Peter P. Swatman, Olton, Solihull, and Peter G. G. Knight, Allesley, Coventry, both of England, assignors to The British Motor Corporation Limited, Birmingham, England
Filed Aug. 1, 1969, Ser. No. 846,776
Int. Cl. F02m 25/00
U.S. Cl. 123—136 **3 Claims**

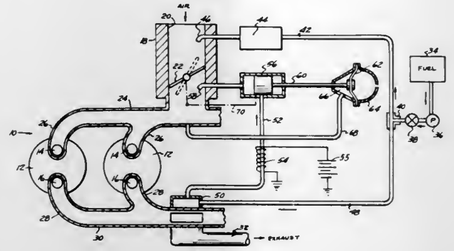


System for preventing loss of vapors from a motor vehicle fuel system comprising a filter bed and connections to said bed from the carburetor float chamber and fuel tank, said filter being permanently vented through the air cleaner, and vented to the choke region of the carburetor whenever the engine is delivering more than a predetermined amount of power.

3,618,579
AUXILIARY FUEL DELIVERY SYSTEM
Robert E. Varran, 3430 Prospect Road, Ypsilanti, Mich.
Filed June 11, 1969, Ser. No. 832,336
Int. Cl. F02m 31/00, 13/04
U.S. Cl. 123—127 **4 Claims**

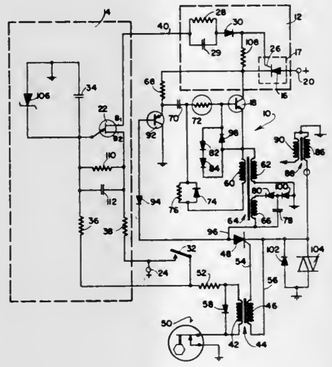
An auxiliary fuel delivery system for an internal combustion engine in which an auxiliary fuel delivery conduit

conducts fuel in heat exchange relation with the exhaust manifold of the engine and then through an electrical heating coil where the fuel is heated to the vapor point and is delivered to a valve controlled by a diaphragm device which



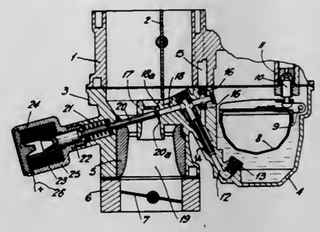
opens the valve in response to either intake manifold pressures, or through linkage operated from the throttle valve, at high-power engine requirements and thereby injects the heated fuel into the intake manifold downstream of the throttle valve.

3,618,580
OVERVOLTAGE AND ELECTRONIC RELAY CIRCUIT FOR CAPACITOR DISCHARGE IGNITION SYSTEMS
Peter Dogadko, and Forbes D. Gilchrist, both of Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 17, 1969, Ser. No. 885,683
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E **9 Claims**



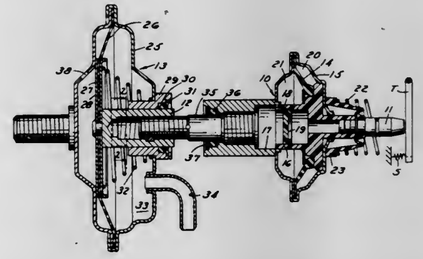
An energy-pulsing circuit is provided for reestablishing a predetermined energy level within a storage capacitor after the energy therefrom has been applied to the ignition coil in response to external pulse signal information. A power-switching circuit is connected between the energy-pulsing circuit and an external power supply to block current flow to the energy-pulsing circuit during one instance, and to provide a current path to the energy-pulsing circuit during another instance. A synchronized oscillator is provided for controlling current flow through the power-switching circuit during desired periods of time, the oscillator circuit being synchronized with the external pulse signal information.

3,618,581
CARBURETORS FOR INTERNAL COMBUSTION ENGINES
Jocelyn Elie Louis Simonet, Paris, France, assignor to Societe Du Carburateur Zenith, Lyon, Rhone, France
Filed Aug. 29, 1969, Ser. No. 854,040
Claims priority, application France, Sept. 5, 1968, 165165
Int. Cl. F02b 77/08; F02m 3/02
U.S. Cl. 123—198 DB **1 Claim**



Carburetors for internal combustion engines are provided with means which, on stopping of the engine, obturate the fuel path from the float chamber to the inlet manifold, and thus prevent the passage of fuel from the float chamber while the engine is standing. Restarting of the engine is thereby facilitated.

3,618,582
THROTTLE CONTROL SYSTEM
Gordon R. Gerlitz, Flint, and George A. James, Dearborn, both of Mich., assignors to F & E Manufacturing Company, Flint, Mich.
Filed Dec. 4, 1969, Ser. No. 882,082
Int. Cl. F02b 77/00; F02d 11/08; F02m 19/12
U.S. Cl. 123—198 **8 Claims**

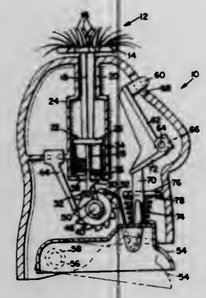


A throttle control system comprising a throttle member movable in response to movement of the throttle of the vehicle and a dashpot assembly mounted on an actuator of a vacuum-operated throttle control device. When the engine of the vehicle is operating, the system operates to prevent the throttle member from moving beyond a certain point toward a throttle-closing position and to prevent unduly rapid return of the throttle when the operator releases the throttle. Upon interruption of the operation of the engine of the vehicle, the system permits the throttle member to move beyond said point toward a throttle-closed position.

3,618,583
GAME APPARATUS WITH SPRING-EJECTABLE TOP
Alvin R. Pottern, Longmeadow, Mass., assignor to Milton Bradley Company, Springfield, Mass.
Filed Aug. 14, 1969, Ser. No. 850,054
Int. Cl. F41b 7/00
U.S. Cl. 124—16 **4 Claims**

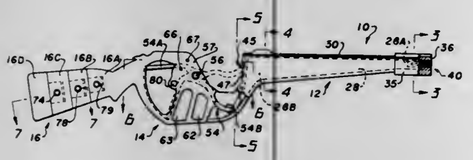
A body with a projectable top releasably disposed thereon, the top resting on a spring-loaded trigger which, when cocked, extends into the path of a rotatable cam movable

upon manipulation of the body in indexing movements in concert with a ratchet wheel, contact of the cam with the trigger uncocking the trigger so as to project the top from the



body. The cam is rotatable by a wheel. Indexing of the ratchet wheel is accomplished by a pivoted base that is located at the bottommost part of the body.

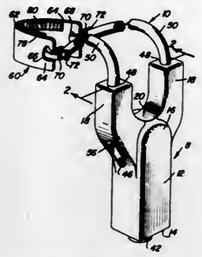
3,618,584
REPEATER-TYPE SELF-PROJECTING ELASTIC BAND GUN
Norman G. Pigeon, 778 Forest Street, Kamloops, British Columbia, Canada
Filed Apr. 23, 1970, Ser. No. 31,290
Int. Cl. F41b *7/02*
U.S. Cl. 124—19 **6 Claims**



A toy gun having barrel provided with a projectile-loading slot extending from end to end of the barrel in communication with the bore thereof. An enlargement on the muzzle end of the barrel has a chamber connecting with the bore. The breech has a plate provided with interconnected projectile storage and discharge slots. A trigger in the breech of the gun has an end member which traverses the discharge slot when said trigger is pivoted. The gun is adapted to shoot elastic projectiles which have a knob on each end thereof. One knob is lodged in the muzzle chamber and then stretched so that the other knob engages and is held by discharge slot in the breech plate, the storage slot projectiles subsequently being transferred to the discharge slot, by way of a connecting slot, for firing.

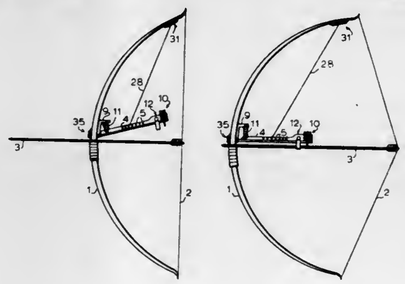
3,618,585
SLINGSHOT WITH PELLET MAGAZINE
Audie Lee Allison, 606 26th St., Snyder, Tex.
Filed Mar. 11, 1969, Ser. No. 806,147
Int. Cl. F41b *7/00*
U.S. Cl. 124—20 **5 Claims**

A slingshot embodying a novelly constructed stock and a three-part sling. The stock embodies a magazine-type handgrip having a storing chamber for a supply of ready-to-use BB's or pellets, birdshot for example. The stock also has arms with bores. The forward ends of stretchable elastic tubes are anchored in their respective bores. The rearward ends of these tubes are connected by a pliant leather or an equivalent strap or saddle which is equipped with Velcro-



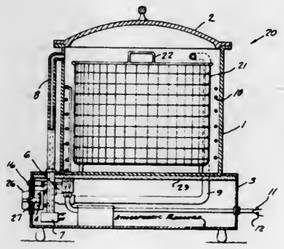
type male and female tapes which function in a manner to provide a nesting and holding pouch for the pellets.

3,618,586
ARROW SIGHT AND BOWSTRING TENSION CONTROL
George C. Current, and Susie B. Current, both of Rt. 1, Box 110A, Boyd, Tex.
Filed Nov. 3, 1969, Ser. No. 873,159
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 **5 Claims**



An arrow sight and bowstring tension control for mounting on a bow including a sight frame rotatably mounted to the bow above the arrow, the rotational position of which is determined by the tension in the bowstring, whereby as the bowstring and arrow are drawn, the sight frame is lowered to rest on the arrow. At a predetermined bowstring tension portions of a sight on a sight assembly carried on the sight frame are brought into alignment to form a rear sight, thereby allowing the archer to sight between the rear sight alignment and a second sight mounted on the bow.

3,618,587
GREASE PRESSURE-PULSING COOKER
Maurice W. Lee, Sr., P.O. Box 25, Boley, Okla.
Filed July 18, 1969, Ser. No. 843,049
Int. Cl. A47j *27/08*
U.S. Cl. 126—389 **5 Claims**



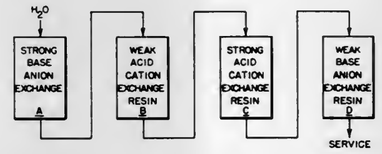
A deep well grease pressure-frying appliance with an electrical circuit including a pressure-responsive switch and a

electromagnetic vent valve for intermittently venting the vessel into a bottom chamber so as to provide periodic pressure pulsations or surges in the grease, which provides quicker and deeper penetration of the grease into a food article contained in the vessel.

3,618,588
CARAMEL COLOR MANUFACTURE
Mohammad H. Anwar, Tappan, and Marvin Calderon, Hyde Park, both of N.Y., assignors to Pepsi Co., Inc., Long Island City, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,131
Int. Cl. A23g *3/32*
U.S. Cl. 127—34 **9 Claims**

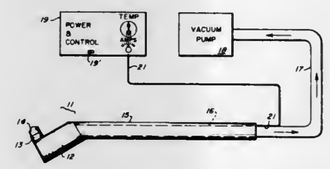
Caramel color is produced from fruit by heating the juice of the fruit in the presence of a caramelization catalyst and removing fruit flavor components during the process.

3,618,589
DESALINATION PROCESS BY ION EXCHANGE
Lorenzo Tavani, Milan, Italy, assignor to Sybron Corporation, Rochester, N.Y.
Filed Mar. 16, 1970, Ser. No. 20,143
Int. Cl. B01d *15/04*
U.S. Cl. 127—46 A **16 Claims**



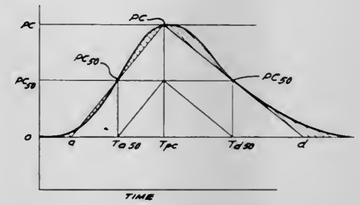
A method for demineralizing fluids comprising contacting the fluid to be treated with a first bed of strong base anion resin in the bicarbonate form, contacting said fluid with a weak acid and strong acid cation resin and finally contacting the fluid with a weak base anion resin. The anion resins are regenerated by passing aqueous bicarbonate solution through the strong base resin, the effluent therefrom is passed through the weak base resin. The cation resins are regenerated by passing a mineral acid solution through the strong acid resin and the effluent therefrom is passed through the weak acid resin.

3,618,590
THERMAL ELECTRIC DENTAL PULP TESTER
Ulrich Anton Frank, Yardley, and Jerome Julius Freundlich, Morrisville, both of Pa., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed June 27, 1969, Ser. No. 837,289
Int. Cl. A61b *10/00, 19/00*
U.S. Cl. 128—2 R **5 Claims**



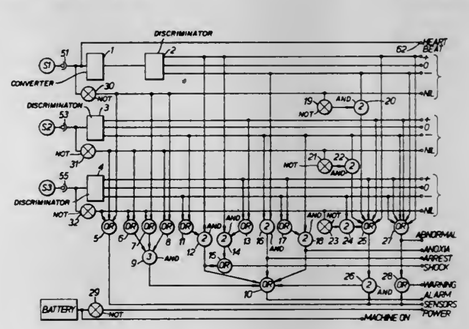
A thermoelectric probe for applying heat or cold to a localized area of a body for medical treatment comprising a thermoelectric module mounted in thermal conductive contact with a heat transfer unit including a honeycomblike assembly for maximizing conduction of heat from the module, and a heat exchange system including a pair of concentric tubular units connected to one side of the honeycomblike unit. One of the tubular units is coupled at its remaining end to an air suction pump for drawing ambient air through the honeycomblike unit.

3,618,591
CARDIAC OUTPUT DETERMINATION METHOD FOR USE WITH DYE DILUTION PROCEDURES
Edward C. Bradley, 1140 Linda Vista Ave., Pasadena, Calif., and John W. Barr, 653 E. Ada Ave., Glendora, Calif.
Filed Apr. 9, 1969, Ser. No. 814,551
Int. Cl. A61p *5/02*
U.S. Cl. 128—2.05 F **2 Claims**



The disclosure concerns a method and apparatus for quickly determining the area under a dye dilution curve, based upon triangle congruency, for use in rapid determination of cardiac output.

3,618,592
DIAGNOSTIC PATIENT MONITOR
John Stewart Simpson Stewart, 50 The Common, Parbold, Wigan, Lancashire, England
Filed Aug. 11, 1969, Ser. No. 848,930
Claims priority, application Great Britain, Aug. 9, 1968, 38,245/68
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **9 Claims**

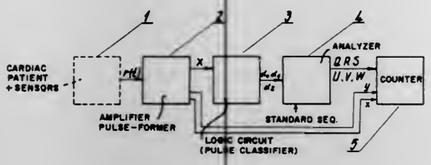


A diagnostic patient monitor is provided which monitors the condition of a patient by means of a sensor system to provide output signals, not less than six in number, indicative of normal, above normal or below normal sensed conditions from at least two sensors. The signals are used to directly indicate each condition and are combined so that specific combinations of abnormal signals provide an indication of the condition of the patient resulting in the abnormal signals. Two abnormal signals occurring simultaneously result in the activation of an alarm.

3,618,593
METHOD OF AND A SYSTEM FOR THE AUTOMATIC ANALYSIS OF HEART DISTURBANCES
Choudomir Kirilov Nachev; Garo Bohos Astardjian; Hristo Radev Hristov, and Kiril Kirilov Boev, all of Sofia, Bulgaria, assignors to Institut Po Technitcheska Kibernetika Pri Ban, Sofia, Bulgaria
Filed Nov. 21, 1968, Ser. No. 777,575
Claims priority, application Bulgaria, Sept. 2, 1968, 10595
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **4 Claims**

A device or system for automatically analyzing disturbances of heart rhythm and a method of such analysis

wherein a sequence of cardiac waves, e.g. as generated by a transducer attached to the body of a patient is converted into normal pulses occurring within predetermined time intervals following a preceding pulse. The disturbance is characterized by delayed pulses occurring at a greater time interval for ac-

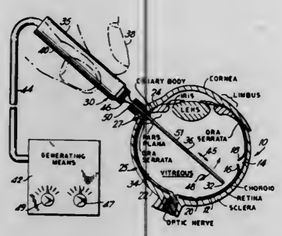


celerated pulses with a shorter interval. Information is stored in a memory in the form of sequences of such pulses representing various cardiac conditions and and a contemporary condition is compared with the stored information to produce output signals indicating the condition.

3,618,594
ULTRASONIC APPARATUS FOR RETINAL REATTACHMENT

Anton Banko, Brooklyn, N.Y., assignor to Surgical Design Corporation, Queens, N.Y.

Division of Ser. No. 760,003, Sept. 16, 1968, Pat. No. 3,528,410. Filed Apr. 6, 1970, Ser. No. 25,991
Int. Cl. A61h *1/00*; A61f *9/00*
U.S. Cl. 128—24 A 11 Claims



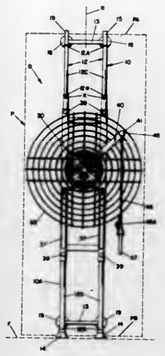
The method and apparatus relate to performing surgical operations on the eye in vivo, including retina reattachment by the insertion of an ultrasonic probe within the eye.

3,618,595
PHYSICAL THERAPY DEVICE WITH VERSATILE ADJUSTING AND MOUNTING MEANS

Bernhardt Stahmer, 1509 Chicago St., Omaha, Nebr., and Joseph F. Opocensky, Rte. #1 Box 80, Valley, Nebr.

Filed June 15, 1970, Ser. No. 46,089
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 20 Claims

A physical therapy device for imparting rotary and reciprocating exercising motions to arms and legs of languid patients. There is a plurality of novel structural features rendering the physical therapy device versatile in providing valuable exercise for variously endowed patients and at various levels of muscular development, and for patients of various degrees of vigor including even for those that can receive treatment from sitting or supine positions only. The physical device has further versatility in that it can be stably mounted for use in all sorts of encountered environments, including

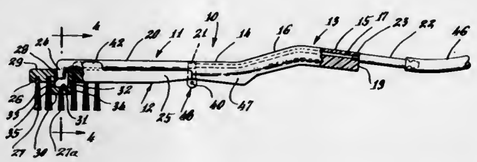


within the normal dwelling home, in hospital rooms, and elsewhere.

3,618,596
ORAL HYGIENE DEVICE

Lester F. Miller, Bethel, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,323
Int. Cl. A61h *13/00*
U.S. Cl. 128—66 11 Claims

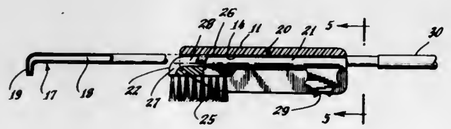


An oral hygiene device for cleaning the teeth and massaging the gums including a brush member and a fluid discharge member having a nozzle wherein both members can be used separately or in combination. The brush member is pivotally connected to a handle for movement between a first position adjacent the nozzle and a second position wherein the brush is disposed adjacent the handle.

3,618,597
ORAL HYGIENE DEVICE

Siegfried Godel, Norwalk, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,331
Int. Cl. A61h *9/00*, *7/00*
U.S. Cl. 128—66 7 Claims



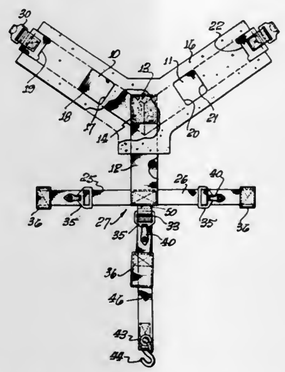
An oral hygiene device for cleaning the teeth and massaging the gums including a brush member and a fluid discharge

member having a nozzle, wherein both members can be used separately or in combination. The brush member is adapted to be displaced along the fluid discharge member to a position adjacent the nozzle or to a storage position within a handle member.

3,618,598
LEG TRACTION ANKLE STRAP

Ronald H. Davis, 1922 Somerset, Cardiff-by-the-Sea, Calif.

Filed Dec. 8, 1969, Ser. No. 883,124
Int. Cl. A61f *5/04*
U.S. Cl. 128—85 5 Claims



An ankle wrap for use with a splint and leg support members to provide a traction splint. An ankle wrap having five strap elements joined together, with first and second straps for wrapping a foot in overlapping relation, and fourth and fifth straps carried on a third strap for connection to the first and second straps to pull the first and second straps tight on the foot, and means for connecting the third strap to the splint and shortening the third strap to apply tension to the foot, while maintaining the foot in position 90° to the leg.

3,618,599
ORTHOPEDIC DEVICE HAVING A RESIN CURABLE BY ULTRASONIC ENERGY

Leroy E. Beightol, Los Angeles, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

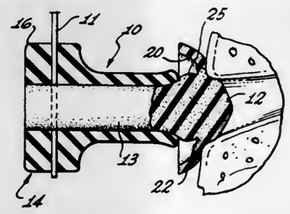
Filed Aug. 4, 1969, Ser. No. 847,433
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 9 Claims

The present invention provides a novel method for the application of an orthopedic cast to a body member which comprises enclosing said member in an ultrasonic energy curable polymer impregnated, woven or nonwoven fabric, and curing said resin by exposure to ultrasonic energy to form a hard, lightweight, physiologically inert integral porous cast.

3,618,600
EAR STOPPLE

Harry E. Douglass, 3146 N. Verdugo Road, Glendale, Calif.

Filed Apr. 1, 1969, Ser. No. 812,047
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 7 Claims

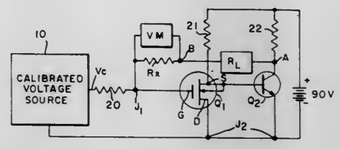


An ear protector comprising a generally mushroom-shaped soft rubber head and stem, with a harder soft rubber retainer sleeve therearound, and a frustoconical section on the stem between the end portion of the retainer sleeve and the head.

3,618,601
IONTOPHORESIS UNIT

Thatcher W. Richardson, 5345 Bevedere, Indianapolis, Ind.

Filed Oct. 16, 1969, Ser. No. 867,003
Int. Cl. A61n *1/30*
U.S. Cl. 128—172.1 6 Claims

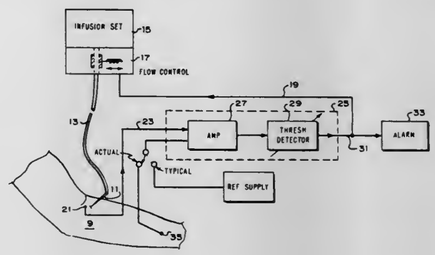


An iontophoresis unit comprising means for probing into a biological medium, the probing means providing a resistance load, a high-voltage source, a low-voltage, calibrated current source, and an amplifier. The amplifier includes an output junction and a summing junction between which the probe means is connected, first circuit means for connecting the summing junction to one side of the low-voltage source and second circuit means for connecting the output junction to one side of the high-voltage source.

3,618,602
LIQUID INFUSION INFILTRATION DETECTION APPARATUS AND METHOD

Robert F. Shaw, 350 Parnassus Heights, San Francisco, Calif.

Filed Aug. 28, 1969, Ser. No. 853,829
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 E 12 Claims

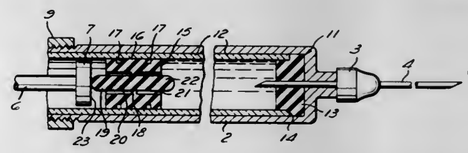


Improved method and means is provided for detecting undesirable infiltration into the perivascular tissue of liquid which is normally administered intravenously or intraarterially.

3,618,603
SYRINGE

Myron F. Levenson, 2974 Montgomery Road, Shaker Heights, Ohio

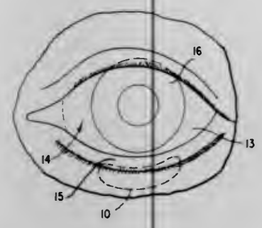
Filed Jan. 29, 1969, Ser. No. 794,867
Int. Cl. A61m *05/22*
U.S. Cl. 128—218 P 3 Claims



A cartridge for use in a hypodermic syringe characterized by an aspirating piston comprising a resilient body portion

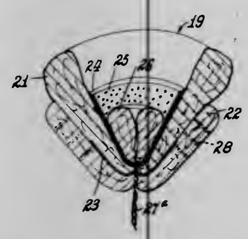
taking the general form of a cylinder; two voids extending in opposite directions within such body portion; and, separating the two voids from each other, a transverse web provided with oppositely directed protuberances.

3,618,604
OCULAR INSERT
Richard A. Ness, Fergus Falls, Minn., assignor to Alza Corporation
Filed June 9, 1969, Ser. No. 831,761
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **21 Claims**



Drug-dispensing ocular insert is comprised of a flexible body of polymeric material that is insoluble in tear liquid and has an imperforate surface. The polymeric material contains a drug which is dispensed to the eye in a therapeutically effective amount by diffusion through the polymeric material. The ocular insert is adapted for insertion in the cul-de-sac of the conjunctiva between the sclera of the eyeball and the lower lid, to be held in place against the eyeball by the pressure of the lid.

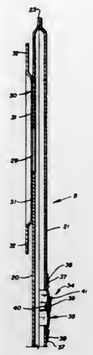
3,618,605
CATAMENIAL TAMPON
Jacob A. Glassman, 1680 Meridian Ave., Miami Beach, Fla.
Continuation-in-part of application Ser. No. 800,983, Feb. 20, 1969, now Patent No. 3,572,341. This application Nov. 12, 1969, Ser. No. 875,903
Int. Cl. A61f *13/20*
U.S. Cl. 128—270 **7 Claims**



A normally compacted tampon comprised of a laminated structure which embodies the arrangement of highly fluid absorbent layers that allow the menstrual wastes to be initially directed into a central absorbent core to thereby cause the core to expand and insure maximum expansion of the tampon as a whole so as to insure maximum absorption of the menstrual waste without overflow or strike-through, thus maintaining a blood-dry tampon exterior to the very end of its useful life.

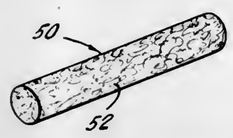
3,618,606
STOMA BAG
Rollen E. Brown, Englewood, and Mathilda C. Frank, Denver, both of Colo., assignors to Osteolite Appliances, Denver, Colo.
Filed Feb. 14, 1969, Ser. No. 799,248
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **6 Claims**

A stoma bag formed of flat sheets of polyethylene or like material, characterized by a mounting pad at the intake thereof which is adapted to be cemented to the body of a patient. The mounting pad is affixed to the bag at a connecting face about the stoma orifice and this pad includes a peripheral flap about the connecting face. At the outer side



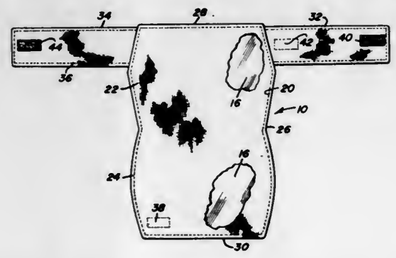
of the bag, an access means is provided, either as a slit normally closed by enmeshing closure strips, or a flap valve. A further embodiment, adapted for a ureterostomy bag includes a check valve within the bag.

3,618,607
SALINE FLUID ABSORPTION AND RETENTION TAMPONS AND METHODS OF MAKING THE SAME
Myron B. Ells, Somerville, and Fred H. Steiger, East Brunswick, both of N.J., assignors to Johnson & Johnson
Filed Feb. 17, 1970, Ser. No. 12,002
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **7 Claims**



An improved saline fluid absorption and retention tampon having a density of from about 0.4 gram per cubic centimeter to about 0.8 gram per cubic centimeter and comprising water-insoluble, wet cross-linked carboxyalkyl cellulose having average degrees of substitution of from about 0.4 to about 1.3, and methods of making the same.

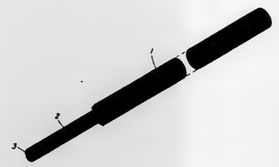
3,618,608
DIAPER WITH FASTENER
Mary E. Brink, 4607 W. Marten Ave., Glendale, Ariz.
Filed Feb. 16, 1970, Ser. No. 11,415
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **4 Claims**



A multilayer diaper having a belt connected thereto which secures the main section of the diaper around an infant's bot-

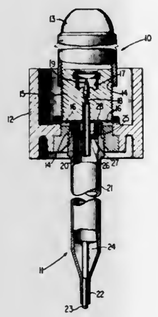
tom by means of mating "Velcro" plush pile fasteners that are sewn to the belt and main section of the diaper.

3,618,609
BRAIDED ABSORBENT MATERIAL
Arthur Glick, Danbury, and Sol Singerman, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Dec. 23, 1969, Ser. No. 887,523
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **3 Claims**



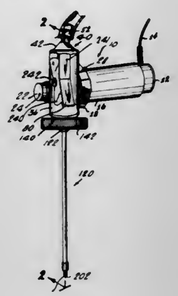
A process is provided for removing body fluids from an area under surgery which comprises contacting the fluid with a brush comprising a core of continuous monofilament hydrophilic fibers, each of said fibers having a denier between about 1.5 and 10 surrounded by a braided sheath of multifilament yarn, said yarn having a denier in the range of about 100 to about 2,400.

3,618,610
CRYOGENIC SURGICAL APPARATUS
Theodore N. Hannant, Cedar Grove, N.J., assignor to Walter Kidde & Company Inc., Belleville, N.J.
Continuation-in-part of application Ser. No. 728,448, May 13, 1968, now abandoned. This application Apr. 22, 1970, Ser. No. 30,910
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **6 Claims**



Cryogenic Surgical Apparatus in which a surgical instrument is threaded into an assembly that charges the instrument with refrigerant. The instrument is hollow providing a chamber for holding the refrigerant which cools a metallic tip on the instrument to subzero temperatures. The upper end of the instrument is provided with an annular wall defining a central opening through which the instrument is charged. The charging assembly is provided with a tube which is connected to the refrigerant supply and extends axially into the threaded bore which receives the instrument. The tube is of smaller diameter than the end opening of the instrument and venting ports are provided at the upper end of the instrument receiving bore to allow gases to escape during the charging of the instrument.

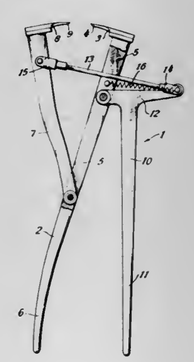
3,618,611
VACUUM ROTARY DISSECTOR
Julius C. Urban, 10533 Sarah St., North Hollywood, Calif.
Filed Mar. 5, 1969, Ser. No. 804,598
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **7 Claims**



The device is a surgical instrument appropriately termed a vacuum rotary dissector, for purposes of performing delicate surgical operations such as brain operations for removing undesired tissue, etc. A thin elongated tubular member or sleeve which is motor driven, rotates within another elongated sleeve having a bullet-shaped end with a side opening in it. At the end of the inner sleeve, there is a cutout providing side edges which are cutting edges that rotate adjacent to the side opening in the outer sleeve, the tip end of the inner sleeve also being bullet shaped to conform to the interior contour of the tip and of the outer sleeve.

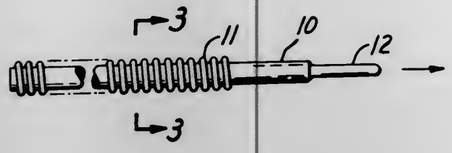
The improvements reside in the contours of the tip ends of the sleeves, the particular shape of the side opening in the outer sleeve, and the particular configuration of the cutting edges or surfaces on the inner sleeve. Also, axial pressure is maintained on the outer sleeve to urge its end surfaces into engagement with surfaces of the tip of the inner sleeve.

3,618,612
PLIER-TYPE CUTTING TOOLS
David F. Ahn, Arkesden, Essex, England, assignor to Arnolds Veterinary Products Limited, Reading, Berkshire, England
Filed Apr. 14, 1969, Ser. No. 815,965
Claims priority, application Great Britain, Apr. 16, 1968, 17,962/68
Int. Cl. A61b *17/32*; **B26b** *17/02, 17/04*
U.S. Cl. 128—318 **2 Claims**



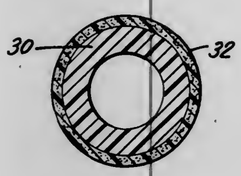
A plier-type cutting or gripping tool having first and second arms-carrying operating heads can be operated one-handed by gripping an operating arm and the first arm and pressing the same together; the mechanical advantage of the tool increasing as the operating heads approach one another.

3,618,613
ANTITHROMBOTIC INTRAVASCULAR CATHETER REINFORCED WITH NONKINKING MEANS
Rudolf R. Schulte, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.
Filed May 19, 1969, Ser. No. 825,656
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 1 Claim



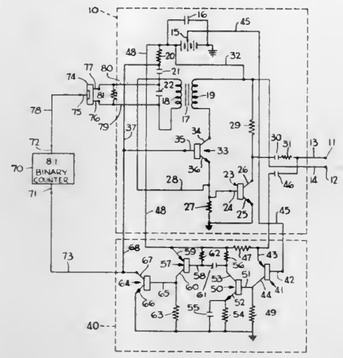
This invention relates to tubular catheters which are inserted through veins to enter the peritoneal cavity for medical purposes. Such tubing catheters have other medical applications such as for drainage or for introduction of medical materials, but since the tubing is of such a small diameter, it has been subject to difficulties in handling. The current invention circumvents problems caused by kinking during use by the application of a wire spring coiled around the tubing in interference fit and then coated with a silicone material to provide the surface finish required for insertion. The distal end of the catheter may be coated with an antithrombotic coating.

3,618,614
NONTOXIC RADIOPAQUE MULTIWALL MEDICAL-SURGICAL TUBINGS
Vincent J. Flynn, Englewood, N.J., assignor to Scientific Tube Products, Inc., Englewood, N.J.
Continuation-in-part of application Ser. No. 518,186, Jan. 3, 1966, now abandoned, Continuation-in-part of application Ser. No. 571,592, Aug. 10, 1966, now abandoned. This application May 6, 1969, Ser. No. 826,778
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 10 Claims



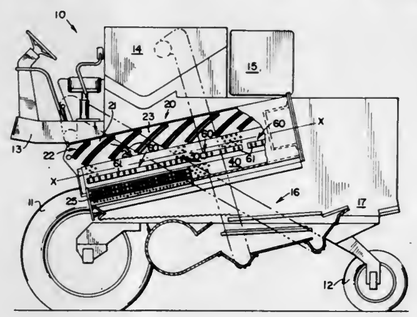
Multiwall surgical tubing, especially for stomach, thoracic or rectal use, has an inner, relatively thick transparent tube encased in a relatively thin, visually transparent, outer shell which contains a radiopaque material, so that as the X-radiation passes through the lateral edges of the composite tube it must pass through a relatively long path at the side edges of the tubing, while the central portion remains substantially transparent. Thus, the position of the tube is readily observed by fluoroscopy, while the flow of contrast media or clots may be observed in the central portion. As used for a heart, ureteral or vein intubation catheter, the multiwall tubing is formed of extruded polyethylene containing a nontoxic, radiopaque-plasticizing compound such as bismuth, oxychloride, which is encased in an extruded outer shell of transparent polyethylene having a hardness and exterior smoothness superior to that of the inner tubing, which outer shell also increases the angular resistance to twisting in use.

3,618,615
SELF CHECKING CARDIAC PACEMAKER
Wilson Greatbatch, Clarence, N.Y., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Sept. 2, 1969, Ser. No. 854,583
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P 15 Claims



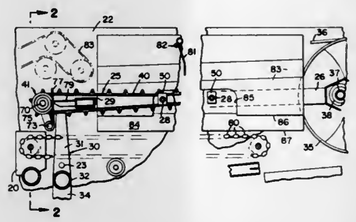
A cardiac pacer including a pair of output terminals, at least one of which is adapted to be placed in operative contact with a patient's heart, coupled to a pulse generator which includes an RC timing circuit connected to a power supply. A signal responsive circuit coupled to one of the output terminals provides a signal in response to each ventricular beat of the patient's heart. The capacitance of the timing circuit is periodically reduced by a capacitor connected in series with the timing circuit and in parallel with a field effect transistor controlled by a binary counter connected to the pacer signal responsive circuit. The resulting periodic test pulse of reduced width is utilized to indicate marginal pacer operation and possible impending failure if the patient's heart fails to respond to the test pulse.

3,618,616
UNIVERSAL ROTOR AND CONCAVE FOR AXIAL FLOW COMBINE
William H. Knapp, Davenport, Iowa, and Ernest M. Van Buskirk, East Moline, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 6, 1970, Ser. No. 996
Int. Cl. A01f *12/26*
U.S. Cl. 130—27 T 8 Claims



An axial flow combine equipped to operate in various crops and crop conditions without replacing the basic components. Spike-tooth elements are detachably mounted on the threshing cylinder concave and side grates. The rotor has spike teeth along its outer periphery that intermesh with those on the threshing cylinder. When operating in conditions not requiring spike teeth, the detachably mounted spike-tooth elements are removed from the threshing cylinder.

3,618,617
SEPARATOR FOR TOMATO HARVESTER AND THE LIKE
Lauren W. Gates, Rio Vista, and Michael J. Hartwig, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed May 1, 1968, Ser. No. 725,874
Int. Cl. A01d
U.S. Cl. 130—30 26 Claims



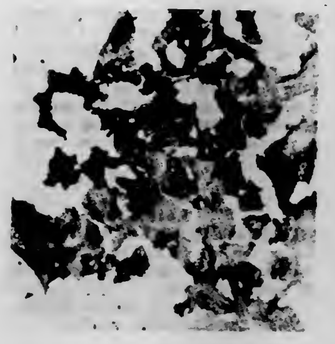
A separator for mechanical harvesters of the type where the fruit or other heavy part of the crop is separated from the remainder of the plant by a shaking action. A generally rectangular frame has a front end where harvested plants are introduced and a rear end where they leave. A rockshaft supports the front end of the frame for substantially pure fore-and-aft movement, while crank means support the rear end of the frame and drive it as a unit in a generally circular motion involving both vertical and fore-and-aft components. There is a plurality of pulleys at each end of the frame, those on the rear end being mounted on the crank pin and driven by the crank means, those on the front end being idlers individually spring mounted. The pulleys carry a plurality of closed-loop belts with upwardly extending projections for engaging harvesting plants and moving them from the front to the rear of the frame. A collecting conveyor beneath the frame catches the fruit shaken from said plant and conveys it elsewhere. Thus, the more easily loosened fruit is shaken off by fore-and-aft shaking while the fruit more difficult to loosen is shaken off by the gradual introduction of vertical movement as the crop moves rearwardly. The belt, pulleys, and belt guides are also novel in structure.

3,618,618
TOBACCO SMOKE FILTERING MATERIAL
Robert L. Strickman, River Vale, N.J., assignor to The Robert L. Strickman Foundation, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 599,495, Dec. 6, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 424,626, Jan. 11, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 59,035, Sept. 28, 1960, now abandoned. This application Apr. 11, 1968, Ser. No. 721,563
Int. Cl. A24d *01/06*; A24f *25/00*
U.S. Cl. 131—10.7 18 Claims

Filter materials for filtering aerosols, such as cigarette filters for filtering tobacco smoke, are provided comprising rigid polyurethane particles devoid of any cellular structure. Preferably the particles are granular and of jagged, spiny, cragged nature. The rigid polyurethane is produced from a polyol and a polyisocyanate.

The particles are produced by first preparing a rigid polyurethane foam, preferably with the aid of a blowing agent, granulating the foam, treating the granules with hot water or steam to hydrolyze unreacted isocyanate and other free materials to render them inert, and then dried.

Preferably, inorganic additives may be present during the preparation of the rigid polyurethane foam, such as the lower alkyl silicates, e.g., ethyl silicate, and water soluble salts of



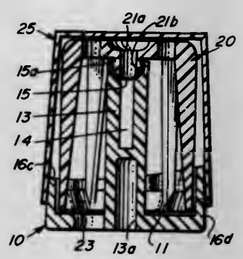
the acids of metals of groups VA and VIA of the Periodic Table, e.g., sodium tungstate.

Inorganic additives may be added to the filter particles, such as an alkaline earth metal carbonate, silicate or hydroxide.

3,618,619
TOBACCO SMOKE FILTERS
John E. Kiefer, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 3, 1970, Ser. No. 16,209
Int. Cl. A24f *13/06*
U.S. Cl. 131—266 3 Claims

Crimped celluclose acetate filter tow having dispersed therein at least one metal oxide selected from zinc oxide, ferric oxide and cuprous oxide, the tow being adapted to be activated by the application thereto of an organic activating agent to alter the characteristics of the individual filaments of the tow to make accessible the oxide dispersed in the two to hydrogen cyanide for removal thereof from the vapor phase of tobacco smoke. Representative of the organic activating agents are triethylene glycol, triacetin, polyethylene glycol, triethylene glycol diacetate, triethyl citrate, propylene glycol, and dimethoxyethyl phthalate. Also disclosed are tobacco smoke filters made from the tow.

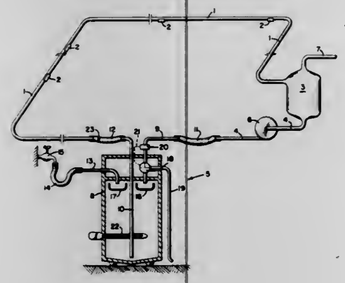
3,618,620
HAIR CURLER AND FROSTING TOOL
James P. Williams, Lubbock, Tex., assignor to Darling Curler, Incorporated, Lubbock, Tex.
Continuation-in-part of application Ser. No. 666,320, Sept. 8, 1967, now abandoned. This application Sept. 23, 1970, Ser. No. 74,583
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 6 Claims



There is a circular base member having a centrally positioned upstanding spindle at its center, a slot extending in

from the edge and to one side of the spindle and an upstanding flange at the periphery increasing in height from adjacent one side of the slot in the base to the other side of the slot thereby forming an inclined ramp on the top of the flange. Received on the spindle is a cage having a circular top with a central aperture received by the top end of the spindle in a formed fitting engagement. Depending from the circular top's periphery are spaced apart spokes that extend inside of the upstanding flange on the base where two of the spokes are spaced apart to form a slot that can be brought into alignment with the slot in the base. The lower ends of the spokes are jointed by an arcuate member. The spindle and top have a passage for the reception of curling lotion. An enclosing cap having an open bottom is received over the assembled cage and base.

3,618,621
WASHING ARRANGEMENT FOR PIPELINE MILKING SYSTEM
Sven-Ake Nordegren, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Apr. 9, 1970, Ser. No. 27,031
Int. Cl. B08b *3/10, 9/06*
U.S. Cl. 134—57 R **7 Claims**

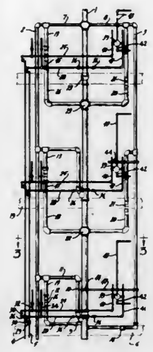


Means are provided for inducing flow of water from a hot water source through a pipeline milking system; and a reversing valve has a first position wherein water which has passed through the system is discharged therefrom, the valve having a second position wherein water which has passed through the system is returned thereto for repeated flow through the system. By temperature-sensing means operatively connected to this valve, it is actuated from said first to said second position in response to heating of the system to a predetermined temperature by hot water flowing through it; and means responsive to this actuation of the valve are provided for adding detergent to the water flowing through the system.

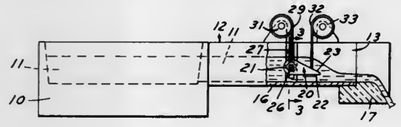
3,618,622
PLUMBING SYSTEM
Allen S. Zien, 9551 N. Lake Drive, Milwaukee, Wis., and Gary R. Mueller, 2842 N. Lefeller St., Milwaukee, Wis.
Filed Feb. 2, 1970, Ser. No. 7,753
Int. Cl. F17d *1/08*; **E03d** *9/04*
U.S. Cl. 137—1 **10 Claims**

Roughing in of the plumbing in residential and commercial buildings and other structures is accomplished by utilizing factory preassembled units incorporating both water supply and drainage piping complete for one or multiple floors and installing the units generally prior to the construction of the wall which is to contain the plumbing, and thereafter erecting the wall to fit the plumbing.

The units are assembled from pipe sections rigidly joined together and with the supply pipes tied or banded to the drain pipes at prearranged crossings to provide the plumbing for a plurality of service rooms disposed adjacent to one another or one above another as may be desired, and to provide a generally rigid portable unit suitable for transfer from the factory to the construction site.



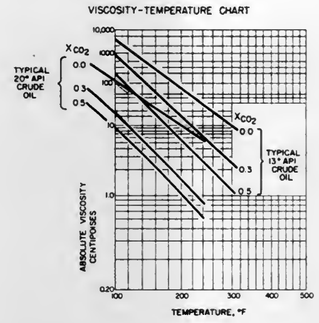
3,618,623
METHOD FOR CONTROLLING THE RATE OF FLOW OF MOLTEN GLASS FROM A CHANNEL
Premakaran Boaz, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 17, 1969, Ser. No. 817,134
Int. Cl. C03b *5/26*
U.S. Cl. 137—1 **1 Claim**



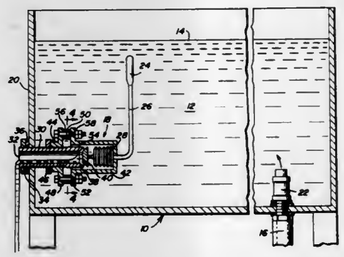
A liquid is delivered to a channel. The channel contains a baffle extending thereacross at a position below the top surface of the liquid but spaced from the bottom of the channel. By varying the submerged position of the baffle in the liquid with respect to the bottom of the channel, the rate of flow of the liquid through the channel is controlled. A prescribed quantity of liquid may be delivered from the channel by positioning the baffle at a prescribed, submerged position within the liquid flowing through the channel.

3,618,624
FLUID PIPELINING
Juris Vairogs, Tulsa, Okla., assignor to Cities Service Oil Company
Filed Feb. 26, 1970, Ser. No. 14,554
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **10 Claims**

The present invention is a method for lowering the viscosity of a fluid being transferred in a pipeline by the introduction of a miscible gas, for example carbon dioxide, into the fluid that is being transported. The miscible gas-fluid mixture is then pumped at such conditions of temperature and pressure so as to prevent the formation of a gaseous phase by utilizing the unique two-phase liquid equilibrium characteristic of certain miscible gases in solution with hydrocarbons. The viscosity of the pipeline fluid is lowered while the deterrent effects of the gaseous phase are removed.

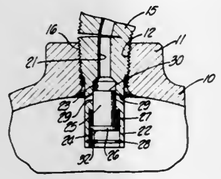


3,618,625
ICE AXE VALVE
William R. Walters, 1300 Sunset, Pawhuska, Okla.
Filed Oct. 29, 1969, Ser. No. 872,109
Int. Cl. A01k *7/02*
U.S. Cl. 137—62 **10 Claims**



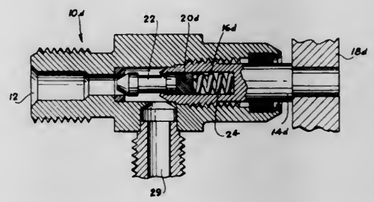
Water stored in a tank is prevented from freezing by opening of a valve device conducting a restricted outflow of water under control of a temperature-sensing element located adjacent the surface of the water where freezing begins. The outflow of water induces inflow of water at a higher temperature from a remote source to maintain the temperature level of the water within the tank above an adjusted value.

3,618,626
SAFETY VALVE FOR COMPRESSED GAS CYLINDER
Anthony Russo, Hacienda Heights, Calif., assignor to Ventro Machine Products, Inc., Buena Park, Calif.
Filed Feb. 2, 1970, Ser. No. 7,801
Int. Cl. F16k *13/04*
U.S. Cl. 137—68 **1 Claim**



The body of a conventional valve assembly for controlling flow from a compressed gas cylinder is extended within the cylinder to receive a safety valve. Should the exposed control valve be damaged, escape of gas at abnormally high-flow rates is prevented by the safety valve, the latter moving by venturi effect against the action of a spring to restrict the rate of escaping gas to a safe value. When gas ceases to escape either because of repair of the control valve, or depletion of the gas supply, the spring returns the safety valve to its initial position.

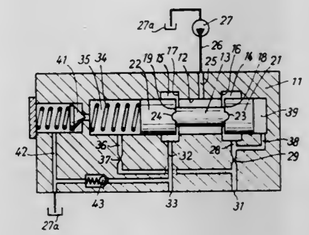
3,618,627
VALVE AUTOMATIC PRESSURE RELEASE MEANS
William Wagner, c/o Watsco, Inc., 1800 W. 4th Ave, Hialeah, Fla.
Filed Oct. 29, 1969, Ser. No. 872,074
Int. Cl. F16k *17/38*
U.S. Cl. 137—73 **1 Claim**



An automatic means incorporated into the structure of a system valve for releasing system pressure, the means comprising a fusible element located in the valve between the internal (high) pressure of the system and a low-pressure field such that elimination of the plug releases the system high pressure to the field low pressure. The means may additionally provide for an automatically reclosing pressure relief element such as a spring.

In primary embodiments the automatic pressure release means comprises a fusible plug located in the valve stem. Pressure release is accomplished by elimination of the plug by either thermal or mechanical means, or a combination. In secondary embodiments the plug is angularly located in the valve housing.

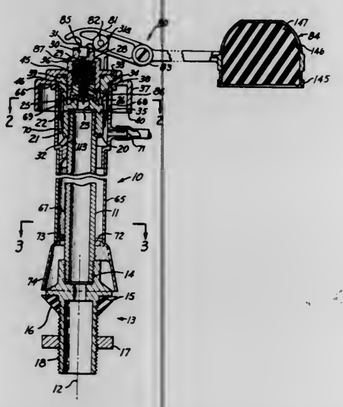
3,618,628
THROTTLING ARRANGEMENT FOR CONTROLLING THE FLOW FROM TWO OUTLETS
Manfred Kramer, Fellbach-Lindle, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed May 28, 1970, Ser. No. 41,397
Claims priority, application Germany, June 28, 1970, P 19 32 996.5
Int. Cl. G05d *11/03*
U.S. Cl. 137—101 **10 Claims**



A spring-biased regulating valve has a first regulating position directing fluid from a pump at a constant pressure to a first outlet, and directing excess fluid to a second outlet. The regulating valve is held in the first regulating position by fluid pressure in a regulating chamber to which fluid is supplied through a throttle from the first outlet. When the pressure in the first outlet rises above a desired constant value, a biased control valve responds to the pressure increase and relieves the pressure in the regulating chamber so that the regulating

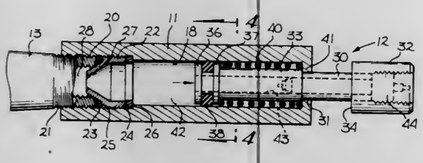
valve moves to a second regulating position in which all the fluid from the pump is supplied to the second outlet until the pressure in the first outlet has again its desired constant value. The consumer connected to the second outlet is not disturbed by interruption of the load on the first outlet, and different pressures are possible for the first and second outlets.

3,618,629
BALLCOCK VALVE
William T. Heyer, 225 Mohawk Road, and Dale F. Soukup, 318 Mohawk Road, both of Santa Barbara, Calif.
Filed Nov. 26, 1969, Ser. No. 880,199
Int. Cl. F16k *21/18*
U.S. Cl. 137—218 **20 Claims**



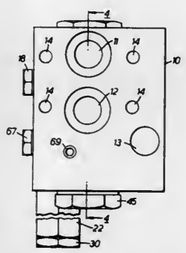
A ballcock valve for controlling the flow of water from an inlet pipe to a tank, which valve includes an inlet seat at which the flow of water is controlled. A body attached to the inlet pipe bounds an internal cavity which is divided by a piston assembly into a bias chamber and a flow chamber. A seal is carried by the piston to engage the inlet seat, and is moved toward and away from the seat to close and to open the inlet port. A bias port bypasses or extends from end-to-end of the piston element so as to conduct inlet pressure to the bias chamber. A vent port which can be opened and closed by mechanism associated with the level of the water of the tank controls the pressure within the bias chamber. The piston assembly is a unitary conveniently removable and replaceable element with a cup-shaped member restrained laterally at its base by a rim. An outlet port extends through the wall of the body to provide for flow of water from the flow chamber to the tank. In one embodiment of the invention an antisiphon skirt surrounds the body so as to block siphoning backflow while admitting air to regions subject to said siphoning flow so as to prevent the same.

3,618,630
PRESSURE VALVE INDICATOR
Anthony E. Marcaccio, Los Angeles, Calif., assignor to Michael S. Louis, Studio City, Calif., a part interest
Filed July 9, 1969, Ser. No. 840,192
Int. Cl. F16k *15/20*
U.S. Cl. 137—227 **2 Claims**



The pressure valve indicator disclosed herein includes a hollow housing for slidably mounting a plunger having two positions, one position being substantially within the housing and the other position being substantially extended out of a selected end of the housing. Resilient biasing means within the housing normally urge the plunger into the housing to its substantially enclosed position while the biasing means is yieldable to applied pneumatic pressure above a predetermined amount to permit the plunger to axially move within the housing to its extended position. Stop means are provided for limiting the axial movement of the plunger to determine the two positions. Coupling means are carried on one end of the housing for detachably connecting with a conventional tire valve stem and a check valve or core is included in the plunger permitting introduction of air into the tire via an air passageway in the plunger, housing and valve stem.

3,618,631
HYDRAULIC CONTROL VALVE
Michael Anthony Jeans, Great Bookham, and Frank Oxley Baines, Hextable, both of England, assignors to Louis Newmark Limited, Croydon, Surrey, England
Filed July 27, 1970, Ser. No. 58,584
Claims priority, application Great Britain, Aug. 5, 1969, 39089/69
Int. Cl. F16k *51/00*
U.S. Cl. 137—269 **10 Claims**



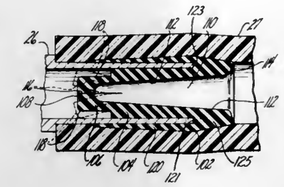
There is described an hydraulic control valve comprising a body member pierced by parallel channels and containing three valve chambers. The first and third valve chambers each communicate with both channels. Apertures respectively at one end, intermediate the ends and at the other end of the second valve chamber communicate by way of respective conduit means within the body member each with a respective port in a surface of the body member and respectively with the first and second channels and the first valve chamber. Reversible stop means in the conduit means permit different valve functions to be performed by valve means contained in a plurality of the valve chambers.

ERRATA

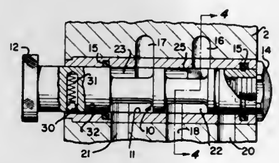
For Classes 137—377 and 137—514.7 see:
Patent Nos. 3,618,688 thru 3,618,690

3,618,632
CHECK VALVE
Frederick F. Stevens, Sandy Hook, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Conn.
Continuation-in-part of application Ser. No. 661,079, Aug. 16, 1967, now abandoned. This application July 31, 1969, Ser. No. 850,313
Int. Cl. F16k *15/14*
U.S. Cl. 137—515.7 **8 Claims**

A fluid check valve having a hollow elongated self-supporting nipple supported in a path of fluid flow and made from a resilient deformable material. A slit through the closed upstream end of the nipple divides it into adjacent sections which are laterally displaced from each other to provide a path of fluid flow therebetween when the fluid pressure on the downstream side of the nipple exceeds the fluid pressure on the upstream side thereof. Under the influence of back pressure the sections resiliently press against each other to prevent reverse fluid flow therebetween. The nipple has an integral part which supports it in a fixed position in an associated conduit member and also forms a seal between the latter member and another conduit member connected thereto. A rigid nipple insert may be provided to prevent inward collapse or deformation of the nipple due to fluid back pressure.

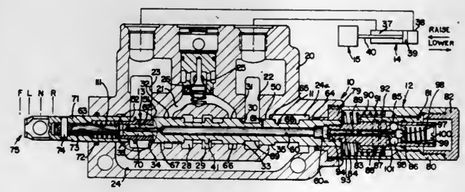


3,618,633
REVERSE VALVE FOR PNEUMATIC TOOL
Paul K. Bizilia, and Albert G. Wordsworth, both of Sayre, Pa., assignors to Ingersoll-RAnd Company, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,098
Int. Cl. F16k *11/00*
U.S. Cl. 137—560 **4 Claims**



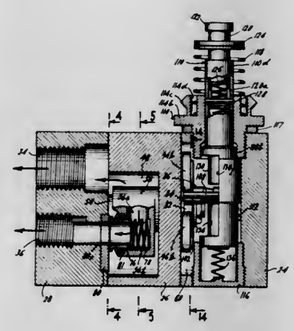
A reverse valve for an air-powered wrench including a spool valve mounted in a valve bore to reciprocate axially between alternate positions controlling the rotary direction of the wrench. The valve also rotates to progressively control the flow of fluid through the valve while providing an unrestricted flow of fluid through the valve when seifted from one axial position, wherein the flow is restricted, to the alternate axial position without changing its rotary position in the bore.

3,618,634
HYDRAULIC CONTROL VALVE WITH FLOW-SENSITIVE UNLATCHING MECHANISM
Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 5, 1970, Ser. No. 756
Int. Cl. F15b *13/01*
U.S. Cl. 137—624.27 **13 Claims**



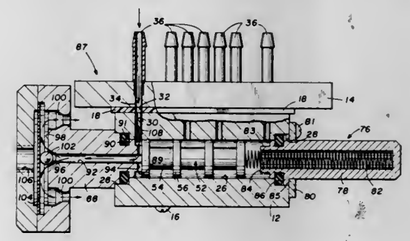
A hydraulic control valve for use in a fluid pressure system that operates a pressure-actuated cylinder, the valve including a detent latching mechanism for holding the control valve in position during a power stroke of the cylinder, and a flow-sensitive valve mechanism effective to prevent the operation of the latching mechanism until the cylinder has completed its stroke. The detent mechanism is unlatched by a fluid-pressure-responsive piston and the flow-sensitive valve mechanism limits the application of pressure to this piston until the flow of working fluid has ceased.

3,618,635
VALVE AND CONTROL
Alton K. Allen, 11 Flower Lane, Kings Point, N.Y.
Filed June 1, 1970, Ser. No. 42,241
Int. Cl. F16k *11/02, 39/04*
U.S. Cl. 137—625.2 **23 Claims**



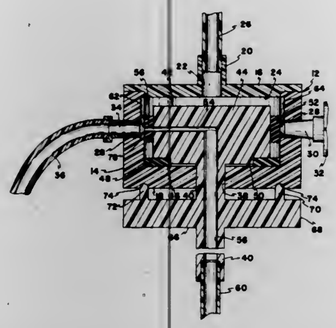
A mechanically operated snap-action valve which is capable of functionally replacing a solenoid-controlled valve and of rapidly and precisely applying a source of air under pressure to a wide variety of pneumatic devices. The valve includes improved internal sealing arrangements and snap-action actuating mechanism responsive to actuating forces applied either manually or mechanically which actuating forces are of a relatively low order yet are capable of transferring a wide range of systems pressures with a high order of reliability and repeatability.

3,618,636
PNEUMATIC LOGIC VALVE
Charles J. Grimland, Garland, and Peter C. Huff, Dallas, both of Tex., assignors to Dynamco Inc., Dallas, Tex.
Filed Mar. 26, 1969, Ser. No. 810,746
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.6 **8 Claims**



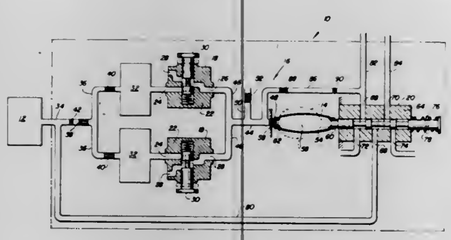
A pneumatic logic valve including a cylinder that is closed by end caps and a valve spool mounted in the cylinder for movement between the end caps. The spool is driven by compressed air that enters the cylinder through passageways in the end caps. Reduced diameter sections of the spool interconnect different pairs of logic holes depending on the position of the spool in the cylinder. Accessories mounted in the cylinder in place of the end caps equip the valve for visible spool position indication, spring-driven spool return and low-pressure signal spool actuation.

3,618,637
ROTARY MIXING VALVE
Louis S. Santomieri, Benicia, Calif., assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah
Filed Feb. 4, 1970, Ser. No. 8,568
Int. Cl. F16k *19/00*
U.S. Cl. 137—625.41 1 Claim



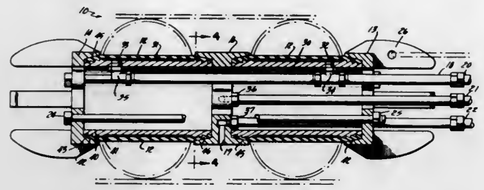
Apparatus and method for conducting any selected one or combination of a plurality of available fluids to an infusion tube, the apparatus having a hollow housing with a plurality of radially spaced fluid input sites and a single core having an effluent passageway, the core being displaceable relative to the housing to bring the passageway serially into fluid communication with the inlet sites. A bypass may be formed between the core and the interior wall of the housing at at least one input site so that one fluid may be mixed with another at the input site prior to passage of the mixed fluids into the effluent passageway.

3,618,638
PNEUMATIC CONTROL APPARATUS
John M. Yarlott, Harvard, and Clyde A. Abbott, Still River, both of Mass., assignors to Trish Energetics, Inc., Harvard, Mass.
Filed June 1, 1970, Ser. No. 42,293
Int. Cl. F16k *11/07*; F16b *19/04*; F15b *15/10*
U.S. Cl. 137—625.66 12 Claims



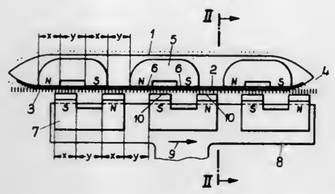
A pneumatic two-hand control apparatus for a machine or the like including a pressure-responsive actuator and a pneumatic control circuit comprising a servomechanism for operating an associated spool valve. A pair of manually operable actuating valves connected in parallel relation in the circuit between the actuator and a pressure source are arranged for substantially simultaneous operation to release pressure from a pair of pressure accumulators to produce a resultant pressure pulse of sufficient magnitude to operate the actuator. The actuator comprises an axially elongated flexible tin-walled shell defining a pressure chamber of variable volume adapted for radial expansion and axial contraction in response to increase in pressure therein.

3,618,639
PACKER FOR SEALING PIPE LEAKS
Daniel R. Daley, Orlando; Clark J. Crooker, Windermere, and Thurman Soles, Orlando, all of Fla., assignors to Cues, Inc., Orlando, Fla.
Filed Nov. 24, 1969, Ser. No. 879,256
Int. Cl. F16l *55/10*, *55/18*
U.S. Cl. 138—97 6 Claims



A packer apparatus for the internal sealing of pipe leaks is made up of easily assembled and disassembled components. A pair of casings is covered with inflatable skins and have a center ring between them and an end skid member at each end of the mechanism. Bolts connecting the two end members tighten the mechanism together in a manner to seal both ends of the inflatable skins covering the casings so that both skins may be inflated on either side of the center ring and when inside a pipe to provide a void area for rapid grouting by the passing of chemicals through the center ring. Thus the unit may be easily assembled and disassembled by the attachment and removal of the bolt between the end of the mechanism whereby parts may be easily replaced in the field and the inflatable skin does not have to have holes therein for anchoring it to the casing.

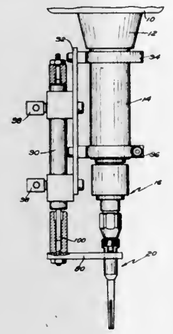
3,618,640
MAGNETIC SHUTTLE DRIVE FOR CONTINUOUSLY PROGRESSING SHEDS IN WEAVING LOOMS
Adolf Linka, Kaiserstrasse 91, 7417 Pfullingen, Germany
Filed Aug. 12, 1969, Ser. No. 849,342
Claims priority, application Germany, Aug. 16, 1968, P 17 85 147.7
Int. Cl. D03d *49/44*, *41/00*, *49/60*
U.S. Cl. 139—134 6 Claims



The shuttle is supplied with permanent magnets having uniform spacing, and alternate poles; the travelling magnetic field is formed by a carrier holding a plurality of magnets of similar size and spacing to that of the magnets on the shuttle, so that, upon movement of the carrier, the shuttle will be carried along and attractive and repelling force components between shuttle and travelling field will cancel, and force components in the direction of the movement of the shuttle along the shuttle race will be additive.

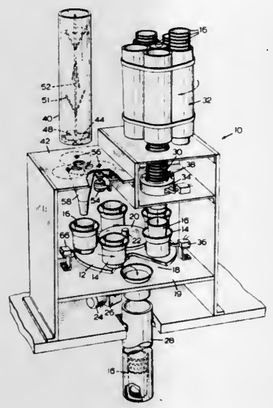
3,618,641
WIRE-WRAPPING TOOL
Daniel T. Hannify, 89 Canario Drive, Warren, R.I.
Filed Feb. 10, 1970, Ser. No. 10,262
Int. Cl. B21f *15/00*
U.S. Cl. 140—124 4 Claims

A wire-wrapping device having a bit assembly so constructed as to allow the wire to be laterally positioned directly into the radially offset groove that runs axially along the periphery of the bit. An inner sleeve surrounds the bit and has a helical slot into which is keyed a pin extending radially outward from the bit, the lower end of the inner sleeve having an axial slot open at its bottom that aligns with the offset groove of the bit allowing the wire to be laterally positioned therethrough. An outer sleeve surrounds the inner sleeve and also has an axial slot open at its bottom and aligned with the groove in the bit. The outer sleeve is



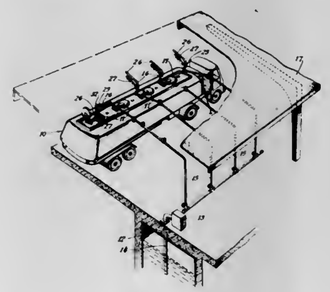
restrained from rotational and axial movement. The inner sleeve is moved axially upward by the drive fork after the wire is placed in the groove. The axial movement causes the inner sleeve to rotate due to the camming action of the pin keyed in the helical slot thereby closing the groove in the bit and clamping the wire therebetween. The bit assembly may then be lowered over a terminal which extends upwardly into the terminal receiving opening of the bit and the wire wrapping device is ready to operate.

3,618,642
COFFEE-PACKAGING MACHINE
Jean-Guy Beaulieu, Boucherville, Quebec, Canada, assignor to General Foods Limited, Toronto, Ontario, Canada
Filed June 8, 1970, Ser. No. 44,439
Claims priority, application Canada, June 9, 1969, 053,755
Int. Cl. B65b *43/44*
U.S. Cl. 141—1 10 Claims



This invention relates to the packaging of granular material, such as coffee, in the bottom of a series of stacked cups and has special use in the dispensing of coffee into cups in this fashion for the subsequent making of a coffee beverage. The machine consists of a table and a jig for receiving the cups overlying the table. The cups are dropped into the jig and the jig moves the cups across the surface of the table and then over the edge of the table into a stacked form. As the cups move over the table, predetermined quantities of coffee are dropped into the cups so that, when they are subsequently stacked, each cup has a predetermined amount of instant coffee in the bottom. In use, one takes a cup from the stack and adds water as required to make a cup of beverage.

3,618,643
CONTAINER-FILLING APPARATUS
John A. Thomson, Havant, and James Carter, London, both of England, assignors to Burmah Oil Trading Limited, London, England
Filed Dec. 29, 1969, Ser. No. 888,317
Claims priority, application Great Britain, Dec. 30, 1968, 61,676/68
Int. Cl. B65b *1/30*, *3/28*; B67d *5/372*
U.S. Cl. 141—198 18 Claims

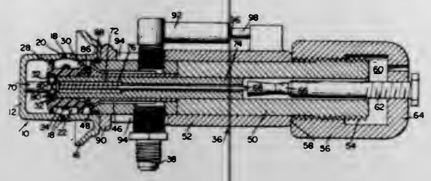


A loading bay for filling the compartments of a vehicle with liquid fuel has a loading arm for each tank compartment. Each loading arm includes a nozzle and a solenoid operated shutoff valve for controlling the flow of liquid fuel through the nozzle, and is associated with a corresponding overfill protection device which is arranged to operate the shutoff device to prevent flow of liquid fuel through the nozzle when the level of liquid in the corresponding tank compartment reaches a predetermined maximum level. The overfill protection device has a normally open electric switch in series with a normally closed pressure operated electric switch and another normally open electric switch mounted on the loading arm. The normally closed pressure operated switch is positioned at one end of a tube which depends into the tank compartment with the other end open and lowermost when the overfill protection device is mounted on the tank vehicle during filling of the tank compartment and the two normally open switches are closed when the loading arm and the associated overfill protection device are positioned for a filling operation. The arrangement is such that liquid fuel is supplied to the tank compartment through the nozzle only when all three switches are closed and the action of liquid fuel in the tank compartment rising to the predetermined maximum level increases the pressure in the tube until the normally closed pressure operated switch is opened. The electric circuits including the switches of each overfill protection device and controlling the operation of the corresponding solenoid-operated shutoff valves are connected electrically in parallel so that operation of one overfill protection device to prevent the supply of further liquid fuel to the corresponding tank compartment has no influence on the supply of liquid fuel to the other tank compartments.

3,618,644
RECIPROCAL VALVE AND ACTUATOR
Frederick G. J. Grise, West Brookfield, Mass., assignor to Novelty Tool Company, Inc., Spencer, Mass.
Filed Feb. 16, 1970, Ser. No. 11,582
Int. Cl. F25b *45/00*
U.S. Cl. 141—348 6 Claims

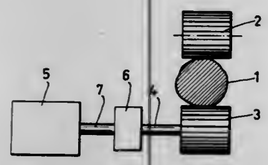
A balanced reciprocal valve comprising a one-piece, e.g., plastic member in the form of a hollow open-ended barrel

having an annular outstanding seal at each end thereof, this valve member being adapted to be placed in a charging cap or thimble having openings for passage of fluid material, and



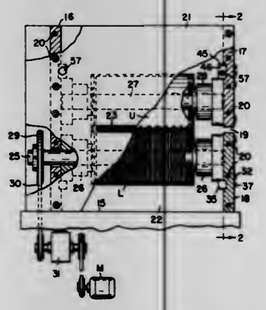
a tool for placing the valve member in closed position wherein the openings in the cap are between the two seals, and selectively in open position so that the openings are clear of the valve member for passage of fluid in either direction.

3,618,645
ARRANGEMENT AT FEEDING TREE TRUNKS FOR TRIMMING BY SHEARING
Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabrik AB, Alfta, Sweden
Filed Oct. 8, 1969, Ser. No. 864,808
Claims priority, application Sweden, Oct. 10, 1968, 13668/68
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z **2 Claims**



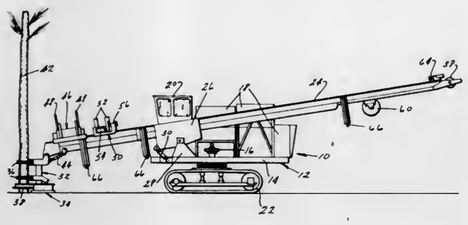
Device for feeding tree trunks for delimbing including a set of feed rollers, a constant speed drive motor, and a torque converter interposed between the motor and the feed rollers.

3,618,646
MEANS FOR PRESSURE-CONDITIONING WOOD VENEER FOR APPLICATION TO CONTOURED CORES
Raymond H. Lewis, Fort Lauderdale, Fla., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif. Division of Ser. No. 677,495, Oct. 9, 1967, Pat. No. 3,541,592.
Filed July 10, 1970, Ser. No. 53,790
Int. Cl. B27d *3/00*
U.S. Cl. 144—282 **7 Claims**



Wood veneer to be bent is subjected initially, along closely spaced lines parallel to its grain, to pressures of many tons p.s.i. which disrupt its fibrous structure. The special mechanism for this purpose embodies a pair of rollers, one being circumferentially scored to impress relatively deep score lines in one face of a veneer strip which is fed between the rollers when rotated. The bearings for these rollers are supported in upstanding walls of a framework to be rested firmly upon or against extended areas of horizontal faces thereof whereby to be adequately braced against the thrust forces proceeding from the rollers when pressure engaging the veneer strips passed between them. The upstanding frame walls are spaced apart sufficiently to successively accommodate between them many veneer strips of normal widths. For accommodation of wider strips, however, one frame wall is made of two sections, one above the other with a horizontal gap therebetween through which wider veneer strips may be extended to lie in part exteriorly of the frame and beyond the proximate ends of the pressure rollers. This operation of pressure conditioning may be applied to a relatively narrow area of each strip along one edge portion thereof, or to wider areas of the strip if the latter be reversed and subjected to a second pass between the rollers. The frame so provided in one wall with a horizontal gap is so constructed and braced as to retain adequate strength for support of the two rollers, one below and the other above the gap, that its capacity for application of very high pressures to the veneer strip is assured.

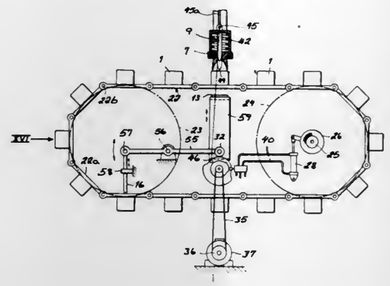
3,618,647
TREE HARVESTER
Virgil C. Stuart, Jr., West Palm Beach, Fla., assignor to Owens-Illinois, Inc.
Filed Nov. 19, 1969, Ser. No. 877,937
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC **5 Claims**



A novel and improved tree-harvesting method and apparatus adapted to cut, delimb, top, transport and deposit a plurality of trees in a stack at a desired collection point. The tree harvester features a horizontally oriented mast which is mounted on a mobile vehicle. A butt shear and felling grapple are pivotally mounted at one end of the mast and are adapted to grasp and sever a standing tree and pivot it to a substantially horizontal position overlying the mast where it is grasped and securely held by a transfer grapple. A combination delimber and top shear is mounted for longitudinal movement on the top of the mast and is adapted to be driven along the tree to strip all limbs from the tree and also to remove the top portion of the tree at either a predetermined length or diameter. After the tree has been delimbed and topped, it is dropped by the transfer grapple into collection arms positioned at intervals along the mast and adapted to hold a large number of delimbed and topped trees to be transported by the tree harvester to a collection point where the trees are deposited in a stack.

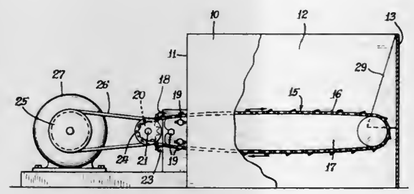
3,618,648
APPARATUS FOR PITTING PULPY FRUITS AND, MORE PARTICULARLY, PRUNES
Jean-Paul A. Becq, Pau, France, assignor to Societe anonyme dite, Societe des Etablissements Fordimit, Basses-Pyrenees, France
Filed May 14, 1969, Ser. No. 824,579
Claims priority, application France, May 17, 1968, 152,238
Mar. 19, 1969, 6,907,847
Int. Cl. A23n *3/04*
U.S. Cl. 146—17 A **17 Claims**

An apparatus for the depitting of pulpy fruit especially prunes wherein a multiplicity of cup-shaped dies each having a relatively wide mouth and a narrow aperture opposite the mouth and defined by a resilient membrane to pass the pit or stone. The cups, which have interior cavities conforming to surfaces of revolution, receive an axially displaceable plunger



which pierces the fruit in the cup and drive the pit or stone out through the narrow opening. A membrane below the opening has resilient walls which permit the pit to be forced therethrough by the plunger but retain the meat of the fruit in the cup. Means is provided to reshape the depitted fruit.

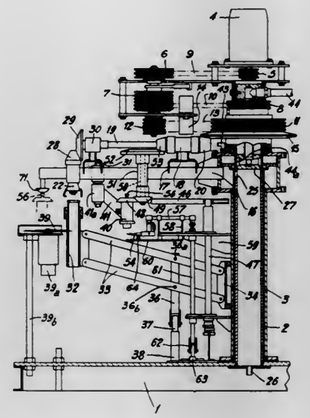
3,618,649
HAY BALE CUTTER
Edward L. Benno, Route 1, Box 198, Grayslake, Ill.
Filed Feb. 26, 1970, Ser. No. 14,534
Int. Cl. A01f *29/00*
U.S. Cl. 146—70.1 **4 Claims**



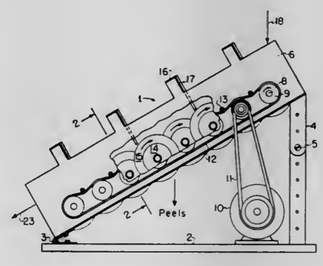
A hay bale slicing machine comprising spaced, endless cutters mounted so as to extend into a hopper in cantilevered fashion, an anticlogging deflector disposed between said cutters and at one end thereof.

3,618,650
APPARATUS FOR PREPARING THE RECEPTACLES AND FRUITS OF BRACTATED PLANTS, MORE PARTICULARLY ARTICHOKES
Jacques Francois Robert Prouhet, Le Clayes, Bois, Yvelines; Charles Gustave Amicel, Carrieres, Seine, Yvelines; Michel Jules Jacquot, Beynes, Yvelines; Pierre Baptistal, Paris, and Roger Buvelot, Paris, all of France, assignors to Societe D'Interet Collectif Agricole March De Vente Aux Encheres Du Nord-Finistere, Kerisnel Saint-Pol-de-Leon, Finistere-Nord, France
Filed July 23, 1969, Ser. No. 844,143
Claims priority, application France, July 26, 1968, 160,741, May 23, 1969, 6,916,926
Int. Cl. A23n *15/04*
U.S. Cl. 146—81 **23 Claims**

This invention relates to an apparatus for preparing the receptacles and fruits of bractated plants, more particularly artichoke bottoms, comprising a support for the receptacle; a blowing head for removing the leaves and the choke from the receptacle; sucker means for picking up the receptacle bottom from the support after such bottom has been cleaned by the blowing head; and machining means for removing irregularities in the shape of the bottom caused by removal of the leaves.



3,618,651
SYSTEM FOR PEELING FRUITS AND VEGETABLES
Marcus R. Hart, Concord; Robert P. Graham, El Cerrito; Charles C. Huxsoll, San Pablo, and Gerald S. Williams, Berkeley, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Nov. 3, 1969, Ser. No. 873,220
Int. Cl. A23n *7/00*
U.S. Cl. 146—226 **3 Claims**

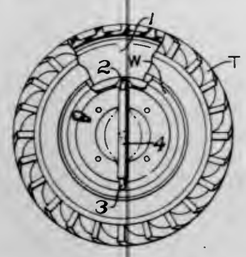


Fruits or vegetables are treated (e.g., with lye) to loosen the peel, and the loosened peel is removed by nonabrasive dry wiping with rotating discs of soft flexible rubber.

3,618,652
SHOCK ABSORBER
Kenneth D. Marshall, W. Richfield, Ohio, and John W. Melvin, Ann Arbor, Mich., assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,019
Int. Cl. B60b *9/18*
U.S. Cl. 152—5 **9 Claims**

A closed fluid-containing vessel subject to deflection in response to changes of load thereon, for example an inflatable vehicle tire, adapted to be filled with a substantially incompressible fluid, is rendered capable of absorbing impacts by having a distensible elastomeric tube mounted externally

of the member and communicating with the interior thereof. The tube wall bulges to accommodate fluid displaced from



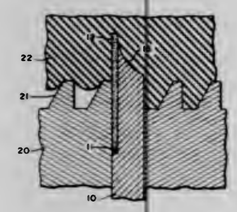
the vessel upon deflection of the latter without substantial increase of fluid pressure above a preselected value.

3,618,653
TRACTION CHAIN DEVICE
Peter M. Stellas, 617 3rd Ave., W., Seattle, Wash.
Filed Nov. 10, 1969, Ser. No. 875,449
Int. Cl. B60c *27/10*
U.S. Cl. 152—213 A **9 Claims**



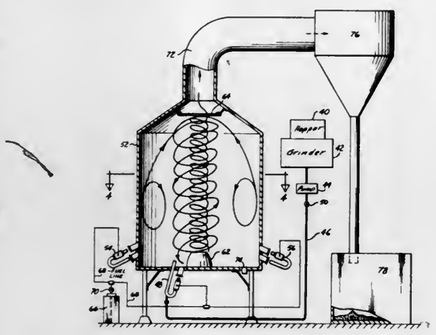
An apparatus for applying and securing a vehicle traction chain is described. A first substantially U-shaped clip member constructed of a material having spring-type characteristics is adapted to engage each of the sidewalls of an automobile tire and is connected to one end of a traction chain. As the vehicle tire is rotated, the traction chain apparatus is emplaced into operative position about the tire. When the tire has rotated approximately 360°, a second substantially U-shaped member attached to the second end of the traction chain is caused to engage pivot studs outstanding from the first U-shaped member. The second U-shaped member is then rotated about the studs into operative position against the tire tread and secured by an overcenter latch arrangement and locking means.

3,618,654
HIGH-SPEED CUTTING BLADE
Forrest Clayton Meserve, North Andover, Mass., assignor to Bandag Incorporated, Muscatine, Iowa
Filed Aug. 28, 1969, Ser. No. 853,768
Int. Cl. B29h *21/08*; **B26d** *1/00*, *9/00*
U.S. Cl. 157—13 **2 Claims**



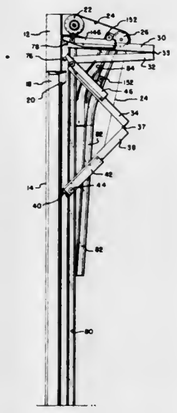
A blade for cutting plastic material such as tire stock, having a body of steel with a flat back surface with a segmental channel in one edge containing a ring of tungsten carbide or the like ground flush with the steel body on one side and projecting outwardly so that it is exposed on both sides and terminates in a circular cutting edge.

3,618,655
SPRAY DRYING APPARATUS
Raymond M. Lockwood, Los Altos, Calif., assignor to Marine Technology, Inc., Beverly Hills, Calif.
Continuation of application Ser. No. 574,202, Aug. 22, 1966, now abandoned. This application Aug. 5, 1969, Ser. No. 849,589
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 E **7 Claims**



The apparatus and method of this invention pertains to the atomizing of a paste or slurry, and the drying thereof to produce a meal or powder. A paste or slurry of material to be dried is introduced into a pipe, such as the exhaust pipe of a pulse jet engine, in which the cycling reversing flow of gases atomizes the paste or slurry and rapidly dries the resulting particles. The partly dried particles are then dispensed into a tank having vortices of gas at a substantially lower temperature than that found in the pulse jet exhaust.

3,618,656
FOLDING DOOR APPARATUS
John C. Young, deceased, late of Harrisburg, Pa. (by Pamela A. Young, executrix), assignor to Compact Closures, Inc., Harrisburg, Pa.
Filed Dec. 8, 1969, Ser. No. 883,208
Int. Cl. E05f *11/54*
U.S. Cl. 160—189 **8 Claims**



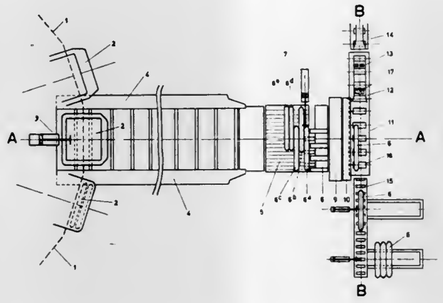
Folding door apparatus including at least four foldable panels hinged together in accordion fashion for vertical

movement relative to the opening of a structure such as a garage; each pair of door panels have roller mountings disposed in vertically arranged trackways on each side of the opening.

ERRATUM
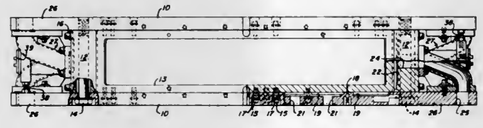
For Class 164—148 see:
Patent No. 3,618,668

3,618,657
REMOVAL OF COPPER INGOTS
Edouard De Bie, Antwerpen, Belgium, assignor to N. V. Metallurgie Hoboken S.A., Brussels, Belgium
Filed Dec. 12, 1968, Ser. No. 783,343
Claims priority, application Belgium, Dec. 14, 1967, 52099
Int. Cl. G01g *13/00*; **B22d** *45/00*, *47/00*; **B65g** *19/00*
U.S. Cl. 164—269 **12 Claims**



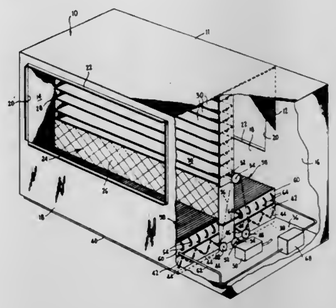
Equipment for clearing away copper ingots which includes a means adapted to both separate the ingots from each other and to push them one by one upon a conveying means. The equipment may also include a weighing machine which works independently both of the casting machine and of the conveying means and weighs the ingots before they have been placed upon the conveying means. Also the equipment may include a chain elevator which is used for separating the ingots from each other, an air piston, and an auxiliary conveying means for conveying faulty ingots.

3,618,658
CONTINUOUS-CASTING MOLD
Francis Gallucci, North Huntingdon Township, Westmoreland Co., Pa., assignor to United States Steel Corporation
Filed Oct. 6, 1969, Ser. No. 863,878
Int. Cl. B22d *11/02*
U.S. Cl. 164—281 **5 Claims**



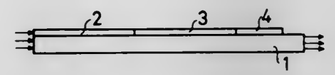
A mold for continuous-casting of metals in which the copper liner can be one-piece construction or four-piece construction used interchangeably. Both forms of liners have their own advantages. The invention enables either form to be used in the same mold.

3,618,659
ENVIRONMENTAL CONDITIONING SYSTEM AND METHOD
Davis I. Rawal, 105 White St., Waterbury, Conn.
Filed Apr. 6, 1970, Ser. No. 25,834
Int. Cl. F28
U.S. Cl. 165—1 **10 Claims**



An environmental conditioning method removes stale air and replaces it, at least in part, with fresh air at volumetric rates that are substantially the same. The stale air from the room is delivered to a return damper with a kinetic energy level of substantially zero, and the volumetric rate of airflow from and to the room is substantially independent of the volume of air removed and replaced. A modular damper unit may be employed, which provides heat exchangers for conservation of heat energy, and the system provided is readily adapted for centralized, overall environmental conditioning by the incorporation of heating, cooling, cleaning and humidity control means therein.

3,618,660
HEAT TRANSFER DEVICE
Claus Busse, Laveno, Italy, assignor to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg
Filed Nov. 21, 1969, Ser. No. 878,669
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **10 Claims**

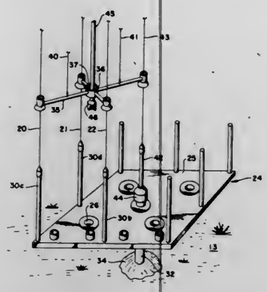


A heat pipe of the kind having a heat-carrying vehicle such as a metal which circulates inside a closed pipe with a cycle of evaporation and condensation is provided with one or more auxiliary heat pipes for use, in starting up from cold, to melt the vehicle of the main heat pipe.

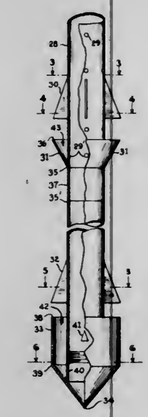
3,618,661
APPARATUS AND METHOD FOR DRILLING AND PRODUCING MULTIPLE UNDERWATER WELLS
Charles P. Peterman, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Aug. 15, 1969, Ser. No. 850,463
Int. Cl. E21b *7/12*
U.S. Cl. 166—.5 **11 Claims**

Apparatus and method for drilling and producing multiple underwater wells wherein drilling and production template means is remotely lowered and installed at an underwater location. The template means comprises a plate having a plurality of holes therein through which underwater well drilling operations may be carried out. A plurality of guideposts on

the template means and guidelines associated therewith are utilized to lower into position the various drilling and production components operatively associated with each of the wells.



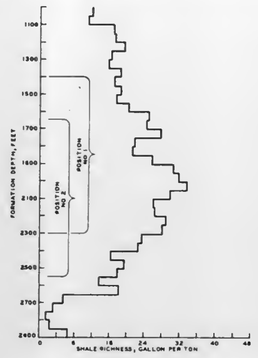
3,618,662
GAS ANCHORS
Harry G. Cambern, 1715 Beech, Pampa, Tex.
Filed Nov. 18, 1970, Ser. No. 90,508
Int. Cl. F21b *43/00*
U.S. Cl. 166—105.5 **6 Claims**



A gas anchor in combination with a downhole pump. The anchor has an upper terminal end connected to a pump intake and a lower terminal end in the form of an inverted cone from which there upwardly depends a skirt member which forms an annulus therebetween. An inverted frustum of a cone circumferentially encloses a marginal portion of the tubular body and forms a conical annulus therebetween with the second annulus being spaced apart from the first annulus by guide means. Apertures placed in communication with each annulus provides a liquid flow path to the pump to enable gas to be separated from liquid as flow occurs into the tubular body.

3,618,663
SHALE OIL PRODUCTION
Riley B. Needham, Bartlesville, Okla., assignor to Phillip Petroleum Company
Filed May 1, 1969, Ser. No. 820,777
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—247 **5 Claims**

A nuclear device is positioned in a shale oil formation and detonated to produce a chimney of fractured oil shale with lean shale at the bottom and rich shale near the top of the chimney and producing shale oil by retorting with a heated gas, preferably at a low temperature for a prolonged period



followed with retorting at a higher temperature to yield shale oil.

3,618,664
OIL RECOVERY METHOD USING AN AQUEOUS FLUID DRIVE
Robert R. Harvey, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 16, 1969, Ser. No. 825,403
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **10 Claims**

Oil is produced by fluid drive using a slug in advance of the drive which contains a suspension of minute solids such as carbon black and at least one polyethylene oxide-type surfactant plus a polysaccharide-type viscosifier.

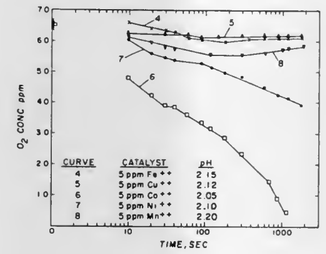
3,618,665
STIMULATION AND SELECTIVE PLUGGING OF PETROLEUM RESERVOIRS CONTAINING KAOLINITE
Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company
Filed Nov. 26, 1969, Ser. No. 880,390
Int. Cl. E21b *43/27*
U.S. Cl. 166—294 **7 Claims**

Fractures or highly permeable streaks in a reservoir containing kaolinite are selectively plugged by the introduction of a solution containing a metallic salt of an organic acid. The solution attacks the kaolinite containing particles of the fractures or permeable streaks and decomposes the clay mineral bonds of the rock matrix. The decomposition process causes the walls of the pores to disintegrate and form individual grains of fine clay particles. Subsequent addition of treatment solution transposes the disintegrated particles and lodges them in the exposed pores of the fractures or permeable streaks. Further flow through the treated area is restricted and the reservoir is selectively plugged. Less permeable areas of the reservoir are somewhat stimulated by the kaolinite breakup with the dislodged clay particles from those areas seeking the more permeable channels in the reservoir and further plugging them. The reservoir is thereby both selectively plugged and stimulated by the solution treatment and the reservoir performance is enhanced.

3,618,666
STEAM INJECTION OF OIL FORMATIONS
Alvin E. Sayers, Lloydminster, Alberta, Canada, assignor to Petrolite Corporation, Wilmington, Del.
Filed Jan. 12, 1970, Ser. No. 2,351
Int. Cl. E21b *43/20*
U.S. Cl. 166—303 **2 Claims**

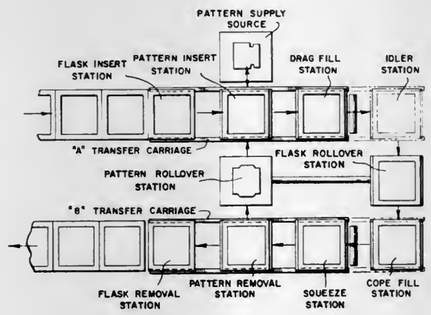
In the process of stimulating the production of petroleum from underground formations by treating the formation with steam, including steam flooding and the "huff and puff" steam soak techniques, the improvement which is characterized by the use of organosilicones in conjunction with steam.

3,618,667
REMOVAL OF DISSOLVED OXYGEN FROM WATER
Earl S. Snavely, Jr., Arlington, Tex., assignor to Mobil Oil Corporation
Filed Mar. 6, 1970, Ser. No. 17,279
Int. Cl. C02b *1/18*; E21b *43/22*
U.S. Cl. 166—310 **13 Claims**



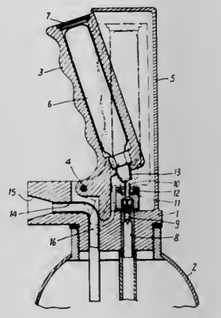
This specification discloses a method of treating water which contains hydrogen sulfide and oxygen dissolved therein to retard the corrosion of metal in contact with the water. A transition metal is added to the water which transition metal catalyzes the reaction between hydrogen sulfide and oxygen, thereby removing the oxygen from the water.

3,618,668
APPARATUS FOR AUTOMATIC MATCHPLATE MOLDING
George T. Dupre', 417 South Elm, Palatine, Ill., and Thomas M. De Marco, 3359 North Austin Ave., Chicago, Ill.
Filed May 18, 1970, Ser. No. 38,166
Int. Cl. B22c *25/00*
U.S. Cl. 164—148 **22 Claims**



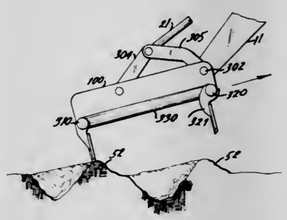
Method for continuous preparation of molds from mold flasks, matchplate mold patterns and mold-forming material; wherein flasks are assembled with flask drag section atop pattern and flask cope section, the drag section is filled with mold-forming material, the entire flask is inverted, the cope section is filled, and the pattern is removed, inverted and made available for use with other flask sections. Multistation apparatus for mass production according to the method. Jolt apparatus employing double-shaft contrarotating motors as a source of mechanical agitation for compacting mold-forming material in flask.

3,618,669
APPARATUS FOR CONTROLLING THE FLOW OF EXTINGUISHING MEDIUM FROM A FIRE EXTINGUISHER
Frederic Sachs, Neuilly-sur-Seine, France, assignor to Compagnie Centrale Sicli Societe Anonyme, Le Blanc-Mesnil, France
Filed Jan. 9, 1970, Ser. No. 1,640
Claims priority, application France, Feb. 7, 1969, 6902832
Int. Cl. A62c *11/00*
U.S. Cl. 169—31 **3 Claims**



The head of the fire extinguisher carries a pivoting handle enclosing a sparklet adapted to be shifted first into an operative position for which the sparklet engages a hollow striker opening with a container enclosing the extinguishing medium. At the same time a projection on said handle crushes the yielding pipe connecting the container with the projecting nozzle. This subjects the container to the pressure of the sparklet gas and any further rocking of the sparklet in the opposite direction releases the yielding pipe so as to allow the projection of the extinguishing medium at the desired rhythm.

3,618,670
MULTIPLE PLANT OR SHRUBBERY HOLE PRODUCING APPARATUS
Joseph F. Alberto, East Islip, N.Y., assignor to Dapa Research Corp., New York, N.Y.
Filed Oct. 17, 1968, Ser. No. 768,386
Int. Cl. A01b *35/32*
U.S. Cl. 172—60 **9 Claims**

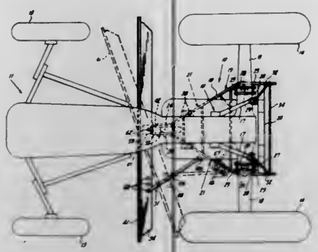


An apparatus for producing holes consisting of a transverse beam having spaced toothed-sections therealong and mechanically actuated control means therefor.

3,618,671
GRADER ATTACHMENT FOR A TRACTOR
Alfred Chantland, Humboldt, Iowa
Filed Nov. 5, 1969, Ser. No. 874,156
Int. Cl. A01b *59/04*; E02f *3/12*
U.S. Cl. 172—297 **4 Claims**

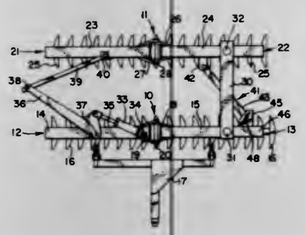
The grader blade of the attachment is located between the tractor front and rear wheels and is carried on a frame sup-

ported on the tractor rear axle for pivotal up-and-down movement by the tractor power lift arms. The grader blade is



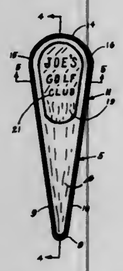
adjustably mounted on the frame for adjustable rotational movements about a vertical axis and a horizontal axis that extends longitudinally of the tractor.

3,618,672
MECHANISM FOR POSITIONING REAR GANG OF OFFSET DISK HARROW
Jerome L. Fueslein, Linden, and Walter Mayer, Stockton, both of Calif., assignors to International Harvester Company, Chicago, Ill.
Filed Dec. 29, 1969, Ser. No. 888,686
Int. Cl. A01b *23/04, 15/14*
U.S. Cl. 172—320 **4 Claims**



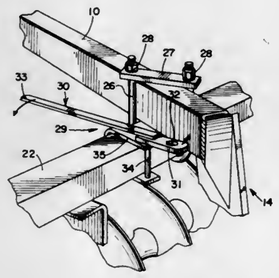
An agricultural implement having front and rear gangs of earth-working tools being interconnected in such a manner that they may easily be adjusted from a transport to a field-operating position and also laterally adjusted with respect to each other to provide the proper tool relationship between said front and rear gangs of earth-working tools for various field-operating conditions.

3,618,673
TOOL FOR REPAIRING DIVOTS MADE BY GOLF BALLS
Fred C. Gossett, 1437 Cleveland Road, Glendale, Calif.
Filed Nov. 18, 1968, Ser. No. 776,531
Int. Cl. A01b *1/00*
U.S. Cl. 172—371 **2 Claims**



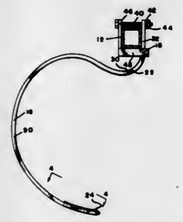
A thermoplastic tool for digging into the turf of a golf course to repair a depression in the earth made by a golf ball. The tool has a V-shaped blade portion with a radiused puncture point and an integral handle with a transverse manipulating rib and a depressed area for advertising material in the handle.

3,618,674
TOOL FOR ADJUSTING DISK HARROW GANGS
Robert D. Woodworth, Clarendon Hills, and Eugen J. Birkenbach, Park Ridge, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed July 17, 1970, Ser. No. 55,639
Int. Cl. A01b *65/02, 63/26*
U.S. Cl. 172—584 **5 Claims**



In an agricultural implement such as a disk, harrow, a tool for adjusting the front and rear disk gangs and for securing said disk gangs in the adjusted position.

3,618,675
SPRING TOOTH ASSEMBLY
Michael C. Hornung, Spearville, Kans., assignor to American Products, Inc., Spearville, Kans.
Continuation of application Ser. No. 524,128, Feb. 1, 1966. This application May 7, 1969, Ser. No. 824,742
Int. Cl. A01b *23/02*
U.S. Cl. 172—707 **7 Claims**

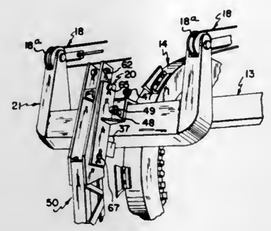


A soil-working agricultural spring tooth having a flat, vertical upper end, and acute-angled tip at the lower end terminating in a vertical plane rearward of the upper end, a generally horizontal convoluted connector section depending from the upper end and extending rearwardly, and an arcuate working section of reversed curvature extending from the tip to a substantially horizontal transition section connecting to the connector section, the transition section being in the same general horizontal plane as the point of transition between the upper end and the connector section.

3,618,676
CRUMBING MECHANISM FOR EXCAVATING MACHINES OR THE LIKE
Vincent S. Penote, Shaker Heights, and Melvin K. Rear, Chesterland, both of Ohio, assignors to The Cleveland Trencher Company, Cleveland, Ohio
Filed Nov. 19, 1968, Ser. No. 776,892
Int. Cl. E02f *5/14;* **E02f** *5/08*
U.S. Cl. 172—743 **22 Claims**

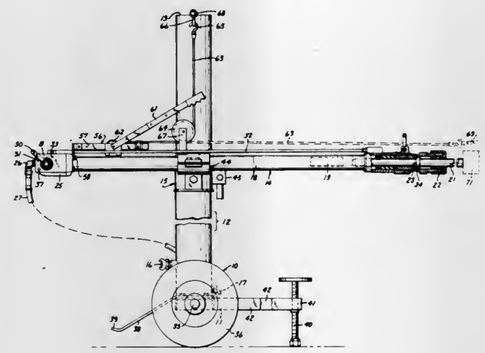
A crumbing mechanism for excavating machines including a mounting assembly for detachable connection to the boom

structure of the machine and a crumbing shoe having a boxlike and reinforced bridge construction detachably connected by the mounting assembly to the boom for excavating operations rearwardly of the digging unit of the machine. The mounting assembly includes a selectively adjustable and lockable arrangement for laterally orienting and locking the



crumbing shoe in its active position in aligned following relation rearwardly of the machine digging unit, and the mounting assembly and crumbing shoe conjunctively include a selectively adjustable and lockable arrangement for selectively raising or lowering the crumbing shoe into and out of active position.

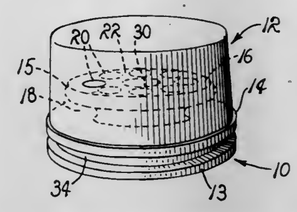
3,618,677
APPARATUS FOR DRIVING FORGE HAMMER KEYS
Nello A. Filippini, Sr., Wilmington, N.C., assignor to Chicago Pneumatic Tool Company, New York, N.Y.
Filed June 1, 1970, Ser. No. 42,124
Int. Cl. B23p *19/02;* **B25d** *17/30*
U.S. Cl. 173—23 **10 Claims**



An apparatus for driving forge hammer keys, having a two-wheeled carriage upon which is fixed a cylinder serving as a reservoir for a pneumatic hammer slidably supported upon the cylinder. A winch mounted upon the hammer is selectively operable to effect raising and lowering of the hammer to a proper operating level relative to the work, or to draw and hold a drift end of the hammer into pressed engagement with the work so that the drift may follow the work as the latter is driven. The carriage provides both mobility and support for the apparatus. Leveling legs are provided on the carriage to effect angular positioning of the apparatus relative to the work.

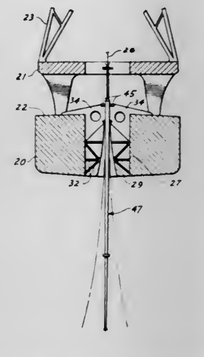
3,618,678
IMPACT HEAD FOR IMPACT TOOLS
Arthur J. Smith, P. O. Box 3274, Visalia, Calif.
Filed June 19, 1970, Ser. No. 47,768
Int. Cl. B25d *9/00;* **E21b** *1/00*
U.S. Cl. 173—131 **11 Claims**

An impact head particularly suited for use with hand-held pneumatically operated impact tools, characterized by a metallic core having a base portion including therein a screw-threaded, axial bore adapted for use in coupling the impact head with an impact tool, and a coaxially related distal portion including a circumscribing annular rib embedded in an impact block formed of an homogeneous mass of synthetic



resin. A particular feature of the impact head resides in an annular array of openings extended through the embedded rib in a manner such that the resin fills the openings and completely surrounds spaced segments of the rib for effectively integrating the core and the block.

3,618,679
LIMITATION OF DRILL STRING BENDING
Robert C. Crooke, Corona Del Mar, Calif., assignor to Global Marine Inc., Los Angeles, Calif.
Filed Sept. 25, 1969, Ser. No. 861,018
Int. Cl. E21b *7/12*
U.S. Cl. 175—5 **11 Claims**



A structure is described for mounting on a drilling vessel for drilling of submarine wells and the like. A guide horn beneath the conventional drill rig on the ship is in the form of a portion of the surface of a torus. The drill string passes through the guide horn so that any angular misalignment between the drill string at the sea floor and the drill string at the ship due to the ship's roll or the like, is distributed along the surface of the guide horn as a gradual curve over a sufficient length of the drill string that the maximum fiber stress in the drill string is less than the fatigue limit of the drill string. The guide horn has a small entrance aperture at its upper end adjacent the drill rig and flares in a circular arc to an enlarged exit aperture adjacent the bottom of the ship.

For drilling in deep water, a portion of the guide horn is replaced with an elongated tubular member that surrounds the drill string and is fixed to the ship at its upper end as a downwardly extending cantilevered structure. The elongated tubular member has a gradually diminishing cross-sectional moment of inertia so that the drill string within the tubular member is constrained to bend in a substantially circular arc of large radius. In its more rigid portion, the elongated tubular member has a gradually tapering wall thickness. In its more flexible portion, the elongated tubular member comprises a plurality of axially aligned rings in end-to-end rela-

tion, surrounded by and substantially flexibly interconnected by a cage. The cage has longitudinally extending ribs with each rib having a gradually tapering cross section. The tubular member is compatible with the guide horn so that no structural modifications of the ship are needed for drilling in either shallow or deep water.

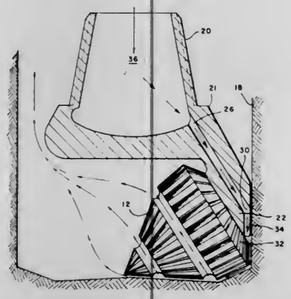
3,618,680
METHOD FOR DRILLING IN PERMAFROST
Joe D. Ellard, Lafayette, La., and Lee Bone, Richardson, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed May 15, 1970, Ser. No. 37,860
Int. Cl. E21b *21/00*
U.S. Cl. 175—17 **8 Claims**

A method for drilling a well bore through a permafrost zone and a drilling fluid for use in that method wherein the drilling fluid contains oil, limited amounts of asbestos and/or silica, a limited tolerable amount of water, and the drilling fluid is cooled before use in the drilling method.

3,618,681
WELL DRILLING AND PRODUCTION
Luther E. Bartlett, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,581
Int. Cl. E21b *7/00, 21/04*
U.S. Cl. 175—17 **17 Claims**

A method for drilling a well and for producing a well through a permafrost zone by maintaining at least a part of the well bore in the permafrost zone at a temperature of from about 14° to about 35° F.

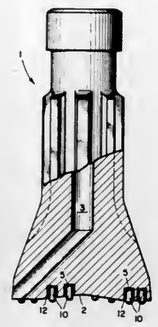
3,618,682
METHOD AND APPARATUS FOR DRILLING
John D. Bennett, Richardson, Tex., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Oct. 24, 1969, Ser. No. 869,083
Int. Cl. E21b *9/10*
U.S. Cl. 175—65 **13 Claims**



A drill bit constructed to provide the simultaneous action of bit teeth mechanically moving the formation and a hydraulic force aiding the movement which is accomplished by channeling fluid down the drill bit cone shank through passages on the face of the cone, and inwardly between the teeth which are in contact with the formation.

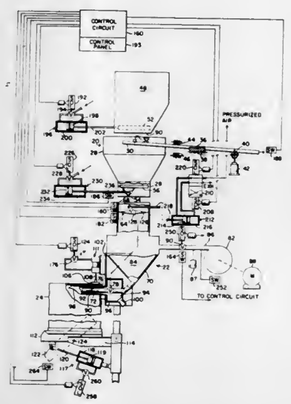
3,618,683
BUTTON BIT
Robert W. Hughes, Easton, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Dec. 16, 1968, Ser. No. 791,532
Int. Cl. E21c *13/00*
U.S. Cl. 175—410 **10 Claims**

A percussive rock drill bit of a type generally known in the art as a button bit wherein a plurality of wear-resistant metal inserts project from the working face of the drill bit. An elastomeric sleeve surrounds that portion of the sides of the insert which is embedded in the bit body. There is metal to



metal contact be between the end of the insert and the bit body for transmitting blow energy from the bit body to the insert.

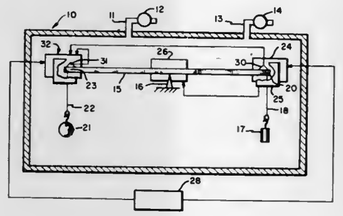
3,618,684
APPARATUS FOR FILLING BAGS WITH WEIGHED DRAFTS OF MATERIAL
Arthur J. Burke, Oakland; Benjamin Martyn, Clifton, and George C. Troost, Prospect Park, all of N.J., assignors to Howe Richardson Scale Company, Clifton, N.J.
Filed Jan. 3, 1969, Ser. No. 788,764
Int. Cl. G01g *13/24*
U.S. Cl. 177—114 **17 Claims**



A bag filling apparatus wherein charges of material are successively weighed out by a scale and dispensed into a feed tank or other suitable receptacle having a spout or nozzle on which an empty bag is mounted. The charge in the tank is selectively discharged into the spout-mounted bag by blowing the charge out of the tank with a large volume of relatively low pressure, high-velocity air. As soon as each charge is dispensed from the scale to the feed tank, the next draft of material is automatically weighed out by the scale and held in the scale until the charge in the feed tank is delivered to the bag. When this occurs, the charge of material in the scale is automatically dispensed into the feed tank, and the scale is automatically operated to weight out the next draft. A control circuit which provides the foregoing automatic operation memorizes the presence of a charge in the feed tank to prevent the charge in the scale from being dispensed before the charge in the tank is delivered to the bag. The circuit also controls operation of a valve at the inlet of the tank to seal

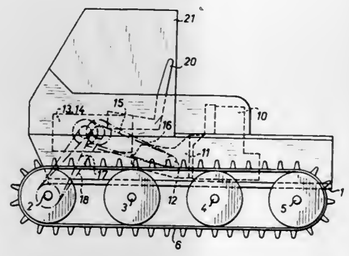
the inlet when pressurized air is admitted to the tank for dispensing the charge. This valve is held closed until the scale has completed each weighing to prevent blowback of pressurized air and consequent interference with the operation of the scale.

3,618,685
TEMPERATURE COMPENSATED ELECTROBALANCE
Owen Orlando Fiet, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Nov. 13, 1970, Ser. No. 89,313
Int. Cl. G01g *3/14*
U.S. Cl. 177—207 **18 Claims**



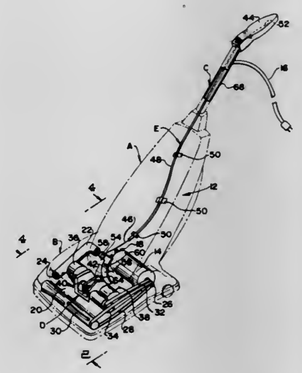
An electrobalance device is provided which includes a beam pivotally mounted at a fulcrum point and further including means for suspending a buoyant body from the beam. The beam, fulcrum and suspended body form a counterbalance scale. A change in the weight suspended from the beam will case the beam to be unbalanced. The device further includes a photoelectric circuit for detecting any such beam unbalance or beam displacement and a servosystem for applying a counterbalancing torque to the beam to reduce the beam displacement toward zero. A current or voltage is used to produce the counterbalancing torque and is therefore a measure of the change in weight producing the unbalancing effect. Means are provided for maintaining the end of the beam at substantially equal temperature so as to enhance the measuring capabilities of the electrobalancing device.

3,618,686
TRACKED VEHICLE
Paul A. Morsbach, and Klaus F. W. Leben, both of Bergedoff, Germany, assignors to Leben & Co. KG Vertrieb von Pistenpflegegeraten fur Skiabfahrten, Munich, Germany
Filed Dec. 8, 1969, Ser. No. 883,133
Claims priority, application Germany, Dec. 16, 1968, 18 14 880.6, Feb. 10, 1969, P 19 06 457.4
Int. Cl. B62d *11/10*
U.S. Cl. 180—6.7 **11 Claims**



A tracked vehicle, especially for over-snow use in mountainous terrain, particularly for preparing ski runs, is equipped with a steering system by positively driving the two endless tracks at different speeds by two intermediate gear systems controlled by the driver.

3,618,687
POWER PROPELLED SUCTION CLEANER
Melvin H. Ripple; Robert F. Dyer; Brandt F. Ziegler, and Christian D. Berger, all of North Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed July 1, 1969, Ser. No. 838,302
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 H **11 Claims**

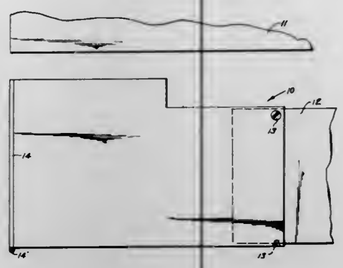


A power propelled suction cleaner includes a wheeled trolley having selectively operable torque transmitting means thereon for transmitting torque to surface engaging drive wheels. The cleaner includes a housing covering the trolley and the housing has a suction nozzle and rotatably driven agitator thereon. The cleaner also includes a handle adapted to be grasped by an operator for moving the cleaner over a surface. The housing and handle are each pivotally connected to the trolley for independent pivotal movement relative to the trolley and to one another. The handle includes manually actuatable operating means connected with the torque transmitting means for selectively engaging the torque transmitting means to transfer torque to drive wheels. Automatically operable disabling means is provided for preventing operation of the torque transmitting means by the manually actuatable operating means when the handle is placed in a predetermined pivoted position relative to the trolley. The cleaner further includes disabling means for raising the agitator out of contact with a surface being treated when the handle is placed in a predetermined pivoted position relative to the trolley. The manually actuatable operating means includes a hand grip reciprocatingly connected with the handle. The hand grip has a hollow interior which includes a cavity portion at which force transmitting means is attached. The hand grip includes a closure releasably secured thereto and closing the cavity. The closure may be removed from the hand grip while the hand grip is connected with the handle to provide exterior access to the connection for the force transmitting means.

3,618,688
BUMPER ADAPTER FOR WASTE HOSE CONNECTOR
Bernard J. Traut, 792 E. 3rd Ave., Roselle, N.J.
Filed Feb. 24, 1970, Ser. No. 13,364
Int. Cl. F16l *35/00*
U.S. Cl. 137—377 **4 Claims**

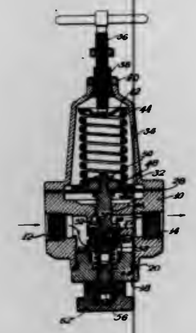
An adapter for bumpers on travel trailers. This device serves the purpose of encasing the sewer hose connector

without having to remove it from the hose. This device is of such construction so as to enlarge the end of the bumper



enough while being offset so the striking edge of the bumper will not be changed.

3,618,689
OVERRUN CONTROL AND PRESSURE REGULATOR
Dale F. German, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio
Continuation-in-part of application Ser. No. 730,340, May 20, 1968, now abandoned. This application Nov. 28, 1969, Ser. No. 880,798
Int. Cl. F16k *17/20*
U.S. Cl. 137—462 **4 Claims**

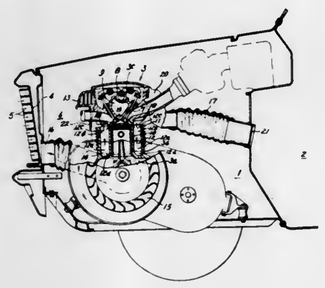


An overrun control and pressure regulator with an inlet, an outlet and a fluid flow passage therebetween. A valve seat is provided on each side of the passage to cooperate with separate valves. The valves are interconnected by means of a stem and may be adjustably spaced from one another to control fluid flow rate. The stem is mechanically connected with a spring biased diaphragm on the outlet side of the regulator. The diaphragm is biased by an adjustable spring against outlet fluid pressure to provide for fluid regulation. If pressure on the outlet side of the regulator is suddenly decreased, the valves operate as an overrun control to terminate fluid flow through the regulator. A reset bypass is provided from the inlet side to the outlet side of the regulator.

3,618,690
DAMPING AND AIR-PURGING MEANS FOR RELIEF VALVE
Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 20, 1969, Ser. No. 826,093
Int. Cl. F16k *21/10*
U.S. Cl. 137—514.7 **2 Claims**

A spring-closed relief valve in which the spring chamber receives liquid escaping past the valve to act as a damping medium, the spring chamber is provided with a check valve to permit controlled escape of liquid and purge the system in which the relief valve is used of air entrained in the liquid. The check valve comprises a plurality of passages through a cylindrical wall all opening into an annular groove circumscribing the wall and an elastic ring in the groove normally closing the passages.

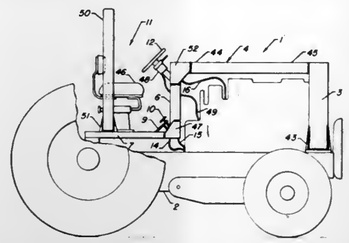
3,618,691
AIR-COOLING APPARATUS FOR AN ENGINE OF A VEHICLE
Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 9, 1969, Ser. No. 856,454
Claims priority, application Japan, Sept. 9, 1968, 43/64308, Sept. 24, 1968, 43/68844
Int. Cl. B60h *1/16*; **B60k** *11/06*
U.S. Cl. 180—54 A **6 Claims**



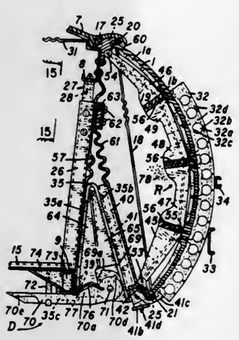
The upper cylinder head portion and lower main cylinder body portion of an engine in a vehicle are provided with respective passages connected to a common blower which forces cooling air through the passages. Preferably, the air discharged from outlets in the body portion is directed against the hotter head portion to intensify the cooling thereof, and in such case an obstruction plate is placed in front of the outlets to prevent interference with the discharged air by air flowing through the engine compartment.

3,618,692
VEHICLE CAB SUSPENSION
Larry F. Stikeleather, Hales Corners, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 4, 1969, Ser. No. 873,929
Int. Cl. B62d *33/06*
U.S. Cl. 180—89 **7 Claims**

An improved vehicle in which a structure extends upward from the front of the vehicle frame. A lateral arm is attached to the structure and extends rearward, where it is attached to the cab unit. A spring means suspends the cab above the vehicle frame.

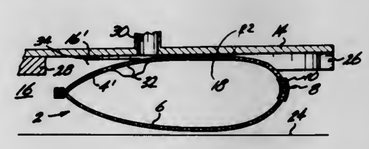


3,618,693
SAFE VEHICLE BODY
Phillip Graham, 2825 Glenmore Ave., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 675,592, Oct. 16, 1967, now Patent No. 3,495,676, which is a continuation-in-part of application Ser. No. 457,627, May 21, 1965, now Patent No. 3,356,175, which is a continuation-in-part of application Ser. No. 226,623, Sept. 27, 1962, now Patent No. 3,219,384, which is a continuation-in-part of application Ser. No. 857,187, Dec. 3, 1959, now Patent No. 3,056,627, and a continuation-in-part of 721,150, Mar. 13, 1958, now Patent No. 3,056,462;, Continuation-in-part of application Ser. No. 557,938, Jan. 9, 1956, now Patent No. 2,916,324; Continuation-in-part of application Ser. No. 557,938, Jan. 9, 1956, now Patent No. 2,916,324; Continuation-in-part of application Ser. No. 449,695, Aug. 13, 1954, Pat. No. 2,826,788. This application Jan. 19, 1970, Ser. No. 3,830
Int. Cl. B60r *21/02*
U.S. Cl. 180—93 **22 Claims**



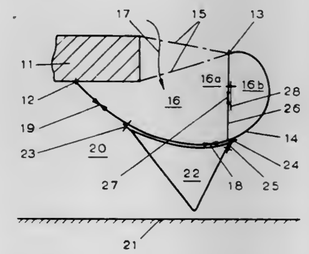
The invention relates to a safe body for a lightweight automobile that acts to allow survival of its occupants during a violent collision between the light automobile and a heavier vehicle by diverting some of the momentum force of the heavier vehicle into the roadway so it bypasses most of the lightweight automobile. The safe body also acts to severely damage the heavier vehicle. A collision impact against a bumper, causes a stop brace to pivot downwardly to the roadway so as to brace the safe vehicle against the force of the heavier vehicle, causing some force to be diverted diagonally through the stop brace into the roadway. Then the heavier vehicle pushes the light vehicle and causes the stop brace to pivot about its point of contact with the roadway, causing the impacted end of the safe vehicle to be propelled upwardly into a position higher than the position of the impacted end of the heavier vehicle, thus allowing the heavier vehicle to move forwardly by wedging under and carrying the light automobile, rather than to crush it or to push the light vehicle aside. This invention has improvements over the safe vehicle body described in my copending application Ser. No. 675,592, since the improved stop brace coacts with other portions of the safe body to safely cushion and divert collision impact forces in progressive steps.

3,618,694
HOP-FREE FLUID BEARING OF SPANDREL INFLATED FLEXIBLE TYPE
Walter A. Crowley, Seattle, Wash., assignor to Aero-Go, Inc., Seattle, Wash.
Filed Oct. 6, 1969, Ser. No. 864,093
Int. Cl. B60v *1/00*
U.S. Cl. 180—124 **13 Claims**



An improved hop-free fluid bearing is disclosed of the flexible type wherein the opposing wall of the flexible annular body is interconnected with the backing member radially outwardly from the inner peripheral edge of the body, and the fluid is discharged into the spandrellike space formed therebetween, both to inflate the body and to pressurize the plenum. The bearing is hop-free by virtue of the inflow openings of the body being grouped within the narrow circumferential segment of the space opposite the inlet, and having an aggregate open cross-sectional area undersized with respect to the inlet, so that a siphoning effect is generated in some of the openings as the fluid travels through the space, there being, however, at least one opening relatively radially offset from the inlet in a region of relatively high static pressure when the body is in a deflated condition, so that the fluid is operative to inflate the body during the initial stage of fluidization.

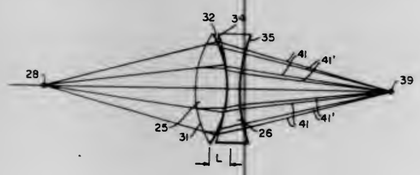
3,618,695
FLEXIBLE SKIRT ASSEMBLIES FOR AIR CUSHION VEHICLES
Raymond Leslie Wheeler, Isle of Wight, England, assignor to British Hovercraft Corporation, Limited, Yeovil, Somerset, England
Filed Oct. 13, 1969, Ser. No. 865,563
Claims priority, application Great Britain, Oct. 25, 1968, 50,675/68
Int. Cl. B60v *1/16*
U.S. Cl. 180—128 **5 Claims**



An air cushion vehicle skirt assembly of the kind including an inflated space bounded by a flexible impermeable sheet. The space is subdivided into inner and outer compartments by a substantially vertical impermeable flexible diaphragm. Nonreturn valves in the diaphragm allow pressurized air to flow from the inner compartment to the outer compartment. The vertical diaphragm acts as a tension member to prevent the sheet bounding the lower part of the space extending downwardly more than a predetermined amount and so

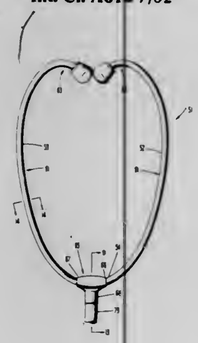
reduces skirt vibration. The pressurized air trapped in the outer compartment by the nonreturn valves provides buoyancy should the body of the vehicle tilt towards the surface of the water. The outer compartment at the forward end of the vehicle is separated from the remainder of the outer compartment by transverse impermeable diaphragms provided with nonreturn valves to permit the entry of pressurized air into that forward part. The space bounded by the flexible sheet may be subtended by a plurality of individual segments attached to the sheets.

3,618,696
ACOUSTIC LENS SYSTEM
Michael J. Hurwitz, Wilkinsburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 7, 1969, Ser. No. 822,412
Int. Cl. G01k *11/06*
U.S. Cl. 181—0.5 R **4 Claims**



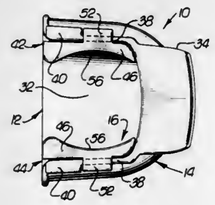
An acoustic lens system having a plurality of acoustic lens elements with the lens elements having respective thermal dispersion factors. The acoustic lens elements are fabricated in accordance with a predetermined relationship of the respective thermal dispersion factors such that the focal length of the acoustic lens system is maintained at a substantially constant value throughout a wise temperature variation. This temperature insensitive result is additionally achieved by a lens system wherein the lens elements are spaced at a precalculated distance from one another.

3,618,697
BINAURAL AND METHOD OF MAKING THE SAME
David Littmann, and Gustav F. Machlup, both of Belmont, Mass., assignors to Minnesota Mining and Manufacturing Company, Village of Maplewood, Minn.
Continuation-in-part of application Ser. No. 643,728, June 5, 1967, now abandoned. This application July 3, 1968, Ser. No. 742,404
Int. Cl. A61b *7/02*
U.S. Cl. 181—24 **22 Claims**



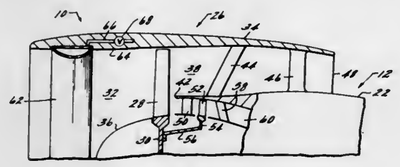
A stethoscope method of making a stethoscope binaural from an elongated resilient tubular member preferably having a symmetrical cross section comprising sliding a tubular T-shaped yoke onto the tubular member, then bending and setting the tubular member and T-shaped yoke in a jig into a substantially symmetrical U-shaped having two legs and a bight with one leg and the adjacent portion of the bight lying substantially in one plane and the other leg in its adjacent portion of the bight lying in a second plane intersecting the first at an angle of 150°. A hole is formed in the tubular member through the base of the T-shaped yoke and a tubular retaining pin is inserted. A tube is then connected to the tubular pin of the binaural. In a preferred structure of the binaural there is provided a tubular homogenous mass of plastic having a cross-sectional configuration in which the thickness of the tubular wall is greater in a direction normal to the major plane of the stethoscope and in which the binaural is provided with a pair of legs and an interconnecting bight section continuous and integral with one another with the legs resiliently urged toward a normal untensioned position by the characteristics of the plastic material. A generally T-shaped member having a channel in the crossmember of the T and a tubular stem engages the bight of the binaural and provides means for connecting a flexible tube in turn connected to a chest piece.

3,618,698
ACOUSTIC DEVICE
Barkman C. McCabe, and John R. Foss, both of Los Angeles, Calif., assignors to Burglar Blast, Inc., Los Angeles, Calif.
Filed Oct. 30, 1969, Ser. No. 872,709
Int. Cl. G10k *11/10*
U.S. Cl. 181—25 **5 Claims**



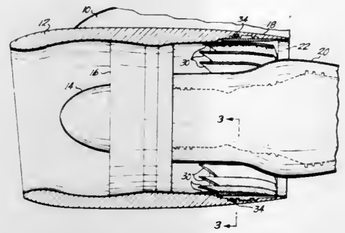
A generally cup-shaped acoustic device attachable over the human ear as a hearing aid. The device is a thin plastic shell having a forwardly opening sound-gathering portion projecting laterally outwardly from the side of the head so as to encompass the ear, a rearward sound-reflecting bowl portion, and an attachment portion adapted for releasably engaging the device over the ear.

3,618,699
MULTIPLE PURE TONE NOISE SUPPRESSION DEVICE FOR AN AIRCRAFT GAS TURBINE ENGINE
Robert C. Evans, and William R. Morgan, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Apr. 27, 1970, Ser. No. 32,197
Int. Cl. F02k *1/26;* **B64d** *33/02;* **F01n** *1/08*
U.S. Cl. 181—33 HA **6 Claims**



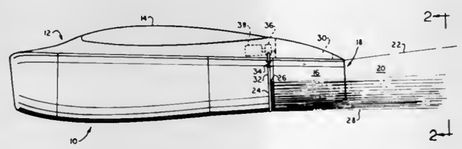
Sound suppression means for a gas turbine power plant which includes a fan positioned within a bypass duct surrounding a core engine which drives said fan. An inflatable diaphragm is positioned within an inlet opening of said bypass duct along the inner wall of the casing which surrounds the fan. Means are provided for selectively inflating said diaphragm such that inlet flow along said inner wall can be increased to sonic or near sonic velocity thereby effectively preventing propagation of multiple pure tone noise generated by said fan from said bypass duct.

3,618,700
RETRACTED NOISE SUPPRESSION SYSTEM
Edwin W. Bond, Issaquah, and Robert L. Lundeen, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed June 15, 1970, Ser. No. 46,049
Int. Cl. B64d *33/06;* **F01n** *1/08*
U.S. Cl. 181—33 HD **4 Claims**



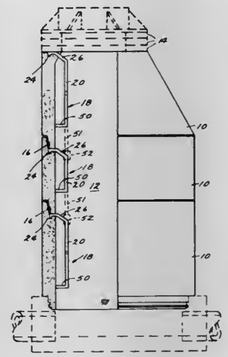
A mechanism for attenuating sound pressure levels in the fluid passageways of an aircraft jet engine comprising a plurality of pivotally attached vane members each having a pair of oppositely facing acoustically treated surfaces. The vane members are stowed for cruise flight in positions aligned along and parallel to the wall of the passageway, wherein fluid flow occurs over only one of said oppositely facing surfaces. The vanes are pivotable along axes parallel to the flow into operative noise suppression positions perpendicular to said wall in which flow occurs over each of said surfaces, thereby increasing attenuation of sound pressure levels in said passageway. The preferred embodiment involves a turbofan jet engine wherein the vane members are stowed along an outer wall in overlapping fashion and the means for pivotally moving the members comprises a power actuated ring member which pivotally displaces each vane into a radial position wherein adjacent vanes cooperate to form trapezoidal acoustic chambers to reflect and dampen sound pressure wave fronts.

3,618,701
JET NOISE-REDUCTION SYSTEM
Howard R. Macdonald, San Diego, Calif., assignor to Rohr Corporation
Filed May 22, 1969, Ser. No. 826,867
Int. Cl. B64d *33/06;* **F01n** *1/14*
U.S. Cl. 181—33 HC **6 Claims**



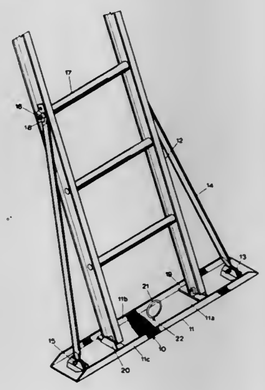
System includes producing temporary shield in form of elongate layer of cold gas extending rearwardly of engine exhaust nozzle in adjacency with lower portion of exhaust gas steam. Shield may be flat but is preferably shaped concave upward to surround lower half of exhaust stream. Shield produced by forcefully projecting a stream of pressurized evaporable fluid which evaporates to form a layer of substantial mass and thickness which reflects at least some sound waves upwardly. Cools and mixes with adjacent exhaust stream to increase mass and cool the stream to reduce sound energy. Mass of shield also absorbs and refracts some of the sound energy. Apparatus is manifold having rear facing outlet means and supplied by pressurized store of liquid or cryogenic fluid carried by nacelle. Pressure pump may be used for liquids such as water.

3,618,702
LADDER SYSTEM FOR INSTALLATION IN MANHOLES
Harold Hendrix, Jr., Dover, and Paul E. Gray, Gnadenhutten, both of Ohio, assignors to United States Concrete Pipe Company, Pittsburgh, Pa.
Filed Apr. 2, 1970, Ser. No. 25,263
Int. Cl. E06c *9/04*
U.S. Cl. 182—93 **17 Claims**



An improved ladder system provides individual ladder sections that can be installed in a manhole made up of individual casing sections. The ladder sections include anchoring elements so that they can be easily installed relative to a casing section in such a way that adjacent casing sections will lock the ladder sections in place. Also, the casing sections and ladder sections are constructed so that installation can be made without any penetration of the casing sections or of the completed assembly.

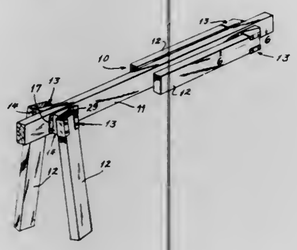
3,618,703
OUTRIGGER SUPPORTS FOR LADDERS
Reuben Wilke, Antigo, Wis.
Filed Aug. 19, 1970, Ser. No. 65,145
Int. Cl. E06c *5/36*
U.S. Cl. 182—107 **3 Claims**



A stabilizing safety attachment for ladders and having an elongate base channel extending across and beyond lower end of the legs of the legs of the ladder. The web material of the base channel is bent upwardly to provide lower attachment flanges for pivotal brace members extending upwardly and inwardly therefrom to attachment at the legs of the ladder by a threaded stud extending through a rung of the ladder. The device also has a pair of upturned retainer tabs formed from the web of the base channel for preventing

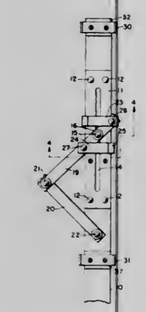
lateral movement of the legs of the ladder in the base channel.

3,618,704
FOLDING LEG BRACKET FOR SAWHORSE
James A. Smith, Sr., 128 N. Ruby Lane, Caseyville, Ill.
Filed Aug. 7, 1970, Ser. No. 61,978
Int. Cl. F16n *11/00*
U.S. Cl. 182—155 **9 Claims**



A folding leg bracket for sawhorses in which the bracket comprises a baseplate attached to the main rail of the sawhorse to provide a swivel surface directed at an angle to the axis of the rail for directing the folding action of the leg to and from a substantially parallel position alongside the rail, and a leg socket swivelly attached to the plate surface and movable between folded and angularly extended positions for determining the folded and angularly erect positions of the leg.

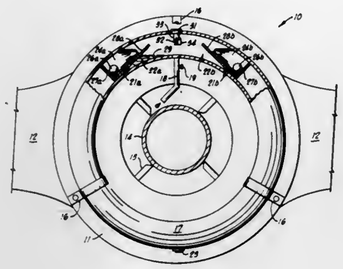
3,618,705
LADDER LEVELER
Earl Waldren, 3827 Park Ave., Covington, Ky.
Filed Sept. 23, 1970, Ser. No. 74,686
Int. Cl. E06c *7/44*
U.S. Cl. 182—204 **1 Claim**



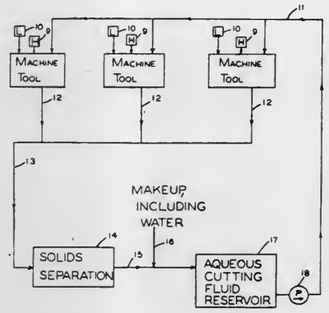
A ladder leveling device to be secured to a side rail of a ladder having a pair of adjustable arms and a self-adjustable, automatic locking device, attachable to either rail of any standard extension or regular ladder.

3,618,706
AUTOMATIC LUBRICANT DISPENSING APPARATUS
Bob J. Wall, 1804 South High, Oklahoma City, Okla.
Filed May 13, 1970, Ser. No. 36,940
Int. Cl. F16n *1/00*; **B26d** *7/08*
U.S. Cl. 184—1 R **13 Claims**

Apparatus for dispensing limited quantities of fluids, such as fluid lubricants, at predetermined times, and specifically relates to apparatus for dispensing lubricant to the dies on a pipe threading tool. A preferred embodiment of the apparatus includes a torus-shaped reservoir in which a quantity of cutting oil is placed. On the radially inward surface of the reservoir may be provided a fluid outlet which communicates with a dispensing tube mounted on the reservoir, the outlet end of the tube being positioned immediately adjacent a cutting die. Inside the reservoir, trap means are provided for moving a portion of the lubricant in an upward direction during rotation of the reservoir for discharge through the dispensing tube.

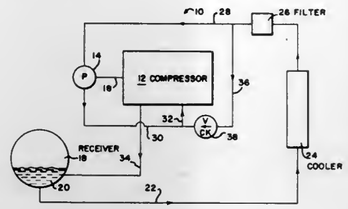


3,618,707
METHOD OF LUBRICATING MACHINE TOOLS
Clyde A. Sluhan, Perrysburg, Ohio, assignor to Metal Chemicals Incorporated, Perrysburg, Ohio
Filed June 16, 1970, Ser. No. 46,743
Int. Cl. F01m *9/02*
U.S. Cl. 184—1 E **4 Claims**



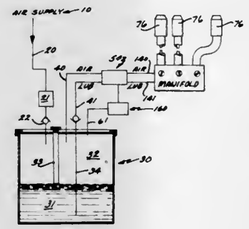
In the operation of at least one machine tool having at least one cutting tool, at least one spindle and at least one slide, a fluid lubricant is fed to the spindle and to the slide. This fluid lubricant is a water-emulsifiable composition consisting essentially of a mineral oil together with an emulsifying agent capable of causing the mineral oil to form a stable emulsion with water. At the same time, there is fed to the cutting tool an aqueous emulsion consisting essentially of water, a mineral oil and an emulsifying agent that maintains the emulsion stable. The overflow or leakage of the fluid lubricant is mingled with the overflow of the aqueous emulsion, and the commingled fluids are collected. Then solids are removed from the commingled fluids to regenerate a clean aqueous emulsion, and the composition of the regenerated aqueous emulsion is adjusted by adding ingredients thereto, to bring the regenerated aqueous emulsion to substantially the same composition as the aqueous emulsion initially fed to the cutting tool, and the regenerated aqueous emulsion is recirculated to the cutting tool.

3,618,708
COMPRESSOR COOLING AND LUBRICATING SYSTEM
Darrel D. Deines, Mocksville, N.C., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,857
Int. Cl. F16n *29/02*
U.S. Cl. 184—6.4 **4 Claims**



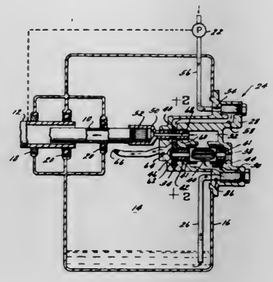
A lubrication system including a pump, compressor-driven, and thus subject to compressor speed excursions provided for supplying lubricant to the compressor, and a pressurized lubricant reservoir (which is pressurized by the compressor) also supplied for providing supplementary lubricant to the compressor. With high-speed operation of the compressor, the pump supplies the full lubricant requirement. With the compressor speed reduced, the pump accordingly delivers less than the full quantity of lubricant required by the compressor. It is at this time that the reservoir of lubricant, pressure-responsively, by way of a check-valved shunt line, automatically supplies the supplementary or makeup quantity of lubricant for the compressor.

3,618,709
PRESSURIZED LUBRICATION SYSTEM
Wallace G. Boelkins, Grand Rapids, Mich., assignor to Uni-Mist, Inc., Grand Rapids, Mich.
Filed Nov. 6, 1969, Ser. No. 874,508
Int. Cl. F16n *7/30*
U.S. Cl. 184—6.4 **11 Claims**



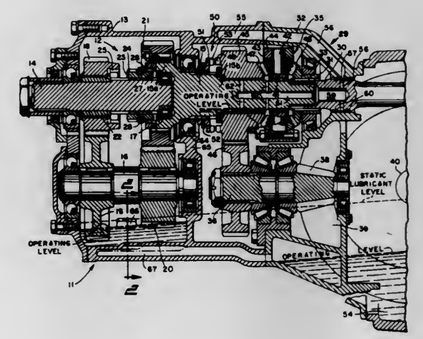
A pressurized lubrication system having a source of air under pressure coupled to a container which holds a quantity of lubricating liquid under a volume of pressurized air, with a metering valve and a check valve in the air line connecting the air source to the pressurized container, and with separate air and lubricant lines extending from the pressurized container to a manifold. The air and lubricant lines each contain a valve, both of which are controlled by a single solenoid, and the solenoid is in turn controlled by a pressure switch operatively connected with the pressurized container to activate the solenoid when the pressure in the container reaches a predetermined high level and to deactivate the solenoid when the pressure in the container reaches a lower predetermined level. The manifold at the end of the air and lubricant lines has metering valves for separately metering the rate of flow of air and lubricant through each of a plurality of coaxial tubes extending outwardly from the manifold, and each of said coaxial tubes have an applicating nozzle at the end thereof.

3,618,710
METERING AND SCAVENGE PUMP
Carroll W. DeLisse, and James I. Long, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Jan. 2, 1970, Ser. No. 162
Int. Cl. F16n *13/18*; **F01m** *1/02*
U.S. Cl. 184—6.11 **6 Claims**



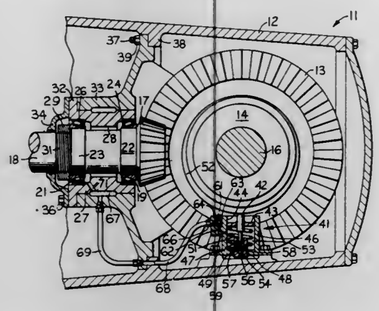
A metering and scavenge pump having scavenge pump means adapted to be driven by a first shaft of a dual-shafted gas turbine engine through speed-reducing means. The speed-reducing means is adapted to function as a pump to meter lubricant which has been pressurized by a supply pump, driven by the other shaft, into the sump cavity so as to establish a fixed relationship between lubricant flow into and out of the sump cavity and prevent undue accumulation of lubricant in the sump without oversizing the scavenge pump. An axial passageway is provided through the drive shaft of the speed-reducing means to direct scavenged lubricant internally of said first shaft.

3,618,711
LUBRICATION SYSTEM FOR A GEARED-DRIVE MECHANISM
George W. Vollmer, Chardon, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed June 8, 1970, Ser. No. 44,125
Int. Cl. F16n *7/36*; **F01m** *9/06*
U.S. Cl. 184—6.12 **11 Claims**



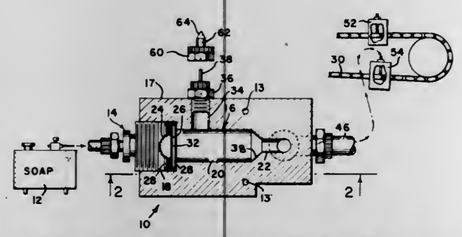
A positive lubrication system for an axle-mounted auxiliary transmission employed in conjunction with a truck axle. A conventional wiper system transfers lubricant from the axle to a power divider for a tandem axle or to a transfer case for a single axle, and a bearing located in the partition wall separating the power divider or transfer case and transmission units is utilized as a pump to deliver lubricant to the transmission. Lubricant pumped to the transmission is returned to a sump by means of core passages in the power divider/transfer case and transmission housing.

3,618,712
DIFFERENTIAL PINION BEARING LUBE PUMP
Robert Casey, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 24, 1970, Ser. No. 13,595
Int. Cl. F16n 7/36
U.S. Cl. 184—6.28 **10 Claims**



Lubricating and cooling oil is supplied to the pinion bearings of a differential by means of a pump located within the differential housing. The pump is of the plunger operated variety and is driven from the differential case to pump the oil contained within the differential housing to the bearings.

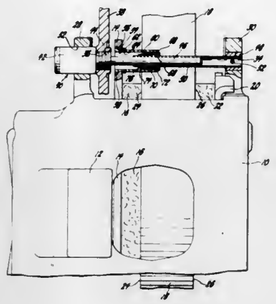
3,618,713
FOAM LUBRICATING SYSTEM AND METHOD
Robert L. Batchelor, 412 Beach Road, Venice, Fla.
Filed Dec. 12, 1969, Ser. No. 884,641
Int. Cl. F16n 15/00
U.S. Cl. 184—15 R **14 Claims**



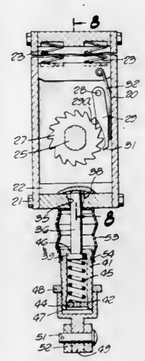
A method and apparatus is disclosed for foam lubricating and cleaning a chain conveyor. The apparatus includes an inclined mixing passageway adapted to receive pressurized foam-forming solution at one end thereof for passage through a restriction to decrease the pressure of the solution. Ambient air is drawn into the mixing passageway through a transverse bore by the decreased pressure of the solution. The mixture is then passed through a second restriction in the passageway to induce air entrainment in the solution and impacted against the transverse walls of a plurality of dispensing passageways. To further enhance air entrainment the dispensing passageways include expansion chambers in which the pressure of the admixture is further decreased. The finished foam is then delivered to various stations in contact with the conveyor chains.

3,618,714
DISC BRAKE FRICTION PAD ADJUSTING DEVICE
Harold E. Croswell, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1970, Ser. No. 38,685
Int. Cl. F16d 65/52
U.S. Cl. 188—71.8 **4 Claims**

A spring steel clip is secured to an inner friction pad backing plate of a caliper disc brake assembly for movement along a modified caliper-supporting pin when the caliper piston is energized to apply the brake. The spring steel clip engages the outer surface of a bushing concentrically disposed upon the supporting pin in a one-way locking fashion whereby wear of the friction pads moves the spring clip along the outer surface of the bushing and positions the friction pad and backing plate assembly at a substantially constant clearance distance from the disc brake surface as the brake lining wears.

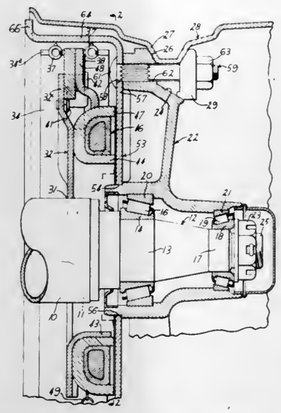


3,618,715
AUTOMATIC BRAKE-ADJUSTING DEVICE
James L. Bostwick, 1501 Bluff Drive, Santa Barbara, Calif.
Filed Sept. 25, 1969, Ser. No. 860,922
Int. Cl. F16d 65/56
U.S. Cl. 188—79.5 K **8 Claims**



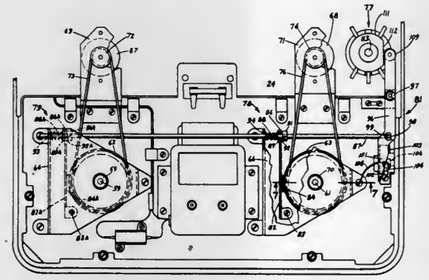
In combination with conventional brake power cylinder and brake-operating arm for a cam brake with a manual slack adjuster including a shaft rotatable to effect slack adjustment, a housing fixed to move with the brake-operating arm and into which the shaft projects and a ratchet wheel on the projecting shaft, a plunger or slide movable in the housing adjacent the wheel carries a pawl biased into contact with the wheel. A push rod guided into the housing moves the slide with respect to the wheel in response to motion of the brake-operating arm. Excessive arm movement, indicating brake action slack, causes the pawl on the slide to engage the ratchet wheel, turning the rotatable shaft to adjust the brake cam to reduce slack. Preferably, the push rod connects to the clevis of the air cylinder actuating rod, with override linkage between the actuating rod and the push rod.

3,618,716
ELECTRIC BRAKE, DRUM, HUB AND RIM ASSEMBLY
Donald T. Studdard, Winfield, and Thomas E. Morrison, Guin, both of Ala., assignors to Continental Conveyor and Equipment Company
Filed Jan. 14, 1970, Ser. No. 2,745
Int. Cl. F16d 65/34; B60t 13/74
U.S. Cl. 188—138 **3 Claims**



An electric brake, drum, hub and rim assembly in which the drum itself is formed of a single piece of steel plate so that the electric magnet portion of the brake mechanism contacts directly the head or inner plate of the drum. The outer or open end of the drum is provided with an integrally formed peripheral flange, thus to restrain the drum against bell-mouthing when the brakeshoe expands against the cylindrical part of the drum. Further, the drum is secured to the hub by headed bolts, the heads being on the inner surface of the drum head, and the bolts being long enough also to secure the hub to the tire rim, whereby the braking torque is transmitted directly from the drum to the rim of the tire.

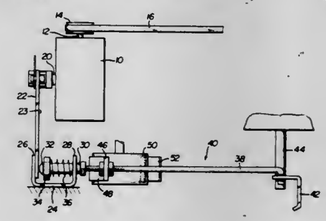
3,618,717
SPRING APPLIED, MECHANICAL RELEASED BRAKE
Kermit V. Anderson, Delano, Minn., assignor to Washington Scientific Industires, Inc., Minnetonka, Minn.
Division of Ser. No. 653,435, July 14, 1967, Pat. No. 3,479,116.
Filed June 27, 1969, Ser. No. 837,211
Int. Cl. B60t 13/04
U.S. Cl. 188—166 **11 Claims**



A portable film reader having a light source directing light through a lens system and film onto a mirror used to reflect the light onto a rear projection screen. The reader is mounted on a frame located in the bottom of a carrying case. Parallel linkage connect the mirror with the cover of the carrying case so that the mirror moves up and down with the cover. The screen pivotally attached to the frame has folding side shields which cooperate with the cover to enclose the space between the mirror and screen eliminating outside light on the rear of the screen. The cover projects forward from the screen to function as a light visor. In the storage position the screen and side shields fold down adjacent the frame and the mirror moves down into the case with the closing of the cover.

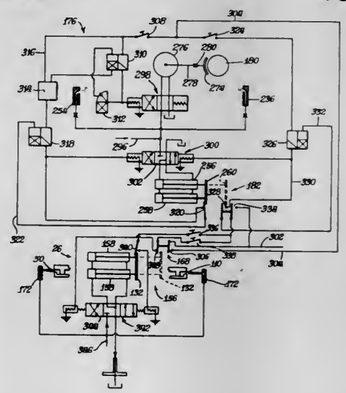
Spring applied cam release brakes are used to simultaneously brake the spindles carrying the film reels. A common control rod carries separate springs to apply pivoted brake levers. A lever pivoted on the frame and connected to the control rod is selectively moved by a cam and finger to release the brakes. The cam is connected to a dual switch operable to selectively control motors for driving the spindles.

3,618,718
BRAKE ACTUATED RETURN TO NEUTRAL MECHANISM
Andrew Blaauw, Winneconne, and Paul H. Stibbe, Neenah, both of Wis., assignors to J. I. Case Company, Racine, Wis.
Filed June 10, 1970, Ser. No. 45,142
Int. Cl. F16h 45/02
U.S. Cl. 192—4 B **9 Claims**



A hydrostatic transmission control linkage having a shift lever movable towards a drive position and a neutral position and to which is attached a friction plate adapted to normally retain the lever in the drive position by means of frictional contact with a plunger yieldably urged against the plate. The plunger is attached to one end of an actuating linkage, the other end of which is secured to a brake pedal in such a manner that, by depressing the brake pedal, the frictional contact between the friction plate and the plunger will be broken to automatically cause movement of the shift lever into the neutral position.

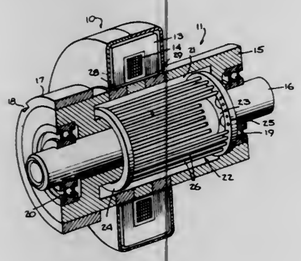
3,618,719
DUAL ENGINE DRIVE FOR MARINE PROPELLER SHAFT
Joseph A. Marland, Hinsdale, and Charles W. Hill, La Grange, both of Ill., assignors to Marland One-Way Clutch Corporation, La Grange, Ill.
Filed Jan. 23, 1970, Ser. No. 5,216
Int. Cl. F16h 57/10
U.S. Cl. 192—4 R **4 Claims**



A marine propulsion transmission for driving a propeller in a forward direction by a main engine and an auxiliary engine

working either individually or in unison and for driving the propeller in reverse by the main engine without reversing the auxiliary engine. The propeller is driven forwardly by the main engine through a one-way clutch allowing overdriving of the propeller by the auxiliary engine and integrated in parallel with a cushioned positive clutch through which the main engine drives the propeller in reverse. The propeller is also driven forwardly by the auxiliary engine through a one-way clutch allowing overdriving of the propeller by the main engine and integrated in tandem with a positive clutch. Integrated electrical and hydraulic controls provide for alternate engagement of the positive clutches to assure disengagement of the auxiliary engine when the propeller is driven in reverse. A brake operated automatically by the same controls briefly stops a freewheeling drive element between the tandem clutches before the corresponding positive clutch is engaged. Working parts are lubricated by jets of fluid under pressure from the hydraulic control system directed into the ends of mutually concentric components.

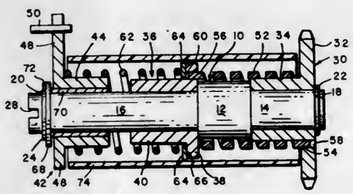
3,618,720
MAGNETIC-PARTICLE CLUTCH OR BRAKE
Ernest A. Linke, Maplewood, N.J., assignor to Bulova Watch Company Inc., New York, N.Y.
Filed July 30, 1970, Ser. No. 59,459
Int. Cl. F16d *37/02*
U.S. Cl. 192—21.5 **8 Claims**



A magnetic-particle clutch constituted by a stator surrounding a rotor assembly having an input member and an output member which are intercoupled when the stator coil is excited. The input or drive member is a cylindrical body having an annular cavity for containing magnetic particles, the output or driven member being formed by a shaft coaxially disposed within the input member and rotatably supported therein, a cylindrical particle-trap rotor being mounted on said shaft and being positioned to rotate within the annular cavity. The particle-trap is formed by a circular cage of alternately polarized parallel bars which create an internal magnetic field to retain the magnetic particles in the interstices of the cage in the unexcited state of the clutch. When the stator coil is excited to produce an external magnetic field, the particles are reoriented to bind the cage to the input member, thereby coupling the drive and driven members.

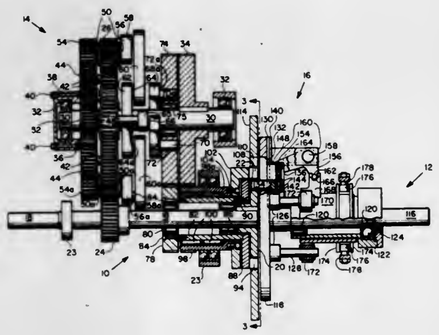
3,618,721
ONE-WAY CLUTCH
Richard C. Hare, Box 33, Whitinsville, Mass.
Filed Aug. 24, 1970, Ser. No. 66,332
Int. Cl. F16d *41/20*
U.S. Cl. 192—35 **6 Claims**

A one-way clutch of the clutch spring type for transmitting rotational movement from a driving member to a driven member, with the driven member free to rotate in either direction when the clutch is disengaged. The clutch has the driven member in the form of a shaft rotatably carrying the driving member and an axially spaced rotatable bushing member, with the clutch spring therebetween, encircling the driven member and connected at its ends to the driving member and bushing member. Axially spaced from the bushing member and also rotatably carried by the driven member shaft is a member fixed against rotation. A compression spring, e.g., a coil spring, encircles the driven member shaft between the fixed member and bushing member and urges them axially apart, the compression spring providing a torsional drag on the bushing member to cause the clutch spring to contract to engage the driven member when the driving member is rotated relative thereto, The compression spring further provides an axial force on the bushing member and fixed member to hold the clutch parts in spring loaded posi-



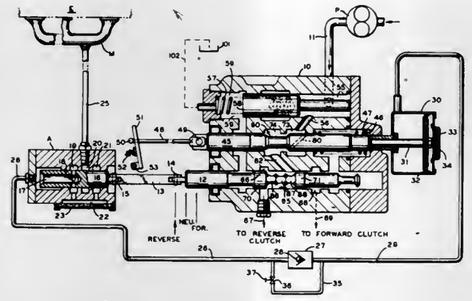
tion. In the preferred construction, the compression spring is functionally secured to the fixed member and bears against a thrust washer in engagement with the bushing member, which is made of a bearing material which freely slides against the thrust washer; the driving member has a hub of diameter slightly larger than the inside diameter of the relaxed clutch spring; and the driven member has a hub with a diameter slightly less than the relaxed clutch spring inside diameter.

3,618,722
CYCLIC CLUTCH
Paul W. Eschenbach, Inman, S.C., and Howard N. Watrous, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed July 27, 1970, Ser. No. 58,481
Int. Cl. F16d *23/10*; **F16h** *35/02*
U.S. Cl. 192—48.9 **29 Claims**



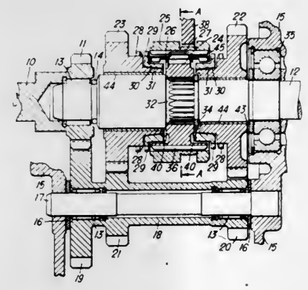
A cyclic phasing clutch is described which is capable of losing one or more integral revolutions of the load while the input shaft rotates at constant speed. Two acceleration-deceleration generators, the output angular velocities of which vary cyclically, are employed with the outputs thereof out of phase with one another by approximately 360° of clutch input shaft rotation. A device is provided for selectively engaging the clutch output shaft with the clutch input shaft, with the output shaft of either acceleration-deceleration generator or, if desired, with a stationary locking means. The preferred type of acceleration-deceleration generator is a drag link using an elliptical input constraint.

3,618,723
TRANSMISSION CLUTCH CONTROL
John C. McPherson, Philadelphia, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Nov. 18, 1969, Ser. No. 877,744
Int. Cl. F16d *25/10*; **F15b** *11/12, 13/044*
U.S. Cl. 192—51 **31 Claims**



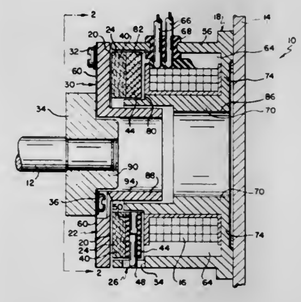
In a hydraulic transmission, the movement of the directional valve into its neutral position automatically effects movement of a control valve to relieve the transmission forward and reverse clutches of hydraulic pressure. When the directional valve is thereafter moved to forward or reverse, hydraulic pressure is applied to one of the clutches but at a controlled rate through automatic metered movement of the control valve. The control valve may also be moved manually so as to contribute inching.

3,618,724
SYNCHRONIZER DEVICES FOR STEPPED-RATIO CHANGE-SPEED GEARS FOR MOTOR VEHICLES
Adolf Oehl, Am Eulenrech, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 5, 1970, Ser. No. 650
Claims priority, application Germany, Jan. 7, 1969, G 69 00 376
Int. Cl. F16d *23/02*
U.S. Cl. 192—53 F **3 Claims**



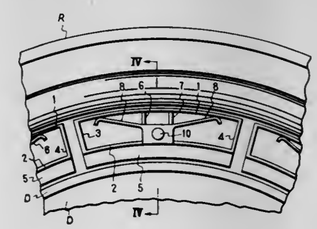
A synchronizer device for stepped-ratio change-speed gears of a motor vehicle utilizes blocker rings (baulk rings) for delaying positive-clutch engagement of a slidable coupling sleeve until a pair of rotary transmission parts to be coupled together approach synchronism. To prevent small axial movements of the blocker rings which should give rise to noise in certain circumstances, an annular spring between each blocker ring and a first rotary transmission has a free end which is shaped to exert an axially outward bias on the respective blocker ring such that the blocker ring is thereby maintained in continuous clearance-free contact with a second rotary transmission part.

3,618,725
TORQUE-TRANSMITTING ASSEMBLY
Walter J. Penkal, Jr., Parma Heights, and Kirit R. Patel, Cleveland, both of Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Nov. 12, 1969, Ser. No. 875,871
Int. Cl. F16d *3/14, 27/06*
U.S. Cl. 192—55 **12 Claims**



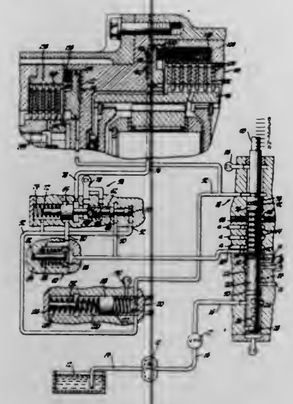
A torque-transmitting assembly includes a pair of torque-transmitting members which are movable between an engaged torque-transmitting position and a disengaged position. Upon energization of an electrical coil, the members are moved into the torque-transmitting position. One of the torque-transmitting members is carried by a base and supported thereon for limited rotational movement relative thereto. During the relatively low pressure initial engagement between the torque-transmitting members, the one member rotates relative to the base to minimize slippage between the torque-transmitting members.

3,618,726
FRICTION BRAKE OR CLUTCH ARRANGEMENT
Elsuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1970, Ser. No. 30,873
Claims priority, application Japan, Dec. 29, 1969, 45/418
Int. Cl. F16d *11/06, 25/04*
U.S. Cl. 192—79 **6 Claims**



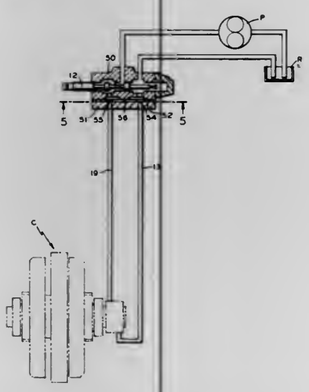
A drum may be coupled to a wheel by means of friction shoes circumferentially distributed on the drum and mounted on carriers which may be pressed radially inward against an outer friction face of the wheel by an inflatable tube interposed between the carriers and the drum. Each carrier is guided by an axially elongated, square bar secured between two radial flanges of the drum and movably confined between radial guide walls of the carrier. The central portion of a plate spring having the shape of a wide V is mounted on each end of the bar, and the terminal spring portions engage an inner circumferential wall of the carrier to bias the friction shoe associated with the carrier away from the wheel. The springs prevent slipping engagement between the shoes and the friction face of the wheel when pressure fluid is released from the inflatable tube.

3,618,727
OVERLAP VALVE
John P. Cornet, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1970, Ser. No. 11,704
Int. Cl. F16d 25/10
U.S. Cl. 192—87.13 2 Claims



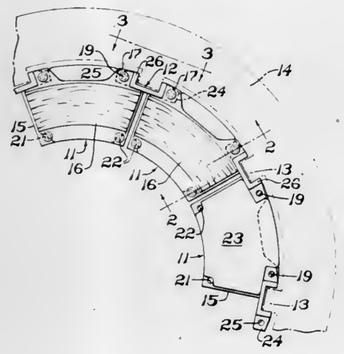
A transmission control system for controlling the engagement and disengagement of a pair of friction drive establishing devices. The control has an overlap control valve having differential area lands and differential area ends for maintaining pressure in the friction device to be disengaged until sufficient pressure is present in the friction device to be engaged to permit torque reaction of the engaging device to maintain continuity of drive during the shift period.

3,618,728
REVERSING CLUTCHES WITH FLUID FLOW CONTROLS
John C. McPherson, Philadelphia, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Nov. 17, 1969, Ser. No. 877,117
Int. Cl. F16d 25/10
U.S. Cl. 192—87.19 3 Claims



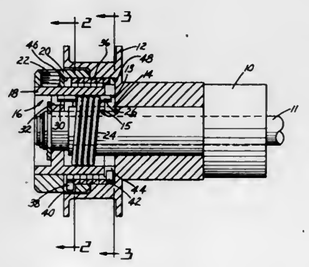
In a hydraulic transmission, a dampener such as an accumulator is placed in the passages transmitting hydraulic fluid pressure to the transmission clutches in order to prevent the sudden engagement of the clutches. In a modification, the dampener is a bypass between the passages transmitting fluid pressure to the clutches, so that the dissipation of fluid pressure through the bypass prevents sudden engagement of the clutches. In a further modification the bypass is formed in a gasket for a valve body in which there are openings for each of the passages in the valves body conveying fluid pressure to the clutches. The cutting away of a part of the gasket actually forms the bypass.

3,618,729
SEGMENTED FRICTION MEMBER FOR BRAKE OR CLUTCH
William Edwin Ely, and Ralph R. Main, both of Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,542
Int. Cl. F16d 13/64
U.S. Cl. 192—107 R 5 Claims



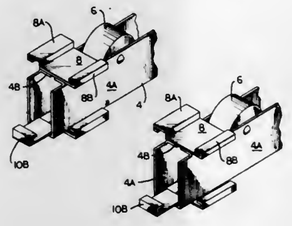
A brake or clutch mechanism that has an annular stator or rotor composed of a plurality of connected individual segments. Each segment has a plate member of heat-absorbing material sandwiched between facing members which are connected by torque links to facing members of adjacent braking segments. The torque links additionally provide splined engagement with an associated part of the brake or clutch for transmitting torque to and from the braking segments.

3,618,730
TORQUE-LIMITING CLUTCH
Herbert Mould, III, Bloomfield, N.J., assignor to Vari-Typer Corporation, Hanover, N.J.
Filed Dec. 12, 1969, Ser. No. 884,489
Int. Cl. F16d 13/08, 43/21
U.S. Cl. 192—56 C 8 Claims



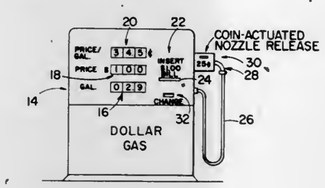
A torque-limiting device is provided which has a rotatably mounted driving member and a driven member. The driving member is connected to a spring cage member through a torsion spring. A clutch spring is disposed to provide frictional driving engagement between the cage member and the driven member. The clutch spring and the driving member are provided with coacting surfaces to release the driving engagement between the cage member and the driven member when a given angular displacement between the cage member and the driving member occurs. The angular displacement between the driving member and the cage member will be proportional to the torque applied by virtue of the torsion spring connection between the driving member and the cage member.

3,618,731
MATERIAL-HANDLING ASSEMBLY OF UNITS HAVING SELF-CONTAINED CONNECTORS
Ralph W. Jindrich, Clarendon Hills, Ill.; Alan W. Speicher, Evansville, and Michael G. Forman, Newburg, Ind., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.
Filed July 22, 1969, Ser. No. 843,407
Int. Cl. B65g 13/00
U.S. Cl. 193—35 11 Claims



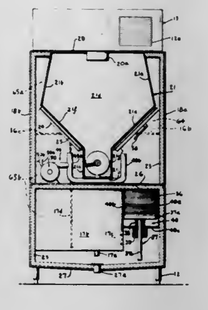
Conveyor units each comprising a pair of rails having a plurality of rollers journaled therein. Each unit has a plurality of transverse brackets on the upper and lower margins thereof, the brackets having U-shaped ends for assembling units in a side-by-side relationship. U-shaped brackets are also on the ends of each unit for end-to-end assembly and locking. The units are adapted to be assembled in an alternately inverted arrangement to serve as a dolly.

3,618,732
GASOLINE-DISPENSING SYSTEM
Harry D. Forse, 220 Woods Road, Edgewood Addition, Anderson, Ind.
Filed Jan. 13, 1970, Ser. No. 2,563
Int. Cl. G07f 1/06
U.S. Cl. 194—4 19 Claims



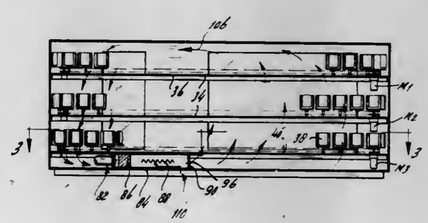
A system for dispensing a quantity of gasoline having a selling price equal to a predetermined denomination of paper currency, such as a one dollar bill. A computing pump is provided including a driving motor, a flow meter which measures the volume of gasoline delivered by the pump, and a selling price computer operated by the flowmeter. A bill reader is provided which receives and inspects the bill to determine its validity and denomination and provides an output signal when the bill has been determined to be valid and of the correct denomination. The motor is started to initiate the pumping operation in response to the output signal from the bill reader and the motor is stopped to terminate the pumping operation by the selling price computer when the selling price of the gasoline dispensed equals the denomination of the bill. A coin-actuated device is provided into which a coin, such as a quarter, must be deposited before the dispensing nozzle can be removed from the holder. Upon properly returning the nozzle to the holder, the coin is returned. Operation of the system is inhibited until the nozzle has been properly positioned and locked into the fill pipe.

3,618,733
ICE CUBE DISPENSER WITH HOPPER SHAPED AND HEATED TO INHIBIT BRIDGING
Marion H. Winsett, c/o N. F. Abramowitz, 2020 Richmond, Houston, Tex.
Filed Apr. 15, 1970, Ser. No. 28,579
Int. Cl. G07f 11/00
U.S. Cl. 194—10 10 Claims



The invention discloses an ice cube vending machine which supports an ice cube making machine thereon which discharges the ice cubes it manufactures downwardly into a hopper tapered first to spread the cubes to minimize abutting cubes bridging or freezing together, the hopper then being oppositely tapered to deliver the cubes centrally into a helix conveyor chamber therebelow from which they may be delivered by metered delivery to drop downwardly into a front opening chamber into which a receptacle has been inserted to receive them. The lower part of the hopper is provided with heated radiator fins which radiate heat through to the ice cubes thereabove, further to inhibit the tendency of the converging ice cubes to freeze or "bridge" together.

3,618,734
SPECIMEN INCUBATOR
Waheed N. Khan, Silver Spring, Md., assignor to Research Foundation of Children's Hospital of the District of Columbia, Washington, D.C.
Filed June 10, 1969, Ser. No. 831,957
Int. Cl. C12b 1/00
U.S. Cl. 195—139 3 Claims

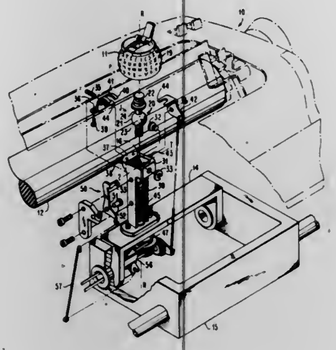


A specimen incubator including a closed cabinet having an access opening which can be selectively opened and closed, and wherein are mounted a plurality of specimen support trays movable in a path in the cabinet in a manner for selective placement of any given tray at the access opening, and further including means for controllably circulating a gaseous medium in the cabinet with means provided to preclude entrance of external atmosphere into the incubator under open conditions thereof, the incubator preferably including pluralities of specimen support trays in vertically separate tiers, and movement of the trays in the individual tiers being individually separately controllable.

3,618,735
SPHERICAL TYPE ELEMENT SUPPORT

Charles D. Bleau, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,421
Int. Cl. B41j 1/60
U.S. Cl. 197—16 11 Claims

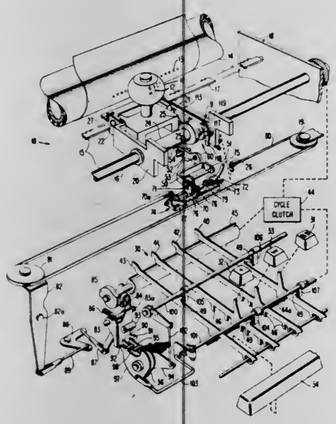


A simplified articulated joint for a spherical-type element is provided by a ball retained in a specially oriented, restricted surface bearing member such that impact and detent forces are directly absorbed by the bearing member.

3,618,736
VARIABLE FORCE IMPACT PRINTER WITH BACKSPACE MECHANISM

William A. Abell, Jr.; Charles M. Isaacs, and Jerome B. O'Daniel, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,027
Int. Cl. B41j 23/08, 19/62
U.S. Cl. 197—17 10 Claims

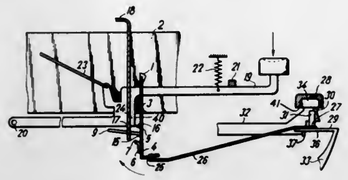


A single-element printer having a complex drive cam for control of print impact velocity, employs power taken from the print shaft within the type element carrier to perform backspace operations as selected by the velocity control mechanism.

3,618,737
SPACER BAR AND KEY LOCKING MECHANISM FOR TYPEWRITERS AND SIMILAR MACHINES

Miroslav Blaha; Rostislav Slama; Jan Sobotka, and Frantisek Hemzal, all of Brno, Czechoslovakia, assignors to Zbrojovka Brno, narodini podnik, Brno, Czechoslovakia

Filed Dec. 16, 1968, Ser. No. 783,900
Claims priority, application Czechoslovakia, Dec. 15, 1967, 8865/67
Int. Cl. B41j 5/22, 29/56
U.S. Cl. 197—107 5 Claims

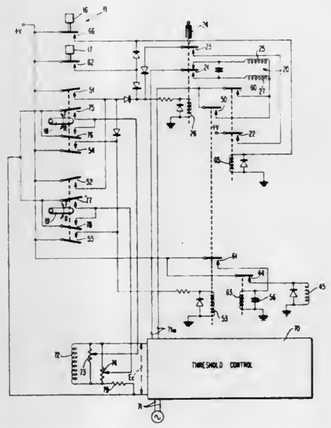


A key locking mechanism and spacer bar locking mechanism for typewriters and similar machines adapted to prevent the full depression of the typing keys and spacer bar when the carriage of the typewriter has reached a predetermined position during a typing sequence. The locking mechanism comprises a locking bar having a main stop surface and an auxiliary stop surface which is mounted slightly below the main stop surface and which is positioned in front of the main stop surface in the direction to the pivoting movement of the locking bar. A two-armed disconnecting lever is pivotally supported on the typewriter frame. One arm of the two-armed lever is connected by means of a rod to the locking bar. The other arm of the locking lever extends into the path of movement of the typewriter carriage. When the latter has reached a predetermined point in its travel it causes a pivoting of the two-armed lever thereby causing the locking bar and locking stop post to move into their locking positions and thereby prevent the depression of the typewriter keys or spacer bar.

3,618,738
VERTICAL PAPER FEED FOR A DRAFTING TYPEWRITER

Richard G. Boyatt, and George T. Williams, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1969, Ser. No. 878,126
Int. Cl. B41j 19/76
U.S. Cl. 197—114 R 11 Claims



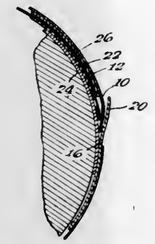
A drafting typewriter is provided for typing notes and dimensions on large sheet material. An improved paper feed

provides for selective slow, fast, forward, or reverse running movement of the paper to locate an area where typing is desired. This movement is effected through the use of an electric motor that is at all times connected to the paper feed mechanism. The same motor is employed to provide incremental forward and reverse stepping motion of the paper feed mechanism to define adjacent printing lines through the use of a displacement measuring transducer.

3,618,739
WRITING MATERIALS HOLDER

Lester K. Fleischmann, 1620 Ravine Terrace, Highland Park, Ill.

Filed Aug. 20, 1969, Ser. No. 851,616
Int. Cl. B41j 13/12
U.S. Cl. 197—136 5 Claims

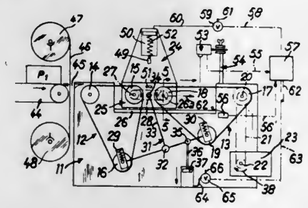


A writing materials holder for use in a typewriter having a relatively hard platen, to hold writing materials which have stencil portions, such as foil, which are permanently deformed or embossed with the impression of the type when struck thereby. The holder is laminated to form a pocket between a pair of layers and within which is received a thin, flexible and resilient cushioning sheet which facilitates deforming the foil when typed. A lip is formed along the pocket for receiving and holding writing materials in juxtaposition over the cushioning sheet for movement about the platen with the holder. In the preferred form of the invention, the holder comprises a cylindrical member positionable about the platen of the writing machine and of a diameter greater than the diameter of the platen so as to loop outwardly about the platen. The sides of the pocket at the edge of the cylindrical member are open to permit replacement of the cushioning sheet.

3,618,740
APPARATUS FOR TRANSPORTING AND WORKING PIECE GOODS AND THE LIKE

Franco Taverna, Valenza, Italy, assignor to Ferag, Fehr & Reist AG, Zurich, Switzerland

Filed Aug. 6, 1970, Ser. No. 61,622
Claims priority, application Italy, Aug. 26, 1969, 106 A/69
Int. Cl. B65b
U.S. Cl. 198—19 8 Claims

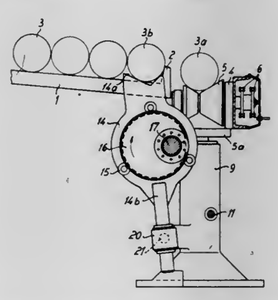


An apparatus for transporting and working piece goods comprising a driven endless conveyor mechanism and a work station displaceable substantially parallel to the feed direction of said conveying mechanism. The conveying mechanism provides at the region of the work station an infeed section and an outfeed section. Deflecting roller means rotatable by the conveying mechanism serve to rotatably mount the infeed section and the outfeed section. A brake mechanism prevents rotation of at least a deflecting roller means associated with the outfeed section relative to the work station during the time that a working operation is carried out upon one of the piece goods. There also being provided a return mechanism for the work station actuated in opposite phase relationship to said brake mechanism that is when the latter is rendered inoperable, for returning the work station back into its starting position.

3,618,741
APPARATUS FOR MANIPULATING HEAVY WORKPIECES

Siegfried Berndt, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

Filed Nov. 14, 1969, Ser. No. 876,821
Claims priority, application Germany, Nov. 15, 1968, P 18 09 152.6
Int. Cl. B65g 47/04
U.S. Cl. 198—26 9 Claims

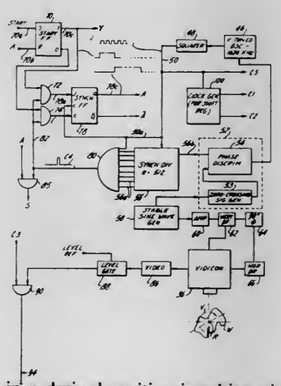


The foremost workpiece of a series of elongated heavy workpieces resting on an inclined support is transferred onto a conveyor by a transfer unit which comprises a series of straps surrounding eccentrics and having sockets at their upper ends and elongated extension at their lower ends. The extension slide in tubular holders mounted to pivot about an axis which is parallel to the drive shaft for the eccentrics whereby the sockets lift the foremost workpiece and transport it along an arcuate path toward and onto the conveyor while the extensions pivot with and slide relative to their holders in response to rotation of the eccentrics.

3,618,742
AUTOMATIC OBJECT ADJUSTMENT

Stanley J. Blanchard, 4 Washington Square Village, New York, N.Y.; George C. Devol, 990 Ridgefield Road, Wilton, Conn., and Paul S. Martin, 189-54 43rd Road, Flushing, N.Y.

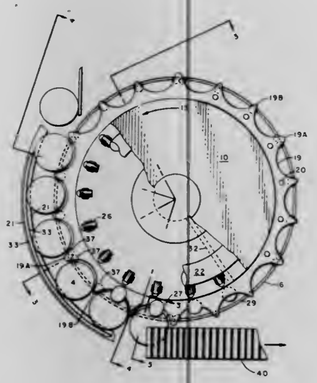
Filed May 18, 1970, Ser. No. 38,020
Int. Cl. B65g 47/24, 43/00
U.S. Cl. 198—33 AB 14 Claims



An object in a desired position is subjected to a circular scan about a reference point and the result is stored as a pat-

tern of impulses representing the contrast between the object and the background. Articles that are later disposed at random angles about the same reference point are subjected to a circular scan, the result is compared with the stored pattern of impulses, and the result of the comparison is used for adjusting the later atricles to the desired orientation.

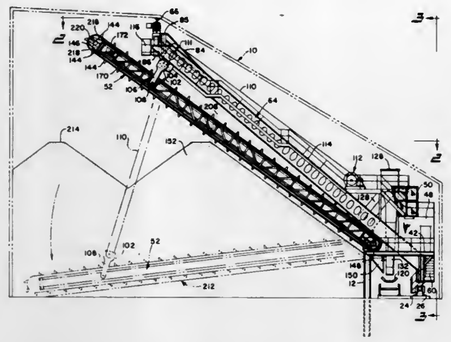
3,618,743
ARTICLE-ORIENTING DEVICE
Victor Benatar, Atlanta, and John H. Perry, Doraville, both of Ga., assignors to The Mead Corporation
Filed Nov. 5, 1969, Ser. No. 874,326
Int. Cl. B65g 29/00, 47/24
U.S. Cl. 198—33 17 Claims



Where consumer-type primary packages such as cans and bottles are arranged and packaged in groups, it is desirable in many instances to orient the individual primary packages so that their labels face outwardly. A device for this purpose is disclosed wherein relatively movable spinning elements are arranged to engage different parts of an article and are effective to rotate the article until a desired position is attained. Article-positioning means prevent the article from toppling over during spinning and hold the article against undesired bodily movement in a direction transverse to its axis of rotation. Article-gripping means respond to sensing means and grip each article at the desired orientation. The primary packages or articles are fed into the device on an infeed conveyor and through a spacing device whereby the articles are arranged in groups and subsequently are individually oriented and fed, for example, into a packaging machine along an outfeed conveyor which itself is arranged with a pair of vertically spaced working reaches so as to receive therebetween and secure the articles in the desired orientation.

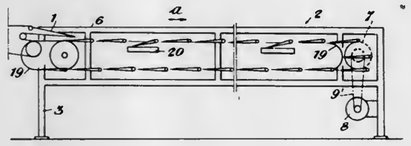
3,618,744
APPARATUS FOR STACKING AND RECLAIMING BULK MATERIALS
Roger L. Hulette, Berea, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 715,745, Mar. 25, 1968, now abandoned. This application June 11, 1969, Ser. No. 839,767
Int. Cl. B65g 15/14, 65/28
U.S. Cl. 198—36 10 Claims

There is provided an apparatus useful for handling bulk material and characterized by a boom constructed and adapted both to reclaim and to stack bulk material. In specific embodiments of the invention, an endless conveyor belt coacts in the same boom with an endless chain of material-raking flights as it traverses the upper side of the boom to



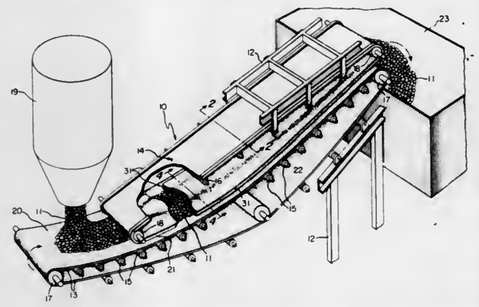
convey material to the discharge extremity of the conveyor belt.

3,618,745
DISTRIBUTING DEVICE
Antonio Dominici, 8, Via Ruggero d'Andreotto, Perugia, Italy
Filed Feb. 18, 1970, Ser. No. 12,379
Claims priority, application Italy, Feb. 18, 1969, 35064A/69
Int. Cl. B65g 15/00
U.S. Cl. 198—155 7 Claims



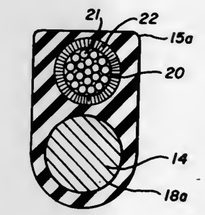
A series of downward tiltable trays are connected end-to-end to form a conveyor traveling over the feeders leading to the machines to which the load traveling on the trays is to be distributed, while means are provided to tilt the trays toward the feeders in order to transfer their load upon them, while a movement equal and contrary to that of the trays is imparted to the tray surface during said transfer.

3,618,746
BELT ASSEMBLY
Paul D. Suloff, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 1, 1969, Ser. No. 862,831
Int. Cl. B65g 15/14
U.S. Cl. 198—165 13 Claims



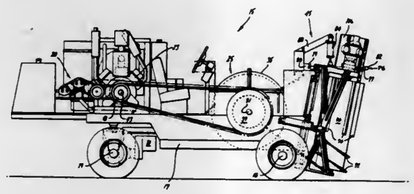
A material-retaining belt of the type used as a cover belt disposed above and in confronting relationship to a material-conveying base conveyor belt in a conveyor system in which the two belts cooperate to transport bulk material from one level to another without spillage or slippage thereof. The retaining belt has a generally rectangular cross section for at least a majority of its width and includes a first portion of elastomeric material containing weighting means, such as lead dust, therein and a second portion in substantially parallel relationship with the first portion which contacts the material being conveyed. The second portion has a center section containing longitudinally extending tension elements and at least substantially unreinforced lateral sections on either side of the center section to enable the retaining belt to drape over and firmly contain the material being conveyed. Particularly when lumpy material is being conveyed, the retaining belt also preferably includes edge portions additionally weighted and adapted to conform to the confronting surface of the edges of the conveying belt to effect a seal to contain the material.

3,618,747
CONVEYOR CHAIN LINK WITH YIELDABLE CONTACT SURFACE
Clifton E. Hammond, Gering, Nebr., assignor to Lockwood Corporation, Gering, Nebr.
Filed Aug. 1, 1969, Ser. No. 846,890
Int. Cl. B65g 15/52
U.S. Cl. 198—195 10 Claims



A link member for chain conveyor assemblies having a U-shaped portion at each end for connection with a similar link of the chain, and a bridging member connecting the U-shaped end portions and extending through a bore of a yieldable body of oblong section in friction fit with the bordering surface of said bore. The body has a second bore which may be an opening through its lengthwise extent, or tapered and open at only one end, or at least partially filled with cellular rubber. SAid second bore provides increased yieldability in the body material adjoining the bore which has a cushioning effect in contacting produce being moved by the conveyor.

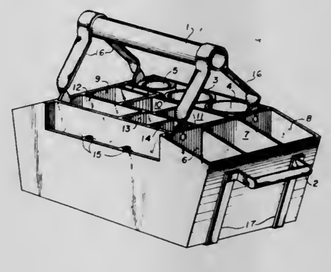
3,618,748
FEED AND GUIDANCE CONTROL APPARATUS FOR A TREE HOGGER UNIT
Routhford J. Burkett, Indio, Calif., assignor to Coachella Valley Organic Fertilizer Co.
Division of Ser. No. 699,687, Jan. 22, 1968, Pat. No. 3,545,692. Filed Mar. 11, 1970, Ser. No. 23,527
Int. Cl. B65g 33/06, 65/06
U.S. Cl. 198—213 2 Claims



The following disclosure describes an improved feed and guidance control for feeding tree parts to a masticator assembly which comprises a part of a tree hogger unit.

The feed apparatus includes a pair of spaced-apart rotatable drums having a series of blades thereon adapted, when said drums are rotated, to engage, lift and move tree parts between the drums. An essentially smooth-walled chute is provided between the drums and masticator assembly, converging toward the latter, and adapted to guide tree parts smoothly to the assembly. A member is also provided which is adjustably positioned with respect to the drums to deflect branches and other tree parts extending thereabove, and confine them to the area swept by the rotating drums.

3,618,749
PLUMBERS TOOL CARRIER
Joseph R. Vaccaro, Flanders, N.J.
Filed Aug. 8, 1969, Ser. No. 848,468
Int. Cl. B65d 85/54
U.S. Cl. 206—16 4 Claims



A tool carrier particularly adapted for plumber's tools comprising:

a. an elongated box having a bottom, two sides and two ends and being open on top,

b. the interior of the box being divided into compartments of a size and shape to hold plumber's tools

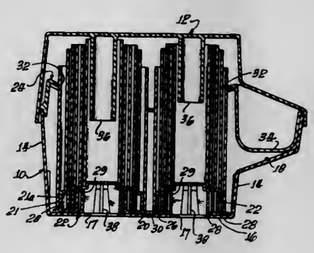
c. a carrying handle protruding from the top of the box

d. the ends of the box being angled outwardly from the bottom

e. a handle on each end of the box

f. strap members connecting the two end handles with the carrying handle and providing a reduced bottom surface for dragging the tool carrier and serving as support members for when it is carried.

3,618,750
STORAGE AND DISPENSING RECEPTACLES
Kenneth Reiner, 7875 Telegraph Road, Pico Rivera, Calif.
Filed Oct. 7, 1969, Ser. No. 864,484
Int. Cl. B65d 83/00, 85/20; A45d 4/00
U.S. Cl. 206—45 8 Claims



This invention relates to special receptacles of a type intended specifically for the storage and use of nested tubular articles. The distinguishing feature of this invention is that the receptacle, in closed position, contains nested tubular articles in a minimum of space, i.e. one within the other, and is

so constructed that in the open position the nested tubular articles may be raised varying heights so as to be selectively available to the user. Examples, as shown and described, are for the storage and presentation for use of hair rollers and of the type used by women in setting their hair.

3,618,751
CRUSHING AND DISPENSING CONTAINER FOR ADMINISTERING PILLS

Ernest J. Rich, Hunterdon County, N.J., assignor to Joseph Nichlos, Princeton, N.J.

Filed Jan. 15, 1970, Ser. No. 3,125
Int. Cl. B65d *1/36, 81/32, 85/56*
U.S. Cl. 206—47 R **8 Claims**

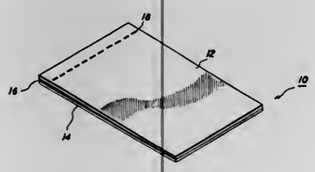


A disposable self-contained device in a variety of different forms for crushing and administering pills in powder form in which a crushing surface is sealed within an envelopelike pouch formed from a tray base member and a plastic film sealed to the edges thereof, which tray contains a spoon and an edible gel in a depression, so that a part of the film can be torn, a pill can be inserted into the envelope pouch and then crushed by an external crushing force. The rest of the film is removed and the pill powder is then transferred to and mixed with the edible gel, and then dispensed to the patient by the spoon which is shaped so as to mate with the depression containing the edible gel and powder, so the patient easily can swallow substantially all the pill powder.

3,618,752
STACK OF IMAGE-RECEIVING MEMBERS

Thomas B. Barker, Webster; Bruce D. MacLellan, Webster, and Casimir J. Mytych, Penfield, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 589,279, Dec. 1, 1966, Pat. No. 3,519,124. Filed May 22, 1969, Ser. No. 851,113
Int. Cl. B65h *55/00*; **B32b** *3/02*
U.S. Cl. 206—57 **1 Claim**



A stack of image-receiving members each of said members being in contact with adjacent members with each of said image members including a generally rectangular, transparent, nonfibrous, flexible sheet no more than about 6 mils thick, including materials selected from the group consisting of polysulfone and polyethylene terephthalate polyester resins and a sheet of paper backing substantially coextensive and in register with said nonfibrous, flexible sheet and secured to said sheet along a common leading edge.

3,618,753
LARGE FLAKE RECONSTITUTED MICA INSULATION

David W. Glasspoole, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

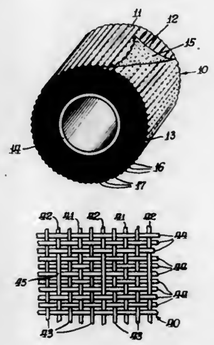
Filed Sept. 17, 1968, Ser. No. 760,356
Int. Cl. B32b *19/00, 19/02*; **B65d** *85/67*
U.S. Cl. 206—59 **9 Claims**

A reconstituted mica insulation sheet comprising large mica flakes has improved physical properties, particularly resistance to cut-through and sever mechanical abuse without danger of electrical failure. The sheet can be impregnated with resin, laminated to webs, adhesive-coated, slit, and coiled to form insulating tapes.

3,618,754
CONFORMABLE ELASTIC ADHESIVE TAPE

Raymond M. Hoey, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Feb. 11, 1969, Ser. No. 798,300
Int. Cl. C09J *7/04*
U.S. Cl. 206—59 C **15 Claims**

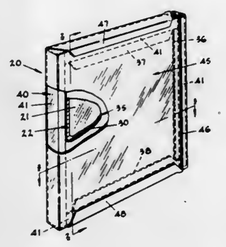


A method for producing and the product thereof comprising a conformable elastic pressure-sensitive adhesive tape including a low modulus woven elastic backing weighing, when relaxed, in the range of 100 to 300 grams per square yard and incorporating distributed warp yarns with elastomeric cores in the ratio range of from 1 such warp yarn in three to one in 6 total warp yarns, which distributed warp yarns cause the major surfaces of the backing when relaxed to assume a nonplanar character including intermingled raised and depressed areas, and a layer of pressure-sensitive adhesive substantially conforming with and adherent to one of the major surfaces of the backing, major surfaces of the tape becoming more nearly planar upon being stretched, specific embodiments of the tape possessing breathability, transverse hand-tearability, high strength and ready unrollability with its backing and adhesive surfaces in contact.

3,618,755
UNITIZED PACKAGE FOR SHEET MATERIALS AND METHOD FOR PACKAGING SAME

James S. Kean, Sr.; Frederick L. Metzger, and Ralph C. Hansen, all of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 4, 1970, Ser. No. 34,359
Int. Cl. B65d *85/48*
U.S. Cl. 206—62 R **8 Claims**

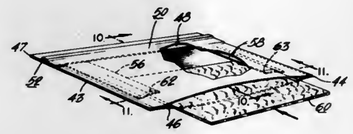


Improved manner for relatively low cost utilized packaging of glass sheets while ensuring the same against breakage and weathering during transportation or storage.

3,618,756
ARTICLE-HOLDING TABS FOR PEEL-OPEN PACKAGES

Robert J. Trewella, Reading, Pa., assignor to Wyomissing Corporation, Reading, Pa.

Filed Sept. 26, 1969, Ser. No. 861,362
Int. Cl. A616 *19/02*
U.S. Cl. 206—63.2 R **1 Claim**

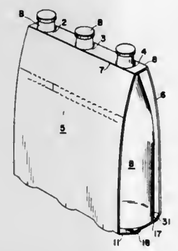


Article-holding tabs for peel-open packages to maintain the contained article in a desired location within the package. The article-holding tabs preferably comprise a pair of spaced parallel elongated strips of flexible material which are adhesively secured along one longitudinal edge to the package interior surface. The tabs facilitate the filling and sealing of the package and also position and hold the article during opening of the package to permit removal by a sterile technique.

3,618,757
ARTICLE CARRIER

James B. Funkhouser, Doraville, Ga., assignor to The Mead Corporation

Filed Jan. 29, 1970, Ser. No. 6,813
Int. Cl. B65d *75/06*
U.S. Cl. 206—65 E **4 Claims**



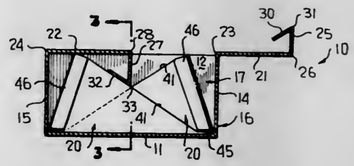
An article carrier having top, bottom and sidewalls foldably joined together to form a tubular structure for disposition about a plurality of articles arranged in side-by-side rectilinear relation in at least one row includes at certain corners of the carrier a pair of divergent fold lines arranged to form a web panel which effectively aids in retaining the articles in the wrapper against dislodgment through the open ends thereof. Where apertures are formed at the carrier corners for receiving portions of the packaged articles to aid in retaining the articles, the web panel formed by divergent fold lines also inhibits tearing of a blank and thus further enchances package security.

3,618,758
CARTON FOR TETRAHEDRAL PACKAGES

Fred B. Shaw, Hinsdale, and Florren E. Long, La Grange, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 804,633, Mar. 5, 1969. Filed Dec. 11, 1970, Ser. No. 97,174
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 T **2 Claims**

This disclosure relates to cartons for packaging a plurality of individual tetrahedral articles and includes a carton body defined by a polygonally shaped bottom wall, opposite pairs of sidewalls, and opposite pairs of end walls, a closure panel is joined by a fold line to each sidewall with the closure panels being in a common plane parallel to the bottom wall in the closed position thereof, a medial panel is joined to each closure panel by a fold line with the medial panels being in side-by-side contiguous relationship generally parallel to a plane normal to the bottom wall, a terminal flap being joined to each medial panel along a fold line and being folded

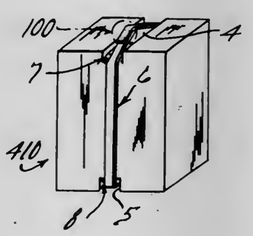


therealong into an outward and upward direction, and each terminal flap and its associated medial panel setting off an acute angle therebetween whereby the terminal flaps engage sides of the tetrahedral articles between the opposite transversely disposed seams thereof.

3,618,759
COMPRESSED SALT BLOCK AND METHOD

Richard Kolasinski, Richmond, and William S. Lewis, St. Clair, both of Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Feb. 4, 1969, Ser. No. 796,362
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 B **1 Claim**



A compressed sodium chloride salt block suitable for use as a salt source for animals, for brine-making in water-conditioning units, or for like uses requiring such salt blocks, wherein said block is comprised of a structure which includes one or more recessed surfaces or recess means on the surface of said block primarily operative to leave a free space between the body of said block and the surface on which it is to be supported so that the band or strap may be freely removed, and secondarily operative to retain the band or strap or the like in position on the block such that the compressed salt block can be readily grasped by hand for lifting and handling of the block, with the band or strap including releasable means as a part thereof such that the band or strap can be removed from the salt block if desired upon termination of the lifting or handling of the block; and, the method of preparing said salt block as well as the method of handling and using said salt block.

3,618,760
STORAGE STABLE ONE-PART POLYMERCAPTAN COMPOSITIONS

Douglas H. Strong, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Oct. 7, 1968, Ser. No. 765,626
Int. Cl. C08g *43/00*; **B65d** *81/00*
U.S. Cl. 206—84 **3 Claims**

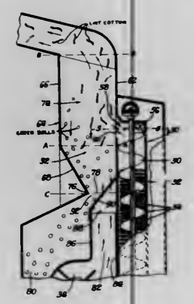
This invention presents metallic soaps which are useful for promoting tack-free surfaces and for curing polymercaptan sealants with quick formation of a protective skin on the

polymercaptan sealant. Metallic soaps in combination with calcium peroxide are useful for promoting tack-free surfaces and for curing polymercaptan sealants with quick formation of a protective skin on the polymercaptan sealant.

ERRATUM

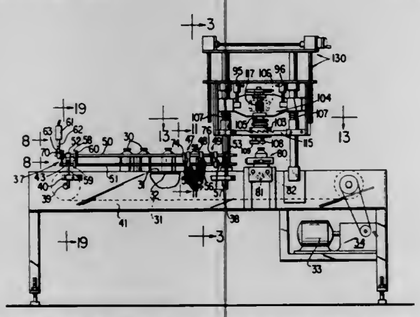
For Class 207—80 see:
Patent No. 3,618,672

3,618,761
CLEAN-BOLL SEPARATOR CONVEYOR FOR COTTON HARVESTER
James M. Francis; Wyatt T. Gable, Jr.; Forrest L. Simpson, and Paul J. Hulseberg, all of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.
Division of Ser. No. 741,722, May 19, 1970, Pat. No. 3,512,342.
Filed June 30, 1969, Ser. No. 870,151
Int. Cl. B07b *9/00*
U.S. Cl. 209—37 **8 Claims**



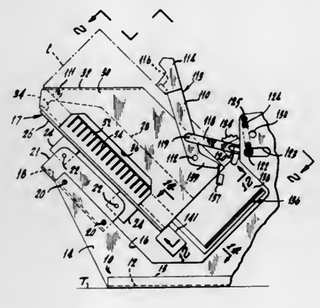
Cotton stripper having a primary separator which utilizes a generally vertical auger enclosed in a perforate housing being operative for separating trash from a harvested aggregate while advancing the same, and subsequently impelling a residue of essentially lint cotton and green bolls into a pneumatic secondary separator having a main airstream and an adjacent counter airstream flowing therein, wherein the main airstream is effective for initially separating a bulk of the lint cotton from the green bolls, any remaining lint cotton with the green bolls then enter the counter airstream which serves to return the same into main airstream for final separation of the lint cotton from the green bolls which gravitate into a collector.

3,618,762
CONTAINER-INSPECTING MACHINE
David F. Sklar, Kent Cliffs, N.Y.
Filed Feb. 20, 1969, Ser. No. 800,853
Int. Cl. B07c *5/02*
U.S. Cl. 209—80 **12 Claims**



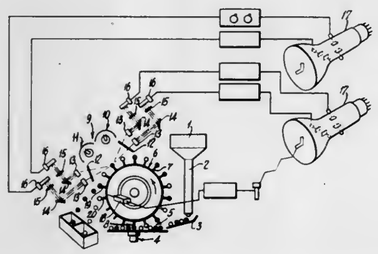
A machine and method for inspecting and sorting containers, such as glass bottles, that are acceptable from those not acceptable because of defects in the lip or shortness of the containers. A rotating test head has feelers thereon which are other than 180° apart and which can move relative to each other in a direction of the axis of the containers to actuate differential transformer means. The rotating testing head is employed to actuate a control circuit for ejecting a container if it is too short or if the lip does not fall within predetermined limits.

3,618,763
INFORMATION RETRIEVAL APPARATUS
Laurence Allan Cross, Jr., Groveville, N.J., assignor to Randomatic Data Systems, Inc.
Filed Jan. 5, 1970, Ser. No. 652
Int. Cl. B07c *3/18*
U.S. Cl. 209—80.5 **18 Claims**



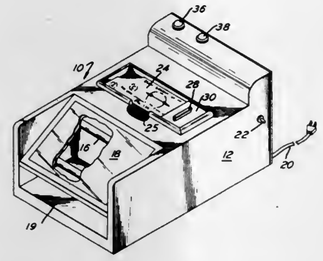
Cards that have been code-notched along one edge are randomly filed in capsules individually insertable in a card selector. A card is selected by code bars entering the notches and is then offset from the remaining cards by gravitational movement, facilitated by vibration of the cards. A rack in the capsule engages only an offset card and is meshed with a pinion. When the pinion is driven, it shifts the rack and the engaged card out of the capsule to a location where a card-transport device takes over to carry the card to a viewing, photographing, or card removal station.

3,618,764
PROCESS FOR INSPECTING PRINTED TABLETS AND CAPSULES USING COLOR RESPONSIVE SORTING MACHINES
Joseph A. Bawduniak, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 13, 1970, Ser. No. 2,605
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.6 **4 Claims**



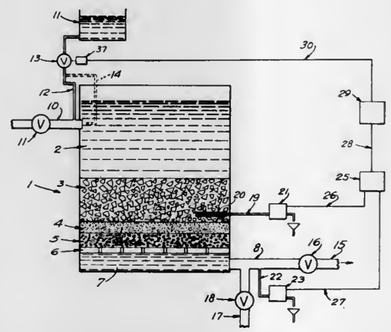
Process for inspecting printed tablets and capsules using color-responsive sorting machines in which tablets having a coating of one color are printed with an ink of a contrasting color which corresponds to the background color against which the tablets or capsules are viewed in the viewing chamber of the color-responsive sorting machine. In this way foreign tablets are rejected.

3,618,765
COUNTERFEIT CURRENCY DETECTOR
Bernard William Cooper, Syosset, and Jerome Rubler, Roslyn Heights, both of N.Y., assignors to Spectronics Corporation, Westbury, L.I., N.Y.
Filed Apr. 14, 1969, Ser. No. 815,565
Int. Cl. B07c *5/342*
U.S. Cl. 209—122 **6 Claims**



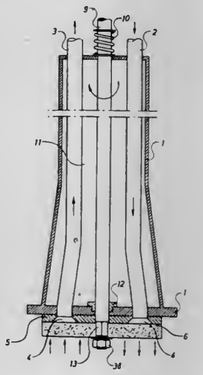
The apparatus disclosed detects counterfeit U.S. paper currency in a manner which is simple, quick, and requires little or not skill. Almost all official U.S. paper currency does not exhibit a chromamorphic response other than that naturally attributable to the cotton or linen stock. Almost all counterfeit currency will exhibit a definite chromamorphic response in the blue range when activated by properly filtered ultraviolet light. Any suspected counterfeits are further subjected to a test for determining the magnetic characteristics of the ink. Genuine U.S. paper currency for the last 25 years uses black ink which incorporates a magnetic pigment.

3,618,766
WATER TREATMENT
Edward F. Morey, Atlanta, Ga., assignor to The Taulman Company, Atlanta, Ga.
Filed Jan. 23, 1970, Ser. No. 5,173
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 **8 Claims**



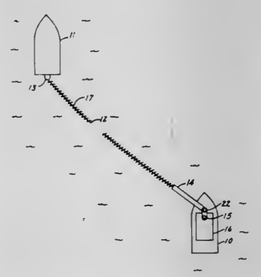
A method for precisely controlling the addition of filter aid chemicals to water treated in a high-rate filter apparatus, wherein turbidity measurements are simultaneously made of the water at an intermediate point in the filter bed and of the final filter effluent. The relationship of the turbidity measurements is used to constantly regulate the optimum addition of filter aid chemicals.

3,618,767
PROCESS AND APPARATUS FOR CONTINUOUS LIQUID SAMPLING
Gottfried Thummel, Mannheim-Waldhof, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany
Filed Oct. 31, 1969, Ser. No. 872,482
Claims priority, application Germany, Nov. 6, 1968, P 18 07 230.5
Int. Cl. B01d *33/00*
U.S. Cl. 210—77 **18 Claims**



Clear samples of fluids containing solids suspended therein are continuously taken without filter-clogging using a filter apparatus immersed in the suspension comprising a rotatable filter disk divided by impermeable material into at least two sectors of liquid-porous material, in which the individual sectors are successively aligned, during each filter disk rotation cycle, in conduit relationship with both an afflux stream comprising liquid continuously withdrawn from the suspension and an efflux stream comprising the afflux stream after it has passed through a substantially closed cycle where the efflux stream passes through the sectors in a flow direction opposite to that of the afflux stream.

3,618,768
LIQUID SWEEPING SYSTEM EMPLOYING HELICAL CONVEYOR METHOD AND APPARATUS
Kenard D. Brown, 1227 South Willow St., Casper, Wyo.
Continuation-in-part of application Ser. No. 808,054, Mar. 18, 1969, now abandoned. This application May 8, 1970, Ser. No. 35,660
Int. Cl. B01d *21/06*
U.S. Cl. 210—83 **29 Claims**



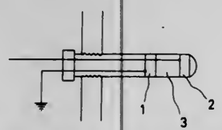
A method and system for removing light fluid such as oil from heavy fluids such as water comprises an extended length of open screw conveyor constructed of material such

that it will float on water. The conveyor may comprise a helical fin having a central bead or core about which stranded cables are wound, the stranded cables may be of steel wire or plastic and when the conveyor is required to float on water, plastic materials are employed for all parts of the conveyor. The conveyor is connected to two spaced motor vessels one end being pivotally connected to one of the vessels for free rotation and the other end passing up into the other vessel through a surrounding conduit and being rotated by a motor mounted on the other vessel. A reservoir is provided in the other vessel to collect the liquid. During operation the cable is rotated in a direction to draw the liquid toward the reservoir vessel and the two vessels are moved forward to sweep an area covered with oil or other lighter fluid. In another embodiment the flexible helical drive member is housed in a flexible tubing having a longitudinal opening for admitting the lighter liquid from the surface of the body of heavy liquid, the entire assembly thus formed floats on the body of liquid.

3,618,769
APPARATUS FOR ION EXCHANGE PROCESS CONTROL

Manuel Adroer Iglesias, Tavern 50, 2, 1, Barcelona, Spain

Filed Sept. 12, 1969, Ser. No. 857,423
Claims priority, application Spain, Sept. 19, 1968, May 22, 1969; 358.307, 367.556
Int. Cl. B01d *35/14*
U.S. Cl. 210—85 **7 Claims**

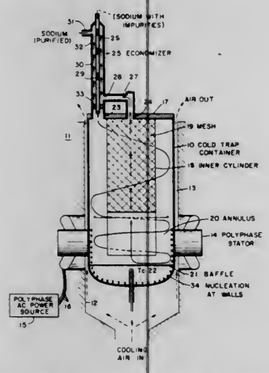


A method and apparatus for ion exchange process control which delivers a voltage proportional to the quotient of two resistances, a first resistance being measured between two electrodes disposed in a ion exchange bed near the point where the effluent leaves and a second resistance being measured between two electrodes in an insulated cell full of exhausted resin, the untreated liquid passing through the cell before entering the ion exchange device. The voltage is amplified and operates a reading instrument and delivers two signals, the presence or absence of such signals triggers a warning and/or an automatic regeneration process.

3,618,770
COLD TRAP

Lawrence E. Pohl, Los Gatos, and Prodyot Roy, Saratoga, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 4, 1970, Ser. No. 8,502
Int. Cl. B01d *35/06*
U.S. Cl. 210—85 **7 Claims**

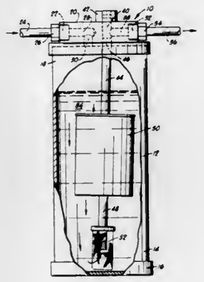


A device for collecting and storing impurities found in high-temperature sodium or other liquid metal loops of nuclear reactors. The effectiveness of nucleating and precipitating these impurities is increased by electromagnetic stirring of the cooled sodium. The electromagnetic stirring action of the sodium or other liquid metal is accomplished with a polyphase rotating magnetic field.

3,618,771
APPARATUS FOR DRYING REFRIGERANT

Robert M. Akers, and Harold L. Westfall, both of Oklahoma City, Okla., assignors to Akers, Incorporated, Oklahoma City, Okla.

Filed Sept. 10, 1969, Ser. No. 856,595
Int. Cl. B01d *17/06, 29/24*
U.S. Cl. 210—95 **1 Claim**

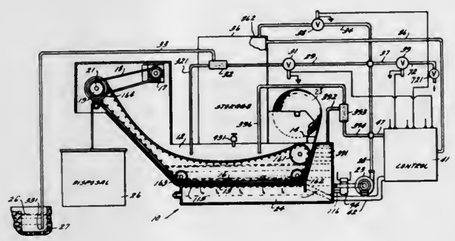


The present invention relates to improved apparatus for drying the refrigerant in refrigeration systems such as automobile air conditioners and the like. A refrigerant permeable desiccant retainer formed of a rigid impervious material having a quantity of particulated or beaded solid desiccant disposed therein is attached within a closed container. The closed container is connected in a refrigeration system downstream of the refrigerant condenser so that liquefied refrigerant passes therethrough. The desiccant retainer prevents the desiccant from escaping from the container and obviates the use of sack-type retainers formed of cloth heretofore used.

3,618,772
CONTROL SYSTEM FOR A VACUUM FILTER

Gerald P. Dietrick, 523 Ridgeview Drive, Florence, Ky.

Filed Feb. 26, 1970, Ser. No. 14,521
Int. Cl. B01d *29/36*
U.S. Cl. 210—104 **8 Claims**



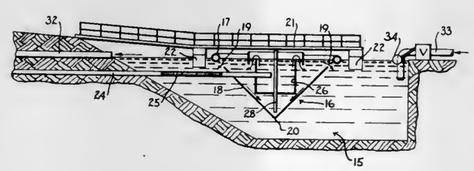
A vacuum filter having a liquid-receiving tank, a filter medium underlying the tank, a vacuum-chamber-receiving

liquid from the filter medium, and a vacuum pump in communication with the vacuum chamber for withdrawing filtered liquid from the vacuum chamber. A control chamber is connected to the tank by a conduit so that a level of liquid is maintained in the control chamber substantially equal to the level of liquid in the tank. A control ejector receives a portion of the filtered liquid from the vacuum pump. A dip tube is connected to the control ejector and has an open end terminating at a selected liquid level. The ejector subjects the dip tube to a reduced pressure when the open end is covered with liquid. A valve which directs other filtered liquid from the pump is actuated by a pressure-operated device connected to the dip tube and to the valve.

3,618,773
WATER PURIFICATION APPARATUS

Sten Jacquet, Hagersten, Sweden, assignor to Sten Jaquet AB, Hagersten, Sweden

Filed Nov. 24, 1969, Ser. No. 879,091
Claims priority, application Sweden, Dec. 2, 1968, 16453/68
Int. Cl. B01d *21/02*
U.S. Cl. 210—123 **3 Claims**

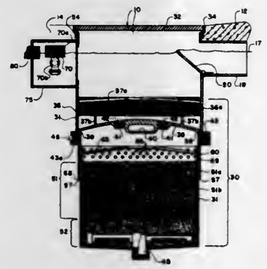


Contaminated raw or waste water is delivered into at least one basin which is supported within a water-filled reservoir. The contaminated water in said basin is subjected to mechanical, biological and/or chemical purification, and the treated effluent is caused to overflow into the reservoir. The basin has a conical wall of supple nonporous material that yields readily to even slight movements of the water both internally and externally of the basin unit.

3,618,774
COMBINATION SWIMMING POOL FILTER, SURFACE SKIMMER AND WATER LEVEL CONTROL DEVICE

Dale Delphia, Route 3, Box 164 A, Newberg, Oreg.

Filed Feb. 2, 1970, Ser. No. 7,561
Int. Cl. E04h *3/20*
U.S. Cl. 210—128 **23 Claims**

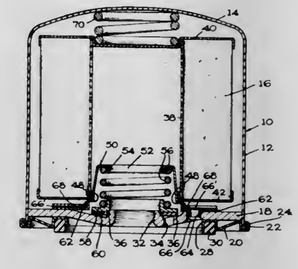


A swimming pool filter unit comprising filter and sand layers, some of the sand cleanable by removing a containing basket, the unit also having automatic pool fill control and overflow drain means.

3,618,775
FILTER ASSEMBLY CHECK AND RELIEF VALVES

William Herbert Hultgren, 6645 Emerald Lake Drive, Miramar Isles, Fla.

Filed July 25, 1969, Ser. No. 845,020
Int. Cl. B01d *34/14, 27/10*
U.S. Cl. 210—130 **1 Claim**

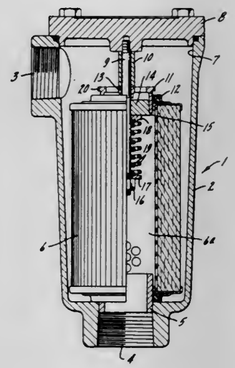


A spin-on oil filter comprising a cylindrical casing having a filter element therein with a closure member closing off one end having a central opening therein formed by a threaded nipple for screwing the filter onto an engine and discharging oil therefrom, oil inlet means surrounding said nipple, and oil bypass ports surrounds said nipple and disposed between said nipple and said oil inlet means, and an oil bypass valve disposed over said bypass ports and biasing means normally urging said bypass valve in a seated position, said bypass valve being disposed in parallel flow relationship with said oil inlet means and disposed within a sleeve upon which is seated an antidrainback valve, and said sleeve being disposed within the center tube of a filter element disposed within said casing.

3,618,776
FILTER ASSEMBLY BYPASS KIT

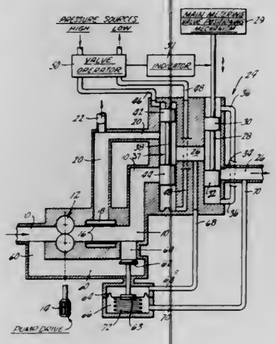
Walter J. Kudlaty, Elmhurst, Ill., assignor to Marvel Engineering Company, Chicago, Ill.

Filed Oct. 3, 1969, Ser. No. 863,478
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—130 **4 Claims**



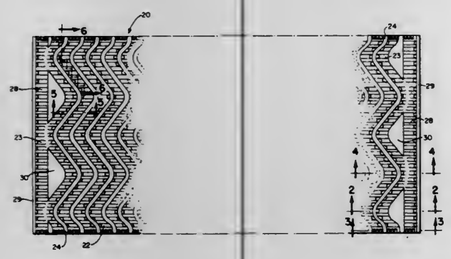
A filter assembly kit including a closure, a support rod removably secured to the closure, a spacer on the rod, and interchangeable plug and bypass valve elements alternately positionable on the rod.

3,618,777
LOW-FLOW CONTAMINATED FUEL TRANSFER SYSTEM FOR A FUEL CONTROL
Gene A. Meyer, Simsbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Dec. 15, 1969, Ser. No. 885,215
Int. Cl. B01d 29/36
U.S. Cl. 210—130 4 Claims



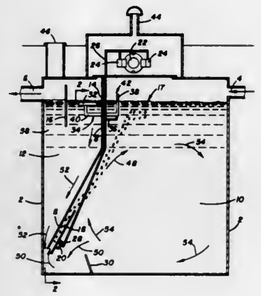
A fuel control system, adapted to handle contaminated fuel, has a primary fuel supply line incorporating a pump and a wash flow filter downstream of the pump. A bypass line containing a bypass valve communicates with the primary line at respective positions upstream of the pump and downstream of the filter. A secondary fuel supply line communicates with the filter to receive a flow of filtered fuel. A main fuel supply line includes a window-type metering valve which receives fuel from either the primary or secondary line via a transfer valve. At low flows the metering valve receives fuel from the secondary line so that it will not become clogged by contaminants in the fuel and at high flows contaminated fuel is delivered to the metering valve through the primary line.

3,618,778
LIQUID-TREATING APPARATUS
Joseph H. Benton, and Joseph A. Self, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
Filed May 22, 1969, Ser. No. 827,011
Int. Cl. B07b 7/00
U.S. Cl. 210—150 8 Claims



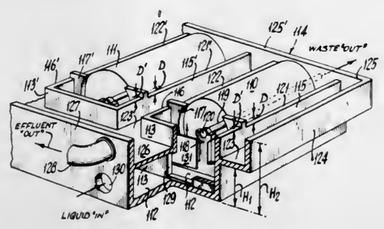
A liquid-treating unit particularly suited for the treatment of liquid waste by aerobic bacterial action includes a module made of alternate flat and corrugated sheets of a thermoplastic material. The corrugated sheets are joined to the flat sheets at the apices of the corrugations. The corrugations have flat apices and reinforced sidewalls to enhance the strength of the module.

3,618,779
SEWAGE TREATMENT APPARATUS
Gerald J. Goodman, Chomedey, Laval, Canada, assignor to Air-Gest International Corp., Montreal, Quebec, Canada
Filed Nov. 21, 1969, Ser. No. 878,843
Claims priority, application Canada, Oct. 31, 1969, 66,373
Int. Cl. C02c 1/12
U.S. Cl. 210—195 5 Claims



A sewage treatment apparatus or plant wherein treatment of the sewage is achieved by aeration. The apparatus consists of a tank having an inlet for raw sewage and an outlet for decomposed sewage, and an inclined baffle structure between the inlet and outlet to divide the tank into an aeration chamber and a settling chamber. The inclined baffle structure permitting sewage flow beneath and above the baffle structure, and a compressor for delivering air under pressure to an air diffuser positioned adjacent the lowermost portion of the inclined baffle structure whereby air in the form of bubbles issuing from the diffuser results in countercurrent flow in the aeration and settling chambers causing intimate mixing and aeration of all of the sewage in the tank. The apparatus also provides for means for returning scum from the surface of the settling chamber to the aeration chamber.

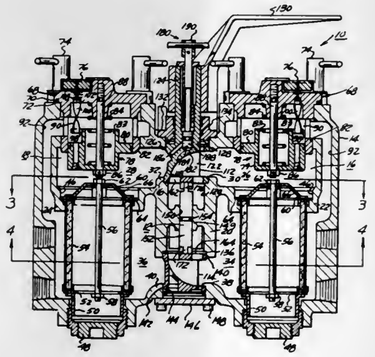
3,618,780
ROTARY WATER-FILTRATION APPARATUS
George R. Evans, 58 Nelson Ave., Harrison, N.Y.
Continuation-in-part of application Ser. No. 787,106, Dec. 26, 1968, now Patent No. 3510002. This application Apr. 15, 1970, Ser. No. 28,782
Int. Cl. B01d 33/06
U.S. Cl. 210—232 15 Claims



The invention contemplates a rotary-filter system in which the end-support structure, for ultimate support of a filter or strainer drum and its axle, is built or erected at the installation site, of concrete, masonry, iron, steel or other suitable material; such structure may, for example, be integrally cast or molded with the concrete, masonry or the like formation of the basic tank structure into which the strainer is to be installed. The end-support structure is provided in opposed walls of a treatment chamber, and one of these walls is the inlet or upstream wall; in the case of the upstream wall, the support structure is a stool or pedestal extending upwardly at

the inlet to the interior of the drum, and at the other end of the support structure is formed in or as a part of the opposite end wall. Axle-loaded bedplates are adjustably securable on each end-support structure, to assure correct axle orientation and alignment at the site. Once thus aligned, the bedplates are secured, and the axle is fastened in place with its revolvably mounted drum necessarily also in place. Seal, drive, and other finishing connections are then made.

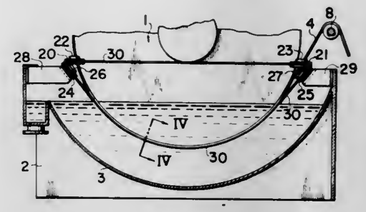
3,618,781
DUPLEX FILTERING DEVICE
Carl A. Brown, Birmingham, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 22, 1969, Ser. No. 852,261
Int. Cl. B01d 35/12
U.S. Cl. 210—341 10 Claims



A duplex filtering device having an inlet port and an outlet port provided with a pair of chambers separated by a common partition, each chamber having a filter element with an inlet and an outlet passageway respectively adapted to be connected to the inlet and the outlet ports of the filtering device. A valve member is disposed at each end of the partition, one of the valve members being adapted to be rotatably shifted from a first position for connecting one of the inlet passageways to the inlet port and to a second position for connecting the other inlet passageway to the inlet port, while the other of the valve members is adapted to be rotatably shifted from a first position for connecting one of the outlet passageways to the outlet port, and to a second position for connecting the other outlet passageway to the outlet port; the pair of valve members being connected to each other for simultaneous movement by means of a universal link extending through the common partition. A third valve carried within the device fluidly connects the two chambers to balance the pressure therein so as to permit shifting of the pair of valve members between their first and second positions.

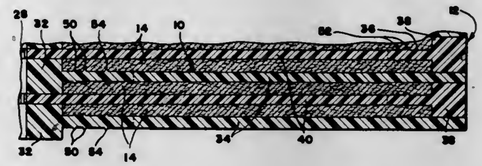
3,618,782
CONTINUOUS ROTARY DRUM VACUUM FILTER
Akitoshi Iwatani, Marugame, Japan, assignor to Ishigaki Kiko Co., Ltd., Sakaide, Japan
Filed May 21, 1969, Ser. No. 826,412
Int. Cl. B01d 33/14
U.S. Cl. 210—401 6 Claims

In a continuous rotary drum vacuum filter of the type employing a filter medium in the form of an endless belt which is entrained over the drum and over rolls spaced from the drum, a device for preventing the intrusion of unfiltered slurry into filtering chambers in the drum through the clearance between the drum and the filter medium comprising a pair of endless pressure belts which press the filter medium against both sides of the drum in the portion of the drum that is immersed in a slurry tank. The pressure belts press the filter medium into channels in the edge of the drum and effect a



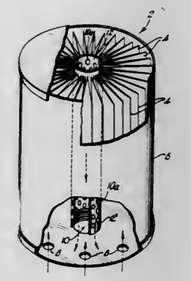
tight seal that eliminates leakage between the filter and the drum in the immersed portion thereof.

3,618,783
FILTER
Kenneth W. Cuyler, Deerfield, Ill., assignor to William W. Nugent & Co., (Inc.), Skokie, Ill.
Filed Oct. 17, 1969, Ser. No. 867,333
Int. Cl. B01d 29/34
U.S. Cl. 210—492 6 Claims



A filter having a plurality of axially aligned and axially spaced flat annular disks of filtering material separated by inner and outer support members alternating axially with the respective disks and having radial spokes providing axial support for the central portions of the disks intermediate their peripheries and terminating in circumferentially widened portions cooperating with adjacent support members to define inlet and outlet openings communicating with the spaces between the disks for the flow of fluid axially through the disks.

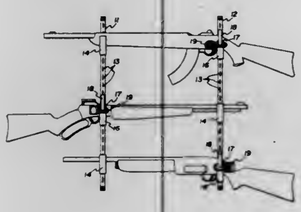
3,618,784
RUST-INHIBITING OIL FILTER ELEMENT
Walter W. Hellmuth, Beacon, and Raymond C. Schlight, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,737
Int. Cl. B01d 39/00
U.S. Cl. 210—493 17 Claims



An oil filter suitable for use in the lubricating oil system of an internal combustion engine, the oil filter element of which has an adherent oxygenated boron derivative. The oxygenated boron derivative can be boric acid and/or any of its dehydration products, salts or esters.

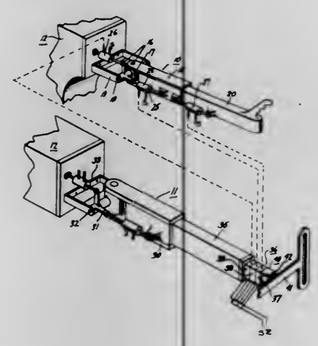
The methods of dispersing the oxygenated boron derivative in the oil filter element include (1) accelerating the oxygenated boron derivative toward the oil filter element by maintaining a pressure differential across the oil filter element; (2) sandwiching the oxygenated boron derivative between two layers of oil filter element material; (3) making a solution of the oxygenated boron derivative in a liquid vehicle, soaking the oil filter material with the solution and volatilizing the liquid vehicle from the oil filter element.

3,618,785
GUNRACK
Albert G. Newman, 6157 Crawford St., San Diego, Calif.
Filed Oct. 10, 1969, Ser. No. 865,438
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **1 Claim**



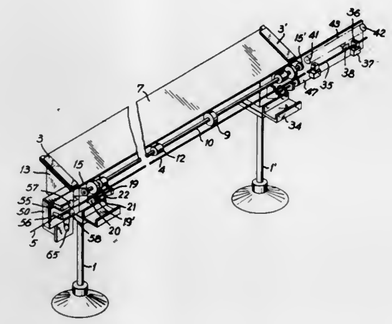
A gun rack having first and second wall brackets with a plurality of vertically aligned slots therein adapted for cooperation with first and second gun brackets dimensioned for receiving a rifle therein; one of the brackets having a locking member cooperating with the wall bracket for locking the gun in position.

3,618,786
MATERIAL-HANDLING APPARATUS WITH END EFFECTOR FORCE RESOLVER AND FEEDBACK
Bruce R. Fick, Ballston Lake, N.Y., assignor to General Electric Company
Filed Jan. 2, 1969, Ser. No. 788,402
Int. Cl. B25j *3/04*
U.S. Cl. 214—1 CM **5 Claims**



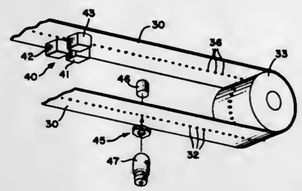
Force feedback is provided to a master member from a slave member by forces sensing elements located at the end of the slave member which exerts the force and by actuators located at the master member responsive to the signals developed by the force-sensing elements.

3,618,787
FINE BAR FEEDER FOR AUTOMATIC BAR MACHINE
Kenji Nemoto, Tokyo, and Masaru Nakajima, Chiba, both of Japan, assignors to Seiko Seiki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 16, 1970, Ser. No. 11,708
Claims priority, application Japan, Feb. 17, 1969, 44/11089
Int. Cl. B65h *5/16*
U.S. Cl. 214—1.5 **1 Claim**



A fine bar feeder for an automatic bar machine wherein the bar material is fitted with a finger and housed in a feeding tube. The feeding tubes carrying the bar material are fed from a cartridge to a feeding position. A pusher rod pushes the rear portion of the bar through the finger block into alignment with feed rollers which are operative to feed the bar to the bar machine and to discharge the remaining unused portion of the bar.

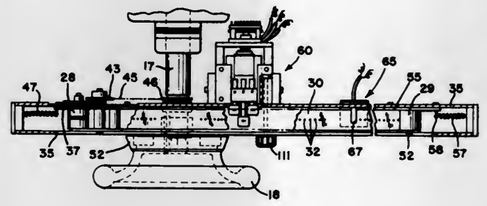
3,618,788
PAPER CUTTER CONTROL
James E. Murray, Cleveland, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 8, 1970, Ser. No. 1,406
Int. Cl. B23q *5/22*
U.S. Cl. 214—1.6 **9 Claims**



A position control circuit for slowing the movement of a high-inertia member prior to stopping at a preselected position includes a position control tape having magnetic pulse-generating marks stored thereon to define desired stopping positions of the member. A pair of pulse-sensing means scans the control tape with the first pulse-sensing means conditioning an electronic counter, the output of which controls the speed of the drive means. A second pulse-sensing means stops the member at the desired position. Position-indicating marks are also included on said control tape and are sensed by a third pulse-sensing means which supplies an input to the counter. After stopping, the drive means will restart at the higher speed unless other marks are detected by the first pulse-sensing means which have not yet been detected by the second pulse-sensing means, in which case the drive means will restart at the lower speed. In all cases, the control tape will move a distance at least equal to the distance between the first pulse sensing means and the second pulse sensing

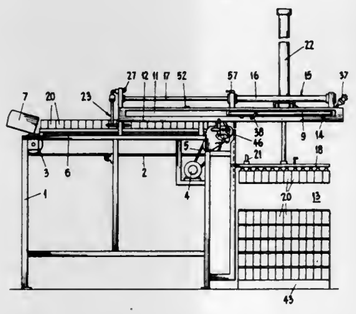
means before the counter returns to its predetermined status to insure that no additional stop marks are located between the sensing heads.

3,618,789
MATERIAL CUTTER CONTROL APPARATUS
Dorse James Young, Centerville, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 8, 1970, Ser. No. 1,407
Int. Cl. B23q *5/50*
U.S. Cl. 214—1.6 **7 Claims**



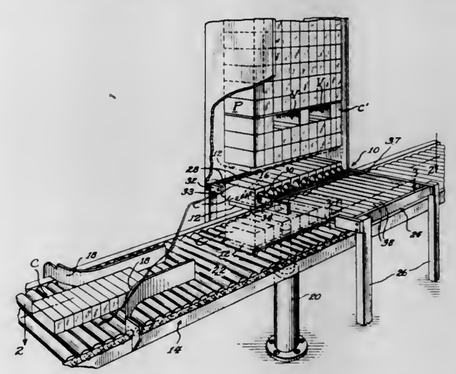
A control apparatus for a material-positioning device includes a magnetic tape which moves, in response to the movement of a machine element, relative to magnetic sensing and/or recording heads. The assembly which supports the heads is indexed in a direction perpendicular to the direction of relative movement to define a plurality of tracks on the magnetic tape. A mechanism moves the head assembly a predetermined distance for each indexing movement When the head assembly reaches one extremity of the tracks, its indexing direction of movement is reversed, and the heads are repositioned to define tracks on the tape which alternate with the tracks defined by the head assembly when moving in the first direction. An adjustment cam is provided to move the head assembly in the direction of relative movement for accurate alignment of the machine element. The magnetic tape is continuous and is moved synchronously with the machine element by means of a chain driven by a lead screw. The chain is tensioned by a first spring and the tape is tensioned by a second spring having a spring constant less than the first spring.

3,618,790
APPARATUS FOR ASSEMBLING AND DEPOSITING LAYERS OF ARTICLES
Joseph T. Carmody, 100 Balaclava Road, Shepparton, Victoria, Australia
Filed Aug. 29, 1969, Ser. No. 854,118
Int. Cl. B65g *57/04*
U.S. Cl. 214—6 FS **14 Claims**



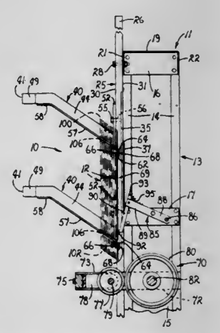
An apparatus includes a conveyor for assembling rows of containers or the like against a stop. A transfer carriage, movable back and forth, is included, having a suction head adaptable to grip and release the containers by means of a vacuum applied thereto. A control circuit is included, and is operable by a fluid medium to actuate the transfer device to a gripping position, connect the suction head to a source of vacuum, release the stop, and move the transfer device away from the position of assembly and toward an unloading location. At such unloading location, means become operable to lower the suction head to a container-depositing position. The vacuum at the suction head is then released to allow the suction head to move clear of the deposited containers, and return to its original position.

3,618,791
STACKING MECHANISM
Thomas C. Potter, Frankfort, and Edward J. Stahnke, Riverdale, both of Ill., assignors to Interlake Steel Corporation
Filed Nov. 28, 1969, Ser. No. 880,651
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **7 Claims**



A stacking mechanism for stacking a plurality of articles in a vertical stack includes an elevatable platform and a plurality of pairs of opposed rollers or pawls which are rotatable in one direction by the articles when the platform is elevated to position a course of the articles between the opposed rollers or pawls, but which do not rotate in the other direction when the platform is lowered. The rollers or pawls are urged against the articles in the course which is positioned between them, whereby successive courses may be added to the stack and the stack is supported by the rollers.

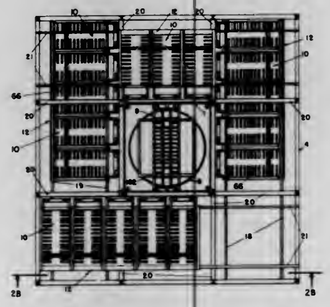
3,618,792
MAT FEEDING MAGAZINE
Gerald C. Paxton, Sanger, Calif., assignor to General Nailing Machine Corporation
Filed Sept. 29, 1969, Ser. No. 861,708
Int. Cl. B65g *59/00*
U.S. Cl. 214—8.5 F **10 Claims**



A mat-feeding magazine for use with a reciprocal member to propel said mats along a predetermined path providing an

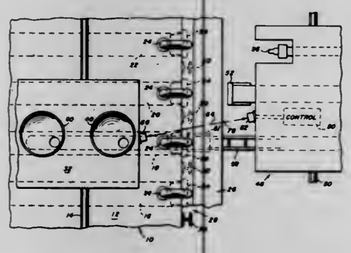
inclined ramp adapted to hold a plurality of substantially flat mats in substantially upright position thereon having an upper mat loading end and an opposite lower mat discharge end adjacent to said path and including mat restraining means at said discharge end of the ramp being effective to preclude inadvertent or multiple feeding of said mats from the magazine by said reciprocal member.

3,618,793
ELEVATOR TURNTABLE-TYPE MECHANICAL AUTO PARKING SYSTEM
Ralph W. Coursey, 1414 E. Wilshire, Oklahoma City, Okla.
Filed Feb. 7, 1969, Ser. No. 797,549
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 CD **6 Claims**



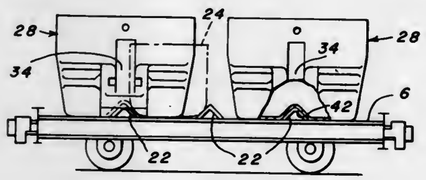
This invention discloses a system, mechanically operated that will park, store and unpark automobiles reversed in direction from their parked direction, and one which is especially adapted for installation in high demand areas where sites are costly and conventional parking systems impractical.

3,618,794
METHOD AND APPARATUS TO INTERLOCK A LARRY CAR AND A PUSHER MACHINE
Edward J. Helm, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed May 2, 1969, Ser. No. 821,412
Int. Cl. C10b *31/04*
U.S. Cl. 214—23 **17 Claims**



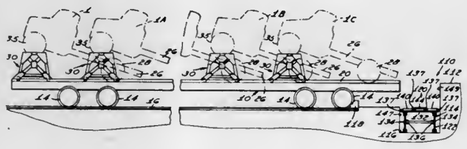
A signal-transmitting device such as a source of columnated gamma ray radiation is positioned on the upper structure of a pusher machine and a receiver responsive to gamma ray radiation is positioned on the larry car. An actuator device such as an electrical relay is arranged to control the power-operated apparatus for discharging the coal from the hoppers on the larry car and is arranged to be actuated by the signal-transmitting device through the receiver. The signal transmitted by the signal device on the pusher machine is directional and is only received by the receiver on the larry car when the leveler bar on the pusher machine is in position to level the coal in the same oven which the larry car is in position to charge. The power-operated apparatus for discharging the coal from the hoppers on a larry car into the oven remains deenergized until the relay is actuated by the signal transmitted from the pusher machine. With this arrangement, the oven can not be charged with coal from the larry car until the leveling bar is in position to level the charge in the same oven. A second signal-transmitting device is positioned on the larry car and a second receiver is positioned on the pusher machine. The second signal-transmitting device is arranged to transmit a signal when a preselected quantity of coal has been charged into the oven and the second receiver, upon receiving the signal, actuates a relay to energize the power-operated apparatus for moving the leveler bar into the coke oven being charged to level the coal in the coke oven chamber and maintain a passageway between the coal charge and the top of the coke oven chamber.

3,618,795
CHARGING BOX FOR AN OPEN HEARTH FURNACE
Charles J. Burch, Lower Makefield Township, Bucks County, Pa., assignor to United States Steel Corporation
Filed Aug. 18, 1969, Ser. No. 850,850
Int. Cl. F27d *3/06, 3/12*
U.S. Cl. 214—31 **4 Claims**



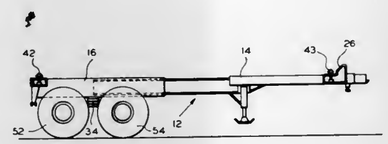
A box for charging scrap into an open-hearth furnace has a longitudinal triangular groove in its bottom with flat portions on each side. In charging the furnace scrap is placed in a plurality of these boxes which are placed on a charging car having a plurality of spaced apart transverse triangular projections. Each box is positioned with its groove fitting over one of the projections. The scrap is then charged in the usual way. Other additives, such as iron ore and limestone, are placed in smaller boxes having a width such that the boxes can be held in position on the car between adjacent triangular projections. The small boxes so positioned are unloaded into the furnace in the usual way.

3,618,796
VEHICLE LOADING AND TRANSPORT SYSTEM
Israel D. Peisner, Huntington Woods, Mich., assignor to Whitehead & Kales Company, River Rouge, Mich.
Filed July 25, 1969, Ser. No. 844,873
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 BA **5 Claims**



The invention is embodied in a vehicle transport, in this instance a rail car, having a plurality of upright pedestals adapted to support the front wheels of vehicles arranged in tandem on the transport. Apparatus is also provided for transferring the pedestals and vehicles to or from the transport.

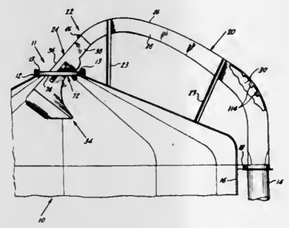
3,618,797
LOAD TRANSFER DEVICE AND METHOD
Robert A. Pratt, Harbert, Mich., assignor to Clark Equipment Company
Filed Sept. 30, 1969, Ser. No. 862,233
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 BA **7 Claims**



A device for transferring a load container to a dock from a truck employs a telescoping rear truck trailer chassis portion movable relative to a front portion with support of the load container on the supporting surfaces of said chassis portions arranged for relative sliding movement with the under surface of the container on forward and reverse movement of the truck thereby to slide the container onto the dock.

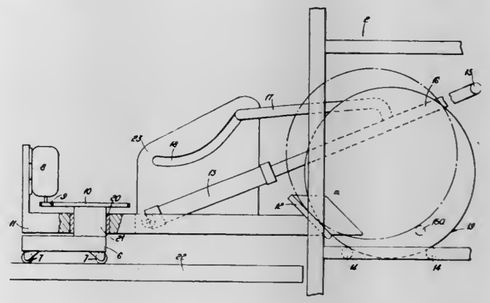
A method of transferring a load container from a truck to a dock by a series of relative sliding movements between the container and portions of the truck; first projecting the rear portion of the container onto the dock by reverse drive while a rear portion of the truck telescopes under the container; subsequently sliding the truck trailer rear and front portions forward under the container by forward drive of the truck; and pushing the container further into storage position on the dock with reverse drive again. A modified form leaves the container with its rear end on the edge of the dock and the front portion resting on a removable support.

3,618,798
DISTRIBUTOR SPOUT FOR GRAIN AND SILAGE
Melvin E. Dreier, Dumont, Iowa
Filed Feb. 9, 1970, Ser. No. 9,692
Int. Cl. B65g *53/40, 65/32;* **B02c** *9/00*
U.S. Cl. 241—39 **5 Claims**



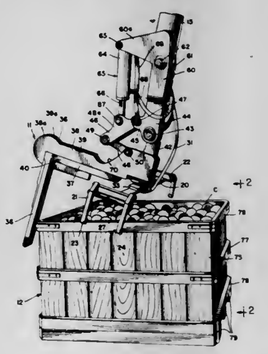
A spout structure, attachable to a fill pipe, for directing grain and silage into a silo is adaptable with slight modification for either a center fill or a side fill operation and includes a plurality of different directional flow channels that divide the grain and silage so that there is uniform distribution of the same within the silo. One embodiment of this spout is designed especially for use with corn and includes certain obstructions in the flow channels for cracking the corn during delivery of the same to the silo.

3,618,799
LOADING APPARATUS FOR A CABLE STRANDING MACHINE
Ronald Yaxley Gill, Ilford, and William George Cook, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Apr. 7, 1970, Ser. No. 26,383
Claims priority, application Great Britain, Apr. 16, 1969, 19,336/69
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 **7 Claims**



A loading apparatus is mechanized to load conductor bobbins onto a cable-stranding machine. The apparatus includes a wheeled base, an axle rigidly attached to the base, a platform rotatably mounted about said axle, a retractable hydraulic arm, one end of which is pivotally mounted on the platform, an actuating means for the hydraulic arm and means for rotating the platform. The actuating means includes a guide rigidly mounted on the platform and a linkage coupled to the guide for imparting lifting, lowering, extending and retracting motions to the arm. The apparatus is supplied with a scoop at a periphery of the platform and a holding bar at the end of the arm to lift up a bobbin while the holding bar presses the bobbin against the scoop. The apparatus may be adapted to load two or more bobbins simultaneously. Full bobbins are located in a storage rack running parallel with a carriage in the stranding machine and the loading apparatus is positioned between the rack and the carriage to automatically unload empty bobbins from the carriage and replace them with full bobbins from the rack.

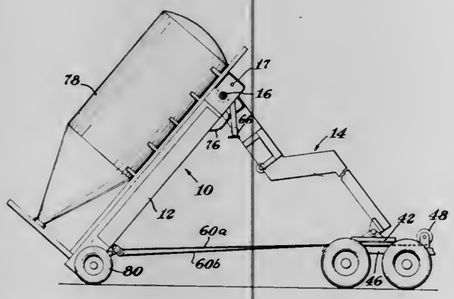
3,618,800
CONTAINER-DUMPING APPARATUS
Vencil Collins, Haines City, and John E. Petersen, Lake Wales, both of Fla., assignors to Petersen Industries, Inc., Lake Wales, Fla.
Filed Oct. 23, 1969, Ser. No. 868,682
Int. Cl. B65g *67/22, 67/46*
U.S. Cl. 214—313 **9 Claims**



A container-dumping apparatus particularly suitable for use with citrus and the like. The apparatus includes a grapple

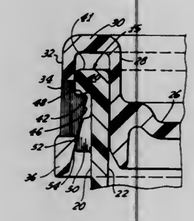
swingably mounted on a lift device such as a crane or boom. The grapple includes an elongated lift bar and a generally L-shaped support arm. The lift bar pivotally carries a clamp on each end thereof, and the clamps are operatively connected to a hydraulically operated piston carried by the lift bar for movement into and out of a container-engaging position. The support arm extends away from the bar and includes a generally horizontally extending base portion and a downwardly extending leg portion which is adapted to extend along the side of a container to be dumped. A hydraulic cylinder is pivotally mounted on the lift device, and the piston associated therewith is extendible to cause the support arm and lift bar to swing about the lift device, thereby tilting the container and dumping the contents thereof.

3,618,801
COMBINATION TANK-TRAILER ASSEMBLY
Donald E. Blanchard, Collinsville, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 8, 1970, Ser. No. 35,773
Int. Cl. B60p 1/04
U.S. Cl. 214—501 **6 Claims**



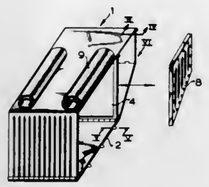
The invention concerns a tank-erecting trailer unit in which the trailer may be hauled to the location when the tank is to be erected, and then the trailer is pivoted at its hinge point by cable means to raise the tank to a vertical position. The cable means extend between the rear of the trailer and a winch located at or near the forward end of the trailer.

3,618,802
DISTORTION PREVENTER
George Yates, Jr., Glendale, Calif., assignor to Growth International Industries Corp., Cleveland, Ohio
Continuation-in-part of application Ser. No. 781,556, Dec. 5, 1968, now Patent No. 3,499,574, and a continuation-in-part of 791,933, Jan. 17, 1969, now Patent No. 3,532,544. This application Jan. 26, 1970, Ser. No. 883,869
Int. Cl. B65d 41/22
U.S. Cl. 215—41 **12 Claims**



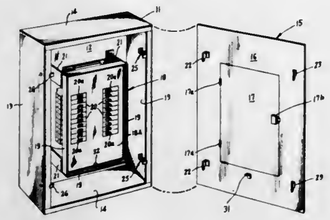
A distortion preventer bead on a container body is spaced from another bead, which cooperates with an adjacent peripheral leg of a closure to provide a locking engagement of the closure and the container body, and serves to limit any pivotal motion by the leg in the direction of the container body.

3,618,803
AIRFREIGHT CONTAINER
Manfred Dobberkau, Herborn; Helmut Lukas, Bicken, and Kurt Luckhoff, Frohnhausen, all of Germany, assignors to Burger Eisenwerke Aktiengesellschaft, Herborn/Dillkreis, Germany
Filed Aug. 14, 1969, Ser. No. 850,062
Claims priority, application Germany, Nov. 19, 1968, P 18 09 634.9
Int. Cl. B65d 7/24
U.S. Cl. 220—1.5 **8 Claims**



A collapsible airfreight container of generally prismatic configuration having a rectangular parallelopipedal main portion including a base, sidewalls and a top, and a trapezohedral cantilevered portion extending laterally of the main portion and projecting beyond the base, the container being collapsible by virtue of hinged junctions between the rectangular sidewalls, base and top. The main section is provided with openings over its entire sidewalls which are closed by flexible covers adapted to be rolled up, while trapezoidal stiffening inserts from the sidewalls of the cantilevered compartment.

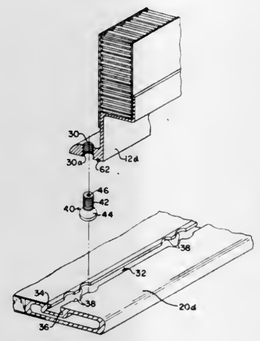
3,618,804
CONCEALED TRIM CLAMP FOR ELECTRICAL PANELBOARDS AND OTHER WIRING CABINETS
Werner A. Krause, West Hartford, Conn., assignor to General Electric Company
Filed Oct. 20, 1969, Ser. No. 867,778
Int. Cl. H02g 3/08
U.S. Cl. 220—3.8 **4 Claims**



A concealed front cover or "trim" fastener for electrical panelboards or other wiring cabinets comprising four hooks fixedly attached to the inside of the front cover. Four support arms or brackets are attached to the inside of the panelboard or cabinet and have bent-over portions onto which the hooks of the front cover may be placed to support the front cover. The support arms are slidably adjustable in a direction perpendicular to the plane of the front cover (i.e., toward and away from the backwall of the cabinet). In one form, the cover is substantially larger than the cabinet, and when the cabinet is recessed into a wall, the outer edges of the front

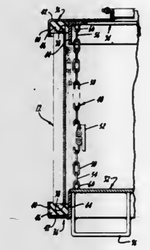
cover overlie peripheral portions of the wall and the cover is spaced away from the cabinet slightly. The support arms are drawn out to accommodate this spacing, and then fixed in place, such as by a nut and bolt. A locking screw mounted on a fixed portion of the cabinet is advanced after the front has been mounted in place and engages a bracket fixedly carried by the front cover and prevents the front cover from being raised so as to disengage the hooks from the adjustable support arms, thereby locking the front in place.

3,618,805
CARGO CONTAINER OR THE LIKE
Oscar W. Meller, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Division of Ser. No. 808,481, Mar. 19, 1969, Pat. No. 3,563,578. Filed July 15, 1970, Ser. No. 54,981
Int. Cl. B65d 7/28, 7/24
U.S. Cl. 220—6 **7 Claims**



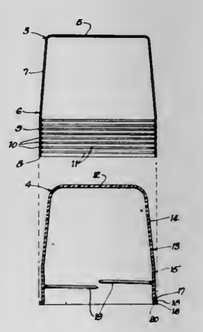
The invention relates to a cargo container or the like constructed of panels which have unique joints specifically adapted for quickly assembling or disassembling the container. Specifically, a unique flexible hinge arrangement is provided for vertical joints, while a quick-fitting locking arrangement is provided at all base horizontal joints. The base joint comprises a flange on the vertical member mating with a recessed beveled groove on the base member, and a plurality of screws threadably received in the flange of the vertical member having tapered heads slidably received in the beveled groove of the base member whereby when the screws are tightened, they lock into the groove of the base member and secure the vertical member to the base member.

3,618,806
COLLAPSIBLE CONTAINER
Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc.
Filed May 24, 1967, Ser. No. 640,930
Int. Cl. B65d 7/30, 45/06
U.S. Cl. 220—7 **7 Claims**



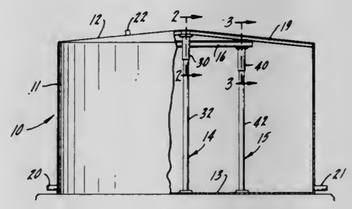
A collapsible container for storing and transporting relatively large quantities of packaged bulk material embodying sidewalls fabricated of a relatively rigid material having a hinge arrangement between adjacent walls formed of an elongate strip of relatively bendable and fluid-impervious material so that the walls may be maneuvered to an open position when the container is assembled to receive material and to a flattened position, with at least portions of adjacent sidewalls in contact with each other, when the container is emptied and disassembled. In addition, at least one end closure is provided having a receptacle attached to and circumscribing the end closure designed to receive the end edges of the walls in pressurable contact when the container is assembled thereby to form a relatively fluidtight seal therebetween, such pressurable contact being provided by a plurality of elongate ties secured to the container and the end closure with an integral camming device operable to increase and decrease the effective length of the ties.

3,618,807
INSULATED METAL CUPS FOR THERMOS BOTTLES
Robert M. Rownd, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Continuation-in-part of application Ser. No. 519,072, Jan. 6, 1966, now abandoned. This application Oct. 19, 1966, Ser. No. 587,881
Int. Cl. B65d 7/12, 7/22
U.S. Cl. 220—10 **19 Claims**



A thermos bottle cup having a cup-shaped metal outer shell and a cup-shaped plastic liner. The upper edge of the shell is engaged with an annular outwardly projecting flange formed in the upper edge of the liner, and the cylindrical upper portions of the liner and shell are tightly fitted together. A quantity of adhesive is disposed between the cylindrical portions.

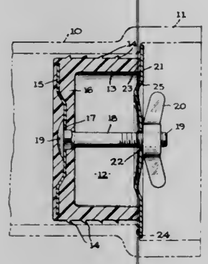
3,618,808
STORAGE TANK
Reign C. Ulm, and Mark D. Kinghorn, both of Schereville, Ind., assignors to Aerojet-General Corporation
Filed June 10, 1970, Ser. No. 45,165
Int. Cl. B65d 25/24
U.S. Cl. 220—18 **11 Claims**



A method and apparatus for removing deformations from a roof structure of a storage tank of the type wherein the roof

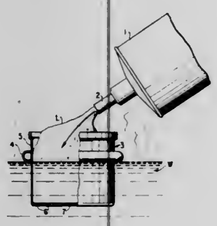
is supported by a plurality of support columns. The method comprises the steps of: (a) creating an upward force against the underside of the roof structure thereby increasing the length of the columns; and (b) removing the upward force while retaining the columns in their increased length. The apparatus provides a storage tank having a plurality of support columns adjustable in length and specific means to retain the columns in an increased length.

3,618,809
RELEASABLE FLUID SEAL FOR CONDUITS
Paul D. Martino, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.
Filed Sept. 3, 1969, Ser. No. 854,991
Int. Cl. B65d *39/12*
U.S. Cl. 220—24.5 **1 Claim**



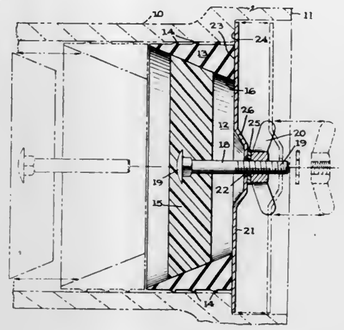
A releasable fluid seal for conduits or pipes has a cup of an elastomeric resilient material fitting into the pipe or conduit. A plate is embedded in the bottom of the cup and a bolt extends through the plate, is embedded in the bottom of the cup and extends through the open end of the cup. A second plate engages the periphery of the open end of the cup and also engages the end of the conduit or pipe or engages in the bell of the pipe. A wing nut on the bolt draws the two plates toward each other and bows the cup into fluidtight sealing engagement with the inner wall of the conduit or pipe.

3,618,810
SHAVING LATHER MOISTENING AND HEATING DEVICE
Henry Allen Wilson, 81 Atherton Ave., Atherton, Calif.
Filed Oct. 21, 1969, Ser. No. 868,039
Int. Cl. B65d *51/24*
U.S. Cl. 220—24 R **3 Claims**



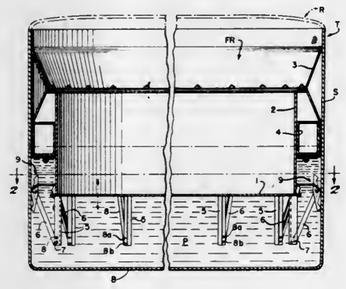
A combined aerosol-dispensed shaving lather confining, moistening and heating device which device also serves to enclose and protect the aerosol dispensing nozzle and valve when not being used.

3,618,811
RELEASABLE FLUID SEAL OR TEST PLUG FOR CONDUITS
Paul D. Martino, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.
Filed Sept. 15, 1969, Ser. No. 857,790
Int. Cl. B65d *39/12*
U.S. Cl. 220—24.5 **1 Claim**



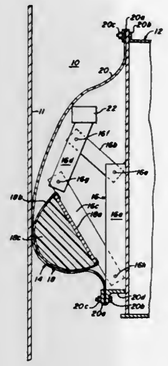
A releaseable fluid seal for conduits or pipes has a cylinder of an elastomeric resilient material fitting into the pipe or conduit. The cylinder has a conical internal surface. A truncated conical plate fits in the cylinder and a bolt extends from the plate through an open end of the cylinder. A second plate engages the periphery of the open end of the cylinder and also engages the end of the conduit or pipe or engages in the bell of the pipe. A wing nut on the bolt draws the two plates toward each other and bows the cylinder into fluidtight sealing engagement with the inner wall of the conduit or pipe. An externally threaded hollow tube passing through the conical plate may be used in place of the bolt when the seal is to be used as a test plug.

3,618,812
WAX SCRAPER FOR FLOATING ROOF TANKS
Harold A. Maeder, Coraopolis; Ardell H. Nelson, Coraopolis, and Franklin R. Neely, Sewickley, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed June 27, 1969, Ser. No. 837,252
Int. Cl. B65d *87/20*
U.S. Cl. 220—26 S **23 Claims**



A wax scraper for removing waxy deposits from the inside surface of the wall of storage tanks, comprising a floating roof structure floating on product stored in the tank and having affixed thereto a plurality of support means, each support means carrying a scraper blade having scraper blade guiding or controlling means attached thereto for guiding the scraper blades over obstructions, such as seam welds or the like, on the inside surface of the tank as the floating roof structure rises and falls with the level of product stored in the tank.

3,618,813
FLEXIBLE SEAL FOR A VAPOR CAVITY
Martin A. Nishkian, Long Beach, and Wayne E. Nuttall, San Gabriel, both of Calif., assignors to United States Steel Corporation
Filed Nov. 24, 1969, Ser. No. 879,022
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 **5 Claims**



A flexible seal is disclosed for a vapor cavity between a tank shell and a floating roof. The seal has a quadrilateral type linkage on the floating roof which linkage has a fixed link and movable links. A flexible wear cover member is on the floating roof. A contact member is mounted on one of the movable links, adjacent the wear cover member, the contact member having a mounting plate, a cover member and a flexible core member between the mounting plate and the cover member. A counterweight means is on one of the movable links and is operable to force the contact member into contact with the wear cover member so that the wear cover member seals the vapor cavity.

Further, a flexible seal is disclosed having a support member secured at one end to the floating roof, and a tubular-sealing member having a wear cover member provided with flanges at each end and a flexible core member. The sealing member has one flange secured to the free end of the support member and the other flange secured to the other end of the floating roof. The sealing member is operable to seal the vapor cavity.

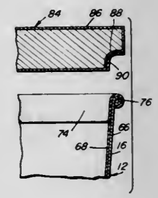
In addition, a seal is disclosed having a mounting member pivoted on the floating roof and a sealing member carried by the free end of the mounting member for sealing the vapor cavity. The sealing member has a rigid core member, a flexible core member surrounding the rigid core member, a wear cover member disposed about the flexible core member, and a support member extending through the sealing member and secured to the rigid core member and to the wear cover member.

Also, a rectangular self-energizing seal is disclosed having a sealing member provided with a rigid inner core member; a flexible inner core member disposed about the rigid inner core member; a rigid outer core member disposed about the flexible inner core member; rigid end section members covering the rigid outer core member, the flexible inner core member, and the rigid inner core member; a flexible outer core member disposed about the rigid outer core member, and the rigid end section members; a wear cover member covering the flexible outer member and the rigid end section members; a support rod extending through the sealing member and secured to the rigid end section members, a pair of generally diagonally disposed scuff pads projecting from the wear cover member, and generally diagonally disposed sealing surfaces on the outer flexible layer. A mounting rod is pivoted on the floating roof and pivotably connected to one of the scuff pads. A counterweight rod is pivotable on the other scuff pad, and a counterweight means is carried by the counterweight rod to force the sealing surfaces into sealing engagement with the tank shell and the floating roof.

Again, a flexible substantially square seal is disclosed having a mounting member pivoted on the floating roof and depending into the vapor cavity, a sealing member connected to the mounting member and having a flexible inner core member; a rigid inner core member disposed about the flexible inner core member; rigid end section members covering the rigid inner core member and the flexible inner core member; a flexible outer core member adjacent the rigid end section members and the rigid inner core member; and a scuff pad surrounding the rigid end section members and the flexible outer core member; a support rod extending through the sealing member and connected to the rigid end section members and to the mounting member. The scuff pad and the flexible outer core member are deformable to seal the vapor cavity.

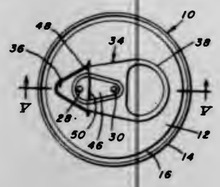
Further, a rotary circular seal is disclosed having a mounting member pivoted at one end of the floating roof, an annular member carried by the other end of the mounting member and rotatable in the mounting member, and a sealing member on the annular member and having a rigid inner core member disposed about the annular member; a flexible outer core member surrounding the rigid inner core member; and a scuff pad about the flexible outer core member.

3,618,814
RECTANGULAR TAPERED NESTABLE WASTE CAN AND COVER
Adolph Nagroski, East High St., Flushing, Ohio
Filed Aug. 25, 1969, Ser. No. 852,603
Int. Cl. B65d *53/00, 25/14*
U.S. Cl. 220—46 R **3 Claims**



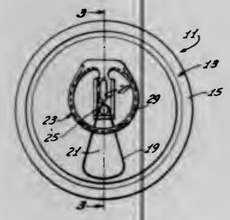
This garbage or trash can is a vermin-proof, tapered, rectangular open top container and cover, the container being nestable with similar containers for storage or shipping. The container is of heavy plastic, or of metal having an interior plastic coating. Sealing material is provided between the cover and the container for providing a vermin-proof closure on the container. The cover is held tightly against the container top either by resilient means, or by being of heavy material. When of heavy material, the cover is a one piece item, with handles, and a curved, recessed edge or lip complementary to an outwardly extending beaded edge on the container top edge. The heavy cover may also be provided with a plastic coating. When resilient means is provided for holding the cover on the container top edge, it may be an outer frame with a sealable lip resiliently securable on the container top edge by coil springs each fastened to outwardly extending ears on two opposite sides of the cover frame, linked chains depending from the coil springs, and a bifurcated boss extending from the container sides cooperates with the links of the chain. An inner cover hinged along one inner edge of the frame rests on an inwardly extending ledge on the bottom of the frame, and coil springs extend between ears on the bottom of the inner cover and on the bottom of the hinged side of the frame, with sealing material between the inner cover and the supporting ledge.

3,618,815
EASY-OPENING DEVICE FOR A CONTAINER END
Robert E. Heffner, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed May 4, 1970, Ser. No. 34,131
Int. Cl. B65d 17/00
U.S. Cl. 220—48 6 Claims



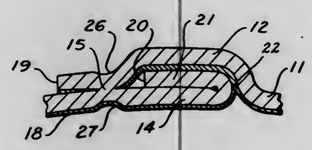
This disclosure relates to an easy-opening container end in which the opening device remains attached to the end after opening, and which includes a V-shaped opening flap in the container end which is forced or plunged into the container by means of a lever tab which has a line of weakness in its upper surface between its handle end and its nose end so that upon opening, the handle end of the tab may be depressed to a nonobstructing position on the container end without closing the pouring orifice in the end.

3,618,816
TAB FOR EASY-OPENING CONTAINER WALL
Omar L. Brown, Dayton, Ohio, assignor to Dayton Reliable Tool & Mfg. Company, Dayton, Ohio
Filed Apr. 22, 1970, Ser. No. 30,649
Int. Cl. B65d 17/24
U.S. Cl. 220—54 17 Claims



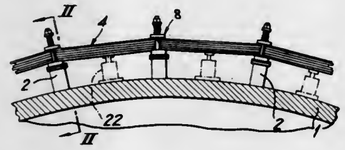
A tab including a lever portion and a handle portion integrally connected to one end of the lever portion by a pliable portion. The other end of the lever portion is suitably connected to a tear portion of a container wall. In use, the handle portion is raised as permitted by the pliable portion until the handle portion is at an appropriate angle to exert a lifting force on the lever portion. Then an outward pulling force is applied to the handle portion to initiate severance of the tear portion with the lever action of the lever portion.

3,618,817
FOOD CONTAINER AND METHOD OF MAKING THE SAME
Thomas D. Troughton, Richmond, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.
Filed May 14, 1970, Ser. No. 37,107
Int. Cl. B65d 25/14
U.S. Cl. 220—64 7 Claims



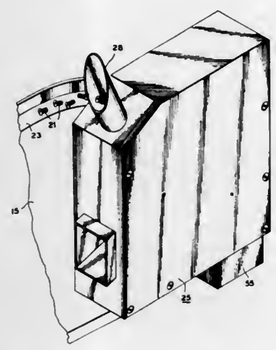
A shell or body tube for a relatively large container such as a tin-lined pail adapted for use in storing and shipping food products and the like, and a method of making such body tube. The method utilizes as the starting material a flat metal sheet plated along at least one side thereof with a layer of tin, and the sheet has longitudinal edge portions respectively terminating in unfinished edges. The plated sheet is bent upon itself along one longitudinal edge portion thereof to form a generally U-shaped section having the tin plating therealong facing outwardly; and the sheet is then formed into a tube having the longitudinal edge portions thereof overlapped and seam welded to each other in close proximity with the unfinished edge of the U-shaped section but on the side thereof at which there are only two juxtaposed layers of the metal sheet. The seam weld and temperature developed therefor are controlled so that the heat of fusion dissipating transversely through the body tube from the situs of the weld fuses the contiguous layers of tin plating along the U-shaped section, thereby isolating both of the unfinished longitudinal edges of the body tube from the interior thereof.

3,618,818
PRESSURE-RESISTANT ENCLOSURE
Andre Puyo, Paris; Jack Picaut, Paris, and Robert Saglio, Antony, all of France, assignors to Coyne et Bellier, Bureau D'Ingenieurs-Conseils, Paris, France
Filed Nov. 21, 1969, Ser. No. 878,769
Claims priority, application France, Nov. 28, 1968, 175684
Int. Cl. B65d 7/44
U.S. Cl. 220—71 10 Claims



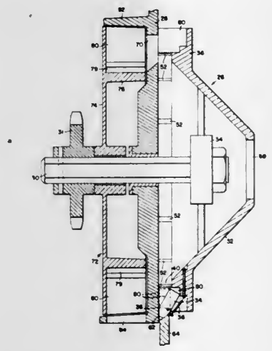
A generally cylindrical vessel subject to internal pressure is surrounded by one or more hoops each consisting of at least one winding of a flat strip bearing upon a multiplicity of peripherally spaced webs under the pressure of spring-loaded clamping plates mounted on these webs.

3,618,819
ELECTRONIC COUNTING APPARATUS
Charles M. Blackburn, Seat Pleasant, and John L. Ditman, Beltsville, both of Md., assignors to Sigma Systems Incorporated, Seat Pleasant, Md.
Filed Oct. 7, 1969, Ser. No. 864,426
Int. Cl. G07f 11/00
U.S. Cl. 221—2 12 Claims



A supply unit comprising a source of parts or pieces feeds a parts-handling unit, which in cooperation with an electronic controller unit, exactly accumulates batches or lots of a predetermined number of parts. The batches are dumped into packages or bags and the counter is reset prior to the next accumulation. High speed and accurate counting are obtained by detecting parts passing to the accumulator through interruption of a broad thin area beam of light impinging on a solar cell via limit slits. The length of each output pulse is analyzed to determine if one or two parts passed and the counter is appropriately updated. Also, the feeding rate is reduced when the count approaches the predetermined number comprising a batch, and a high speed deflector moves into the parts path to the accumulator as the batch is completed to the predetermined number to deflect following parts away from the accumulator for subsequent refeeding to the parts-handling unit.

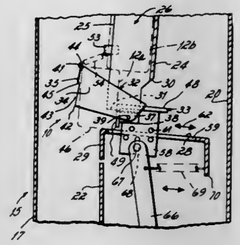
3,618,820
SEED-SELECTING MECHANISM
Eugene Gilson Keeton, Rte. 2, Trenton, Ky.
Filed Jan. 13, 1970, Ser. No. 2,568
Int. Cl. A01c 9/00
U.S. Cl. 221—219 5 Claims



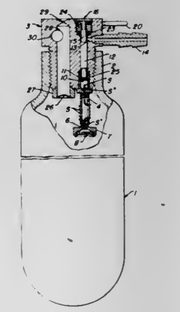
A planter provided with a seed-selecting mechanism including a housing rotatable about a horizontal axis and having one end abutting against and cooperating with a fixed plate to form an annular groove having a rotatable bottom. The rotatable grooved bottom has notches circumferentially spaced along its inner side for receiving and elevating a plurality of seeds from a seed supply in the bottom of the housing. Fingers extend radially from the outside to the inside of the housing and are pivotally connected thereto for movement in the notches toward and away from the fixed plate and the fingers are biased to a position wherein they extend closely adjacent the fixed plate. A cam moves the fingers away from the fixed plate as the notches pass through the seed supply and as the notches move upwardly from the seed supply, the fingers are successively disengaged from the cam and pivot to pin a seed against the fixed plate. A discharge opening in the fixed plate is in the path of the rotating fingers and the fingers eject the pinned seeds therethrough.

3,618,821
DISPENSING MECHANISM FOR A VENDING MACHINE
Charles J. Laug, Cincinnati, Ohio, and Charlie F. Jones, Covington, Ky., assignors to William F. Shepherd Inc., Cincinnati, Ohio
Filed May 7, 1970, Ser. No. 35,399
Int. Cl. B65h 3/24
U.S. Cl. 221—247 4 Claims

A dispensing mechanism for a coin-operated vending machine of that type having at least one substantially vertical chamber adapted to hold a plurality of cookie packages in stacked relation, one on top of the other. A fixed horizontal ledge is positioned beneath the stack of packages to provide a bottom supporting surface. An ejector cage is positioned at the bottom of the stack and is adapted to reciprocate horizontally between a home position whereat the bottommost package of the stack is embraced by the cage and an eject position whereat the cage (with the bottommost package) is pushed from beneath the stack and over the fixed horizontal ledge for dispensing the cookie package.



3,618,822
EMERGENCY OXYGEN SUPPLY DEVICE
August J. Hildenbrandt, Jr., Fairfield, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 5, 1969, Ser. No. 830,722
Int. Cl. B67b 7/00
U.S. Cl. 222—3 3 Claims

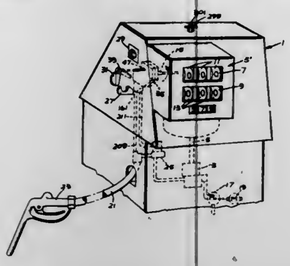


A gas supply unit (such as for the supply of emergency oxygen) with such unit comprising a high-pressure gas cylinder having a gas release section that provides laminar flow through a capillary tubing section so as to obviate the need of moving parts in the gas flow regulation from the interior of the cylinder to a gas outlet nozzle. A preferred embodiment uses a pull pin, together with a movable rod and rupture disc means, that are all downstream from the capillary tubing as the actuator mea o initiate flow from the high-pressure cylinder.

3,618,823
FUEL DISPENSER POWER RESETTING AND CONTROL MECHANISM
Christian W. Kruckeberg, Fort Wayne, Ind., assignor to Tokheim Corporation
Filed May 18, 1970, Ser. No. 38,063
Int. Cl. B67d 5/26
U.S. Cl. 222—33 21 Claims

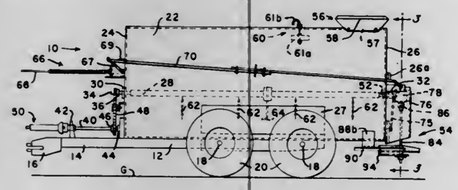
A power-operated mechanism which operates the register resetting and flow control devices of a liquid fuel dispenser in sequence, in response to the proper operation of a single-

manual control lever, and which, with minor added control mechanism, compels predetermined manual operation of



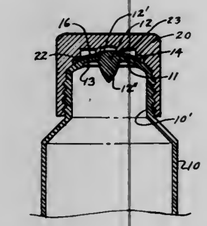
self-service, ticket printing, or other optional attachments for the dispenser.

3,618,824
MATERIAL SPREADER
Shaun A. Seymour, Ephrata, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Aug. 30, 1968, Ser. No. 756,478
Int. Cl. A01c *3/06*
U.S. Cl. 222—51 **7 Claims**



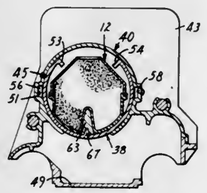
A material spreader comprised of a tank, mounted on a wheeled frame and adapted to contain liquid manure, an inlet port to fill the tank, and outlet to discharge slurry material from the tank, agitator means within the tank to keep solids in suspension, and adjustably positionable distributing means adjacent the outlet adaptable to distribute the slurry on the ground in a uniform pattern of preselected direction.

3,618,825
CLOSURE FOR DISPENSING SPOUT
Robert E. Clarke, 1410 Saratoga Drive, Bel Air, Md.
Filed Dec. 15, 1969, Ser. No. 885,021
Int. Cl. B05b *1/34*
U.S. Cl. 222—106 **1 Claim**



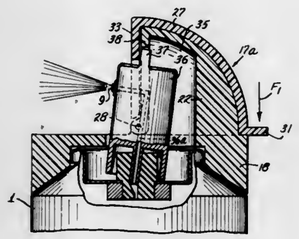
A closure for dispensing spout, especially adapted for use with liquids or semiliquids, the spout having a central passage, a member spanning the passage and having a central closed portion and open areas between the central closed portion and the outer periphery thereof, and a resilient membrane or diaphragm member having a central opening overlying the central closed portion of the spanning member, the diaphragm extending outwardly from the central closed portion to the outer periphery of the spanning member and normally closing the open areas of the spanning member, the outer periphery of the diaphragm member being sealed to the spout and the inner portion thereof surrounding the opening being deflectable outwardly by pressure on the material in the spout to allow discharge of the material through the open areas of the spanning member and around the central closed portion, the resilience of the diaphragm closing the open areas of the spanning member when no pressure is exerted on the material in the spout.

3,618,826
DEVELOPER POWDER SUPPLY
Larry G. Kangas, St. Joseph Township, St. Croix County, Wis., and Robert W. Carlson, Bloomington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1969, Ser. No. 867,693
Int. Cl. B65d *47/00, 83/06*
U.S. Cl. 222—166 **8 Claims**



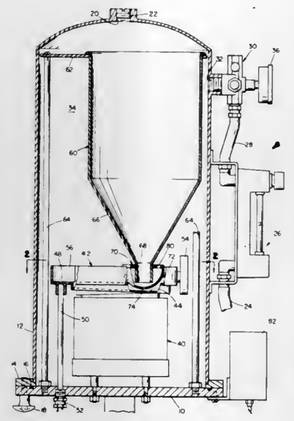
A developer powder supply package in which a removable strip is secured to converging sidewalls to cover a powder discharge opening formed in the cover of a container which also has a body formed with an elongated recess for mating with a dispensing carriage extending across the exterior surface of its base. A dispensing carriage provides support for the supply package over an area into which it is desired to dispense the developer powder and is rotatable to support the package in an inverted position to dispense the developer powder from the container through the discharge opening after the strip has been removed.

3,618,827
SPHERICAL, SWINGING CLOSURE/ACTUATOR CAP FOR AEROSOL CANS
Mario Melocchi, Via Mose Bianchi 71, Milan, Italy
Division of Ser. No. 630,760, Apr. 13, 1967, Pat. No. 3,469,746. Filed July 17, 1969, Ser. No. 842,678
Int. Cl. B65d *83/14*
U.S. Cl. 222—182 **4 Claims**



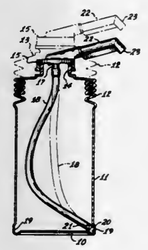
This invention relates to a part-spherical cap for an aerosol container which cap is mounted to rotate about a pivotal axis and thereby actuate the control valve of the container. This cover is so designed that movement in one direction, both uncovers the container nozzle and actuates the control valve, while movement in the other direction automatically results in closure of both valve and cover.

3,618,828
POWDER FEEDER
Albert A. Schinella, Concord, N.H., assignor to Humphreys Corporation, Bow, N.H.
Filed June 8, 1970, Ser. No. 44,007
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **10 Claims**



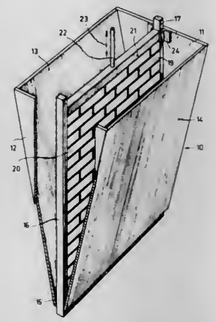
A powder feeder includes a feeding structure having a receiving surface, a feeding surface and a discharge channel. A drive vibrates the feeding surface to move particles along that surface from the receiving surface to the discharge channel. A supply hopper has an outlet channel above and spaced from the receiving surface and disposed between the outlet channel of the supply hopper and the receiving surface of the feeder structure is a control member that has a port aligned with and of smaller dimension than the outlet channel of the supply hopper.

3,618,829
EXPANDABLE RECEPTACLE
Austin E. Elmore, 8519 E. Pasadena Ave., Scottsdale, Ariz., and Ernest A. Uhlmann, 5205 N. Saddle Rock Road, Phoenix, Ariz.
Filed Oct. 14, 1968, Ser. No. 767,340
Int. Cl. B65d *37/00*
U.S. Cl. 222—209 **2 Claims**



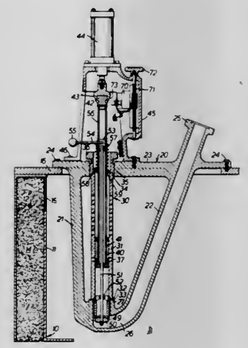
A receptacle having accordion folding in the top portion which functions both as a means to allow compression and expansion of the receptacle from variations of ambient temperature and atmospheric pressure and for evacuating the contents of the receptacle through a discharge nozzle at the top of the accordion folding.

3,618,830
DEVICE FOR ACCURATELY DOSING A CONTINUOUS FLOW OF FINE-GRANULAR POWDER
Peter Theodorus Joseph Bex, and Willem Luiten, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 4, 1969, Ser. No. 873,884
Claims priority, application Netherlands, Nov. 13, 1968, 6,816,124
Int. Cl. G01f *11/10*
U.S. Cl. 222—361 **5 Claims**



A device for accurately dosing at a previously adjustable value a continuous flow of fine-granular powder having a particle size of smaller than approximately 20 microns out of an outlet aperture of a storage container. The container is provided with a sheathlike thin-walled member which is open on its lower side and vibrates approximately parallel to the direction of flow of the powder. The wall of the member is substantially gridlike and the open end of the member is arranged with a small amount of play in the outlet aperture of the container.

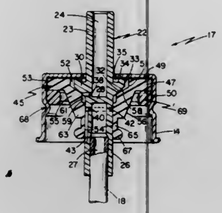
3,618,831
CASTING MACHINES FOR CASTING BATTERY PLATE GRIDS
Alan John Goodwin, and Norman Shanks, both of Swinton, England, assignors to Chloride Overseas Limited, Swinton, England
Filed June 20, 1969, Ser. No. 834,963
Claims priority, application Great Britain, June 21, 1968, 29,680/68
Int. Cl. B67d *5/50*
U.S. Cl. 222—385 **2 Claims**



For supplying molten lead to a battery plate grid casting machine, a lead pump, immersed in molten lead in a lead

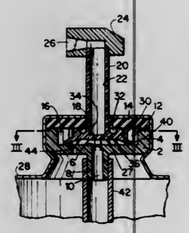
pot, is formed as a readily removable cartridge incorporating all the working parts of the pump, which is simply screwed into a fixed body incorporating the delivery pipe.

3,618,832
FAST FILL VALVE ASSEMBLY FOR PRESSURIZED DISPENSING PACKAGE
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Feb. 14, 1969, Ser. No. 799,448
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.16 **17 Claims**



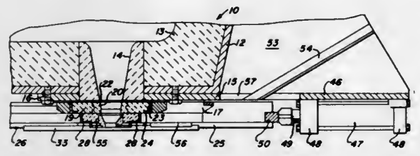
A valve assembly for a pressurized dispensing package in which a rigid elongated valve member having upper and lower passages separated by a transverse wall member, upper and lower ports communicating with these passages, respectively, and a first camming surface, acts upon a flexible sealing member having a passage for receiving the valve member, a flange for securing it to the package, a skirt portion sealing the lower valve port, and a second inclined camming surface between the skirt and the flange which cooperates with the first camming surface, in such a way as to separate the sealing surface of the skirt from the lower port, opening communication between the ports to permit material flow from the container, through the valve passages, to atmosphere. The camming surfaces are operated by applying either a tilting or an axial pressure to the valve member; the described valve assembly is also self-returning, and may be charged in a manner bypassing at least one valve port.

3,618,833
AEROSOL DISPENSER VALVE
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 20, 1969, Ser. No. 867,641
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.22 **6 Claims**



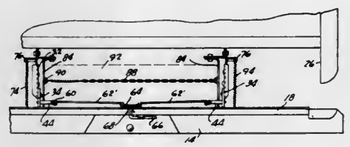
An aerosol dispenser valve including a spring-biased valve member having a spring-biasing means integral therewith.

3,618,834
SLIDING GATE CLOSURE FOR BOTTOM-POUR VESSEL REMOVABLE AS A UNIT
Earl P. Shapland, Jr., Champaign, Ill., and James T. Shapland, Wilkens Township, Allegheny County, Pa., assignors to United States Steel Corporation
Filed May 26, 1969, Ser. No. 827,605
Int. Cl. B67d *3/00*
U.S. Cl. 222—504 **7 Claims**



A sliding gate closure which includes a replaceable orifice plate positioned in a fixed relation to a removable mounting plate. Blank gates and nozzle gates are supported on entrance and exit rails depending from the mounting plate, and on levers pivoted to the mounting plate in the space between the ends of the rails opposite the outlet from the vessel. Levers are spring actuated and can be adjusted individually beforehand and the position of adjustment maintained through changes of orifice plate.

3,618,835
TRUCK BUMPER, TRAILER HITCH AND QUICK ACCESS TIRE CARRIER
Edwin C. Terry, and Robert C. Terry, both of Ursa, Ill.
Filed July 18, 1969, Ser. No. 843,048
Int. Cl. B62d *43/00*; **B61f** *19/04*
U.S. Cl. 224—42.06 **8 Claims**

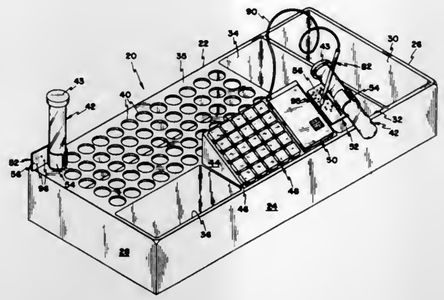


A bumper for a vehicle adapted to have a trailer hitch device connected thereto and said bumper being swingable from a vertical plane to a horizontal plane to permit a vehicle to back up to a dock and to permit easy access to a tire carrier, the structure including bracket means connected to the chassis of the vehicle, other bracket means pivotally connected to said first-mentioned bracket means with bumper means rigidly secured to said other bracket means, and latch means operatively connected to linkage means secured to the bumper for latching the bumper in a vertical plane to said first mentioned bracket means at one time and for releasing said bumper so it can be swung to a horizontal lower plane at another time, said bumper means being positioned in a plane below a tire carrier bracket when in its lower position to provide quick access to a tire adapted to be carried by said tire carrier.

3,618,836
CHEMISTRY ENCODING
Dwight J. Bushnell, Murray, and Max Glen Worthington, Salt Lake City, both of Utah, assignors to Bio-Logic, Inc., Salt Lake City, Utah
Filed Sept. 15, 1969, Ser. No. 857,978
Int. Cl. G06k *1/12, 5/02, 19/00*
U.S. Cl. 225—1 **8 Claims**

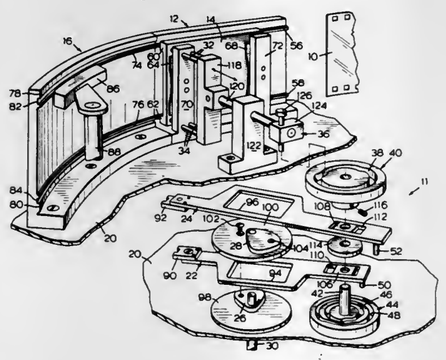
Method and apparatus for encoding chemistry information on an identification device used to identify containers of biological matter such as blood samples, the apparatus including superimposed dies each having a plurality of rows of

apertures, the apertures of one die being in alignment with the apertures of the other die, the dies being spaced one from another to receive the identification device between the dies. A stylus, having a tip for penetrating the identification device, is selectively inserted through the aligned apertures in the two dies thereby perforating (encoding) the device at one



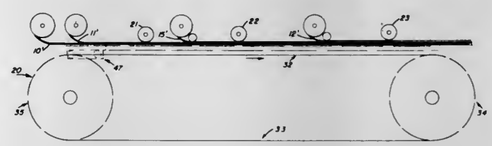
or more predetermined sites. Each perforation represents a chemical test or a set of tests to be performed on the biological matter in the container. A verifier is provided so that when the stylus perforates the device at a given site, an electrical circuit is completed to illuminate a corresponding portion of a display panel for optical indication to the operator of the true nature of the encoding which has taken place.

3,618,837
FILM TRANSPORT MECHANISM
Jan W. Jacobsen, Copenhagen, Denmark, assignor to Multiscreen Corporation Limited
Filed Dec. 29, 1969, Ser. No. 888,997
Int. Cl. G03b *1/22*
U.S. Cl. 226—57 **13 Claims**



A film transport mechanism for moving a film through a motion picture camera or the like. The mechanism has a pair of claw arms pivotally and slidably mounted on a common axis. The arms are respectively driven in an arc about the axis by constant diameter cams which rotate at constant speed and move the claw arms back and forth through half a film frame length. Each claw arm has a claw at its distal end for engaging film perforations. The cams are attached to a common shaft and they impart motion to the arms such that the arms never move in the same direction. A cam wheel rotates about the axis and combines with followers attached to the arms to reciprocate the claws into and out of engagement with the film at predetermined points in a cycle, the predetermined points being fixed in relation to the angular positions of the cams relative to an arbitrary datum.

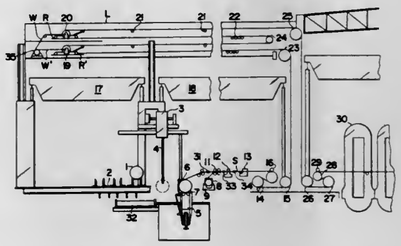
3,618,838
VACUUM TRUCK SYSTEM
Stanley R. Schieven, Webster, and Gerald A. Sampson, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,324
Int. Cl. B65h *17/28*
U.S. Cl. 226—95 **10 Claims**



An endless conveyor mechanism for holding one or more webs and/or other parts on a rigid surface while they are conveyed along a rectilinear path comprises a plurality of rigid truck members arranged to move in a closed path one portion of which is the rectilinear path through which the web or other parts are to be moved, and means for moving said trucks so that during the time they are moving in said trucks so that during the time they are moving in said rectilinear path they are held in abutment so that their web-supporting surfaces combine to form, in effect, a single rigid surface on which the web or other parts are held by vacuum as they are moved through said path.

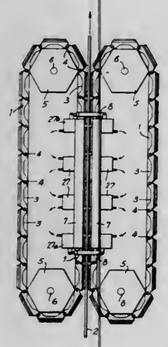
The driving mechanism for the truck members brings the trucks into tight abutment at the beginning of the rectilinear path, then advances said trucks in butted relation through said path at a controlled rate, while at the same time accommodating for slight tolerances in individual truck dimensions, and then controls the movement of the trucks into the return portion of their path in such a way as to prevent them from bumping together and becoming damaged.

3,618,839
CONTINUOUS STEEL STRIP COLD-ROLLING MILL APPARATUS
Yoshiaki Kawasoko, Fukuyama-shi, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Japan
Filed Dec. 8, 1969, Ser. No. 882,824
Claims priority, application Japan, Jan. 8, 1969, 44/1444
Int. Cl. B65h *17/42*
U.S. Cl. 226—118 **2 Claims**



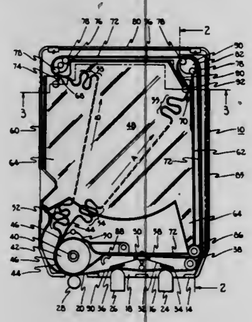
In a continuous steel strip cold-rolling mill apparatus wherein steel strips are welded together into a long continuous strip, stored in a looper and then cold rolled by a tandem mill, said looper is installed horizontally in a space of a factory building above overhead travelling cranes thereof.

3,618,840
ENDLESS TRACK DEVICES FOR LAYING CABLES AND THE LIKE
Bernard Francois Maurice Courret, Toulon, France, assignor to Etat Francais Delegation Ministerielle pour L'Armenent, Paris, France
Filed Dec. 30, 1969, Ser. No. 889,139
Claims priority, application France, Dec. 31, 1968, 182.800
Int. Cl. B65h *17/34*
U.S. Cl. 226—172 11 Claims



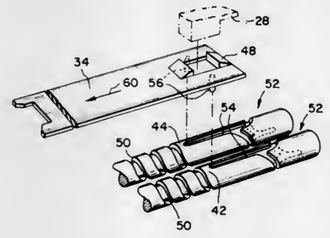
A pair of opposed endless track devices have adjacent branches whose links cooperatively engage a cable therebetween and advance the cable with the links. The links travel in rails and form chambers therewith in which pressure fluid is supplied to force the links into engagement with the cable while advancing the links and cable therewith.

3,618,841
ENDLESS LOOP TAPE CARTRIDGE
Robert Daniel Browning, Indianapolis, Ind., assignor to RCA Corporation
Filed Oct. 1, 1969, Ser. No. 862,682
Int. Cl. B65h *23/10*
U.S. Cl. 226—195 9 Claims



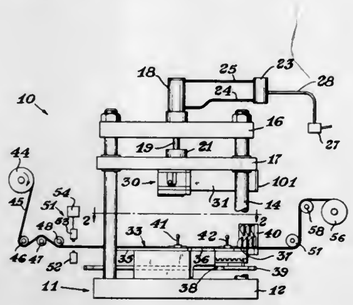
An endless loop tape cartridge for use with a cartridge tape player includes a cartridge housing having a tape storage chamber with two egress openings. The cartridge housing includes apertures adapted to accommodate the cartridge player transducers, and additionally, a rotatably mounted pressure roller. The endless loop of magnetic tape is positioned within the cartridge such that the tape loop path moves: (a) around the pressure roller, (b) into the cartridge storage chamber, (c) out through the cartridge chamber first egress opening, (d) across the front end of the cartridge for engagement with the player transducers, (e) around the pressure roller, (f) reinserted into the cartridge storage chamber, and (g) out through the cartridge chamber second egress opening back to the pressure roller.

3,618,842
SURGICAL STAPLING CARTRIDGE WITH CYLINDRICAL DRIVING CAMS
Graham W. Bryan, Ridgefield, Conn., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Mar. 20, 1970, Ser. No. 21,465
Int. Cl. B27f *7/24*
U.S. Cl. 227—138 24 Claims



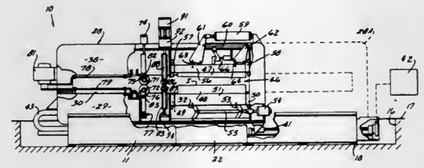
A sterilized disposable cartridge for a surgical instrument adapted to apply staples to the disunited skin or fascia of a patient in order to effect the joining of the tissue. A number of staples are housed in the staple-carrying cartridge and are supported and driven by means of a pair of threaded screws. The rear portion of each screw is provided with a cylindrical camming surface; and each screw is caused to rotate in response to the interaction between a driving member and its cylindrical camming surface. The associated surgical instrument is powered by a gas under pressure and employs a power unit having O-ring seals.

3,618,843
APPARATUS FOR JOINING METAL FOIL LAMINATES
Robert R. Hayes, Euclid, and Barry L. Laidman, Cleveland, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.
Filed June 2, 1969, Ser. No. 829,438
Int. Cl. B23k *21/00*; B23p *3/02*
U.S. Cl. 228—3 12 Claims



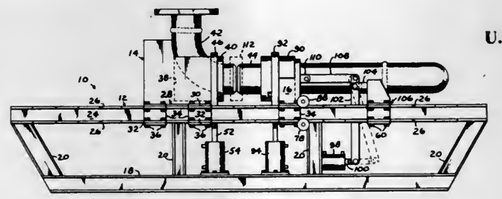
An apparatus is described suitable for the cold welding of metal foil or plastic-metal laminates such as aluminum-polyethylene wherein electrical contact is obtained by forming a weld through at least one layer of plastic of the laminate.

3,618,844
STRIP POSITIONING DEVICE
John D. Morley, Bay City, and William F. Salbenblatt, Saginaw, both of Mich., assignors to Newcor, Inc., Bay City, Mich.
Division of Ser. No. 563,971, May 31, 1966, Pat. No. 3,511,961. Filed Oct. 24, 1968, Ser. No. 790,185
Int. Cl. B23k *1/00*, *37/04*
U.S. Cl. 228—4 14 Claims



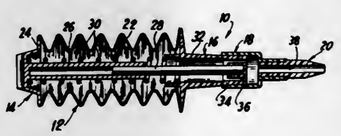
A positioning mechanism for a clamp in a strip welding machine having a platform with slide means and means reciprocably supporting the slide means thereon. Means are provided for reciprocating the slide means and the slide means has at least one contact surface thereon arranged at an acute angle to the path of the slide means. A carriage is provided for supporting the clamp and guide means are provided on the platform for supporting the carriage for movement transversely of the slide means. At least one contact surface, fixed with respect to the carriage is provided and is slideably engaged with the contact surface on the slide means for causing the carriage to reciprocate along the guide means in response to reciprocation of the slide means.

3,618,845
PRESSURE WELDING APPARATUS
Luther D. Totten, 619 Spring, Mount Shasta, Calif.
Filed Apr. 24, 1969, Ser. No. 818,864
Int. Cl. B23k *19/00*
U.S. Cl. 228—44 6 Claims



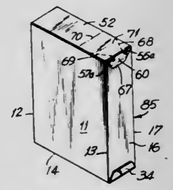
A generally horizontal frame adjustably holds crossmembers which in turn supports material holding dies gripped by pressure cylinder operated clamp means. A portion of one crossmember is movable toward the other to adjustably align the ends of the material to be welded. Pressure operated linkage forcibly abuts the heated ends of material being welded.

3,618,846
MANUALLY OPERATED SUCTION DEVICE
Patrick J. Poli, 39 Pine St., Plainview, N.Y.
Filed Feb. 17, 1969, Ser. No. 799,766
Int. Cl. B23k *3/06*
U.S. Cl. 228—52 3 Claims



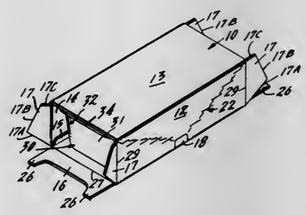
A cold tip manually operated suction device having a removable trap for the disposing of collected excess solder.

3,618,847
RECLOSABLE DISPENSING CONTAINER WITH SNAP-LOCKING TOP TAB
Stanley R. Koolnis, New York, N.Y., assignor to Lee Drechsler, Palisades and Fred Zandell, New York, N.Y.
Filed July 30, 1969, Ser. No. 846,039
Int. Cl. B65d *5/54*
U.S. Cl. 229—17 R 12 Claims



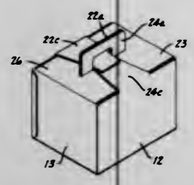
The present invention pertains, generally, to reclosable containers and, more particularly, to reclosable containers having a top wall comprising inner and outer panels adhesively secured at selective locations, a pair of spaced retainers projecting from said top wall and a tab extending from a panel of said top wall, enabling the container to be reclosed after initial opening by the positioning of said tab between said pair of spaced retainers.

3,618,848
PAPERBOARD SLEEVE FOR TRAYS
Thomas Dominic Pawlowski, Neenah, and Richard Gene Mathison, Larsen, both of Wis., assignors to American Can Company, New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,390
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R 5 Claims



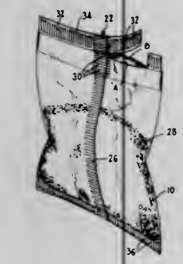
A substantially open-ended paperboard sleeve for a tapered tray containing a ready-to-cook comestible, having a new end construction designed to hold the tray in place in the sleeve. The end construction includes a restraining panel, biased against an end panel of the tray, hingedly attached to the bottom panel of the sleeve and extending inwardly of the sleeve. The end construction also includes two locking panels hingedly connected to the side panels of the sleeve and extending inwardly of the sleeve. The restraining panel is provided with a pair of fingers, extending inwardly of the sleeve and in cradling relationship to the end panel of the tray. Each locking panel overlies a respective finger thereby preventing the restraining panel from moving outwardly of the sleeve and away from the tray.

3,618,849
CONTAINER HANDLE AND TOP CLOSURE
Jon M. Schwaner, and Lloyd W. Ellson, both of Indianapolis, Ind., assignors to Inland Container Corporation, Indianapolis, Ind.
Filed June 18, 1970, Ser. No. 47,194
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 B **4 Claims**



Disclosed is a container in which tabs are cut from the opposing, first-closed, or inner closure flaps, the tabs extending to the hinged margin of the closure flaps. The free end portions of the inner closure flaps have upturned registering marginal portions forming a carrying handle, the overlying outer closure flaps having slots accommodating the handle portions of the inner flaps and the tabs extending in overlying relation to the outer closure flaps and into locking engagement with said handle portions.

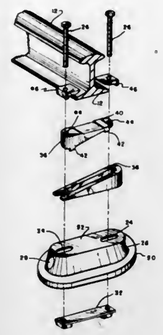
3,618,850
RECLOSEABLE CONTAINER
Charles E. Palmer, Main St., Somers, Conn.
Filed Apr. 13, 1970, Ser. No. 27,835
Int. Cl. B65d *33/30*
U.S. Cl. 229—62 **9 Claims**



A recloseable container has a tubular body with a longitudinal flap extending along the length thereof, and a strip of nonresiliently deformable material extending about its inner periphery. The longitudinal flap is secured to the body, and the body is deformed by pleats extending through the secured area and generally parallel to the strip of deformable material to provide a tear channel. The strip of deformable material is capable of maintaining a folded configuration to render the container recloseable by folding it along the strip to engage opposed portions thereof.

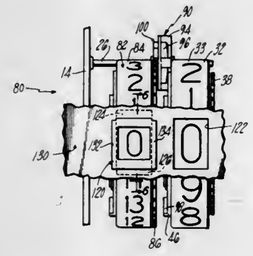
3,618,851
ADJUSTABLE RAIL FASTENER
Webster D. Smith, Lomita, and William I. Berks, Manhattan Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Feb. 19, 1970, Ser. No. 12,777
Int. Cl. E01b *9/42, 9/66*
U.S. Cl. 238—281 **5 Claims**

A pair of wedgelike elements are mounted one above the other between a horizontal surface and a rail, with their inclined surfaces abutting each other. One of the wedgelike elements is moved laterally to raise or lower the rail, whereas



both elements are moved laterally to cause the rail to move sideways.

3,618,852
FUEL PUMP REGISTER WITH EXPANDED READOUT
William Kes, Avon, and Lawrence E. Hough, Hartford, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.
Filed Nov. 10, 1969, Ser. No. 875,410
Int. Cl. G06c *15/42;* **B67d** *5/22*
U.S. Cl. 235—94 R **7 Claims**

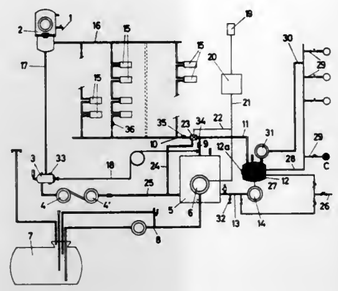


Register conversion means for modifying the volume and/or cost counters of a fuel pump register for expanding the available readout of the volume counter from 99 9/10 gallons to 149 9/10 gallons and the available readout of the cost counter from $9.99 to $14.99 and which comprises a substitute highest order number wheel bearing the sequence of indicia of 0–14 and having a 30-tooth drive gear, a substitute compound transfer gear with relatively large and small eight-tooth gears respectively engageable with the drive gear of the substitute number wheel and the combination locking ring and two-tooth transfer segment of the adjacent lower order number wheel for indexing the substitute wheel one count for each revolution of the adjacent lower order number wheel, and an auxiliary window mask for the substitute wheel.

3,618,853
HEATING FLUID CIRCULATING SYSTEM
Antonino Adriano Trimboli, Calle Alberto Aquilera No. 32, Madrid, Spain
Filed Feb. 27, 1969, Ser. No. 804,053
Int. Cl. F24d *3/02, 3/08*
U.S. Cl. 237—8 **13 Claims**

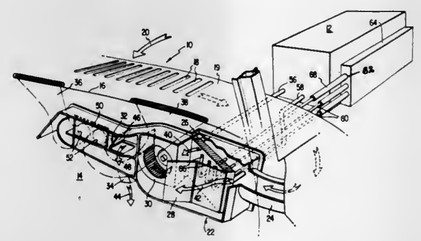
A fluid-circulating system includes a fluid-containing heating circuit and a discrete hot water circuit. Each circuit has a portion adjacent to the other. One or more radiators are provided in the heating circuit, and a boiler is similarly provided

in the heating circuit. Circulators are provided in both circuits for circulating the fluids therein. A heat exchanger is associated with the adjacent portions of both circuits and ef-



fects heat exchange between the fluids in these adjacent portions whereby the fluid in the hot water circuit is indirectly heated by the boiler of the heating circuit.

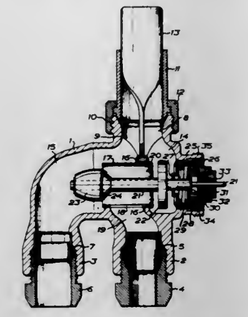
3,618,854
VEHICLE-HEATING SYSTEM EMPLOYING A CRITICAL POINT HEAT PIPE
Sidney Frank, Baltimore, Md., assignor to Isotopes, Inc., Westwood, N.J.
Filed Dec. 23, 1968, Ser. No. 786,053
Int. Cl. B60h *1/08*
U.S. Cl. 237—12.3 B **9 Claims**



The employment of a heat pipe as a passive, self-operating thermal energy transport valve which automatically thermally couples a heat source to a heat sink or decouples the same depending upon the operating temperature of the heat pipe and its relation to the critical point of the working fluid. The critical point heat pipe can serve as an auxiliary heat transport device for supplying heat from the exhaust gases of a vehicle engine to the vehicle compartment heat exchanger during engine warmup.

3,618,855
RADIATOR VALVES
Sven David Ferdinand Nilsson, and Kurt Rune Glimmerfors, both of Markaryd, Sweden, assignors to Aktiebolaget Markaryds Metallarmatur, Markaryd, Sweden
Filed Oct. 15, 1969, Ser. No. 866,464
Claims priority, application Sweden, Oct. 22, 1968, 14,243/68
Int. Cl. F24d *3/00*
U.S. Cl. 237—59 **4 Claims**

A radiator valve has a housing with a displaceable valve stem in a passage, one end of which has a valve seat controlled by a valve member on the stem and the other end of which is controlled by a throttle element on the stem and which passage is connected between its ends with an inlet connection for hot water supply for dividing the inlet flow of hot water in one stream passing past the valve member to a feed outlet connected to the radiator inlet, and one stream passing past the throttle element to a return chamber and to an outlet pipe connection while bypassing the radiator, the

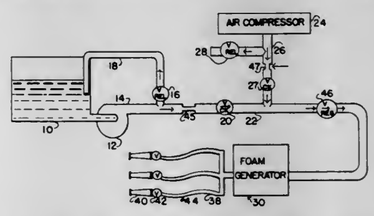


return chamber being connected with a return inlet from the radiator.

ERRATUM

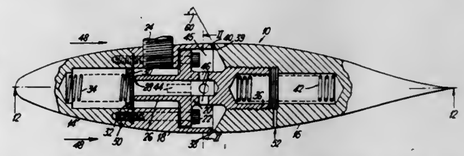
For Class 238—281 see:
Patent No. 3,618,851

3,618,856
METHOD AND MEANS FOR DISPERSING FOAM
Norman H. Sachnik, San Angelo, Tex., assignor to Range Engineering Development Corporation, San Angelo, Tex.
Filed Apr. 28, 1967, Ser. No. 634,551
Int. Cl. A01n *17/02;* **A62c** *1/12*
U.S. Cl. 239—8 **3 Claims**



Foam is generated by mixing water, foam material, and compressed air under pressure. The foam is released from a nozzle by a valve at the nozzle, resulting in better control and a more constant product. One method of distribution of the foam is to disperse it in an airblast to be subsequently carried by the wind and spread for agricultural purposes.

3,618,857
SPRAY NOZZLE
Johannes Hendrik Rautenbach, Natal Province, and Maitland Reed, Westville, Natal, both of Republic of South Africa, assignors to Aviation Design & Engineering Company, South Africa (Proprietary) Limited
Filed Apr. 30, 1969, Ser. No. 820,544
Claims priority, application Republic of South Africa, May 8, 1968, 68/2980
Int. Cl. B05b *1/06*
U.S. Cl. 239—11 **4 Claims**



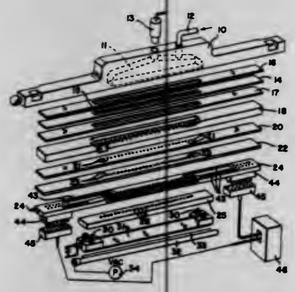
A spray nozzle the body of which is provided with a circumferential spray orifice. The orifice is defined by faces on

two pieces which are adjustable relatively to one another so that the width of the orifice can be varied. The body is formed by rotating an aerofoil section about a chord of the section and the orifice is positioned so that spray fluid is directed in a dish-formation towards the end of the body which, in aerial spraying, is the leading end. If the nozzle is used in a stationary condition, then an airstream is caused to flow over the body from said leading end. A one-way valve is provided which is adapted to be opened by the pressure of the spray liquid fed to the nozzle.

3,618,858
DROP CHARGING BAR

Fred E. Culp, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed May 25, 1970, Ser. No. 41,126
Int. Cl. B05b *5/00*; **F 23d** *11/28*
U.S. Cl. 239—15 **4 Claims**

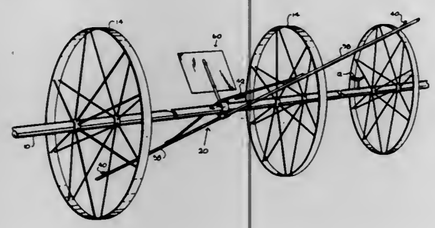


A charging element for a noncontacting coating system is formed as a bar with a series of transversely extending notches with each notch having a coating of an electrically conductive material applied thereto and connected to a control unit for selectively energizing said coatings to thereby discriminately impart electrical charges to coating material passing through the notches in the bar. With this construction not only is fabrication of the bar facilitated, but startup problems are eliminated since the charging bar may be moved into position after the flow of coating material through the coating apparatus has begun.

3,618,859
WIND ANCHOR FOR IRRIGATION PIPE

Victor D. Watts, 1310 E. Buckley, Brownfield, Tex.

Filed Sept. 23, 1970, Ser. No. 74,676
Int. Cl. A01g *25/02*
U.S. Cl. 239—212 **9 Claims**

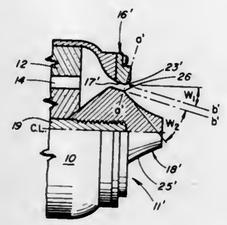


A hub is journaled to the pipe on a side-roll agricultural irrigation system. An elongated anchor let extends to either side of the pipe from the hub. The rear leg is weighted so that as the pipe moves, the weighted rear leg drags behind. A wind vane on the hub extends above the pipe so when the wind moves the wind vane, the leeward leg is moved into anchoring position.

3,618,860
ROCKET ENGINE NOZZLE

Arthur R. Parilla, Mountain Lakes, N.J., and Howard D. Thompson, West Lafayette, Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 22, 1967, Ser. No. 695,309
Int. Cl. B63h *11/00*; **B64d** *33/04*
U.S. Cl. 239—265.11 **6 Claims**

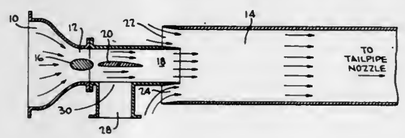


A plug nozzle for rocket engines wherein the danger of nozzle failure due to particle impingement on the plug surface when metallized solid propellants are utilized is eliminated without effecting desirable design characteristics by the provision of a double corner for Prandtl-Meyer expansion, the angle at the cowl lip corner being reduced and supplemented by a second corner formed in the plug itself at the throat section of the nozzle.

3,618,861
DIVERTER VALVE FLOW THROTTLE

Allen B. Holmes, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 14, 1970, Ser. No. 2,700
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.27 **10 Claims**



A diverter valve flow throttle for controlling the flow of the high-velocity exhaust gases of a turbojet engine in V/STOL aircraft. In a first embodiment, the diversion is performed by a single rotating vane that blocks the flow of gases only in the fan mode. Leakage to the fan duct is impossible during the jet mode due to the high-velocity, low-pressure area developed at the opening of the duct. In a second embodiment, fluidic techniques are utilized to divert the exhaust gas flow without the use of any mechanical vanes. The frictional losses in the tailpipe due to the extremely high velocities of the exhaust stream are compensated for by a series of vents located in the tailpipe duct which admit a secondary flow of air to the main jet flow. The adjustable vents also provide constant engine speed throttling and control as an aid during conversion.

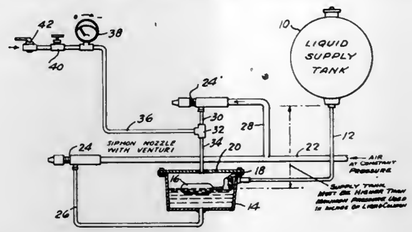
3,618,862
APPARATUS FOR CONTROLLING THE DISPERSION OF LIQUID IN AN AIR NOZZLE

Morton E. Phelps, 9417 New Benton Highway, Little Rock, Ark., and Tommy O. Bell, Hallsville, Tex.

Filed Nov. 21, 1969, Ser. No. 878,759
Int. Cl. B05b *7/30*
U.S. Cl. 239—341 **2 Claims**

A liquid supply tank carrying a solution of insecticide, herbicide, fertilizer, etc., feeds, by gravity, to a constant level

float control chamber. A pipe connects the interior of the float chamber above its liquid level to a source which, optionally, may provide absolute pressure above or below atmospheric. The float chamber, below its liquid level, is connected to the suction side of an eductor type of nozzle

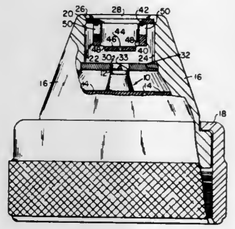


operated by air at constant pressure for any particular distribution. The supply of liquid permitted to be drawn by eductor action and distributed by the nozzle is regulated by regulating the head, positive or negative, in the space above the liquid level in the supply chamber.

3,618,863
ATOMIZING NOZZLE ASSEMBLY

Nathaniel Hughes, Beverly Hills, Calif., assignor to Energy Sciences, Incorporated, El Segundo, Calif.

Filed Sept. 4, 1969, Ser. No. 855,304
Int. Cl. F23d *11/16*
U.S. Cl. 239—419.3 **11 Claims**

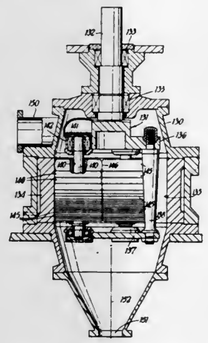


Liquid (e.g., paint) is sprayed with a nozzle having an axial flow passage and coaxial radial holes into the passage spaced 180° apart intermediate the nozzle inlet and outlet.

3,618,864
METHODS OF COMMINUTING PARTICULATE MATTER

Laszlo Lazarus Szego, Lancashire, England, assignor to Vickers Limited, London, England

Filed Apr. 1, 1969, Ser. No. 812,244
Int. Cl. B02c *15/08*, *4/10*, *15/00*
U.S. Cl. 241—19 **20 Claims**

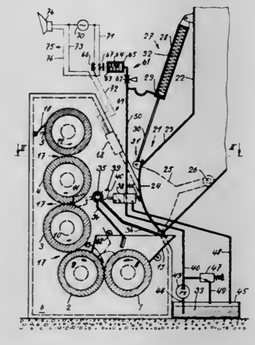


A method of comminuting particulate material in a mill having loosely mounted roller crushing masses that orbit inside a cylindrical chamber, the material being crushed between the masses and the chamber wall. The material is forced into one end of the chamber suspended in a carrier fluid, such as gas, liquid or a foamed substance, which is directed in a helical path along the chamber wall. The material in the carrier fluid is crushed progressively into smaller particles as it progresses through the chamber.

3,618,865
METHOD AND APPARATUS FOR MILLING PASTY MATERIALS

Roman Alfred Grundler, Sirnach, and Paul Emil Brenner, Oberuzwil, both of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, St. Galen County, Switzerland

Filed May 4, 1970, Ser. No. 34,164
Claims priority, application Switzerland, May 9, 1969, 7058/69
Int. Cl. B02c *4/04*
U.S. Cl. 241—30 **12 Claims**



In a method of milling pasty material, such as chocolate, having a tendency to separate out components, between one or more pairs of cooperating friction rollers associated with a pouring trough receiving the material from a supply device which can be blocked from the trough in a controlled manner in dependence on the extent to which the trough is filled with material, both the level of the material in the trough and the flow of the material into the trough are sensed in a coordinated manner and the blocking of the supply device is controlled in accordance with such sensing. The apparatus includes two feeling or sensing levers fixed to oscillate as a unit, these levers being counterbalanced in one direction. When the slide controlling blocking of the supply device is opened, the material moving into the trough engages one of the levers to swing both levers against the bias of the counterweight, moving the other lever into a position where it senses the level of the material in the trough at the nip between two cooperating friction rollers. This provides a control signal resulting in closing of the slide or gate of the supply device. When the level of the material at the nip between the two rollers falls below a predetermined point, the material disengages the other lever and the counterweight swings both levers back to a position where a control means is operated to reopen the slide controlling discharge from the supply device into the trough.

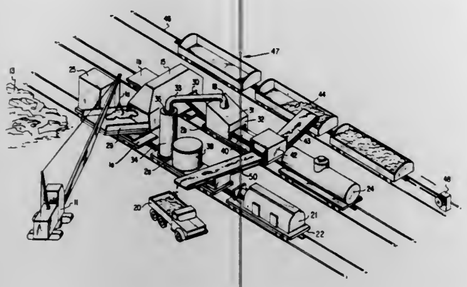
3,618,866
MOBILE SCRAP RECLAMATION

Lloyd B. Robinson, 2614 Walnut St., Alton, Ill.

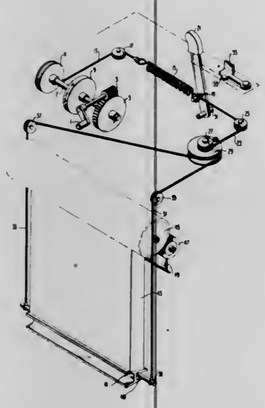
Filed Aug. 22, 1969, Ser. No. 852,395
Int. Cl. B02c *21/02*
U.S. Cl. 241—101 M **6 Claims**

A method for processing scrap metal at sites not justifying the expense of permanent scrap-processing equipment utilizes a mobile metal reclamation unit including scrap-processing apparatus mounted on railroad cars which are moved to sites containing a limited amount of bulky scrap materials. The scrap material is then formed into more com-

pact scrap material with the apparatus mounted on railroad cars, and upon completion of processing of the scrap material the apparatus may be moved to other sites also containing limited amounts of bulky scrap metal items.

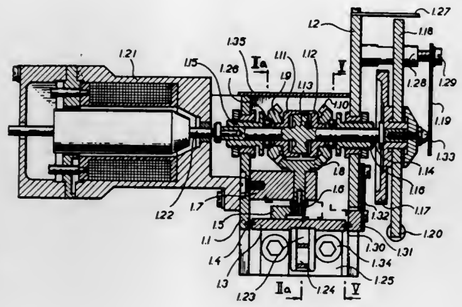


3,618,867
TONER REPLENISHER DEVICE
Richard A. Berlier, and Dyer T. McCrory, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 18, 1969, Ser. No. 858,988
Int. Cl. B02c *4/00, 23/02*
U.S. Cl. 241—167 **9 Claims**



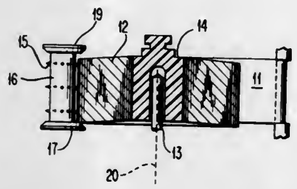
A toner replenisher unit for an electrostatic copying device. The toner particles are abraded off a solid toner block. Constant pressure is maintained between the toner block and the abrading roll throughout the consumption of the toner block by a spring acting through a ratio pulley, such that the spring force reduces as the weight of the toner block is reduced. Loading of the abrading roll is prevented by a brush which removes any toner particles. Toner particles, which do not freely fall from the brush, are removed by a brush wiper. Means are provided for accepting and positioning the toner block with an attached pallet so that the upper surface of the pallet is substantially parallel to a chord described by the edges of the surface ground into the toner block by the abrading roll.

3,618,868
INDEXING CORE HOLDER FOR A TOROIDAL WINDING MACHINE
Bohuslav Vavrinec, Prague, Czechoslovakia, assignor to Tesla, narodni podnik, Praha, Czechoslovakia
Filed Mar. 27, 1970, Ser. No. 23,409
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 **5 Claims**



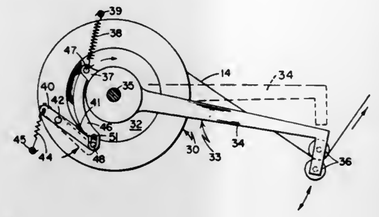
Small rectangular toroidal cores are held for winding by a pair of clamping jaws mounted on a slide to be indexed for precise placement of the winding by a reversible, step-by-step transmission. The transmission includes a driven cam acting through a stepping pawl and ratchet means to drive associated gearing terminating in a rack carried by the slide. The direction of indexing is reversed by a shiftable, two-way bevel clutch in said gearing. The clutch is controlled by adjustable switch-actuating means carried by the slide and operably connected to clutch-operating means.

3,618,869
SERVOING MECHANISM FOR IMPROVED TYPEWRITER RIBBON SPOOLING
David R. Cialone; Clifford E. Herrick, and George T. Slaughter, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,233
Int. Cl. B65h *17/02, 17/08*
U.S. Cl. 242—67.3 **7 Claims**



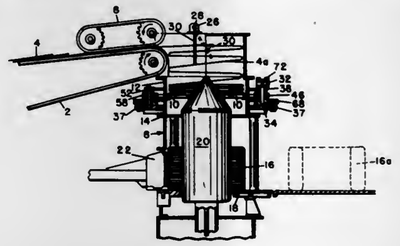
A web-spooling apparatus for winding a thin web on a core is constructed to control any tendency of the web to telescope. A drive roller rides on the periphery of the web as it winds the web on the core. The drive roller includes web-penetrating radial spikes and has a pair of flanges at the top and bottom which extend radially beyond the spikes and contact the edges of the web should the web tend to move axially off the core. The core is mounted on a spindle in such a way as to permit the core to yaw about the spindle. Contact between the web and a flange causes the core to be yawed about the spindle and thereby provides an angle of small magnitude between the core and web, thus causing the web to move axially in a direction opposite to its first such action, thereby tending to correct the telescoping condition.

3,618,870
TENSION CONTROL APPARATUS
Frank Samuel Martin, Wenham, Mass., assignor to The Gillette Company, Boston, Mass.
Division of Ser. No. 586,713, Oct. 14, 1966, Pat. No. 3,465,935.
Filed Feb. 17, 1969, Ser. No. 831,791
Int. Cl. B65h *25/24, 59/38*
U.S. Cl. 242—75.43 **2 Claims**



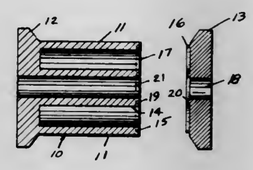
A tension control and brake assembly for maintaining tension on strip material includes a coil support having a braking surface, and a tension control arm pivotally mounted at the coil support and having its arm extending in the direction of the strip leaving the coil. A guide member is positioned on the arm at a point remote from the pivotal mounting of the arm for engaging the strip. A brake structure is disposed to brake the rotation of the coil support. A link connects the tension control arm and the brake and is arranged to actuate the brake on movement of the tension control arm in the direction of rotation of the coil. A first spring urges the tension control arm in the direction of rotation of the coil, and a second spring urges the brake into engagement with the coil support.

3,618,871
ROD-INTERCEPTING MEANS IN A COIL-FORMING CHAMBER
Martin Gilvar, Westboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Aug. 1, 1969, Ser. No. 846,864
Int. Cl. B65h *54/76*
U.S. Cl. 242—81 **7 Claims**



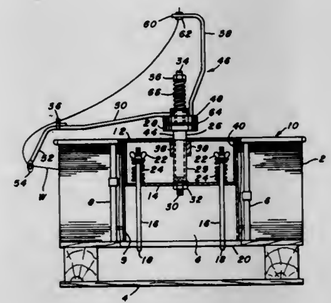
The invention relates to a rodmill in which nonconcentric convolutions of continuous rod deposited on a conveyor or concentric convolutions delivered directly by a laying head are collected in coil formation in a chamber. The chamber (often referred to in the industry as a reforming chamber or tub) includes novel mechanism in the form of fingers which may be moved simultaneously into the upper part of the chamber to intercept the leading rod convolutions coming from the next billet for a sufficient time to permit the previously formed coil to be pushed laterally out of the lower part of the chamber. As soon as the previous coil has been removed, the fingers are retracted to allow the temporarily arrested rings to fall to the floor of the chamber to be followed by the remaining convolutions of the rod as they are continuously delivered by the conveyor or laying head to the chamber. Alternatively, the fingers may be actuated to intercept the falling convolutions at any intermediate position to provide an opportunity to cut the rod, thereby to subdivide the rod into two or more coils.

3,618,872
SPOOL
Henry J. Witkowski, 5626 E. Lake Road, Erie, Pa.
Filed Sept. 4, 1969, Ser. No. 855,211
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.61 **3 Claims**



A spool for thread of the type used in textile industry or the like made up of a generally hollow cylindrical body and a hollow cylindrical center mandrel section concentric to the outside cylindrical body. The body and mandrel section are both integrally molded to the fixed flanged end section. The separable end section is in the form of a disk with a hole adapted to align with the hole in the mandrel section. A bead, V-shaped in cross section, is fixed to the separable end flange and a groove having a cross section shape that is complementary in shape to the V-shaped head is formed in the distal end of the body. The separable flange may be fixed to the body by inserting the bead in the groove and affixing it by means of a suitable adhesive.

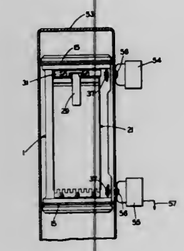
3,618,873
SPINNER-TYPE WIRE UNCOILING APPARATUS
Silas C. Fons, and Richard P. McDermott, both of Waukegan, Ill., assignors to United States Steel Coporation
Filed May 21, 1970, Ser. No. 39,187
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 **6 Claims**



Apparatus especially suitable for paying off wire from a cored bundle or coil or wire positioned eye-up on a skid or a pallet. The apparatus includes a hat member consisting of a plate with a centrally disposed crown adapted to be positioned with the plate resting on the upper surface of the coil and the crown fitting into the eye of the coil. Holddown rods are provided which are anchored at their bottom ends to the skid or pallet with their upper ends passing through the crown of the hat member when the apparatus is positioned on a coil of wire. Helical coil springs surround the portion of each of the rods above the crown and a wing nut threaded on the upper end of each rod holds the spring in compression so that the crown of the hat member is constantly urged in-

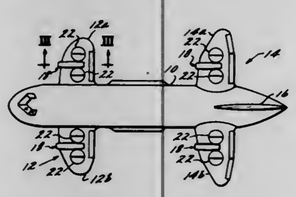
wardly of the eye of the coil of wire. A spindle extends centrally from the bottom of the crown to a point above the plate of the hat member. A spinner payoff mechanism is rotatably mounted on the spindle and a brake is provided for controlling the speed of rotation of the spinner payoff mechanism.

3,618,874
PNEUMATIC CARRIER LATCH SENSING DEVICE
Dale O. Kettering, Canton, and James L. McWhorter, East Sparta, both of Ohio, assignors to Diebold, Incorporated, Canton, Ohio
Filed June 18, 1970, Ser. No. 47,304
Int. Cl. B65g 5/32
U.S. Cl. 243—19 **7 Claims**



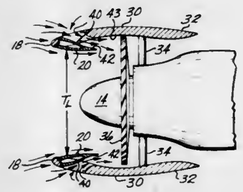
An electrical sensing construction for material-conveying carriers and related terminal stations in pneumatic tube systems, particularly for conducting banking transactions. Electrical sensing coils are mounted in opposite ends of one carrier wall. A switch is mounted within each end of the carrier and is connected to each coil. An actuator pin communicates with each switch for opening and closing the switch. A projecting ear on the carrier door depresses the actuator pin when in closed position which opens the switch. An electrical transmitter and receiver each have an associated coil mounted in the terminal station aligned with the carrier coils when the carrier is at rest within the terminal. A signal from the transmitter is received by the receiver when the carrier switch or switches are closed to indicate an open carrier door. The received signal initiates control functions required to prevent premature launching of the carrier into the pneumatic tube system, if a carrier door is open.

3,618,875
V/STOL AIRCRAFT
Peter G. Kappus, Cincinnati, Ohio, assignor to General Electric Company
Filed Feb. 24, 1969, Ser. No. 801,293
Int. Cl. B64c 29/04
U.S. Cl. 244—12 B **14 Claims**



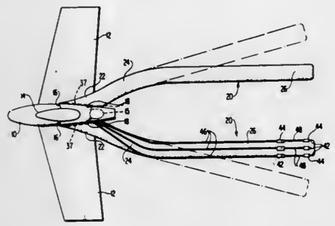
A V/STOL aircraft comprises a fuselage having tandem wings which are offset lengthwise and vertically. Identical propulsion units are provided in each wing half. Each power unit comprises a pair of gas generators mounted respectively above and below the wing half and a pair of lift fans mounted within the wing structure on opposite sides of the engines. A valve system diverts the hot gas stream of the engines into a plenum chamber formed integrally with the wing structure. The hot gas streams are then directed from the plenum chamber to a tip turbine which powers the lift fans when vertical thrust is desired in operation of the aircraft. When forward speed of the aircraft is great enough for the aircraft wings to have sufficient lift, the hot gas streams are directed through propulsive nozzles providing a forward thrust component. In cruise, one engine of each power unit could be shut down. Each engine and each lift fan has emergency capacity which is automatically brought into play in the event of a failure of a lift fan or engine, with proper adjustments being made to the other power units to maintain balance and controlled operation of the aircraft in the lift mode.

3,618,876
AIRCRAFT ENGINE LEADING EDGE AUXILIARY AIR INLET
Wallace E. Skidmore, Redmond; Bjarne E. Syltebo, Bellevue; Wilton S. Viall, Des Moines, and Peter C. Abeel, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 22, 1969, Ser. No. 887,180
Int. Cl. B64d 29/00
U.S. Cl. 244—53 B **3 Claims**



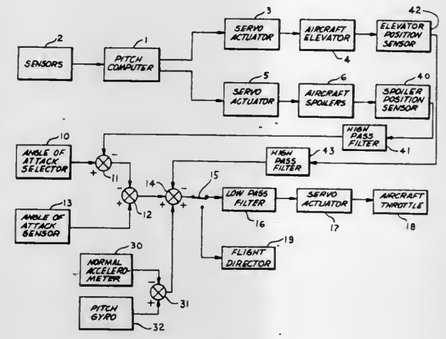
A primary and an auxiliary inlet system for an aircraft jet engine. A rigid leading edge ring pivotally supports exterior and interior foil members which in a first position provide a portion of the cowling forebody fairing and which in a second position coact to provide one wall of an auxiliary inlet. The foils are spring-biased into their first positions for cruise flight and are responsive to aerodynamic pressures caused by changing flight conditions to pivot into said second position for low-speed flight and takeoff conditions.

3,618,877
FLEXIBLE TAIL AIRCRAFT
Franklin W. Peters, Liberty Hall R. D. #5, Box 341, Charlottesville, Va.
Filed Dec. 2, 1969, Ser. No. 881,409
Int. Cl. B64c 17/00, 9/08
U.S. Cl. 244—75 R **9 Claims**



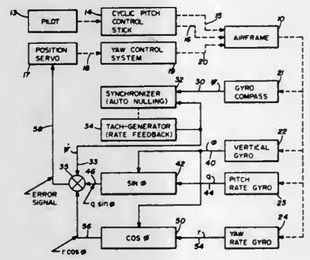
Aircraft having a pair of elongated, flexible tails for maneuvering as well as stabilizing the aircraft in flight. The tails extend a distance at least three times the length of the fuselage and are hollow to receive compressed air for maintaining the tails in elongated, inflated, rearwardly projecting condition. The compressed air conveyed through the tails may be provided by a turbine associated with a jet engine which propels the aircraft. Maneuverability and stability of the aircraft is achieved upon selective movement of the tails which may be accomplished by controlling the flow of air through the tails as well as venting the air from various locations on the tails. Mechanical means may also be provided to supplement actuation of the tails to provide the desired stabilization and maneuverability.

3,618,878
AIRCRAFT THROTTLE CONTROL
James A. Klein, Santa Monica; Lowell O. Lykken, Westlake Village, and Naren M. Shah, Santa Monica, all of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif., by said Lykken and Shah and Collins Radio Company, Dallas, Tex., by said Klein
Filed June 23, 1969, Ser. No. 835,513
Int. Cl. B64c 13/18
U.S. Cl. 244—77 D **15 Claims**



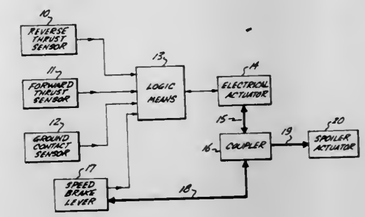
An aircraft controlled in part during descent or ascent by spoilers in the vertical direction, uses a throttle control signal that is derived from the outputs of an angle of attack sensor and a spoiler position sensor. As a result, the changes in the angle of attack occasioned by the movement of the spoilers are compensated. When the aircraft is held on a predetermined flight path and also controlled in part by an elevator in the vertical direction, the output of an elevator position sensor also contributes to the resultant throttle control signal as a long-period anticipatory term.

3,618,879
PITCH/ROLL TO YAW FLIGHT COORDINATOR
Milford R. Murphy, Arlington, Tex., assignor to Bell Aerospace Corporation, Hurst, Tex.
Filed Aug. 14, 1969, Ser. No. 849,988
Int. Cl. B64c 13/18
U.S. Cl. 244—77 E **6 Claims**



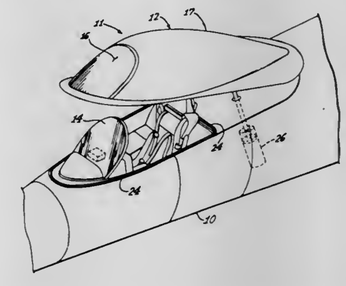
A pilot maneuvering aid wherein a yaw control signal is made proportional to the difference between C and the sum A+B where A is the product of pitch rate and the sine of the roll angle, B is the product of yaw rate and the cosine of the roll angle, and C is turn rate.

3,618,880
SPEED BRAKE SYSTEM FOR AIRCRAFT SPOILERS
Edward A. Hagaman, Bellevue; Lyle F. Stayner, Seattle, and Sherman M. Bissell, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 11, 1970, Ser. No. 36,042
Int. Cl. B64c 9/34
U.S. Cl. 244—113 **11 Claims**



A system for allowing automatic or overriding manual actuation of an aircraft's spoilers as an airspeed brake includes a speed brake lever disposed adjacent the pilot whose movement is coupled to a spoiler actuator by suitable mechanical linkage and a logic means which receives inputs from a reverse thrust sensor, a forward thrust sensor, a ground contact sensor, and the speed brake lever. The logic means combines these inputs according to a predetermined schedule to accordingly provide a deploy or a retract output signal to an electrical actuator which in turn provides a mechanical movement which is coupled to the spoiler actuator and to the speed brake lever by another mechanical linkage. The inputs and predetermined schedule allows for automatic deployment of the spoilers as a speed brake under normal landing, abnormal landing, and refused takeoff maneuvers, and allows automatic retraction of the spoilers during any go-around or refused landing maneuver. An embodiment of each of the system elements is illustrated and described as is an embodiment of a mechanical coupler between the spoiler actuator, the electrical actuator, and the speed brake lever, which coupler provides priority to movements of the speed brake lever over those of the electrical actuator.

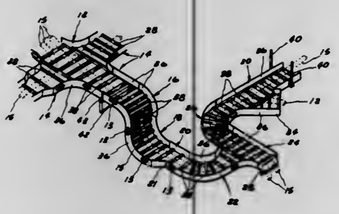
3,618,881
COCKPIT ENCLOSURE
Walter E. Fellers, Los Angeles; Leon F. Begin, Pasadena, and Michael G. Huben, Los Angeles, all of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
Filed July 31, 1969, Ser. No. 846,363
Int. Cl. B64c 1/14
U.S. Cl. 244—121 **2 Claims**



A cockpit enclosure or canopy assembly for aircraft including a canopy comprising fore and aft portions and a platelike protective shield constituting armor glass. The forward portion and protective shield constituting primary and emergency windshields, respectively, of the canopy assembly. The protective shield also functioning as a combining glass for head-up display or like equipment. The shield and canopy

assembly cooperating to insure maximum visibility, improved aerodynamic features, reduces clutter and improves neatness etc., of the canopy area.

3,618,882
CABLE SUPPORT TRAY SYSTEM
Henry A. Podedworny, Wayne, Mich., assignor to Unistrut Corporation, Wayne, Mich.
Filed Sept. 30, 1969, Ser. No. 862,222
Int. Cl. F16l 3/08, 3/22
U.S. Cl. 248—68 R **11 Claims**



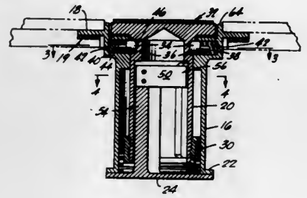
A cable support tray and tray system for the support of cables, tubes and the like, comprised of parallel longitudinal rail sections connected by transverse rungs, which support the cables, tubes, pipes, etc., in a longitudinal direction corresponding to the direction of the rails, and in which the rungs are constructed and arranged so as to accommodate fastening means in such manner as not to protrude beyond the general plane of the cable trays.

3,618,883
ANTENNA MOUNT
Max Cohn, 13 Banner Court, East Brunswick, N.J.
Filed Oct. 29, 1969, Ser. No. 872,157
Int. Cl. E04d 13/00
U.S. Cl. 248—237 **3 Claims**



An antenna mount adapted for mounting on a variety of different kinds of roofs. A central mast is provided with two pairs of articulated mounting legs each pivoted at one end to the bottom of the central mast and the other end to a slider secured around the central mast and a bracing leg is also pivotally attached to the slider perpendicular to the mounting legs. Movement of the slider varies the orientation of the legs in order to adapt the mount for roofs of various shapes and configurations.

3,618,884
RETRACTABLE TIEDOWN POST FOR SERVICE CART
Herbert W. Wilson, Cypress, Calif., assignor to McDonnell Douglas Corporation
Filed Feb. 2, 1970, Ser. No. 7,516
Int. Cl. B65j 1/22
U.S. Cl. 248—361 **4 Claims**



A foot-operated, floor-mounted, self-contained retractable post to restrain a serving cart in an aircraft in areas where a fixed post protruding above the floor would present a hazard. A spring-loaded flush-mounted post is extendible upon partial rotation and is locked flush with the floor upon depression when not in use.

3,618,885
COLLAPSIBLE STAND
Johannes Muller, Schlankreye 37, 2 Hamburg 13, Germany
Filed June 16, 1969, Ser. No. 833,441
Claims priority, application Germany, June 15, 1968, P 17 73 637.7
Int. Cl. A47b 97/04
U.S. Cl. 248—460 **22 Claims**

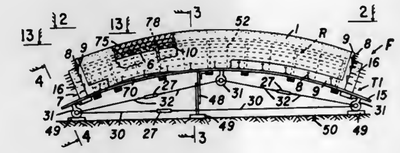


A rodlike center support member slidably extends through a sleeve. The latter is provided on at least one end face with three or more angularly offset slots radiating from the bore of the sleeve. Each of the recesses receives an end portion of a contact or engaging member which is so secured in the respective recess that it can be moved from a position in which it extends radially outwardly from the bore inclined to the axis thereof to a position in which it extends in parallelism with its axis. When the stand is to be erected the sleeve is slid to the lower end of the central support member and the engaging members are moved to their radially outwardly extending position so that they can rest on the ground. When the stand is to be collapsed the sleeve is moved to the upper end of the central support member and the engaging members are moved to their position in parallelism with the axis of the bore in which they extend parallel to the elongated support member.

3,618,886
ADJUSTABLE PANEL FORM FOR THIN SHELLS
Phillip Graham, 2825 Glenmore Ave., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 802,348, Feb. 26, 1969, now abandoned , Continuation-in-part of application Ser. No. 540,314, Apr. 5, 1966, now Patent No. 3,467,354.
This application July 18, 1969, Ser. No. 843,037
Int. Cl. B28b 7/02, 7/22
U.S. Cl. 249—13 **13 Claims**

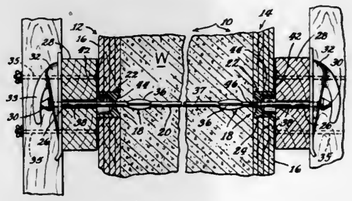
This invention pertains to a low cost adjustable form that can be adjusted for forming various types of two-way curved,

precast, reinforced thin shell cementitious and plastic panels for small spanned building shells having uniform scalloplike, corrugated shells like the shells shown in my U.S. Pat. No. 3,154,888 and to the method of making the same. The form can be adjusted so as to mold different original types of panels, that differ by having different curvature, and/or different size. The form has a base with an adjustable template frame. A thin reinforced base coating is mounted within the



template frame. An elastic edge form that is like a gasket, is secured to the template frame with metallic fasteners. The elastic edge form molds a keying groove in the panel edging. The fasteners position reinforcing and clevis connectors that are attached to the reinforcing, to allow like panels to be easily joined with pins at erection, even during inclement weather, the keying grooves allowing the panels to be keyed together with grout when the weather is suitable.

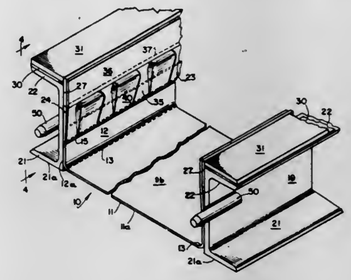
3,618,887
CONCRETE WALL FORM AND PARTICULAR ELASTOMERIC TIE ROD BUSHING THEREFOR
George J. Eriksson, Morton Grove, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.
Filed Apr. 23, 1969, Ser. No. 818,515
Int. Cl. E04g 17/08
U.S. Cl. 249—40 **8 Claims**



A tie rod bushing which is pressed into a hole in a plywood panel of a concrete wall form and has a flexible lip which enables the tie rod to be projected through the bushing during form erection and prevents poured concrete from seeping past the bushing. In one form of bushing, the inner end face thereof lies flush with the inner side or face of the panel so that when the panel and bushing are removed, the wall surface is substantially continuous. In another form of bushing, the bushing projects into the concrete and leaves a socket in the latter when the panel and bushing are removed.

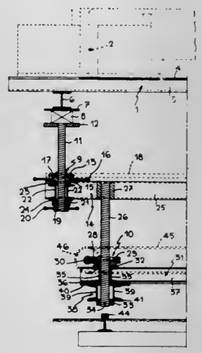
3,618,888
CASTING FORMS
Mark J. Wise, Dayton, Ohio, assignor to The Flexicore Co. Inc., Montgomery County, Ohio
Filed July 22, 1969, Ser. No. 843,636
Int. Cl. B28b 7/06
U.S. Cl. 249—50 **4 Claims**

A long, steel open-ended form has upstanding smooth sides from the form bottom to provide full width of a concrete slab casting; the sides then continuing upwardly and inwardly to reduce the width of a casting slab; after which the form side continues upwardly for constant but reduced slab width; the upwardly and inwardly disposed form side being flat but having at least 50 percent of its casting surface "dimpled" inwardly of the casting region with the "dimple" depth being a maximum at or near the top of the inwardly extending side



portion and reduced to zero at or near the bottom of said portion.

3,618,889
CASING-DEVICE FOR THE REINFORCED OR PRESTRESSED CONCRETE FLANGE OF A GIRDER
Abraham Lipski, Uccle, Belgium, assignor to Procedes Nouveauz de Construction Preflex Societe Anonyme, Saint-Gilles, Belgium
Filed Oct. 2, 1969, Ser. No. 863,228
Claims priority, application Belgium, Oct. 15, 1968, 64764
Int. Cl. B28b 7/08
U.S. Cl. 249—50 **10 Claims**

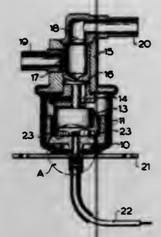


A casing-device with numerous applications and varying sizes for the lower reinforced or prestressed concrete flange of a girder. Said flange has a substantially rectangular or square section and is cast independently of the girder's web. Said device comprises side-elements with side-sections and a casing soffit with articulated soffit-sections allowing the realization of said flange with a vertical upward or downward deflection. Said side-sections are rigid and weighty in order to facilitate their clamping against the soffit-sections and the tightness between these two parts.

3,618,890
THERMOSTATICALLY CONTROLLED AIRFLOW REGULATOR
Hans-Dieter Bastam, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 6, 1970, Ser. No. 61,630
Claims priority, application Germany, Aug. 12, 1969, P 19 40 989.3
Int. Cl. F16k 31/00; F03g 7/06
U.S. Cl. 251—11 **8 Claims**

A housing has a passage provided with a surface portion defining a valve seat. An inlet and an outlet terminate in this

surface portion and each have an exposed cross section. A cup-shaped member of insulating material is located in the aforementioned passage longitudinally spaced from the valve seat. An electric heating device is arranged in the cup-shaped member and a bimetallic coil is located in the passage partly received in the cup-shaped member and having a freely

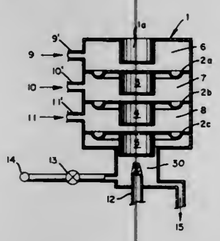


movable end portion capable of movement circumferentially of the passage in response to temperature fluctuations. A rotary valve member engages the valve seat and is connected with the end portion so as to be rotated by the latter with corresponding variations in the exposed cross sections of the inlet and outlet.

3,618,891
DEVICE FOR SELECTING EXTREME VALUE OF PLURAL INPUT SIGNALS

Karl Heinz Topfer, Dresden; Karl August Arnulf Schwarz, Dresden, and Walter Dieter Schrepel, Friedewald uber Radebeul 1, all of Germany, assignors to Deutsche Akademie Der Wissenschaften, Berlin, Germany

Continuation of application Ser. No. 556,655, June 10, 1966, now abandoned. This application Apr. 4, 1969, Ser. No. 816,155
Int. Cl. F16k *31/145*
U.S. Cl. 251—61.2 **6 Claims**



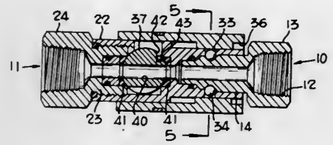
A fluid-operated apparatus for selecting extreme magnitudes, that is, the maximum or minimum magnitudes from several input signals, including a housing which is divided into several uniform chambers which are totally closed for the exception of the input thereto. The chambers are separated by flexible diaphragms carrying actuating projections thereon which transmit the pressure signals to the adjacent membranes or diaphragms, the last actuating means producing a signal corresponding to the extreme value present in one of the chambers by releasing such signal from a fluid source.

3,618,892
SLEEVE-OPERATED VALVED COUPLING

Joseph S. Sciuto, Jr., Crestwood, Mo., assignor to Stile-Craft Manufacturers, Inc., St. Louis, Mo.

Filed Dec. 12, 1968, Ser. No. 783,315
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.2 **11 Claims**

A coupling having a ball valve member rotatively supported in a valve chamber of a tubular body, the ball valve member being provided with a substantially straight passage that communicates a chamber inlet and outlet when the ball valve member is located in the valve-open position. A plug is received in a body socket and communicates with the chamber outlet. When the ball valve member is disposed in the valve-open position, a substantially straight through flow passageway is provided in the coupling. A sleeve, slidably mounted on the body, and the ball valve member are interconnected by a means that selectively moves the ball valve member to the valve-open or valve-closed position upon slidable longitudinal actuation of the sleeve. The interconnecting means includes a transverse groove in the ball valve member which receives a pin carried by and movable with

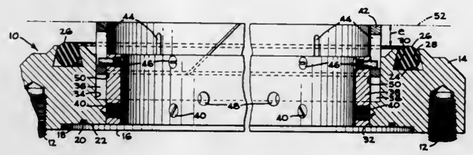


the sleeve, the pin engaging opposed groove shoulders to turn the ball valve member as the sleeve is longitudinally manipulated. The same pin operates in a body opening of predetermined configuration to control longitudinal sleeve movement and to lock the sleeve selectively in at least one limit when the ball valve member is in its valve-closed position, the sleeve being angularly related on the body, when so locked, to permit insertion or withdrawal of the plug relative to the body socket. The sleeve is rotatable out of locked position to latch the plug and is then capable of longitudinal sliding movement to actuate the ball valve member.

3,618,893
ANTIVIBRATION VALVE SEAT ASSEMBLY

Louis, Bois, Sens, France, assignor to Societe Technique Et Commerical D' Installation1 Industrielles "Luceat," Sens(Yonne), France

Filed Nov. 26, 1969, Ser. No. 880,038
Claims priority, application France, Dec. 20, 1968, 179,511
Int. Cl. F16k *1/44*
U.S. Cl. 251—359 **10 Claims**



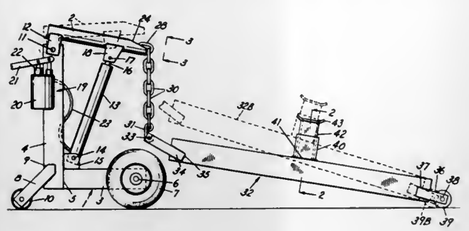
An antivibration seat assembly especially for a relief-type valve, comprising an annular body adapted for removable installation in the valve's flow passage, a resilient seat to establish a seal between the body and the valve's plate or closure member, and an auxiliary floating seat within a chamber surrounding the flow passage through the body. The floating seat moves axially to an extended position in response to a pressure differential between its end surfaces when the valve's closure member approaches the closed position, and during the final closing movement of the closure member, the floating seat remains in contact with it, eliminating undesirable vibrations.

3,618,894
VEHICLE-JACKING APPARATUS

Gerald R. Meyer, R.R. #1, Centerville, Mich.

Filed Mar. 31, 1970, Ser. No. 24,285
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **6 Claims**

A hydraulic cylinder on a wheeled carriage vertically swings a lever. A chain suspended from the lever adjustably engages one end of a lift beam. The beam has a ground engaging roller at its opposite end, and a vehicle-engaging seat located between the ends of the beam rises as the lever tilts

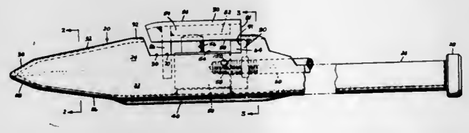


the beam to jack the vehicle from a point remote from the carriage.

3,618,895
SPREADER FOR DAMAGED CORES

James J. Van Gompel, Fremont, Ind., assignor to Brammall Inc., Angola, Ind.

Continuation-in-part of application Ser. No. 848,507, Aug. 8, 1969, now abandoned. This application May 14, 1970, Ser. No. 37,225
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **41 Claims**

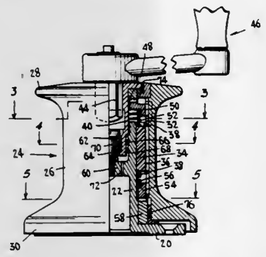


An elongated body is provided with a fixed tapered nose portion which facilitates entry of the body into a damaged core. The body is provided with an opening in the upper part thereof which receives a shoe. A shoe is movably supported by the body for movement in a direction substantially perpendicular to the axis of the body, and a guide means is provided for guiding such movement of the shoe. A hydraulic ram is provided for operating the shoe to move it outwardly of the body. An attachment is also provided to enable a larger shoe to be employed with the apparatus.

3,618,896
RATCHET WINCHES

Richard W. Bewley, P.O. Box 531, Southport, Conn.

Filed Dec. 17, 1969, Ser. No. 885,716
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 **14 Claims**

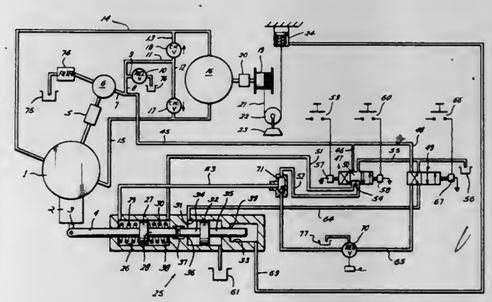


Direct-drive and gear-drive winches comprising a base for securement to a boat deck, said base having an upstanding post on which a winch drum is journaled. At the top of the drum there is a socket member adapted to receive a driving plug of a crank handle by which power is applied to the winch drum. The socket member, also journaled on the upstanding post of the base, either directly or through ring gearing drives one of a pair of ratchet wheels the other of which is connected to the drum, to effect rotation in one direction. In different embodiments, the drum and base have cooperable ratchet wheels constituting back checks. In one gear-driven embodiment of the invention the socket member and a central drive pinion have cooperable ratchet wheels, the pinion engaging idler gears on the base which in turn engage the drum through a ring gear carried thereby. The ratchet wheels provide for direct drive when the socket member is turned on one direction, and for a gear-reduction drive when the socket member is turned in the opposite direction. In another geared embodiment of the invention the socket member has a drive pinion engaging idler gears carried on a turnable spider, said idler gears engaging a ring gear of the stationary base. The turnable spider can have a direct drive of the winch drum through a pair of cooperable ratchet wheels, or it can be geared to the drum by other ratchet wheels and a second central drive pinion carried by the base. The second drive pinion engages idler gears turnably carried by the base, which latter gears in turn engage an internal ring gear on the winch drum. Turning of the socket member in one direction effects a gear drive having one specified ratio, and turning of the socket member in the opposite direction effects a gear drive to the winch drum having another ratio.

3,618,897
CONSTANT TENSIONING SYSTEM

John J. Swoboda, Jr., 5602 Chippendale, and Norman L. Swoboda, 2009 E. Rosebud, both of Victoria, Tex.

Filed June 25, 1969, Ser. No. 836,298
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 **1 Claim**



A winch drum or capstan or the like upon which a load-bearing cable or rope is reeled is operated by an hydraulic, hydrostatic transmission through a suitable gear reduction. The transmission is adjustable as to direction as well as output rate by means of a feedback system including a servomotor or valve which has manually selected automatic and manual modes. In the automatic mode, a load cell or other instrumentality directly sensing the tension in the cable or rope acts through the servomotor to adjust the transmission and thereby actuate the reeling device as required to maintain the desired tension in the cable or rope. In the manual mode, the tension sensing instrumentality is rendered ineffective to adjust the transmission.

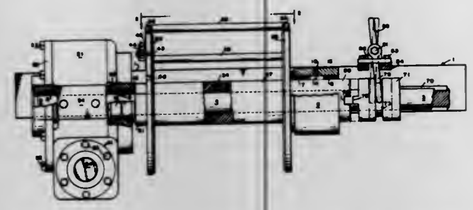
3,618,898
WINCH

Elmer L. Notestine, 2232 S.E. 154th St., Portland, Oreg.

Filed July 2, 1969, Ser. No. 838,495
Int. Cl. B66d *1/02*
U.S. Cl. 254—187 **1 Claim**

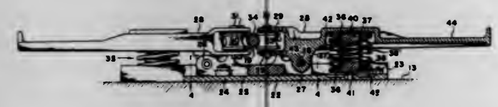
A winch having a main shaft of uniform diameter throughout its length journaled in spaced-apart bearings interconnecting parallel frame members, and a winding drum rotatable about the main shaft between certain of said bearings to thereby provide a rigid assembly which is longitu-

dinally and laterally torsion stiff under all lateral and longitudinal impact forces throughout its length, and wherein the



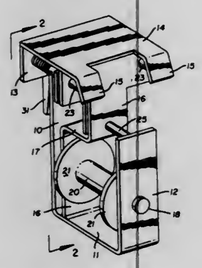
work load stresses are transmitted through the bearings and not to the main shaft, as in other winches I am aware of.

3,618,899
CABLE GUIDE
John K. Hancock, Jr., Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 1, 1970, Ser. No. 42,208
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 **5 Claims**



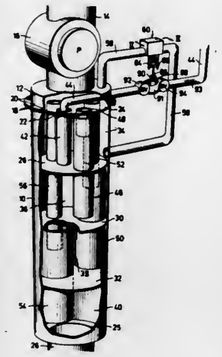
This cable guide when employed in multiples provides means for controlling the direction of movement of cargo-laden pallets, especially when coupled together to form a "train." The pallets are motivated by a pulling force on a flexible cable connected to the lead pallet. With the guides mounted to the floor beneath the surface over which the pallets ride, the cable tension angle increases as the lead pallet approaches. Just prior to the lead pallet reaching the guide, the spring-loaded halves which comprise the guide open up to release the cable. The halves are then automatically repositioned by their springs allowing the pallets to pass over the guide. The location of subsequent guides determines the direction of the pallet train and if arranged in a straight line the trains will not wander.

3,618,900
CABLE ROLLER
Samuel J. Sowards, 217 W. Lincolnway, Lisbon, Ohio, and William L. Reall, Jr., 1746 Kensington Ave., Youngstown, Ohio
Filed Jan. 29, 1970, Ser. No. 6,729
Int. Cl. B66d *1/36*
U.S. Cl. 254—194 **4 Claims**



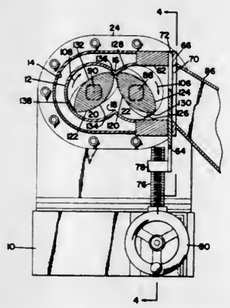
A cable roller includes a body structure mounting a roller in its lower portion and a projecting hooklike configuration in its upper portion by means of which it is supported on a strand to which the cable is to be attached. Movable latch bars are arranged to close the area of the body structure adjacent the roller and the projecting hooklike configuration and springs are provided to bias the latch bars into normally closed position. A lever is provided which may be remotely actuated for moving the latch bars to open position so that the device may be positioned on or removed from a supporting strand and a cable positioned on or removed from the roller thereof.

3,618,901
APPARATUS FOR PRODUCING A WATER GEL
Gustav Sindgren, 2 Ramsundsvagen, Bromma, Sweden
Filed May 26, 1969, Ser. No. 827,552
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **8 Claims**



A container is divided into several mixing compartments connected for series flow by a plurality of tubes of progressively increasing diameter. Water is introduced into each but the first compartment by a supply tube concentric with the connecting tube. A gel-forming agent is pumped into the first compartment at a rate dependent on the difference between the water supply pressure and the pressure in the first compartment. The water gel mixture produced is progressively diluted in each mixing compartment.

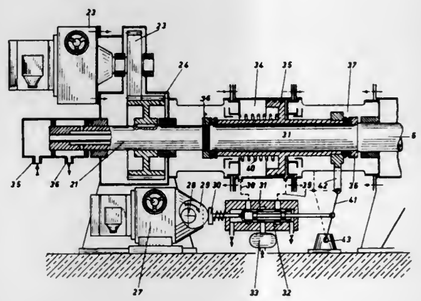
3,618,902
CONTINUOUS MIXER
Ambrose K. Brennan, Jr., Thomasville, Pa., assignor to Teledyne Inc., York, Pa.
Filed Nov. 14, 1969, Ser. No. 876,681
Int. Cl. B01f *7/04*
U.S. Cl. 259—6 **3 Claims**



A continuous mixer for intimately mixing, kneading, blending and/or reacting a wide variety of materials, the mixer including a horizontal mixing barrel which in cross section is in the form of intersecting major arcs providing a pair of side-by-side communicating cylindrical chambers with a material inlet adjacent one end and a material outlet at the opposite

end. An axially extending shaft is disposed in each chamber having secured thereon a plurality of contiguous progressively offset generally lenticular-shaped interengaging paddles rotating in the same direction forming pockets varying in volume. The construction and arrangement of the paddles are such as to provide a minimal clearance between the rotor crests and their enveloping chamber walls and a clearance of about two to five times such minimal clearance between the crests of a paddle and the flanks of its mating paddle whereby most of the material is extruded from a compression pocket to an expansion pocket through the clearance between crests of a paddle and the flanks of its mating paddle which are moving in mutually opposite directions resulting in high shear with consequent highly efficient mixing.

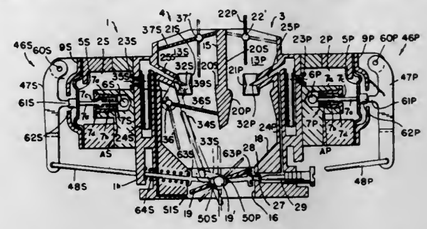
3,618,903
MIXING AND KNEADING DEVICE
Fritz Ronner, and Fritz Sutter, both of Pratteln, Switzerland, assignors to Buss A. G., Barfusserplatz, Basel, Switzerland
Filed Mar. 30, 1970, Ser. No. 23,796
Claims priority, application Switzerland, Apr. 2, 1969, 5387/69, Feb. 5, 1970, 1778/70
Int. Cl. B01f *7/00*
U.S. Cl. 259—102 **16 Claims**



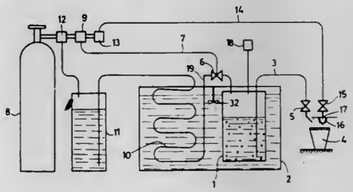
A mixing and kneading device comprising a housing and a shaft mounted therein. The shaft carries a conveyor helix and mixing and kneading vanes. The vanes cooperate with stationary elements in the housing to carry out the kneading and mixing functions. The shaft is rotated by a variable speed rotary motor and is also reciprocated to move the vanes toward and away from the stationary elements by a pressure fluid motor having its piston connected to the shaft. The rate of reciprocations of the piston and shaft is cyclically controlled by a valve device which is actuated by a cam driven by a variable speed motor to thereby vary the number of reciprocations during a revolution of the shaft. A second valve device regulates the flow of pressure fluid during a cycle to reduce or stop the flow of fluid to the piston near the end of the shaft's stroke toward the stationary elements.

3,618,904
HIGH VELOCITY PRESSURE DIAPHRAGM CARBURETOR
Stephen Woods, 14155 Shadywood Drive, Plymouth, Mich.
Continuation-in-part of application Ser. No. 822,828, Apr. 9, 1969, now Patent No. 3,556,067, which is a continuation-in-part of application Ser. No. 629,488, Apr. 10, 1967, now abandoned. This application July 31, 1969, Ser. No. 846,563
Int. Cl. F02m *7/06*
U.S. Cl. 261—23 A **14 Claims**

The disclosure relates to a carburetor having a closed fuel reservoir or chamber to eliminate vapor losses. A mechanical linkage including a cam operated by the throttle valve controls fuel flow to the reservoir or chamber at off-idle, part-throttle and wide-open throttle.

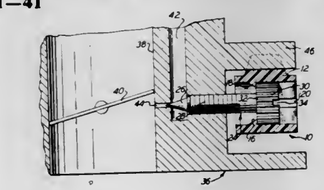


3,618,905
MACHINE FOR THE PRODUCTION OF AERATED BEVERAGES
Sergio Primus, Pordenone, Italy, assignor to I.M.D. Italiana Macchine Distribuzione S.p.A, Bergamo, Italy
Filed Feb. 13, 1970, Ser. No. 11,165
Claims priority, application Italy, Feb. 21, 1969, 13195/A/69
Int. Cl. B01f *3/04*
U.S. Cl. 261—153 **7 Claims**



A machine for the instantaneous automatic preparation of carbonated beverages is disclosed in which the sensing member responsive to the variations of level in the tank containing the carbon-dioxide saturated water forming the base of the drink to be prepared is a pressure-stat responsive to the pressure obtaining in the carbonated water tank. The advantage is that the only variable magnitude sensed by the pressure-stat is the level of water in the tank, the pressure being a direct function of said level by virtue of a well known physical law. Switching and timing means are also provided in order to warrant for an appropriate and orderly sequence of the operations, as automatically performed by the machine, inherent in the preparation of an "instant" carbonated beverage. Thus, for example, means are provided to dispense a flavoring substance (such as lemon essence in the case of a lemonade and so forth) at the proper instant of time and in the appropriate amount. The amount of carbonated beverage dispensed for each drink dosage is constant, and the constancy of the carbonation (i.e. amount of carbon dioxide contained in a volume unit of water) is also ensured.

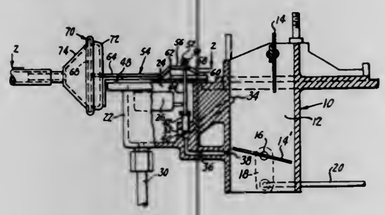
3,618,906
DEVICE AND PROCESS FOR LIMITING IDLING FUEL IN CARBURETORS
William W. Charron, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 18, 1967, Ser. No. 661,570
Int. Cl. F02m *3/08, 19/04, 7/18*
U.S. Cl. 261—41 **3 Claims**



A polyamide cap fits tightly over the head of the idling needle and a vane on the cap abuts a boss on the carburetor

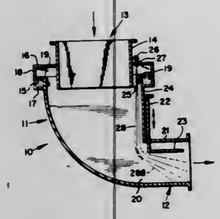
body to prevent needle rotation in one direction. Internal teeth of the cap fit over the idling needle head to prevent separating the cap from the needle, while lands on the interior of the cap permit easy installation. The cap is installed during carburetor flow testing with the idling needle in the position producing the maximum allowable amount of fuel flow through the idling passages and with the vane contacting a boss on the side preventing further increases in the amount of idling fuel. A decrease in idling fuel can be effected by rotating the cap and needle in the direction moving the vane away from the boss for almost one full turn.

3,618,907
ANTISMOG CARBURETOR
Alpha Severn, 5316 S St., Sacramento, Calif.
Filed Jan. 28, 1969, Ser. No. 794,604
Int. Cl. F02m *7/12*
U.S. Cl. 261—41 D **1 Claim**



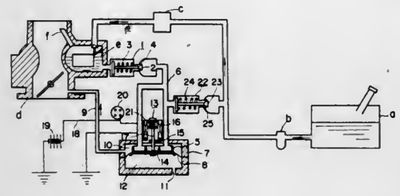
A vacuum-controlled valve is adapted to cut off the admission of fuel to a carburetor idling jet when the motor vehicle is decelerated and vacuum in the intake manifold is high. The engine thus acts as a brake, and when deceleration takes place to a predetermined extent, the drop in vacuum, that is, increase in pressure in the intake manifold, opens the valve to admit fuel to the carburetor to prevent the motor from stalling.

3,618,908
GAS SCRUBBERS
Arthur F. Stone, Madison, N.J., assignor to Air Pollution Industires, Inc., Englewood, N.J.
Filed June 10, 1969, Ser. No. 831,889
Int. Cl. B01d *47/00, 47/06*
U.S. Cl. 261—62 **4 Claims**



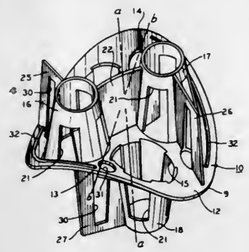
Gas to be scrubbed is fed under pressure down the upright arm of a generally elbow-shaped conduit and is intercepted by a curtain of water spray prior to its entrance into the horizontal arm. Water overflowing a circumferential weir drains down the walls of the upright arm. An adjustable damper controls the area of the passage immediately behind the water curtain.

3,618,909
EVAPORATION-INHIBITING DEVICE FOR A CARBURETOR
Tadahide Toda; Mitsumasa Yamada, and Hidekatsu Miyake, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha Toyota-cho, Toyota, Aichi Prefecture, Japan
Filed Apr. 30, 1969, Ser. No. 820,557
Claims priority, application Japan, Apr. 30, 1968, 43/28675
Int. Cl. F02m *5/12*
U.S. Cl. 261—72 R **3 Claims**



The present invention relates to a device for inhibiting fuel evaporation in a carburetor, said device comprising a variable-capacity bag which communicates with a float chamber in the carburetor and the internal volume of which can be varied by an operating device, a first one-way valve is positioned between said bag and said float chamber, and a second one-way valve through which said bag is connected to a fuel supply line located upstream of a fuel pump, said operating device being so controlled as to increase or decrease the internal volume of said bag in dependence on whether the engine is running or stopped. A certain amount of the fuel in the float chamber is introduced into the sealed variable capacity bag outside of the float chamber when the engine is stopped so as to minimize the amount of fuel in the float chamber, to inhibit the evaporation of fuel and thereby prevent the release of unburnt hydrocarbons.

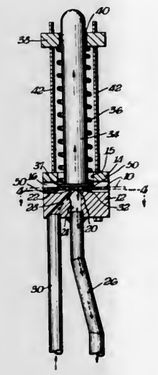
3,618,910
TOWER PACKING
Frederick W. Arndt, Bay Village, Ohio, assignor to Heil Process Equipment Corporation, Cleveland, Ohio
Filed May 28, 1969, Ser. No. 880,844
Int. Cl. B01f *3/04*
U.S. Cl. 261—94 **14 Claims**



A tower packing unit comprising a saddle-shaped platform having a circular edge in plan view and having hollow, slotted, turretlike projections extending up and down on each side of the platform. Slotted buttress vanes standing up and down on each side of the platform in chordal planes of said edge reach radially from each turret to the periphery of the platform. These vanes extend substantially the height of the turrets above the platform and extend in opposite directions from the turrets on the same side of the platform. The platform has openings to the turrets and to the slots in the vanes. The hollow turrets are slotted longitudinally and are of truncated conical form based on the platform. Preferably, there is a pair of such turrets extending away from each side of the

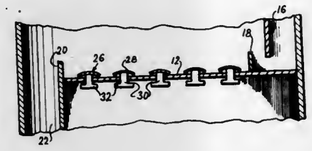
platform with an interconnecting vane joining each pair of turrets in the center of the unit on each side of the platform. These vanes rise from opposite sides of the middle of the platform and lie in planes which contain the longitudinal axis of the unit and lie at right angles to each other.

3,618,911
DYNAMIC GAS-MIXING APPARATUS
Aaron J. Martin, Kennett Square, Pa., assignor to Marlabs, Inc.
Filed Sept. 5, 1969, Ser. No. 855,641
Int. Cl. B01f *3/04*
U.S. Cl. 261—104 **5 Claims**



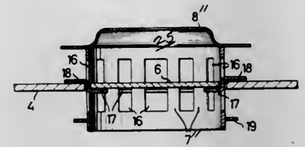
A first gas stream is directed to flow across the face of a gas-permeable wafer. The opposite face of the wafer covers an open-ended receptacle containing a second gas (often in liquid form under high pressure) which is allowed to permeate through the wafer, at a constant rate dependent upon the gas and its temperature, into the flowing first gas stream. This mixing permits the creation of a gas mixture having one component at a relatively low but controlled concentration. The wafer and its associated apparatus is housed in an oven.

3,618,912
TRAY FOR GAS AND LIQUID CONTACT TOWER
Vlastimil Braun, and Otto Vitek, both of Brno, Czechoslovakia, assignors to Kralovoposlka Strojirna Zavody chemickych zarizehi Klementa Gottwald, norodni podnik, Brno, Czechoslovakia
Continuation-in-part of application Ser. No. 464,982, June 18, 1965, now abandoned. This application Jan. 31, 1969, Ser. No. 795,474
Int. Cl. B01f *3/04*
U.S. Cl. 261—114 VT **7 Claims**



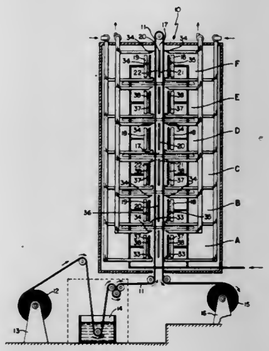
A tray for gas or vapor and liquid contact towers has elongated slots. An elongated cap covers either a single slot or two or more aligned slots. The caps have a rooflike profile or any suitable curved configuration. Each cap is provided with a longitudinally extending single row of longitudinally spaced depending members each of which extends transversely of the respective cap and downwardly through the respective slot. There is an abutment means on the depending members to limit the upward movement of the cap.

3,618,913
FRACTIONATING COLUMNS
Arno Schramm, Mannheim, Germany, assignor to Stahl Apparate-Und Geratebau G.m.b.H., Viernhein am Hessen, Germany
Filed May 16, 1969, Ser. No. 825,233
Int. Cl. B01d *3/20*
U.S. Cl. 261—114 VT **14 Claims**



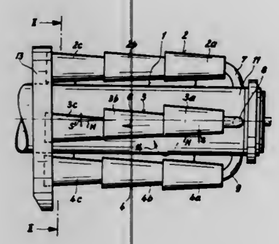
An intermediate plate of a fractionating column includes shutters vertically movable in support members, which latter are vertically movable in the bottom apertures of the plate. The support members have openings therein for the passage of the lighter medium.

3,618,914
APPARATUS FOR PROCESSING TEXTILE CORD
Willie H. Best, Columbia, S.C., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 15, 1970, Ser. No. 46,050
Int. Cl. F27b *9/28*
U.S. Cl. 263—3 **20 Claims**



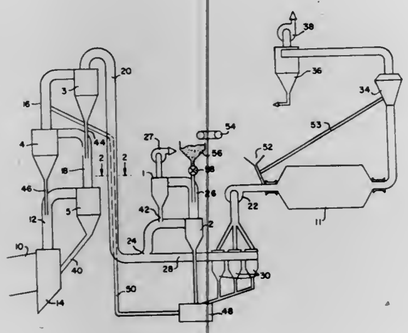
An apparatus for treating or processing textile cord, especially cords suitable for reinforcing pneumatic tires. The apparatus has a number of vertically stacked and spaced gas-fired burners with exposed flames for emitting infrared radiation. A continuous textile cord, or sheet of textile cord fabric is moved through the apparatus in heat-receiving relation past the exposed flame of burners. A screen or shield with adjustable openings is interposed between the moving cord and each burner for regulating the infrared radiation impinged on the cord. A sensor, responsive to the temperature of the cord, is utilized for changing the size of the openings of the shield to control the environment or heat conditions in which the cord is processed.

3,618,915
ROTARY FURNACE
Otto Heinemann, Ennigerloh, and Werner Schobler, Ahlen, both of Germany, assignors to Polysius AG, Neubeckum, Germany
Filed July 17, 1970, Ser. No. 55,634
Claims priority, application Germany, Aug. 22, 1969, P 19 42 840.1
Int. Cl. F27b 7/38
U.S. Cl. 263—32 C 8 Claims



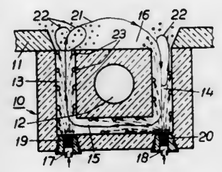
A rotary tubular furnace having a cooling zone comprising an array of passages for conveying the furnace charge to a discharge station. The passages are disposed around the furnace and extend generally parallel to its axis from the furnace discharge end. Conical sections oriented with axes generally parallel and offset from each other are coupled in tandem to form passages which retard the issuance of the charge and enhance its cooling.

3,618,916
APPARATUS FOR PREHEATING SEPARATORS FOR PULVERIZED MATERIAL
Jean Claude Giorgi, Hellemmes, France, assignor to Fives Lille-Cail, Paris, France
Filed Nov. 20, 1969, Ser. No. 878,310
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R 5 Claims



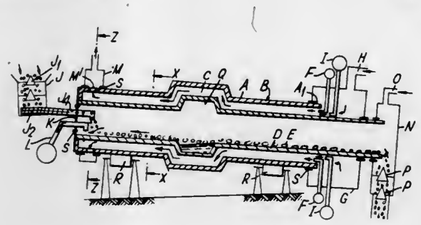
Apparatus for preheating pulverized material in the manufacture of cement includes a plurality of cyclone separators at least two of which are vertically spaced from each other. Air is passed between the separators in one direction and the particulate material is pneumatically conveyed in the opposite direction through a tube located within the air conduit.

3,618,917
CHANNEL-TYPE INDUCTION FURNACE
Bengt Fredrikson, Vasteras; Sven Hellsing, Finspong, and Kare Folgero, Vasteras, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Feb. 9, 1970, Ser. No. 9,705
Claims priority, application Sweden, Feb. 20, 1969, 2340/69
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 9 Claims



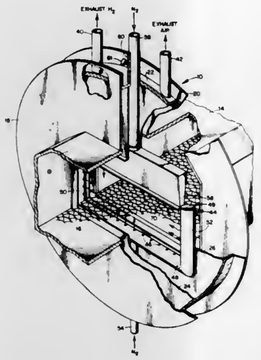
A channel-type induction furnace has one or more inductors, a bottom channel beneath the inductor or inductors and side channels connecting the bottom channel to the hearth. In the case of more than one inductor, there is also at least one central channel running between the inductors. Nozzles are provided openings into the bottom channel opposite the side and central channels for the supply of inert and/or active gas into the channels to modify the flow therein and to carry to the top of the melt various impurities.

3,618,918
ROTARY KILN FOR CONTINUOUS HEATING OF MATERIAL WITHOUT CONTACT WITH HEATING GASES
Madhusudan Raghunath Tembe, c/o Tembe Industries Tembe's Bungalow, Sykes Extension P.O. Shakapuri, Kolhapur, India
Filed Sept. 29, 1969, Ser. No. 861,876
Claims priority, application Great Britain, Nov. 28, 1968, 56,566/68
Int. Cl. F27b 7/08
U.S. Cl. 263—34 3 Claims



A rotary kiln for the continuous carbonization of coal is formed of a longitudinally extending inner shell surrounded by a longitudinally extending outer shell so that heating-gas passages extending the longitudinal direction of the kiln about the inner shell. Within the inner shell, intermediate the charging end and discharging end of the kiln, a cavity or pool is provided for holding the coal in a liquid state for a required period of time during its travel through the kiln. At the discharge end the inner shell extends longitudinally beyond the outer shell and a stationary firing chamber is provided at the end of the outer shell so that it is spaced from the discharge end. At the charging end of the kiln, a fixed chimney hood is arranged in communication with the heating-gas passages about the inner shell. By sealing the interior of the inner shell from the heating-gas passages and also from the atmosphere, the coal can be continuously carbonized without being contacted by the heating-gas or the atmosphere.

3,618,919
ADJUSTABLE HEAT AND GAS BARRIER
Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, Waltham, Mass.
Filed Nov. 3, 1969, Ser. No. 874,093
Int. Cl. F27b 5/02
U.S. Cl. 263—37 7 Claims

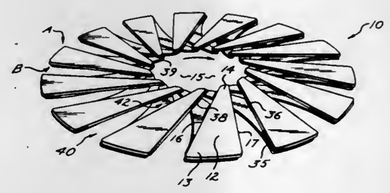


A heat and gas barrier for a muffle furnace having a gas gate adjustable to selected heights within the muffle and effective to controllably isolate the respective gas atmospheres of adjacent muffle zones.

3,618,920
THERMAL PROCESSING TO IMPROVE THERMAL STRESS RESISTANCE
Jack R. Bohn, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Mar. 16, 1970, Ser. No. 20,152
Int. Cl. F27b 19/04
U.S. Cl. 263—52 3 Claims

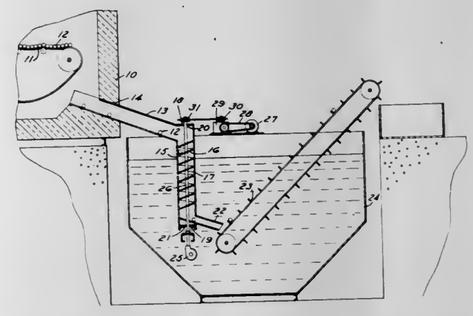
Tensile thermal stress failure can be avoided by inducing favorable residual stresses which oppose thermal stresses encountered in the duty cycle. Favorable residual stresses are induced by heating an object to ductile temperature, applying a heat flux to localized areas of the object, and cooling so as to retain thermal stresses.

3,618,921
DIFFUSER PLATE
Robert Lee Corbett, Jr., 22732 Westlake Road, Rocky River, Ohio
Filed June 15, 1970, Ser. No. 46,407
Int. Cl. C21d 1/00
U.S. Cl. 226—5 R 7 Claims



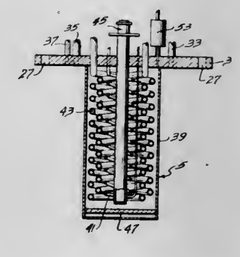
There is disclosed herein a diffuser plate for separating coils of sheet metal stacked on a vertical axis in an annealing furnace, the plate comprising two superimposed layers of flat bars, the bars in one layer being straight with tapered edges and uniformly skewed with respect to true radii of the plate and the bars in the other layer being tapered and curved in a circumferential direction opposite to the slant of the bars in the first layer and overlapping said bars in said first layer.

3,618,922
METHOD AND MACHINE FOR HEAT TREATING METAL BALLS
Roland C. Crans, Detroit, Mich., assignor to Holcroft & Company, Livonia, Mich.
Filed Dec. 8, 1969, Ser. No. 882,814
Int. Cl. C21d 1/62
U.S. Cl. 266—6 R 10 Claims



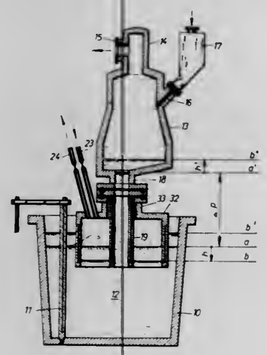
Apparatus for hardening metal balls consisting of a spiral track within a quenching medium through which the heated balls move downwardly by gravitation thereby subjecting them to uniform quenching action. The speed of quenching is varied by rotating the spiral track and by moving the quenching medium relative to the track by a pump.

3,618,923
APPARATUS FOR THE DISTILLATION OF POLONIUM FROM BISMUTH
Lloyd Richard Michels, San Jose, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 25, 1969, Ser. No. 852,565
Int. Cl. C21c 5/38; C22b 7/00
U.S. Cl. 266—16 4 Claims



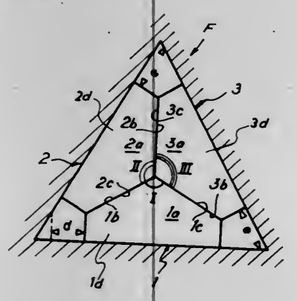
Polonium is distilled from bismuth under vacuum in a pot provided with a cover carrying a condenser which is positioned inside the pot. The condenser is filled with a liquid metal heat transfer medium in which heating elements and cooling elements are immersed. During distillation, the condenser is cooled and polonium freezes on it. The vacuum is then broken and the cover, with the attached condenser, is removed and carried to a receptacle, which may be another still pot. The condenser is then heated, melting the polonium. The polonium may be redistilled any desired number of times and further purified by chemical separation and/or solvent extraction. The apparatus may be used for the distillation of other metals.

3,618,924
METHOD AND APPARATUS FOR DEGASSING LIQUID STEEL
Theodor Messing, Mulheim, Germany, assignor to Standard-Messo Duisburg Gesellschaft fur Chemietechnik mit beschrankter Haftung & Co., Duisburg, Germany
Filed Oct. 23, 1968, Ser. No. 769,793
Claims priority, application Germany, Oct. 24, 1967, P 15 83 294.7
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **3 Claims**
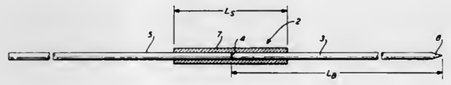


A method of and device for degasifying liquid steel batch by batch by vacuum treatment in a gas extraction chamber filled with a suction intake pipe extending down into a ladle containing the liquid steel to be degasified, according to which while holding said ladle and said gas extraction chamber stationary, displacing a batch of molten steel from said ladle into said degasifying gas extraction chamber, degasifying said last-mentioned batch in said gas extraction chamber and releasing the degasified batch from said chamber.

3,618,925
ADJUSTABLE CLOSURE FOR OUTLETS IN RECEPTACLES FOR MOLTEN METAL OR THE LIKE
Bernard Girolami, Metz-Borny, France, assignor to Institut De Recherches De La Siderugie Francaise, Saint Germain-en-Laye, Yvelines, France
Filed Feb. 13, 1970, Ser. No. 11,232
Claims priority, application France, Feb. 14, 1969, 6903584
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **16 Claims**



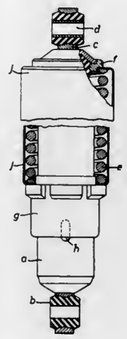
A closure for outlets in receptacles for molten metal wherein a frame having sides which form a regular polygon accommodates a set of coplanar vanes, one for each side of the frame. The vanes comprise identical triangular portions bounded by edge faces each of which abuts against one edge face of the adjoining vane. The apices of all triangular portions abut against each other in outlet-closing positions of the vanes, and the vanes are movable from such closing positions along the respective sides of the frame, in the same direction and through identical distances, whereby their triangular portions define a polygonal passage for outflow of molten metal. The center of such passage coincides with the center of the frame.

3,618,926
TAPPING BAR ASSEMBLY
William J. Bernat, Charleston, S.C., assignor to Air Reduction Company, Incorporated, New York, N.Y.
Filed Apr. 1, 1970, Ser. No. 24,745
Int. Cl. C21b *7/12*
U.S. Cl. 266—42 **8 Claims**



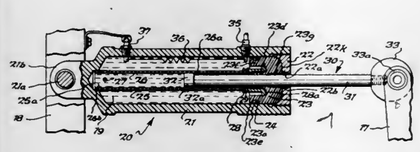
A tapping bar assembly is set forth, which serves to eliminate discarding of scrap lengths of bar. The assembly includes at least a pair of generally cylindrical tapping bars, which are held in rigid end-to-end relationship by a consumable metallic sleeve surrounding the adjoining bar ends and crimped thereabout.

3,618,927
VEHICLE SUSPENSION UNITS
Lawrence George Nicholls, Tyseley, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Apr. 25, 1969, Ser. No. 819,390
Claims priority, application Great Britain, Apr. 26, 1968, 20068/68
Int. Cl. F16f *13/00*
U.S. Cl. 267—8 **2 Claims**



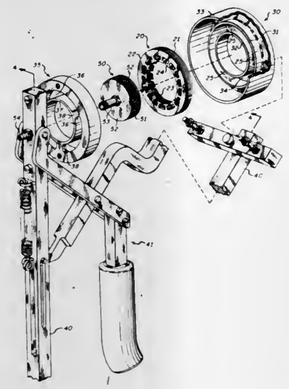
A vehicle suspension unit which comprises a telescopic hydraulic damper and a coil compression spring fitting over the body of the damper and abutting at one end against a collar on the piston rod of the damper and at the other end against a sleeve adjustably surrounding the body, the sleeve engaging the body through the intermediary of cam means such that angular movement of the sleeve around the body causes adjustment of the axial position of the sleeve on the body, the cam means positively locating the ring in at least two different positions of adjustment, mainly characterized in that the sleeve comprises an inner portion (4) whose end face is shaped to constitute a cam surface (7) engaging projections (*h*) on the body of the damper and an outer portion (3) surrounding the inner portion and projecting axially beyond the shaped end face thereof.

3,618,928
RESILIENT CYLINDER LIQUID SPRING
Paul H. Taylor, 3877 East River Road, Grand Island, N.Y.
Continuation of application Ser. No. 619,531, Feb. 27, 1967, now abandoned. This application Aug. 14, 1969, Ser. No. 850,269
Int. Cl. B60g *13/08*; **F16f** *5/00, 9/10*
U.S. Cl. 267—65 **5 Claims**



A low pressure operating liquid spring and/or shock absorber capable of operating under varying impact loads is provided for use in suspension systems for passenger vehicles and the like.

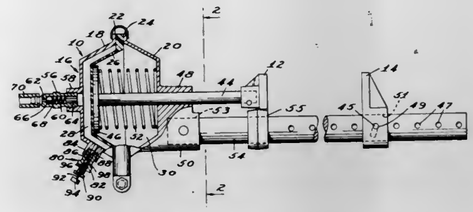
3,618,929
HOLDING AND MASKING FIXTURE FOR APPLYING A COATING OF THERMOSETTING MATERIAL TO SELECTED SURFACES OF A PART
Harold R. Upchurch, Durham, N.C., assignor to Sperry Rand Corporation
Filed Apr. 3, 1969, Ser. No. 813,001
Int. Cl. B25b *1/04*; **B44d** *1/095*
U.S. Cl. 269—6 **4 Claims**



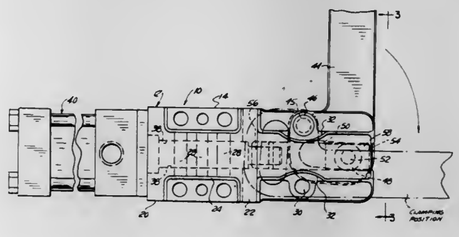
A holding and masking fixture for hand use in the fluidized bed method of applying a coating of thermosetting material to selected surfaces of relatively small parts. The heated part is mounted in a masking fixture configured to clamp the part by the surfaces thereof to remain uncoated thereby precisely masking those surfaces. The masked part is immersed into a powder cloud of the thermosetting material, and the coated part is baked thereby curing the adhered thermosetting material.

3,618,930
PNEUMATIC PIPE CLAMP
James C. Brandt, 3153 Stelling Road, and Paul A. Brandt, 240 Colorado St., both of Palo Alto, Calif.
Filed Dec. 18, 1968, Ser. No. 784,813
Int. Cl. B25b *5/02*
U.S. Cl. 269—20 **1 Claim**

A portable clamp in which one of the clamping jaws is operated by a diaphragm-type fluid actuator, having valve means for automatically closing the fluid inlet to the actuator when the fluid inlet is disconnected from a pressure source to thereby retain clamping pressure on the object clamped.

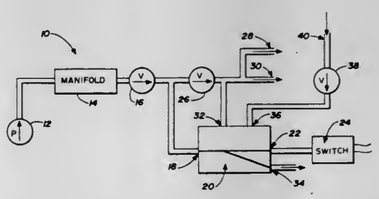


3,618,931
CAM WEDGE POWER CLAMP
Leland F. Blatt, 790 Shoreham, Grosse Pointe Woods, Mich.
Filed Jan. 19, 1970, Ser. No. 3,853
Int. Cl. B23g *3/02*
U.S. Cl. 269—94 **1 Claim**



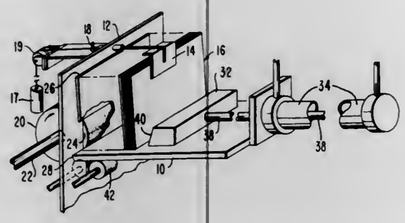
A power-actuated clamp used for holding workpieces in a fixed position having reversible parts for simplified construction.

3,618,932
DOCUMENT FEEDER CONTROL SYSTEM
Victor M. Moreland, and Ernest L. Staples, Jr., both of Dallas, Tex., assignors to Recognition Equipment Inc., Dallas, Tex.
Filed Sept. 22, 1969, Ser. No. 859,700
Int. Cl. B65h *7/02*; **F15c** *1/10*
U.S. Cl. 271—26 **9 Claims**



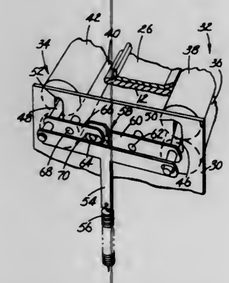
A control system for document feeders of the type having a document advancing paddle includes a fluidic OR gate and a pressure-sensitive switch. The OR gate normally activates the switch which in turn connects operating power to a paddle advancing motor. The OR gate includes control ports that are coupled to the faceplate and bottom plate ducts in the feeder. Whenever one of the ducts is blocked, the OR gate deactivates the switch and thereby stops the operation of the paddle.

3,618,933
CARD FEED DEVICE
Edwin O. Roggenstein, Birmingham, and Earl Olsen, Detroit, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 10, 1969, Ser. No. 875,298
Int. Cl. B65h *1/08*
U.S. Cl. 271—39 **5 Claims**



A mechanism for feeding cards singly from a stack of cards where the feeding is initiated by intermittent forces applied to the stack, each force operating to press the stack against a driven feed roller and to push a foremost card of the stack into a dispensing slot, the application of each force rendering the feed roller effective to eject the foremost card.

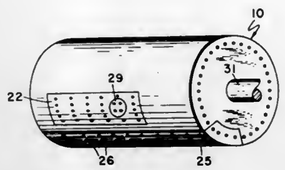
3,618,934
FEED ROLL ASSEMBLY
Richard W. Germuska, Cleveland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed May 18, 1970, Ser. No. 38,025
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 **9 Claims**



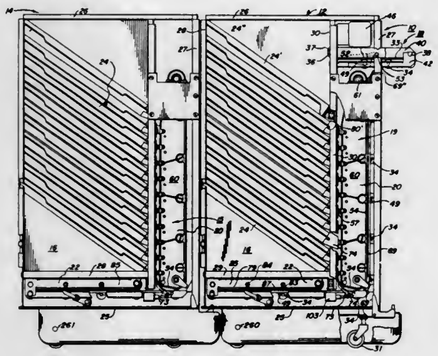
A feed roll assembly of two roll couples for transporting sheet material past a selected station at a uniform speed, each couple being separable under stress to allow for thick documents to be driven. The roll couples are interconnected with a linkage that allows initial independent separation movement of each of the roll couples, and thereafter separation movement of one of the roll couples will cause a corresponding but proportionately less separation of the other roll couple.

3,618,935
TRANSFER APPARATUS FOR A SMALL PIECE OF SHEET MATERIAL
George F. Howatt, Holden, Mass., assignor to New England Envelope Manufacturing Company, Worcester, Mass.
Filed June 23, 1969, Ser. No. 835,697
Int. Cl. B65h *5/06, 5/08*
U.S. Cl. 271—51 **3 Claims**

The present invention relates to an article transfer apparatus and, more particularly, to a roller for moving a sheet of paperlike material and, at the same time, turning it at a substantial angle to its original aspect.



3,618,936
JAM DETECTION SYSTEM FOR SORTING APPARATUS
Richard T. Ziehm, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 31, 1969, Ser. No. 872,812
Int. Cl. B65h *29/58*
U.S. Cl. 271—64 **2 Claims**

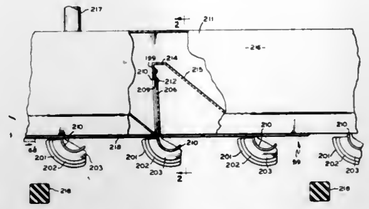


An improved control and jam detection system for an apparatus for sorting documents including transport means, a plurality of modules, each module having a plurality of trays for storing documents, each tray having an inlet located along the document path and a deflector member associated therewith and adapted when actuated to route said documents from said transport means into the tray. The system comprises program means to actuate an individual one of said deflector members to route said documents into a selected tray in predetermined sequence, sensing means for sensing presence and absence of a document at predetermined locations along said document feed path and providing corresponding presence and absence indicating signals, and circuit means coupled to said transport means including a timing means responsive to said signals and providing an input to control the transport means whereby upon the occurrence of a jam the transport of documents into each of the modules is stopped and the document input supplied to an overflow tray until another signal from said program means is received at which time the apparatus is shutdown.

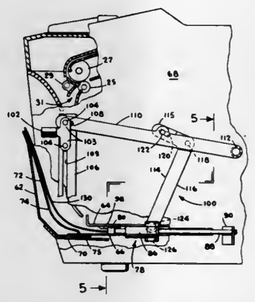
3,618,937
VACUUM CONVEYOR
William E. Follett, P.O. Box 608, Beaverton, Oreg.
Filed July 25, 1968, Ser. No. 747,605
Int. Cl. B65h *29/32*
U.S. Cl. 271—74 **3 Claims**

A vacuum conveyor having a plenum chamber has a zigzag bottom with planar walls having openings which are normally

closed by sheetlike main flaps. The leading edge of a sheet engages pilot valve flaps on the main flaps to first open the pilot valve flaps and then engages and opens the main flaps.



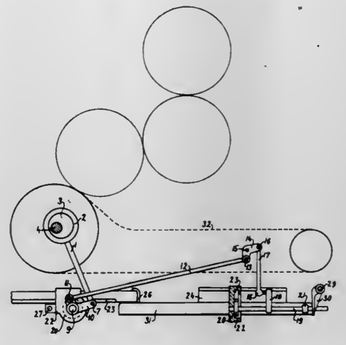
3,618,938
DOCUMENT-STACKING DEVICE FOR PHOTOCOPYING MACHINES
Phillip Pollak, Jr., Westport; Douglas I. Morrison, Norwalk, and William A. Ross, Darien, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 15, 1969, Ser. No. 884,945
Int. Cl. B65h *31/20*
U.S. Cl. 271—86 **11 Claims**



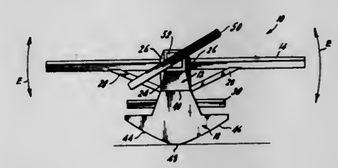
In a photocopy machine, an integrated stacking chute is positioned within the confines of the machine frame to receive and stack sheets successively exiting from a machine feed path. The chute entrance is vertically oriented, while the chute terminal portion is defined by a pair of closely spaced, horizontal members. A backstop slidingly received between the horizontal members is adjustably positioned such that when the leading edges of the sheets abut the backstop, the trailing edges thereof are conveniently accessible at the chute entrance.

3,618,939
MECHANISM FOR ORIENTING PAPER SHEETS
Jaroslav Jiruse, Blansko, Czechoslovakia, assignor to Adamovske Strojirny, narodni podnik, Adamov, Czechoslovakia
Filed Feb. 24, 1969, Ser. No. 802,335
Claims priority, application Czechoslovakia, Feb. 23, 1968, 1390/68
Int. Cl. B65h *31/34*
U.S. Cl. 271—89 **7 Claims**

In a mechanism adapted to be used, for instance, with installations such as printing presses in order to provide for proper orientation of stacked sheets, the sheets are stacked on a table and at one end the sheets are located against a given stop structure. A shifting structure coacts with the opposed end of the sheets to shift them into engagement with the stop structure. In addition, a pair of opposed side-edge-shifting structures are provided for engaging the opposed side edges of the sheets so as to properly position them laterally. A single drive is provided to coact with the end-shifting structure while a transmission extends therefrom to the pair of opposed side edge shifting structures so that in this way the drive is transmitted to all of the shifting structures. In the drive, there is a friction type of transmission giving the possibility of adjusting the several shifting structures even while the mechanism operates.

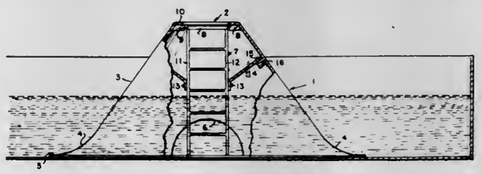


3,618,940
SIMULATED AIRPLANE SEESAW SUPPORTED ON DISSIMILAR ROCKERS
Fraydun Manocherian, 215 Weaver St., Scarsdale, N.Y.
Filed Jan. 29, 1969, Ser. No. 795,105
Int. Cl. A63g *11/00*
U.S. Cl. 272—56 **2 Claims**



A child's seesaw is constructed in the form of a simulated airplane having a fuselage section mounted for side-to-side rocking movement and wing and tail sections adapted to provide seat locations for two to four children. "Two dissimilar rockers mounted transversely of the fuselage support the seesaw."

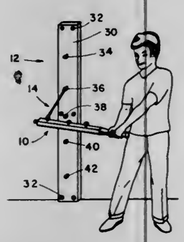
3,618,941
AMUSEMENT SLIDE
Benjamin G. Haynes, 1607 W. Clay St., and Ronald H. Schulson, Rt. #1, Box 264, both of Dallas, Oreg.
Filed Oct. 1, 1969, Ser. No. 862,838
Int. Cl. A63g *21/18*
U.S. Cl. 272—56.5 **1 Claim**



A hollow frustoconical shell whose sides merge on a radius of curvature into a flanged annular base and adapted for use above ground or partially submerged in water. The wall of the shell is provided with a downwardly opening entrance to provide a user with access to the interior of the shell and to a

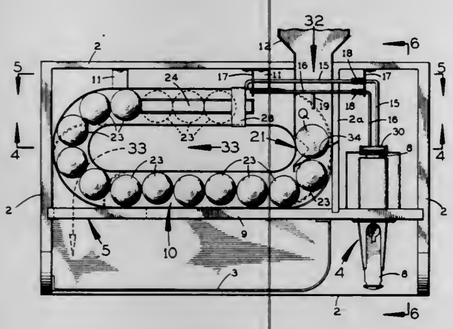
vertically disposed ladder terminating at the opening provided by the frustum of the shell. Upon reaching the top of the ladder a user makes his exit through the open frustum into a position for sliding down the wall of the shell somewhat in the manner enjoyed by users of pool-side slide apparatus for quick descent into the water.

3,618,942
AN ELASTIC PUSH-PULL BATTING PRACTICE TYPE EXERCISE DEVICE
Robert H. Bates, 276 South Firestone Blvd., and Wesley Klipstein, 1381 Girard St., both of Akron, Ohio
Filed Apr. 6, 1970, Ser. No. 25,784
Int. Cl. A63b *23/00*
U.S. Cl. 272—82 **4 Claims**



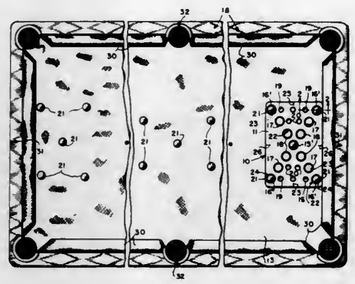
A device for exercising and strengthening the wrists. The device consists of a bat or club, an anchor board which is securely fastened to a wall or column, and a length of a strong elastic rope or band which is attached at one end to any one of a number of points on the anchor board and at the other end to any one of a number of points on the bat or club.

3,618,943
COIN-OPERATED POOL TABLE
Ernest Milu, Hollywood, Fla., assignor to All Tech Industries, Inc., Hialeah, Fla.
Filed Dec. 31, 1969, Ser. No. 889,501
Int. Cl. A63d *15/00*
U.S. Cl. 273—11 C **1 Claim**



A coin-operated pool table in which the playing balls are released to an open compartment upon the deposit of a predetermined coin, including a bridge member which engages the top of the cue ball which is larger than the object balls for the automatic release and return of the cue ball into the compartment during the play of the game. As the object balls are hit into the table pockets, they are guided down a common helical runway where they are sequentially retained by a hinged spring biased platform and a stop member secured over said runway until said platform is released by a coin-actuated lever.

3,618,944
POOL BALL RACK
James H. Myers, 2406 Dalewood Drive, Silver Spring, Md.
Filed Feb. 12, 1970, Ser. No. 10,741
Int. Cl. A63d *15/00*
U.S. Cl. 273—22 **6 Claims**



A ball rack for use with pool or pocket billiard tables for locating the object balls in predetermined spread relation to one another on different areas of a pool table to facilitate locating the object balls for playing a new and unique pool game. The rack has an elevated top wall provided with openings through which the balls are displaced downwardly onto the playing surface of the pool table and including resilient rings secured to the openings for engaging and accurately locating the balls on the pool table and before removal of the rack therefrom.

3,618,945
BASEBALL TRAINING BAT
William Kuchar, 704 Third St., Lyndhurst, N.J.; Anthony Nicodemo, 402 Second St., Jersey City, N.J., and Joseph Pope, 51 Spruce St., Jersey City, N.J.
Filed May 18, 1970, Ser. No. 38,338
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 B **8 Claims**

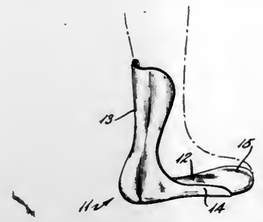


A baseball bat in which the areas of the bat above and below the preferred hitting area are formed with cushioning material to train a player to hit the ball with the delineated preferred hitting area of the bat and to protect the bat from splitting when the ball is hit with the cushioned areas.

3,618,946
INSERT FOR FOOTBALL KICKING SHOE
Ryals E. Lee, 420 Plantation Road, Tallahassee, Fla., and Paul W. Lee, 1606 Marshall St., Waycross, Ga.
Filed May 28, 1969, Ser. No. 828,792
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 B **1 Claim**

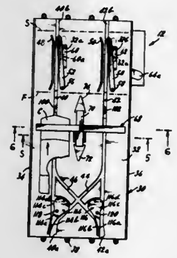
Apparatus molded to the shape of an individual's foot and

insertable within a football shoe to prevent bending of the



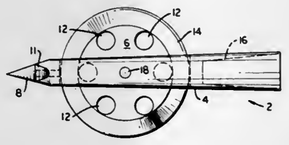
ankle when a football is placekicked.

3,618,947
START-FINISH MECHANISM FOR RACING GAME
Julius Cooper, New Hyde Park, and Erwin Benkoe, Manhasset Hills, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,437
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 R **15 Claims**



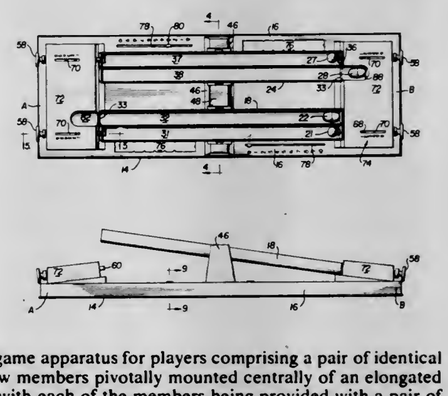
A starting and finishing gate for use in a racing game which includes a racing course having first and second racing lanes. The gate includes first and second gate members which are arranged in relation to the first and second racing lanes to move between lane blocking positions and lane clearing positions. In the lane blocking positions, the gate members establish a starting line for the cars and when moved to the lane clearing position, the cars are permitted to travel about the racing course. The gate also includes a finish indicator having first and second signals arranged to indicate the arrival at a finish line of one of the cars on one of the racing lanes.

3,618,948
ARROWHEAD WITH ROTATABLE CUTTING BLADE
Walter L. McGlocklin, R.R. #2, Bloomington, Ind.
Filed June 27, 1969, Ser. No. 837,142
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 B **2 Claims**



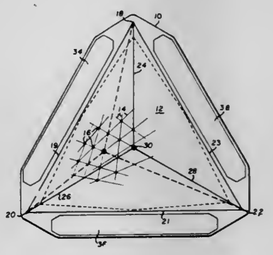
A hunting arrowhead formed from a ferrule body section and having a circular cutting member which is rotatably mounted therein. The circular cutting member is positioned in an elongated slot formed in the ferrule body section. The elongated slot can be centrally located in said body section or it can be disposed forwardly thereof so that the member projects beyond the end of the body section. When the slot and hence the cutting member are centrally located in said body section, a multisided point is positioned at the forward end of said body section.

3,618,949
GAME APPARATUS
William R. McLain; Daniel F. Krause, and Charles H. Hardin, all of Davidson County, Tenn., assignors to Kusan, Inc., Nashville, Tenn.
Filed Feb. 27, 1970, Ser. No. 14,975
Int. Cl. A63f *9/00, 9/14*
U.S. Cl. 273—110 **14 Claims**



A game apparatus for players comprising a pair of identical seesaw members pivotally mounted centrally of an elongated base with each of the members being provided with a pair of longitudinally extending tracks, one track opening onto a "win" pocket for a ball-containing capsule and one track for a steel ball. Two steel ball spring projectors are mounted on each end of the base in alignment with and projecting within the two ends of the steel ball tracks and are operative to strike and project the balls to the opposite ends of the tracks to effect tilting of the tracks by their weight and resultant gravity movement of the capsules toward and into the "win" pockets.

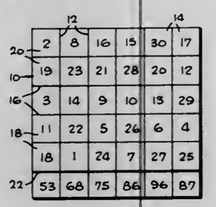
3,618,950
GAME IN WHICH MOVEMENT OF PEG CAUSES BOARD AREAS TO CHANGE
Kenneth Chew, Santa Clara, Calif.
Filed Dec. 12, 1969, Ser. No. 884,410
Int. Cl. A63f *9/00*
U.S. Cl. 273—134 AE **1 Claim**



A generally triangular shaped game board having three sets of lines disposed on the surface thereof with each set of lines radiating from different apices of an equilateral triangle and intersecting the other sets of lines at a plurality of points over the surface of the game board. Holes are provided at the in-

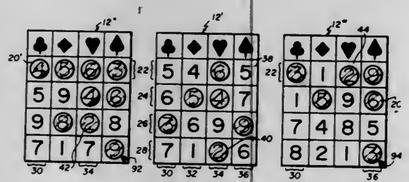
tersection of the lines and a peg is provided for being positioned in any of the plurality of holes. Three strings are respectively connected between the peg and the three vertices of the triangle so that movement of a peg from one hole to another causes the three areas defined by the strings and the sides of the triangle to be changed simultaneously each time the peg is moved to a new location.

3,618,951
APPARATUS FOR PLAYING A BINGOLIKE GAME
Gerald H. Parrick, III, 5424 Corteen Pl., Apt. 26, and Gerald G. Clodfelter, 4657 Kraft Ave., both of North Hollywood, Calif.
Filed June 11, 1969, Ser. No. 832,409
Int. Cl. A63f 3/00
U.S. Cl. 273—135 B **15 Claims**



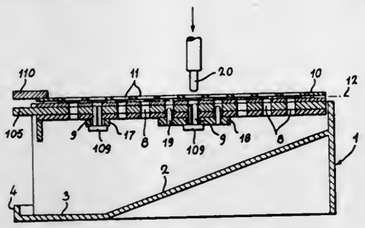
A game board delineated by horizontal and vertical lines into a plurality of columns and rows to define vacant spaces, the lowermost horizontal line being heavier than the others, a plurality of number-carrying tokens, each carrying a different number and totaling the number of rows minus one on the game board times the number of columns on the game board, and a random number selector having a plurality of different numbers thereon, with the lowest number being larger than the highest number on the number tokens. In species for plural players, a plurality of game boards overlap so that some of the spaces on the board of one player are in common with spaces on the board of another player.

3,618,952
GAME UTILIZING MATHEMATICAL BASE SYSTEMS
Ronald J. Tallarida, Willingboro, N.J., assignor to University Creations, Inc., Cherry Hill, N.J.
Filed Sept. 8, 1969, Ser. No. 856,061
Int. Cl. A63f 3/00; G09b 19/02; G06c 27/00
U.S. Cl. 273—135 B **23 Claims**



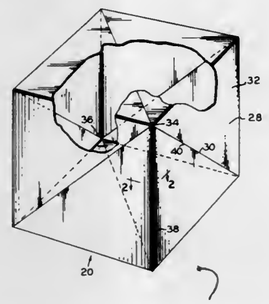
A game apparatus having at least one playing board having an array of uniquely identifiable positions thereon with such positions having numerical values associated therewith, each position being identified by a playing card suit symbol and a numeral. A position selection system consisting of conventional playing cards is provided for sequentially identifying a plurality of said positions on the board and the numerical values associated therewith. When a preselected number of positions have been identified, further identification ceases; and a base selection card is chosen for selecting the particular mathematical base system on which continued play of the game is to be predicated. Once the base system is chosen, those identified numerical values which have mathematical significance in the particular base system chosen are converted to numerical values in another base system, preferably base 10, and the total of these converted numerical values is determined to represent the score of the player. A particular aspect of the apparatus resides in the disc-type converter which is of simple, compact construction and so designed to facilitate direct conversion of one numerical base system to another.

3,618,953
CHECKERBOARD GAME DEVICE
Sergio Lanza, 14 R, Via Groberti, Lavagnola, Italy
Filed July 20, 1970, Ser. No. 56,449
Claims priority, application Italy, Aug. 8, 1969, 7239-A/69
Int. Cl. A63f 3/00
U.S. Cl. 273—130 D **9 Claims**



A box provided with a removable cover panel, which is formed with through bores arranged in rows as in a checkerboard. Removable pieces can be secured to the underside of the panel by means of suitable securing pins so that the piece is held between the panel and the head of the pin. The piece is provided with at least one through bore for the securing pin and is provided in correspondence with the remaining bores of the panel covered by the piece itself with pins integral to the piece and adapted to penetrate partially into the panel bores. The pins are expelled by the action of a stylus operate by the player, an the piece will fall off whenever all securing pins, or just one integral pin, has been expelled. The player will direct his hits without knowing the position of the pieces. To this respect the checkerboard may be covered by a suitable opaque and perforable sheet.

3,618,954
PUZZLE BOX
Stephen S. Murff, Eugene, Oreg., assignor to Scientific Demonstrators, Inc., Eugene, Oreg.
Filed Sept. 4, 1970, Ser. No. 69,856
Int. Cl. A63f 9/08
U.S. Cl. 273—155 **10 Claims**



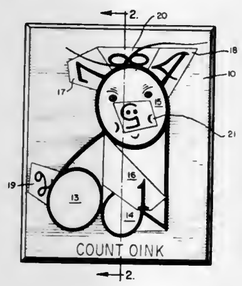
A puzzle box is formed in the shape of a rectangular parallelepiped made of rigid sheet material. The edges of the parallelepiped are hingedly connected together, but the faces thereof are each slit along one diagonal. Three of the slit diagonals meet at one corner of the parallelepiped, while the other three slit diagonals meet at the opposite corner. The resulting structure may be turned inside out as well as foldably transformed into a variety of configurations.

3,618,955
METHOD OF MAKING AN EARTH PUZZLE
Bette Abell Barnes, 1210 Sheridan Lane, Beaumont, Tex.
Filed Mar. 3, 1970, Ser. No. 15,995
Int. Cl. A63f 9/12; G09b 27/08
U.S. Cl. 273—157 R **4 Claims**



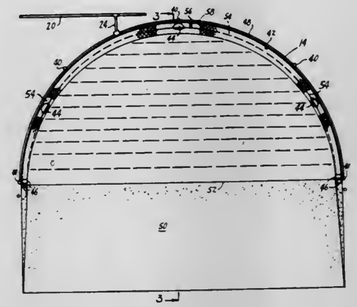
An earth puzzle including sphere formed of magnetizable material and a plurality of puzzle pieces which may be placed on the sphere to form a world globe. The puzzle pieces are retained on the sphere by permanent magnets attached to the underside of the puzzle pieces. In making the aforementioned structure, the sphere is first fabricated from magnetizable material. A second sphere is molded on the first sphere after which a representation of the world is painted or otherwise placed on the second sphere. The second sphere is then cut into puzzle pieces and removed from the first sphere. Permanent magnets are then suitably attached to the underside of the puzzle pieces which may then be placed on the first sphere to form a world globe with the permanent magnets retaining the pieces on the first sphere.

3,618,956
NUMERAL STUDY PUZZLE
Robert J. Biederer, 507 North Wisner, Park Ridge, Ill.
Filed Aug. 28, 1969, Ser. No. 853,732
Int. Cl. A63f 9/10; G09b 19/02
U.S. Cl. 273—157 R **1 Claim**



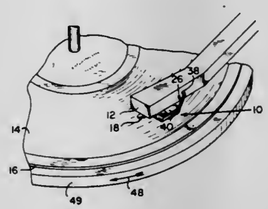
A picture puzzle having a playing board provided with a recessed area and puzzle pieces for placement in said recessed area to form a complete picture, said puzzle pieces having a numeral appearing thereon and the periphery of some of the pieces coincide with the form of the numeral along edges thereof facing the edges of the recessed area in the playing board. The numerals on other pieces define features of the creature or object depicted in the picture. The shapes of the pieces are not as irregular as the shapes of the numerals disposed on the pieces.

3,618,957
GOLF GAME
Thomas R. Cain, 5265 California Way, Paradise, Calif.
Filed June 2, 1970, Ser. No. 42,777
Int. Cl. A63b 67/02, 69/36
U.S. Cl. 273—176 A **5 Claims**



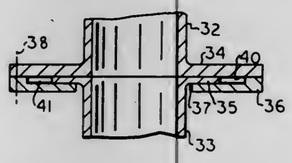
A golf ball driving range includes a plurality of rows of ball stops spaced at varying distances from the tee-off area. Each stop is shaped in the form of a semicircle, with the opening thereof facing the tee-off area. An electrical system is provided to sense when a driven golf ball enters a stop. This system may take the form of photoelectric units mounted at the front of each stop or, alternatively, electrical wires embedded in the vertical walls and inclined floor of each stop. The sensing system actuates flashing indicator lights associated with each row of stops and the lights of each row are of different colors. An inclined ball return channel is provided within each stop, adjacent the juncture of the rearwardly inclined floor thereof and the walls of the stop. A game of golf may be played by assigning a par to each row of stops and counting the number of shots required to drive a golf ball into one stop of each row.

3,618,958
PHONOGRAPH RECORD WIPER
John A. Schmidlin, West Orange, N.J., assignor to Arnet, Inc., New York, N.Y.
Filed Feb. 6, 1970, Ser. No. 9,352
Int. Cl. G11b 3/58
U.S. Cl. 274—47 **4 Claims**



A phonograph record wiper suspended from the phonograph arm in wiping relation with the grooved surface of a phonograph record, wherein the suspending connection permits unimpeded pivotal movement in the wiper of an extent which results in the automatic assumption by the wiper of an optimum wiping position in response to rotational movement of the phonograph record beneath the wiper.

3,618,959
LATERALLY SLIDABLE SEALED JOINT
Milan E. Gerard, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Division of Ser. No. 520,002, Jan. 11, 1966, Pat. No. 3,435,185.
Filed Aug. 16, 1968, Ser. No. 848,764
Int. Cl. F16j *15/14, 15/40;* **B65d** *53/06*
U.S. Cl. 277—1 **4 Claims**

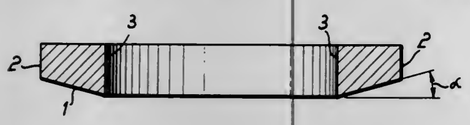


Open-ended inner and outer walking chambers have a liquid-sealed sliding connection between them, and the outer chamber has a similar liquid-sealed sliding connection with the high vacuum chamber of an electron beam gun whose beam passes through the liquid-sealed chambers to impinge upon the surface of a workpiece.

The open ends of the walking chambers have inflatable seals which, upon being inflated, move to engage the work surface in releasable locking engagement therewith. The walking chambers also have pneumatic motors and metering devices to index the chambers relative to the beam.

A walking seal system, including the pneumatic motors, metering devices, valves, and associated elements and circuitry, operates cyclically to alternately inflate the chamber end seals, evacuate the walking chambers, and actuate the indexing motors to advance the chambers relative to the beam while maintaining therewithin the required low-order vacuum environment for the beam as it moves relative to the workpiece.

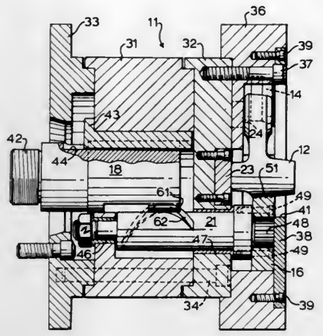
3,618,960
PISTON RING
Max Koehler, 5813 Holkenstr. 25, Wetter-Wengern, Germany
Division of Ser. No. 673,340, Oct. 6, 1967, Pat. No. 3,561,087.
Filed June 16, 1970, Ser. No. 46,617
Int. Cl. F16j *9/00*
U.S. Cl. 277—216 **4 Claims**



A split piston ring of pressed and sintered metal powder and method of making the same. The piston ring is characterized primarily in that it has a higher density on its inner periphery than on its outer periphery, while the same density and density distribution prevail on every radial cross-sectional plane.

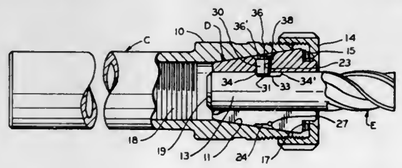
3,618,961
CAM JAW CHUCK
Jozef Kiwalle, Peoria, Ill., and Frederick M. Lamb, South Bend, Ind., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 10, 1969, Ser. No. 883,959
Int. Cl. B23b *31/12*
U.S. Cl. 279—33 **5 Claims**

A chuck assembly for securing a workpiece and having a chuck body rotatably supporting cam-shaped jaw means. The cam-shaped jaw means may be rotated for variable engagement with the workpiece by linear movement of a drawbar



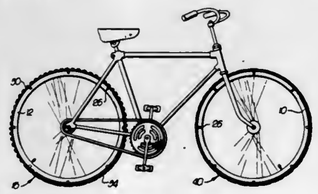
member to secure the workpiece between the jaw means and one or more stops arranged upon the chuck body.

3,618,962
COLLET CHUCK
John R. Cox, Lakewood, and Joseph E. Mix, Cleveland, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed Feb. 17, 1970, Ser. No. 12,097
Int. Cl. B23b *31/10, 31/20*
U.S. Cl. 279—82 **4 Claims**



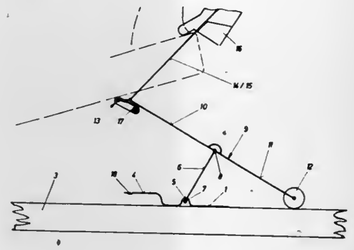
A collet chuck having a radially movable pin therein for locking a tool such as an end mill against axial withdrawal from and turning in the collet. The pin is tapered and fits within a correspondingly tapered, radially extending hole in the collet which limits its inward movement. The pin is biased into full seating engagement with the tapered hole by a retaining spring and is adapted to be cammed radially outwardly during insertion of an end mill by a beveled end on the tool shank or by the flute contour in the case of a double ended end mill. With the collet in the chuck the inner end of the pin radially overlaps a shouldered recess on the shank of the tool and the outer end contacts the inner wall of the chuck. The pin thereby prevents axial withdrawal or turning of the tool.

3,618,963
ICE BICYCLE
Antonio Romano, c/o Ice Capades 6121 Santa Monica Blvd, Los Angeles, Calif.
Filed Nov. 3, 1969, Ser. No. 873,613
Int. Cl. B62k *13/00*
U.S. Cl. 280—7.12 **13 Claims**



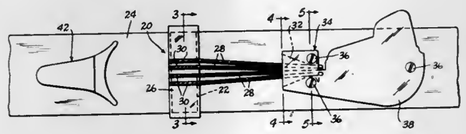
A runner band is applied over the front wheel of a bicycle. The runner band has a skate edge for movement along an ice surface. A combined track and runner band is applied to the rear wheel of the bicycle, one part of the band having teeth for biting into the skate surface whereby suitable traction may be applied for propelling the bicycle. Another small part of the band is provided with skate parts. Accordingly, when it is desired to skate, the wheel is stopped at the runner part of the band.

3,618,964
REAR TIGHTENER FOR SAFETY SKI BINDINGS
Hans-Otto Frisch, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed Nov. 4, 1969, Ser. No. 873,989
Claims priority, application Germany, Mar. 7, 1969, G 69 09 236.0, May 14, 1969, P 19 24 728.0
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **6 Claims**



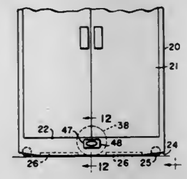
The rear tightener is pivotally held at two tension elements, which extend past the sides of the heel of the skiing boot in a downwardly inclined direction and are held on the ski by a supporting member. The latter consists of a push rod and in its central portion is pivoted to a guide lever, which is secured to the ski. The pivotal axis of both parts are parallel and extend transversely to the longitudinal axis of the ski and parallel to the tread of the ski. The arm of the push rod which extends from the pivot to the tip of the ski holds the tension elements. The other arm extending from the pivot to the rear end of the ski bears on the ski. A releasable locking device is provided, which serves to hold the push rod and/or the guide lever on the ski.

3,618,965
SAFETY DEVICE FOR SKIS
Harvard K. Hecker, 26 Black Creek Lane, St. Louis, Mo.
Filed Dec. 15, 1969, Ser. No. 885,056
Int. Cl. A63c *11/00, 9/08*
U.S. Cl. 280—11.35 C **9 Claims**



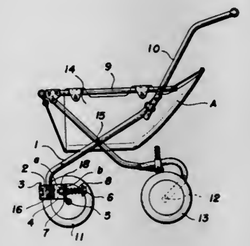
A novel safety device for materially reducing friction between a ski and a skier's boot sole, particularly in the area of the ball of the foot, on release of the toe binding. One embodiment includes a Teflon tapepiece secured on a ski in the area beneath the ball of a foot for transverse pendulum engagement by the lower surface of a small stainless steel plate pivotally mounted on the ski by a plurality of stainless steel cable segments. A modification includes the stainless steel plate secured to a belting supported capable of transverse pendulum movement. A second modification includes two ball bearing discs mounted transversely of a ski in the ball of the foot area against which the ball of the foot portion of a boot is disposed.

3,618,966
MOBILE CABINET AND ANCHOR MEANS FOR SUPPORTING THE WHEELS THEREOF IN RAISED AND LOWERED POSITIONS
James R. Vandervest, Muskegon Heights, Mich., assignor to E. H. Sheldon and Company, Mushegon, Mich.
Filed July 2, 1970, Ser. No. 52,043
Int. Cl. B62d *21/14*
U.S. Cl. 280—43.17 **4 Claims**



A cabinet or support structure is equipped with a pair of large wheels mounted on wheel hubs that are eccentrically supported upon an axle, the axle being rotatable to raise the wheel hubs and thereby the wheels so that the bottom of the cabinet can seat on the floor or floor carpet, and when the axle is rotated to lower the hubs, the cabinet can then be moved on the large wheels together with edge-supported casters. Means are provided for angling the wheel hubs in positions for supporting the wheels in raised and lowered positions, and means are also provided for limiting the withdrawal of the axle-rotating means.

3,618,967
BABY CAR
Genshiro Sugiyama, Tokyo, Japan, assignor to Sugiyama Manufacturing Co., Limited
Filed Mar. 9, 1970, Ser. No. 17,797
Int. Cl. B60g *1/00*
U.S. Cl. 280—47.11 **3 Claims**



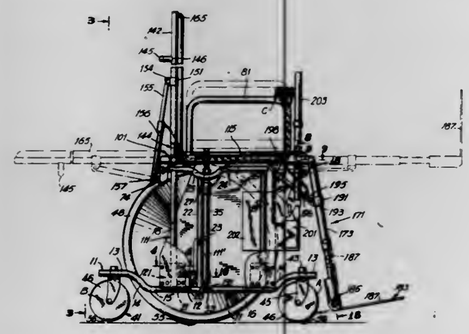
A baby carriage having caster wheels at its front end together with spring actuated mechanism for resiliently yieldably urging said wheels to a position for guiding the carriage in a rectilinear path, said mechanism being automatically yieldable in response to steering forces on the carriage to permit angular steering movement of the wheels so that they may follow a curved path of movement.

3,618,968
PATIENT-OPERATED WHEELCHAIR
Edward M. Greer, 820 Loma Vista, Beverly Hills, Calif.
Filed May 1, 1969, Ser. No. 820,980
Int. Cl. A61g *5/00*
U.S. Cl. 280—47.11 **11 Claims**

A patient-operated wheelchair having improved stability and having a backrest adjustable from the vertical to infinite angles as well as a pair of footrests, each of which is independently infinitely adjustable between a lowermost position to a horizontal position so that when the backrest and both footrests are in the horizontal position, the wheelchair is converted into a stretcher. The wheelchair includes hydraulic or like-powerized controls, permitting the user adjustably to

position the various components of the wheelchair for maximum comfort and flexibility. The apparatus, in addition to convertibility from a wheelchair to a stretcher, permits heightwise adjustment of the seat, adjustment of individual leg supports and angular adjustment of the backrest. Arm rests are provided which may be deflected from the normal or vertical position to a horizontal position, facilitating sidewise movement of the patient from the wheelchair to a horizontal surface, such as a bed or massage table.

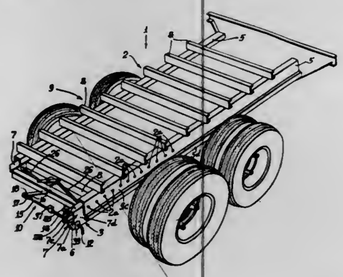
A powerized mechanism, preferably hydraulic, effects the various adjustments, the hydraulic mechanism being powered



either by a hand-operated pump or by an electrically driven pump.

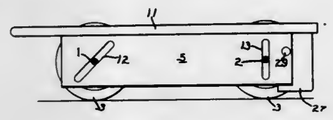
The apparatus is supported on the usual hand driven main wheels and includes front and rear sets of casters disposed at a different level than the main wheels whereby, when the wheelchair is employed in the normal phase, the weight of the device is carried by the front set of casters and the hand-driven wheels. When the apparatus is used as a stretcher, the center of gravity shifts so that the weight is carried by the rear set of casters and the handwheels. In each instance only one set of casters and the handwheels are in contact with the ground to facilitate movement.

3,618,969
APPARATUS FOR POSITIONING TRAILER SUSPENSION FRAME
John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.
Filed Apr. 22, 1970, Ser. No. 30,739
Int. Cl. B62d *53/06*
U.S. Cl. 280—80 B **16 Claims**



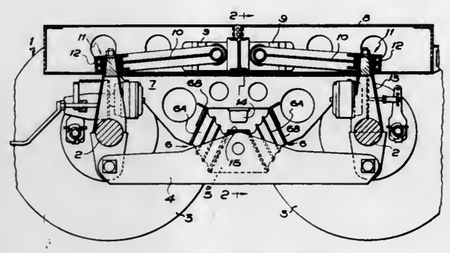
An apparatus for selectively positioning the sliding suspension frame or bogie relative to the trailer underframe including a bogie-locking assembly having handle and linkage operated spring-loaded locking pins for registering with holes in fixed suspension rails attached to the trailer underframe wherein the handle is provided with a latch pin which is held against a slotted latch plate against the action of the locking pin springs, the handle having a rotating dial, which indicates the desired amount of bogie shifting, positioned to be rotated by a star wheel driven by movement of the trailer frame relative to the bogie such that when the trailer has moved a sufficient distance, and the star wheel thereby rotated, the latch pin on the handle is allowed to pass through the slotted latch plate to permit the locking pins to engage the openings in the fixed suspension rails to prevent any further relative movement between the trailer frame and the bogie.

3,618,970
VEHICLE STEERED BY TILTING THE BODY
Darrell A. Frigaard, W. 215 Waverly Pl., Spokane, Wash.
Filed Mar. 16, 1970, Ser. No. 19,937
Int. Cl. B62b *11/00*
U.S. Cl. 280—87.01 **4 Claims**



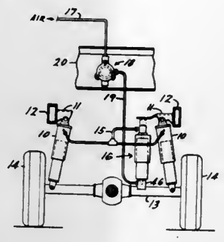
A vehicle has spaced-apart front and rear transverse axles each supported by a pair of wheels journaled thereon at its ends. A body is extended lengthwise of the vehicle over the axles and has side portions adjacent to the wheels. The body also has central rib structure hinged thereto and secured to and supported by the axles. The side portions have upright slots receiving the axles, the front pair of slots sloping forwardly from top to bottom to cause turning of the front axle upon lateral tilting of the body. The tilting of the body is opposed by resilient members connecting the rib structure to the side portions. A platform for a rider is provided on the body. A rear extension of the body behind the rear axle includes braking skids for engaging the surface beneath the vehicle upon raising of the front end of the body. The central rib structure is connected to the front axle by a member secured to the front axle and hinged to turn on an upright axis with respect to the rest of the rib structure.

3,618,971
SUSPENSION SYSTEMS FOR ROAD VEHICLES
Ronald Wragg, Sheffield, England, assignor to North Derbyshire Engineering Company Limited
Filed May 18, 1970, Ser. No. 37,973
Claims priority, application Great Britain, May 22, 1969, 26,061/69
Int. Cl. B60g *19/02*
U.S. Cl. 280—104.5 **5 Claims**



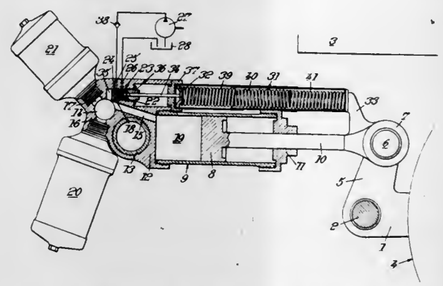
A road vehicle suspension system has a beam pivotally connected with an axle at each end and one or more rubber springs secured to a triangularly shaped block pivotally mounted on the beam, the rubber springs at their other ends being nonpivotally mounted on the frame of the vehicle, the pivot point between the rubber springs and the beam lying on or about the horizontal center plane through the metal plate secured to the pivotally secured block.

3,618,972
VALVE FOR A PNEUMATIC LEVELING SYSTEM
Walter T. Buhl, Ann Arbor, Mich., assignor to Ainsworth Industries Corporation, Toledo, Ohio and Frank M. Cobourn, executor of Harold F. Hadley, deceased, part interest to each
Filed Mar. 5, 1970, Ser. No. 16,765
Int. Cl. B60g *9/00*
U.S. Cl. 280—124 **5 Claims**



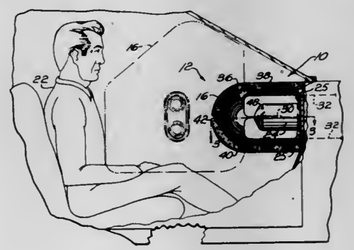
A semiautomatic activating valve for a level control for a suspension system having pneumatic support means, such as shock absorbers or air bags. The suspension system has a feeler consisting of two relatively movable parts, one being fixed to either the sprung or the unsprung structure of the vehicle and the other being movable toward the other structure by air from a source under pressure, such as a tank or a compressor, that is fed to the feeler by manual actuation of the valve from closed to open position. The valve has retaining means which hold it in open position to supply air to the feeler which extends its movable part to sense the distance separating the sprung and unsprung structures. The feeler has two alternatively openable ports between the support means and (1) atmosphere or (2) the air supply line from the valve. When the sprung structure is too low, the feeler feeds air to the support means until the sprung structure moves up to predetermined "level" spacing and the feeler moves up therewith to its "level"position. When the sprung structure is too high, the feeler extends and opens the line from the support means to atmosphere to lower the sprung structure to "level" spacing which moves the feeler down, to close the vent line. The valve also comprises a piston which is responsive to a predetermined pressure in the air line from the valve to the feeler for restoring the valve to its closed position. This results when the feeler extends to or beyond its "level" position or if the sprung structure is low but the source air is unable to raise it at least to "level" position so the feeler cannot extend and the pressure in the feeler builds up.

3,618,973
HYDROPNEUMATIC VEHICLE-WHEEL SUSPENSION SYSTEM
Jean Panhard, Paris, France, assignor to Societe De Constructions Mechaniques Panhard & Levassor, Paris, France
Filed Nov. 12, 1969, Ser. No. 875,713
Claims priority, application France, Nov. 13, 1968, 173596, Sept. 17, 1969, 6,931,666
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **16 Claims**



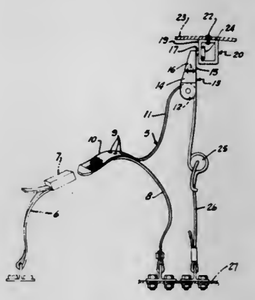
A hydropneumatic suspension comprises a suspension arm which bears the wheel and which is hinged on an axle fixed on the chassis of the vehicle. The piston which slides in the cylinder and which is adapted to displace liquid contained in a chamber connected to two oleopneumatic accumulators is pivoted on the arm. A device for replenishing liquid to the chamber is arranged so that for a given load on the wheel a certain position of the wheel with respect to the chassis is maintained despite possible leakages.

3,618,974
VEHICLE SAFETY APPARATUS
Richard Chute, Huntington Woods, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 7, 1969, Ser. No. 814,031
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **6 Claims**



A safety apparatus for protecting an occupant of a vehicle during an accident includes a confinement having a collapsed condition and an expanded condition. Located within the confinement is a liquid reservoir having a gas-producing liquid stored under low pressure therein. An explosive charge is situated within the liquid reservoir and is ignited or detonated upon the occurrence of an accident to burst the reservoir and disperse or impel the gas-producing liquid in a particalized form into the confinement. The particalized liquid quickly vaporizes nd effects expansion of the confinement so as to protect the occupant of the vehicle from injury during the accident.

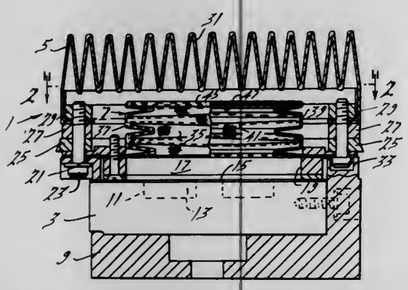
3,618,975
COMBINATION SEAT BELT AND SHOULDER HARNESS FOR AUTOMOTIVE VEHICLES AND THE LIKE
Fred B. Bombach, 1821 Litchfield Ave., Dayton, Ohio
Filed Oct. 21, 1969, Ser. No. 868,166
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 SB **3 Claims**



This invention consists of an ordinary seat belt embodying two straps that are buckled together over the lap of a person sitting in the seat of an automotive vehicle or the like; and a shoulder harness having one end riveted or otherwise secured to one of the aforesaid straps of the seat belt. The shoulder harness passes upward, around and down over a rotatably mounted pulley that is in the lower end of a pulley support.

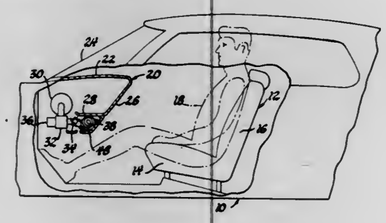
The aforesaid pulley support is swingably secured to a toggle bracket which is riveted or otherwise fastened to the underside of the roof of an automotive vehicle or the like. The rear and lower end of the aforesaid shoulder harness is now secured to a retrieving and storing pulley, after passing over the aforesaid pulley as previously stated, the retrieving and storing pulley being secured to the upper end of a vertically disposed strap that has its lower end firmly secured to the body of the aforesaid automotive vehicle or the like.

3,618,976
INFLATABLE BAG AND GAS DIFFUSING DEVICE
Maurice B. Leising, Clawson; Douglas A. Larson, Sterling Heights, and John M. Stilson, Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 31, 1969, Ser. No. 870,343
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **10 Claims**



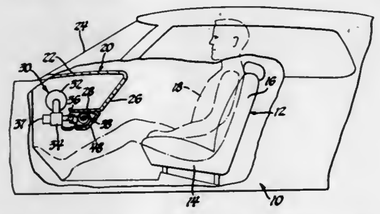
Inflatable bag device including a gas generator containing ignitable propellant, a bag adapted to be inflated by the gas released from the propellant, and an expansible chamber which filters and diffuses the gas and propellant particles discharged from the gas generator.

3,618,977
INFLATABLE OCCUPANT RESTRAINT
Edwin H. Klove, Jr., Bloomfield Hills, and James L. Noll, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 35,954
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **1 Claim**



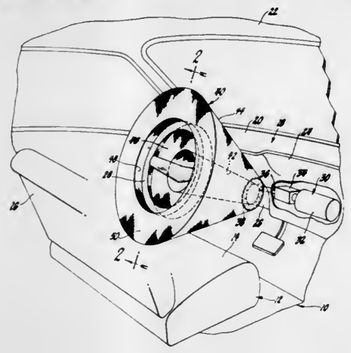
A vehicle includes a seat having a seat cushion and a seat back for supporting an occupant in seated position, an instrument panel having a frontal surface located in spaced juxtaposed relationship to the seat back and a lower surface located above the level of the seat cushion and forwardly of the occupant's knees. A source of pressure fluid on the vehicle communicates with a diffuser tube located adjacent the lower surface of the instrument panel. The pressure fluid is releasable in response to the vehicle receiving an acceleration pulse of predetermined amplitude and time. An inflatable cushion of generally tear drop shape longitudinally of the vehicle has its apical end mounted on the vehicle and communicating with the diffuser tube. When inflated by the pressure fluid, the cushion deploys rearwardly and upwardly. The upper and lower walls of the cushion flare outwardly with respect to each other from the apical end of the cushion, with the upper wall engaging the frontal surface of the instrument panel and the lower wall engaging the knees and upper leg portions of the seated occupant. These walls are interconnected by an end wall of arcuate cross section which tangentially engages the torso of the seated occupant and extends arcuately away from the torso in spaced relationship to the head of the occupant. Sidewalls interconnect the upper, lower and end walls of the cushion.

3,618,978
INFLATABLE RESTRAINT FOR VEHICLE OCCUPANT
Edwin H. Klove, Jr., Bloomfield Hills; James S. McDaniel, Birmingham, and James L. Noll, Livonia, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,080
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **1 Claim**



A vehicle includes a seat and a seat cushion and a seat back for supporting an occupant in seated position, an instrument panel having a frontal surface spaced from and juxtaposed to the seat back, and a source of pressure fluid releasable in response to the vehicle receiving an acceleration pulse of predetermined amplitude and time. The occupant restraint includes an inflatable cushion which is normally rolled upon itself and located below the frontal surface of the instrument panel in communication with the source of pressure fluid. When the pressure fluid is released, the cushion unrolls along the knees and upper leg portions of the seated occupant and along the frontal surface of the instrument panel and into engagement with the torso of the occupant to thereby apply a downward and rearward force on the seated occupant and fill the space between the frontal surface of the instrument panel and the upper leg portions and torso of the occupant.

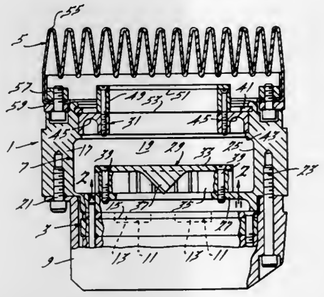
3,618,979
VEHICLE OCCUPANT RESTRAINT
Ronald S. Gulette, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,260
Int. Cl. B60m *21/02*
U.S. Cl. 280—150 AB **1 Claim**



A vehicle includes a seat for supporting an operator in seated position, a steering column supporting a steering

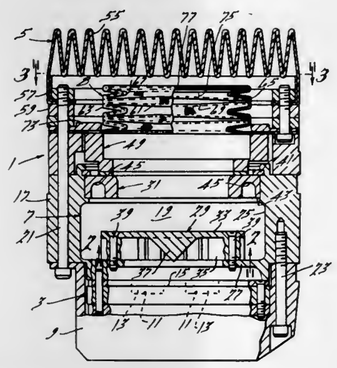
wheel for steering the vehicle, and a source of pressure fluid releasable in response to the vehicle receiving an acceleration pulse of predetermined amplitude and time. An occupant restraint for the operator includes an inflatable cushion of generally frustoconical shape surrounding the column and wheel and having its apical end mounted on the column adjacent the instrument panel of the vehicle. When the cushion is inflated, the basal end thereof is located in a position for impact by the operator.

3,618,980
TRAP FOR NONGASEOUS MATTER
Maurice B. Leising, Clawson; Gerald L. Holbrook, Troy, and Douglas A. Larson, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 31, 1969, Ser. No. 870,470
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



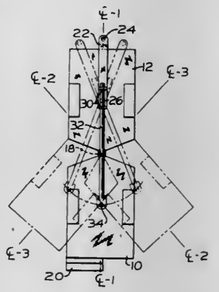
Inflatable bag device including a gas generator containing an ignitable propellant, a bag adapted to be inflated by gas released from the propellant, and a trapping device for inhibiting movement of solid or molten material from the gas generator to the interior of the bag.

3,618,981
INFLATABLE DEVICE
Maurice B. Leising, Clawson; Gerald L. Holbrook, Troy; Douglas A. Larson, Sterling Heights, and John M. Stilson, Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 31, 1969, Ser. No. 873,769
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



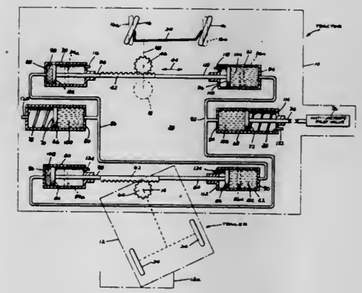
Inflatable bag device including a gas generator containing an ignitable propellant, a bag adapted to be inflated by gas released from the propellant, a trapping device for inhibiting movement of solid or molten material from the gas generator to the interior of the bag, and an expansible chamber for filtering and diffusing nongaseous matter which passes through said trapping device.

3,618,982
DRAWBAR FOR ARTICULATED VEHICLE
John A. Moore, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 18, 1969, Ser. No. 843,099
Int. Cl. B60d *7/00*
U.S. Cl. 280—408 **3 Claims**



A drawbar mechanism for a vehicle made of two sections articulately connected as by a vertical pivot pin and which vehicle is steered by angling the two sections with relation to each other about the pin. The drawbar is pivoted for swinging movement behind the rear of the rearmost section and there is a connection between the forward section and the drawbar to cause the drawbar to swing in a direction opposite to that in which the vehicle is steered, thus reducing the magnitude of movement of the drawbar away from the direction of travel of the vehicle.

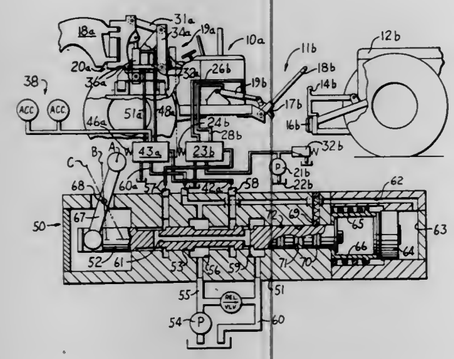
3,618,983
ANTIJACKKNIFING SYSTEM
Harry D. Forse, 220 Woods Road, Edgewood Addition, Anderson, Ind.
Filed Dec. 10, 1969, Ser. No. 883,826
Int. Cl. B62d *53/06*
U.S. Cl. 280—432 **16 Claims**



An antijackknifing system for a tractor-semitrailer combination. In one embodiment, a first fluid cylinder is provided having a piston with fluid on opposite sides thereof, the piston being linearly actuated in opposite directions, respectively, by turning movement of the steerable front wheels of the tractor in opposite directions from the center position. A second fluid cylinder is provided having a piston therein with fluid on opposite sides thereof, the piston being linearly actuated in opposite directions from a neutral position, respectively, by pivotal turning movement of the semitrailer with respect to the tractor in opposite directions from its centered

position. A third fluid cylinder is provided having a piston with fluid on opposite sides thereof. A first conduit connects the three cylinders on one side of the respective pistons thereby providing a first closed fluid system, and a second conduit connects the three cylinders on the opposite sides of the respective pistons thereby providing a second closed fluid system so that movement of the piston of one of the first and second cylinders away from its neutral position without corresponding coordinated movement of the piston of the other of the first and second cylinders causes movement of the piston of the third cylinder away from its neutral position to accommodate fluid displaced by movement of the piston of the one cylinder. The piston of the third cylinder is coupled to increase the braking force exerted by the trailer brakes and simultaneously to decrease the braking force exerted by the tractor brakes in response to movement of the piston of the third cylinder away from its neutral position in either direction thereby to assist the driver in restoring a normal coordinated relationship between the position of the front wheels of the tractor and the pivotal position of the semitrailer with respect to the tractor.

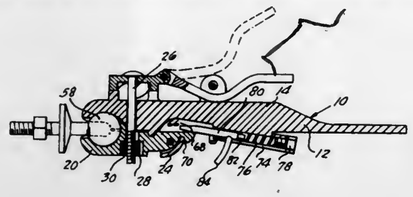
3,618,984
PILOT SELECTOR VALVE FOR SIMULTANEOUSLY CONTROLLING SEPARATE FLUID CIRCUITS
Charles F. Cook, Decatur; Lawrence F. Schexnayder, Joliet, and James W. Thais, Decatur, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 28, 1969, Ser. No. 845,322
Int. Cl. B60d 1/00
U.S. Cl. 280—481 **2 Claims**



A pilot selector valve comprises a three-position spool reciprocally mounted therein for selectively communicating pressurized fluid to separate circuits, each adapted to actuate a vehicle attachment. The vehicle attachments may comprise a cushion hitch assembly and a push-pull coupling each mounted on a wheel tractor scraper. The pilot selector valve may be positioned to either (1) render the cushion hitch assembly operative and unlatch the coupling, (2) render the cushion hitch assembly inoperative and retain the coupling in an unlatched position, or (3) retain the cushion hitch assembly in an inoperative condition and actuate the coupling to a latched position.

3,618,985
TRAILER HITCH
Elmer M. Farr, P.O. Box 265, Saratoga, Tex.
Filed July 25, 1969, Ser. No. 844,824
Int. Cl. B60d 1/06
U.S. Cl. 280—512 **8 Claims**

A trailer hitch comprising a body member of elongated configuration having a socket formed in the front end thereof for receiving a ball therein, said socket formed by a semispherical recess in the upper portion of the body member and a complementary semispherical recess disposed in a lower portion hingedly connected to the body member. Said lower hinged portion is provided with a bolt member that extends therethrough and through the body member with a swivel member mounted on said bolt member and having a disc member adapted to slide along an inclined plane disposed on said body member so said semispherical recesses form a spherical socket for a socket member when the trailer



hitch is secured to a towing vehicle. Lug means are provided on the body member and a bar means for securing the swivel member to the body member and biasing means with a pin member are disposed in a housing on the body member to bear against said lower portion member to prevent the lower portion member from inadvertently separating from said body member.

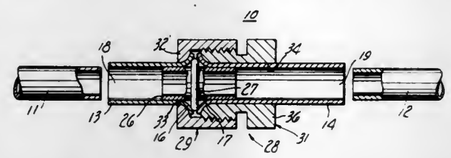
3,618,986
REMOVABLE TAILPIPE CONNECTION
Anthony J. Todavich, Puposky, Minn.
Filed Oct. 10, 1969, Ser. No. 865,255
Int. Cl. F16l 25/00
U.S. Cl. 285—4 **4 Claims**

Apparatus for freeing the tube of a muffler body from a tailpipe that has an end point normally positioned inside the tube at a predetermined location along the axis of the tube. The preferred form of the apparatus comprises means for structurally weakening the tube along a line located in the tube. The line has a first portion that extends toward the body of the muffler and a second portion that extends around at least half the circumference of the tube at a position adjacent the predetermined location. Means are also provided for separating the tube along the line, so that the tailpipe may be conveniently removed from the tube.

3,618,987
LEAK-TIGHT COUPLING
Martin R. Carbone, Carpinteria, Calif., assignor to Cajon Company, Solon, Ohio
Continuation of application Ser. No. 698,346, Jan. 16, 1968, now abandoned. This application Nov. 5, 1969, Ser. No. 871,643
Int. Cl. F16l 25/00
U.S. Cl. 285—12 **6 Claims**

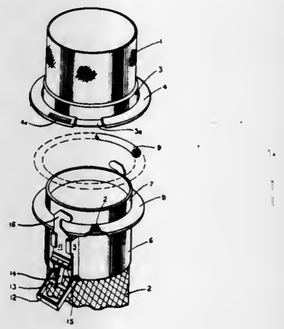
Relates to a leaktight coupling having a dual capability of joining two lines together in either an easily demountable relationship or a relatively permanent relationship. Includes flanged tubular members, axially aligned with their flanges

adjacent, and a sealing member disposed between said flanges. To connect two lines in a demountable relationship, one line is permanently secured to one tubular member, the other line being passed through the other tubular member, through the sealing member, and partially into the first tubular member, the sealing member holding the second line in



place. To connect two lines in a permanent relationship, the lines are permanently secured to respective ones of the tubular members, and the ends of a sleeve carrying the sealing member extend respectively into the tubular members. In either use, a clamping device draws the flanged tubular members together.

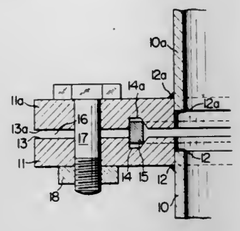
3,618,988
DUCT CONNECTOR ARRANGEMENT
Robert C. Zurmuehlen, Jennings, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Oct. 6, 1969, Ser. No. 864,131
Int. Cl. F16l 37/10, 37/20
U.S. Cl. 285—312 **3 Claims**



A duct connector arrangement which includes first ring means carried by a first duct and a second ring means carried by a second duct and freely rotatable thereon. Cooperative lock means are attached to one ring to be received by slot means in the other ring means to coupled the fist and second duct means together.

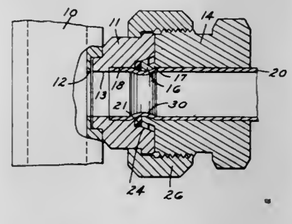
3,618,989
SEALING MEANS
Yoshinori Ito, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Tokuda Seisakusho, Kanagawa-ken, Japan
Filed Jan. 27, 1970, Ser. No. 6,249
Claims priority, application Japan, Jan. 28, 1969, 44/6855
Int. Cl. F16l 17/00
U.S. Cl. 285—336 **2 Claims**

A fluidtight pipe coupling of the type comprising a pair of opposed annular flanges secured on the abutting ends of pipes to be coupled, opposed annular grooves formed in the opposing faces of the flanges, an annular metallic gasket disposed in the annular grooves. Each of the grooves has an outer cylindrical sidewall and an inner conical sidewall having diameters decreasing toward the mating groove. The gasket is of rectangular cross section and the inner corner or edges thereof are in tight engagement with the conical walls,



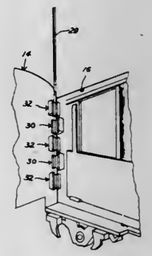
the outer cylindrical wall of the gasket being slightly spaced apart from the outer walls of the grooves.

3,618,990
TUBE COUPLING
Jay F. Falke, Adrian, Mich., assignor to Primore Sales, Inc., Adrian, Mich.
Filed July 14, 1969, Ser. No. 841,627
Int. Cl. F16l 19/00
U.S. Cl. 285—343 **11 Claims**



A refrigeration tubing coupling for connecting deformable tubing to a refrigeration unit or to another length of refrigeration tubing. The coupling comprises two bodies having openings therein, one of the bodies has an annular projection which engages a surface on the second body and is deformed radially inwardly upon axial movement of the bodies toward one another to clamp the tubing and form the seal.

3,618,991
CORNER JOINTS BETWEEN ANGULARLY RELATED, MOLDED WALLS AND STRUCTURES UTILIZING THEM
Clarence K. Edwards, 865 Morrison St., and Lawrence D. Edwards, 2816 Rosemont Ave., both of Medford, Oreg.
Filed Apr. 9, 1970, Ser. No. 26,910
Int. Cl. F16b 5/07
U.S. Cl. 287—20.92 D **6 Claims**



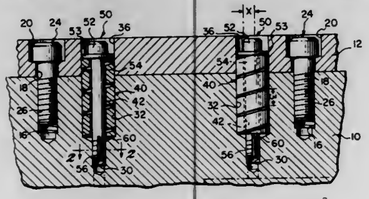
A novel joint structure is provided for molded wall members which may be designed, for example, to be combined into sides and ends of model railway cars, model buildings suitable for use as wayside scenery in model railway setups,

or in any box, box tray, fence or other enclosure. At the corner of structure, angularly related walls are brought into abutting relation. Each wall end has integral with it one or more interiorly located, channel-forming brackets whose open sides face toward the opposite end of the wall from that of which it forms a part. If there are two or more brackets on a wall end, they are aligned vertically with one another and spaced apart, the construction and arrangement being such that the brackets integral with abutting walls can be aligned and can be dependably and fixedly united with one another by the mere sliding into place of a locking member.

3,618,992
EXPANDING DOWEL CONSTRUCTION

Lawrence V. Whistler, Sr., 259 Doncaster Road, and Lawrence V. Whistler, Jr., 251 Doncaster Road, both of Kenmore, N.Y.

Continuation-in-part of application Ser. No. 755,151, Aug. 26, 1968, now abandoned. This application May 9, 1969, Ser. No. 840,078
Int. Cl. E04c *3/00*
U.S. Cl. 287—20.92 E **20 Claims**

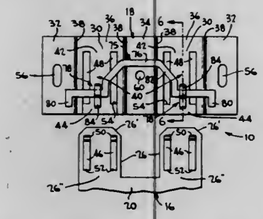


A pair of parts to be located and secured to one another are provided with a first hole and a through hole respectively and in alignment with one another. An expandable resilient helical spring dowel is positioned within said holes, and an expanding means cooperates with the dowel to expand it into engagement with the holes to properly align the parts.

3,618,993
CLIP ASSEMBLY

Eugene L. Platte, 305 South Harvard, Robinson, Ill.

Continuation-in-part of application Ser. No. 3800, Jan. 19, 1970. This application June 8, 1970, Ser. No. 44,258
Int. Cl. F16b *5/06*
U.S. Cl. 287—20.924 **25 Claims**

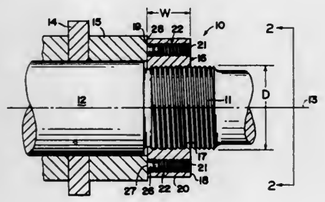


A clip assembly including male and female clip elements having clip means including cooperating locking means. After securement of the male and female clip elements to structural members to be joined, the structural members may be locked to each other by engagement of the male and female clip means. According to one embodiment, yoke means may be provided to permit disengagement of the male and female clip elements without the need for additional tools. A small round clip assembly is also disclosed for use in close areas. Teeth may be used to preclude rotation of the clip elements if a single-securing means is used to attach a clip element to a supporting member. A further feature includes a plurality of spaced locking means to permit locking of the clip elements even if they are not fully engaged. A further feature provides a clip element used for attaching structural members in an angular relationship which is collapsible for compactness in shipping of the clip element prior to use.

3,618,994
ARBOR NUT

Paul J. Gepfert, Shaker Heights, and Thomas E. Cyphert, Solon, both of Ohio, assignors to Loopco Industries, Inc., Twinsburg, Ohio

Continuation-in-part of application Ser. No. 674,198, Oct. 10, 1968, now abandoned. This application May 14, 1969, Ser. No. 824,648
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 R **4 Claims**



Disclosed are several embodiments of an invention relating to an arbor nut for detachably interconnecting and tightening machine elements. One embodiment of the nut includes a body provided with a threaded main bore, a first and second side face and an exterior transverse peripheral face lying therebetween. A plurality of threaded bores are defined in the body extending from the first side face to the second side face. Jacking screws are disposed within each of said bores. The jacking screws are defined by socket heads adapted to be turned and advanced by means of an Allen wrench and swivel pads at the ends of the screws opposite the socket heads. Each of the swivel pads comprises a bearing element having a face and includes a spherical bearing seat adapted to engage a complementary bearing surface of the jacking screw. In operation, the nut is advanced hand tight against an adjacent machine element. An Allen wrench is then utilized to advance the jacking screws against the face of the adjacent machine element in order to lock the elements firmly on the arbor. Any misalignment of the adjacent element and the body of the nut is compensated for by the swivel pad at the end of the jacking screw. The swivel pad also isolates the rotary movement of the jacking screw from the adjacent machine element.

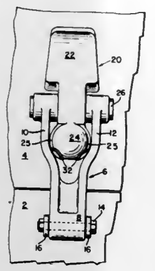
A second embodiment of the invention includes the nut as heretofore described which further includes an additional bore in the body of the nut extending from its first side face to its second side face. A locking member, disposed in the additional bore has a threaded portion engaged with the threaded portion of the additional bore and includes an end portion which is capable of extending beyond the first side face of the nut to engage a recess in the machine element adjacent to the nut. A pilot hole may also be provided in the nut for locating one or more recesses in the adjacent machine element. If desired, the recesses in the adjacent machine element may take the form of a cylindrical bore complementary in shape to the locking member.

A third embodiment of the nut according to the invention includes a pair of opposed faces forming a gap in the body of the nut, each opposed face being defined by a surface having the perimeter comprising the threaded main bore of the nut, its first and second side faces, and its exterior peripheral surface. In a preferred embodiment, an adjustment means includes a threaded bore and counterbore extending from the exterior surface of the body of the nut beyond the pair of opposed faces in a direction generally transverse to the faces. A securing member is located in said threaded bore in such a manner that the rotation of the securing member causes a change in the length of the gap.

3,618,995
OVER CENTER RUBBER HOOD HOOK

Allan D. McLean, Seattle, Wash., assignor to Pacific Car and Foundry Company, Bellevue, Wash.

Filed June 10, 1970, Ser. No. 45,184
Int. Cl. E05c *5/00, 19/14*
U.S. Cl. 292—66 **9 Claims**

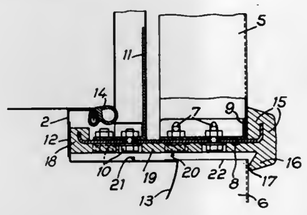


A latching means for use upon the hood of a vehicle. The latch has a ball and socket interlock with definitive camming surfaces and the elements are so interrelated that the latching action includes an over center movement. The over center movement of the latch allows for greater latch security with far less operator effort. In most installations, the operating force required to operate this latch is horizontal, away from the body, as opposed to a vertical force at arms length that is required on latches without this over center feature.

3,618,996
BUMPERS FOR MOTOR VEHICLES

Jean G. Cadiou, Saint-Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Nov. 12, 1969, Ser. No. 875,935
Claims priority, application France, Nov. 14, 1968, 173 702
Int. Cl. B60r *19/08;* **B62d** *25/12*
U.S. Cl. 293—63 **6 Claims**



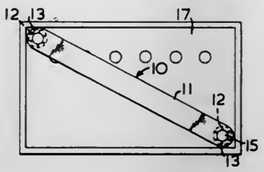
This invention relates to a bumper constituted at least by one central element and two stops, each comprising a reinforcement rigidly fixed to the central element, wherein the reinforcement of each stop is rigidly fixed to a movable panel articulated to a rigid frame, while the reinforcement is in abutment on the frame when the panel is in closed position with respect to said frame.

3,618,997
BATTERY STRAP HOLDER

Hugh M. Cochrane, 23 Taber Road, Toronto, Ontario, Canada

Filed Sept. 22, 1969, Ser. No. 859,874
Int. Cl. B25b *9/00*
U.S. Cl. 294—63 B **5 Claims**

A lifting device for electric storage batteries which comprises a flexible nonmetallic lifting handle and a gripping member recessed in each end of said handle, said handle and said gripping members having concomitant circular openings

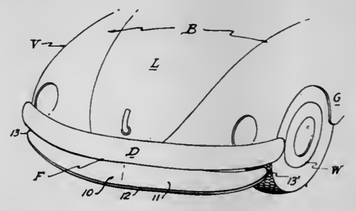


of a size and shape capable of receiving and gripping the terminal posts of a storage battery.

3,618,998
WINDLOAD APPLICATOR AND STABILIZER FOR STEERABLE FRONT WHEELS OF REAR-ENGINED VEHICLES

Donald A. Swauger, 20616 Blackhawk St., Chatsworth, Calif.

Filed Apr. 15, 1970, Ser. No. 28,654
Int. Cl. B62d *37/00*
U.S. Cl. 296—1 S **8 Claims**

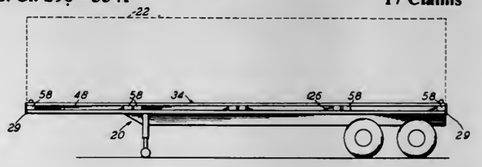


In an airfoil windload applicator for automatically increasing traction between the tires of the steerable front wheels of a rear-engined vehicle and the pavement in increments dependent upon acceleration of speed of such vehicle relative thereto an airfoil member pivotally mounted adjacent and relative to a flat pan bottom and spring loaded means for supporting the airfoil member at a normally raised position, but yieldable for increased inclination and greater downward pressure of such tires upon the pavement.

3,618,999
CONVERTIBLE SECUREMENT APPARATUS FOR SECURING STANDARD CONTAINERS AND NONSTANDARD CARGO ON VEHICLES

Emil J. Hlinsky, Oakbrook, and Allen D. Siblik, Mundelein, both of Ill., assignors to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

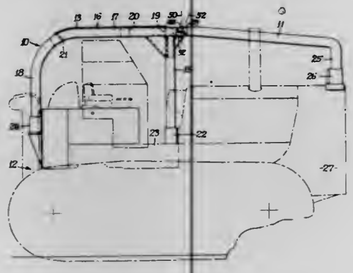
Filed May 18, 1970, Ser. No. 38,292
Int. Cl. B60p *7/08*
U.S. Cl. 296—35 A **17 Claims**



Securement apparatus having a movable pedestal alternately usable either as a retractable twist lock or a chain tiedown winch. It is adapted to be used, for example, along the sides of vehicles such as flatbed trucks or railway flatcars, for releasably locking a standard container, or a nonstandard load such as a carton, a pallet or a machine packed for shipment. The device is movable along the side of the vehicle for use on a wide variety and combination of loads. The twist

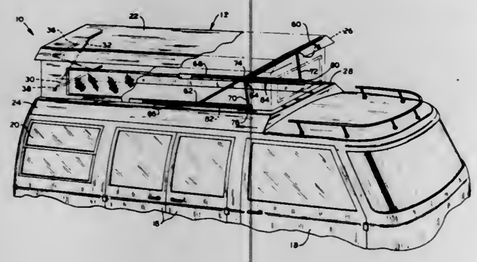
lock is elevatable above the level of the vehicle deck to secure standard containers, and is retractable below the deck level when a flatbed is required. It is readily movable for use at any selected position along the deck and is easily convertible for use as a chain tiedown for nonstandard cargo. When the twist lock is retracted, it frees space through which a tiedown chain can be trained and tensioned.

3,619,000
ELASTIC CONNECTION BETWEEN CANOPY AND FRONT SWEEP
William P. Macarus, Palos Park, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 19, 1970, Ser. No. 3,625
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 **5 Claims**



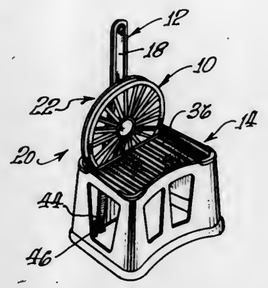
Attachment for a tractor comprising a canopy frame, front sweeps, and elastic joints therebetween. The rear ends of two front sweeps are connected to projecting front end portions on a sweep frame adjacent its middle legs in elastic joints each of which comprises a bolt loosely extending through openings in the end portions on the canopy frame and the rear ends of the front sweep, rubber bushings around the bolt and within the openings, and rubber washers on the bolt between the bolt head, canopy frame, front sweep, and nut on the bolt.

3,619,001
VEHICLE WITH RETRACTABLE AND EXTENSIBLE ROOF ASSEMBLY
Charles L. Borskey, P.O. Box 26, Andrews, Ind.
Filed Mar. 18, 1970, Ser. No. 20,545
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B **4 Claims**



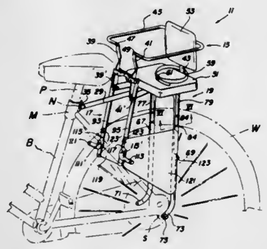
A vehicle with a retractable and extensible roof assembly comprising a ceiling for the vehicle having an opening formed at one end thereof, a vertically movable roof portion over the ceiling, movable between a fully extended portion and a retractable portion having flexible sidewalls between the movable roof portion in the ceiling, and spring biased means for aiding in the elevation of the roof to the fully extended position thereof.

3,619,002
COMBINATION TOY AND CHAIR
Jay McKinney, P.O. Box 95, Dewey, Ariz., and John M. Adams, Golden, Colo., assignors to said Adams, to said McKinney, Dewey, Ariz.
Filed May 1, 1970, Ser. No. 033,693
Int. Cl. A47c *13/00*
U.S. Cl. 297—118 **3 Claims**



A stool having in its top at the rear thereof a transverse wheel recess for receiving therein a lower portion of a wheel in an upright position with the major portion of the wheel projecting above the top of the stool to provide a backrest. The stool also has in the top thereof rearwardly of the wheel recess a paddle recess for receiving a paddle therein in an upright position and with a handle portion of the paddle projecting above the top of the stool behind the wheel, the paddle being locked in its recess against withdrawal when the wheel is in its recess. Upon removal of the wheel and then the paddle from their respective recesses, the wheel and paddle may be used as a toy by employing the paddle to roll the wheel over any suitable surface.

3,619,003
REAR-MOUNTED BABY SEAT FOR A BICYCLE
Maurice E. Rich, Jr., Memphis, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.
Filed Jan. 27, 1970, Ser. No. 6,248
Int. Cl. A47c *15/00*
U.S. Cl. 297—243 **6 Claims**

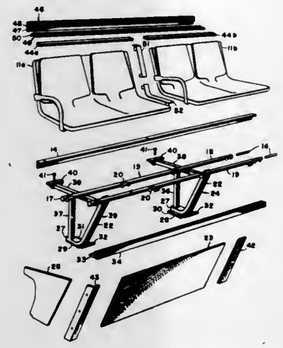


A baby seat for mounting on the rear of a bicycle. The baby seat includes a horizontally extending lower frame assembly, an upper frame assembly attached to the lower frame assembly and defining an upwardly oriented interior adapted to receive the baby, and support braces for supporting the baby seat from the bicycle.

3,619,004
CANTILEVER SEAT STRUCTURE
Thomas J. McKernan, and Douglas J. Arendsen, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed Dec. 23, 1969, Ser. No. 887,717
Int. Cl. A47c *1/12*
U.S. Cl. 297—248 **8 Claims**

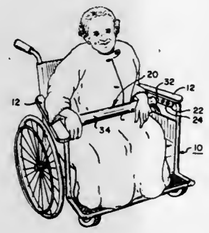
A chair structure is supported upon a plurality of spaced support frames, each having a rear vertical leg, and a front

leg extending from said rear leg forwardly and then upwardly and forwardly to a spaced distance from the top of the rear leg, the frame having horizontal rails connecting the front and rear legs and extending rearwardly therefrom, attachment means being provided for securing the rearwardly extending rails to a wall or other support. Longitudinal rails



connect the spaced support frames, and chairs are mounted upon the support frame structure. Closure panels extend at an inclination from the bottom of the rear leg upwardly to enclose the front of the seat structure, while side panels close the ends of the seat structure. At the top of the seat structure, a plastic closure is provided for adjustably closing the space between the top of the seat structure and the wall.

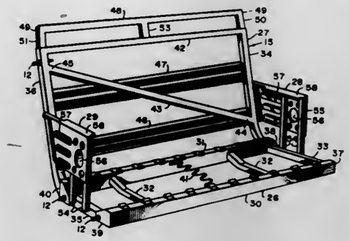
3,619,005
RESTRAINING DEVICE FOR WHEELCHAIRS AND THE LIKE
Garnet Hardy, 1227 North Main St., Marion, Ohio
Filed Apr. 16, 1969, Ser. No. 816,593
Int. Cl. A47c *31/00*
U.S. Cl. 297—390 **1 Claim**



A restraining device for use with wheelchairs and the like, for preventing patients from falling out and hurting themselves. The device includes a padded bar which extends above and across the seat portion of the chair, and is supported by a pair of brackets oppositely arranged on the side arms of the chair.

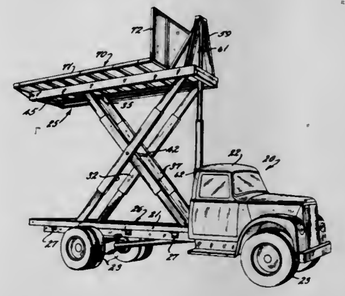
3,619,006
VEHICLE CANTILEVER SEAT
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Apr. 22, 1970, Ser. No. 30,635
Int. Cl. A47c *7/00, 7/20;* **B60n** *1/00*
U.S. Cl. 297—450 **12 Claims**

A cantilever seat or chair frame is adjustably suspended from a vehicle sidewall from a plate in the sidewall at the upper inner end of the chair back adjacent the wall and with a cushion-concealed diagonal strut extending through a side rail of the back downwardly to the outer lower end of the frame adjacent the junction of the back and chair seat. Safety



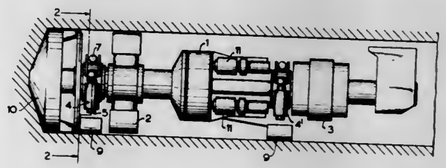
energy-absorbing panels are provided by the seat and arm rests together with cross braces to provide torque resistance.

3,619,007
STATIONARY OR MOBILE, RELATIVELY MOVABLE, LOAD-CARRYING, POWERED MEMBERS
William N. Phillips, Auburndale, Fla., assignor to Leco, Inc., Lakeland, Fla.
Filed June 4, 1969, Ser. No. 830,376
Int. Cl. B60p *1/34*
U.S. Cl. 298—11 **7 Claims**



Relatively movable load-carrying members connected to be maintained in predetermined relation with hydraulic means for producing relative movement, to serve for example as a hi-lift, the device being of a character to be mounted on a fixed or other base such as a vehicle, and also designed to be tilted to dump a load carried thereby.

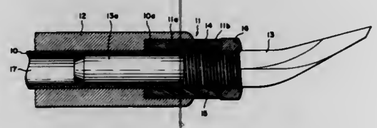
3,619,008
SUPPORTING AND ROTATIONAL RESETTING DEVICE ON A TUNNEL-DRIVING MACHINE
Gerd Kampf-Emden; Heinz Robert Horst, and Friedrich Wilhelm Klapdohr, all of Rheinhausen, Germany
Filed Oct. 31, 1969, Ser. No. 872,827
Claims priority, application Germany, Nov. 9, 1968, P 18 07 973.7
Int. Cl. E21c *29/02;* **E01g** *3/04*
U.S. Cl. 299—31 **5 Claims**



A tunnel-driving device comprising a machine frame for a driving machine which rotatably drives a tunnel-extracting

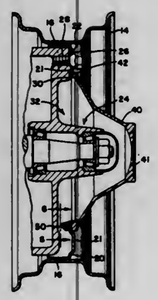
tool. The machine frame is centrally positioned in respect to the tunnel by a forward bracing assembly and a rear bracing assembly having elements which may be moved outwardly into engagement with the tunnel wall.

3,619,009
SCALING BAR
Paul C. O'Leary, Salt Lake City, Utah, assignor to Rock Tools Inc., Salt Lake City, Utah
Continuation-in-part of application Ser. No. 830,183, May 7, 1969, now abandoned. This application Apr. 20, 1970, Ser. No. 29,785
Int. Cl. E21c *37/26*
U.S. Cl. 299—91 **14 Claims**



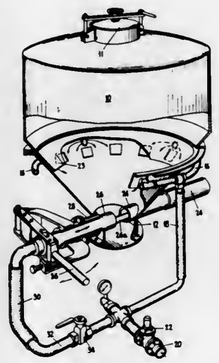
A scaling bar for prying overhanging rock from mine tunnels and the like. An elongate, relatively thin-walled tube of lightweight material, such as aluminum, has an end closely fitted into engagement with and secured to one end of a relatively thick-walled coupling that is internally threaded at its other end for the reception of the externally threaded end of a scaling point. The tube and at least part of the sleeve coupling are covered with a resin-impregnated fiber glass that is bonded intimately thereto. Various forms of scaling points can be screwed into the coupling from time to time, each being secured in place by a lock nut on its shank. The opposite end of the tube is preferably provided with a similar coupling for the reception of a second scaling point, a handle, an adapter for a second tube, or merely a plug.

3,619,010
PLASTIC HUB CAP WITH INTEGRAL MOUNTING TABS
Alan D. Foster, Adrian, Mich., assignor to The Dayton Steel Foundry Company, Dayton, Ohio
Filed June 12, 1969, Ser. No. 832,756
Int. Cl. B60b *7/06*
U.S. Cl. 301—37 P **2 Claims**



An all-plastic hub cap for a pressed steel wheel has a body formed exclusively of high impact resistant molded plastic material, an axially disposed annular seating face integrally formed with the body and adapted to engage the mounting flange of the wheel, and means defining a plurality of angularly spaced-apart mounting tabs integrally formed with the body and proportioned to be received axially inwardly of the mounting flange. Each mounting tab has an axially inwardly and radially outwardly extending surface which defines with the seating face an annular depression adapted to receive the mounting flange to form an interference fit therewith.

3,619,011
APPARATUS FOR DISCHARGING PARTICULATE MATERIAL FROM CONTAINERS
Allan M. Doble, Hughesdale, Victoria, Australia, assignor to Godfrey Engineering (Australia) Pty. Ltd., Victoria, Australia
Filed Sept. 30, 1969, Ser. No. 862,291
Claims priority, application Australia, Sept. 4, 1968, 44319/68
Int. Cl. B65g *53/04*
U.S. Cl. 302—53 **6 Claims**

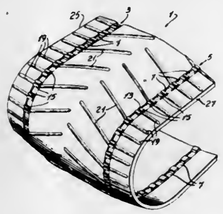


This invention relates to improved means for discharging particulate material such as flour or cement from a hopper or like container, particularly those fitted to vehicles for the transport of such material.

The hopper is of generally cylindrical construction converging to a reduced vertical cylindrical extension at the bottom forming a well from which the material is discharged.

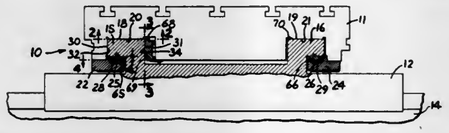
A discharge pipe extends radially outwardly through the wall of the well and an air pipe extends radially through the wall of the well diametrically opposite the discharge pipe. The air pipe has a forward extension of reduced diameter which enters the inlet opening of the discharge pipe and the end of the air pipe around the forward extension is sealed off. The air pipe is axially slidable in a stuffing box so that in its fully extended position it abuts against the end of the discharge pipe preventing discharge of material, whilst in its fully retracted position a space is provided between the ends of both pipes permitting discharge of material which is aerated and blown through the discharge pipe by the air passing through the reduced forward extension of the air pipe.

3,619,012
SNOW TRACK
Rejean Bizier, and Pierre Paul Triacca, both of 829 Woodward, Sherbrooke, Quebec, Canada
Filed Oct. 3, 1969, Ser. No. 863,592
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **4 Claims**



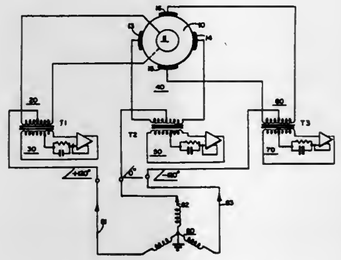
The commonly known endless track for snow vehicle of the type comprising a single continuous belt of rubber material to wind around one or a pair of spaced apart sprocket wheels when provided with the required sprocket-tooth apertures is improved by providing means to define a transverse outer convex shape in the belt, and these means are resiliently deformable to provide a substantially flat running and bearing surface for the snow vehicle when the same is loaded.

3,619,013
PRELOADED HYDROSTATIC WAY-BEARING
Gordon H. Jones, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Feb. 16, 1970, Ser. No. 11,539
Int. Cl. F16c *17/00*
U.S. Cl. 308—5 **6 Claims**



An improved hydrostatic way-bearing construction is disclosed utilizing hydraulic preloading of opposed way bearing surfaces between relatively slidable machine tool members. Said construction comprises preload gibs having hydrostatic bearing surfaces, preloading being accomplished by a plurality of longitudinally spaced hydraulic actuators, some recessed within the holddown cleats of the supported member and others recessed within one of the preload gibs. All of the bearing surfaces are completely enclosed by seals and exhaust oil therefrom is scavenged by means of a suction pump.

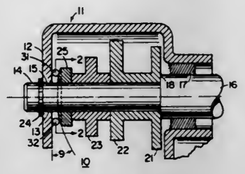
3,619,014
GYROSCOPE
William H. Quick, La Mirada, Calif., assignor to North American Rockwell Corporation
Continuation of application Ser. No. 442,135, Mar. 23, 1965. This application Apr. 2, 1970, Ser. No. 31,808
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **12 Claims**



A gyroscope including a rotor positioned between a plurality of electrodes. An electrostatic support arrangement establishes an AC potential between the rotor and the electrodes. A differential sensing arrangement for providing a position signal is secured to the electrodes. A servo arrangement, including an amplifier, is connected between the sensing arrangement and a power supply circuit for maintaining the rotor centered between the electrodes.

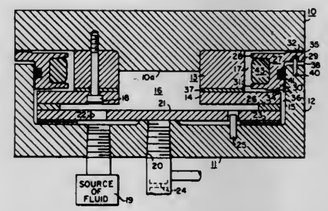
3,619,015
BEARING DEVICE HAVING END PLAY ELIMINATION MEANS
Andre Frans Goossens, Waasmunster-Sombeke, Belgium, assignor to The Singer Company, Rochester, N.Y.
Filed Jan. 6, 1970, Ser. No. 990
Int. Cl. F16c *17/04*
U.S. Cl. 308—135 **3 Claims**

Bearing device having end play elimination means is disclosed wherein axial dimensional tolerance buildup along one axis is substantially eliminated by a conical spacer coaxially disposed along said one axis and a resilient spring member



having detenting portions which coact in a wedgelike manner with the conical spacer in a plane normal to the plane of said one axis to eliminate end play along the said one axis.

3,619,016
HYDROSTATIC BEARING
Charles E. Kraus, Allendale, N.J., assignor to Excelermatic, Inc.
Continuation-in-part of application Ser. No. 707,911, Feb. 5, 1968. This application Sept. 9, 1969, Ser. No. 871,458
Int. Cl. F16c *17/04*
U.S. Cl. 308—160 **24 Claims**

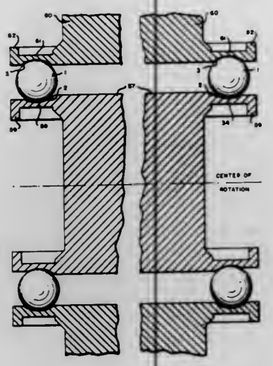


A hydrostatic bearing for supporting a load-carrying member or assembly, such as the roller in a toroidal drive, from a stationary frame or casing in which a spacer carried by the load member and the stationary member define a secondary cavity within a primary cavity and within which there is a pressure responsive element, such as a single or multiple ring, subjected to fluid under such pressure and in such directions as to interpose fluid between the stationary member and the pressure element and between the pressure element and the load-carrying member and which constitutes a balancing factor.

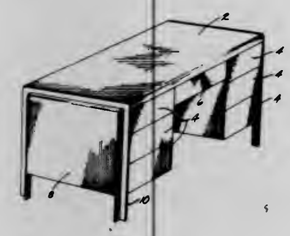
3,619,017
LOW-STRESS BALL BEARINGS
John F. Robinson, Newport Beach, and Lynn A. Shackelford, Villa Park, both of Calif., assignors to North American Rockwell Corporation
Division of Ser. No. 756,757, Sept. 3, 1968, Pat. No. 3,549,220. Filed Apr. 9, 1970, Ser. No. 27,004
Int. Cl. F16c *27/04*
U.S. Cl. 308—184 **9 Claims**

The invention relates to ball bearings in which the Hertzian stresses in the raceways are reduced by a construction in which one or both race members are so supported as to permit deflection in the manner of a beam in distinction to conventional bearings wherein the race members are supported over their entire circumferential area and compressed in effect as a solid block. By suitably proportioning the effective length and depth of the beam structure, in relation to the strength of the race material and to the applied load, a marked reduction in localized stresses and a consequent

marked increase in operating life is achieved, without attendant disadvantages such as excessive decrease in stiffness, increase in friction, etc.



3,619,018
FURNITURE CONSTRUCTION
Mark K. Wallach, New York, N.Y., assignor to Stow/Davis Furniture Company, Grand Rapids, Mich.
Division of Ser. No. 664,071, Aug. 29, 1971, Pat. No. 3,479,102.
Filed Nov. 17, 1969, Ser. No. 877,265
Int. Cl. A47b *47/00*
U.S. Cl. 312—107 **7 Claims**

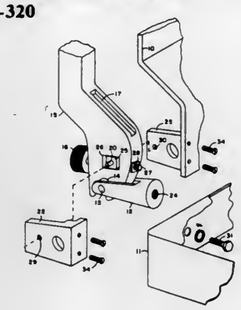


This disclosure relates to furniture construction in which a novel end structure is attached to a rigid furniture construction comprising, for example, a rigid three box construction. In one embodiment there is formed a subassembly comprising a sub-top, back, bottom, four upstanding bulkhead members positioned along and perpendicular to the sub-top and back, and a centrally located fifth bulkhead member which is parallel to the back. The back and the sub-top can be grooved to receive the four upstanding bulkheads. The subassembly has three aligned, interconnected, rigid boxes. The two end boxes have an open side.

The subassembly can be employed in the construction of desks, credenzas, and the like. A finished top and a finished back panel are attached to the subassembly. Leg units and finished side panels are then applied to substantially cover the subassembly. Drawers and shelves can be added to make a finished unit.

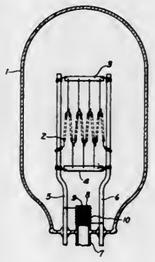
The novel end structure comprises a flat, inverted, U-shaped member which is coextensive with the furniture top and two sides thereof and has a pair of flat, longitudinal bars attached to the legs of the U-shaped members. The bars are substantially perpendicular to the plane of the U-shaped members and preferably contain a finished filler therebetween.

3,619,019
VARIABLE LENGTH COMPENSATING LEVER LATCH HANDLE MECHANSIM
Casswell C. Hepker, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Dec. 22, 1969, Ser. No. 887,014
Int. Cl. A47b *88/00, 95/02*
U.S. Cl. 312—320 **5 Claims**



A cam-lock handle to facilitate insertion, extraction, and holddown functions between a demountable equipment or device and its container or mounting base includes an operational variable pivot point assembly for the handle by means of which the mechanical advantage of the handle may be varied to optimize handle functions and ready adjustment for variations in equipment lengths is permitted.

3,619,020
METHOD OF INTRODUCING HALOGENS INTO ELECTRIC LAMPS
Oskar Herrmann, Berlin, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH
Filed Oct. 8, 1969, Ser. No. 864,719
Claims priority, application Germany, Nov. 21, 1968, P 18 10 149.0
Int. Cl. H01j *9/38*
U.S. Cl. 316—24 **2 Claims**

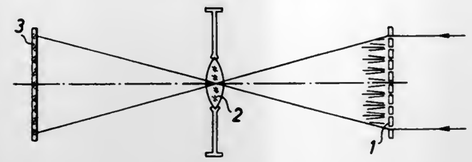


In the process of introducing a halogen into a lamp in the form of a halogenated hydrocarbon, the feed conduit or exhaust tube is extended into the interior of the lamp bulb where it contains a tungsten surface area which is locally heated to a temperature sufficiently high to decompose the hydrocarbon and precipitate the carbon thereat.

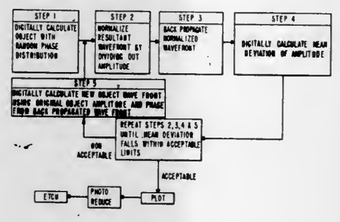
3,619,021
METHOD OF MAKING A DIFFUSING LAYER
Klaus Biedermann, Unterhaching, and Friedrich Bestenreiner, Gruenwald, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 9, 1970, Ser. No. 27,038
Claims priority, application Germany, Apr. 11, 1969, P 19 18 375.6
Int. Cl. G02b *5/02*
U.S. Cl. 350—3.5 **6 Claims**

A photosensitive layer is exposed by a first light wave field having random phase distribution with peaks and valleys

representing different amounts of exposing light, whereupon the exposed layer is developed and treated to reduce the differences between the lengths of the optical path so that they are less than half of the wavelength of light and so that a laser beam passing through the layer forms a second wave field having a substantially constant amplitude and a locally varying phase. This wave field can be used for illuminating a transparent picture so that the same forms a holographic recording on a photographic plate when a reference beam of coherent light is directed at an angle at the photographic plate.

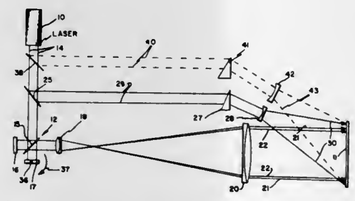


3,619,022
METHOD OF MAKING AN OBJECT DEPENDENT DIFFUSER
Peter M. Hirsch; James A. Jordan, Jr., and Louis B. Lesem, all of Houston, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 17, 1970, Ser. No. 72,948
Int. Cl. G02b *5/02, 27/00*
U.S. Cl. 350—3.5 **8 Claims**



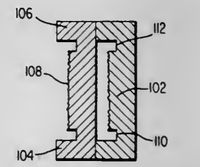
A technique for making optimized phase objects which can uniformly diffuse the information content in a physical wave front across a defined recording plane.

3,619,023
OPTICAL ELEMENT FOR GENERATING CONTOUR STRIPES
Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Mar. 4, 1969, Ser. No. 804,207
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **8 Claims**



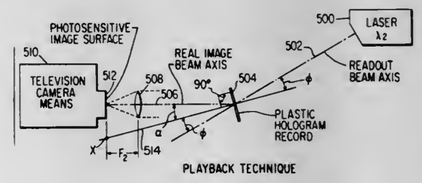
An optical element for generating in space a fringe pattern consisting of light maxima and minima. This optical element consists of a hologram on which light from two adjacent light sources generating light of substantially the same frequency has been recorded. The fringe pattern may be utilized for moire gauging or for the production of contour maps. One hologram may have a single fringe pattern or a plurality of fringe patterns recorded thereon. Also, a simplified holographic apparatus is disclosed for producing the optical element.

3,619,024
PACKING OF HOLOTAPE
Joseph Ralph Frattarola, Hightstown, N.J., assignor to RCA Corporation
Filed Sept. 29, 1969, Ser. No. 861,675
Int. Cl. G02b *5/00*; **G03c** *1/76*
U.S. Cl. 350—3.5 **1 Claim**



A hologram in the form of a flexible tape, either metal or plastic, has a central region of a first thickness and having a hologram relief pattern thereon and edge regions of a greater thickness so as to provide protective ridges for the relief pattern when wound upon itself. A method of making such a hologram includes, placing a hologram original on a backing material wider than the original, metallizing the exposed surfaces of the original and backing layer, separating the metallized layer from the original and backing to form a master, embossing the hologram from the master into a plastic tape having a width greater than that of the master.

3,619,025
ELIMINATION OF THE EFFECTS OF SCRATCHES AND TWISTING IN A HOLOGRAPHIC MOTION PICTURE TAPE
William James Hannan, Pennington, N.J., assignor to RCA Corporation
Filed Sept. 30, 1969, Ser. No. 862,272
Int. Cl. G03b *27/00*
U.S. Cl. 350—3.5 **11 Claims**



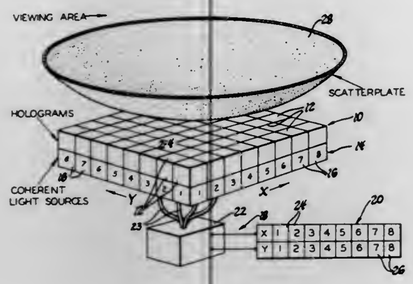
Longitudinal streak in playback of pressed phase hologram motion pictures on plastic tape, due to diffraction by longitudinal scratches on the plastic tape, which is normally superimposed on reconstructed image, is eliminated by recording phase hologram with object beam oblique to surface of recording medium. This displaces the streak from the area of the reconstructed image.

Angle of incidence of readout beam is optimized to produce minimum shift in the axis of the image beam in response to any twisting of flexible tape.

3,619,026
THREE-DIMENSIONAL HOLOGRAM DISPLAY
Ivan Cindrich, Southfield, Mich., assignor to Chain Lakes Research Corporation, Detroit, Mich.
Filed Oct. 6, 1969, Ser. No. 863,898
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **3 Claims**

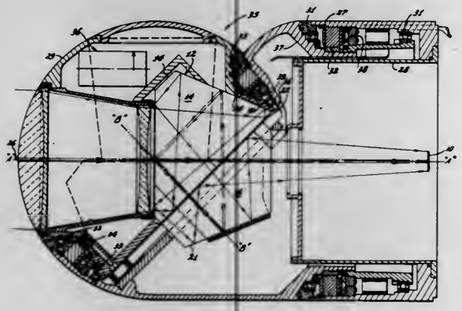
A holographic image-reproduction apparatus comprising coextensive two-dimensional arrays of developed holograms

and coherent light sources operable by a keyboard and logic unit to permit selective energization of sources. Each hologram contains at least one interference pattern representing



an object image at a spatial location identified by coordinate selection switches in the keyboard. A nonflat diffuser is disposed between the holograms and the viewing area to permit 360° viewing.

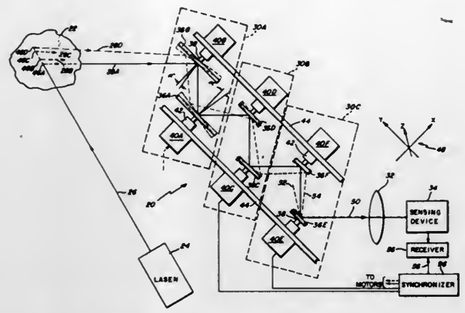
3,619,027
OPTICAL SIGHTING DEVICE FOR FULL HEMISPHERIC VIEWING EMPLOYING A PECHAN PRISM
William G. Baker, Rolling Hills Estates, and James H. Gisbrecht, Rolling Hills, both of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
Filed June 9, 1970, Ser. No. 44,747
Int. Cl. G02b *17/00, 5/04, 7/18*
U.S. Cl. 350—6 **3 Claims**



Optical equipment including a Pechan prism functioning to retain the image plane (eyepiece) in a fixed relation with respect to nonmovable components of the equipment while making possible full hemispherical viewing.

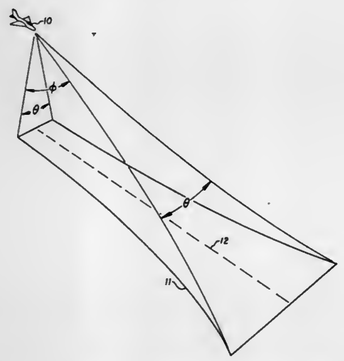
3,619,028
FOURIER OPTICAL SCANNER
Wayne H. Keene, Medfield, and Charles M. Sonnenschein, Natick, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed June 25, 1970, Ser. No. 49,678
Int. Cl. G02b *17/06*
U.S. Cl. 350—7 **6 Claims**

An optical-scanning system comprising a series of paired scanning mirrors. In each pair of mirrors, the two mirrors are counterrotated about parallel axes and are tilted equally with respect to the axes whereby an incident beam of light is reflected by the two mirrors and emerges with a sinusodial oscillation. The paired mirrors are positioned so that the emerging beam from one pair of mirrors is incident upon the next pair of mirrors. The angles of tilt in the various pairs of mirrors are selected in accordance with Fourier coefficients



so that the final emerging beam oscillates with any desired format such as a sawtooth scan.

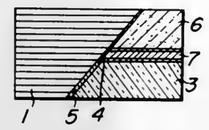
3,619,029
INFRARED-RECONNAISSANCE SYSTEM
James D. Crownover, Dallas, Tex., assignor to Texas Instruments Incorporated, 13500 North Central Expressway, Dallas 31, Tex.
Filed Nov. 26, 1965, Ser. No. 511,022
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **3 Claims**



An infrared-reconnaissance system is disclosed which comprises an infrared detector, optical means for both viewing the forward area defined by a predetermined elevation angle and for simultaneously scanning an area substantially perpendicular to the line of flight of the aircraft and transmitting same to the detector. Display means responsive to the video output of the detector produces a visual image of the radiation sensed along a first display dimension corresponding to the elevation angle scan and along a second display dimension corresponding to the scan which is substantially perpendicular to the line of flight of the aircraft.

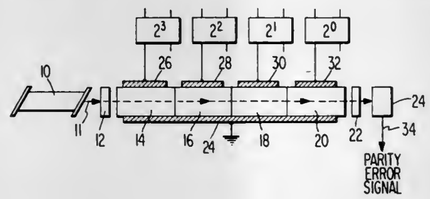
3,619,030
FIBER OPTICS ELEMENT
Kaoru Tomii, and Eiichi Miyazaki, both of Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1968, Ser. No. 783,793
Claims priority, application Japan, Dec. 28, 1967, 43/88
Jan. 20, 1968, 43/3397
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **2 Claims**

A fiber optics element comprising a pair of fiber optics assemblies connected in series, the side face of one assembly being transparent, and provided with a half mirror between said two assemblies at an oblique angle to the optical path.



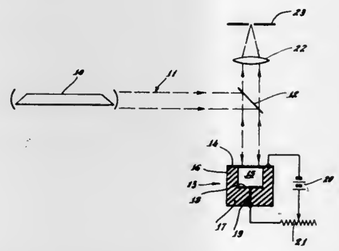
whereby the reflected image of an object disposed in close contact with the end face of said one assembly is derived from the side face thereof.

3,619,031
ELECTRO-OPTIC PARITY CHECKER
Juan Jose Amodei, Levittown, Pa., assignor to RCA Corporation
Filed Feb. 27, 1970, Ser. No. 15,009
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **3 Claims**



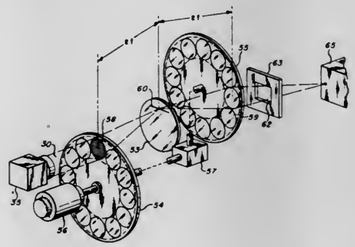
A parity checker is disclosed in which electrical signals representing "1" and "0" bits of an information word are supplied to optically aligned electro-optic polarization rotators. A polarized light beam directed through the rotators is rotated 90° an odd or an even number of times depending on whether there are an odd or an even number of 1's in the information word. An analyzer and a light detector receptive to the rotated beam provides an electrical indication of the parity of the information word.

3,619,032
TEMPORAL LIGHT MODULATOR USING DEFLECTABLE MEMBRANE
Fremont Reizman, Wilton, Conn., assignor to The Perkin-Elmer Corporation
Filed July 29, 1968, Ser. No. 748,517
Int. Cl. G02f *1/32*
U.S. Cl. 350—161 **7 Claims**



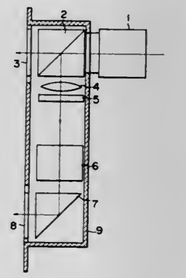
A system for modulating the amplitude of a beam of radiant energy which includes a reflective surface, a lens positioned to form a Fraunhofer diffraction pattern of a beam reflected from the surface, and a spatial filter located at the focal point of the lens. Means are provided for moving the reflective surface through a range of positions, so that the intensity at the center of the pattern varies from a maximum to a minimum. The filter is arranged to select only the central region as the output beam.

3,619,033
THREE-DIMENSIONAL LIGHT BEAM SCANNER UTILIZING TANDEMLY ARRANGED DIFFRACTION GRATINGS
Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation
Filed Sept. 25, 1968, Ser. No. 762,449
Int. Cl. G02b *5/18, 27/38*
U.S. Cl. 350—162 **3 Claims**



A light beam scanning apparatus including a rotatable disc having a plurality of focusing elements disposed in an annular or spiral pattern such that an impinging light beam is intercepted in succession by each of the focusing elements and deflected along a plurality of adjacent lines thereby providing, in accordance with the characteristics of the focusing elements, either a two-dimensional scan pattern oriented respectively transverse or parallel to the direction of the focused light or alternatively a three-dimensional scan pattern encompassing the areas of the orthogonal two-dimensional patterns.

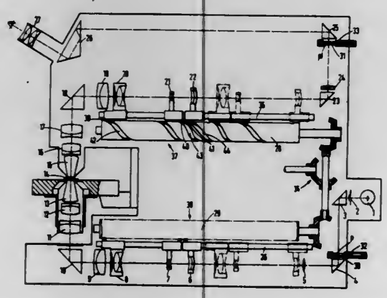
3,619,034
COLOR SEPARATING OPTICAL DEVICE
Motoi Yagi, Zushi-shi, and Yasuo Takemura, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Jan. 21, 1970, Ser. No. 4,543
Claims priority, application Japan, Jan. 25, 1969, 44/6120, Jan. 27, 1969, 44/6352
Int. Cl. G02b *27/14;* **H04n** *9/08*
U.S. Cl. 350—173 **7 Claims**



A color-separating optical device comprising a beam splitter for separating a light coming from an image pickup lens into a portion passing straight through said beam splitter and a remaining portion reflected thereby, a color stripe filter on which there is formed an image of reflected light, a

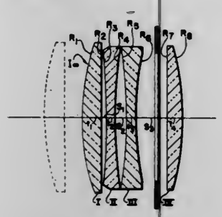
relay lens for receiving a light from said stripe filter and a means for reflecting a light from said relay lens in the same direction as that which previously passed straight through said beam splitter, thereby obtaining two parallel beams of light, and a lenticular lens interposed between said color stripe filter and beam splitter so as to reduce optical resolution conducted in a direction perpendicular to the stripes of said color stripe filter.

3,619,035
ZOOM LENS SYSTEM FOR MAINTAINING TWO PAIRS OF CONJUGATE PLANES FIXED
Harold Horace Hopkins, Barnet, England, assignor to W. Watson & Sons, Limited, Barnet, England
Filed Jan. 24, 1969, Ser. No. 793,701
Claims priority, application Great Britain, Jan. 25, 1968, 4026/68
Int. Cl. G02b *15/14, 21/14*
U.S. Cl. 350—184 **4 Claims**



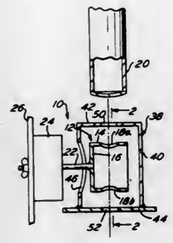
A zoom lends system has three movable lens components and means for moving each lens component relative to the other two in such a way that two pairs of conjugate planes remain fixed in position throughout the range of magnification. The zoom system may be used in zoom microscopes and phase contrast microscopy. One pair of fixed conjugate planes is used for object and image positions and the other pair for an aperture stop and phase-changing device. One such zoom system may be used between the objective and eyepiece and another in the substage assembly.

3,619,036
COMPACT FOUR ELEMENT PHOTOGRAPHIC OBJECTIVE LENS
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 7, 1968, Ser. No. 774,141
Int. Cl. G02b *9/36*
U.S. Cl. 350—221 **25 Claims**



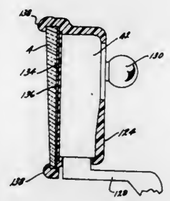
Compact airspaced four element photographic objectives are shown with an overall length less than ⅛ the focal length. Chromatic and spherical aberrations, coma, astigmatism, field curvature and distortion are corrected. The ratio of the minimum Abbe Y value of the first and fourth elements to the maximum Abbe Y value of the second and third elements (i.e., Baker's Ratio) is less than 1.2. The Petzval sum does not exceed 0.225. Focusing is accomplished by a movable first element.

3,619,037
A LASER BEAM SHUTTER INCLUDING A HEAT SINK
Alexander L. Pugh, Jr., Paoli, Pa., assignor to TRW Inc., Philadelphia, Pa.
Filed Sept. 19, 1968, Ser. No. 760,768
Int. Cl. G02f *1/30*
U.S. Cl. 350—269 **7 Claims**



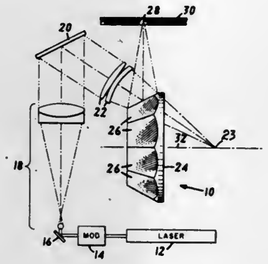
A control for disrupting and permitting the flow of the output beam of a laser to a workpiece. The control includes a shutter mounted in the path of the output beam and movable between a position in which the shutter extends across the path of the output beam so as to disrupt the beam, and a position in which the beam is allowed to pass the shutter. A metal heat sink surrounds the shutter. When the shutter extends across the path of the beam, the shutter deflects the beam against the surface of the heat sink which dissipates the heat developed by the beam.

3,619,038
DAY/NIGHT PRISM REARVIEW MIRROR
Robert E. Underhill; Roy D. Strengholt, and Konrad H. Marcus, all of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich., by said Underhill
Filed Sept. 11, 1967, Ser. No. 666,793
Int. Cl. G02b *5/08, 17/00*
U.S. Cl. 350—281 **4 Claims**



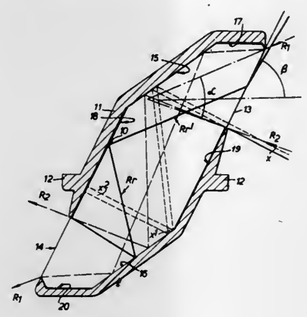
This disclosure relates to a glass mirror assembly, such as for example, a rearview mirror for an automobile. The mirror is produced by heating a reflective glass plate, and placing the heated glass plate in a mold slightly larger than the plate, and having a ditch around the edge of the mold. The reflective glass plate is held in place in the mold by a vacuum source, which communicates with the glass plate through vacuum ports in the mold wall. A mirror bracket or support, preferably containing a prism actuator element, is secured in the opposite side of the mold cavity. The mold-halves are closed, and the actuator element is pressed against the back of the mirror by a special brace which extends through the mold-half to secure the position of the mirror glass in the mold. The brace is tightened after the mold-halves are closed. The heated thermoplastic material, such as polyvinyl chloride, is injected into the mold under pressure to form a supporting body of the assembly. The bracket or actuator element has a flat surface which is coated with a thermoplastic material, preferably the same which is injected into the mold, and this coated surface contacts the mirror glass. The thermoplastic material is bonded to the mirror glass plate, preferably through an adhesive-promoting coating on the mirror plate.

3,619,039
LASER SCANNING SYSTEM INCLUDING ROTATING REFLECTOR
Leo Beiser, Flushing Manor, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed June 19, 1968, Ser. No. 738,234
Int. Cl. G02b *17/00*
U.S. Cl. 350—285 **16 Claims**



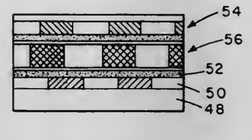
Collimated coherent light is passed through a lens which establishes a cone of light converging towards a first focal point. A multifaceted reflector intercepts the converging cone of light and redirects it to a scanning focal point. At the point where it is intercepted by the reflector, the cone of light is large enough in cross section to illuminate simultaneously several facets of the reflector. The reflector may have generally the shape of a cone frustum and is rotated about its axis so that the scanning focal point scans an image surface. The first focal point is on the axis, and the scanning focal point therefore describes a circular arc. The image surface is curved to conform to the arc. The collimated light travels in a direction which may be parallel to the rotor axis but which is preferably inclined to the axis in order to provide improved optical efficiency.

3,619,040
PRISM PERISCOPE
William Thomas Rickets, Kent, England, assignor to David Mark Cowan and Stanley Phillip Cowan, Trading in partnership as the Helio Mirror Company
Filed Sept. 10, 1969, Ser. No. 856,546
Int. Cl. G02b *5/04, 23/08*
U.S. Cl. 350—286 **2 Claims**



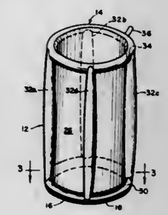
A periscope prism or a periscope installation including such a prism in which in order to avoid reflection from said prism back to the object under observation, the entry surface, any internally reflecting surfaces and the exit surface of said prism are arranged to be at angles other than right angles to the path of the light incident thereon.

3,619,041
SPECTRAL ZONAL ENCODER EMPLOYING A SILVER HALIDE EMULSION LAYER
David E. Willoughby, Leominster, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.
Filed Jan. 13, 1969, Ser. No. 790,656
Int. Cl. G02b *5/22*
U.S. Cl. 350—311 **2 Claims**



This disclosure concerns spectral zonal encoders for impressing image information carried by electromagnetic radiation in one or more predetermined spectral zones on spatial carriers, and fabrication methods therefor. One illustrated multizone encoder is a lamination of three grating filters comprising three photoresist grating patterns filled with dye-vehicle filter materials having preferential absorption in different regions of the visible spectrum. Another illustrated encoder comprises a grating filter fabricated by color-coupling lines in an exposed photographic emulsion which is sandwiched between two filled photoresist-grating filters.

3,619,042
COLLAPSIBLE UNDERWATER VIEWING DEVICE
Sanford H. Lazar, 30 Fifth Ave., San Francisco, Calif.
Filed June 1, 1970, Ser. No. 42,194
Int. Cl. G02b *5/00, 7/00, 27/00*
U.S. Cl. 350—319 **4 Claims**

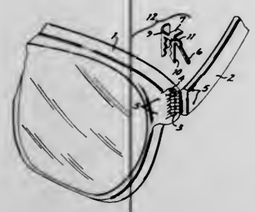


A collapsible and portable underwater-viewing device comprising confronting upper and lower tubular end sections having relatively thin flexible walls and inflatable to form relatively rigid rings, struts interconnecting the end sections to maintain the latter in spaced relationship to each other when in the inflated condition, a continuous flexible web of water-impermeable material secured to the end sections thus forming a protected viewing region when one end of the device is submerged below the surface of a body of water, and a transparent panel of flexible and foldable material secured to an overlaying the submergible end section, thus forming a viewing cylinder through which the user, after immersing the one end below the aforementioned water surface, may observe therethrough regions below such surface from the vantage point of the upper end section, the end sections being deflatable so that the latter, the web secured thereto, the interconnecting struts, and the transparent panel may be collapsed and folded to form a compact and conveniently portable device.

3,619,043
TEMPLE TENSIONER AND HINGE SCREW LOCKING DEVICE FOR EYEGLASSES
Howard Carlyle, 8420 Madison, South Gate, Calif.
Filed Sept. 22, 1969, Ser. No. 859,897
Int. Cl. G02b *5/16*
U.S. Cl. 351—113 **3 Claims**

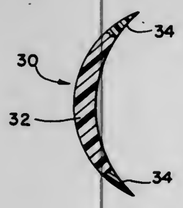
A temple tensioning and hinge screw locking device that is stamped and shaped from steel by a continuous die and then

tempered to make a permanent device which may be readily clipped onto the hinge portion of eyeglass frames and held in position either by spring clip action or by a screw, or both, becoming a permanent integral part of the eyeglasses, exert-



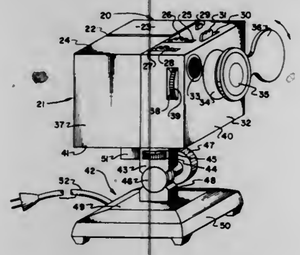
ing inward pressure on the temple pieces which extend along the sides of the wearers head, holding the eyeglasses in the prescribed position at all times, and a temple hinge screw lock flange which rests on top of the hinge screw so that said screw cannot loosen or back out.

3,619,044
RIGID GAS PERMEABLE CONTACT LENS WITH SOFTER EDGE PORTION
Pandurang M. Kamath, East Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.
Continuation-in-part of application Ser. No. 815,322, Apr. 11, 1969, now Patent No. 3,551,035. This application Feb. 18, 1970, Ser. No. 12,378
Int. Cl. G02c *7/04*
U.S. Cl. 351—160 **2 Claims**



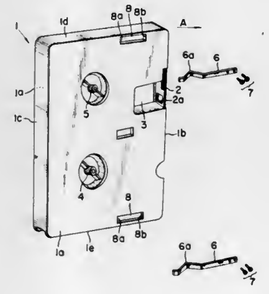
A rigid, oxygen permeable contact lens formed of the plastic material poly (4-methyl pentene-1) with a soft swellable plastic grafted on the poly (4-methyl pentene-1) lens as the edge of the lens. Method of making such lenses.

3,619,045
MOVIE FILM SOUND VIEWER
Otto R. Nemeth, Santa Monica, Calif., assignor to Anthony M. Frank and Charles A. Palmer, Calif., part interest to each
Filed July 8, 1968, Ser. No. 743,203
Int. Cl. G03b *31/02, 23/02*
U.S. Cl. 352—27 **16 Claims**



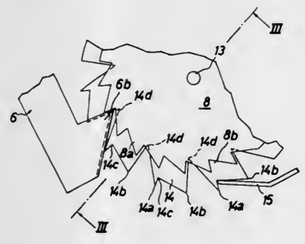
A portable, self-contained movie film sound viewer includes a film transport component for moving film at a continuous rate past a sound-reproducing head, a film-advancing component for moving film intermittently at a variable rate past a viewing aperture, and a film movement sensor located between the film portions passing the sound-reproducing head and viewing aperture. The sensor is biased against the film to monitor film tension and forms a film loop whose optimum length corresponds with synchronous movement between the film portions being viewed and listened to. The sensor coacts with a mechanical servo to automatically correct out-of-phase motions of the film portions by increasing and decreasing the intermittent motion of the film-advancing component as underrunning and overrunning conditions occur. The use of sprockets customarily used for transferring film is eliminated.

3,619,046
CARTRIDGE-HOLDING DEVICE
Tokusaburo Kakiuchi, and Hideaki Akiyama, both of, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 5, 1969, Ser. No. 855,625
Int. Cl. G03b *23/00*
U.S. Cl. 352—78 **2 Claims**



Holding device for a film cartridge insertable into an opening cinematographic apparatus for projection position and rewind position. A click spring having a V-shape is mounted in the apparatus to extend into the opening. A corresponding recess is formed in the cartridge, and the click spring is engageable with edges of the recess in the two positions.

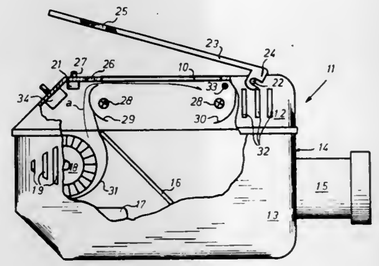
3,619,047
MOTION PICTURE CAMERA WITH FILM FRAME COUNTER
Karl Neudecker, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 12, 1969, Ser. No. 875,708
Claims priority, application Germany, Nov. 14, 1968, G 68 06 909
Int. Cl. G03b *1/60*
U.S. Cl. 352—172 **10 Claims**



A frame counter for 8-millimeter motion picture film which comprises two coaxial toothed disks one of which is provided with indicia representing different numbers of film frames and the other of which has alternating deeper and

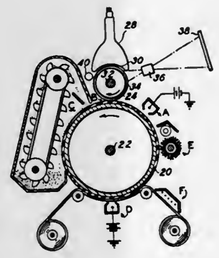
shallower tooth spaces. A pawl is driven by the film-transporting mechanism of the camera to repeatedly index the other disk and to index the one disk only when its pallet extends into a deeper tooth space.

3,619,048
EPISCOPE
Heinz Engert, Nurnberg; Gunter Kayser, Munich; Hans Lautenbacher, Munich; Siegfried Schafer, Munich, and Johann Weinhofer, Munich, all of Germany, assignors to Enna Werk Optische Anstalt Dr. Appelt K.G., Munich, Germany
Filed Aug. 13, 1969, Ser. No. 849,852
Claims priority, application Germany, Aug. 13, 1968, P 17 97 080.8
Int. Cl. G03b *21/16*
U.S. Cl. 353—61 **7 Claims**



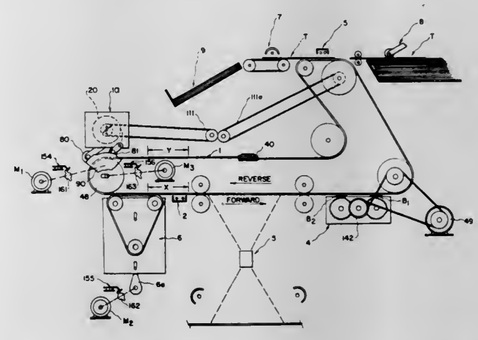
An episcope with a housing having a top mounted object support and a hinged cover over the object support. A high-intensity low-voltage lighting system with associated reflectors transfers a clear brilliant image into a projection lens system. The object support is a heat-insulating glass plate. A high-volume fan in the housing together with inlet and outlet apertures in the housing wall and flow guides inside the housing maintain a boundary layer of cooling air flow across the underside of the object support. Controls for the high-intensity lighting system are interrelated with the object support area so projection lighting is on only when the cover is down or an object on the support engages a switch. A magnetic latch maintains the cover in its lowered position.

3,619,049
XEROGRAPHIC IMAGERY USING A LONG PERSISTENCE PHOSPHOR INTERMEDIATE
Gary K. Starkweather, and Richard M. Bobbe, both of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 663,805, Aug. 8, 1967, abandoned. Filed Mar. 16, 1970, Ser. No. 19,587
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **1 Claim**



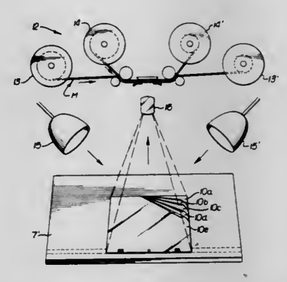
Apparatus for placing an image on a photoreceptor by exciting a phosphorescent intermediate which then contacts the photoreceptor causing an image in the pattern of the excited phosphors on the intermediate. Apparatus may be added for viewing the image formed on the intermediate. By use of a long persistence phosphor, the intermediate is capable of several exposures on the photoreceptor though it is excited only once.

3,619,050
WEB-HANDLING APPARATUS AND CARTRIDGE AND WEB USABLE THEREWITH
Thaddeus Swanke, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 19, 1969, Ser. No. 834,695
Int. Cl. G03g *15/00*; B65h *19/18*
U.S. Cl. 355—16 **44 Claims**



An electrophotographic machine using an electrophotosensitive web which is adapted to be driven through an endless path is provided with a device for replacing a used web with a new one. The device is adapted to remove a used web, receive a cartridge containing a new web and position the leading edge of the new web for threading in the apparatus. The leading web end is picked up by a towbar, threaded through the machine and spliced to form a continuous belt. When replacement again is desired, the device separates the web and feeds the web back into the cartridge for disposal. A particular web and web-cartridge combination usable in such apparatus and a mechanism for handling such web and cartridges are also disclosed.

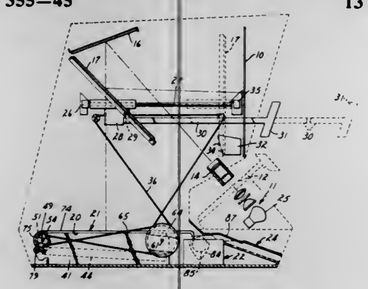
3,619,051
PRODUCTION OF COLOR FILMS FROM MONOCHROMATIC FILM
Norman H. Wright, San Clemente, Calif., assignor to Norman Wright Productions, Inc., Laguna Niguel, Calif.
Filed Oct. 23, 1969, Ser. No. 868,716
Int. Cl. G03b *27/76*
U.S. Cl. 355—32 **8 Claims**



Relates to a method of converting exposed and developed monochromatic motion picture strip film (generally of live action) into colored versions thereof. Method includes the steps of projecting and enlarging frames of the monochromatic strip film to produce enlarged images of each frame in step by step succession; a plurality of transparent cells are produced for each frame so projected, each cell carrying a different color, each color being correlated to a selected

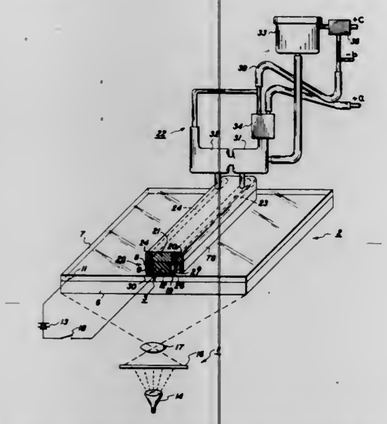
image component of the projected and enlarged frame and the placement of the component therein; colored cells for each frame are them assembled in superimposed relation and photographed on unexposed color film, the original monochromatic live action film being between the assembled cells and the color film, the monochromatic master imparting detail and shading to and outlining areas of color in the color impressions received from the cells by the color film. Various types of color film and cell paints can be employed.

3,619,052
MICROFILM READER PRINTER
Wolodymyr Diachuk, Columbia Heights, and Thomas A. Turgeon, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 24, 1969, Ser. No. 809,535
Int. Cl. G03b *27/70*
U.S. Cl. 355—45 **13 Claims**



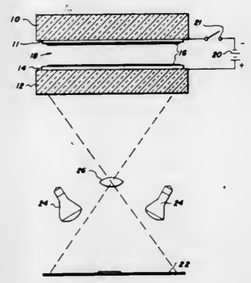
This invention is a low-cost microfilm reader printer which uses sheet form print material. The invention utilizes a sheet-feeding mechanism having a compressible dispensing roll in contact with one end of a stack of sheet print material, and a guide-disposed adjacent the periphery of the roller. When rotated, the dispensing roller separates sheet in the stack and feeds successive sheets between the roller and the guide approximately 180° around the roller and directs the dispensed sheet to an exposure station above and parallel to the storage area. Subsequent to exposure, the exposed sheet is advanced to a developer.

3,619,053
PHOTOELECTROPHORETIC IMAGING SYSTEM
Kallis H. Mannik, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,622
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **12 Claims**



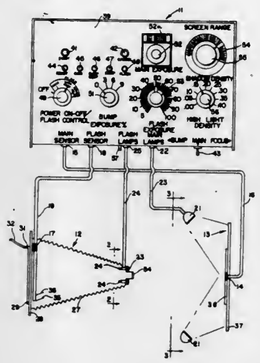
A photoelectrophoretic system is disclosed which utilizes a pneumatic operated circuit to apply an imaging suspension onto injecting and blocking electrodes, to control the agitation of the ink between the electrodes and to remove excess ink from the electrodes. The blocking electrodes are either a skid-type member or a roller-type member with both being supported to make contact with an injecting electrode.

3,619,054
OIL FILM IMAGING APPARATUS
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 571,343, Aug. 9, 1966. Filed Jan. 16, 1970, Ser. No. 8,134
Int. Cl. G03g *15/14*
U.S. Cl. 355—16 **6 Claims**



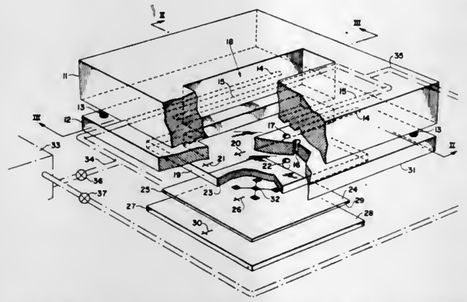
An apparatus for forming an image, comprising a photoconductive insulating layer having a thin liquid film thereon and separated from an electrode by a small gap. After an electrical field has been established between the photoconductive layer and the electrode, the photoconductive layer is selectively illuminated causing liquid transfer in imagewise configuration onto the electrode. An image is also formed on the photoconductive insulating layer. Alternately, a thin liquid film is applied to both the photoconductive insulating layer and the electrode or solely to the electrode.

3,619,055
EXPOSURE CONTROL DEVICE
Harold Brent Archer, Pittsford, N.Y., and Charles R. Williams, Wheaton, Ill., assignors to Sargent-Welch Scientific Company, Chicago, Ill.
Filed June 5, 1969, Ser. No. 830,689
Int. Cl. G03b *27/76*
U.S. Cl. 355—69 **14 Claims**



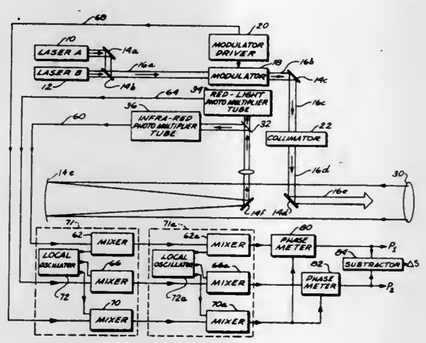
An instrument for the control of exposure in halftone photography is described which instrument automatically compensates for variations in light sources and variations in flare conditions in the camera. A main lamp sensor and integrator means measures the cumulative illumination produced by the main lamp and flash lamp sensor and integrator means measures the cumulative flash illumination, including flare. Exposure of the main and flash lamps is terminated when the proper amount of light for an exposure is reached, based upon preset calibrations for the camera conditions and the type of work to be done.

3,619,056
PATTERN REGISTERING JIG
Gerald Hermann Hantusch; David Alfred Vincent, and Eric Henry Van Tongerloo, all of Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Sept. 28, 1970, Ser. No. 75,828
Int. Cl. G03b *27/20*
U.S. Cl. 355—91 **5 Claims**



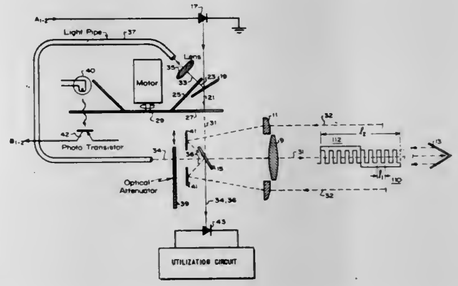
A jig for accurately registering an image or pattern bearing mask on one face of a silicon slice with an existing pattern on the opposite face of the silicon slice. The face of the silicon slice which bears the existing pattern is initially registered with, placed in contact with, and held by a supporting face of a vacuum chuck. This initial registration is performed by sighting through an optically transparent portion of the chuck body and registering corresponding reference and registration marks on the silicon slice and the chuck body respectively. Following this initial registration image bearing mask is placed on the opposite face of the silicon slice so as to form a sandwich of the vacuum chuck body, silicon slice and image bearing member. When the image bearing member has also been registered with the vacuum chuck body, by sighting through the aforementioned transparent portion and aligning corresponding registration marks, the pattern bearing mask will be correctly registered with the existing pattern on the opposite face of the silicon slice.

3,619,057
GEODETIC LASER SURVEY SYSTEM
Vito E. Castellano, Orange; Edward L. Cohn, La Mirada, and Robert A. Fowler, Torrance, all of Calif., assignors to North American Aviation, Inc.
Filed June 28, 1967, Ser. No. 649,513
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **5 Claims**



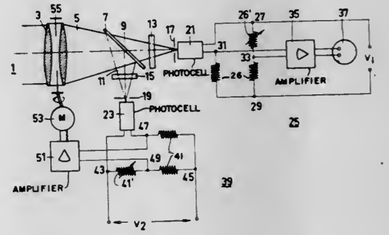
Apparatus—comprising a pair of light-sources whose beams are combined, modulated, and directed to a distant retroreflector—that measures the phase-shift of the modulations on the reflected light beams in order to measure the index-of-refraction of the atmosphere and the movement, if any, of the retroreflector.

3,619,058
DISTANCE MEASURING APPARATUS
William R. Hewlett, Palo Alto, and Gregory Justice, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 24, 1969, Ser. No. 879,291
Int. Cl. G01r *25/00*; **G01c** *3/08*
U.S. Cl. 356—5 **11 Claims**



The phase of a modulated light carrier signal that is transmitted to and reflected back from a distant reflector is compared with a reference modulated light carrier signal to provide a direct readout of distance to the reflector. The reference and reflected light carrier signals are chopped alternately and measured in a signal circuit that reconstructs the phase information on the chopped signals for continuous analysis and readout directly in distance.

3,619,059
COLOR TEMPERATURE MEASURING PROCESS AND APPARATUS
Peter Muller, Ruhpolding, and Ernst Guilino, Munich, both of Germany, assignors to Institut fur Plasmaphysik G.m.b.H., Munich, Germany
Filed Aug. 6, 1969, Ser. No. 848,002
Claims priority, application Germany, Aug. 7, 1968, P 17 97 032.0
Int. Cl. G01j *5/60, 3/42*
U.S. Cl. 356—45 **15 Claims**

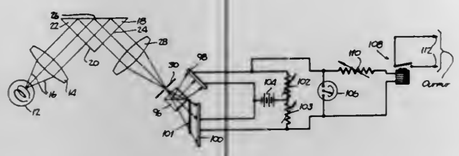


The color temperature of the radiating body is measured by separately measuring photoelectrically two different wavelength ranges of a beam emanating from the body, while the intensity of the beam is adjusted by an attenuating device so that the two different wavelength ranges are affected substantially the same and one of the wavelength ranges is maintained at a predetermined intensity.

3,619,060
IDENTIFICATION DEVICE

Joseph E. Johnson, Physics Department, University of S.C., Columbia, S.C.

Filed Nov. 19, 1968, Ser. No. 777,117
Int. Cl. G01b 9/08
U.S. Cl. 356—71 **22 Claims**

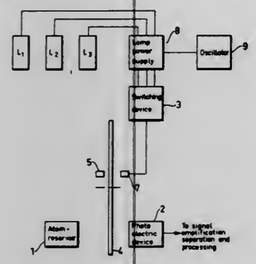


An identification device which includes a source of parallel light beams, a prism having a face for receiving the light beams and having another face for receiving an object to be identified, apparatus for receiving an image of the object and additional apparatus for comparing the image of the object with a known image.

3,619,061
APPARATUS FOR SIMULTANEOUS MULTIELEMENT ANALYSIS BY ATOMIC FLUORESCENCE SPECTROSCOPY

Douglas Graham Mitchell, Stockholm, Sweden, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 26, 1969, Ser. No. 827,554
Claims priority, application Sweden, May 27, 1968, 7083/68, Jan. 24, 1969, 1006/69
Int. Cl. G01n 21/52; G01j 3/00
U.S. Cl. 356—85 **11 Claims**



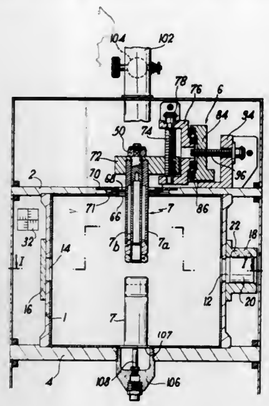
Apparatus for multielement atomic fluorescence spectroscopy comprising an atom reservoir containing at least two atomic species and a plurality of light sources which are sequentially operated to excite atomic fluorescence radiation from each of the atomic species, in turn, for detection by a same photoelectric device. An optical filter arrangement is interpositioned between the atom reservoir and photoelectric device, so as to prevent unwanted radiation from reaching the photoelectric means. A plurality of readout devices are connected to the photoelectric device in phase with the respective operations of the light sources and optical filter arrangement, so as to provide an indication of the concentration of the corresponding atomic species in the atom reservoir.

3,619,062
ELECTRODE-HOLDER FOR EMISSION SPECTROGRAPH

Alain Heres, 10 Toules Aures, 4 Manosque, and Alfred Simenauer, Villa n° 28 le Petit, Nice 13 Aix en Provence, both of France

Filed Apr. 29, 1970, Ser. No. 32,898
Claims priority, application France, May 9, 1969, 6915076
Int. Cl. G01j 3/02
U.S. Cl. 356—86 **5 Claims**

In order to permit very accurate centering of electrodes which are intended to support samples for the purpose of spectrometric analysis, the invention provides an electrode holder comprising a column which is adapted to slide within the wall of an excitation chamber. The column is connected

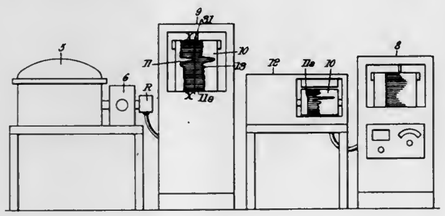


on one side of the wall to two end pieces which are each adapted to support a half clamp and on the other side of the same wall to a system for carrying out the displacement of the column in three directions at right angles to each other.

3,619,063
SPECTROMETER FOR THE FAR INFRARED

Armand Hadni, Nancy; Robert Thomas, Saint-Die, and Jacques Weber, Verdun, all of France, assignors to Centre National De La Recherche Scientifique, Paris, France

Filed Sept. 24, 1968, Ser. No. 761,997
Claims priority, application France, Sept. 29, 1967, 122823
Int. Cl. G01b 9/02
U.S. Cl. 356—106 **6 Claims**



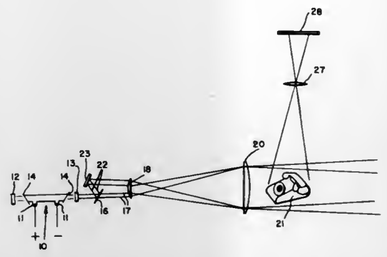
The spectrometer comprises a Michelson interferometer, recording means, reading means and a wave analyzer. The recording means produce on a support an area of aspect different from the aspect of the support, this area having a contour which reproduces the interferogram supplied by the interferometer. The reading means deliver, for each reading of the support, a signal representative of the transverse dimension of a part of the area whose variations reproduce the variations of the interferogram.

3,619,064
MOIRE GAUGING SYSTEMS

Robert S. Brooks, Redondo, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 18, 1968, Ser. No. 760,572
Int. Cl. G01b 9/02, 11/10
U.S. Cl. 356—109 **28 Claims**

A moire gauging system for measuring deviations of complex surfaces of a master compared to a replica thereof or of a master compared to a deformed or vibrating master. To this end, optical fringes are generated interferometrically to project substantially plane sheets of light parallel to each other onto the object to be measured. There fringes on the master can be recorded photographically or by creating a hologram, for example, and compared to the replica, or

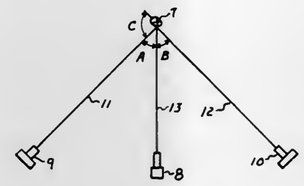


deformed master or the like which is also illuminated with the same fringe pattern. Distinctions between the two objects to be compared can be detected and measured by the resulting moire pattern.

3,619,065
VERIFICATION OF THREE-DIMENSIONAL SHAPES BY MEANS OF CONTOUR LINES

Kenneth Leslie Agnew, Falconbridge, Ontario, Canada

Continuation-in-part of application Ser. No. 293,729, July 9, 1963, now abandoned. This application July 29, 1967, Ser. No. 687,078
Int. Cl. G01b 11/30, 11/24
U.S. Cl. 356—120 **2 Claims**



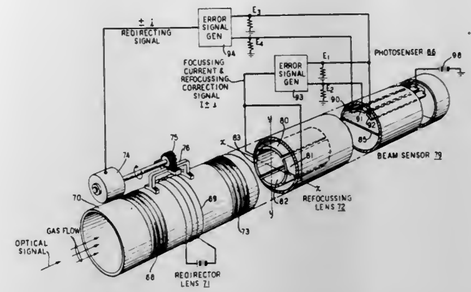
This invention relates to an optical method of subsequently verifying similarity of shape of a three-dimensional object, or its reproduction, previously recorded on a two-dimensional record, such as a photograph. A projector, the shape, and a recording device are arranged in a plane, the straight lines connecting them in the aforesaid order forming a V with the shape at the intersection of the two arms of the V. Distortion of the initially projected lines (which must be at a substantial angle to the central plane of the V), produced by reflection from a master pattern, is either eliminated or reproduced by subsequent shapes, if similar, depending on the direction of the path of reprojection around the V. In some cases, distortion of the lines may be obtained by calculation rather than by actual reflection from a master pattern.

3,619,066
BEAM POSITION AND WIDTH SENSING BY SCATTERING

Peter Kaiser, Middletown, and Enrique A. J. Marcatili, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 7, 1969, Ser. No. 805,201
Int. Cl. G01j 1/42; G02b 5/14
U.S. Cl. 356—122 **9 Claims**

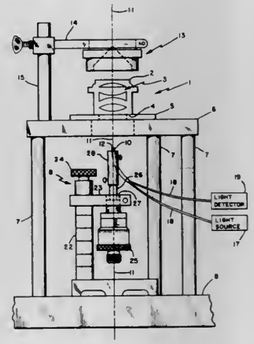
Beam position and beam width sensing is accomplished by scattering a small percentage (0.1 percent) of the beam energy. The scattered light is analyzed by an arrangement of three photosensors that compare the energy distribution along different portions of the beam and produce appropriate error signals which are then used to reposition and focus the beam. Scattering is accomplished by means of thin threads disposed across the wavepath.



3,619,067
METHOD AND APPARATUS FOR DETERMINING OPTICAL FOCAL DISTANCE

Bradford Howland, Cambridge, and Arthur F. Proll, Newburyport, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 19, 1970, Ser. No. 4,154
Int. Cl. G01b 9/00; G02b 5/14
U.S. Cl. 356—125 **17 Claims**



The location of the focal surface of a lens system is precisely determined, using a retroreflector on one side of the lens system and a bifurcated light guide of intermixed fibers on the other side, with one set of the light guide fibers leading to a source of light and another set leading to a light detector. The bifurcated light guide is moved relative to the lens system and the position which results in a minimum of light output to the detector determines precisely the location of the focal surface of the lens system.

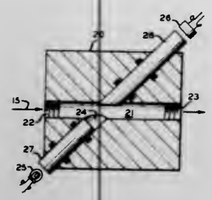
3,619,068
REFRACTOMETER

Arthur B. Broerman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 28, 1969, Ser. No. 853,702
Int. Cl. G01n 21/46
U.S. Cl. 356—130 **5 Claims**

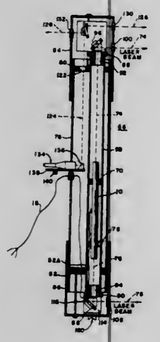
A refractometer is formed by a housing having two intersecting passages therethrough. The fluid to be tested is

passed through the first passage, and a radiation beam is passed through the second. A bundle of light tubes is positioned in the second passage so that one end of the bundle is



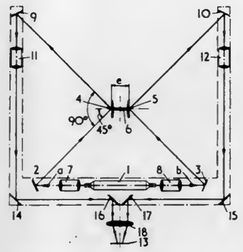
disposed in the test fluid at an angle with the axis of the tube bundle. A radiation detector measures the radiation passed through the tube bundle.

3,619,069
OPTICAL ALIGNMENT METHOD AND MEANS UTILIZING COORDINATED LASER BEAMS AND LASER BEAM COORDINATING MEANS FOR SAME
John Alexander, Wilmington, Del., assignor to Technidyne, Inc., Wilmington, Del.
Division of Ser. No. 717,067, Mar. 12, 1968, which is a continuation-in-part of application Ser. No. 632,279, Apr. 20, 1967, now abandoned. Filed Apr. 21, 1969, Ser. No. 817,872
Int. Cl. G01b *11/27*
U.S. Cl. 356—138 **12 Claims**



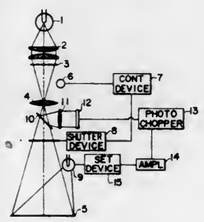
A laser projection device is provided which includes a tubular housing having a lasing chamber and symmetrically disposed optics at each end of the housing and chamber, effecting propagation of laser beams from each end of the housing in opposed straight line relationship. Another embodiment includes an additional outer housing having beam bending pentaprism optics for projecting the initially opposed laser beams in parallel planes and at least one beam splitting device for creating opposed beams in straight line configuration from at least one of the initially opposed beams in at least one of the parallel projection planes. The pentaprism optics are adjustable to effect either parallel or predetermined skew orientation of the several beams in the projection planes. Both embodiments are provided with telescopes or other optical viewing devices for determining a condition of impingement of the laser beams on a remote target by the visual detection of a red glow emitted from such a target when such an impingement occurs.

3,619,070
METHOD AND APPARATUS FOR MEASURING THICKNESS
Robert Alfred Pirlet, Angleur, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium
Filed May 6, 1968, Ser. No. 726,946
Claims priority, application Luxembourg, Belguim, May 5, 1967, Dec. 15, 1967, 53,596; 708,100
Int. Cl. G01b *11/06*
U.S. Cl. 356—163 **27 Claims**



A method for measuring the thickness of a body, characterized in that on each side of the body whose thickness is to be measured one point is selected, the points being situated on a common normal to the median plane of the material or substantially in proximity to such a normal, these two points being such that the planes tangential to the walls of the body at these points are substantially parallel. Optical rays are directed towards each of these points, and a high proportion of the rays emanating from these points are collected in the form of two distinct beams. These beams are subsequently oriented towards a common plane and the distance between the images resulting from the intersection of these beams with the plane is measured by a suitable means, this distance being indicative of the thickness being measured.

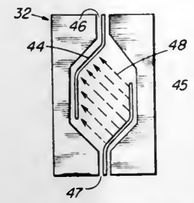
3,619,071
PHOTOGRAPHIC-GRADATION-MEASURING DEVICE
Tsutomu Kimura, Ashigara-Kamigun, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara Kamigun, Kanagawa, Japan
Filed Sept. 2, 1969, Ser. No. 854,467
Claims priority, application Japan, Sept. 10, 1968, 43/65149
Int. Cl. G01j *1/42*; G01d *5/36*
U.S. Cl. 356—222 **5 Claims**



A mosaic of photosensitive elements acts in conjunction with a photochopper to provide a varying electrical signal indicative of the gradation contrast of a photographic negative image projected on the elements.

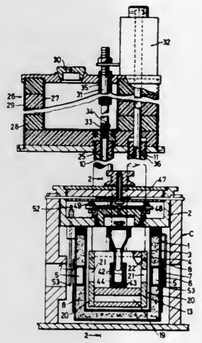
3,619,072
FLUID SAMPLE CELL WITH QUICK PURGING MEANS
John P. O'Hara, Staten Island, and Robert K. Siegfriedt, Merrick, both of N.Y., assignors to Mobil Oil Corporation
Filed Mar. 24, 1969, Ser. No. 809,878
Int. Cl. G01n *21/26*
U.S. Cl. 356—246 **7 Claims**

An automated infrared analysis apparatus having an improved sample cell which has grooves therein for quicker purging of a sample, a chart drive mechanism which quickly skips over predetermined portions of the infrared spectrum



and a programable reference cell holder. The infrared characteristics of an oil sample or the like can be determined at the rate of approximately one sample every 3½ minutes.

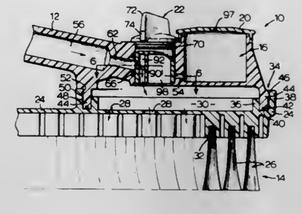
3,619,073
SAMPLE HOLDER FOR OPTICAL MEASUREMENTS AT LOW TEMPERATURES
Michel Ossona De Mendez, 26 Rue Coriolis, 75 Paris (12°); Albert Foucard, 40 Chemin de Meaux, 93 Gagny, and Jacques Verin, 15 Rue Feron, 95 Montmorency, all of France
Filed Nov. 25, 1969, Ser. No. 879,797
Claims priority, application France, Dec. 2, 1968, 176,183
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **15 Claims**



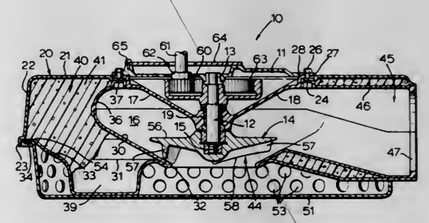
A sample-holding apparatus for carrying out optical measurements at low temperatures, comprising a block forming a heat reservoir which includes a cavity of tapered cross section, a container for a sample, the shape of which is matched to that of the cavity to permit transfer of heat by contact between the block and the container even when the container is initially at a higher temperature than the block and contracts as it cools, a heating device, and a cooling device for said block, and a temperature control device for controlling the heating and cooling devices.

3,619,074
FOUNTAIN BRUSH AND VALVE THEREFOR
Janusz Morawski, Toronto, Ontario, Canada, assignor to Trixie Corporation Limited, Toronto, Ontario, Canada
Filed July 15, 1970, Ser. No. 55,046
Int. Cl. A46b *11/06*
U.S. Cl. 401—46 **7 Claims**

The body of a fountain brush has a chamber with exit holes surrounded by the projecting bristles. The body is connected to a hollow handle through which water is supplied; the body also has a well exterior of the chamber but also connected thereto. A three-way valve controls the flow of liquid not only from the hollow handle into the chamber and through the exit holes but also the supply of liquid detergent contained in the well.



3,619,075
FLOATING PUMP
Walter F. Chmela, Willowdale, Ontario, Canada, assignor to Watermaster Industries Limited, London, Ontario, Canada
Filed Nov. 3, 1969, Ser. No. 873,282
Int. Cl. F01d *25/28*
U.S. Cl. 415—7 **7 Claims**

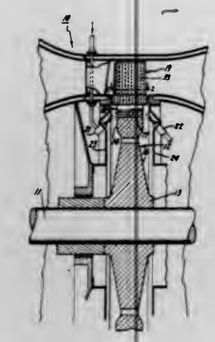


A floatable pump comprises a centrifugal impeller keyed to the lower end of an impeller shaft which is journaled in a bearing plate. To permit ready disassembly of the pump and withdrawal of the impeller assembly therefrom, the bearing plate and a pumping chamber cover member disposed around the impeller shaft between the impeller and the bearing plate are both detachably secured within an opening in the top surface of the pump housing. Such an opening is dimensioned so as to permit direct withdrawal of the impeller assembly therethrough.

3,619,076
LIQUID-COOLED TURBINE BUCKET
Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company
Filed Feb. 2, 1970, Ser. No. 7,805
Int. Cl. F01d *5/14*
U.S. Cl. 415—115 **5 Claims**

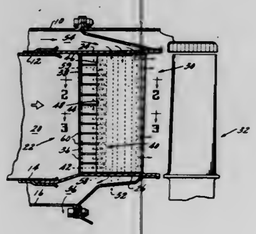
Turbine blade construction is described providing for the uniform distribution of cooling liquid to eliminate significant temperature gradients over the blade surface. Each blade consists of a central airfoil-shaped spar clad with a sheet of metal having a very high thermal conductivity e.g. copper.

The cladding sheet has grooves recessed in the sheet face adjacent the spar, which grooves together with the surface of the spar define coolant passages distributed over the surface as dictated by the cooling requirements.



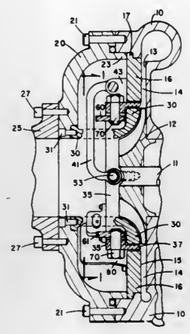
3,619,077
HIGH-TEMPERATURE AIRFOIL
George J. Wile, Hamilton, Ohio, and Herbert Garten, Swampscott, Mass., assignors to General Electric Company
Continuation of application Ser. No. 334,524, Dec. 30, 1963, now abandoned. This application Sept. 30, 1966, Ser. No. 584,056
Int. Cl. F01d *25/12, 5/18*
U.S. Cl. 415—115 **11 Claims**

A turbomachinery airfoil includes a plurality of stacked wafer elements which form at least a portion of the outer airfoil surface and are adapted to receive cooling fluid from a main support member.



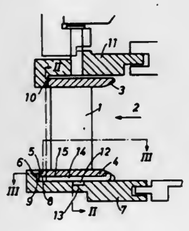
3,619,078
CENTRIFUGAL GAS COMPRESSOR
Gordon L. Mount, West Monroe, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed June 22, 1970, Ser. No. 48,358
Int. Cl. F04d *27/00, 15/00*
U.S. Cl. 415—150 **3 Claims**

The annular diffuser valve of the centrifugal compressor is supported on two pairs of links or bars. One pair is disposed normal to the other pair. Like ends of the links are pivotally connected to the machine casing. The opposite ends of the links of each pair are pivotally connected to the valve at diametrically opposite sides thereof, whereby the valve is held concentric with the impeller for free linear movement across the diffuser passage. Power means is provided for imparting such linear movement to the valve.



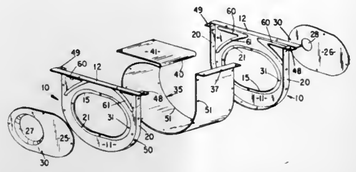
3,619,079
GUIDE BLADE MOUNTING MEANS FOR STEAM OR GAS TURBINES
Ragnar Nils Anders Torstenfelt, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden
Filed June 18, 1970, Ser. No. 47,434
Claims priority, application Sweden, July 8, 1969, 9656/69
Int. Cl. F04f *5/48;* **F04b** *49/00*
U.S. Cl. 415—189 **3 Claims**

A mounting means for the guide blades of a steam or gas turbine comprising an inner ring to which each blade is axially locked by means of crossed bars which respectively extend across the ring and through a shroud which is secured to an end of the blade. The crossbars extend at an angle with respect to one another and by the selection of crossed bars having different degrees of angularity, replaced blades can be set in various angular positions to meet different requirements.

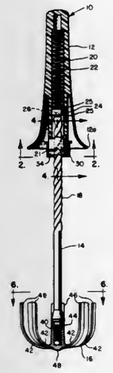


3,619,080
CENTRIFUGAL FAN HOUSING
Charles E. Bullock, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jan. 21, 1970, Ser. No. 4,652
Int. Cl. F04d *29/40, 29/00*
U.S. Cl. 415—219 **5 Claims**

The centrifugal fan housing consists of not more than five parts, two of which are duplicate parts, which may be assembled with the inlet bell at either end of the housing and with the scroll located to provide for clockwise rotation or counterclockwise rotation of the fan. This arrangement provides a universal fan housing which is assembled from identical parts to suit any installation.

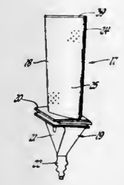


3,619,081
BEATER FOR COMESTIBLES AND THE LIKE
Casimir F. Gruska, Chicago, and William Lelyk, Medinah, both of Ill., assignors to American Home Products Corporation, New York, N.Y.
Filed Dec. 4, 1969, Ser. No. 881,972
Int. Cl. B01f *7/16, 9/12*
U.S. Cl. 416—70 **2 Claims**



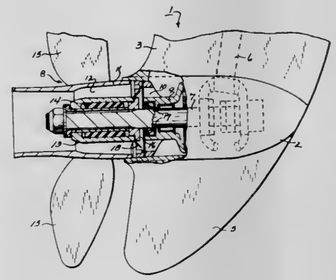
A one-hand beater for comestibles and the like is provided with a relatively flexible plastic mixing element having mixing fingers, each of which radiates outwardly and upwardly from a hub and terminates spaced apart from said hub at its top end, and means for more simply, efficiently and economically securing a shaft to the handle of the beater.

3,619,082
TURBINE BLADE
George B. Meginnis, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 5, 1968, Ser. No. 742,900
Int. Cl. F01d *5/08, 5/18*
U.S. Cl. 416—90 **16 Claims**



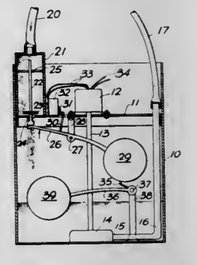
A turbine rotor blade of laminated porous metal cast into a base includes an inner reinforcing layer which has increasing porosity in the direction spanwise of the blades so that the strength diminishes with load in the spanwise direction and the porosity provides for flow of air to the porous blade wall. Pores or relieved areas in some sections of some layers are elongate and disposed with their long dimension spanwise of the blade for increased strength in this direction, in which stress in the blade is greatest.

3,619,083
FISHLINE CUTTER FOR MARINE PROPULSION UNITS
Wilbur E. Witte, Oshkosh, Wis., assignor to Brunswick Corporation, Chicago, Ill.
Filed June 2, 1969, Ser. No. 829,370
Int. Cl. B63h *1/20*
U.S. Cl. 416—93 **2 Claims**



A cutter is mounted on the inner end of the propeller hub of an outboard marine propulsion unit to cut fishlines which become entangled upon the propeller and protect the gearcase seal from damage by the line.

3,619,084
WATER SUPPLY AND PUMP FOR FOUNTAINS
Harold L. Gordon, 1529 First St., Youngstown, Ohio
Filed Aug. 3, 1970, Ser. No. 60,457
Int. Cl. F04b *49/04*
U.S. Cl. 417—40 **3 Claims**

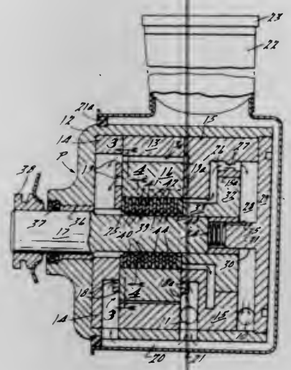


A water supply and pump for fountains is disclosed which includes a cylindrical container for holding the water supply, pump means for moving the water supply from the container to a fountain and means for returning the water from the fountain to the container controlled by a float valve responsive in operation to the level of water in the container, a secondary float valve biases the first float valve to effect a cycle in the pumping action and switch means controlled by the first float valve controls the pumping means.

3,619,085
HYDRAULIC PUMP

Christopher Nuss, Warren, and Thomas A. Phillips, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 1, 1969, Ser. No. 812,211
Int. Cl. F04b 1/26, 49/00
U.S. Cl. 417—223 11 Claims

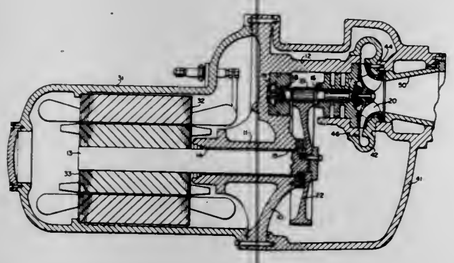


The fluid pressures at opposite sides of a metering orifice in the outlet of a hydraulic pump are employed to regulate the power operating the pump and, in cooperation with the size of the orifice, to predetermine the volume output of the pump.

3,619,086
SELF-CONTAINED CENTRIFUGAL REFRIGERANT GAS COMPRESSOR AND ELECTRIC MOTOR

John G. Johnson, Waynesboro, Va., and James H. Anderson, York, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1970, Ser. No. 14,469
Int. Cl. F04b 17/00, 35/04; F01d 15/12
U.S. Cl. 417—360 7 Claims

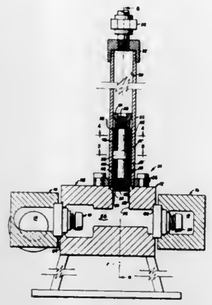


A self-contained electric motor-driven refrigerant gas compressor assembly is comprised of a bearing support member having a first cantilevered bearing assembly support means projecting from its back side with an electric motor armature shaft journaled therein and a second cantilevered bearing assembly support means projecting from its front side with a centrifugal gas impeller and shaft journaled therein. The armature shaft projects through the support member to its front side and suitable means for rotatably interconnecting the projecting armature shaft and the impeller shaft is provided on the front side.

3,619,087
FREE PISTON-TYPE PUMP

Archie W. Beeman, Box 245, Odessa, Tex.

Filed Dec. 17, 1969, Ser. No. 885,843
Int. Cl. F04b 9/08, 21/02, 17/00
U.S. Cl. 417—390 10 Claims

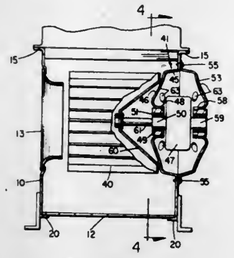


A free piston-type pump having two or more cylinders with each cylinder being connected to a chamber and a free piston being reciprocatingly received therein. Each chamber is connected to a common inlet and outlet manifold. A fluid to be pumped is connected to the inlet manifold by a pump which provides a low positive pressure therein, while a high-pressure power fluid is connected to an opposite side of the piston so as to reciprocate the piston with great force in one direction while the fluid to be pumped reciprocates the piston with a lesser force in an opposite direction. Hydraulic flow control means connected to a plurality of such cylinders provides uninterrupted use of the power fluid by continuously downstroking one piston while another piston is on the upstroke.

3,619,088
SINGLE INLET CENTRIFUGAL FAN

Charles E. Bullock, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 17, 1970, Ser. No. 12,005
Int. Cl. F04b 17/00; F04d 17/08
U.S. Cl. 417—423 3 Claims

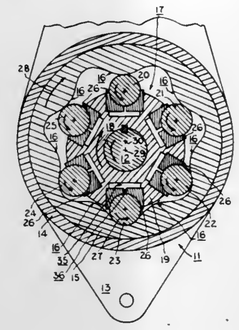


The invention relates to single inlet centrifugal blowers or fans. The fan is of less axial length than the width of the housing. The rear closed end wall of the housing confronting the backwall of the fan is provided with an inwardly extending cylindrical surface of substantially the same diameter as the fan and terminating in close spatial relation to the backwall of the fan. The cylindrical surface may be formed integral with the closed housing wall, or as a separate piece attached to the housing wall, or as part of the motor mount. The cylindrical surface serves to direct secondary rotational airflow from the space or cavity between the fan backplate and the rear wall of the housing.

3,619,089
FLUID-PRESSURE DEVICE

Michel A. Pierrat, Andover, Mass., assignor to Automatic Radio Mfg. Co., Inc., Melrose, Mass.

Filed Mar. 13, 1970, Ser. No. 19,315
Int. Cl. F01c 1/10; F03c 3/00; F04c 1/06
U.S. Cl. 417—440 16 Claims

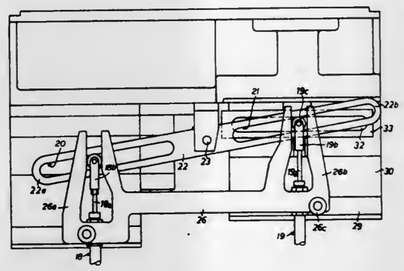


A fluid-pressure device, operated as a pump, motor, or the like, and including cooperating inner and outer gear portions which are angularly movable in relation to one another, is caused to make tight line-contact sealing for entrapped fluid, by way of a plurality of pressure-actuated sealing rollers which exhibit only low levels of friction confined to limited sealing intervals during rotational cycles. In a fluid pump construction, based in part upon a known design in which the inner and outer gear portions have different numbers of teeth and in which the resulting tooth contacts function to prevent fluid leakage between spaced teeth, the outwardly projecting teeth of the inner gear portion are formed by cylindrical rollers radially pressurized into tight rolling line contact with surfaces of the surrounding internally toothed gear portion at selected intervals as the result of commutator-type valving of the fluid-pressures developed by the pump. Manufacturing tolerances are relatively noncritical, because of the dynamic operations of the roller teeth, and the outer gear portion, rollers, and pressure-applying inner gear support structure for the rollers, all possess axial symmetries which enable them to be manufactured conveniently and economically by separations from elongated extrusions, and the like.

3,619,090
APPARATUS FOR REGULATING THE SPEEDS OF DRIVEN UNITS IN MACHINE TOOLS OR THE LIKE

Heinz Hartkopf, Solingen, Germany, assignor to Th. Kieserling & Albrecht Werkzeugmaschinenfabrik, Solingen, Germany

Filed Feb. 9, 1970, Ser. No. 9,785
Claims priority, application Germany, Feb. 11, 1969, P 19 06 651.4
Int. Cl. F04b 23/04, 41/06
U.S. Cl. 417—426 10 Claims

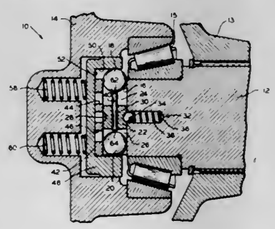


The rate of delivery of two axial piston pumps is adjustable by the cores of two flexible shafts each of which can change the inclination of a pivotable part in the respective pump. The cores carry followers movable in slots provided in the arms of a lever which is pivotable to thereby change the delivery of one or both pumps. The lever can be pivoted by a reciprocable holder having two forks which guide the followers and move them toward or away from the axis of the lever in response to displacement of the holder. This causes adjustment of one of the pumps because one of the followers is normally held against movement in a direction to move the corresponding core axially. The pumps can be adjusted simultaneously if the one follower is moved by a slide to thereby pivot the lever and cause the other follower to move the corresponding core lengthwise to the extent determined by selected distances between the axis of the lever and the followers.

3,619,091
FLUID PRESSURE DEVICE

Barry L. Frost, Jackson, Mich., assignor to Clark Equipment Company

Filed Mar. 27, 1970, Ser. No. 23,123
Int. Cl. F04b 19/02
U.S. Cl. 417—462 13 Claims

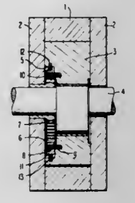


A fluid pressure device of the ball piston type wherein a locating rod is provided to define a minimum distance between opposing ball pistons, insuring that a ball piston will not stick in an inoperative position. A slidable dividing member may be releasably located in a central position between opposing fluid chambers so that the volume of each fluid chamber may remain constant during operation if required to do so by inlet or outlet fluid flow restrictions.

3,619,092
DEVICE FOR ATTACHING A PISTON GEAR IN A ROTARY PISTON ENGINE

Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Filed June 17, 1970, Ser. No. 46,853
Claims priority, application Japan, June 17, 1969, 44/57531
Int. Cl. F01c 1/02; F04c 1/02; F16h 57/00
U.S. Cl. 418—61 4 Claims

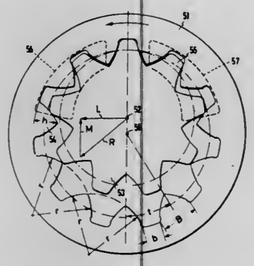


A device for attaching a piston gear in a rotary piston engine which has a rotary piston formed with a circular recess on an end face thereof, a piston gear mounted circumferentially and resiliently by spring pins within said circular recess and also having a step provided on the outer periphery thereof, and a snapring engaged with said step and inserted into a ring groove provided on the inner peripheral face of the recess to prevent the piston gear from moving in axial direction.

3,619,093
GEAR-TYPE HYDRAULIC MACHINE

Hermann Harle, Freiolsheim, and Siegfried Eisenmann, Neckarsulm, both of Germany, assignors to Furstlich Hohenzollernsche Huttenverwattung Laucherthal, Laucherthal, Hohenzollern, Germany

Filed Nov. 13, 1969, Ser. No. 876,370
Claims priority, application Germany, Nov. 18, 1968, P 18 09 445.6
Int. Cl. F01c *1/10, 19/08, 21/00*
U.S. Cl. 418—73 22 Claims

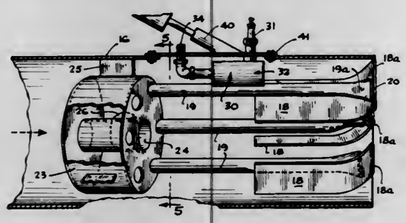


A gear-type hydraulic machine, wherein fluid is conveyed between gear teeth of two mating gearwheels, includes an internal gear rotatably mounted in the machine and a smaller inner external gear mounted in the machine on journals and meshing with the internal gear. The pressure and the suction sides formed between the cooperating gear teeth are separated exclusively by the mating or meshing teeth. The numbers of teeth of the two gears differ sufficiently that a substantial part of the gear peripheries run out of engagement to define a crescent-shaped zone between the gears. This crescent-shaped zone communicates, through suitably dimensioned leakage passages or gaps, with the respective pressure and suction sides of the machine in order for intermediate pressure to build up in the crescent-shaped zone. This intermediate pressure operates to reduce substantially the radial thrust applied to the smaller inner gear by the pressure on the pressure side.

3,619,094
BURNER AND METHOD FOR ODOR ELIMINATION

La Clede Lientz, Hollister, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Filed May 21, 1969, Ser. No. 835,284
Int. Cl. F23j *15/00*
U.S. Cl. 431—5 4 Claims

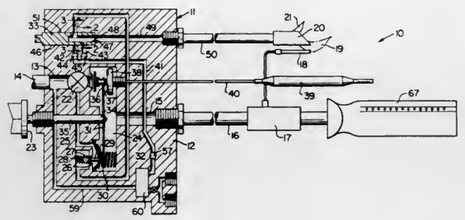


A burner and method which can substantially eliminate odorous materials or smoke from an airstream at a high volume. Air containing odorous materials is directed at a high rate and volume around a multiplicity of tubular members having flared or elongated passageways. The odorous air is directed around the ends of the passages by vanes and the fuel in the tubular members is combined therewith between the ends of the passages and the vanes to incinerate the odorous substances in the air a short distance from the vanes.

3,619,095
FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 18, 1970, Ser. No. 47,356
Int. Cl. F23q *9/08*
U.S. Cl. 431—42 10 Claims

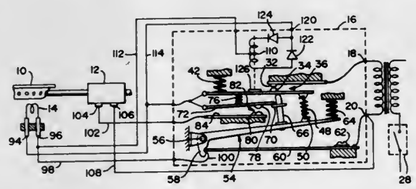


Control means having a first passage means for interconnecting a source of fuel to a pilot burner means to produce a small standby flame at the pilot burner means, the control means having second passage means for additionally interconnecting the source of fuel to the pilot burner means to produce a large heater flame at the pilot burner means whereby no fuel is adapted to be interconnected to a main burner means when only a small standby flame exists at the pilot burner means and the source of fuel is adapted to be interconnected to the main burner means when the large heater flame exists at the pilot burner means. A single adjusting means is provided in the passage means for adjusting the fuel flow rate therethrough by substantially infinitely adjusting the flow rate through one of the passages and adjusting the flow rate through the other passage means in substantially a stepped manner.

3,619,096
IGNITION PROVING SYSTEMS

Keith T. Krueger, Garden Grove, and Hugh J. Tyler, Santa Ana, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 10, 1969, Ser. No. 856,749
Int. Cl. F23n *5/02*
U.S. Cl. 431—66 28 Claims



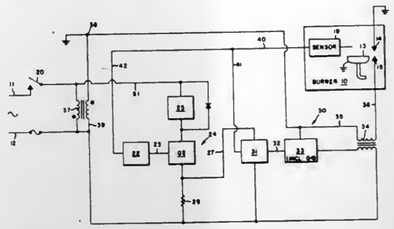
Ignition-proving systems utilizing a holding coil in parallel with an electric igniter, a heat expansible wire in series with the igniter, and first and second switches controlled by the coil and wire, respectively, to control the operation of a fuel valve whereby the system assumes a fail-safe state in response to any failures of components or electricity.

3,619,097
SAFETY TIMED BURNER CONTROL SYSTEM

Homer B. Clay, Minneapolis, Minn., and William Lloyd Hewitt, Harbor City, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 27, 1970, Ser. No. 14,956
Int. Cl. F23n *5/10*
U.S. Cl. 431—80 9 Claims

A burner control system adapted to be connected to a fuel burner wherein a safety timing circuit is used to assure ignition of the burner fuel and subsequent proper operation of the burner. The safety timer circuit utilizes a capacitive voltage divider network that initially is supplied with energy at start up of the system, and which is subsequently supplied

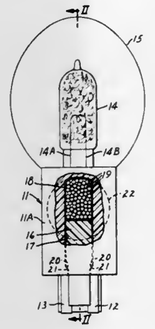


with energy from a flame rectification sensor in order to assure the ignition and continued operation through an ignition control means and a silicon-controlled spark-generating circuit. The sensing of flame also causes the shutdown of the silicon controlled spark ignition portion of the system.

3,619,098
PHOTOFLASH UNIT

Theodore F. Bolles, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1969, Ser. No. 873,198
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 5 Claims

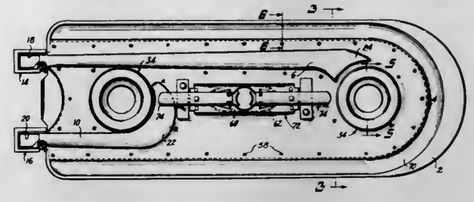


A disposable photoflash unit containing a reserve cell as a source of energy for ignition. The aqueous electrolyte of the reserve cell is contained in a multiplicity of small capsules and the cell is activated by rupturing a substantial portion of the capsules thereby releasing the electrolyte.

3,619,099
TOP BURNER STRUCTURE FOR GAS RANGES

Harold J. Moss, Charleston; Gene S. Sliger, Cleveland, and Jimmie L. Taylor, Cleveland, all of Tenn., assignors to Magic Chef, Inc., Cleveland, Tenn.

Filed Apr. 9, 1970, Ser. No. 27,025
Int. Cl. F24c *3/10*
U.S. Cl. 431—192 7 Claims

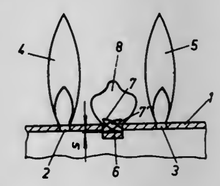


A pair of metal plates having face-to-face channels are secured together and sealed at their edges by ceramic enamel. The plates define manifold chambers communicating with the channels and an annular burner, having burner holes near its top, is secured to the plates at the manifold chamber. A depression in a side of the burner has openings for directing jets of gas fuel to mix near an igniter tube and to move upwardly toward the burner holes.

3,619,100
BURNER TIP FOR MULTIGAS BURNER

Helmut Schmidt Auf Altenstadt, Remscheid-Reinshagen, and Georg Heln, Huckeswagen, both of Germany, assignors to Joh. Vaillant KG, Remscheid, Berghauser Strasse, Germany

Filed Mar. 12, 1970, Ser. No. 18,995
Claims priority, application Germany, Apr. 5, 1969, P 19 17 509.8
Int. Cl. A01n *9/20*; A61k *27/00*
U.S. Cl. 431—349 8 Claims



The top of an enclosure defining a mixing chamber is formed of sheet metal having apertures therein through which the gas-air mixture freely flows to form the main flames. Adjacent the apertures, the sheet metal is slit and displaced inwardly in the form of a web defining parallel slots along its sides from which the mixture flows to form adhering flames.

CHEMICAL

3,619,101
COLORING LIVE HUMAN HAIR WITH WATER-SOLUBLE COLORED POLYMERS

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of application Ser. No. 227,542, Oct. 1, 1962, now abandoned. This application Jan. 28, 1966, Ser. No. 523,525
Claims priority, application France, Luxembourg, Luxembourg, Oct. 5, 1961, Sept. 6, 1965, May 13, 1965, 875,144; 49,441/65; 48,591/65
Int. Cl. A11k *7/12*
U.S. Cl. 8—10.1 27 Claims

The method of coloring human hair with compositions which contain a dissolved water-soluble film forming polymer that has chemically bonded dye groups. Hair dye compositions containing specific dissolved polymers that have lateral side chains chemically bonded to the polymer chain and a terminal dye group.

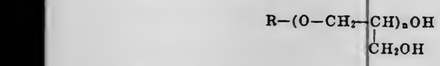
3,619,102
DYEING KERATINIC FIBERS WITH AQUEOUS SOLUTIONS OF DIRECT DYES AND ORGANIC SOLVENTS

Charles Zviak, Franconville, and Giuliana Ghilardi, Paris, both of France, assignors to L'Oreal, Paris, France

Filed June 7, 1968, Ser. No. 743,578
Claims priority, application Luxembourg, June 9, 1967, 53850/67
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 4 Claims

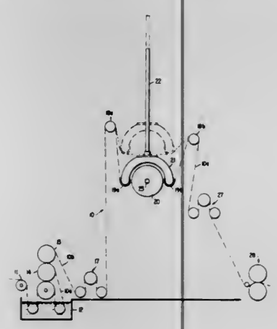
A composition for dyeing keratinic fibers and particularly human hair which comprises, in aqueous solution, at least

one direct dye having a poor affinity for the fiber at room temperature and an organic solvent which is inert to both the dye and the fiber, and corresponds to the formula



in which R is selected from the group consisting of an alkyl radical having three to eight carbon atoms, C_6H_5, (C_6H_5–CH_2), and C_6H_{11}, and n is a number between one and four inclusive. The invention also includes a method of making the composition.

3,619,103
PROCESS FOR PRODUCING HEAT-INDUCED EFFECTS ON TEXTILE FIBERS AND FABRICS
Sumner Henry Williams, Short Hills, N.J., and Joseph Reid Ellis, Easton, Pa., assignors to GAF Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 660,167, Aug. 3, 1967, now Patent No. 3,498,086, Continuation-in-part of application Ser. No. 614,520, Feb. 7, 1967, now abandoned. This application Mar. 25, 1969, Ser. No. 810,323
Int. Cl. D06p *5/00*
U.S. Cl. 8—14 **5 Claims**



A process for producing heat-induced effects on textiles, films or other suitable flexible substrata such as for example:

1. physical migration of dyes, chemicals or pigments;
2. heat fixation of dyes, chemicals or pigments;
3. development of dyes, chemicals or pigments by the reaction of two or more components, or by heat-induced transformation of an intermediate;
4. curing of creaseproofing agents, cross-linking agents, synthetic resins, natural gums, etc.;
5. discharging or destroying of dyes, pigments, etc.;
6. drying of said flexible substrata.

Localized and overall chemical reactions and physical changes on or in such substrata are obtained by application of heat, i.e. a temperature from about 500° F. to about 1,500° F., by contact of the flexible substrata with a heated surface within a short period of contact, e.g. a fraction of a minute, generally.

3,619,104
PROCESS FOR THE PRODUCTION OF LEVEL END-UNIFORM DYEINGS WITH WATER-SOLUBLE SULPHURIC ACID ESTERS OF LEUCO-VAT DYESTUFFS
Joseph Van Diest, Binningen, and Louis Frossard, Basel, both of Switzerland, assignors to Sandoz AG, Basel, Switzerland
Filed June 27, 1969, Ser. No. 837,332
Claims priority, application Switzerland, June 28, 1968, 9669/68
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 **4 Claims**

A process for the production of consistently level and end-uniform dyeings on textile materials selected from the group consisting of cotton and of mixtures of cotton and polyesters by padding with sulfuric acid esters of leuco-vat dyestuffs, wherein the padding is carried out in the presence of a polyglycol of the formula

$HO—(CHRCH_2O)_x—H$

in which R is a member selected from the group consisting of hydrogen and methyl and x is an integer, and which has an average molecular weight within the range of 1,000 to 20,000.

3,619,105
CELLULOSE ESTER FIBER WITH D,HEXYL SODIUM SULFOSUCCINATE THEREIN AND DYEING THEREOF
John R. Caldwell, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 319,990, Nov. 30, 1963, now Patent No. 3,432,472, dated Nov. 9, 1971. This application Sept. 22, 1967, Ser. No. 669,726. The portion of the term of the patent subsequent to Mar. 11, 1986, has been disclaimed and dedicated to the public.
Int. Cl. D06p *1/36*
U.S. Cl. 8—31 **8 Claims**

Cellulose ester compositions having dispersed therein a salt having the structure R-X-M where R is an organic radical; X is an acid radical containing phosphorus or sulfur and having a dissociation constant of about 1X10–3 or higher; and M is an ion derived from a metal or amine. The cellulose ester compositions so modified are easily dyed with cationic dyes to obtain bright, vivid color which has excellent fastness toward light, laundering and drycleaning. Also disclosed is a process for preparing a fiber dyed with cationic dyes.

3,619,106
PROCESS FOR DYEING KERATINIC FIBERS WITH WATER-SOLUBLE POLYSULFHYDRYL POLYMERS
Gregoire Kalopissis, Paris; Constantin Aretos, Issy-Les Moulineaux; Roger Charle, Soisy sur Montmorency, and Jean Gascon, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Continuation-in-part of application Ser. No. 441,311, Mar. 19, 1965, now abandoned , and a continuation-in-part of 565,371, July 15, 1966, now abandoned. This application Nov. 3, 1969, Ser. No. 873,627
Claims priority, application France, Luxembourg, June 19, 1964, Aug. 5, 1965; Mar. 23, 1964, Nov. 6, 1964, Jan. 7, 1965, Mar. 8, 1965, 978,830; 27,374; 45729/64; 47298/64; 47746/65; 45729/65
Int. Cl. D06p *1/00*
U.S. Cl. 8—31 **11 Claims**

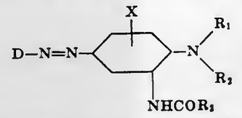
The process of dyeing keratinic fibers comprising first treating the fibers with an aqueous solution of water-soluble keratinic fiber reactive polysulfyhdryl polymer which has —SH groups that react with the keratinic fiber, said polymer being present in amounts of about 0.1–10 percent by weight of the aqueous solution then dyeing the keratinic fibers with a dye composition selected from the group consisting of reactive dyes and metallized monoazo acid dyes.

3,619,107
PROCESS FOR DYEING, PADDING AND PRINTING OF SYNTHETIC FIBERS WITH MONOAZO DYESTUFFS OF A DIAZOTIZED AMINOBENZENE AND AMINOPHENYLMETHYLPYRAZOLONE
Hans Schladetsch, Frankfurt/Main; Erich Brenneisen, Hofheim/Taunus; Helmut Lindner, Frankfurt/Main, and Heinz Schmidt, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed Apr. 2, 1969, Ser. No. 812,885
Claims priority, application Germany, Apr. 20, 1968, P 17 69 214.7
Int. Cl. D06p *1/02*; C09b *29/38*
U.S. Cl. 8—41 **3 Claims**

Process for the dyeing, padding and printing of fibrous materials consisting of or containing cellulose acetate, linear polyamide, polyurethane and polyester fibers by treating the said materials with water-insoluble monoazo dyestuffs obtained from the reaction of a diazotized aminobenzene with a 1-(3'- or 4'-amino-phenyl)-3-methyl-pyrazolone-(5).

3,619,108
POLYESTER FIBERS DYED WITH A WATER-INSOLUBLE AZO DYESTUFF
Richard Peter, Basel; Hans-Joerg Angliker, Basel, and Hans Wilhelm Liechti, Oberwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed June 10, 1969, Ser. No. 832,024
Claims priority, application Switzerland, June 11, 1968, 8661/68
Int. Cl. C09b *31/14*; D06p *1/02*
U.S. Cl. 8—41 C **12 Claims**

Polyester fibers dyed with a water-insoluble azo dyestuff of the formula



in which D represents the residue of a diazo component, R_1 and R_2 each represents an alkyl group that may be substituted and that may be interrupted by an oxygen atom, R_3 represents a six-membered heterocyclic residue and X represents a hydrogen atom or an alkyl, aryl, aryloxy, arylthio or alkyoxy group.

3,619,109
COBALT-PHTHALOCYANINE-POLYAMINE COMPLEXES FOR THE DYEING AND PRINTING OF TEXTILES
Heinrich Vollman, Leverkusen; Peter Mertens, Cologne-Marienburg; Johannes Eibl, Burscheid-Kaltenherberg, and Ulrich Altmann, Cologne-Duennwald, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 22, 1968, Ser. No. 754,709
Claims priority, application Germany, Aug. 31, 1967, F 53376
Int. Cl. D06p *3/60*
U.S. Cl. 8—54.2 **10 Claims**

A process for dyeing and printing textile materials made of natural or regenerated cellulose wherein an insoluble cobalt-phthalocyanine is solubilized by oxidizing to a hexavalent state and complexing with two molecules of an amine which complex contains an anion, is dissolved in a solvent and is applied to the textile materials which materials are subsequently treated to a heating treatment above 100° C. or to a treatment with reducing agents to convert the salts of cobalt-phthalocyanine to the original insoluble state.

3,619,110
PROCESS OF HYDROPHILIZATION, PURIFICATION AND BLEACHING OF CELLULOSE FIBERS
Roger Julien Borezee, La Celle Saint-Clous, France, assignor to Ugine Kahlmann, Paris, France
Filed Oct. 22, 1969, Ser. No. 868,639
Claims priority, application France, Oct. 22, 1968, 170,805
Int. Cl. D06l *3/06*
U.S. Cl. 8—109 **7 Claims**

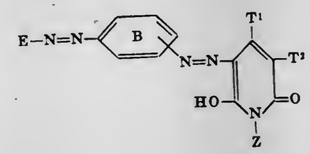
Cellulosic materials, such as cotton fibers or mixtures of cotton and other cellulosic or synthetic fibers, are hydrophilized, purified and bleached by treating the cellulosic materials with a small amount of chlorine dioxide over a short period of time and then bleaching the treated cellulosic material with a peroxidized compound.

3,619,111
DESIZING, SCOURING AND BLEACHING COTTON/POLYESTER FABRICS CONTAINING PORTIONS DYED WITH SENSITIVE DYESTUFFS
Marvin H. Rowe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 17, 1970, Ser. No. 12,124
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 **4 Claims**

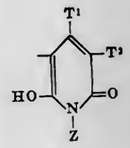
A method of desizing, scouring and bleaching greige cotton/polyester fabrics containing colored portions constructed of yarns dyed with an excess of sensitive dyestuffs without incurring color markoff upon, or bleeding into the white background portions of the fabric. The dry greige fabric is first singed then quenched with steam or a water mist under conditions preventing a water pickup exceeding 30 percent of the fabric weight. The fabric is then passed through a multidip-type rope washer used as a treating chamber in which the solution contained therein is a hot alkaline solution of surface active agent held at 160°–210° F. and is at a solution to fabric weight ratio of 20–40:1. The motion of the fabric through the solution and alternate dipping and squeezing action of the solution through the fabric acts to scour, desize and remove excess dyestuff therefrom. After then washing thoroughly with water, the fabric is finally saturated with a peroxymonosulfate solution buffered at a pH of 5 to 8.5, then heated in the saturated condition at a temperature of 100°–212$\pi\zeta$ f. to effect bleaching.

3,619,112
PROCESS FOR COLORING CELLULOSE ACETATE, POLYAMIDE AND POLYESTER TEXTILE MATERIALS WITH WATER-INSOLUBLE DISAZO DYESTUFFS
Alistair Howard Berrie, and Nigel Hughes, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Dec. 1, 1969, Ser. No. 881,310
Claims priority, application Great Britain, Dec. 9, 1968, 58279/68
Int. Cl. C09b *31/14*; D06p *1/18*
U.S. Cl. 8—41 R **3 Claims**

Process for coloring cellulose acetate, polyamide and polyester textile materials with water-insoluble disazo dyestuffs of the formula:



wherein E is a residue of a coupling component of the phenol, naphthol, 5-pyrazolone or acylacetarylamide series or a group of the formula:



T^1 and T_2 each independently represent a hydrogen atom, an optionally substituted hydrocarbon radical or a cyano, acyl, carboxylic acid ester or amide group, Z is a hydrogen atom or an optionally substituted hydrocarbon radical, and the benzene ring B can contain substituents.

3,619,113
FLAME-RETARDANT FINISH FOR CELLULOSIC TEXTILE MATERIALS
Richard Frederick Stockel, Bridgewater Township, Somerset County; Samuel James O'Brien, Dunellen, and Robert George Weyker, North Plainfield, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sept. 26, 1969, Ser. No. 861,481
Int. Cl. D06m *13/14, 13/28*; C09k *3/28*
U.S. Cl. 8—116.3 **9 Claims**

A flame-retardant finish for cellulosic textile materials, the method of applying it and the textile materials treated with the flame retardant. More particularly, the flame-retardant finish comprises an aqueous solution of tris(hydrox-

ymethyl)phosphine (THP) or tris(alkoxymethyl)phosphine (formula I), a methylolated nitrogenous cellulose reactant and, optionally, urea.

$P(CH_2OR)_3$

3,619,114
TREATMENT OF KERATINOUS SUBSTRATES

Giuseppe Anzuino, Vercelli, Italy, and Clarence Ralph Robbins, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,944
Int. Cl. D06m *3/00, 3/02, 13/00*
U.S. Cl. 8—127.5 **11 Claims**

A process for the modification of monomer pretreated keratinous substrates which comprises treating said substrate with a small but effective amount of a copper ammonium hydroxide solution.

3,619,115
COOL WATER LAUNDERING PROCESS

Francis L. Diehl, Wyoming, Ohio, and Norman R. Smith, Heidelberg-Rohrbach, Germany, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 581,720, Sept. 26, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 413,948, Nov. 25, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 163,041, Dec. 29, 1961, now abandoned. This application Sept. 8, 1967, Ser. No. 666,498
Int. Cl. D06f
U.S. Cl. 8—137 **5 Claims**

A process for laundering fabrics in 60° F.–90° F. Water containing .05–.5 percent of a detergent composition containing 4–35 percent of specific zwitterionic detergents and 8–90 percent of detergency builders which complex the calcium and magnesium ions in hard water.

3,619,116
METHOD FOR SCOURING WOOL

Neil Saville, Liversedge, England, assignor to Thomas Burnley & Sons Limited, Cleckheaton, Yorkshire, England

Filed Apr. 2, 1969, Ser. No. 812,813
Int. Cl. D01c *3/00*
U.S. Cl. 8—139.1 **3 Claims**

A process and plant for scouring wool, wherein the wool is treated with a dry cleaning agent, such as for instance trichloroethylene or perchlorethylene, and used cleaning agent is separated from the wool and washed with a mixture of water and alcohol, the cleaning agent containing wool, grease being then separated from the water and alcohol and recovered in a solvent recovery low pressure and low temperature distillation apparatus.

3,619,117
TREATMENT OF KERATINOUS SUBSTRATES

Giuseppe Anzuino, Vercelli, Italy, and Clarence Ralph Robbins, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,942
Int. Cl. D06m *3/00, 3/02, 13/00*
U.S. Cl. 8—127.5 **11 Claims**

A process for the modification of monomer-pretreated keratinous substrates which comprises treating the keratinous substrate with a small but effective amount of a compound selected from the group consisting of phenyl, mono- and diisocyanates and phenyl, mono- and di-thioisocyanates.

3,619,118
TREATMENT OF KERATINOUS SUBSTRATES

Giuseppe Anzuino, Vercelli, Italy, and Clarence Ralph Robbins, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,943
Int. Cl. D06m *3/00, 3/02, 13/00*
U.S. Cl. 8—127.5 **12 Claims**

A process for the modification of monomerpretreated-keratinous substrates which comprises treating the keratinous substrate with a small but effective amount of a compound comprising a mercury salt of an organic carboxylic acid.

3,619,119
PASTY SPOT-TREATING COMPOSITIONS FOR USE ON TEXTILES

Gunter Felletschin, Metzkausen; Josef Hartenstein, Hilden, Rhineland; Horst-Jurgen Krause, Duesseldorf-Holthausen, and Gunter Reese, Duesseldorf, all of Germany, assignors to Henkel & Cie G.m.b.H., Duesseldorf-Holthausen, Germany

Filed Dec. 11, 1968, Ser. No. 783,097
Claims priority, application Germany, Dec. 28, 1967, P 16 17 139.4
Int. Cl. B08b *3/00*
U.S. Cl. 8—137 **7 Claims**

A pasty spot-treating composition comprising (a) from 2 percent to 10 percent by weight of a primary alcohol mixture containing at least 70 percent of straight-chain C_{16} to C_{18} alcohols, ethoxylated with from 8 to 20 mols. of ethylene oxide, (b) from 0.5 percent to 5 percent by weight of a primary alcohol mixture containing at least 70 percent of straight-chain, saturated C_{12} to C_{14} fatty alcohols, ethoxylated with from 1 to 5 mols. of ethylene oxide, (c) from 15 to 30 percent by weight of an alcohol mixture of alcohols having 10 to 18 carbon atoms, containing at least 50 percent by weight of straight-chain alkanols, ethoxylated with from 1 to 4 mols. of ethylene oxide and sulfated, in the form of a salt selected from the group consisting of alkali metal and ammonium salts, (d) from 0.3 percent to 5 percent by weight of a hydrotropic compound selected from the group consisting of alkali metal and ammonium benzenesulfonates, alkali metal and ammonium toluenesulfonates and alkali metal and ammonium xylenesulfonates, and (e) at least 50 percent by weight of an aqueous solution media. The spot-treating compositions have a practically constant viscosity, are easily rubbed on textiles and have foam-suppressing properties.

3,619,120
DRYCLEANING PURIFIER

John R. Conlisk, and Clement A. Filliben, both of C/O Atlas Chemical Industries Inc., Wilmington, Del.

Filed Nov. 27, 1968, Ser. No. 779,647
Int. Cl. D06l *1/04*
U.S. Cl. 8—142 **6 Claims**

A purifier composition for drycleaning solvent is provided containing a major fraction of particles of activated carbon of intermediate size and a density equal to or greater than that of the drycleaning solvent in which used and a minor fraction of particulate material of substantially greater particle size, at least a part of which have a density less than that of drycleaning solvent used. Optionally, the minor fraction may also contain particles having a density greater than that of the drycleaning solvent used. The composition is adapted for use in the solvent systems of conventional drycleaning apparatus.

3,619,121
POLYACRYLONITRILE DYEING WITH N-ALKYLAMINOALKYLSULFONIC ACIDS AND BASIC DYES

Gunther Boehmke, Leverkusen,Grobendriesch, and Walter Hees, Koeln, Hoechenberg, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 9, 1969, Ser. No. 865,161
Claims priority, application Germany, Aug. 7, 1969, P 19 40 179.7
Int. Cl. D06p *5/04*
U.S. Cl. 8—169 **3 Claims**

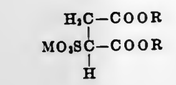
Polyacrylonitrile fibers are dyed with a basic dye in a solution of a long chain alkylaminoalkanesulfonate or long chain alkyl-, hydroxyalkyl-aminoalkanesulfonate and a nonionc emulsifier. N-Octadecenyl-, N, N - dihydroxyethylaminoethane sulfonate or N-Octyldecyl-, N-benyl-, N-Hydroxylethyl ethanesulfonate are used with a basic azo, oxazine or anthraquionone dye.

3,619,122
PROCESS FOR DYEING POLYAMIDE FIBERS

Anthony De Maria, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 26, 1968, Ser. No. 787,204
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 **6 Claims**

A process for producing barre free dyeing of polyamide fibers comprising dyeing said fibers with a composition comprising an acid dye and a dialkyl sulfosuccinate having the following formula:



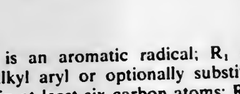
wherein R is an alkyl radical having from four to 18 carbon atoms and M is either an alkali metal, alkaline earth metal, ammonium, or a substituted ammonium radical.

3,619,123
PROCESS FOR DYEING FIBER MATERIALS OF SYNTHETIC POLYAMIDES WITH ACID DYESTUFFS

Klaus Walz, Leverkusen-Wiesdorf; Walter Hees, Cologne-Hoehenberg, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 29, 1968, Ser. No. 748,233
Claims priority, application Germany, Aug. 7, 1967, F 53164
Int. Cl. D06p *3/24*
U.S. Cl. 8—173 **8 Claims**

Process for dyeing synthetic polyamide fiber materials with acid dyestuff containing dye bath, the improvement comprising including in said dye bath, 0.5 to 2 percent by weight of the polyamide to be dyed, an aromatic sulfonic acid of the following formula:



wherein Ar is an aromatic radical; R_1 and R_2 are H, cycloalkyl, aralkyl aryl or optionally substituted alkyl and together contain at least six carbon atoms; R_3 is alkylene or aralkylene; n is 0 or 1; and Me is a cation.

3,619,124
PROCESS FOR THE DYEING OR PRINTING OF FIBROUS MATERIALS

Gerhard Weckler, Sulzbach, Taunus; Helmut Diery, Kelkheim, Taunus; Lorenz Heib, Hofheim, Taunus, and Franz Schon, Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Oct. 30, 1969, Ser. No. 872,744
Claims priority, application Switzerland, Nov. 4, 1968, 16405/68
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 **5 Claims**

The dyeing or printing of fibrous materials is improved by using a compound of the formula

$R_1—CHX—(CH_2—CH_2—O)_nR_2$

in which R_1 is alkyl of four to 20 carbon atoms, X is chlorine or bromine, n is a number of three to about 200 and R_2 is an aliphatic hydrocarbon radical of up to 20 carbon atoms, alkylphenyl with up to 12 carbon atoms in the alkyl moiety, phenyl, naphthyl, benzyl, the acyl residue of a fatty acid of up to 18 carbon atoms, benzoyl or the group of the formula $R_1—CHX—CH_2—CH_2$, as dispersing, levelling or after treating agent. The improvement consists in the combination of dispersing and levelling properties.

3,619,125
METHOD OF INHIBITING ACIDIC CORROSION WITH CYCLOHEXYLTHIOUREAS

Robert Alan Porwancher, Wilmette, and Karl Maurice Beck, Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

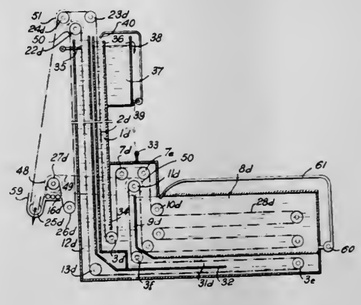
Filed Oct. 1, 1968, Ser. No. 764,319
Int. Cl. C23f *11/16*
U.S. Cl. 21—2.7 **1 Claim**

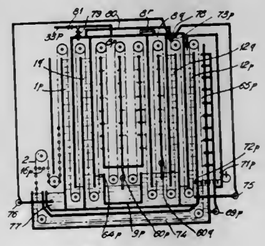
Inhibiting corrosion of metals in contact with aqueous solutions having a pH<7 is accomplished by the addition of from 0.2 to 0.0002 percent of 1,3-dicyclohexyl-2-thiourea or cyclohexyl-2-thiourea to the potentially corrosive solution.

3,619,126
METHOD OF CONTINUOUSLY HEAT-TREATING PRODUCTS IN SEALED CONTAINERS, AND APPARATUS FOR PERFORMING THE SAME

Pierre Carvallo, 24 Villa Dupont, Paris, 16eme, Seine, France

Filed Sept. 22, 1964, Ser. No. 398,240
Claims priority, application France, Oct. 1, 1963, 949,146
Int. Cl. A61l *1/00, 3/00; A23l 3/04*
U.S. Cl. 21—56 **11 Claims**





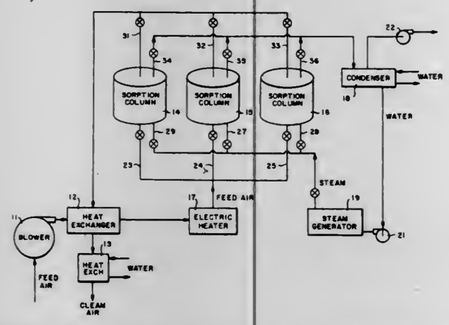
Method and apparatus for thermal treatment of products contained in sealed containers, in which the containers are conveyed along a path of travel comprising in succession at least one inlet hydrostatic pressure column, at least one treatment chamber under pressure and at least one outlet hydrostatic pressure column, the containers traveling in said chamber in contact with a liquid contained in said chamber and maintained to a predetermined treatment temperature, the liquid and its vapor in said chamber being subjected to an overpressure with a gaseous fluid, the pressure of which is constantly maintained at a value greater than the vapor pressure of said liquid at said treatment temperature, said overpressure being balanced by said hydrostatic columns.

3,619,127
METHOD OF PURIFYING AUTOMOTIVE EXHAUST GASES
Robert H. Hass, Fullerton, and Rowland C. Hansford, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Sept. 22, 1966, Ser. No. 581,175
Int. Cl. B01d *53/34*; B01j *11/08*
U.S. Cl. 23—2 E 4 Claims
Dilute combustible gases such as automobile exhaust gases, are oxidized by contacting the same at elevated temperatures with a catalyst comprising a minor proportion of a group VIII noble metal and a minor proportion of a group VIB metal, supported on a carrier such as alumina.

3,619,128
METHOD FOR PROCESSING RARE EARTH FLUOROCARBONATE ORES
Richard L. Angstadt, Armonk, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Dec. 5, 1968, Ser. No. 781,607
Int. Cl. C22b *59/00*
U.S. Cl. 23—18 1 Claim
Rare earth fluorocarbonate ore is processed by digesting the ore in concentrated aqueous alkaline solution at a temperature of between about 100° C. and about 150° C. followed by separating the rare earth mineral values from the digestion solution in the form of rare earth hydrous oxides. The hydrous oxides can be processed further by roasting so as to facilitate removal of the noncerium oxides from the cerium values by a leaching process.

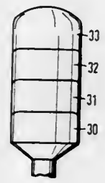
3,619,129
PROCESS FOR THE MANUFACTURE OF ANHYDROUS REFRACTORY METAL IODIDES
Vincent Chiola, and Clarence D. Vanderpool, both of Towanda, Pa., assignors to Sylvania Electric Products, Inc.
Filed Jan. 13, 1970, Ser. No. 2,645
Int. Cl. C01g *35/00*, *39/00*, *41/00*
U.S. Cl. 23—22 8 Claims
Anhydrous refractory metal iodides can be prepared by reacting an alkyl iodide and a refractory metal chloride under controlled temperature conditions. After digesting for at least about 5 minutes, the refractory metal iodide is isolated and dried under a nonoxidizing atmosphere.

3,619,130
METHOD OF REMOVING CARBON DIOXIDE FROM GASEOUS MIXTURES
Frank J. Ventriglio, Annapolis; David M. Zall, Annapolis; Cyril J. Stockhausen, Annapolis, and Donald R. Decker, Jr., Baltimore, all of Md.
Filed Aug. 27, 1968, Ser. No. 755,548
Int. Cl. B01d *53/00*, *53/16*
U.S. Cl. 23—25 6 Claims



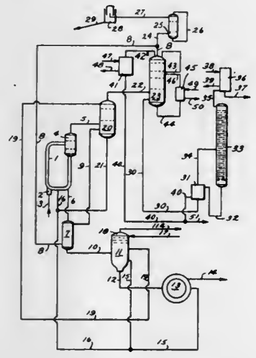
Method for removing CO_2 from air by passing said air through said sorbent material made by treating molecular sieve-type zeolite with aqueous solution of any alkali carbonate. The sorbent material may be regenerated repeatedly by passing either heated air or superheated steam therethrough.

3,619,131
METHOD OF PRODUCING STOICHIOMETRIC MG-AL SPINEL CRYSTALS FOR INTEGRATED CIRCUITS
Josef Grabmaier, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed May 6, 1969, Ser. No. 824,734
Claims priority, application Germany, May 6, 1968, P 17 67 394.8
Int. Cl. B01j *17/24*; C01f *7/02*; H01h *3/10*
U.S. Cl. 23—52 7 Claims



A method of producing Mg-Al spinel crystals of a stoichiometric composition free from precipitation and tension. The invention is characterized in that the carrier crystal is an alumina-rich spinel crystal. The crystal growing thereon is produced according to its length by changing the provided mixing ratio of MgO/Al_2O_3 to a stoichiometric composition of the desired spinel crystal. During the growth process, slight amounts of TiO_2 are added to the spinel powder supplied.

3,619,132
PROCESS FOR THE PRODUCTION OF ALKALI CYANIDES
Hans-Joachim Mann, Brilon; Klaus Simon, Rheinfelden; Robert Richter, Hochkirchen; Friedrich Bittner, Bad Soden; Heinrich Burkhardt, deceased, Bruhl (by Sigrid Burkhardt, heir), and Jacob Gensheimer, Frankfurt, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Oct. 28, 1968, Ser. No. 771,188
Claims priority, application Germany, Oct. 27, 1967, P 15 92 329.2
Int. Cl. C01c *3/08*; B01d *9/00*
U.S. Cl. 23—79 9 Claims



Alkali cyanides are prepared from carbon dioxide free impure hydrocyanic acid gases by reacting with aqueous alkali hydroxide, e.g. NaOH or KOH, in a first step at subatmospheric pressure to form the alkali cyanide and then the alkali cyanide is crystallized in a second step at a still lower pressure.

3,619,133
METHOD FOR PREPARING SODIUM AMMONIUM HYDROGEN PHOSPHATE
Kozo Fukuba, Nihama; Reiji Matsuda, Nihama; Syozo Fujioka, Shuso-Gun, Ehime-ken; Yasutomo Ogushi, Nihama, and Shigeru Nishibara, Nihama, all of Japan, assignors to Sumitomo Chemical Co., Ltd.
Filed Nov. 27, 1968, Ser. No. 779,373
Claims priority, application Japan, Dec. 6, 1967, 42/78572
Int. Cl. C01b *25/26*, *25/28*
U.S. Cl. 23—107 2 Claims
This invention relates to a process for producing sodium ammonium hydrogenphosphate ($NaNH_4HPO_4.4H_2O$) of a high purity and ammonium chloride or an ammonium chloride-containing solution from phosphoric acid, ammonia and sodium chloride or ammonium phosphate and sodium chloride.

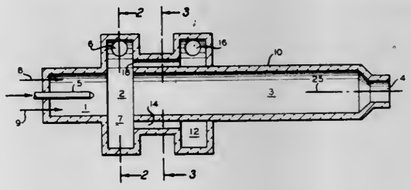
3,619,134
METHOD OF PRODUCING SMALL PARTICLE SIZE Z-14 ZEOLITE
Charles S. Park, deceased, late of Baltimore (by Gwen J. Burke, administratrix), and Philip K. Maher, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation of application Ser. No. 633,355, Apr. 21, 1967, now abandoned. This application Mar. 16, 1970, Ser. No. 18,793
Int. Cl. C01b *33/28*
U.S. Cl. 23—113 4 Claims
Method of producing crystalline Z-14 zeolite having a particle size in the range of 20 to 200 millimicrons, wherein a reaction mixture having controlled molar ratios of Na_2O, SiO_2, Al_2O_3 and H_2O is prepared at a low temperature, preferably within the range of −5° C. to +5° C. digested, and thereafter refluxed for a period of time to crystallize Z-14 zeolite having the desired particle size. The product is particularly suited, either in pure form or dispersed in a matrix, as a catalyst in the treatment of hydrocarbons.

3,619,135
PROCESS FOR GENERATING HYDROCARBON FREE RADICALS FROM CARBOXYLIC ACIDS AS TERTIARY ALCOHOLS
Alexander F. MacLean, Durham, N.H., assignor to Celanese Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 333,751, Dec. 26, 1967, now abandoned. This application Jan. 29, 1969, Ser. No. 795,031
Int. Cl. C01c *3/00*; C07c *121/18*, *9/06*
U.S. Cl. 23—151 19 Claims
Certain organic reactants which are free from aliphatic unsaturation and which are capable of yielding free radicals upon treatment with peroxides are oxidized, in the liquid phase in an aqueous medium, with certain peroxy compounds to form free-radical intermediates which are then allowed to react further with themselves or with other components of the reaction medium to form useful end products. Preferred features include the slow addition of the peroxy compound to the reaction zone and the use of certain metalic ions to improve yields. The process may be used for the reaction of HCN and carboxylic acids to produce nitriles; the conversion of tertiary alkanols to ketones; and the production of cyanogen from hydrogen cyanide.

3,619,136
PROCESS FOR PRODUCING PHOSPHORIC ACID
Everett N. Case, Flossmoor, Ill., assignor to Atlantic Richfield Company
Filed Nov. 12, 1968, Ser. No. 774,960
Int. Cl. C01b *25/18*, *25/22*
U.S. Cl. 23—165 22 Claims
A process for the production of phosphoric acid from phosphate rock comprising reacting the phosphate rock with an equilibrated phosphoric acid having a P_2O_5 concentration between about 20 to 50 percent in an attack stage at a temperature below about 180° F. to dissolve at least about 90 percent of the phosphate values in the rock and produce a monocalcium phosphate-phosphoric acid-water solution up to about 90 percent saturated with monocalcium phosphate and containing insoluble material and less than about 1 percent fluorine, the weight ratio of P_2O_5 in the acid to P_2O_5 in the rock feed being sufficient to dissolve the phosphate values in the rock and provide the desired solution and at least about 7:1, separating the insoluble material from the solution to produce a solution of monocalcium phosphate-phosphoric acid-water, reacting sulfuric acid with said solution to produce phosphoric acid and precipitate calcium sulfate, the sulfuric acid being added in an amount essentially stoichiometric with respect to the monocalcium phosphate in the solution, separating the calcium sulfate from the phosphoric acid solution, recycling the phosphoric acid solution to the attack stage to provide said equilibrated acid, and removing a portion of the phosphoric acid as product.

3,619,137
PRODUCTION OF IRON OXIDE PIGMENTS
Eric G. Ratcliffe, Easton, Pa., assignor to Pfizer Inc., New YOrk, N.Y.
Filed Jan. 16, 1969, Ser. No. 791,774
Int. Cl. C01g *49/02*; C22b *3/00*
U.S. Cl. 23—200 7 Claims
Pigment-grade ferric oxide is precipitated from a solution of a ferrous salt by aerating at ambient temperature while introducing substantially two equivalents of base at such rate as to maintain the pH between 5 and 6.

3,619,138
CARBON-BLACK PROCESS
Thomas J. Gunnell, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 23, 1969, Ser. No. 793,288
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 8 Claims

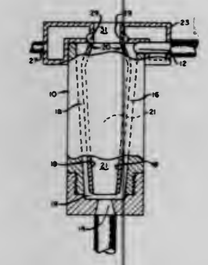


A process for the production of carbon-black by the pyrolytic decomposition of a hydrocarbon feed with hot combustion gases introduced through the periphery of the reactor and commingled with an augmenting gas introduced in a direction generally opposite to the axial flow of the hydrocarbon feed through the reactor.

3,619,139
MANUFACTURE OF CARBON FILAMENTS
Kenneth G. O. Dixon, Ashtead; Richard Malcolm Gill, Pinner, and Donald R. Lovell, London, all of England, assignors to Morganite Research & Development Limited, London, England
Filed Jan. 31, 1969, Ser. No. 795,718
Claims priority, application Great Britain, Feb. 2, 1968, 5353/68
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.1 4 Claims
The production of carbon filaments by the pyrolysis of filamentary material, such as filaments of cellulose and polymers or copolymers of acrylonitrile, wherein the heating of the filaments above 900° is conducted in the presence of a carbon gettering material in a protective atmosphere. The carbon gettering material is preferably provided by the car-

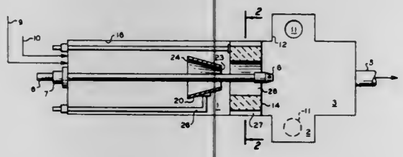
bonization of cellulosic paper in which the filaments are wrapped during the heating above 900° C.

3,619,140
PROCESS FOR MAKING CARBON BLACK
Allan C. Morgan, Winchester, and Merrill E. Jordan, Walpole, both of Mass., assignors to Cabot Corporation, Boston, Mass.
Filed Jan. 3, 1967, Ser. No. 606,665
Int. Cl. C09c 1/50
U.S. Cl. 23—209.4 **3 Claims**



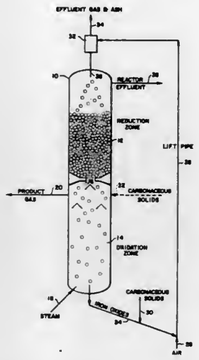
A process is provided for making high-quality carbon blacks at unusually good yields in a highly compact reaction space. The key steps of the process are the generation of a very hot combustion gas stream moving at very high speed in essentially plug flow by burning a hydrocarbon gas in oxygen in a compact combustion zone under conditions of very high heat release assuring the attainment of temperatures of over 3,000° F. and the transverse injection into said high-speed combustion stream from the periphery thereof of a plurality of individual streams of liquid hydrocarbon make, each of which is injected under sufficient pressure to cause same to enter said high-speed combustion stream at a linear velocity of more than about 100 feet per second. Preferably, a highly oxygen-enriched oxidant is used to burn the hydrocarbon gas.

3,619,141
CARBON BLACK PRODUCTION
Eulas W. Henderson, Bartlesville, Okla., and Glenn J. Forseth, Phillips, Tex., assignors to Phillips Petroleum Company
Filed Oct. 21, 1968, Ser. No. 769,281
Int. Cl. C09c 1/50
U.S. Cl. 23—209.4 **6 Claims**



Process for the production of carbon black by the pyrolytic decomposition of a hydrocarbon feed in a reactor having an axial zone, a combustion zone, and a carbon black formation zone in axial alignment wherein the gases in the axial zone are passed through a cone and/or choke and into the combustion zone and a portion of the gases downstream of the choke passed to the upstream side of the choke.

3,619,142
CONTINUOUS STEAM-IRON PROCESS
James L. Johnson, Oak Park; Frank C. Schora, Palatine, and Paul B. Tarman, Elmhurst, all of Ill., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Feb. 11, 1969, Ser. No. 798,334
Int. Cl. C01b 1/07, 1/02
U.S. Cl. 23—214 **8 Claims**



In a continuous steam-iron process wherein finely divided iron oxides are reduced in a reduction zone and the reduced iron oxides are reacted with steam in an oxidation zone to make hydrogen, the reduction of the iron oxides is effected by means of a continuously recirculating stream of hot, finely divided carbonaceous solids which are mixed with the iron oxides in a downwardly moving bed under reducing conditions, and heat is supplied to the reduction zone by the carbonaceous solids which are heated by partial combustion outside the reduction zone. In the preferred embodiment of the process, the mixture of reduced iron oxides and carbonaceous solids from the reduction zone is separated in a fluidized separation zone into a stream of reduced iron oxides and a stream of carbonaceous solids. The stream of reduced iron oxides is conducted to the oxidation zone where the reduced iron oxides fall through a fluidized bed of hydrocarbonaceous solids in countercurrent flow relationship to steam, whereby a product gas is produced which contains methane by virtue of the reaction of the hydrogen (produced by the steam-iron reaction) with the hydrocarbonaceous solids.

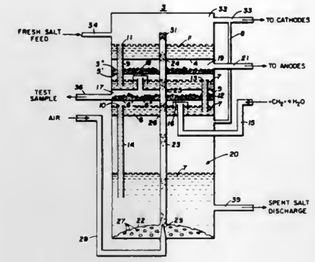
3,619,143
PROCESS FOR THE PURIFICATION OF SULFUR FROM PYRITE AND OTHER SULFUR-CONTAINING ORES
Angel Vian Ortuno; Segundo Jimenez Gomez, and Juan Javier Diaz Roncal, all of Madrid, Spain, assignors to Empresa Auxiliar De La Industria S. A., Madrid, Spain
Filed Apr. 22, 1969, Ser. No. 818,452
Claims priority, application Spain, Apr. 23, 1968, 353037
Int. Cl. C01b 17/06
U.S. Cl. 23—224 **17 Claims**

Arsenic sulfide is removed from sulfur by treatment with an acidic liquor containing an oxidizing agent, so that sulfuric acid and arsenic acid are formed and sulfur is obtained essentially pure. The process is very economical, because by using nitric acid in sulfuric acid, the nitrogen oxides formed may be oxidized with air, combined with water to regenerate nitric acid and the acidic liquor recycled.

3,619,144
APPARATUS FOR REFORMING HYDROCARBON FUELS TO PRODUCE HYDROGEN
Mohendra S. Bawa, and James K. Truitt, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 590,813, Oct. 31, 1966, Pat. No. 3,505,018.
Filed Sept. 15, 1969, Ser. No. 868,264
Int. Cl. C01b 1/16; H01m 27/20
U.S. Cl. 23—282 **5 Claims**

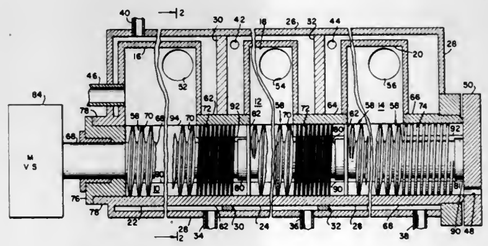
Apparatus for reforming hydrocarbon fuels by admixing a hydrocarbon and water to form a feedstream, contacting the

feedstream with an inorganic salt or mixture of inorganic salts in the molten state, and separating the gaseous effluent generated by this contact. After the hydrogen-containing effluent is removed from the molten salt, means are provided



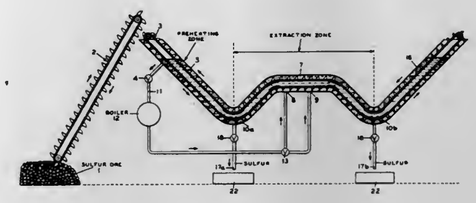
that the latter may be mixed with oxygen at a temperature and pressure sufficient to permit combustion between the oxygen and any residual carbon which may be retained in the salt, after which further means are provided to remove the gaseous reaction products of this combustion.

3,619,145
APPARATUS FOR POLYMERIZING LIQUIDS
Jack E. Crawford, Beaumont, Tex.; Ralph W. Edwards, Metuchen; Edward D. Henze, Bridgewater Township, Somerset County, and William C. L. Wu, East Brunswick, N.J., assignors to Mobil Oil Corporation
Division of Ser. No. 630,745, Apr. 13, 1967, Pat. No. 3,522,214.
Filed Nov. 28, 1969, Ser. No. 879,950
Int. Cl. C08f 1/98; B01j 1/00
U.S. Cl. 23—285 **2 Claims**



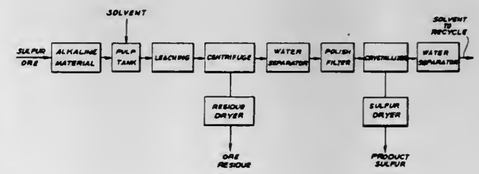
Apparatus for treating viscous liquids, as in the polymerization of polyester prepolymer, while the liquid is being transported through one or more reaction chambers in a closed vessel by a pair of closely intermeshed, horizontal, counterrotating screws extending across each chamber. The screws are partially immersed in the liquid and distribute it on their outwardly moving upper surfaces in layers thin enough for the elimination of gaseous products without excessive frothing under subatmospheric pressures in a vapor space extending over a substantial area of the surfaces of the screws. A small nip clearance between the intermeshing screw flights provides a wiping action that prevents accumulating material thereon and exposes fresh surfaces of the polymerizing liquid as well as regulating the thickness of the layer thereof carried upwardly by each screw even when great increases in viscosity occur during polymerization. Gastight seals between adjacent chambers are obtained by completely enclosing the intermeshing screws in close fitting barrels or tunnels and providing restricted orifices therein whereby the enclosed screw sections become completely filled with the polymerizing material.

3,619,146
SULFUR RECOVERY
Ruel Carlton Terry, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,130
Int. Cl. C01b 17/08
U.S. Cl. 23—308 S **4 Claims**



Sulfur is continuously extracted from sulfur bearing ore, found or brought to the surface, by conveying said ore through a conduit containing a downstream sulfur extraction section. After sulfur is extracted, the residual trailings are further conveyed upstream through a second conduit to an exit point.

3,619,147
SULFUR EXTRACTION IN PRESENCE OF AN ALKALINE MATERIAL AND INCLUDING WATER SEPARATION, SOLVENT RECYCLE AND DRY SEAL VAPOR LOCK
Carl K. Amano, Denver, and Clifford J. Lewis, Lakewood, both of Colo., assignors to Brameda Resources Limited, Vancouver, British Columbia, Canada
Filed June 12, 1969, Ser. No. 838,723
Int. Cl. B01d 9/02, 11/02; C01b 17/08
U.S. Cl. 23—299 **5 Claims**

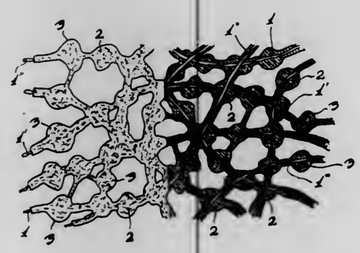


This invention relates to a process and apparatus wherein a solvent for dissolving and recovering sulfur from sulfur bearing ore or concentrate may be continuously recycled and reused without loss. The invention further involves a closed, sealed system so constructed as to prevent the loss of any solvent during the processing of the sulfur ore or concentrate while, nevertheless, obtaining pure sulfur from each cycle. The process and apparatus of the present invention provide means for initially leaching a crushed sulfur ore or concentrate and thereafter passing the resultant slurry to a separator for the separation of the leached residue from the sulfur saturated or rich solvent. Thereafter, water is separated from the sulfur saturated solvent and the solvent is fed into a crystallizer from which extremely pure elemental sulfur is obtained. After passing through the crystallizer, the elemental sulfur is separated from the solvent, the sulfur is dried, resulting in a pure end product and the solvent is recycled to the initial steps of the process. At each point in the processing operation, wherein vaporized solvent may be present, the solvent vapors are returned to a condenser and thereafter recycled as practically pure solvent to the system. The leached residue itself is recovered in such condition that whatever minerals are present are sulfur-free and such minerals are easily recoverable.

3,619,148
METALLURGICAL COKE
Thomas J. Wilde, Fullerton, Calif., assignor to Republic Carbon Products Company Inc., Chicago, Ill.
Division of Ser. No. 714,398, Mar. 4, 1968, Pat. No. 3,444,047, which is a continuation-in-part of application Ser. No. 547,683, Apr. 1, 1966, now pending, which is a continuation-in-part of application Ser. No. 329,090 Dec. 9, 1963. Filed Apr. 9, 1969, Ser. No. 814,706
Int. Cl. C10l *5/16*; **C21b** *5/00*
U.S. Cl. 44—23 **8 Claims**

Metallurgical coke is made from carbon particles by heating the particles to shrink them. Thereafter, the shrunk carbon particles are mixed with a carbonaceous binder and formed into lumps which are heated in a nonoxidizing atmosphere to drive off volatiles and carbonize the binder.

3,619,149
GRINDING CLOTH AND METHOD FOR THE PREPARATION THEREOF
Noboru Kitazawa, No. 4-10, 2-chome, Daitakubo, Urawa-shi, Saitama-ken, Japan
Filed Nov. 18, 1969, Ser. No. 877,771
Int. Cl. B24d *11/02*; **C08g** *51/12*
U.S. Cl. 51—294 **4 Claims**



The present invention relates to a grinding cloth of excellent grinding properties and process for the preparation thereof. The novel grinding cloth comprises preparing fiber filaments in such a manner e.g. by compressing them as to have spaces between them, thereby forming a fiber base. The said base is fixed in a matrix by means of a synthetic resin adhesive containing grinding particles. Globular crystals are formed on said matrix by spraying a mixture of said synthetic adhesives containing grinding particles and having a higher surface tension than said matrix.

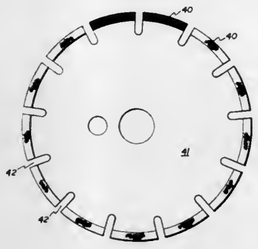
3,619,150
ABRASIVE ARTICLE AND NONLOADING COATING THEREFOR
Royden Carrington Rinker, Sidney, N.Y., and Joseph Michael Biglin, Manchester, Conn., assignors to The Borden Company, New York, N.Y.
Continuation of application Ser. No. 599,396, Dec. 6, 1966, now abandoned. This application Sept. 22, 1969, Ser. No. 860,122
Int. Cl. B24d *11/00*; **C08g** *51/12*
U.S. Cl. 51—295 **6 Claims**

A flexible coated abrasive article is formed having a nonloading coating applied over the size coating, said nonloading coating comprising a mixed resin composition of a thermosetting resin and either a thermoplastic or elastomeric resin and a water-dispersible metallic soap dispersed throughout said resin composition.

3,619,151
PHOSPHATE BONDED GRINDING WHEEL
Herbert D. Sheets, Jr., and Martin J. O'Hara, both of Columbus, Ohio, assignors to Landis Tool Company, Waynesboro, Pa.
Filed Oct. 16, 1968, Ser. No. 768,184
Int. Cl. B24d *3/02*
U.S. Cl. 51—307 **7 Claims**

An abrasive grit/phosphoric acid/fine alumina molding composition, containing at least 0.4 percent by weight of finely divided ferric oxide for cold-pressing and subsequent heat-curing to a body containing abrasive grit particles held together by a water-insoluble phosphate binder; preparation of the body through employment of said amount of the ferric oxide particles with the subsequent heat-curing including a precuring of cold-pressed molding composition at 170° F. to 250° F. for ¾ to 3 hours; and the abrasive body thereby produced.

3,619,152
CUTTING TOOL WITH BORON FILAMENT COMPOSITE
Stanley A. Yalof, Escondido, and Ray T. Williams, San Diego, both of Calif., assignors to Tetrahedron Associates, San Diego, Calif.
Filed Sept. 16, 1969, Ser. No. 858,265
Int. Cl. C04b *31/16*
U.S. Cl. 51—309 **6 Claims**



A cutting tool comprising a support body with a boron filament composite cutting edge.

ERRATA

For Classes 65—152 and 65—162 see:
Patent Nos. 3,619,158 and 3,619,159

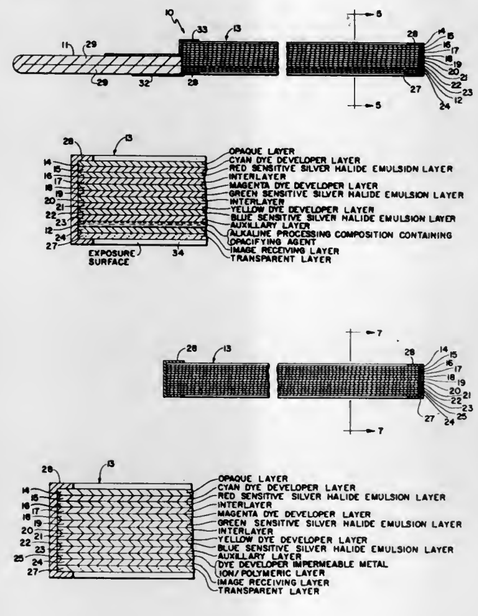
3,619,153
PHOTOCONDUCTIVE ELEMENT AND PROCESS EMPLOYING A SUBSTITUTED SILYLISOBUTYLETHYLENEDIAMINE-ADHESIVE INTERLAYER
Anthony F. Lipani, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 24, 1968, Ser. No. 731,743
Int. Cl. G03g *5/00*; **B05b** *1/06*; **B44d** *1/09*
U.S. Cl. 96—1.5 R **11 Claims**

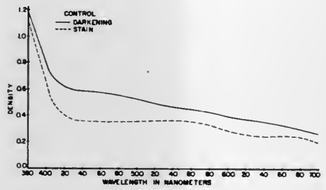
An electrophotographic plate comprising an electrically conductive substrate material overcoated with an interlayer material comprising a substituted silylisobutylethylenediamine, said interlayer, in turn, being coated with an overlayer comprising selenium and a method of preparing and process of using said plate are disclosed.

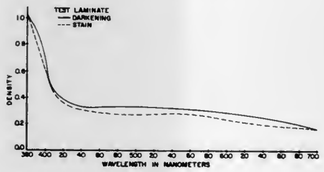
3,619,154
INFRARED SENSITIZATION OF PHOTOCONDUCTIVE COMPOSITIONS EMPLOYING CYANINE DYES
Giancarlo A. Cavagna, Adelphi; Asa Leifer, Beltsville; Fredric N. Miller, Laurel, and Frederick J. Vermillion, Jr., Wheaton, all of Md., assignors to Westvaco Corporation, New York, N.Y.
Filed July 30, 1968, Ser. No. 748,772
Int. Cl. G03g *5/00*; **G03c** *1/08*
U.S. Cl. 96—1.7 R **11 Claims**

Photoconductive compositions comprising zinc oxide are sensitized in the near infrared region of the spectrum by near infrared-sensitizing cyanine dyes. The dyes adsorb onto the surface of zinc oxide and render it photosensitive to wavelengths of light above 700 millimicrons.

3,619,155
PHOTOGRAPHIC PRODUCTS AND PROCESSES UTILIZING A POLYVALENT METAL ION-CROSS-LINKED POLYMERIC LAYER
Richard W. Young, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 1, 1970, Ser. No. 42,394
Int. Cl. G03c *5/54*, *7/00*
U.S. Cl. 96—3 **54 Claims**



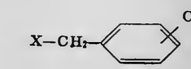




A photographic film unit adapted to be processed by passing said unit between a pair of juxtaposed pressure-applying members which includes a composite structure composed of a plurality of layers including a photosensitive silver halide emulsion layer having associated therewith a dye image-forming material which is processing composition soluble and diffusible as a function of exposure of the photosensitive silver halide emulsion layer to incident actinic radiation; a polymeric layer dyeable by said dye image-forming material; opacifying means adapted to be interposed intermediate the dyeable polymeric layer and next adjacent silver halide emulsion layer and associated dye image-forming material in a quantity adapted to mask dye image-forming material in a quantity adapted to mask dye image-forming material associated with the silver halide emulsion layer subsequent to photoexposure of the emulsion; a substantially continuous polymeric layer having associated therewith a metal ion; e.g., a metal ion cross-linked polymeric layer, adapted to be interposed intermediate the dyeable polymeric layer and next adjacent silver halide emulsion layer and associated dye image-forming material, subsequent to substantial dye image formation by transfer of dye image-forming material from association with the silver halide emulsion layer to the dyeable polymeric layer and to restrain transfer of dye image-forming material and other products of the development process which effect stability and/or quality of the image; and a rupturable container containing processing composition and adapted to discharge its contents between said dyeable polymeric layer and the photosensitive silver halide emulsion layer.

3,619,156
COMPETING COLOR DEVELOPER COMPOSITION
Atsuaki Arai; Mitsugu Tanaka; Haruhiko Iwano, and Isao Shimamura, all of Minami-Ashigara-Machi, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed June 20, 1969, Ser. No. 835,216
Claims priority, application Japan, June 20, 1968, 43/42840
Int. Cl. G03c *7/16*, *7/00*
U.S. Cl. 96—22 **18 Claims**

A color developer composition comprising a primary aromatic amino developing agent, a color-forming coupler, an alkali, and a water-soluble competing developing agent having the formula:



wherein X and X′ each represents a p-hydroxyanilino group of which the benzene ring may further be substituted by a member selected from the class consisting of an alkyl group having from one to four carbon atoms, a hydroxyalkyl group having from one to four carbon atoms, an alkoxy group having from one to four carbon atoms and a halogen atom, and the X′–CH_2–group may be located at the o-, m- or p-position to the position of the X–CH_2–group.

An improved color reversal development of a multilayer, multicolor photographic element is also claimed, where the improvement comprises utilizing, in at least one color developer used in the process, a water-soluble competing developing agent as above described.

Further described is a composition for preparing a color developer solution comprising a primary aromatic amino developing agent and the water-soluble competing developing agent described above.

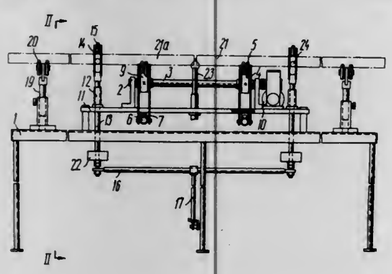
3,619,157
THERMO RECORDING
Eric Maria Brinckman, Mortsel, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Oct. 24, 1967, Ser. No. 677,759
Claims priority, application Great Britain, Oct. 24, 1966, 47,626/66
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **9 Claims**

A recording material composed of an opaque dispersion of nonpolymeric fatty or waxy material in a binder containing a pigment that absorbs light and converts it to heat becomes clear in areas exposed to light.

3,619,158
APPARATUS FOR WELDING GLASS RODS, PARTICULARLY TUBULAR GLASS RODS

Albert Musagitovich Akhunov, ulitsa Gogolya, 53, kv. 8, Bugulma; Raekhat Maxutov, ulitsa Tukaeva, 75a, kv. 35, Bugulma; Yakov Ferdorovich Gubarev, ulitsa Gogolya, 51, kv. 8, Bugulma; Mansur Abdullovich Zalyaliev, ulitsa Shevchenko, 53, kv. 43, Bugulma; Ilgiz Mullayanovich Sabirov, ulitsa Petrovskaya, 10, kv. 5, Bugulma, and Khalida Khatimovna Imamutdinova, ulitsa Kuibysheva, 32, kv. 15, Leninogorsk, all of U.S.S.R.

Filed Mar. 23, 1970, Ser. No. 21,752
Claims priority, application U.S.S.R., Mar. 31, 1969, 1,321,697
Int. Cl. C03b 29/04
U.S. Cl. 65—152 3 Claims

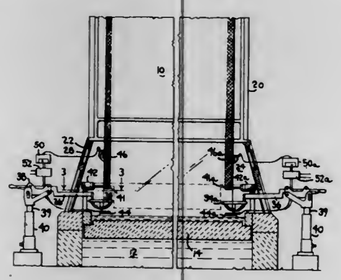


An apparatus for welding glass rods, particularly, glass rods of a hollow tubular shape, wherein the operation of reciprocating the rods being welded longitudinally, simultaneously with their rotation about the longitudinal axes thereof, is mechanized.

3,619,159
AUTOMATIC CONTROL FOR GLASS DRAWING PROCESS

Daniel A. Shirley, Mount Zion, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 641,879, May 29, 1967, now abandoned. This application June 30, 1970, Ser. No. 56,035
Int. Cl. C03b
U.S. Cl. 65—162 5 Claims

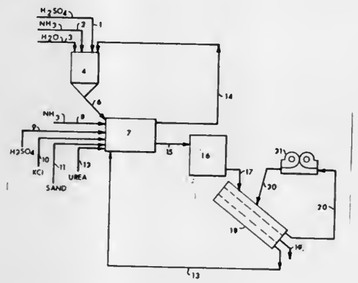


The width of a continuous sheet of glass is maintained substantially constant by automatically controlling the temperature of the edges of the sheet in the forming region. A controller, regulating heating and/or cooling means positioned in heat exchange relationship with an edge of the sheet receives signals from a radiant energy sensor responsive to changes in the lateral position and/or radiant energy emanating from an area of the edge, and regulates the thermal energy supplied to or removed from the edge of the sheet in a portion thereof that is of rapidly changing viscosity, i.e., i.e., between the meniscus and the point at which the glass has cooled to the top of its annealing range in accordance with the changes detected to maintain the temperature of the edge and the width of the sheet substantially constant.

3,619,160
PROCESS FOR GRANULATING X-O-O AND X-O-Y GRADES OF FERTILIZER

James E. Gabrielson, Mundelain, Ill., and Leonard Berkowitz, Berkeley Heights, N.J., assignors to Esso Research and Engineering Company

Filed June 17, 1968, Ser. No. 737,595
Int. Cl. C05c 9/00
U.S. Cl. 71—30 11 Claims



X-O-O grades of fertilizer (fertilizer containing substantially only nitrogen) normally consisting essentially of diammonium sulfate and X-O-Y grades of fertilizer (fertilizer containing nitrogen and potassium) composed essentially of diammonium sulfate and potassium chloride can be effectively granulated to a desirable commercial size in the presence of a small amount (5-12 wt. percent) of a urea or ammonium nitrate additive while maintaining the temperature in the granulator of between about 150° to 210° F.

3,619,161
PURIFICATION OF AMMONIATED SUPERPHOSPHORIC ACID FERTILIZER SOLUTIONS

Warren A. Knarr, and Tommie G. Edwards, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 31, 1968, Ser. No. 772,377
Int. Cl. C05b 1/06
U.S. Cl. 71—34 1 Claim

Fertilizer solutions derived from wet process phosphoric acid, such as ammoniated superphosphosphoric acid, are clarified of carbonaceous impurities by admixing with a small amount of a water-immiscible organic stratifying agent comprising an organic liquid of lower specific gravity than the solution being treated, allowing settling, and then separating an upper carbonaceous layer of impurities.

3,619,162
PRODUCTION OF AND APPLICATION TO SOIL SUSPENSION FERTILIZERS FROM NITRIC ACID SOLUTIONS OF PHOSPHATE ROCK

Herman Pottgiesser, and Karl Heinz Zapp, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Apr. 4, 1969, Ser. No. 813,749
Claims priority, application Germany, Apr. 5, 1968, P 17 67 140.8
Int. Cl. C05b 11/06, 11/12
U.S. Cl. 71—37 6 Claims

To prepare suspension fertilizers from nitric acid solutions of phosphate rock the solutions are neutralized in an already neutralized solution in a vessel by means of ammonia and/or an ammonium salt of carbonic or carbamic acid, a pH of from seven to 10 and a temperature of from 10° to 50° C. being maintained. During or immediately after the neutraliza-

tion, substances containing carbonate ions and/or forming carbonate ions in solution are introduced. The finished suspension should have a $CO_3^{(-)}$ content of at least 0.2 percent by weight.

3,619,163
METHOD OF REDUCING THE CAKING TENDENCY OF FERTILIZERS

Aage J. Alertsen, Haslum, Norway, assignor to Elektrokemisk A/S, Oslo, Norway

Filed Jan. 14, 1969, Ser. No. 791,138
Claims priority, application Norway, Jan. 19, 1968, 227/1968
Int. Cl. C05g 3/00
U.S. Cl. 71—64 E 2 Claims

Colloidal silicon dioxide-containing flue dust recovered from the smoke from metallurgical processes is used for coating of the grains of particulate fertilizers to reduce the tendency for the particles of the fertilizer to cake.

3,619,164
METHOD OF CONTROLLING GROWTH OF WOODY JUNGLE PLANTS

William A. Erby, Alburtis, and Robert A. Walde, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Continuation-in-part of application Ser. No. 541,096, Apr. 8, 1966. This application July 21, 1967, Ser. No. 654,989
Int. Cl. A01n 13/00
U.S. Cl. 71—70 4 Claims

Application of effective amounts of 2,3,5,5,5 pentachloro-4-keto pentenoic acid, along or in synergistic combination with arsenic acid or dimethyl arsenic acid to woody jungle plants in situ causes quick wilting of leaves and subsequent defoliation of the plants which action makes observation of the jungle floor possible over a long period of time which begins shortly after application with the onset of wilting.

3,619,165
ALKYNL CARBOXYLATES AND THEIR USE FOR KILLING MERISTEMATIC BUDS

Rupert A. Covey, Wolcott, and Charles E. Crittendon, Hamden, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Oct. 20, 1967, Ser. No. 676,728
Int. Cl. A01n 9/00,
U.S. Cl. 71—70 13 Claims

The invention concerns a composition containing an alkynyl carboxylate and its use for killing meristematic tissue on ornamental and agricultural plants.

3,619,166
METHOD OF INCREASING SUGAR CONTENT OF CROPS

Bruno Quebedeaux, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1969, Ser. No. 812,398
Int. Cl. A01n 9/36
U.S. Cl. 71—86 7 Claims

The sugar content of sugar-containing crops such as sugar cane, can be increased by applying to the crops an effective amount of carbamoylphosphonate such as ammonium ethyl carbamoylphosphonate from two to eight weeks prior to normally scheduled harvest.

3,619,167
HERBICIDAL COMPOSITIONS CONTAINING BIPYRIDYLIUM SALTS WITH REDUCED CORROSIVENESS TOWARD METALS

Gordon James Marrs, Bracknell, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 16, 1968, Ser. No. 762,350
Claims priority, application Great Britain, Sept. 27, 1967, 43,928/67
Int. Cl. A01n 9/22
U.S. Cl. 71—94 6 Claims

Herbicidal compositions of bipyridylium diquaternary salts and a dithiophosphorous acid derivative. Examples of such derivatives are the salts of alkyl esters of dithiophosphoric acid.

3,619,168
METHOD FOR KILLING UNDESIRABLE PLANT GROWTH

Kenneth T. Mecklenborg, and Kenneth H. Pettengill, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed July 24, 1967, Ser. No. 655,296
Int. Cl. A01n 9/24
U.S. Cl. 71—106 6 Claims

A post-emergence herbicidal composition is provided which comprises an emulsion containing water, a nonionic emulsifier, and an aliphatic, organic ester prepared from aliphatic monocarboxylic acids containing four to 22 carbon atoms and lower aliphatic alcohols containing one to 10 carbon atoms. The herbicides are effective in killing such weeds as mustard, foxtail, crabgrass and pigweed, and can be made selective so as to have no substantial adverse effect on certain desired crops such as beans and peanuts while being toxic to certain undesirable plants.

3,619,169
METHOD OF INCREASING THE RECOVERABLE SUGAR FROM SUGAR BEETS

Warren H. Zick, Pittsburgh, Pa., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Apr. 23, 1969, Ser. No. 818,828
Int. Cl. A01n 9/24
U.S. Cl. 71—107 7 Claims

This invention discloses a method of increasing the recoverable sugar from sugar beets which comprises contacting the beet plants with an effective amount of an alkyl ester of 2-methoxy-3,6-dichlorobenzoic acid.

3,619,170
COPPER INFILTRATING COMPOSITION FOR POROUS FERRUGINOUS PARTS

Ernest L. Fisher, Crown Pt., and Glen D. Kole, Hammond, both of Ind., assignors to SCM Corporation, Cleveland, Ohio

Filed July 24, 1969, Ser. No. 844,660
Int. Cl. B22f 1/00
U.S. Cl. 75—.5 R 10 Claims

Disclosed is an infiltrating composition for infiltrating iron compacts. The infiltrating composition is a conventional copper-based infiltrating powder containing a small amount of iron-chromium alloy as a release agent to prevent adhesion of the infiltrating slug residue to the infiltrated iron compact.

3,619,171
METHOD AND A MIXTURE FOR THE PREPARATION OF AN IRON MELT WITH A LOW SULPHUR CONTENT

Hermanus Bakkerus, Voorburg, and Bernardus J. J. van der Holst, Delft, both of Netherlands, assignors to Nederlandse Organistie Voor Toegepast-Natuurweten-Schappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer, The Hague, Netherlands

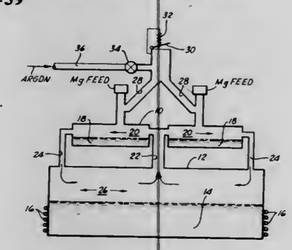
Filed Dec. 2, 1968, Ser. No. 780,555
Claims priority, application Netherlands, Dec. 5, 1967, 6716522 Germany, Nov. 6, 1968, P 18 07 332.0
Int. Cl. C21c 7/02
U.S. Cl. 75—55 18 Claims

(1) A method for the preparation of an iron melt with a low sulfur content wherein a mixture is added to the melt, the mixture comprising Na_2CO_3, calcium compounds and a quantity by weight of NaCl which is at least one-third and at most three times the quantity (by weight) of Na_2CO_3 while, of the total mixture, at least one-third consists of calcium compounds and (2) said mixture for adding to an iron melt.

3,619,172
PROCESS FOR FORMING SPHEROIDAL GRAPHITE IN HYPEREUTECTOID STEELS
Noel Lutgen, Sucy en Brie, and Pierre Karinthi, Champigny sur Marne, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude
Continuation of application Ser. No. 662,939, Aug. 24, 1967, now abandoned. This application Apr. 24, 1970, Ser. No. 29,751
Int. Cl. C22c *37/04*; C21c *1/10*
U.S. Cl. 75—59 4 Claims

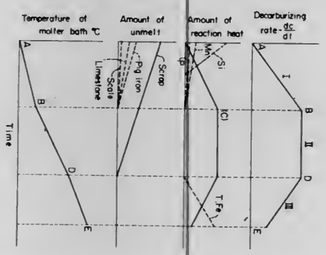
Process for improving the castability and the mechanical characteristics of iron-carbon alloys containing between 0.8 and 2.5% by weight of carbon by precipitating at least part of the carbon in excess of that of the eutectoid in the form of spheroidal graphite. This process comprises injecting into the molten iron alloy argon or other rare gas in the form of a multitude of very fine bubbles.

3,619,173
METHOD FOR THE CONTROLLED ADDITION OF VOLATILE TREATING MATERIALS
Norman A. D. Parlee, Los Altos Hills, and William E. Mahin, Oakland, both of Calif., assignors to Kaiser Industries, Inc., Oakland, Calif.
Filed Feb. 18, 1969, Ser. No. 800,074
Int. Cl. C21c *7/00*; C22b *9/00*
U.S. Cl. 75—59 7 Claims



A process for adding volatile treating materials to molten metals with control of the final concentration of the material in the metal to remove impurities therefrom, and to impart advantageous properties to the metal.

3,619,174
METHOD FOR CONTROLLING THE CARBON CONTENT IN AND/OR THE TEMPERATURE OF THE STEEL
Takehiko Fujii; Taiji Araki, and Katsukiyo Marukawa, all of Wakayama-shi, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 592,830, Nov. 8, 1966, now abandoned. This application June 6, 1969, Ser. No. 843,884
Claim priority, application Japan, Nov. 27, 1965, 40/73041
Int. Cl. C21c *5/32*
U.S. Cl. 75—60 2 Claims



On the basis the experimental data, constants are predetermined to establish the decarburizing rate of a ferrous metal bath in a refining vessel in three successive oxygen blowing periods constituting the refining cycle. The model provided by the three equations determining the decarburizing rates is then used to control the refining time so as to obtain a steel of the desired carbon content from the charge of a given carbon content.

3,619,175
REFINING OF MOLTEN METAL
Herbert Greenewald, Jr, Upper Arlington, Ohio, assignor to Berry Metal Company, Harmony, Pa.
Filed Nov. 18, 1969, Ser. No. 877,872
Int. Cl. C21c *5/28*; C22b *9/00*
U.S. Cl. 75—60 12 Claims

A method of refining molten metal, especially steel, utilizes improved apparatus for injecting gaseous treating media such as oxygen into the molten metal. The apparatus is provided with an internally-cooled nozzle that directs the gaseous medium into the molten bath and that is fabricated of an improved copper alloy to thereby significantly reduce the frequency of required apparatus replacement during the metallurgical processing.

3,619,176
ALUMINUM AMALGAM PREPARATION
Robert G. Briody, and Ephraim A. Cuevas, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sept. 23, 1969, Ser. No. 860,239
Int. Cl. C22b *21/00*
U.S. Cl. 75—68 R 9 Claims

A method of preparing aluminum amalgam or aluminum-mercury mixtures is described in which mercury vapors are passed through a bed of aluminum particles contained in a chamber. The particles are removed from the chamber after thorough contact with the mercury and washed in an inert, organic, oxygen-free liquid to remove excess mercury. The particles are described as useful as a catalyst in the manufacture of tetramethyl lead.

3,619,177
PROCESS FOR DEOXIDIZING COPPER WITH NATURAL GAS-AIR MIXTURE
Russell R. Beck; Charles W. Anderson, and Martin E. Messner, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed May 5, 1969, Ser. No. 821,800
Int. Cl. C22b *9/08, 15/00, 15/14*
U.S. Cl. 75—76 8 Claims

A process for reducing the oxygen content of molten copper. A mixture of natural gas and air is introduced under the surface of a bath of molten copper, wherein the natural gas reacts with the oxygen in the air to partially oxidize the hydrocarbon constituents of the natural gas to form a reducing gas mixture containing hydrogen and carbon monoxide. The reducing gas mixture reduces the oxygen contained in the copper. In a preferred embodiment, air is introduced over the surface of the bath to react with unreacted material emanating from the surface of the bath, forming a reducing gas mixture over the bath which aids in reducing the oxygen content of the copper and decreases the emission of pollutants into the atmosphere.

3,619,178
PROCESS FOR DIRECTLY REDUCING PLUTONIUM DIOXIDE TO PLUTONIUM
Rowland E. Felt, Richland, Wash., assignor to The United States of America as Represented by the United States Atomic Energy Commission.
Filed Nov. 14, 1969, Ser. No. 877,039
Int. Cl. C22b *61/04*
U.S. Cl. 75—84.1 4 Claims

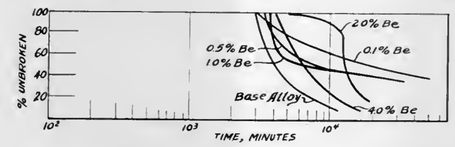
Plutonium dioxide is reduced to plutonium metal by adding the plutonium dioxide and calcium to a flux consisting of 5 to 20 weight percent calcium fluoride and 95 to 80 weight percent calcium chloride held at about 800° C. The plutonium dioxide and calcium may be added simultaneously

or sequentially; however, the weight of unreacted plutonium dioxide in the flux must never exceed 20 percent of the weight of the flux and no more than a slight excess of calcium may be present in the flux. The plutonium metal is removed to one vessel and the salt removed to another where it is contacted with calcium–30 weight percent zinc to remove residual plutonium therefrom.

3,619,179
AGE-HARDENING MARTENSITIC STEELS
Frank A. Malagari, Jr., Freeport, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Apr. 22, 1969, Ser. No. 818,445
Int. Cl. C22c *39/20*
U.S. Cl. 75—124 4 Claims

Age-hardening martensitic steel consisting essentially of 0.2% to 0.6% carbon, 4% to 6% chromium, 1% to 2% molybdenum, 0.2% to 0.8% vanadium, 0.25% to 3% aluminum and 2% to 7% nickel.

3,619,180
STRESS-CORROSION-RESISTANT ALLOY
Roger W. Staehle, Columbus, Ohio, and Juan Royuela, Madrid, Spain, assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 6, 1968, Ser. No. 781,802
Int. Cl. C22c *37/10, 39/02*
U.S. Cl. 75—124 7 Claims



An austenitic stainless alloy which is resistant to stress-corrosion cracking containing 18–23 atomic percent chromium, 12–18 atomic percent nickel, and 0.2–1.5 atomic percent beryllium, the amount of nitrogen being limited to not greater than 200 parts per million. The alloy may also include 0.5–3.0 atomic percent aluminum and/or 0.05–0.2 atomic percent carbon.

3,619,181
ALUMINUM SCANDIUM ALLOY
Lowell A. Willey, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 474,470, July 23, 1965, now abandoned. This application Oct. 29, 1968, Ser. No. 771,669
Int. Cl. C22c *21/00*; C22f *1/04*
U.S. Cl. 75—138 35 Claims

Aluminum and aluminum alloys of varying binary, ternary and multicomponent types having from 0.01 to about 5.0 percent by weight of scandium characterized by improved physical properties and methods of thermally treating the same.

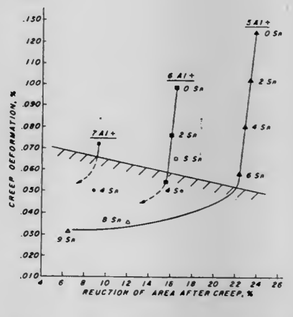
3,619,182
CAST NICKEL-BASE ALLOY
Clarence G. Bieber, Suffern, and John J. Galka, Tuxedo, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed May 31, 1968, Ser. No. 733,318The portion of the term of the patent subsequent to Aug. 5, 1986, has been disclaimed.
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 9 Claims

A cast alloy containing for example 0.2 percent carbon, 13 percent chromium, 10 percent cobalt, 2 percent molybdenum, 4 percent tungsten 4 percent tantalum 3 percent aluminum, 4.5 percent titanium, 0.02 percent boron, 0.1 percent zirconium, balance essentially nickel, has an unusual combination of properties at elevated temperatures including high stress-rupture strength, high resistance to the effects of oxidation and sulfidation, and structural stability.

3,619,183
NICKEL-BASE ALLOYS ADAPTABLE FOR USE AS STEAM TURBINE STRUCTURAL COMPONENTS
John H. Olson, Franklin Lakes, N.J., and Jere H. Brophy, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Mar. 21, 1968, Ser. No. 714,764
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 3 Claims

Nickel-base alloys containing correlated amounts of aluminum, titanium, columbium, molybdenum and tungsten, adaptable for use as structural components (notably steam turbine bolts) at temperatures on the order of 1000° F. Alloys, which also contain iron and usually carbon, afford specified minimum room and elevated temperature yield strengths and other desirable metallurgical characteristics.

3,619,184
BALANCED TITANIUM ALLOY
Howard B. Bomberger, Jr., Canfield, and Stanley R. Seagle, Warren, both of Ohio, assignors to Reactive Metals, Inc.
Filed Mar. 14, 1968, Ser. No. 713,214
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 4 Claims



A titanium alloy containing aluminum, zirconium, silicon, at least one stabilizer from the group consisting of molybdenum, columbium, tantalum, vanadium and tungsten and which may also contain tin, all balanced in accordance with prescribed relationships.

ERRATUM

For Class 95—44 C see:
Patent No. 3,619,202

3,619,185
PHOTOGRAPHIC PROCESSING COMPOSITIONS AND PROCESSES USING SAME
Sidney Kasman, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 29, 1968, Ser. No. 725,145
Int. Cl. G03c *5/30, 5/54*
U.S. Cl. 96—29 R 10 Claims

The shelf life of photographic developing compositions containing N-alkoxyalkyl substituted hydroxylamines is increased by addition of an oxyethylamino compound of the group consisting of triethanolamine, morpholine, N-ethylmorpholine, ethanol amine, 3-diethylamino-1,2-propanediol,N,N-diethylaminoethanol, tris-2-propanolamine, N,N-dihydroxyethylglycine and cellulose diethylaminoethyl ether.

3,619,186
PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS
Timothy F. Parsons, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 4, 1969, Ser. No. 796,560
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 19 Claims

A receiving layer for use in a photographic diffusion transfer process comprises a proteinaceous colloid binder, a silver precipitant, a water-soluble polyvinyl quaternary salt containing a five or six membered heterocyclic nucleus containing a quaternary nitrogen atom and an iodide. The layer can also contain a silver salt or complex for improving image density and/or a toning agent.

3,619,187
PROCESS FOR PREPARING COLORED PHOTORESISTS
Edward Cerwonka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Feb. 12, 1968, Ser. No. 704,521
Int. Cl. G03c *1/68*
U.S. Cl. 96—35.1 13 Claims

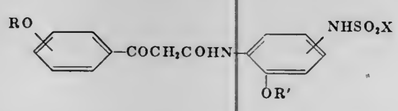
Photopolymerizable compositions containing a polymerizable ethylenically unsaturated compound, a ferric salt, a peroxy compound and an alpha-hydroxycarboxylic acid, and their use in preparing photoresists.

3,619,188
BLEACH-FIX PROCESSING
David Gerald Alcock, and Enzo Piccotti, both of Ilford, England, assignors to Ilford Limited, Ilford, England
Filed July 18, 1969, Ser. No. 843,183
Claims priority, application Great Britain, July 24, 1968, Apr. 14, 1969, 35,340/68, 18,934/69
Int. Cl. G03c *5/32, 7/00, 5/26*
U.S. Cl. 96—50 9 Claims

This application describes a bleach-fix process which comprises bleach-fixing photographic silver halide color material, after development of the silver image, in the presence of a water-soluble selenocyanate salt, selenourea, substituted selenourea or substituted selenouracil.

3,619,189
COLOR PHOTOGRAPHIC DEVELOPING PROCESS
Makoto Yoshida; Momotoshi Tsuda, and Isao Shimamura, all of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jan. 21, 1970, Ser. No. 4,660
Claims priority, application Japan, Jan. 22, 1969, 44/4579
Int. Cl. G03c *7/00*
U.S. Cl. 96—55 12 Claims

A color photographic developer and process utilizing same employing particular yellow couplers represented by the formula



wherein R and R′ may be the same or different and each represents an alkyl group having one to three carbon atoms and X represents an alkyl group, an aryl group, or a substituted aryl group.

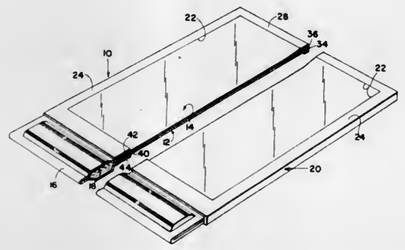
3,619,190
SILVER HALIDE PHOTOGRAPHIC COLOR MATERIAL CONTAINING FLUORINE SUBSTITUTED BENZOYLACETAMIDE COLOR COUPLERS
Marcel Hendrick Verbrugghe, Kontich, and Raymond Albert Roosen, S-Gravenwezel, both of Belgium, assignors to Gevaert-Agfa N. V., Mortsel, Belgium
Filed Feb. 16, 1970, Ser. No. 11,816
Claims priority, application Great Britain, Mar. 19, 1969, 14,476/69
Int. Cl. G03c *7/00, 1/40*
U.S. Cl. 96—55 6 Claims

Silver halide elements containing benzoylacetamide color couplers having a fluorine atom in the para-position of the benzoyl moiety.

3,619,191
DIAZO TYPE MATERIALS
Robert C. Desjarlais, South Hadley Falls, Mass., assignor to The Tecnifax Corporation, Holyoke, Mass.
Filed Sept. 13, 1967, Ser. No. 667,365
Int. Cl. G03c *1/60, 1/58, 1/54*
U.S. Cl. 96—75 39 Claims

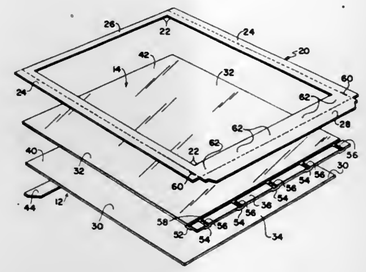
Light-sensitive diazo compositions containing light-sensitive diazonium derivatives of dialkoxy-substituted paraphenylene diamines, at least one coupling component for said diazonium derivatives, and at least one background discoloration inhibitor are disclosed.

3,619,192
PHOTOGRAPHIC FILM UNIT
Edwin H. Land, Cambridge, and Albert J. Bachelder, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 622,286, Mar. 10, 1967. This application Jan. 26, 1970, Ser. No. 5,799
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 14 Claims



A photographic film unit comprising all of the materials required to produce a photographic print including a photosensitive element, a transparent image-receiving element, a container of processing liquid and a binding element secured to the exterior margins of the photosensitive and image-receiving elements adjacent three sides of the area to be exposed and processed. The binding element secures the photosensitive and image-receiving elements to one another along three sides of the exposure area and secures the container to the elements adjacent the remaining side of the exposure area. The film unit is designed to be maintained in tact throughout and subsequent to exposure and processing in which a processing liquid is discharged from the container and distributed in a layer between the photosensitive and image-receiving elements over the exposed area to form a transfer image between the elements. The external binding sheet functions to control the thickness of the layer of liquid insuring sufficient liquid at the edges of the exposed area to provide for complete image formation and providing a white border for the finished print. The image-receiving element is embossed at the borders of the image-receiving area.

3,619,193
PHOTOGRAPHIC FILM UNIT
Frank W. Knight, Salem, N.H., assignor to Polaroid Corporation, Cambfidge, Mass.
Filed Dec. 30, 1968, Ser. No. 787,749
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 R 13 Claims



A self-developing film unit including a photosensitive sheet, a transparent second sheet, binding means for securing the sheets in face-to-face relation at the margins thereof with the trailing end section of the second sheet extending beyond the trailing edge of the photosensitive sheet, a container of processing liquid coupled with the sheets at one end of the film unit in position to release its contents for spreading between the sheets, and trapping means at the opposite end of the film unit for collecting and retaining excess processing liquid. The film unit is adapted to be retained intact following spreading of the processing liquid and the trapping means include narrow portions of the trailing end section embossed toward the photosensitive sheet to form longitudinal ribs providing liquid trapping spaces located between the trailing end section of the second sheet and the binding means.

3,619,194
NOVEL LIGHT-ABSORBING LAYERS FOR PHOTOGRAPHIC ELEMENTS CONTAINING SUBSTITUTED 1-AMINOPYRIDINIUM DYES, assignor to Gary F. Mitchell, Rochester, N.Y. and Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 832,847, June 12, 1969, now abandoned. This application Nov. 5, 1969, Ser. No. 874,389
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 25 Claims

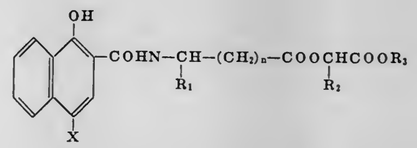
Novel light-absorbing photographic layers containing substituted 1-aminopyridinium dyes are described. These layers are useful as filter and antihalation layers in photographic elements.

3,619,195
PHOTOGRAPHIC COUPLER DISPERSIONS
John H. Van Campen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,836
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 19 Claims

Water-insoluble organic solvent-soluble polymers are advantageously mixed with hydrophobic photographic couplers either alone or together with an auxiliary solvent to prepare a coupler composition that is valuable for dispersing in aqueous hydrophilic colloid silver halide emulsion for color photographic elements. The novel dispersions are valuable for preparing photographic elements because they have good sensitometric characteristics, produce layers having improved rigidity even in thin layers and give improved stability to coupler and dyes formed from couplers, as well as provide other improved physical characteristics.

3,619,196
LIGHT-SENSITIVE COLOR-PHOTOGRAPHIC EMULSIONS
Masakuni Iwama; Isaburo Inoue; Yutaka Takei; Toshihiko Yamamoto, and Takayo Endo, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Oct. 22, 1969, Ser. No. 868,579
Claims priority, application Japan, Oct. 24, 1968, 43/77030
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 6 Claims

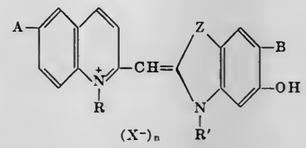
A light-sensitive silver halide color-photographic emulsion, characterized by containing a cyan coupler represented by the general formula



wherein R_1 is a hydrogen atom or a methyl group; R_2 is a hydrogen atom or an aliphatic hydrocarbon residue having one to 16 carbon atoms; R_3 is an aliphatic hydrocarbon residue having one to 18 carbon atoms; n is zero or 1; and X is a hydrogen atom, a halogen atom, or a substituted or unsubstituted phenylazo group.

3,619,197
OPTICALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS
Shiro Kimura; Yoshiyuki Nakazawa; Yasuharu Nakamura; Akira Sato; Masao Sawahara, and Katsuji Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed July 16, 1969, Ser. No. 842,361
Claims priority, application Japan, July 16, 1968, 43/50099
Int. Cl. G03c *1/10*
U.S. Cl. 96—132 4 Claims

A photographic silver halide emulsion containing a sensitizing dye represented by the formula:



wherein Z represents a member from the group consisting of a sulfur atom or a selenium atom; A represents a member from the group consisting of a hydrogen atom, a lower alkyl group or a hydroxyl group; B represents a member from the group consisting of a hydrogen atom or a lower alkyl group; R and R′ represent a member from the group consisting of a lower alkyl group or a substituted alkyl group, and at least one of R and R′ represent a member from the group consisting of a sulfoalkyl group or a carboxyalkyl group; X represents an anion; and n represents 0 or 1, n being 0 when the sensitizing dye is an intramolecular salt.

A photographic light-sensitive element comprising the above emulsion on a support is also claimed.

3,619,198
SILVER HALIDE EMULSIONS CONTAINING HYDROXY SUBSTITUTED ALICYCLIC COMPOUNDS

Nobuo Yamamoto; Akikazu Mikawa, and Minoru Sonoda, all of Kamagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 19, 1969, Ser. No. 834,880
Claims priority, application Japan, June 19, 1968, 43/42418
Int. Cl. G03c 1/28, 1/34
U.S. Cl. 96—107 **12 Claims**

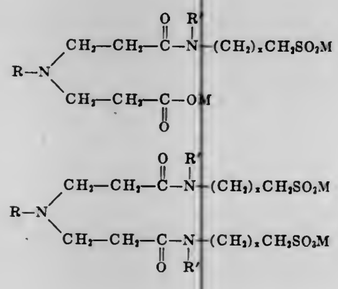
Silver halide photographic emulsions containing antifogging, sensitizing hydroxy-substituted alicyclic compounds.

3,619,199
PHOTOGRAPHIC COATING FORMULATION

E. Scudder Mackey, Binghamton, N.Y., and Fred S. Eiseman, Maplewood, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 31, 1968, Ser. No. 772,388
Int. Cl. G03c 1/38
U.S. Cl. 96—114.5 **7 Claims**

Novel amphoteric surfactants having the formulas:



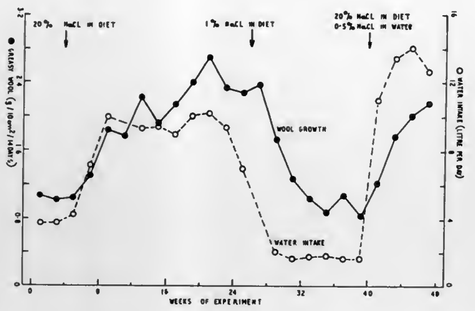
wherein R is an aliphatic hydrocarbon radical having from eight to 20 carbon atoms, R′ is selected from the group consisting of hydrogen, and alkyl radicals having from one to four carbon atoms, X is an integer of one–five and M is hydrogen, ammonium, nitrogen containing bases such as diethanolamine, triethanolamine, triethylamine, morpholine and piperidine, an alkali metal, and are used as wetting agents in gelatin coating compositions and photographic gelatin silver halide emulsions.

3,619,200
METHOD AND FOOD COMPOSITION FOR FEEDING RUMINANTS

Kenneth Adie Ferguson, West Pennant Hills, New South Wales, and David Henry Solomon, Glen Waverley, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Filed June 20, 1967, Ser. No. 647,522
Claims priority, application Australia, May 1, 1967, June 21, 1966, 21096/67, 7198/66
Int. Cl. A61k 17/00, 21/00, 27/00
U.S. Cl. 99—2 **19 Claims**

A feed or feed supplement for use in increasing the efficiency of protein production relative to feed intake in ruminants wherein a proteinaceous feed material of plant, animal or synthetic origin is rendered resistant to breakdown within

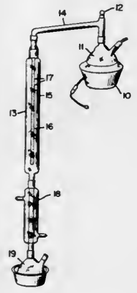


the rumen by chemical modification of the protein and/or the application of a protective coating.

3,619,201
PESTICIDE DECONTAMINATION OF ANIMAL FEED AND FOODS

Thomas E. Archer, Woodland, and Donald G. Crosby, Davis, both of Calif., assignors to The Regents of the University of California

Filed Oct. 24, 1967, Ser. No. 677,543
Int. Cl. A23k 1/00
U.S. Cl. 99—2 R **9 Claims**



Reduction and elimination of agricultural chemicals whose permanent presence is undesirable in plant materials. The process involves one or more steps including (1) chemical destruction of agricultural chemical residues by treatment with hot alkali-alkanol wash, (2) wash of plant materials with solvent vapor, and (3) rapid dehydration of plant materials having a relatively high water content.

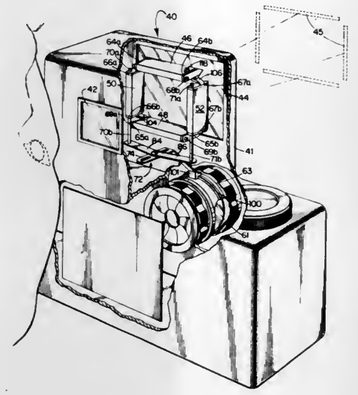
3,619,202
VARIABLE FRAME VIEWFINDER FOR PHOTOGRAPHIC CAMERA

Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 11, 1970, Ser. No. 45,417
Int. Cl. G03b 3/00
U.S. Cl. 95—44 C **12 Claims**

A photographic camera has a variable focus objective lens and a novel variable frame viewfinder coupled to the focus control mechanism for the objective lens. The viewfinder includes a plurality of discrete reticles respectively defining linear framing marks, and a corresponding plurality of anamorphic reticle imaging means, one associated with each of the reticles, for projecting virtual images of the respective-

ly associated framing marks into the viewed field. The reticles and associated reticle means are positioned in associated pairs oriented to establish respective reticle projection axes diverging into the field from a viewfinder viewing location such that the virtual images of the framing marks cooperate when viewed in composite to frame a portion of the field. The anamorphic reticle imaging means are each disclosed as



comprising a cylindrical lens having an axis of zero power aligned with a slitlike window defined by the reticle, each of the lenses being positioned at most a focal length away from the associated window. Frame varying means coupled to the focus control mechanism causes the framed portion of the scene to vary in accordance with a predetermined program so as to compensate for sighting parallax errors and field size changes.

3,619,203
RIDDLING BOTTLED WINES

Adolf L. Heck, and Allan J. Hemphill, both of Korbel Ranch, Guerneville, Calif.

Division of Ser. No. 550,264, May 10, 1966, Pat. No. 3,533,602.
Filed Oct. 2, 1969, Ser. No. 863,231
Int. Cl. C12g 1/00
U.S. Cl. 99—48 **6 Claims**

A method of riddling bottled wine comprising holding a bottle of wine in an inverted and inclined position, shifting said bottle to a second inclined position with a different side of the bottle underneath, holding the bottle in the second position sufficiently long for sediment in the bottle contents to settle the desired amount, and shifting said bottle back to its original position; said shifting of the bottle being preferably accomplished without rotation of the bottle, but by swinging said bottle between said positions through a substantially vertical arc with the bottle being inclined at approximately 20° from the vertical in each of said positions, the bottle also preferably being vibrated between said shifting steps at a vibration of say approximately 3,000 cycles per minute.

3,619,204
PREPARATION OF PARTICULATE MATTER FOR FREEZE DRYING

Saul Katz, Monsey, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Jan. 14, 1969, Ser. No. 791,156
Int. Cl. A23f 1/08
U.S. Cl. 99—71 **3 Claims**

A new method of preparing an extract for freeze drying has been discovered which is readily adaptable for a continuous or a batch freeze drying system. The extract is passed through a continuous crystallizer and the slush formed therein is extruded into a vacuum. The extruded ropes are frozen to below the eutectic point of the extract in a vacuum chamber via evaporative cooling. The extruded ropes tend to expand or foam in the vacuum chamber and the expansion can be used as a means of controlling product density.

3,619,205
PROCESS OF PREPARING A SLUSH ICE BEVERAGE CONCENTRATE

Daniel J. LeVan, Nanuet; Barry E. Homler, Ossining, and Peter M. Bosco, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 20, 1968, Ser. No. 777,486
Int. Cl. A23l 1/00; A23g 5/00
U.S. Cl. 99—78 **3 Claims**

Sucrose, flavor, a water dispersible gum, an edible polyhydric alcohol, an edible food acid and water are mixed and then frozen. The frozen mixture is ground and blended with a quantity of flaked ice. The blend is refrozen forming a spoonable frozen concentrate which is added to an equal portion of cold water, carbonated water, or milk to form a slush ice beverage.

3,619,206
MODIFIED PROTEIN

Mervyn Thomas Arthur Evans, Lawrence, and Laurence Ian Irons, St. Albans, both of England, assignors to Lever Brothers Company, New York, N.Y.

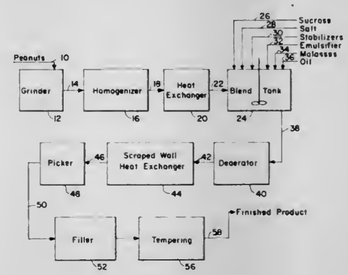
Filed Oct. 3, 1969, Ser. No. 863,709
Claims priority, application Great Britain, Oct. 11, 1968, 48,379/68
Int. Cl. A23l 1/32
U.S. Cl. 99—113 **11 Claims**

Egg yolk protein is acylated with the internal anhydride of a dicarboxylic acid to give an N-carboxyacylated egg yolk protein useful in preparing aqueous oil emulsions, such as salad dressings and mayonnaise, that are sterilizable by heat without coagulation.

3,619,207
PEANUT BUTTER CONTAINING HOMOGENIZED PEANUT PASTE

Joseph W. Dzurik, Green Township, Hamilton County; Eddy R. Hair, Colerain Township, Hamilton; Michael E. Hardy, Cincinnati, and Edward R. Purves, Forest Park, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 14, 1969, Ser. No. 850,049
Int. Cl. A23l 1/38
U.S. Cl. 99—128 **14 Claims**



A peanut paste ingredient for peanut butter has a maximum particle size of no more than 80 microns and has more than 50 percent of its particles in the 8–20 micron range. The best method for preparing this ingredient is by further size-reducing ground peanuts in a homogenizer utilizing particular pressures. The paste can contain more peanut skins than typical commercially available peanut butters contain and can be used in sweet peanut butter products without appearance or taste disadvantages.

3,619,208
PUDDING MIX COMPOSITION
Bernard J. Bahoshy; Robert R. Ferguson, and Joseph L. Hegadorn, all of Dover, Del., assignors to General Foods Corporation, White Plains, N.J.
Filed Aug. 21, 1968, Ser. No. 754,471
Int. Cl. A23l *1/14*
U.S. Cl. 99—139 **11 Claims**

A pudding mix composition includes, in combination with an amylaceous ingredient, a modified amylaceous ingredient. The preparation of a pudding therefrom is considerably simpler and is more tolerant of preparation errors.

3,619,209
PUDDING COMPOSITION CONTAINING LIPID ESTER
Joseph L. Hegadorn; Robert R. Ferguson, and Bernard J. Bahoshy, all of Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.
Filed Aug. 21, 1968, Ser. No. 754,470
Int. Cl. A23l *1/14*
U.S. Cl. 99—139 **12 Claims**

A pudding mix composition includes, in combination with an amylaceous ingredient, a lipid ester surface active agent. The preparation of a cooked pudding therefrom is considerably simpler and is more tolerant of recipe preparation errors in that the tendency of the pudding to stick to the pan and to scorch the pan during preparation is reduced or eliminated.

3,619,210
ORGANIC TRISULFIDE-CONTAINING CHOCOLATE FLAVOR COMPOSITIONS
Gunther M. Nakel, Springfield Township, Hamilton County, and George D. Hiler, Harrison Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 2, 1970, Ser. No. 400
Int. Cl. A23l *1/22*; **A23g** *1/00*
U.S. Cl. 99—140 R **10 Claims**

Novel compositions of matter possessing a chocolatelike flavor and aroma, consisting essentially of a blend of certain sulfides, particularly certain organic trisulfides pyrazines, phenols and aldehydes in the appropriate percentages, the ratio of sulfur to nonsulfur compounds preferably being about 1:3500. Examples are given for a variety of preferred food products in which such novel compositions can be used to impart a chocolatelike flavor and aroma or to enhance a chocolate flavor and aroma already present.

3,619,211
POTATO AND POTATO CHIP FLAVOR AND AROMA
Stephen S. Chang, East Brunswick, and Boyapalle Rami Reddy, Piscataway, both of N.J., assignors to Research Corporation, New York, N.Y.
Filed Aug. 9, 1968, Ser. No. 751,335
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 **5 Claims**

A flavor and aroma reminiscent of potato and potato chip is prepared by heating methionine or a mixture of methionine and a reducing sugar, such as glucose, in the presence of an oil, such as a cooking oil, e.g. corn oil, such as heating under deep fat frying conditions. The resulting oil can be used as a salad oil or as an ingredient of a salad dressing or soups, such as potato soup or tomato soup, or can be used as a frying oil or applied to food products since the the resulting oil has a potato and potato chip flavor and aroma. A potato and potato chip flavor and aroma can also be imparted to foods, including food of animal or vegetable origin, including sea food, such as snack foods prepared from starch or flour, by applying or incorporating methionine in such foods followed by heating, such as deep fat frying. Additionally, a potato chip of improved taste can be obtained by adding methionine to potato slices and then frying in oil or by employing in the manufacture of potato chips a cooking or deep fat frying oil containing methionine or an admixture of methionine and a reducing sugar, such as glucose.

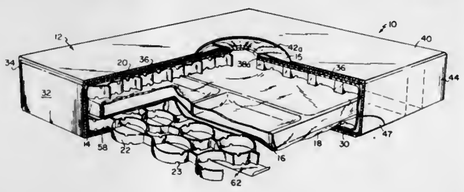
3,619,212
FOOD FLAVOR AND SPICE COMPOSITIONS AND THEIR PRODUCTION
Kazuo Mori, Osaka; Yasuo Yamamoto, Nara; Hideshi Noichi, Kyoto, and Yuichi Fukuda, Kyoto, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan
Filed Nov. 13, 1968, Ser. No. 775,522
Claims priority, application Japan, Dec. 29, 1967, 42/84848
Int. Cl. A23l *1/22, 1/26*
U.S. Cl. 99—140 R **7 Claims**

Process of manufacturing food flavor and spice compositions which includes absorbing flavors or spices onto an edible powder and suspending the resulting adsorbate in an edible liquid.

3,619,213
DARKENING-RESISTANT FRYING FAT
Donald J. Haynes, Northbrook, Ill., and Vernon E. Weis, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 22, 1969, Ser. No. 827,017
Int. Cl. A23d *5/00*
U.S. Cl. 99—163 **10 Claims**

A frying fat composition contains a minor proportion of particular silicon-containing additive to retard darkening in the frying fat over long periods of frying use. Pyrogenic silica utilized at a 0.05 to 0.7 weight percentage level is a preferred antidarkening additive.

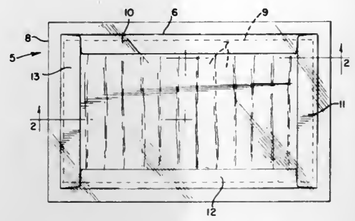
3,619,214
SELF-COOKING DISPOSABLE FOOD PACKAGES
Milton S. Cohen, Arlington, Mass., assignor to Battelle Development Corporation, Columbus, Ohio
Filed Dec. 16, 1968, Ser. No. 784,022
Int. Cl. B65d *81/34*
U.S. Cl. 99—171 H **23 Claims**



A food package comprising a container whose interior surface defines a substantially closed cavity having a vapor vent in its upper portion, a pair of electrodes mounted within the lower portion of the cavity in spaced-apart relationship, and a food compartment disposed within the cavity above the electrodes.

3,619,215
HEAT-AND-SERVE PACKAGES FOR PREFRIED BACON AND THE LIKE
John C. Bard, and Russell H. Maas, both of Madison, assignors to Oscar Mayer & Company, Inc., Chicago, Ill.
Filed Nov. 12, 1968, Ser. No. 775,000
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 **12 Claims**

Heat-and-serve packages of prefried bacon and the like include a disposable, heatable tray formed with foldable sides from sheet material capable of retaining melted fat, with slices of prefried bacon or the like laid flatwise or shingled on the bottom of the tray. The sides of the tray are folded downwardly and inwardly over the margins of the sliced bacon and the assembly is enclosed in a disposable film envelope being preferably evacuated and hermetically sealed. In use, the outer film or envelope is removed, the sides of the tray are folded up and the tray is inserted in an oven or placed on a hot plate whereby the bacon is heated and acquires the characteristic flavor of bacon fried or cooked in the usual manner. Single or multiple trays may be sealed in an envelope formed of barrier film. A single tray may be folded and multiple trays may be separable into smaller trays.



While the invention is particularly useful for sliced prefried bacon, other sliced or generally flat heat-and-serve items may constitute the contents such as prefried slices of Canadian bacon and flattened prefried hamburger and pork sausage patties.

3,619,216
ICE CREAM CONE FILLER SHEETS AND PACKAGE
David Weinstein, Baltimore, Md., assignor to Maryland Baking Co., Inc., Baltimore, Md.
Filed Aug. 1, 1969, Ser. No. 854,348
Int. Cl. B65b *23/00*
U.S. Cl. 99—180 **6 Claims**

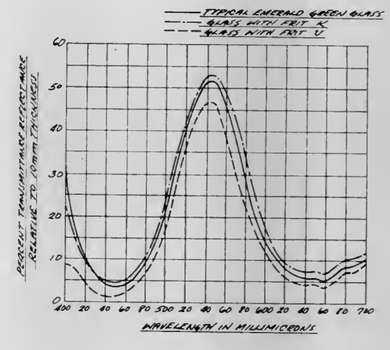


Filler sheets for packaging ice cream cones in cartons are corrugated and folded to provide upstanding panels which support succeeding sheets in alternating relation. Each filler sheet has rows and columns of pockets for holding individual ice cream cones. The sheets are so designed that the upper edges of the upstanding panels lie in a plane above the upper edges of the cones in the pockets.

3,619,217
DESENSITIZER FOR PHOTOLITHOGRAPHIC PRINTING PLATE
Fred William West, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 751,363, Aug. 9, 1968, now abandoned. This application Oct. 30, 1968, Ser. No. 772,025
Int. Cl. C09d *5/20*; **C09k** *3/00, 3/18*
U.S. Cl. 106—2 **2 Claims**

A desensitizer for photolithographic printing plates based on photopolymerizable layers comprises an aqueous acidified lithographic gum in which at least part of the acid is hydrofluoric acid and a minor amount of hydrogen peroxide.

3,619,218
GLASS COLORANT COMPOSITION
Erwin C. Hagedorn, Oregon, and Dallas P. Hall, Toledo, both of Ohio, assignors to Owens-Illinois, Inc.
Division of Ser. No. 579,971, Sept. 16, 1966, which is a continuation-in-part of Ser. No. 285,088, June 3, 1963, abandoned.
Filed Mar. 20, 1970, Ser. No. 21,397
Int. Cl. C03c *3/14, 3/08*
U.S. Cl. 106—47 **4 Claims**



Colorant-enriched frit glass compositions of the following ingredients are disclosed together with methods of producing colored glasses using same:

Ingredients	Percent by Weight		
	Composition 1	Composition 2	Composition 3
SiO_2	15–50	0–10	
Cr_2O_3	2–10	2–10	
R_2O	23–46		
Na_2O	X	21–30	10–40
K_2O	less than 25% X	0–7	
B_2O_3	10.5–47	49–70	35–70
$R_2O + B_2O_3$	44–74		
Fe_2O_3		0–10	
CoO		0–8	0–43
MnO		0–18	0–23
PbO, BaO & ZnO		0–15	
NiO			0–18
Fe_2O_3			0–18 at least 2%
ZnO			0–43
CuO			0–28

3,619,219
NUCLEAR RADIATION ABSORBING GLASS
Heinz Bromer, Hermannstein, near Wetzlar; Norbert Meinert, Wetzlar, and Hans-Jorgen Preuss, Wetzlar, all of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany
Filed Aug. 27, 1968, Ser. No. 755,550
Claims priority, application Germany, Aug. 29, 1967, L 57316
Int. Cl. C03c *3/30, 3/14*
U.S. Cl. 106—47 R **2 Claims**

In a glass composition containing boric acid as the glass former and further containing the oxides of beryllium and lithium for the purpose of slowing down and moderating nuclear radiation a certain percentage of tungsten oxide is introduced to the effect that the percentage of lithium oxide can then be increased to an amount which in pure $Li_2O/BeO/BO_3$-glasses has previously only been achieved with miniature melts of approximately 0.5 grams.

3,619,220
LOW TEMPERATURE FIRED, GLASS BONDED, DIELECTRIC CERAMIC BODY AND METHOD

Galeb H. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of application Ser. No. 626,245, Mar. 27, 1967, now abandoned. This application Sept. 26, 1968, Ser. No. 767,046
Int. Cl. C04b 33/00
U.S. Cl. 106—39 R 10 Claims

Combining a high temperature prefired ceramic powder with a low firing temperature ceramic powder; forming a slip or paste suspension of the powder combination, drying and firing the combination between the softening temperature of the low firing ceramic powder and the temperature where gravitational forces overcome the cohesive force between the molten low temperature powder and the high temperature powder. Preparing capacitors, resistors, inductors, etc. employing the low temperature fired ceramic body.

3,619,221
AMINE FORMATE ACCELERATOR ADDITIVES FOR PORTLAND CEMENT COMPOSITIONS

Theophilos G. Kossivas, Arlington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 25, 1970, Ser. No. 22,680
Int. Cl. C04b 13/26
U.S. Cl. 106—90 20 Claims

Water-soluble salts of amines and formic acid are added to Portland cement compositions (e.g. concrete) to accelerate the setting time thereof. The additives exhibit a particular effectiveness for offsetting the set-retardation effect of water-reducing, set-retarding agents, (e.g. lignosulfonates) employed in Portland cement compositions.

3,619,222
MODIFIED PROTEIN COMPOSITION AND METHOD OF FORMING INSOLUBLE SEALS

Ernest E. Werle, Riverside, and Thomas F. Mitchell, Arlington Heights, both of Ill., assignors to Darling & Company, Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 8,019
Int. Cl. C08h 15/02
U.S. Cl. 106—123 10 Claims

An adhesive composition having thermosetting and/or thermoplastic properties comprising a protein, such as animal glue, uniformly mixed with a lignosulfonate and polyhydric composition, such as sorbitol, glycerine or ethylene glycol, which can contain water as a carrier, and which on heating forms a water insoluble seal.

3,619,223
PROCESS OF SPINNING VISCOSE

Paul V. Brower, and John F. Fuzek, both of Elizabethton, Tenn., assignors to Beaunit Corporation, New York, N.Y.

Continuation of application Ser. No. 458,018, Sept. 23, 1954, now abandoned. This application June 14, 1965, Ser. No. 463,947
Int. Cl. C08b 21/22; D01f 3/12, 3/14
U.S. Cl. 106—165 20 Claims

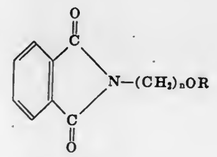
1. A process for the production of improved cellulosic products which comprises modifying a high maturity viscose by incorporating therein at least about 0.15 percent by weight of a polyalkylene glycol having an average molecular weight of about 300 to 7,500 and extruding while stretching the resultant viscose at a salt point of about 7.5 to 9 into an acid spin bath comprising sulfuric acid, sodium sulfate and at least 4 percent by weight of zinc sulfate, said percentage of said polyalkylene glycol being based upon the cellulose content of the viscose, and said amount of said polyalkylene glycol being sufficient to produce a regenerated cellulosic product having substantially increased dry strength over that obtained without said polyalkylene glycol, said dry strength being at least about 3.83 grams per denier.

3,619,224
HOT MELT ROAD-MARKING COMPOSITIONS

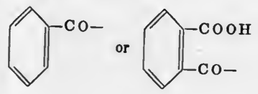
Wataru Inamoto, Sakai-shi; Seizo Kuroki, Osaka-shi; Kohtaro Tottori, Sakai-shi; Osamu Nagasawa, Sakai-shi, all of Japan, and Sakai Chemical Industry Company Limited, Sakai-shi, Osaka-fu, Japan

Filed July 22, 1969, Ser. No. 843,756
Claims priority, application Japan, July 24, 1968, 43/52707
Int. Cl. C08h 17/44
U.S. Cl. 106—240 9 Claims

A hot melt road-marking composition which comprises 15 to 40 weight percent of a thermoplastic binder resin having a softening point of 50° to 160° C., 10 to 30 weight percent of at least one species of phthalimide derivatives having the structural formula of



wherein R is hydrogen, CH_3CO-,



and n

is an integer of 1 or 2, and 30 to 75 weight percent of filler and pigment; said phthalimide derivative having a melting point of 90° to 120° C. and capable of dissolving said thermoplastic resin binder therein when fused but having substantially no compatibility with the resin binder at a room temperature.

3,619,225
LOW ADHESION SURFACE COATINGS COMPRISING IMIDES OR AMIDES OF FLUORENE SUCCINIC ACID (9)

Hans-Werner Demmig, and Kurt Rehnelt, both of Dusseldorf, Germany, assignors to Henkel & Cie., G.m.b.H., Dusseldorf-Halthausen, Germany

Continuation-in-part of application Ser. No. 712,380, Mar. 12, 1968, now Patent No. 3,538,054. This application Feb. 20, 1970, Ser. No. 13,169
Claims priority, application Germany, Mar. 15, 1967, H 62,138
Int. Cl. C07g 17/00
U.S. Cl. 106—287 5 Claims

Compositions for forming low adhesion surface coatings on cellulose-containing materials wherein the main coating agent is an imide or amide of fluorene succinic acid-(9) substituted on the nitrogen with aliphatic or cycloaliphatic radicals of five to 22 carbon atoms and the coated cellulose containing materials which are useful in pressure-sensitive adhesive tapes.

3,619,226
FLUID, NONCRYSTALLINE CHLOROPRENE COPOLYMERS

Chester Arthur Hargreaves, II, and Franklin Luckenbill Montgomery, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 16, 1967, Ser. No. 646,497
Int. Cl. C08h 17/26
U.S. Cl. 106—287 2 Claims

The present invention is directed to a novel copolymer of (1) chloroprene monomer and (2) a copolymerizable monomer, said copolymer being prepared by polymerizing an aqueous emulsion of said monomers to 90 to 100 percent monomer conversion in the presence of from about 0.2 to about 0.6 parts of sulfur and an amount of a dialkyl xanthogen disulfide equivalent to about 4 to about 15 parts diethyl xanthogen disulfide; parts are by weight per 100 parts of total monomers.

3,619,227
IRON OXIDE PIGMENTS

Frederick Roy Tomkinson, Saddleworth, near Oldham, England, assignor to Pfizer Inc., New York, N.Y.

Filed July 15, 1968, Ser. No. 744,703
Claims priority, application Great Britain, July 21, 1967, 33,607/67
Int. Cl. C09c 1/24
U.S. Cl. 106—304 12 Claims

Coloring matter deposited on iron oxide particles obtained by precipitation, produces stable light-fast pigments with enhanced tinctorial value. These composite pigments, which have a greatly diminished tendency to separate into their component colors, are useful in coloring concrete, bricks, plastics, textiles and paints.

3,619,228
METHOD OF PATCHING WOOD PRODUCTS USING A PARTICULAR POLYESTER BLEND

Earland G. Hallonquist, Nanaimo, British Columbia, and Manfred M. Honnige, Ceder, British Columbia, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed July 25, 1966, Ser. No. 567,359
Int. Cl. B32b 35/00; C08b 27/18, 27/04
U.S. Cl. 117—2 4 Claims

An improved plywood patch is obtained by a method of patching plywood comprising the steps of preparing a blend of (A) 45 to 72 weight percent of a mixture containing (1) a polymerizable linear polyester resin comprising reactants of (a) a polyhydric alcohol, (b) an adduct of hexahalocyclopentadiene and an ethylenically unsaturated polycarboxylic compound and (c) a compound selected from the group consisting of maleic anhydride and fumaric acid and (2) an ethylenically unsaturated monomer, (B) 0–10 weight percent of a modifying monomer selected from the group consisting of styrene, vinyl toluene, vinylacetate and α-methyl styrene and (C) 28 to 45 weight percent of an inert material selected from the group consisting of clay, whiting, asbestos, shell flour and wood flour, mixing a catalyst with said blend, applying the catalyzed blend to defects in a plywood surface and curing the blend for at least 10 minutes at a temperature of about 200° to 235° F.

3,619,229
REINFORCED POLYSTYRENE AND ITS COPOLYMERS

Robert C. Hartlein, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sept. 5, 1968, Ser. No. 757,749
Int. Cl. C03c 25/02
U.S. Cl. 117—4 10 Claims

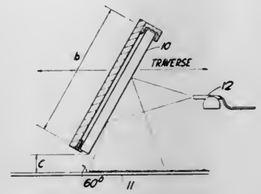
Polystyrene and copolymers thereof can be reinforced by glass fibers having a coating of silane coupling agent and a thermosetting polymer such as epoxy, phenolic, polyester, polyacrylate and melamine, to provide superior thermoplastic injection molding compositions.

3,619,230
PARTICULATE COATING METHOD

Carl Matthews, London, England, assignor to Matthews Refractories Limited, London, England

Continuation-in-part of application Ser. No. 580,716, Sept. 26, 1966, now abandoned. This application Mar. 23, 1970, Ser. No. 21,979
Claims priority, application Great Britain, Sept. 20, 1965, July 25, 1966; 40,037/65, 33,288/66
Int. Cl. B44c 1/06; B44f 9/04
U.S. Cl. 117—19 9 Claims

A method of producing a coated surface comprises the steps of grinding a natural stone to particle sizes of less than 1 mm., adjusting the proportions of particle sizes present to produce a mixture containing 20 to 30 percent by weight of particles of size less than 100 mu, applying at least one adhesive layer to the surface, depositing onto the adhesive layer to be secured thereby a layer of the said particle mixture to produce a substantially continuous adherent surface layer of

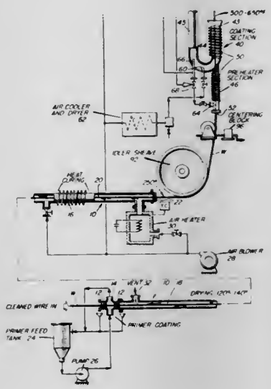


contiguous particles obscuring the adhesive from view, and removing surplus nonadherent particles.

3,619,231
CONTINUOUS METAL COATING PROCESS WITH FUSIBLE PULVERULENT MATERIALS

William B. Johnson, Chester, N.J., assignor to Anchor Post Products, Inc., Baltimore, Md.

Continuation of application Ser. No. 496,458, Oct. 15, 1965, now abandoned. This application June 16, 1969, Ser. No. 845,926
Int. Cl. B44d 1/092, 1/094, 1/42
U.S. Cl. 117—21 7 Claims



A method and apparatus for the coating of running strands on webs with a thermoplastic protective layer. The successive steps comprise the application of a primer and the air current drying and curing of same using inductive heating. While still hot, the strand or web is passed axially through a dense cylindrical bed of a powdered thermoplastic. This bed is constantly being cooled and replenished by recycling using air currents and directional jets. Vinyl polymer, epoxy-polyamide, and polyolefins such as polyethylene or polypropylene containing metals, metal oxides, metal hydroxides and metal carboxyl groups are proposed as coating materials.

3,619,232
METHOD OF FORMING A PINHOLE-FREE ALLOY LAYER ON THE SURFACE OF A BASE MADE OF ALUMINUM OR AN ALUMINUM ALLOY

Tadashi Nakano, 2-15-4, Kasumigaoka, and Keiichi Henmi, 1-12-9, Haruyoshi, both of Fukuoka, Japan

Filed Mar. 29, 1968, Ser. No. 717,333
Int. Cl. C23c 17/02
U.S. Cl. 117—22 4 Claims

A method of forming a pinhole-free alloy layer on the surface of a base made of aluminum or an aluminum alloy, said method being characterized by applying a thin film of

hydrocarbon on the surface of the base, spraying and depositing fine particles of a metal halide over said film, heating the coated base in a furnace to over the temperature at which a sublimation of aluminum halide takes place and then cooling it.

3,619,233
METHOD OF METALLIZING A CERAMIC MEMBER

Julius Carl Hipp, Elm Grove, and James Arthur Schmidt, Brookfield, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 6, 1969, Ser. No. 804,987
Int. Cl. B44d *1/16*; **C03c** *17/08*
U.S. Cl. 117—22 **11 Claims**

A thick, solderable metallic coating is provided on a ceramic member by applying a metallic composition comprised of at least 10 weight percent, preferably at least 30 weight percent, of powdered molybdenum trioxide, or tungsten trioxide, or mixtures thereof, and at least 30 weight percent of powdered gold, or copper, or silver, or alloys thereof, on the surface of the member and then firing the coated member in a wet reducing atmosphere at a temperature above the melting point of the solderable material to substantially reduce the molybdenum trioxide and/or tungsten trioxide to the metallic form. In one embodiment, the molybdenum trioxide and/or tungsten trioxide is applied to the surface of the ceramic member first and gold, copper, silver, or alloys thereof, is then applied over this first coating. In another embodiment, the metallic composition is applied to the ceramic member as an admixture.

3,619,234
PROCESS FOR THE OPTICAL BRIGHTENING OF FIBROUS MATERIALS OF SYNTHETIC POLYAMIDES OR CELLULOSE ESTERS

Joachim Weihsbach, Frankfurt/Main; Otto Smerz, Kelkheim/Taunus, and Gunter Rosch, Altenhain/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

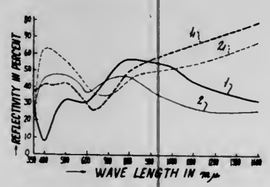
Filed Feb. 14, 1969, Ser. No. 799,531
Claims priority, application Germany, Mar. 2, 1968, P 17 19 355.4
Int. Cl. D06l *3/12*
U.S. Cl. 117—33.5 T **8 Claims**

Fibrous materials of synthetic polyamides or cellulose esters are capable of optical brightening according to the so-called thermosol process (padding at ambient temperature with subsequent fixation by a heat treatment) when fixing in the presence of an auxiliary consisting of a polyalkylene glycol and a fatty alcohol oxethylate. Optionally foam-depressing phosphoric acid alkyl esters and branched carboxylic acid esters are used additionally.

3,619,235
INFRARED REFLECTING GLASS AND METHOD FOR THE MANUFACTURE THEREOF

Shigemasa Furuuchi, and Takashi Mukaiyama, both of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 551,566, May 20, 1966, now abandoned. This application Oct. 6, 1969, Ser. No. 866,100
Claims priority, application Japan, May 24, 1965, 40/30164
Int. Cl. C03c *17/06*
U.S. Cl. 117—33.3 **5 Claims**



An infrared reflecting layer is deposited on a surface of a glass sheet by thermal decomposition. The deposited layer is one or more oxides of Ti, Ta, W, Zr, Th, Sn or Nb containing uniformly dispersed microscopically fine particles of metallic gold and/or metallic platinum. The film is mechanically strong and chemically stable.

3,619,236
METHOD FOR COATING LAYERS OF GELATIN AND A CARBOXYL-CONTAINING POLYMER ON A SUPPORT

Glen M. Dappen, and Grace E. Kane, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,843
Int. Cl. G03c *1/30*
U.S. Cl. 117—34 **7 Claims**

A hardened coating such as a photographic emulsion, containing gelatin and a water soluble carboxyl-containing polymer, is provided on a support by first blending the gelatin with a carbodiimide or isoxazolium slat hardener and subsequently blending that mixture with the carboxyl-containing polymer to provide a coating material which hardens sufficiently slowly to provide uniform coating.

3,619,237
COPY SHEET UTILIZING CERTAIN ACETOACETONITRILES

Albert W. Leclair, Hudson, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed Mar. 10, 1969, Ser. No. 805,839
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **4 Claims**

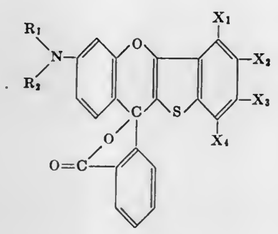
A thermographic copy sheet capable of being rendered thermographically inactive upon exposure to short wave length radiation is formed from acetoacetonitrile derivatives such as 2-phenyl acetoacetonitrile, and a material reactive with it to form a color, such as a silver slat. A dye sensitizer may be included to shift the spectral response.

3,619,238
PRESSURE SENSITIVE COPYING PAPER

Shiro Kimura; Teruo Kobayashi, and Sadao Ishige, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 15, 1969, Ser. No. 841,991
Claims priority, application Japan, July 15, 1968, 43/49816
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **2 Claims**

A pressure sensitive copying paper is prepared using a color former of the general formula



wherein R_1 and R_2 each represents an alkyl group having 1 to 5 carbon atoms or a benzyl group, and X_1, X_2, X_3 and X_4 each represents a hydrogen atom, a halogen atom, an alkoxyl group or a methyl group. The compound of the above general formula is incapsulated in solution and the thus formed microcapsules are applied to an upper paper. When this upper paper is superimposed over a lower paper coated with an electron acceptable solid acid such as an acid clay, in such a manner that the microcapsule coated surface is in direct contact with the acid coated surface, and pressure applied thereto, a deep reddish purple color is formed in those areas to which pressure has been applied. The color former

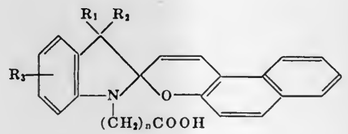
of the above general formula may also be admixed with yellow orange, or blue color formers to produce black images.

3,619,239
PRESSURE SENSITIVE COPYING PAPER

Chiaki Osada, and Hisatake Ono, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1969, Ser. No. 884,006
Claims priority, application Japan, Dec. 10, 1968, 43/90351
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **4 Claims**

A novel color forming material used in a pressure sensitive copying paper comprises

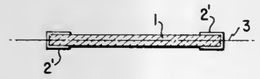


wherein n is an integer of 1 to 4; R_1 and R_2 represent an alkyl group having 1 to 4 carbon atoms or a phenyl group; R_3 represents a hydrogen atom, an alkoxyl group wherein the alkyl group is an alkyl group having 1 to 4 carbon atoms, an alkoxycarbonyl group wherein the alkyl group is an alkyl group having 1 to 4 carbon atoms or a halogen atom.

3,619,240
MECHANICALLY STRENGTHENING ARTICLES MADE OF VITREOUS OR CERAMIC MATERIALS

Francois Toussaint, Lodelinsart, and Maurice Boffe, Fleurus, both of Belgium, assignors to Glaverbel S. A., Watermael-Boitsfort, Belgium

Filed Apr. 18, 1968, Ser. No. 722,381
Claims priority, application Luxembourg, Apr. 25, 1967, 53,509
Int. Cl. C03c *17/00*
U.S. Cl. 117—40 **25 Claims**



Processes for increasing the mechanical strength of articles made of glass, vitrocrystalline materials or ceramic materials by coating at least certain surface portions of a base layer with a coating of glass substance having a lower softening temperature and a lower coefficient of thermal expansion than the material of the base layer, the coating material being brought to a temperature which is sufficiently high to place it in at least a softened state and the resulting unit then being cooled to produce compressive stresses in the layer of coating material. Articles composed of a base layer and a coating layer having a lower coefficient of thermal expansion and a lower softening temperature than the base layer, the coating layer having been placed in a softened condition either before or after having been applied to the base layer.

3,619,241
PROCESS FOR MAKING PYROLYTIC CARBON COATED NUCLEAR FUEL OR POISON

Walter V. Goedell, Poway, and Charles S. Luby, San Diego, both of Calif., assignors to Gulf Oil Corporation

Division of Ser. No. 272,199, Apr. 11, 1963, Pat. No. 3,325,363. Filed June 9, 1967, Ser. No. 649,785
Int. Cl. B41m *5/24*, **B44c** *1/097*, **C23c** *7/00; 9/06; 13/02*
U.S. Cl. 117—46 **6 Claims**

A method of manufacturing a nuclear fuel or poison which includes heating particulate nuclear fuel or poison to between about 800° C. and 1400° C., contacting the heated material with an acetylene containing atmosphere having an acetylene partial pressure of at least about 0.65 atmosphere to deposit a spongy pyrolytic carbon coating on the particles followed by depositing a dense exterior fission products retentive coating on the spongy carbon coating.

3,619,242
METHOD FOR TREATING THE SURFACE OF A SUBSTRATE SHEET

Masao Ogawa, Tokyo; Shigeo Hayashi, Yokohama-shi; Wasuke Sato, Kawasaki-shi; Ichiro Morimoto, Kawasaki-shi; Teisuke Horibe, Tokyo, and Gunji Takeuchi, Yokohama-shi, all of Japan, assignors to Shawa Denko K. K., Tokyo, Japan

Filed Dec. 23, 1968, Ser. No. 786,466
Claims priority, application Japan, Feb. 1, 1968, 43/6137
Int. Cl. B44d *1/50*, *1/097*
U.S. Cl. 117—46 FC **6 Claims**

A method for treating the surface of a substrate sheet which comprises coating at least one side of a substrate sheet with a solution prepared by dissolving in an organic solvent chlorinated polyethylene containing 40 to 75 percent by weight of chlorine or a mixture of 99 to 50 percent by weight of said chlorinated polyethylene and 1 to 50 percent by weight of chlorinated polypropylene containing 25 to 35 percent by weight of chlorine and, if necessary further treating the surface of the coated layer with corona discharges or flames.

3,619,243
NO RERACK METAL PLATING OF ELECTRICALLY NONCONDUCTIVE ARTICLES

Frank A. Brindisi, Jr., Madison, and Theophil J. Wieczorek, West Haven, both of Conn., assignors to Enthone Incorporated, New Haven, Conn.

Filed Feb. 17, 1970, Ser. No. 12,134
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **23 Claims**

No rerack process for the metal plating of electrically nonconductive articles or objects on vinyl plastisol-coated plating racks, involving contacting the rack prior to racking thereon the nonconductive articles destined to be plated with a liquid lower alkyl formamide, preferably N,N-dimethylformamide, or N-methyl-2-pyrrolidone, or a mixture thereof, for a time sufficient to render the rack substantially nonsusceptible to electroless deposition of metal thereon during a subsequent electroless metal plating step. Consequently the prior requirement of reracking of the articles on clean racks subsequent the electroless metal plating step and prior to the electroplating is eliminated.

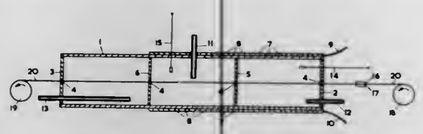
3,619,244
PRODUCTION OF TREATED MATERIALS

Robert Holroyd Stanley, Shincliffe Village; George Harry James Neville, Darlington, and Frank Pickering, Billingham, all of England, assignors to British Titan Products Company Limited, Durham, England

Filed Mar. 20, 1968, Ser. No. 714,620
Claims priority, application Great Britain, Apr. 18, 1967, 17709/67
Int. Cl. B44d *1/092*, *5/06*
U.S. Cl. 117—47 A **30 Claims**

A process for the production of iridescence on synthetic polymeric surfaces by applying to the surface as a film of

variable thickness adequate to produce iridescence within the visible spectrum a titanium compound having the general formula $Ti(X)_4$ in which X represents a halogen atom or a (–OR) group and subsequent to application of the film age-



ing the treated surface at a temperature above 85° C. The titanium compound is preferably titanium tetrachloride although organic titanates are also useful and the synthetic polymeric surface is preferably a surface formed of polyethylene terephthalate.

3,619,245

PRELIMINARY TREATMENT FOR POLYOLEFINS TO BE CHEMICALLY METAL PLATED

Hiroshi Maekawa, Sakai-shi, Japan, assignor to Okuno Chemical Industry Company, Limited, Osaka-shi, Japan

Filed July 9, 1968, Ser. No. 743,283
Claims priority, application Japan, July 13, 1967, 42/45448
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 A 9 Claims

In chemically plating a polyolefin resin, a process which comprises wetting a surface of a polyolefin resin to be etched for chemical plating with an organic solvent solution of an organic peroxide having a concentration of 10 to 90 weight percent, and then decomposing the organic peroxide on the surface of the polyolefin resin.

3,619,246

TREATMENT OF RESIN SURFACES TO IMPROVE THEIR RECEPTIVITY TO COATINGS AND THE LIKE AND RESIN BODIES WITH TREATED SURFACES

Robert A. Bragole, West Peabody, Mass., assignor to USM Corporation, Boston, Mass.

Filed May 12, 1969, Ser. No. 823,964
U.S. Cl. 117—47 A 9 Claims

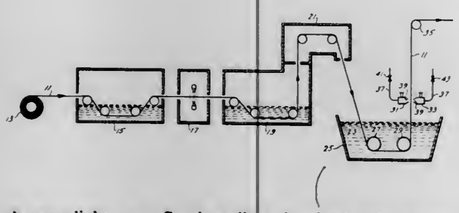
Resin materials having low-surface energy are treated to increase their surface receptivity towards coatings and the like by providing a photosensitizer at the surface of the resin, subjecting the surface to ultraviolet radiation and applying a silane or siloxane to the surface prior to coating.

3,619,247

METHOD OF PRODUCING THIN, BRIGHT UNSPANGLED GALVANIZED COATINGS ON FERROUS METAL STRIPS

Perry Marvin Newport, and George Michael Mino, both of Hamburg, N.Y., assignors to Bethlehem Steel Corporation

Filed Aug. 29, 1968, Ser. No. 756,283
Int. Cl. B05c *11/06*; C23c *1/02*
U.S. Cl. 117—51 2 Claims



A very light gage flat hot dip galvanized strip having a bright unspangled surface, is made by applying a very thin zinc coating to smooth cold strip having a surface finish between 20 and 80 microinches by passing the strip at a high rate of speed through a low temperature molten zinc bath having a high aluminum content and wiping the strip quickly by means of powerful steam wiper dies located closely adjacent to both the strip and bath surfaces.

3,619,248

FRICTION REDUCING COATINGS

Norman F. Whitsitt, Plano; Walter D. Garland, Carrollton; James K. Baxter, Richardson, and William G. Setser, Richardson, all of Tex., assignors to The Western Company of North America

Filed July 15, 1968, Ser. No. 744,652
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.1 11 Claims

Friction reducing coatings are made by adding water to a particulate hydratable polymer material having a weight average molecular weight of at least 200,000. A preferred polymer material is a mixture of sodium carboxymethylcellulose and a copolymer of acrylamide and vinylpyridine. The friction reducing coating may be applied to a surface by distributing the particulate polymer material over the surface to form a thin layer which is then wet with water or by applying a water solution of the polymer material to the surface, or by applying a slurry of the polymer material over the surface and wetting the film formed by evaporation from the slurry. The slurry of polymer material may comprise a mixture of hydratable polymer material, a gelling agent, a dispensing agent such as methanol, and a plasticizer, such as glycerol. After applying the slurry to the surface, water is added when the alcohol suspending agent has evaporated.

3,619,249

A METHOD FOR PRODUCING A FLUOROCARBON COATING ON METALS AND CERAMICS AND THE PRODUCT THEREOF

William A. Cannon, Garden Grove, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 5, 1968, Ser. No. 749,944
Int. Cl. B44d *1/48*, *1/36*
U.S. Cl. 117—62.1 12 Claims

Fluorocarbon coated metals and ceramics and method therefor. The metal or ceramic substrate is treated with a polar organic material to effect chemisorption of a monomolecular layer. A viscous saturated hydrocarbon coating, e.g., of petrolatum, is applied over the chemisorbed layer and is fluorinated to convert the hydrocarbon to the corresponding fluorocarbon. Such fluorocarbon coated metals and ceramics are useful for antisticking, anticorrosion and antifriction applications.

3,619,250

METHOD FOR MAKING MICROPOROUS SHEET MATERIAL

Yasushi Nishijima, Sakai, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha

Filed June 23, 1969, Ser. No. 835,766
Claims priority, application Japan, July 18, 1968, 43/51063
Int. Cl. B44d *1/44*; D06n *3/04*
U.S. Cl. 117—63 5 Claims

A method of making a microporous sheet material is disclosed. A base material is coated with a solution of a film-forming synthetic polymer. The solution consists mainly of polyurethane dissolved in a water-miscible organic solvent. The coated base material is treated with a coagulating liquid containing urea and at least one water-soluble inorganic salt. The coagulated polymer layer is then washed and dried.

3,619,251

CLEANING AND POLISHING CLOTH AND METHOD OF MAKING IT

Norman S. Stiles, Sr., 2069 Meadow View Road, Westfield, N.J.

Filed May 22, 1969, Ser. No. 834,191
Int. Cl. A47l *13/00*; B44d *1/092*
U.S. Cl. 117—56 4 Claims

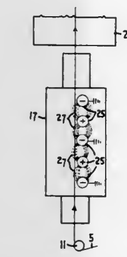
A cleaning and polishing cloth consists of a cotton fabric impregnated with mineral spirits. It is made by washing and drying a piece of cotton material, immersing it into a bath of mineral spirits, then wringing it and then allowing it to dry for a period of about 5 to 7 days. The finished cloth may be sprayed with perfume, if desired. It can be used most effectively for cleaning and polishing all types of articles, as well as a floor mop and a blackboard wiper.

3,619,252

MANUFACTURE OF ELASTOMER COATED GLASS FIBERS

Alfred M. Roscher, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1966, Ser. No. 605,814
Int. Cl. C03c *25/02*; B44d *1/50*; B32b *17/04*
U.S. Cl. 117—66 23 Claims



This invention relates to coating and impregnating glass fibers with an aqueous elastomer composition and then drying the glass fibers with high frequency electrical heating to move substantially all the water while leaving the elastomer solids substantially unaffected. Also encompassed herein are products produced by the foregoing process, as well as the subsequent process step of applying additional heat to cure a heat curable resin component of the coating and impregnating composition.

3,619,253

COLOR CONTROL FOR SUEDELIKE POLYMERIC SHEET MATERIALS

Charles L. Hoffmeyer, Madison, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1968, Ser. No. 788,006
Int. Cl. D06n *3/00*
U.S. Cl. 117—66 10 Claims

A new method for improving the color reproducibility of batch quantities of synthetic suedelike sheet materials is provided by this invention. Batch quantities of newly prepared sheet material, are color corrected to substantially match specific color standards by adjusting the solids content of a fluorochemical and polyorganosiloxane repellency solution between 0.5 and 10 percent solids prior to applying the repellency solution to the sheet material.

3,619,254

THERMOMETRIC ARTICLES AND METHODS FOR PREPARING SAME

Frederick Davis, Pittsburgh, Pa., assignor to Liquid Crystal Industries, Turtle Creek, Pa.

Filed Mar. 18, 1969, Ser. No. 808,319
Int. Cl. B44d *1/14*; G01k *11/16*
U.S. Cl. 117—72 15 Claims

Thermometric articles comprising a substrate, a coating of a cholesteric composition on the substrate, and a coating of a solid on the cholesteric composition, the solid being immiscible and unreactive with the cholesteric composition; and methods for preparing such articles.

3,619,255

SUBSTRATE COATED WITH AN ORGANOPOLYSILOXANE EMPLOYING A PRIMER COMPRISING A TITANATE AND AN ORGANOPOLYSILICATE

Guenther Fritz Lengnick, Mantiou Beach, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Continuation-in-part of application Ser. No. 661,544, Aug. 18, 1967, now abandoned. This application Nov. 10, 1969, Ser. No. 875,485
Int. Cl. B32b *15/08*, *17/10*, *27/08*
U.S. Cl. 117—75 5 Claims

This invention relates to a primer composition comprising a solution of organosilicates and condensed titanates of the formula $(Ti)_n(O)_m(OR)_p$, wherein R is an organic radical having from one to 20 carbon atoms, n is an integer of at least 2, m is an integer of at least 1 and p is an integer of at least 4 and use of the primer composition to adhere silicone rubber to substrates.

3,619,256

SILICONE RUBBER COATED SUBSTRATES AND A METHOD FOR BONDING SILICONE RUBBER THERETO

Anthony Enrico Pepe, Sylvania, Ohio, and Charles George Neuroth, Blissfield, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,255
Int. Cl. B44d *1/14*; B32b *15/08*, *25/20*
U.S. Cl. 117—75 9 Claims

A silicone rubber coated substrate and method for preparing the same which comprises treating a substrate with a primer solution containing an ω-amino-organosilane and thereafter coating the primed substrate with a room-temperature-curable organopolysiloxane composition containing a silane compound having both an oxirane ring and a hydrolyzable group on the silane molecule. The silane compound will react with the primer composition and also act as a curing agent for the organopolysiloxane composition to provide an adhesive bond between the silicone rubber and the substrate.

3,619,257

PREPARATION OF PLURAL LAYER SYNTHETIC LEATHER AND THE LIKE

Kazuo Fukada, Hyogo; Hiroshi Okamoto, Osaka, and Hiroaki Tanaka, Osaka, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed July 30, 1968, Ser. No. 748,597
Claims priority, application Japan, Aug. 8, 1967, 42/51319
Int. Cl. B44d *1/14*; D06n *3/08*
U.S. Cl. 117—76 T 15 Claims

A process for producing a plural-layer synthetic leather whereby (1) a fibrous material is impregnated with a polyurethane containing polymer solution, treated with a nonsolvent for the polymer which nonsolvent is miscible with the solvent of the polymer solution which acts to coagulate the polymer so as to form a porous structure, (2) treating the treated base with an aqueous solution of a solvent or a surfactant and (3) coating the polymer solution onto the pretreated fibrous base and coagulating the polymer with a nonsolvent so as to form a porous structure.

3,619,258

PLASTICIZED SULFUR, COATED ASPHALT IMPREGNATED FABRIC

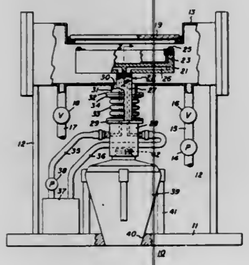
Richard J. Bennett, and Rector P. Louthan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Apr. 10, 1968, Ser. No. 720,368
Int. Cl. B32b *11/04*
U.S. Cl. 117—92 6 Claims

A fabric is asphalt or bitumen coated and then adhesively coated at least on one side with plasticized sulfur. Bitumens including asphalt and asphalt emulsions now available are applicable. Hot melt application which can be followed im-

mediately by the plasticized sulfur is possible. The product, which is flexible, solvent, weather resistant and light reflecting, and can be used for waterproofing as in roofing, road liners, pond and ditch liners, as wrapping material, it can be packaged as in rolls for marking stripes on tennis courts, athletic fields. Also, it can be used as pipe wrap, tank cladding and for decorative purposes.

3,619,259
PHOTOPOLYMERIZED FILM, COMPOSITE THEREOF, AND METHOD OF FORMING
Archibald N. Wright, and Wilfred F. Mathewson, Jr., both of Schenectady, N.Y., assignors to General Electric Company
Continuation-in-part of application Ser. No. 628,447, Apr. 4, 1967. This application Apr. 1, 1969, Ser. No. 812,262
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **11 Claims**



A thin, continuous film is formed on a substrate by the ultraviolet surface polymerization of the vapor of an imide containing photopolymerizable organic material. Such films are useful as coatings on metallic and nonmetallic substrates, capacitor dielectrics, cryogenic device insulation, insulation for microelectric devices, insulation on electrically conductive wire, and for corrosion protection.

3,619,260
POLYMERIZATION OF BIS-(ACRYLOXYALKYL) CARBONATES
Gordon M. Parker, Harwick, Pa., assignor to PPG Industries, Inc, Pittsburgh, Pa.
Filed June 2, 1969, Ser. No. 829,753
Int. Cl. C08f *1/16*; **C07c** *69/54*
U.S. Cl. 117—93.31 **4 Claims**

Phosgene is reacted with acrylates or methacrylates containing one hydroxyl group in the presence of an acid acceptor to form the novel bis-(acryloxyalkyl) carbonates of this invention. The product is highly radiation sensitive so that it may be polymerized by ionizing radiation and forms a coating which is hard and stain resistant.

3,619,261
COATING FOR FIBERBOARD AND CONTAINERS FORMED THEREFROM
Harry E. Dunholter, 4851 S. Arvilla Drive, Toledo, Ohio, and James C. Jones, 3304 River Road, Toledo, Ohio
Filed Jan. 30, 1970, Ser. No. 7,243
Int. Cl. B44d *5/08*, *5/00*
U.S. Cl. 117—95 **11 Claims**

Free release coating for fiberboard surfaces by applying to the surface the reaction product of fatty acids and diethanolamine. This coating is made by heating the reaction product of a fatty acid and diethanolamine in the presence of a diluent of an alkyl glycol at a sufficient temperature and for a suitable time until a uniform mixture is obtained. The mixture is applied to a fiberboard surface of a container without any post curing to provide a coating which will freely release camelback rubber upon storage in the container.

3,619,262
PROCESS FOR DEPOSITING CARBON ON IRON
Marnell A. Segura, Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed Jan. 16, 1970, Ser. No. 3,497
Int. Cl. C23f *9/02*; **B44d** *1/12*
U.S. Cl. 117—100 M **11 Claims**

A process for coating a metal surface, such as a reduced iron ore, with an adherent layer of carbon is provided. The metal is contacted with carbon and a mixture of olefins. Suitably, the olefin mixture contains polyenes and dienes, preferably cyclopolyenes and cyclodienes. The process is conducted at temperatures ranging from about 200° F. to about 600° F. The metal surface, coke, and the olefinic mixture is brought into contact by any solid-liquid contact means, e.g., by spraying a slurry of carbon and olefin mixture in a fluidized bed of the metal or by slurrying the reactants in a solid blender. The concentration of reactants, the bath temperature and the contact time generally will control the amount of carbon that is deposited on the metal surface.

3,619,263
COATING OF ORE PELLETS WITH BITUMINOUS EMULSIONS
Edward R. Bremer, St. Paul, Minn., and Robert M. Ripple, San Francisco, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Dec. 17, 1968, Ser. No. 784,482
Int. Cl. C21b *1/00*; **C22b** *1/00*
U.S. Cl. 117—100 B **6 Claims**

Process for protecting ore pellets from abrasive degradation by coating them with a bituminous emulsion in an amount sufficient to deposit on the pellet surfaces from 0.1 to 0.3 percent by weight relative to the pellets of a protective coating.

3,619,264
PROCESS FOR THE PRODUCTION OF WATER-REPELLENT, FINELY-DIVIDED INORGANIC COMPOUNDS
Karl-Heinz Worms, Dusseldorf-Holthausen, and Stefan Gjavotchanoff, Monheim-Hitdorf, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
Filed Dec. 26, 1968, Ser. No. 787,199
Claims priority, application Germany, Dec. 28, 1967, H 64 896
Int. Cl. B44d *1/02*; **C08h** *9/00*
U.S. Cl. 117—100 **4 Claims**

A process for imparting water-repellent properties to an inorganic compound which comprises treating said inorganic compound in a finely-divided form with from 1 to 20 percent by weight, based on the weight of said inorganic compound, of a compound having the formula

R–COOR′

wherein R is the aliphatic remainder of a fatty acid having 10 to 26 carbon atoms and R′ is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms at a temperature of from 150° C. to 350° C., and recovering a water-repellent inorganic compound.

3,619,265
RARE EARTH OXIDE HAVING INERT LAYER THEREON AND METHOD OF MAKING SAME
Michael J. Hammond, and Raymond F. Herner, both of Iowanda, Pa., assignors to GTE Sylvania Incorporated
Filed Feb. 28, 1969, Ser. No. 803,429
Int. Cl. C09k *1/04*
U.S. Cl. 117—100 B **5 Claims**

A rare earth oxide host phosphor has incorporated thereon an outer layer of chemically combined fluoride ion. The coating increases the adherence properties of the phosphor in slurry application techniques for the manufacture of television screens by preventing poisoning of the phosphor particles by dichromate ions present in the slurry. The phosphor is coated by batching in a .05 molar fluoride bath, in acidic solution, about 400 to 500 grams of phosphor per liter of solution, agitating for about 20 to 30 minutes, and decanting the acidic solution, washing and then filtering and drying the phosphor. The drying temperature should be less than 200° C. to prevent disruption of the coating.

3,619,266
THERMOPLASTIC MOULDING COMPOSITIONS ON THE BASIS OF SATURATED POLYESTERS
Klaus Weissermel, Kelkheim/Taunus; Rudolf Kern, Mainz; Heinz Schmidt, Frankfurt am Main, and Walter Herwig, Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Apr. 18, 1969, Ser. No. 817,550
Claims priority, application Germany, Dec. 12, 1968, P 18 14 148.5
Int. Cl. B32b *27/06*, *27/36*
U.S. Cl. 117—100 C **15 Claims**

Thermoplastic moulding compositions on the basis of linear saturated polyesters wherein the polyester granules containing a neutral or partially neutralized salt of montan wax or of montan wax esters is additionally coated with a neutral or partially neutralized salt of montan wax or of montan wax esters.

3,619,267
THERMOPLASTIC MOULDING COMPOSITIONS ON THE BASIS OF SATURATED POLYESTERS
Klaus Weissermel, Kelkhein/Taunus; Rudolf Kern, Mainz; Walter Herwig, Frankfurt am Main, and Siegfried Breitschaft, Augsburg, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Apr. 18, 1969, Ser. No. 817,570
Claims priority, application Germany, Apr. 12, 1968, P 18 14 149.6
Int. Cl. B32b *27/06*, *27/36*
U.S. Cl. 117—100 C **10 Claims**

Thermoplastic moulding compositions on the basis of saturated linear polyesters which comprises coating the polyester granules with neutralized or partially neutralized slats of montan wax or of esters of montan wax.

3,619,268
LAMINATED ARTICLES COMPRISING A THERMOPLASTIC CORE AND A HIGH DENSITY RIGID POLYURETHANE FOAM COATING
Earl J. Robertson, Grosse Ile, and Robert M. Rodak, Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed Feb. 24, 1969, Ser. No. 801,738
Int. Cl. B44d *1/22*
U.S. Cl. 117—104 R **7 Claims**

High density rigid polyurethane foams are employed as coatings for thermoplastic polymers. The resulting laminated articles are useful insulative articles such as beverage coolers, building articles such as building panels and buoyant articles such as sailboats.

3,619,269
SURFACE MODIFYING TREATMENT OF SHAPED ARTICLES MADE FROM POLYESTERS
James Eric McIntyre, and Michael Mundie Robertson, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 370,068, May 25, 1964, Pat. No. 3,416,952
Filed Nov. 21, 1968, Ser. No. 777,877
Claims priority, application Great Britain, June 5, 1963, Oct. 31, 1963, Oct. 31, 1963, Jan. 10, 1964, Jan. 10, 1964, 22323/63, 43055/63, 43056/63, 1230/64, 1231/64
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **6 Claims**

A process for the treatment of the shaped articles, made from an essentially linear crystallizable polyester, with a water-insoluble crystallizable polymeric compound, wherein said crystallizable polymeric compound contains within a single molecule (A) sufficient repeat units identical with those forming the crystallizable portions of the polyester to confer crystallizability on the compound and (B) at least one active group serving to modify the surface of the shaped article, the said group being selected from at least one of the following: an acidic group and a basic group, the said crystallizable polymeric compound having a melting point above 100° C., measured by the temperature of disappearance of birefringence, and the said treatment being carried out by applying the crystallizable polymeric compound to the surface of the shaped article and subjecting the shaped article with the compound to a thermal treatment at a temperature above 90° C.

3,619,270
ADHESIVE COMPOSITION
Guenter Horst Tesch, Fribourg, Switzerland, assignor to Breveteam S. A., Fribourg, Switzerland
Filed Feb. 15, 1968, Ser. No. 705,640
Claims priority, application Switzerland, Feb. 22, 1967, 2713/67
Int. Cl. C09j *7/04*; **D06n** *3/04*
U.S. Cl. 117—122 H **1 Claim**

An adhesive composition for floor coverings, particularly, though not exclusively for reinforced textile stair carpets comprises one part of contact adhesive components which are sticky at room temperature, and which bring about an adhering effect, and one part of synthetic thermoplastic components which are nonsticky at room temperature, but which, however, on heating to a temperature above 60° C. suffer temporary partial loss of their cohesion and become a strong sealing adhesive, which is adapted to form a permanent bond with the base to be bonded.

3,619,271
PROCESS FOR IMPROVING FABRICS CONTAINING CELLULOSIC FIBERS
Juerg Merz, Therwil, and Christian Guth, Basel, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Oct. 15, 1968, Ser. No. 767,841
Claims priority, application Switzerland, Oct. 19, 1967, 14627/67
Int. Cl. D06m *15/10*; **C09k** *3/28*; **C09b** *67/00*
U.S. Cl. 117—137 **4 Claims**

The present invention is concerned with the use of high molecular polyethylene glycol as a means for increasing the absorptivity of cellulosic fabrics. It is preferably used in applying to the fabric an aqueous preparation that contains a dyestuff, a flameproofing agent, a hydrophobizing agent or an antimycotic

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3,619,272
METHOD FOR COATING POLYOLEFIN OR PAPER SUPPORTS WITH CHLORINATED BUTENE-1 POLYMER COATINGS
Thomas H. Shepherd, Hopewell, and Murray H. Reich, Princeton, both of N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.
Filed Sept. 1, 1967, Ser. No. 664,963
Int. Cl. B44d *1/098*; **B32l** *27/08*
U.S. Cl. 117—138.8UA **7 Claims**

Method for coating various substrates, and coating compositions employed therein, incorporating, as a principal constituent thereof, a chlorinated butene-1 polymer prepared by chlorination of a polymer having a melt index of from 0.1 to 60, and comprising from 20 percent to 95 percent by weight isotactic polymer. The chlorinated material contains from 3 percent to 70 percent by weight chlorine. Coatings thus provided are useful as adhesives or primer coats for polyolefin films or sheets, or as protective coatings for paperboard or other paper stock materials.

3,619,273
METHOD FOR APPLYING LONG CHAIN FATTY ACID PHENYLMERCURY FUNGICIDES IN WAX
Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture
Filed July 14, 1969, Ser. No. 841,575
Int. Cl. B44d *1/09*; **D06m** *13/50*
U.S. Cl. 117—138.5 **3 Claims**

This invention relates to a process for applying long chain fatty acid phenylmercuric fungicides. Many long chain fatty acid phenylmercuric salts are available as fungicides but application procedures have been difficult and expensive. This invention relates to a method whereby these compounds can be applied in conjunction with a wax finish, in a single bath application whereby the fungicide remains in the wax finish component of fabric treatments for water repellency and fungicidal activity.

3,619,274
COATED SYNTHETIC MATERIAL
Thomas Jefferson Proffitt, Jr., Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 21, 1967, Ser. No. 632,561
Int. Cl. D02j *3/18*; **C09k** *3/16*
U.S. Cl. 117—138.8 **1 Claim**

Improved antistatic protection has been achieved in synthetic fibers, particularly synthetic staple fibers, by treating the fibers with salts of

1. polyoxyethylene or polyoxypropylene amines; and
2. phosphoric acid esters of
   a. monohydroxy alkyl alcohols or
   b. polyoxy (ethylene or propylene) monoalkyl ethers.

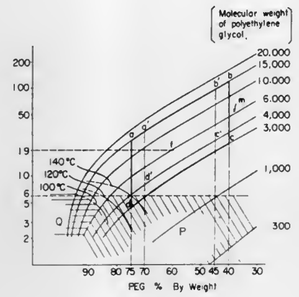
Most synthetic fibers such as polyamide, acrylic and polyester fibers are hydrophobic and tend to develop and retain static charges. Before such fibers can be converted into textiles, it is necessary to apply an antistatic finish. It is most economical to apply such a finish to the fiber at the point of manufacture. This requires application to a large rope of continuous filaments travelling at high speed. A suitable finish must have a low-viscosity and a low-surface tension in solution in order to penetrate the tow rapidly. The finish on the fiber should remain nontacky even when exposed to humid air. If the finish becomes tacky, the fibers cannot be carded and spun into uniform yarns.

3,619,275
FIBROUS SHEET MATERIAL
Michael Barash, Rockville Centre, N.Y., and Benedict S. Anthony, Milford, Pa., assignors to Collagen Corp., c/o The Seagrave Corp., New York, N.Y.
Division of Ser. No. 596,742, Nov. 25, 1966, Pat. No. 3,542,910. Filed Aug. 13, 1969, Ser. No. 870,703
Int. Cl. D06n *3/00*; **D04h** *1/64*
U.S. Cl. 117—138.8 N **4 Claims**

Reconstituted sheet material is disclosed having properties at least equal to those of natural leather, said sheet material consisting essentially of leather fibers and polyamide-type synthetic resin fibers held together by an acrylic ester bonding material, the sheet being produced by forming a dry batt of the leather and synthetic resin fibers, applying a bonding material to the batt, setting the bonding material in situ, and then drying the resulting sheet.

3,619,276
PROCESS FOR IMPROVING SURFACE CHARACTERISTICS OF POLYESTER SHAPED ARTICLES
Jiro Shimeha, Ikeda-shi; Takeo Shima, Iwakuni-shi; Yukiharu Asami, Iwankuni-shi; Ryuichiro Tsuzuki, Ibaragi-shi, and Norboru Yabuuchi, Ibaragi-shi, all of Japan, assignors to Teijin Limited, Osaka, Japan
Continuation-in-part of application Ser. No. 587,313, Oct. 7, 1966, now abandoned. This application Nov. 19, 1969, Ser. No. 878,033
Claims priority, application Japan, Oct. 21, 1965, Oct. 28, 1965. Oct. 30, 1965, Feb. 28, 1966, 40/64655, 40/66460, 40/66578, 41/12176
Int. Cl. B23b *27/00*
U.S. Cl. 117—138.8 F **7 Claims**

A process of improving the surface characteristics of polyester shaped articles which comprises coating said articles with a composition comprising a copolyester consisting of (A) a water-soluble polyoxyalkylene glycol having a molecular weight of 7000–15,000, (B) terephthalic acid and (C) ethylene glycol or a copolyester consisting mainly of the



above wherein said water-soluble polyoxyalkylene glycol is present in a range of from about 40 to about 75 percent by weight and the reduced viscosity of the resultant copolyester is within the range of 0.9 to 2.0.

3,619,277
METHOD OF IMPROVING THE CREASE RESISTANCE OF A CELLULOSIC FABRIC
James Forrest Allen, deceased, late of Pennington, N.J. (by Christina L. Allen, executrix), and Harold K. Latourette, Geneva, Switzerland, assignors to FMC Corporation, New York, N.Y.
Division of Ser. No. 265,020, Mar. 12, 1963, which is a division of 118,269, June 20, 1961, abandoned. Filed Nov. 26, 1969, Ser. No. 877,581
Int. Cl. D06m *15/00*
U.S. Cl. 117—139.4 **2 Claims**

A method of treating cellulosic fabrics with 2-hydroxyethyl vinyl sulfone.

3,619,278
PROCESS FOR TREATING TEXTILE MATERIALS
Zennosuke Ogawa, Gumma-ken, Japan, assignor to Shinetsu Chemical Company, Tokyo, Japan
Filed May 21, 1969, Ser. No. 826,723
Claims priority, application Japan, June 4, 1968, 43/38200
Int. Cl. D06m *15/66*
U.S. Cl. 117—139.5 A **10 Claims**

When textile materials are treated with a silicone rubber emulsion containing, as its principal component, organopolysiloxane, prepared by emulsion polymerization of organosilane or organosiloxane, which is represented by a unit formula:

$$R_nSiO_{\frac{4-n}{2}}$$

in which R is a monovalent hydrocarbon radical containing from 1 to 18 carbon atoms and n is a mean value of from 1.9 to 2.1, the relative viscosity of which silicone rubber emulsion in a toluene solution at 25° C. is at least 1.8, the textile materials are provided with excellent flexibility and springiness, and what is more, when the silicone rubber emulsion is applied to textile materials together with known resin-finishing agents heretofore employed for the purpose of improving the properties of the textile materials, it will serve to prevent the reduction of the strength of the textile materials which is one of the disadvantages of the known textile-material treating agents.

3,619,279
TONER RECEIVING MEMBER
Herbert N. Johnston, Columbus, and Nicholas D. Gallagher, Troy, both of Ohio, assignors to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 520,872, Jan. 17, 1966, Pat. No. 3,493,412. Filed July 16, 1969, Ser. No. 842,356
Int. Cl. D21h *1/34*; **G03g** *7/00*
U.S. Cl. 117—155 UA **10 Claims**

A toner receiving member having available at an external surface a solid crystalline plasticizer to reduce the fusion power requirements when toner is fused to the receiving member. The external surface of the toner receiving member is substantially free of material plasticizable by the solid crystalline plasticizer. Typically a plasticizer such as ethylene glycol dibenzoate may be available on the surface of paper.

3,619,280
TREATED PAPER AND NONWOVEN MATERIAL FOR WIPING SURFACES AND METHOD THEREFOR
Fred F. Scheuer, Bronx, N.Y., assignor to Dustikin Products, Inc., Bronx, N.Y.
Filed July 18, 1969, Ser. No. 843,223
Int. Cl. D21h *1/40*, *5/22*
U.S. Cl. 117—154 **4 Claims**

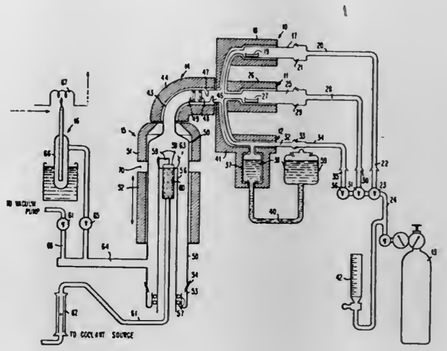
Tissue-type paper and nonwoven material are uniformly impregnated with a nonaqueous liquid carrier selected from liquid hydrocarbons, glycols and pine oils containing an agent uniformly distributed therein automatically, by applying a predetermined quantity of treating fluid to any portion of the nontreated material. The agent is selected from waxes, silicones and materials producing a predetermined odor. The agent does not separate from the carrier until at least the treated material is substantially impregnated, and the carrier and agent remain in the material substantially as when it was impregnated and are deposited in the same proportions as a thin film on a surface wiped by the material.

3,619,281
PROCESS FOR THE IMPROVEMENT OF TEXTILES BY THE USE OF SILICONES AND HARDENING ACCELERATORS
Horst Kroning, Dresden; Christian Dathe, Radebeul, and Richard Muller, Radebeul, all of Germany, assignors to Institut fur Silikon-und Fluorkarbon-Chemie, Radebeul, Germany
Filed Feb. 7, 1969, Ser. No. 797,682
Int. Cl. D06m *15/66*
U.S. Cl. 117—161 ZA **7 Claims**

Process for the improvement of fibrous materials, particularly in the finishing of textiles, by the use of silicones and hardening accelerators, which comprises treating the materials with aqueous emulsions of silicones and using as hardening accelerators an addition compound of aminoalkyltrifluorosilane and hydrofluoric acid. The fibrous materials thus treated exhibit an excellent and lasting water repellence and a high resistance to rubbing off of colors.

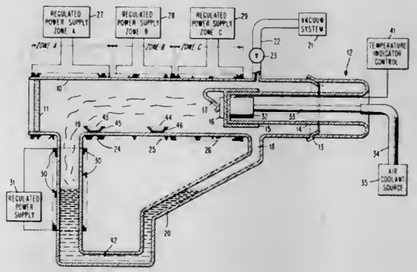
3,619,282
METHOD FOR VAPOR GROWING TERNARY COMPOUNDS
Gerald W. Manley, Johnson City, N.Y.; Philip S. McDermott, Athens, Pa.; Edward S. Pan, Wappingers Falls, N.Y., and Ralph J. Riley, Apalachin, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 27, 1968, Ser. No. 763,147
Int. Cl. H01l *7/36*; **C23c** *13/04*
U.S. Cl. 117—201 **7 Claims**

Ternary epitaxial films are grown from a gaseous mixture consisting of mercury, cadmium, and tellurium mixed with an inert or unreactive gas such as hydrogen. The mixture is heated to a temperature to prevent binary combinations and then rapidly cooled to the point of supersaturation by flowing the mixture through a thermal gradient having equithermal



lines substantially parallel to the growth surface of a substrate.

3,619,283
METHOD FOR EPITAXIALLY GROWING THIN FILMS
Donald R. Carpenter, Vestal; Gerald W. Manley, Johnson City, N.Y.; Philip S. McDermott, Athens, Pa., and Ralph J. Riley, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 27, 1968, Ser. No. 763,307
Int. Cl. C23c *13/08*; **B05c** *11/14*; **C23c** *13/00*
U.S. Cl. 117—201 **12 Claims**



A monocrystalline material of the formulation $Hg_{(1-x)}Cd_{(x)}Te$ is grown epitaxially on a seed or substrate monocrystal of Cd Te, or the like. The reactants are mixed in the vapor phase and held at a temperature which prevents binary combinations. The ternary vapor phase mixture is then rapidly cooled to supersaturation and condensed on the seed crystal substrate. In a dynamic system, the mercury vapor acts as a carrier gas as well as a reactant.

3,619,284
ELECTROCONDUCTIVE PAPER AND PROCESS OF MAKING SAME
Dilip K. Ray-Chaudhuri, Somerset; Stanley Field, Piscataway, and Irving D. Hodgkin, Neshanic Station, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,777
Int. Cl. G03g *5/00*
U.S. Cl. 117—201 **8 Claims**

A paper having a surface adapted for electrostatic printing and a process for preparing such paper; said paper containing

at least one monoquaternary nitrogen compound which serves as the electrostatic electroconductive medium.

3,619,285

METHOD OF MAKING A PATTERNED METAL FILM ARTICLE

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Filed Dec. 10, 1969, Ser. No. 883,984
Int. Cl. G03c 5/00; C23b 5/62
U.S. Cl. 117—212 **14 Claims**

A method of making a patterned metal film article comprising depositing an organic resist material on the surface of a relatively nonporous insulating substrate in the pattern desired for the metal, leaving portions of the substrate surface exposed, treating both the exposed substrate surface portions and the resist surface with a sensitizer and with an activator for electroless deposition of a metal on both these surfaces, treating both said surfaces with an etching solution so that only the exposed substrate surface portions become deactivated, and treating both the surfaces with an electroless metal plating solution such that metal deposits only on the resist surface.

3,619,286

CAST GRAPHITE ELECTRODES FOR EDM APPLICATIONS

Ludwik Gutnajer, Carversville, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 18, 1968, Ser. No. 784,893
Int. Cl. C01b 31/04; H01m 13/02
U.S. Cl. 117—226 **1 Claim**

A no-wear graphite electrode for electrodischarge machining. The electrode is cast from powdered graphite mixed with a binder. The mixture is cast in a mold and subsequently fired. After firing, it is coated with pyrolytic graphite.

3,619,287

PROCESS OF PRODUCING AN ELECTRICAL RESISTOR

Anthony J. Stankavich, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 20, 1968, Ser. No. 761,184
Int. Cl. C23c 17/00; C04b 41/14
U.S. Cl. 117—227 **3 Claims**

An electrical resistance element particularly adapted for use in precision potentiometers and related applications wherein the high temperature resistant and essentially electrically nonconductive base has fused thereon a resistance material comprised of powdered glass and metal resinate suitably treated and admixed with precious metal powders with which in the mixing process is combined an organic vehicle preferably provided by ethyl cellulose dissolved in an alcohol exemplified by 1-undecanol or 1-decanol or equivalents thereof. The instant invention as applied to a ceramic substrate assures uniformly successful results in the printing process, and among other advantages contributes significantly to increased shelf life for the material being applied.

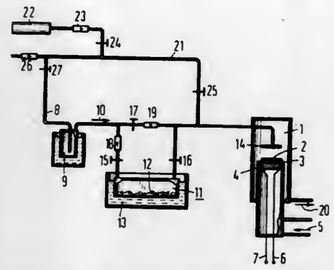
3,619,288

PROCESS FOR PRECIPITATING A HIGH MELTING METAL CONTACT LAYER AT LOW TEMPERATURES

Erhard Sirtl, Midland, Mich., assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 22, 1969, Ser. No. 886,946
Claims priority, application Germany, Jan. 2, 1969, P 19 00 119.5
Int. Cl. C23c 11/02
U.S. Cl. 117—227 **15 Claims**

A method for precipitating a high melting metal contact layer, at low temperatures, through thermal dissociation of a gaseous compound of the high melting contact metal and precipitating the same upon a carrier body, preferably of semiconductor material. The metal contact layer is



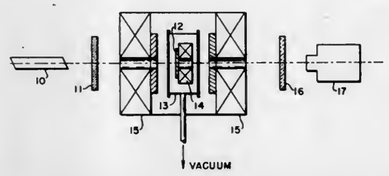
precipitated upon the carrier body through thermal dissociation of the easily volatile trifluorophosphine or trifluorophosphine hydride of the respective metals.

3,619,289

PREPARATION OF MANGANESE BISMUTH

Di Chen, Minnetonka; Roger W. Honebrik, Minnetonka, and Gary N. Otto, Mayer, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 2, 1968, Ser. No. 695,042
Int. Cl. C23c 13/04; H01f 1/14
U.S. Cl. 117—235 **8 Claims**



The preparation of manganese bismuth involved a long heat treatment in the prior art. Using a laser beam monitoring system to make real time measurements of the magneto-optic effect in manganese bismuth while forming the compound has reduced the time required for heat treatment from approximately 68–72 hours to a matter of about 20 minutes or less.

3,619,290

METHOD OF MAKING MAGNETIC TRANSFER SHEET AND ARTICLE

James E. Deegan, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 19, 1968, Ser. No. 746,194
Int. Cl. R41m 5/10
U.S. Cl. 117—235 **8 Claims**

Carbon paper coatings of the type embodying a vinyl resin matrix which embraces a pigment-carrying nonvolatile liquid exudable under pressure to make a mark on a copy sheet, are provided. The coating is of such character that pigments having a high agglomerative tendency, especially magnetic pigments such as iron oxide, can be used and still be carried properly from the layer along with the liquid vehicle when pressure is applied. In the case of magnetic pigments this makes it possible to provide marks which embody sufficient pigment to give appropriate signal strength for scanning. The result is achieved by including in the mixture an amine type wetting agent, and by providing as a portion of the volatile vehicle used to render the mixture coatable a pair of control solvents of different types. The control solvents are one of the ketone type and the other of a nonketone type (such as ethyl acetate, 2-nitro propane, or equivalent). The optimum ratio between the control solvents is usually between about 1:2 and about 1:1.

3,619,291

DESOLVENTIZING OF STARCH

Felix Joseph Germino, Palos Park; Joseph Frank Stejskal, Brookfield, and William Edward Schaffrath, Chicago, all of Ill., assignors to CPC International Inc.

Filed Sept. 6, 1968, Ser. No. 758,122
Int. Cl. C13l 1/04, 1/00, 3/00
U.S. Cl. 127—71 **14 Claims**

Starch which has been treated with a hydrophilic organic solvent, such as a low molecular weight alcohol, ketone, or the like, and which, as a result, retains relatively large quantities of these solvents, is desolventized by admixing it with a gel retarding salt, and heating the admixture to a temperature above about 150° F. The process is applicable to any type or variety of starch in nongelatinized form; the process does not gelatinize or otherwise affect the properties of the starch.

3,619,292

TABLETS AND METHOD OF FORMING

Robert E. Brouillard, and Charles L. Griffith, both of Cedar Rapids, Iowa, assignors to Penick & Ford, Limited, Cedar Rapids, Iowa

Filed July 15, 1968, Ser. No. 744,645
Int. Cl. C13f 3/00
U.S. Cl. 127—29 **9 Claims**

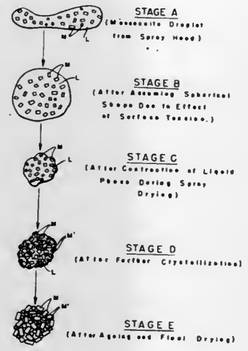
Massecuite Aggregated Total Sugar granules are employed as a binder or binder-filler in the manufacture of compressed tablets, preferably by direct compression of a particulate tableting composition into which the Total Sugar granules have been blended. In some embodiments, the Total Sugar granules also function as an absorbent carrier, and/or as a tablet disintegrator or solubilizer. The Massecuite Aggregated Total Sugar (MATS) granules of high D.E. comprise generally spherical aggregates of cohered microcrystals of dextrose internally containing the residual oligosaccharides of the starch hydrolysis in solid solution, the granules being free-flowing, nonhygroscopic, porous and compressible.

3,619,293

GRANULAR SUCROSE PRODUCTS AND PROCESS FOR PRODUCING SAME

Masahiro Niimi; Tetsu Furukawa, and Hitoshi Masada, all of Tokushima, Japan, assignors to Nippon Shiryo Kogyo Co., Ltd., Tokushima, Japan

Continuation-in-part of application Ser. No. 412,259, Nov. 18, 1964, now abandoned , Continuation-in-part of application Ser. No. 593,372, Nov. 10, 1966, now abandoned Continuation-in-part of application Ser. No. 626,399, Mar. 28, 1967, now abandoned, Continuation-in-part of Ser. No. 674,168, Oct. 10, 1967, Pat. No. 3,540,927. This application Feb. 18, 1970, Ser. No. 12,361
Int. Cl. C13f 1/02
U.S. Cl. 127—30 **6 Claims**



Granular crystalline sucrose products are prepared from water solutions of sucrose containing noncrystallizable sugar, such as molasses. The sugar solution is subjected to partial crystallization to form a pumpable massecuite composed of microcrystals of sucrose dispersed in a water solution of the sucrose containing the molasses or other noncrystallizable sugar. The massecuite is sprayed into a drying air stream to form atomized droplets, and part of the water is removed to form granular aggregates of the sucrose microcrystals containing residual sucrose solution. The aggregates are aged and dried to form internally additional sucrose crystals and to further reduce water content. The products, comprising generally spherical granules formed of aggregates of microcrystals of sucrose, are characterized by being free-flowing and nonhygroscopic, and by rapid dissolution in water. The process is particularly adapted to the processing of partially refined cane sugar or beet sugar liquors to produce a brown sugar product of these characteristics.

3,619,294

METHOD OF COMBINING CRYSTALLINE SUGAR WITH IMPREGNATING AGENTS AND PRODUCTS PRODUCED THEREBY

William C. Black, Cedar Rapids, and Otto J. Rajtora, Iowa City, both of Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa

Filed July 15, 1968, Ser. No. 744,642
Int. Cl. C13k 1/00
U.S. Cl. 127—30 **15 Claims**

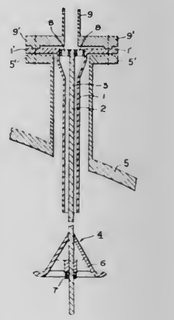
Massecuite Aggregated Microcrystalline Sugar granules (structurally comprising cohered sugar microcrystals with internal capillary networks) are employed as a means to combine crystalline sugar with solid or liquid modifying agents which are dissolved (or otherwise dispersed) in an aqueous or organic solvent carrier, which is sprayed (or otherwise applied) onto a bed of the granules while they are being agitated and intermixed. The liquid carrier and modifying agent are absorbed into the granules to achieve internal impregnation thereof. Where the liquid carrier is relatively volatile compared to the modifying agent, as when the added substance is normally a solid, the carrier can be evaporated leaving the added substance within the granules. Either with or without removal viz by evaporation or drying) of the liquid carrier, the impregnated granules can be subjected to a second treatment in which a pore closure material is applied to reduce the porosity of the surface layers of the granules, and thereby at least partially seal off the impregnated agent from escape to or contact with the atmosphere. Alternatively, the impregnated granules without drying and/or subjected to a second treatment can be packaged in sealed containers.

3,619,295

METHOD OF REMOVING MATTER ADHERING TO INNER WALL OF VINYL CHLORIDE POLYMERIZATION KETTLE

Kozo Nishizaki; Tetuzo Yamazawa, and Yoshiaki Okuda, all of Okayama-ken, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1969, Ser. No. 815,142
Claims priority, application Japan, Aug. 7, 1968, 43/55507
Int. Cl. B08b 9/00, 3/10
U.S. Cl. 134—22 R **1 Claim**



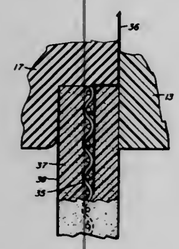
In removing the polymeric vinyl chloride which remains adhering to the inner wall of a polymerization kettle after

having withdrawn the polymerization reaction product from the kettle wherein the polymerization of polymeric vinyl chloride has been completed, the method of removing the adhering polymeric vinyl chloride which comprises drying said adhering matter by heating it under ventilative condition at a temperature 40–80° C. to reduce the moisture content of the adhering matter to below 15 percent and thereafter spraying 1,2-dichloroethane against the dried adhering matter to thereby remove the adhering matter consisting of polymeric vinyl chloride, and an apparatus for practising the above method.

3,619,296
FUEL CELL ELECTRODE

Leonard W. Niedrach, and George J. Haworth, both of Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 26, 1967, Ser. No. 699,004
Int. Cl. H01m *27/04, 13/00*
U.S. Cl. 136—86 D **6 Claims**

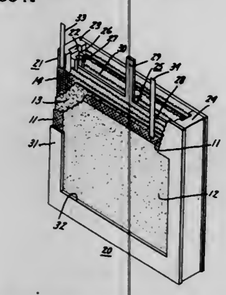


A fuel cell electrode is composed of catalytic and gas adsorbing materials which consist of a chromium-tungsten oxide as a support, a metal dispersed on the support, the metal selected from the class consisting of noble metals and alloys of noble metals, a current collector, and a binder bonding the materials together and to the current collector in electronically conductive relationship. Further, the catalytic and gas adsorbing materials comprise a chromium-tungsten oxide as a support, a support of carbon with boron dissolved therein, a mixture of carbon with boron dissolved therein and boron carbide, or carbon, and a metal dispersed on both of the supports, the metal selected from the class consisting of noble metals and alloys of noble metals. An adhesive binder is employed which is not chemically attacked by the electrolyte or the reactant fluid of the cell in which the electrode is used. Such an electrode is particularly useful in a fuel cell employing a fuel containing carbon monoxide, such as reformer gas, an acid electrolyte, and under various operating conditions.

3,619,297
METHOD OF CHARGING SECONDARY METAL-AIR CELL

Paul J. Moran, Ballston Lake, N.Y., assignor to General Electric Company

Filed June 26, 1969, Ser. No. 836,778
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A **1 Claim**

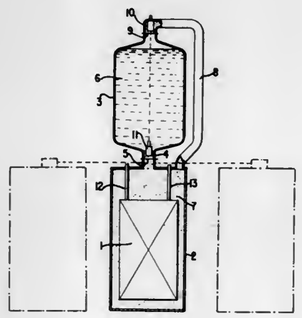


A composite gas diffusion electrode has an electrically conductive porous substrate, a noble metal or non-noble metal catalytic material impregnated into the substrate, and a porous, electrically conductive sheet adjacent to and spaced from one surface of the substrate and electrically insulated therefrom, the porous sheet having a lower oxygen overvoltage than the substrate, and electrical insulation means disposed between the sheet and the substrate. A modified gas diffusion electrode has electrical insulation means of at least one chemically inert, porous separator positioned between the substrate and the porous sheet. During the charging of a cell employing the above types of electrodes, the porous sheet provides isolation of oxygen gassing at the porous sheet while the porous separator provides additional physical spacing of the oxygen gassing at the porous sheet from the catalytically impregnated substrate.

3,619,298
DEFERRED-ACTION ELECTROCHEMICAL GENERATORS

Jean Firmin Jammet, Poitiers; Alain Blondel, Lillebonne, and Yannick Marsault, Poitiers, all of France, assignors to Societe Des Accumulateurs Fixes Et De Traction (Societe Anonyme), Point de La Folie, Romainville, France

Filed July 31, 1970, Ser. No. 59,994
Claims priority, application France, Aug. 1, 1969, 6926542
Int. Cl. H01m *21/10*
U.S. Cl. 136—114 **12 Claims**



Deferred-action electrochemical cells or generators wherein the electrolyte in a reservoir and electrodes in a container are maintained separately sealed off from each other by frangible membranes that can be ruptured by appropriate priming devices for activation of the cell or generator by flow of electrolyte from the reservoir into the container. In case of electrodes of lithium these must be maintained in an inert or neutral gas in the sealed container to prevent their alteration or deterioration during storage. Upon priming or breaking of the frangible membranes electrolyte flows from the reservoir into the container and simultaneously the neutral or inert gas is driven out of the electrode container and is directed via a conduit into the electrolyte reservoir wherein it is retained. A closed system is thus provided wherein neither electrolyte or inert gas can escape to the surrounding environment. Preferably, the reservoir and containers are enclosed in an overall fluidtight enclosure. Thus, spillage of electrolyte from the primed cell or generator upon vibration, irregular movements or overturning of the primed cell or generator and its loss to environment is avoided, as is damage from spilled electrolyte. At the same time, operation of the cell or generator continues undisturbed.

3,619,299
THERMOCOUPLE

Paul Weinmann, Aich; Otto Pauling, Kirchheim/Tech; Franz Macho, Kirchheim/Tech; Hans Wiedenmann, Altbach/N.; Adolf Krajc, Wernau-Neckar, and Ruth Korner, Plochingen/Neckar, all of Germany, assignors to Junkers & Co. G.m.b.H., Wernau, Germany

Filed Oct. 28, 1968, Ser. No. 771,033
Claims priority, application Germany, Nov. 4, 1967, P 15 39 296.8
Int. Cl. H01v *1/02*
U.S. Cl. 136—228 **3 Claims**



A thermocouple wherein the tubular outer conductor of the head is connected with the ground by way of a drawn tube a portion of which is expanded radially to snugly receive a portion of the outer conductor. The tube is provided with an external flange or with external threads to facilitate adjustable or nonadjustable fastening of the thermocouple in a support, such as the housing of a safety igniter in a range or oven.

3,619,300
PHOSPHATE CONVERSION COATING OF ALUMINUM, ZINC OR IRON

Ferdinand Phillip Heller, Philadelphia; Mark Allen Kuehner, North Hills, and Lester Steinbrecher, Southampton, all of Pa., assignors to Amchem Products, Inc., Lower Gwynedd Township, Montgomery County, Pa.

Filed Nov. 13, 1968, Ser. No. 775,517
Int. Cl. C23f *7/10, 7/12, 7/14*
U.S. Cl. 148—6.15 **7 Claims**

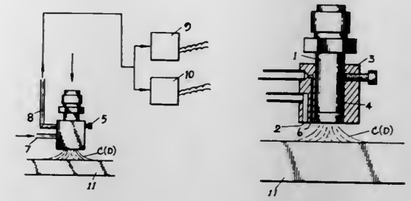
A zinc phosphate coating process for coating a metal surface consisting of aluminum, iron or zinc or alloys of aluminum, iron or zinc which comprises treating said metal surface with an aqueous solution containing as its essential ingredients, (a) at least about 0.7 gram per liter of zinc ion, (b) at least 1 gram per liter of phosphate ion 3as PO_4), (c) at least about 1 gram per liter of nitrate ion (calculated as NO_3), (d) between about 0.006 gram per liter and about 1 gram per liter of nitrite ion (calculated as NO_2), (e) between about 0.025 gram per liter and about 2.5 grams per liter of fluoride added as a combination of fluorides and bifluorides of sodium and potassium, such that the molar ratio of potassium to sodium is about 2:1 and the ratio of fluoride to bifluoride is about 1:1.

3,619,301
UNCUT DETECTING METHOD IN GAS WORKING

Roku Suzuki, and Hidetaka Shigeizumi, both of Tokyo, Japan, assignors to Koike Sanso Kogyo Co. Ltd., Tokyo, Japan

Filed Mar. 27, 1969, Ser. No. 810,961
Int. Cl. B23k *7/00*
U.S. Cl. 148—9 **11 Claims**

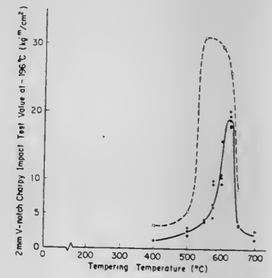
This invention provides a method for detecting "uncut" condition in gas workings, in particular in cutting works. The detection is performed by making use of two back pressures generated by pressurized fluid ejected from a jet located adjacent a nozzle and different with whether the gas from a nozzle is in a flame flow or a noncombustion flow.



3,619,302
METHOD OF HEAT-TREATING LOW TEMPERATURE TOUGH STEEL

Koichi Aoki, Yokohama; Seinosuke Yano, Kamakura; Hiroshi Mimura, Tokyo; Tohru Inoue, Tokyo, and Hiroshi Sakurai, Kawasaki, all of Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1968, Ser. No. 776,421
Int. Cl. C21d *1/26, 7/14*
U.S. Cl. 148—12 **8 Claims**



Heat-treating method of hot-rolled steel plate containing 1.5% to 10.0% Ni, 0.1% to 5.0% Mn and further at least one element selected from the group consisting of Mo, Cu, Cr, Nb and V, at need and the balance being substantially Fe, comprising subjecting one or more times repeatedly said hot-rolled steel plate to heating to and sequent quenching from a temperature within the range between Ac_1 and Ac_3 points, then subjecting the steel plate to tempering treatment at a temperature below Ac_1 point, thereby to improve largely toughness at low temperature and obtain excellent workability.

3,619,303
LOW ALLOY AGE-HARDENABLE STEEL AND PROCESS

Frederick J. Semel, Philadelphia, Pa., assignor to Alan Wood Steel Company, Conshohocken, Pa.

Continuation-in-part of application Ser. No. 749,274, Aug. 1, 1968, now abandoned. This application Dec. 18, 1968, Ser. No. 785,862
Int. Cl. C21d *7/14*; **C22c** *41/02*
U.S. Cl. 148—12.3 **26 Claims**

A ferrite-carbide low alloy constructional steel in the aged condition or capable of aging having the following composition:

Carbon	0.10% max.
Manganese	0.30 to 1.50%.
Silicon	0.35 max.
Molybdenum	0.04 to 0.50%.
Niobium	0.005 to 0.075%.

Iron and impurities, balance.

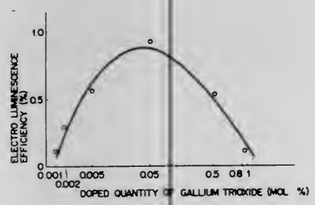
and a process of manufacture including aging and techniques for rolling the same.

3,619,304

METHOD OF MANUFACTURING GALLIUM PHOSPHIDE ELECTRO LUMINESCENT DIODES

Makoto Naito, Tokyo; Akinobu Kasami, Yokohama-shi, and Masaru Kawachi, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 25, 1969, Ser. No. 852,754
Claims priority, application Japan, Aug. 30, 1968, 43/61775
Mar. 8, 1969, 44/177797
Int. Cl. H01l 7/38, 7/46; H05b 33/00
U.S. Cl. 148—171 **10 Claims**



A gallium phosphide electro luminescent diode is fabricated by contacting molten gallium containing gallium phosphide, an N-type impurity and oxygen with a P-type gallium phosphide substrate and then slowly cooling the substrate to epitaxially grow an N-type gallium phosphide layer on the substrate, preferably on the (111) phosphorus surface thereof.

3,619,305

EXPLOSIVE COMPOSITIONS CONTAINING EXPANDED AMMONIUM NITRATE IN CRYSTALLINE FORM AND METHOD OF PREPARING SAME

Jacques Chatel de Raguet De Brancion, Boulogne sur Seine, France, assignor to Societe d'Explosifs et de Produits Chimiques

Continuation-in-part of application Ser. No. 558,273, June 17, 1966, now abandoned. This application Feb. 26, 1968, Ser. No. 708,443
Int. Cl. C06b 19/00
U.S. Cl. 149—2 **23 Claims**

An explosive composition containing as an essential ingredient ammonium nitrate in fine crystalline form having a specific surface greater than 500 cm^2/g. The ammonium nitrate in this form is obtained by crystallization from an aqueous solution in the presence of a tensio-active agent such as laurylamine acetate.

3,619,306

MOLDED EXPLOSIVE BODIES HAVING VARIABLE DETONATION SPEEDS

Adolf Berthmann, Leverkusen; Gerhard Martin, Troisdorf, and Maximilian Klunsch, Opladen, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 12, 1968, Ser. No. 759,501
Claims priority, application Germany, Sept. 13, 1967, D 54099
Int. Cl. F42b 1/00
U.S. Cl. 149—18 **6 Claims**

Process of manufacturing molded explosive bodies so that their detonation speeds can be varied within a defined range by reducing the density of the molded body. The reduction in density can be effected by incorporating into the starting components, porous, voluminous or air-containing materials. The solidification of the resulting compositions is thereafter carried out by incorporating into the above starting components a suitable binding agent, varying the working pressure in the forming of the bodies, or suitably regulating the sintering conditions.

The resultant bodies are characterized by their reduced densities and therewith reduced detonation speeds and by their high-mechanical strengths.

3,619,307

COPOLYESTER EXPLOSIVE OR PROPELLANT COMPOSITIONS

Martin Hauser, West Hartford, and George Sidney Sprague, Stamford, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 651,100, June 29, 1961. Filed June 3, 1969, Ser. No. 830,151
Int. Cl. C06d 5/06
U.S. Cl. 149—19 **4 Claims**

Rocket propellant and explosive compositions containing, as binders, carboxy-terminated polyester resins comprising a saturated dicarboxylic acid, a saturated diol and 2-methyl-1,2,3-propanetricarboxylic acid, are disclosed.

3,619,308

METHOD OF FORMING IN PLACE A GELLED AQUEOUS SLURRY EXPLOSIVE

Allen Lemoyne Caldwell, Prairie Village, and Dale S. Partridge, Shawnee Mission, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1968, Ser. No. 772,858
Int. Cl. C06b 1/04
U.S. Cl. 149—60 **4 Claims**

The extrudability of an aqueous slurry explosive stabilized with a gelled polysaccharide gum is improved by incorporating an effective amount of water-soluble polyacrylamide in the composition. Preferably this is accomplished by injecting into the exit stream of the pump a solution of borax as gelling agent and polyacrylamide to reduce resistance of the gel to extrusion through a tubular conduit into the desired location.

3,619,309

TREATMENT OF ALUMINUM OXIDE SURFACES WITH MOLTEN VANADIUM PENTOXIDE

Marc Marian Faktor, Bushey; George Reginald Newns, Ealing, London, and Dennis Gordon Fiddyment, London, all of England, assignors to Her Majesty's Postmaster General, London, England

Filed Jan. 26, 1968, Ser. No. 700,898
Claims priority, application Great Britain, Feb. 3, 1967, 5,347/67
Int. Cl. C23f 1/04; C23g 1/00
U.S. Cl. 156—2 **12 Claims**

Surface irregularities of a crystalline aluminum oxide member, such as an α-corundum crystal, are removed by treatment with molten vanadium pentoxide, preferably at temperatures exceeding 800° C. The treatment may be carried out in more than one stage, using a fresh vanadium pentoxide melt in each stage.

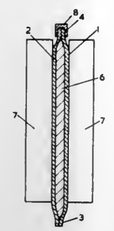
3,619,310

METHOD OF MAKING LIQUID-FILLED PRESSURE-DISTRIBUTING PADS USED IN PRESSES

Kenneth Clarke, Knebworth, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 775,019, Nov. 12, 1971, now abandoned. This application Nov. 6, 1969, Ser. No. 874,465
Int. Cl. B32b 1/10, 31/20
U.S. Cl. 156—145 **6 Claims**

Rectangular flat surfaced cushion plates, for use as pressure distributing pads in pressing operations, are made by seam welding two flexible metal sheets together around three sides of the desired rectangle, introducing a cushioning liquid to form a layer between the two sheets, then closing the fourth side of the rectangle by seam welding and then subjecting the resultant convex surface sachet structure to pressure between the platens of the press to permanently deform the metal sheets in the vicinity of the welds.

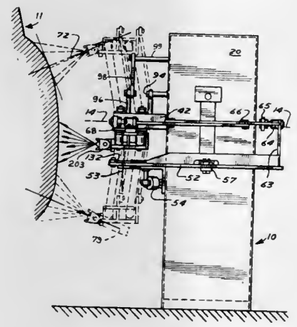


3,619,311

METHOD OF PROGRAMMING A CONTROLLER

Glenn R. Rose, St. Paul, and Robert S. Hedin, Minneapolis, both of Minn., assignors to Programmed & Remote Systems Corporation, St. Paul, Minn.

Division of Ser. No. 838,020, June 19, 1969, Pat. No. 3,561,398, which is a continuation of application Ser. No. 561,882, June 20, 1966, now abandoned. Filed July 2, 1970, Ser. No. 52,018
Int. Cl. B31b 1/62
U.S. Cl. 156—62 **4 Claims**



A method of programming a controller for an oscillating spray painter to paint an object that moves past the sprayer. A scale drawing of the object is superimposed on a developed layout of the path of the sprayer. A control member for the controller is divided into sections corresponding to the strokes of the sprayer and the points where painting should begin and stop during each stroke of the sprayer are determined from the scale drawing and then correspondingly placed on the control member.

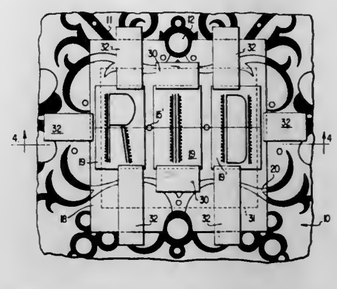
3,619,312

METHOD FOR APPLYING MONOGRAMS ON DECORATIVE ARTICLES OR THE LIKE

Samuel D. Berlin, Stevenson, Md., assignor to General Crafts Corporation, Baltimore, Md.

Filed Nov. 4, 1968, Ser. No. 773,258
Int. Cl. B32b 31/16, 31/22
U.S. Cl. 156—62 **3 Claims**

A method by which monograms can be placed within a decorative design area of an ornamental panel. Selected monogram letters are positioned on an initial positioning guide sheet which has a replica of the design of the ornamental panel printed thereon. The guide is then placed on the panel with matching design portions in proper position and with a sheet of carbon paper or the like interposed therebetween. The letters are then traced with a pencil or pen resulting in the transfer of the same to the ornamental panel.



3,619,313

BOARD FOR MOUNTING MAGNETIC ELEMENTS

Joseph Szuch, 3842 Bentley Ave., Culver City, Calif.

Filed Oct. 31, 1969, Ser. No. 873,019
Int. Cl. B29j 5/00
U.S. Cl. 156—62.2 **8 Claims**

A method of making a game board generally comprising the steps of placing a printed game board paper over a fixture having permanent magnets therein, depositing magnetic material on the surface of the game board paper, removing excess magnetic material from the surface of the game board paper, and positioning a plastic material over the game board paper such that the magnetic material on the paper is captured in adhesive which also serves to bond the plastic to the game board paper.

3,619,314

METHOD OF JOINING ADJACENT SHEETS OF ELASTOMERIC MATERIAL ON A SUPPORT STRUCTURE

Marcel Ecureux, Paris, France, assignor to Strati-France S. A., Paris, France

Filed Dec. 27, 1968, Ser. No. 787,492
Claims priority, application France, Jan. 5, 1968, 135,006
Int. Cl. E04f 13/00
U.S. Cl. 156—71 **1 Claim**

A method of joining adjacent sheets of elastomeric material to each other and to a support structure. Each sheet includes at least a top and bottom layer of elastomeric material

and a layer of reinforcing textile material disposed therebetween and having marginal portions extending beyond said top and bottom layers. The novel method comprises the steps of applying a liquid elastomer solution to the underside of the adjacent marginal portions and pressing the marginal portions against the support structure in an overlapping relation thereby joining said adjacent portions and adhering the joint to the support structure. A liquid elastomer solution is then applied over the joint to provide a continuous outer surface.

3,619,315

METHOD OF MANUFACTURING A POLYURETHANE COATED SHEET MATERIAL

David Ian Carrack; Eric Ivan Riseley, and Derek Kingston, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 20, 1967, Ser. No. 691,945
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **4 Claims**

A method for the manufacture of a coated sheet material having an improved flex-life, comprising applying to a flexible fibrous substrate having at least one base layer of a cured polyurethane composition, a relatively thin adhesive layer of a curable polyurethane composition dissolved in an organic solvent; allowing the solvent to evaporate from the adhesive layer for a time sufficient for the adhesive layer to become substantially dry, but insufficient for significant curing thereof to take place, laminating to the substantially dry adhesive layer a layer of a dried and cured, or partially cured, polyurethane composition supported on a release band; and removing the release band after final curing of the or each layer.

3,619,316

PROCESS OF MAKING POROUS, BONDED FIBROUS WEB

Shigeru Ishida, Fukaya, Saitama; Masayuki Yonei, Fukaya, Saitama, and Tadashi Yokota, Kyoto, all of Japan, assignors to Nippon Cloth Industry Co., Ltd., Kyoto, Japan

Filed May 28, 1968, Ser. No. 732,550
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **4 Claims**

Sheets comprising fibrous materials which are soft, excellent in mechanical properties, smooth at the surface thereof, and high in air and moisture permeability are produced by the steps of

1. bonding fiber webs with another using a binder (A) having plasticizing or molding ability at a temperature lower than a melting point or degrading temperature of the fibers constituting the fiber webs,

2. bonding further the whole webs together by impregnating or filling the interstices remaining with the molded webs with a binder (B) without dissolving or swelling the constituent fibers and the binder (A), and

3. dissolving the binder (A) to remove therefrom using a solvent which dissolves the binder (A) but not the constituent fibers and the binder (B).

As the binder (A), there may be used starch, dextrin, carboxymethylcellulose, methylcellulose, casein, polyethylene oxide, polyvinyl chloride, polyvinyl alcohol, polyvinyl acetate or the like. As the binder (B), there may be polyvinyl chloride, polyvinyl acetate, polyvinyl alcohol, polyamide, polyester, polyacrylate, polyurethane, synthetic rubber of every kind, natural rubber or the like.

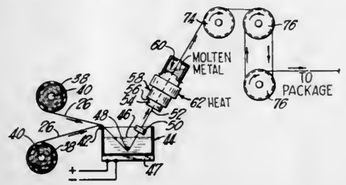
3,619,317

TENSILE MEMBERS, APPARATUS AND PROCESS

William Shulver, Saylesville, R.I., and Donald L. Blake, Seekenk, Mass., assignors to Owens-Corning Fiberglass Corporation

Filed Mar. 31, 1967, Ser. No. 627,405
Int. Cl. D04h *3/08*; **B29c** *6/02*
U.S. Cl. 156—180 **11 Claims**

Composite tensile members made up of a plurality of line-type tensile elements, such as continuous glass fibers, embedded in an encapsulating matrix of hardenable material, such as thermosetting resin, hardenable metal, etc. The glass fibers (line-type tensile elements) are carefully oriented in side-by-side relationship so that they are all substantially equally load bearing, so as to support a designed load without incurring individual fiber breakage. The matrix helps distribute the interfiber loading. Thus, all fibers are utilized. Though specifically applicable to nonyielding line-type tensile elements, fibers of metals and resins might also be used



in the product and process. On a strength to weight ratio, strengths 5x the best steel wires in conventional cables, are provided in the unique composite members of the invention, using continuous glass fibers.

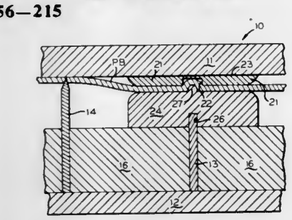
Apparatus and process for producing the composite tensile members wherein a molten bath is used as the direct heat-transfer and pressurizing medium.

3,619,318

METHOD AND APPARATUS FOR PREPARING SCORING DIES

Richard S. Shultz, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 27, 1969, Ser. No. 853,370
Int. Cl. B29d *24/00*
U.S. Cl. 156—215 **4 Claims**



A male-female member and a female scoring element cooperate with a uniform size scoring rule to locate the female scoring element on a scoring cylinder. The male-female member is removed and replaced by a second male-female member having a bead or land entering the groove of the female scoring element. The width of the groove of the female scoring element is chosen in accordance with the caliper of paperboard being scored, and the land enters the groove of the female scoring element to an extent placing a proper score in the board. The distance between the cylinder supporting the female scoring element and the rule chase and the dimensions of the male-female member and the female scoring element are so chosen that the paperboard fits nicely between the male-female member and female scoring element, which are in confronting relationship, so that deformation of the paperboard takes place only at the score being formed.

3,619,319

METHOD OF MAKING A COMPOSITE REINFORCED SYNTHETIC RESIN SHEET MATERIAL

Kastulus Utz, Freising, Germany, assignor to Alkor-Werk Karl Lissman KG, Munich-Solln, Germany

Filed July 1, 1968, Ser. No. 741,575
Claims priority, application Germany, July 5, 1967, A 56196
Int. Cl. B32b *31/00*
U.S. Cl. 156—229 **11 Claims**

The specification describes a method of making a sheet material in which strips of plastic laminate are woven, knitted or otherwise made into a textile product which is then subjected to fixation, for instance by heat so that the strips are connected together. Owing to the outer layers of the laminated strips having a lower melting point fixation can be carried out without affecting the inner layers of the laminated strips which may have been stretch-orientated and maintain this orientation during the fixation process.

3,619,320

PRODUCTION OF PLANE THREE-PLY MATERIALS FOR PLANE BUILDING COMPONENTS

Heinz Mueller-Tamm, Ludwigshafen/Rhine, and Hans Frielingsdorf, Bad Duerkheim, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktienzesellschaft, Ludwigshafen am Rhine, Germany

Filed Aug. 30, 1968, Ser. No. 756,376
Claims priority, application Germany, Sept. 7, 1967, P 17 04 493.8
Int. Cl. B29c *19/00*
U.S. Cl. 156—244 **4 Claims**

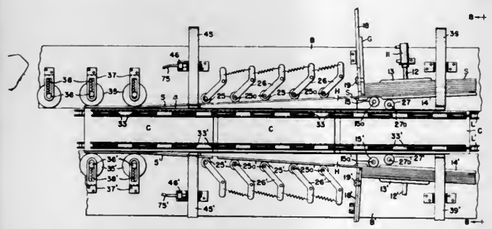
A process for the production of plane three-ply materials for plane building components, which materials consist of a relatively thick inner ply of a thermoplastic and relatively thin outer plies of another thermoplastic. The process comprises preparing a board of polyethylene by means of a screw extruder at elevated temperature and covering the board on both sides with a film of a terpolymer at elevated temperature by means of a pair of rollers to form a sandwich assembly. The terpolymer must have a specific chemical composition; it is prepared from (1) a predominant amount of ethylene, (2) a relatively low amount of an ethylenically unsaturated carboxylic acid and (3) a relatively low amount of an ester of an ethylenically unsaturated carboxylic acid.

3,619,321

APPLICATION OF FACINGS TO CORES

Raymond H. Lewis, Fort Lauderdale, and Donald J. Peters, Boca Raton, both of Fla., assignors to Roberts Consolidated Industries, Inc., Industry, Calif.

Filed Sept. 11, 1968, Ser. No. 759,072
Int. Cl. B32b *31/12*; **B05c** *1/14*
U.S. Cl. 156—249 **8 Claims**



A machine and method for continuously applying thermoplastic adhesive, in the form of a flexible nontacky spread in a solid state, while mounted on a carrier, to an advancing core to which a facing is to be affixed. The adhesive spread is initially moved past a heating unit, as is each facing, to (1) preheat the facing and (2) liquify the adhesive. The spread of adhesive is then transferred to the core and separated from its carrier in so doing. Thereafter, the facing is advanced to a position against the adhesive spread where it is maintained under a continuing pressure to permit cooling and solidification of the adhesive for permanent union with both the core and facing applied thereto.

3,619,322

PROCESS FOR BONDING FELTS, NEEDLED FELTS, FELT-LIKE MATERIALS AND SIMILAR PRODUCTS

Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Filed May 31, 1967, Ser. No. 642,496
Claims priority, application Germany, May 31, 1966, V 31161
Int. Cl. B32b *31/00*
U.S. Cl. 156—282 **19 Claims**

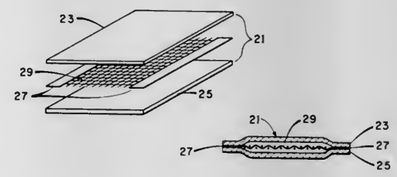
The present disclosure relates to a process and apparatus for bonding felts or feltlike materials which comprises adding to the materials to be bonded a synthetic bonding fiber thereby forming a fiber blend and fuse-bonding the fiber blend by heat-treating said blend to the sticking or melting point of the bonding fibers and setting the fiber blend by cooling down the bonded fibers, said heat-treatment and cooling down stages being effected shocklike by passing at least part of the heating and cooling treatment medium through the material being treated.

3,619,323

METHOD OF BONDING SILICONES TO SILICONES

Leo F. Stebleton, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 6, 1968, Ser. No. 773,819
Int. Cl. B29h *7/04*
U.S. Cl. 156—292 **9 Claims**



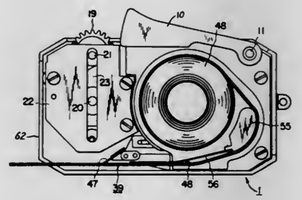
A cured silicone can be bonded to itself or to other cured silicones without the use of primers or materials requiring curing by means of a fusible silicon-containing material, such as a silarylenesiloxane block copolymer. A film or coating of the fusible silicon-containing material can be applied directly to the surfaces to be joined, or a separate film of that material can be placed between the surfaces. Heat is then applied to the fusible material causing it to become tacky and to adhere to the surfaces to be joined when they are pressed together. On cooling of the fusible material, the surfaces are securely bonded together by the fusible material.

3,619,324

MINIATURE LABELING APPARATUS

Yo Sato, Tokyo-to; Sozo Izumihara, Kawaguchi-shi; Haruo Toda, Omiya-shi; Kiyoji Nagashima, Ageo-shi; Eiichi Matsushima, Omiya-shi; Soji Kojima, Kawagoe-shi; Reizo Watanabe, Omiya-shi, and Kiyoshi Someno, Hasuda-machi, all of Japan, assignors to Sato Kiko Kabushiki Kaisha, Tokyo-to, Japan

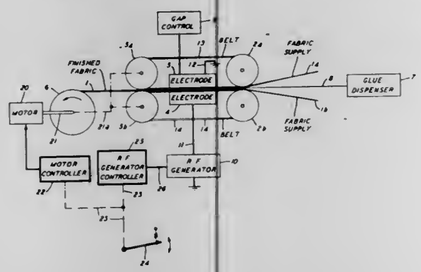
Filed June 26, 1969, Ser. No. 836,901
Claims priority, application Japan, July 3, 1968, 43/45914 Sept. 30, 1968, 43/71028, June 5, 1969, 44/43570, June 7, 1969, 44/44945, June 12, 1969, 44/45760, June 11, 1969, 44/45393, June 10, 1969, 44/45608, Feb. 24, 1969, 44/13775, June 10, 1969, 44/45607, June 4, 1969, 44/43870, 44/43871, June 14, 1969, 44/46535
Int. Cl. B41m *1/40*; **B32b** *31/20*
U.S. Cl. 156—576 **13 Claims**



A printing mechanism, and a label tape feeding mechanism both actuated by a hand-pushed drive lever, and a roll of

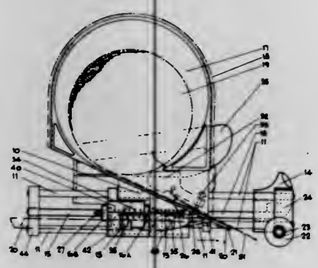
label tape, are enclosed within a compact case, whereby a lightweight labeler is obtained and can be used continuously for a long period without fatiguing the user.

3,619,325
SEALING TEMPERATURE CONTROL APPARATUS FOR CONTINUOUSLY FED SHEET MATERIAL
George R. Hair, Clifton, N.J., and John G. Nielsen, Wantagh, N.Y., assignors to Bondit Corp., Newark, N.J.
Filed Mar. 12, 1969, Ser. No. 806,542
Int. Cl. B29c *27/04, 27/10;* **G05g** *15/06*
U.S. Cl. 156—380 **4 Claims**



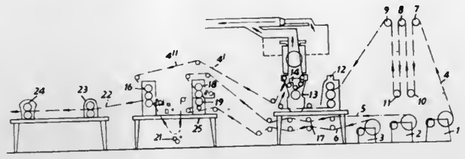
Apparatus for joining sheet material is disclosed in which the material to be joined is fed from supply rolls, a dry monofilament adhesive is interfed between the materials in the area thereof to be joined, the materials and the interfed adhesive are then concurrently compressed and subjected to radio frequency heating energy whereby the adhesive melts and covers the sheet areas to be joined. The heating energy applied to the adhesive is controllably varied with the rate of travel of the material so that the adhesive is heated to the proper temperature regardless of the speed of operation of the machine.

3,619,326
DISPENSERS FOR TAPE-CONVEYED ARTICLES SUCH AS LABELS
Kenneth Burbidge, 73 Hastie Ave., Mangere Bridge, Manakau, New Zealand
Filed Apr. 16, 1968, Ser. No. 721,856
Claims priority, application New Zealand, Apr. 17, 1967, 148051
Int. Cl. B32b ; B41m
U.S. Cl. 156—384 **24 Claims**



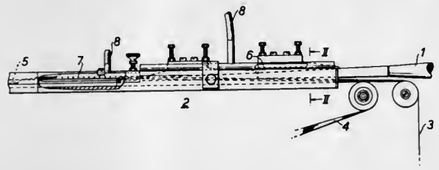
In a label dispenser of the kind in which self-adhering labels are lightly adhered to a roll of tape which is drawn step-by-step over an edge member to cause the labels to become partly peeled, one after the other, from the tape, there is incorporated means acting automatically to compensate for any slackness that may develop in the tape as a result of a label being plucked therefrom, thus ensuring accuracy of delivery.

3,619,327
PACKAGING PRODUCTION
Auguste Tricollet, 395, Rue Paradis, Marseilles, France
Filed May 9, 1969, Ser. No. 826,060
Int. Cl. B41m *1/26*
U.S. Cl. 156—384 **2 Claims**



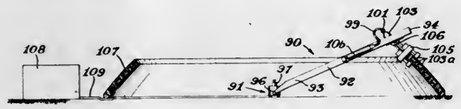
The invention provides a machine for the assembly of three strip materials into a multiple-layer packaging or wrapping material. A top layer strip is fed to a printing machine. An intermediate layer strip of, for example, metal foil is fed to a corrugation machine, and the corrugated layer is fed with a backing strip to a gumming machine which unites them. Then the printed layer and the united intermediate and backing layers are fed to a gumming machine which assembles them. The multiple-layer product can be fed to a cutter and divider.

3,619,328
APPARATUS FOR APPLYING ADHESIVE TO CONTINUOUS WEBS
Edward George Preston; Rolf Penzias, and Horace Alexander Stone, all of Deptford, London, England, assignors to Molins Machine Company Limited, London, England
Filed July 8, 1968, Ser. No. 743,236
Claims priority, application Great Britain, July 17, 1967, 32,791/67
Int. Cl. B31f *1/00;* **A24c** *5/24*
U.S. Cl. 156—461 **8 Claims**



In a cigarette filter-plug rod-making apparatus in which filter material is continuously wrapped in a garniture to form a continuous rod, adhesive is applied to the wrapper web before it enters the garniture at a metered rate either by a pasting wheel for starch or by a gun for polyvinyl acetate.

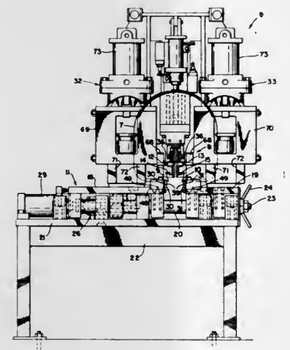
3,619,329
EXTRUSION APPARATUS FOR THE PREPARATION OF WALLED STRUCTURES
Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 28, 1969, Ser. No. 803,348
Int. Cl. B29d *27/00*
U.S. Cl. 156—500 **7 Claims**



A lightweight plastics extruder is disclosed which can be used with particular benefit in the preparation of structures

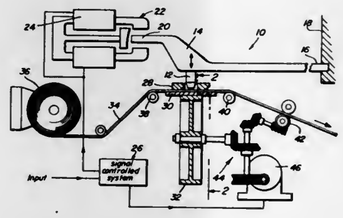
wherein a foamable plastic is extruded in a desired location and the extruder moved as foam material is deposited.

3,619,330
ADJUSTABLE CLAMP USED IN A TUBE SPLICING MACHINE
Glenn D. Kerr, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 25, 1970, Ser. No. 14,101
Int. Cl. B29h *15/04;* **G03d** *15/04*
U.S. Cl. 156—503 **20 Claims**



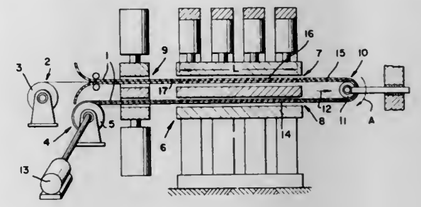
A machine for splicing unvulcanized inner tubes. The machine employs a clamp which is adjustable for holding various size inner tubes. The clamp has a pair of end sections with configured recesses for receiving opposing edges of the inner tube and a pair of intermediate sections which are removably positionable in abutting relation between the end sections. Means are provided for varying the spacing between the end sections to accommodate different intermediate sections.

3,619,331
CODE PUNCH RECORDING SYSTEM
Gregory Grosbard, Long Beach, N.Y., assignor to International Research Development, Inc.
Filed Aug. 29, 1969, Ser. No. 854,126
Int. Cl. B32b *31/18, 31/10;* **B26f** *1/00*
U.S. Cl. 156—510 **10 Claims**



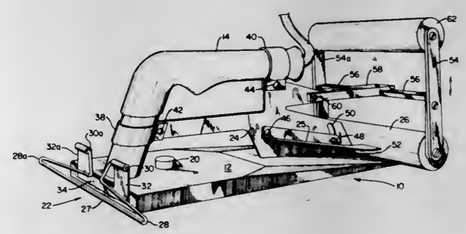
Portions of magnetic tape are transferred to data processing cards by a code punching device. The tape is fed past the punch closely spaced from the card in response to a signal input causing reciprocation of the punch thereby transferring punched out portions of the tape to the cards. A pressure activated adhesive coating the cards firmly holds the punched out tape portions on the cards.

3,619,332
SYSTEM FOR CURING ELONGATE WORKPIECES
Hendrikus Johannus Bongers, Huls, Krefeld, Germany, assignor to G. Siempelkamp & Co., Krefeld, Rhld., Germany
Filed July 25, 1968, Ser. No. 747,506
Claims priority, application Germany, July 25, 1967, P 17 04 999.9
Int. Cl. B30b *15/34;* **B32b** *31/00*
U.S. Cl. 156—583 **4 Claims**



An elongate workpiece of flexible polymeric material, such as a conveyor belt, is passed back and forth through different stages of a multiplaten press for simultaneous curing of two or more sections of this workpiece.

3,619,333
APPARATUS FOR APPLYING HEAT BOND TAPE TO ADJACENT CARPET SECTIONS
Donald H. Mender, 8500 West 106th Ave., Broomfield, Colo.
Filed Mar. 17, 1969, Ser. No. 807,521
Int. Cl. B30b *15/34;* **B32b** *31/08;* **B65h** *21/00*
U.S. Cl. 156—583 **6 Claims**

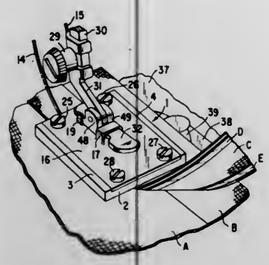


Attachment apparatus for a manually moveable heated carpet seaming iron of the type which melts an adhesive on one face of a seaming tape, characterized by a tape guide secured to the forward end of the iron which aligns the longitudinal central axis of the tape beneath the seam to be formed, pile guides disposed rearwardly of the guide which press the carpet edges downwardly and into abutting relation, and a trailing presser roll for applying pressure to the carpet and forcing it into contact with the melted adhesive.

3,619,334
SEWING MACHINE ATTACHMENT FOR HOT PRESSING MATERIALS
Robert C. Hauf, West Paterson; Melvin Wiener, Rockaway, and John A. Herr, Garwood, all of N.J., assignors to The Singer Company, New York, N.Y.
Filed Oct. 15, 1969, Ser. No. 866,529
Int. Cl. B30b *15/34;* **B32b** *31/20;* **D05b** *29/12*
U.S. Cl. 156—583 **4 Claims**

A sewing machine attachment having a heating element enclosed therein, whereby a material contacting surface of the attachment is utilized to apply heat for hot pressing materials disposed on the sewing machine. A clip arrangement permits the attachment to either be mounted on a presser foot with the material contacting surface facing downwardly, or mounted on a modified throat plate with the

material contacting surface facing upwardly. When the attachment is mounted in the latter position, a special presser

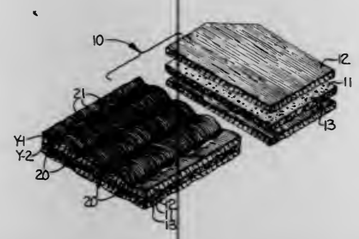


foot having a die may be used to form embossed designs on the materials.

3,619,335
UNITARY LAMINATE
Thomas Toplica Bryan, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 21, 1969, Ser. No. 818,046
Int. Cl. B32b *7/06, 27/06*
U.S. Cl. 161—1 15 Claims

A unitary laminate is shown comprising a backing layer and flexible polymeric film. The film includes as a plasticizer a nonionic surfactant. In a preferred embodiment, the flexible polymeric film is adhered to the backing layer by an intermediate adhesive layer.

3,619,336
STITCHED COMPOSITE NONWOVEN FABRIC HAVING FOAM SUPPORTING LAYER AND OUTER FIBROUS LAYERS
George H. Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.
Filed Jan. 19, 1970, Ser. No. 3,745
Int. Cl. B32b *7/08*
U.S. Cl. 161—50 5 Claims



A stitched, composite, integrated, multilayer nonwoven fabric adaptable for use as bed coverings, garments and the like and specifically characterized by improved hand, drapability, compressibility, resilience, washability, bulk, strength and insulating qualities. The fabric comprises a supporting layer of three-dimensional, compressible, resilient, cellular, resinous foam material having an integral network extending in random directions to define a multiplicity of cells; upper and lower three-dimensional, self-sustaining facing layers of nonwoven textile fibers superimposed on opposite sides of and being contiguous with the supporting layer to completely cover the supporting layer and form the multiple-layer fabric having outer faces with textile fiber characteristics; and elongate, spaced-apart rows of stitches penetrating the superimposed layers for stitch-bonding together the individual fibers of each of the facing layers and for stitch-bonding together the superimposed layers to form the composite fabric. The resulting composite nonwoven fabric may include napped and/or ribbed outer surfaces to provide desired characteristics.

3,619,337
DIMENSIONALLY STABLE FABRIC HAVING A SUEDELIKE TEXTURE
Gene C. Weedon, Richmond; Robert C. Winckhofer, Richmond, and George H. Collingwood, Hopewell, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Aug. 15, 1968, Ser. No. 752,739
Int. Cl. D03d *27/00*; D04h *1/00*
U.S. Cl. 161—64 6 Claims

A dimensionally stable fabric having a suedelike texture is produced by a process which comprises brushing or napping a fabric containing filaments comprising a polyamide matrix having microfibers of a higher melting synthetic polymer dispersed therein. A substantial number of the filaments of the base or ground of the napped fabric are then fused together at their crossover points to impart dimensional stability to the fabric and retain the original fabriclike appearance. The dimensionally stable fabric retaining its original fabriclike appearance is then contacted with an alkylene glycol having two to about 10 carbon atoms for a period of time sufficient to soften the dimensionally stable fabric thereby imparting a suedelike texture on the brushed or napped surface of the fabric without any substantial loss of dimensional stability in the fused fabric.

3,619,338
GLASS FABRIC SHEETS BONDED TOGETHER WITH POLYISOCYANURATES PREPARED FROM AN ORGANIC DIISOCYANATE AND A MONOISOCYANATE USING IONIC POLYMERIZATION CATALYSTS
Lucius G. Gilman, Wakefield, and Morton H. Gollis, Brookline, both of Mass., assignors to Monsanto Research Corporation, Saint Louis, Mo.
Continuation of application Ser. No. 234,513, Oct. 31, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 845,593, Oct. 12, 1959, now abandoned. This application May 14, 1968, Ser. No. 733,190
Int. Cl. B32b *17/10*
U.S. Cl. 161—93 2 Claims

Polyisocyanurates made by reacting diisocyanates and monoisocyanates, process for making the polyisocyanurates using ionic polymerization catalysts, and laminates made fusing the polyisocyanurates as laminating resins.

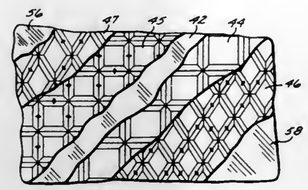
3,619,339
POROUS NONWOVEN FILM-FIBRIL SHEET AND PROCESS FOR PRODUCING SAID SHEET
William Lee Garrett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 8, 1969, Ser. No. 840,049
Int. Cl. B32b *7/00*; D04h *3/14*
U.S. Cl. 161—109 10 Claims

A nonwoven film-fibril sheet of substantially continuous plexifilamentary strands is point-bonded and perforated, within specified limits, to provide a porous, strong, nonpapery fabriclike sheet for, e.g., garment end uses.

3,619,340
MULTILAYERED THERMAL INSULATION MATERIAL
Peter Jones, 2211 Verde Oak Drive, Hollywood, Calif.
Filed Jan. 21, 1969, Ser. No. 792,378
Int. Cl. B32b *3/00, 3/10*
U.S. Cl. 161—127 7 Claims

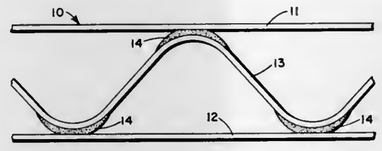
This invention relates to improvements in multilayered thermal insulation employing heat reflectivity in multiple layers of flexible, embossed, reflective material or of reflectively coated materials which are themselves heat insulators. The several layers are arranged in series and are embossed to

define spaced, substantially dead, air cells. The walls of successive layers of cells are offset one from the other whereby



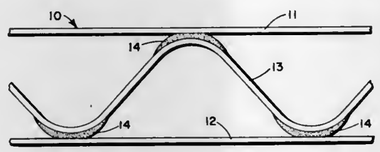
compressive strength of the structure is maintained while providing substantial flexibility.

3,619,341
CORRUGATED FIBERBOARD
Curtis Elmer, Raleigh, N.C., assignor to Alton Box Company, Alton, Del. and Monsanto Company, Saint Louis, Mo.
Filed July 18, 1969, Ser. No. 843,106
Int. Cl. B32b *3/28, 27/42*; C08a *37/16*
U.S. Cl. 161—133 5 Claims



Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and intermediate resin treated medium and liner sheet members useful in the manufacture thereof. Such board is made by treating medium and, optionally, liner members with a modified phenol aldehyde resole resin composition and thereafter bonding corrugated medium to liner members with a thermosetting resorcinol-starch-formaldehyde adhesive system.

3,619,342
CORRUGATED FIBERBOARD
William D. Burke, West Springfield, Mass., assignor to Alton Box Board Company, Alton, Del. and Monsanto Company, Saint Louis, Mo.
Filed July 18, 1969, Ser. No. 843,125
Int. Cl. B32b *3/28, 27/42*; C08g *37/16*
U.S. Cl. 161—133 5 Claims



Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and intermediate resin treated medium and liner sheet members useful in the manufacture thereof. Such board is made by treating medium and, optionally, liner members with a modified phenol aldehyde resole resin composition and thereafter bonding corrugated medium to liner members with the phenol aldehyde resole resin used as the waterproofing agent in a starch adhesive.

3,619,343
ROOFING MATERIAL
Clarence S. Freeman, P.O. Box 1204, Beaumont, Tex.
Filed Apr. 23, 1969, Ser. No. 818,778
Int. Cl. B32b *5/02, 5/16*
U.S. Cl. 161—160 15 Claims

An expanded plastic roof product having a first layer of open cell expanded material, the material being preferably a polyolefin on density from about 1 to about 25 pounds per cubic foot and there being additional layers thereon for weather protection, coloration, styling and appearance preferably like that of current roofing materials.

3,619,344
ORIENTED FOAM LAMINAR STRUCTURES
Leon Edward Wolinski, Buffalo, N.Y., and Roland G. Harris, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 767,093, Oct. 14, 1968, now abandoned. This application Aug. 7, 1969, Ser. No. 848,206
Int. Cl. B32b *3/12*
U.S. Cl. 161—161 17 Claims

A laminar structure comprising oriented foam having thermoformable thermoplastic film bonded to the surfaces thereof and process for its preparation.

3,619,345
HEAT-SENSITIVE STENCIL PAPER
Keishi Kubo, Kanagawa-ken; Kiyoshi Sakai, Tokyo, and Kenzi Itoh, Tokyo, all of Japan, assignors to Habushiki Kaisha Ricoh, Tokyo, Japan
Filed June 24, 1969, Ser. No. 836,171
Claims priority, application Japan, June 28, 1968, 43/44526
Int. Cl. B41c *1/14*; B41m *1/12*; B44d *3/30*
U.S. Cl. 161—162 2 Claims

A heat-sensitive stencil paper consisting of a porous thin paper (Stencil base tissue) laminated to a vinylidene chloride-vinyl chloride copolymer film and a powder layer formed on the surface of said film.

3,619,346
POLYVINYL ACETATE ADHESIVE
Stanley R. Sandler, Springfield, Pa., assignor to The Borden Company, New York, N.Y.
Filed Nov. 20, 1967, Ser. No. 684,536
Int. Cl. B32b *27/30*; C08g *51/24*
U.S. Cl. 161—251 8 Claims

This invention relates to vinyl acetate polymer adhesives which are room temperature curable under acidic conditions and more particularly to aqueous adhesives curable at room temperature comprising a vinyl acetate polymer, an N-hydroxymethyl reactive monomer copolymerizable with said polymer, an acidic curing agent, and a volatile curing inhibitor selected from the group consisting of substituted and unsubstituted C_1-C_5 aliphatic primary alcohols having a boiling point below about 150° C.

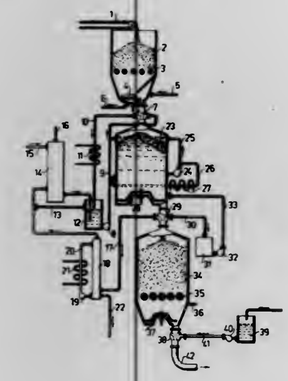
3,619,347
RECOVERY OF WASTEPAPER TREATED WITH UREA OR THE LIKE RESINS TO IMPART WET STRENGTH
Glen V. Ireland, Jr., Brookfield, Wis., assignor to Salvox Mfg. Company, Milwaukee, Wis.
Filed Mar. 13, 1969, Ser. No. 807,064
Int. Cl. D21c *5/02*
U.S. Cl. 162—5 6 Claims

Wastepaper treated typically with urea resins or the like to impart high wet strength is recovered by treating it in a standard paper pulper in an aqueous medium with a mixture of sulfuric and phosphoric acid and, advantageously, an emulsifying agent.

3,619,348
PROCESS FOR CONTINUOUS CELLULOSE COOKING

Arne Johan Arthur Asplund, Lidingo; Karl Nicolaus Cederquist, Nasbypark, and Rolf Bertil Reinhall, Lidingo, all of Sweden, assignors to Defibrator Aktiebolag, Stockholm, Sweden

Continuation-in-part of application Ser. No. 543,713, Apr. 19, 1966, now abandoned. This application Sept. 5, 1969, Ser. No. 857,295
Int. Cl. D21c *3/26*
U.S. Cl. 162—19 12 Claims



The invention provides an apparatus and method for producing cellulosic pulp. A downwardly moving column of cellulosic material is contacted with a countercurrent flow of steam in a steaming zone. The steaming zone is maintained at an atmospheric pressure and temperature effective to expel air from the material without causing discoloration thereof. The temperature may be from 100° C. to 120° C. The steamed material is preimpregnated in a zone which is sealed from the ambient air. The preimpregnation is effected by contacting the steamed material with cold liquor having a temperature below that of the steamed material and effective to produce a rapid absorption of liquor therein. The cold liquor temperature is in the range of about 20° C. to about 80° C., and pressures of up to 10 gauge pressures can be employed. A condensate material resulting from the steaming treatment is separated from the cellulosic material after it has been subjected to the steaming treatment. The preimpregnated cellulosic material is sluiced through an impregnating zone containing hot cooking liquor at a temperature and superatmospheric pressure sufficient to effect impregnation thereof. The temperature within the impregnating zone may range from 100° C. to 180° C. and increase in the direction of material movement. The impregnated material is then passed from the impregnating zone for subsequent introduction into any desired pulp vapor phase digesting zone. The disclosed apparatus is used to effect the various process steps of the overall treatment.

3,619,349
BLEACHING OF SHREDDED OR FLUFFED CELLULOSIC PULP WITH GASEOUS CHLORINE MONOXIDE

Norman Liebergott, Chomedy, and Henry Irving Bolker, Pointe Clare, Quebec, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada

Filed Dec. 8, 1969, Ser. No. 882,819
Claims priority, application Great Britain, Dec. 16, 1968, 59,738/68
Int. Cl. D21c *9/12*
U.S. Cl. 162—66 17 Claims

A process for bleaching a fibrous cellulosic pulp which comprises bleaching the pulp at high consistency and in the form of fluffed or shredded fibers and fiber aggregates with chlorine monoxide in the gaseous phase.

3,619,350
CHLORINE DIOXIDE PULP BLEACHING SYSTEM

Richard Marchfelder, 159-A Lake Ave., Greenwich, Conn.

Filed July 11, 1969, Ser. No. 840,927
Int. Cl. D21c
U.S. Cl. 162—67 5 Claims

A chlorine dioxide bleaching process is disclosed that improves the efficiency of bleaching paper, reduces the consumption of chemicals, water and heat, and minimizes waste disposal problems. The essential feature of the invention is a two-stage system for generating chlorine dioxide in which partially spent chemicals discharged from the primary generation stage are more completely reacted under controlled conditions in a dechlorination stage. Since chlorine dioxide solution from the dechlorinator is somewhat contaminated, it is separately collected for use in the early pulp chlorination stages while the purer chlorine dioxide from the primary generator is reserved for use in the latter stages of pulp bleaching. The chloride content and corrosiveness of the spent reagents are minimized by this process which not only provides for economical utilization of the chemicals but also makes it feasible to add the underflow from the dechlorinator to the black liquor recovery system and so increase the recovery of sulfides. Waste disposal problems and the consumption of water are minimized by recycling free acid from the dechlorinator to the generator and by utilizing the filtrate from the last stages of pulp washing as the absorption media in the chlorine dioxide absorption towers.

3,619,351
PROCESS AND COMPOSITION FOR CONTROL OF RESIN IN CELLULOSE PULP SUSPENSIONS

Frans Adam Kolosh, Molndal, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jan. 29, 1969, Ser. No. 795,023
Claims priority, application Sweden, Jan. 30, 1968, 1239/68
Int. Cl. D21c *3/20*
U.S. Cl. 162—72 14 Claims

Process and composition for controlling resin in aqueous cellulose pulp suspensions which comprises incorporating in the suspension a resin control agent comprising a water-soluble nonsurface-active cationic quaternary ammonium salt.

3,619,352
FLAME RETARDANT HARDBOARD AND ITS MANUFACTURE

Donald Alfred Bell, Holmcroft, Athy, Ireland, assignor to Bowaters United Kingdom Paper Company Limited, London, England

Filed July 18, 1968, Ser. No. 745,706
Claims priority, application Great Britain, July 26, 1967, 34,299/67
Int. Cl. D21h *1/02*
U.S. Cl. 162—127 3 Claims

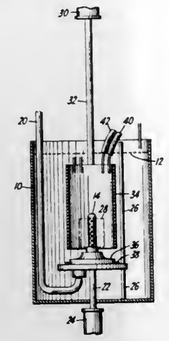
A process of manufacturing flame retardant hardboard which includes forming, in continuous manner, a travelling layer of wet wood fiber, continuously forming on a surface of said wood fiber layer as it advances, a layer comprising wet asbestos fiber and wood pulp, and subsequently removing water from the two layers whereby the two layers combine and unite together. Preferably, as a binder, starch is present with the asbestos fiber and the surface of the wood-asbestos layer may be treated with flame retardant chemicals, some of which penetrate to the wood fiber layer.

3,619,353
METHOD AND APPARATUS FOR MOULDING MULTILAYERED FIBROUS ARTICLES HAVING LAYERS OF DIFFERENT FIBROUS MATERIALS

John Covington Williams, Meriden, Conn., assignor to AMF Incorporated

Filed Sept. 20, 1968, Ser. No. 761,068
Int. Cl. D21j *7/00*
U.S. Cl. 162—129 7 Claims

Apparatus and method for pulp moulding a fibrous article including a tank containing a first slurry of fibrous material, a foraminous die connected to a rod and cylinder for moving the die into and out of the first slurry in the tank on which the article is formed, a sleeve connected to a rod and cylinder for moving the sleeve into and out of the first slurry in the tank, the sleeve functioning to isolate the die from the first slurry in the tank, and hoses connected to the sleeve for



supplying a second slurry of fibrous material to the area between the sleeve and the die in order that the accreted product be composed of layers of varying fiber constituents.

3,619,354
LAMINATED FELTED SHEETS AND ASBESTOS CONTAINING COATING COMPOSITION FOR USE THEREIN

Robert G. Woolery, Lewiston, N.Y., assignor to Union Carbide Corporation, New York, N.Y., continuation-in-part of application Ser. No. 576,248, Aug. 31, 1966, abandoned

Filed Feb. 5, 1969, Ser. No. 796,913
Int. Cl. B32b *5/08, 19/06;* D21h *5/18*
U.S. Cl. 162—129 3 Claims

Disclosed is a process for forming laminated felted sheets wherein a wet base sheet of fibrous material is formed on a paper making screen and, before the wet base sheet is removed from the screen, a nonseparable, uniform asbestos-binder composition is applied thereto. The composition comprises an intimitate mixture containing (a) at least 50 percent by weight of chrysotile asbestos having a specific surface area from about 60–80 $m^2/g.$, a magnetite content of from about 0.04–0.5 percent, a reflectance of from about 72–78 percent, and a pulpability such that 0.2–1 percent of the asbestos is retained on a 65 mesh Tyler screen and (b) a binder therefore. The ratio of asbestos to binder, on a dry weight basis, ranges from about 3:1 to 9:1.

3,619,355
METHOD FOR DECREASING AGING OF PAPER WITH SULFITES AND/OR BISULFITES AND PRODUCT

Richard A. Silberman, Ridgefield, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Sept. 7, 1967, Ser. No. 665,955
Int. Cl. D21h *1/10*
U.S. Cl. 162—135 3 Claims

A dried paper web is impregnated with a soluble sulfite and/or bisulfite salt, such as sodium sulfite or bisulfite which salt may be incorporated in an aqueous starch, or starch clay, surface-sizing composition to decrease the aging of the paper.

3,619,356
FIXING OF ANIONIC DYESTUFFS TO CELLULOSIC FIBERS WITH CATIONIC POLYMERIC FATTY ACID POLYALKYLENE POLYAMINES

James L. Keen, New Brighton, Minn., assignor to General Mills, Inc.

Filed Mar. 25, 1968, Ser. No. 715,544
Int. Cl. D21h *3/80*
U.S. Cl. 162—162 17 Claims

Cellulosic fibers are dyed by treatment with an anionic dye such as Calcocid Blue 2G (a tri-phenyl methane dye, color Index 42090) and a polyamine derived from polymeric fat acids such as the polyamine obtained by hydrogenating, in the presence of ammonia, the reaction product of ammonia and tall oil fatty acids. Paper is prepared by adding such dye and polyamine to the aqueous fiber dispersion prior to the formation of sheets.

3,619,357
PROCESS OF DYEING CELLULOSIC FIBERS WITH MONTMORILLONITE CLAY AND A POLYMERIZED FATTY NITROZEN COMPOUND AND PRODUCTS OBTAINED THEREBY

James L. Keen, New Brighton, Minn., assignor to General Mills, Inc.

Filed Mar. 25, 1968, Ser. No. 715,549
Int. Cl. D21h *3/80*
U.S. Cl. 162—162 17 Claims

Cellulosic fibers are dyed by treatment with an anionic dye, such as Nigrosine 02P or OPX, color index 5420, an alkali metal or acid montmorillonite clay such as bentonite, and a fatty nitrogen compound, prepared from polymerized fat acids, such as tallow diamine. Paper is prepared by adding the dye, clay and fatty amine or quaternary ammonium compound to the aqueous dispersion prior to the formation of sheets therefrom.

3,619,358
METHOD FOR IMPROVING WATER DRAINAGE FROM A PAPER WEB ON A WIRE-SCREEN OF A PAPER MACHINE BY USING A MODIFIED POLYACRYLAMIDE PREPARED FROM A WATER-SOLUBLE POLYACRYLAMIDE BY THE HOFFMAN REACTION

Ten Yoshii, Akashi-shi; Shigehiko Yoshioka, Kobe-shi; Hazimu Hashimoto, Akashi-shi; Iwao Sugiyama, Akashi-shi, and Tsuruo Okada, Tokyo, all of Japan, assignors to Seiko Kagaku Kogyo Company, Limited, Akashi-shi, Hyogo-ken, Japan

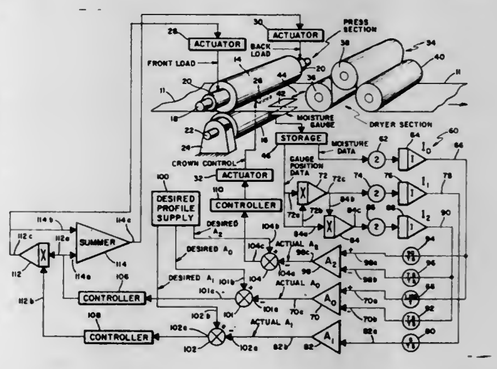
Filed June 5, 1969, Ser. No. 830,845
Claims priority, application Japan, June 12, 1968, 43/40373
Int. Cl. D21h *3/58*
U.S. Cl. 162—168 2 Claims

The sheeting or paper web forming operation in a paper making process, can be facilitated by addition to a pulp stock, of a modified polyacrylamide prepared from a water-soluble polyacrylamide by the Hoffmann reaction.

3,619,359
GROSS MACHINE MOISTURE CONTROL SYSTEM FOR THE NET END OF A PAPER MACHINE

Marion A. Keyes, IV, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.

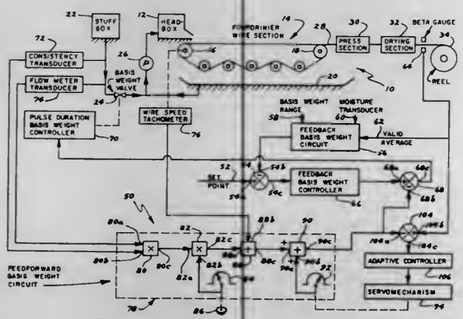
Filed Mar. 10, 1969, Ser. No. 805,642
Int. Cl. D21f *3/06*
U.S. Cl. 162—252 12 Claims



This invention relates to wet end moisture control utilized in the making of a continuous web of paper. An on line cross

machine moisture profile is obtained and this profile is automatically adjusted by appropriately changing the relative contributions of a plurality of control actuators so that the profile is made to conform more accurately to a desired shape prior to entering the dryer section of the paper making machine. A scanning moisture gauge traverses the web between a press roll section and the dryer section. From this scan, a continuous moisture profile is stored from which the gross moisture level, skew, and curvature of the profile are computed. From gross moisture level, skew, and curvature signals, the control actuators simultaneously apply controlled amounts of pressure to the ends and center of the press rolls to bring the continuous moisture profile to a desired profile.

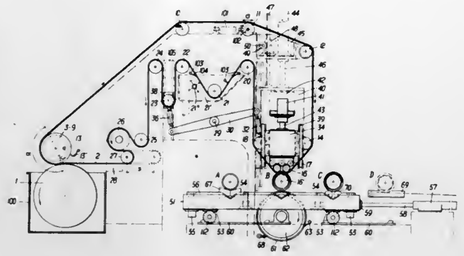
3,619,360
BASIS WEIGHT CONTROL SYSTEM FOR A PAPERMAKING MACHINE
Spencer R. Persik, Jr., Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 17, 1968, Ser. No. 784,335
Int. Cl. D21f *1/08*
U.S. Cl. 162—258 **5 Claims**



A system for controlling the final basis weight of a paper web by adjusting the amount of heavy fiber stock supplied to a Fourdrinier Machine headbox in response to an adjusted predicted basis weight signal. Such signal is based on comparisons between the actual basis weight of the paper web downstream of the drying section, a desired basis weight signal input, and a predicted basis weight signal derived from the consistency of heavy stock, its rate of flow, and the speed of the paper web forming section. Means are provided for comparing the actual basis weight signal with a desired basis weight signal input to provide a first error signal. A second error signal is generated by comparing the feedforward predicted basis weight with the actual basis weight signal. A new predicted basis weight signal is then produced by adjusting the predicted basis weight signal in response to the second error signal. The basis weight is then controlled by adjusting the heavy stock flow valve in response to a signal representing a comparison between the first error signal and the new predicted basis weight signal, which thus provides an adjusted predicted basis weight signal.

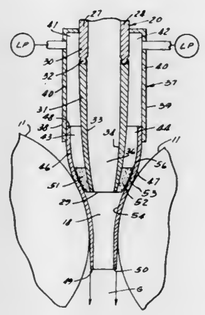
3,619,361
APPARATUS FOR MAKING PIPES FROM FIBER PULP
Johann Schoggl, St. Rolten, Niederosterreich, Austria, assignor to J. M. Voith AG, Lower Austria, Austria
Filed Jan. 30, 1969, Ser. No. 795,208
Claims priority, application Austria, Jan. 30, 1968, A 920/68
Int. Cl. B31c *1/08*
U.S. Cl. 162—284 **21 Claims**

An apparatus for making pipes from a pulp which contains fiber material and a binder comprises a pulp feeder, couch-roll means for couching pulp from said feeder, a horizontal breast roll spaced from the couch-roll means, a mandrel detachably supported on the top of said breast roll, pressure-roll means arranged to urge said mandrel against said breast roll, and an endless felt blanket, which is trained over said couch-roll means and is mounted on support means to pass between said pressure-roll means and said mandrel and to pass from said pressure-roll means extends back to said couch-roll means out of contact with said breast roll. The



blanket transfers said pulp in the form of a web from said couch-roll means to said mandrel. The web is wound around the mandrel in a tubular form to form the desired pipes.

3,619,362
PAPERMAKING HEADBOX STOCK NOZZLE WITH LIQUID JACKET MEANS FOR ELIMINATION OF STOCK EXPOSURE TO AIR
Joseph D. Parker, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Feb. 3, 1969, Ser. No. 796,090
Int. Cl. D21f *1/00*
U.S. Cl. 162—301 **7 Claims**

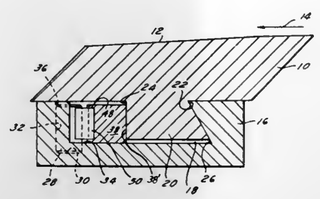


A twin wire paper forming machine including a headbox having a stock outlet nozzle for directing a stream of stock into the forming nip of the machine. A liquid jacket means disposed on opposite sides of the stock nozzle discharges a stream of liquid into contiguous relation with the stock stream between the outlet of the stock nozzle and the nip to prevent exposure of the stock to ambient air. The stock outlet nozzle comprises wall members which include stationary and moveable portions, the area between the moveable portion of the outlet nozzle and the liquid jacket means varying as a function of the stock pressure in the outlet nozzle and liquid pressure in the liquid jacket means.

3,619,363
BLADE ASSEMBLY FOR PAPER-MAKING MACHINES
Perry O. Pherson, West Suffield, Conn., assignor to A. P. Wagenknecht Co., Inc., Thompsonville, Conn.
Filed Sept. 30, 1969, Ser. No. 862,348
Int. Cl. D21g *9/00*
U.S. Cl. 162—352 **2 Claims**

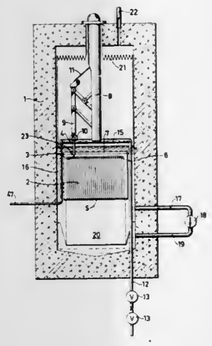
An assembly to be used for foil blades, flat top deflector blades, forming board blades and other replacable wear strips which span a papermaking machine providing quick blade removal while the machine is in the operating as well as nonoperating condition and wherein accurate seating and

firm gripping of the blade is accomplished during normal operation. The base of the blade is positioned within a channel in a support member and held in place by a bar provided with a series of inclined wedge surfaces. Each wedge surface



engages a pin on the support member such that longitudinal motion of the bar creates a transverse, horizontal force which effects fixed engagement of the blade base with the channel wall of the support member.

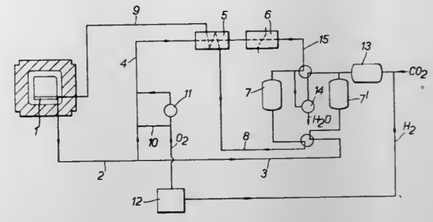
3,619,364
NUCLEAR REACTOR IN WHICH THE COOLANT IS BOILING LIGHT WATER
Peter Heinrich Erwin Margen, Roslags-Nasby, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Apr. 11, 1968, Ser. No. 720,690
Claims priority, application Sweden, Apr. 12, 1967, 5121/67
Int. Cl. G21c
U.S. Cl. 176—31 **1 Claim**



In a nuclear reactor of the boiling light water type the steam-water mixture produced in the fuel cartridges is passed through steam-water separators in which the steam is separated from the water. According to an improved embodiment a fuel cartridge is united with a steam-water separator to form a unit. Said unit can be lifted by a refueling machine, so as to be inserted into and removed from the reactor through a refueling tube.

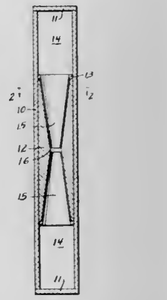
3,619,365
NUCLEAR REACTORS AND COOLANT THEREFOR
Geoffrey Baguley, Croft, Warrington, England, and Daniel A. Shields, San Carlos, Calif., assignors to United Kingdom Atomic Energy Authority, London, England
Filed July 17, 1968, Ser. No. 745,608
Int. Cl. G21c *15/28*
U.S. Cl. 176—38 **4 Claims**

Carbon dioxide for the cooling of a carbon dioxide-cooled, graphite-moderated nuclear reactor is mixed with hydrogen and passed over a catalyst which promotes the reaction between carbon dioxide and hydrogen to produce methane. The hydrogen is obtained by electrolysis of water in plant which may also produce argon-free oxygen for consumption



in a carbon monoxide/oxygen recombination unit, converting carbon monoxide formed in the coolant to carbon dioxide.

3,619,366
FUEL SUBASSEMBLY FOR A NUCLEAR REACTOR
Walston Chubb, Worthington; Donald L. Keller, Columbus; Richard A. Wullaert, Columbus, and Victor W. Storhok, Columbus, all of Ohio
Filed May 6, 1969, Ser. No. 822,211
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 **1 Claim**

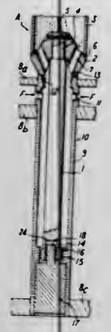


A fuel subassembly for a nuclear reactor incorporating a body of uranium dioxide or mixed uranium-plutonium dioxide fuel within an elongated casing. A gas plenum is located at the top and bottom of the subassembly and a metal tube or rod serving as a heat sink extends along the axis of the subassembly.

3,619,367
FUEL ASSEMBLY WITH SOLID END-FITTING
Andre Gumuchian, Paris, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed May 23, 1968, Ser. No. 731,468
Claims priority, application France, June 6, 1967, 109,346
Int. Cl. G21c *19/10*
U.S. Cl. 176—78 **1 Claim**

The end-fitting of a fuel assembly is constituted by a solid cylinder which is intended to be placed within a stationary cylindrical support tube of a nuclear reactor diagrid, the support tube being provided with openings for the admission of a cooling fluid. The lower extremity of the end-fitting is provided with a recess for the engagement of a member which locks the end-fitting in the support tube. The upper extremity of the end-fitting is attached to a connecting element which is joined to a fuel assembly box containing the fuel pins. The

connecting element is pierced by openings so that the cooling fluid which is admitted into the space formed between the



support tube and the end-fitting can circulate between said space and the interior of the fuel assembly box.

3,619,368
PREPARATION OF A CELLULAR MATERIAL RICH IN PROTEIN

Jan W. Woldendorp, Munstergeleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Oct. 31, 1969, Ser. No. 873,061
Claims priority, application Netherlands, Oct. 31, 1968, 30615/67, Feb. 12, 1968, 6870/68
Int. Cl. C12d *13/00*
U.S. Cl. 195—30 **7 Claims**

A process of preparing protein by cultivating protein-rich Eumycetes, wherein a mixture of aliphatic mono- and dicarboxylic acids with fewer than 8 carbon atoms is used as a carbon source in a culture medium with a pH between 5.5 and 8.

3,619,369
PROCESS FOR PRODUCING XYLITOL BY FERMENTATION

Hiroshi Onishi, and Toshiyuki Suzuki, both of Noda-shi, Japan, assignors to Noda Institute for Scientific Research, Noda-shi, Japan

Filed July 8, 1969, Ser. No. 840,034
Claims priority, application Japan, Oct. 31, 1968, 43/78944
Int. Cl. C12c *1/00*
U.S. Cl. 195—37 **7 Claims**

A process for producing xylitol by fermentation (xylitol is useful as sweetening materials or treating agents of diabetics), which comprises (i) culturing yeasts, for example, Debaryomyces sake (ATCC 20,212) in a culture medium containing glucose so as to produce D-arabitol, (ii) after the sterilization of said culture medium, culturing acetic acid bacteria, for example, Acetobacter suboxydans ATCC 621 therein so as to produce D-xylulose, and further, (iii) with or without separating D-xylulose from said broth, culturing yeasts, for example, Candida guilliermondii var. soya ATCC 20,216 in a culture medium containing the D-xylulose as a sugar source so as to produce xylitol.

3,619,370
MICROBIAL REDUCTION OF THIADIAZOLES

Leonard M. Weinstock, Rocky Hill; Roger J. Tull, Metuchen, and Dennis M. Mulvey, Iselin, all of N.J., assignors to Charles E. Frosst & Co.

Filed Apr. 21, 1969, Ser. No. 818,086
Int. Cl. C12d *13/00*
U.S. Cl. 195—51 **3 Claims**

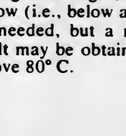
Process is described for reducing a 3-substituted-4-(3-amino-2-oxopropoxy)-1,2,5-thiadiazole chemically with sodium borohydride or aluminum alkoxide or by use of a bacterial, actinomycetales or fungal reductase to provide a 3-substituted-4-(3-amino-2-hydroxypropoxy)-1,2,5-thiadiazole that exhibits β-adrenergic blocking properties and therefore useful, inter alia, in treatment of angina pectoris.

3,619,371
PRODUCTION OF A POLYMERIC MATRIX HAVING A BIOLOGICALLY ACTIVE SUBSTANCE BOUND THERETO

Eric Mitchell Crook, and Garth Kay, both of London, England, assignors to National Research Development Corporation, London, England

Filed June 26, 1968, Ser. No. 742,978
Claims priority, application Great Britain, July 3, 1967, 30615/67, Feb. 12, 1968, 6870/68
Int. Cl. C07g *7/02*; **A61k** *23/00*
U.S. Cl. 195—63 R **20 Claims**

A polymeric matrix having a biologically active substance chemically bound thereto, which comprises a polymer and a biologically active substance linked by groups of the formula:



where Y represents a nucleophilic substituent that is an amino group, or an aliphatic or aromatic group.

3,619,372
ACID RESISTANT LIPASE AND PROCESS FOR PREPARATION THEREOF

Fumihiko Yoshida; Hiroshi Motai, and Eiji Ichishima, all of Noda-shi, Japan, assignors to Kikkoman Shoyer Co., Ltd., Noda-shi, Japan

Filed June 27, 1966, Ser. No. 560,709
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **9 Claims**

Lipase which is acid resistant and has an average molecular weight of 43,500 and comprises glutamic acid or glutamine, threonine, –S–S bonds, and mannose. The lipose is prepared by culturing *Torulopsis ernobii ATCC 20000 in a liquid medium containing carbon, nitrogen and other inorganic salt source under an aerobic condition. Vegetable oils or fatty acids may be added to the medium.*

3,619,373
PROCESS FOR MALTING GERMINATED GRAIN

Bernard Dixon, Harpenden, and Alan Arthur Douglas Comrie, Manchester, both of England, assignors to The Enzymic Malt Company Limited, London, England

Filed June 7, 1968, Ser. No. 735,181
Claims priority, application Great Britain, June 8, 1967, 26619/67
Int. Cl. A23i *1/00*
U.S. Cl. 195—70 **4 Claims**

A process of malting for the production of acid malt involving subjecting grain having a low percentage of potential extract (less than 75 percent) to oxygen-free conditions at chitting (rootlet emergence) or at an early stage after chitting. The period of exposure to these conditions is at least 2 days at temperatures of 10° C. to 36° C. and the preferred moisture content of the grain is high (35 to 50 percent). Drying temperatures are low (i.e., below about 55° C.) if normal colored acid malt is needed, but a novel and very highly colored dried acid malt may be obtained if drying is carried on at temperatures above 80° C.

3,619,374
ANTIBIOTIC PRODUCTION UTILIZING STREPTOMYCES REFUINEUS VAR. THERMOTOLERANS

Julius Berger, Passaic; Andrew E. Karr, Bloomfield; Willy Leimgruber, Montclair; Benjamin Tabenkin, Upper Montclair, N.J.; Arno Johannes Schocher, Benken, Switzerland, and Vladimir Stefanovic, Needham, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 416,599, Dec. 7, 1964, Pat. No. 3,361,742. Filed Dec. 4, 1967, Ser. No. 687,433
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 **5 Claims**

Antibiotics having antitumor and antibacterial activity are produced by fermentation of thermophilic actimomycetes *Streptomyces refuineus* var. *thermotolerans*, having NRRL numbers 3,143 and 3,144, in a nutrient medium containing a protein source and a carbohydrate source, at 35° C. to 55° C., extracting the fermentation broth with a solvent and isolating the active fraction.

3,619,375
PROCESS FOR MAINTAINING TEMPERATURE DIFFERENTIAL IN COKING CHAMBER OF HORIZONTAL COKING OVEN

Victor Gobiet, Wanne-Eickel; Gunther Juranek, Gelsenkirchen, and Heinrich Schurhoff, Essen, all of Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

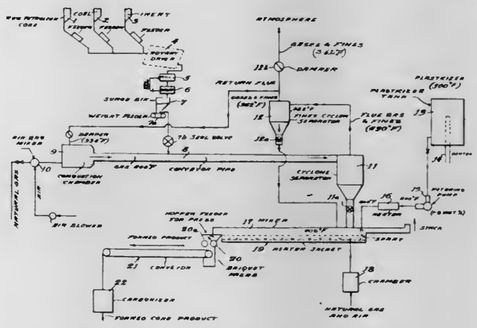
Filed Mar. 19, 1969, Ser. No. 808,556
Claims priority, application Germany, Mar. 27, 1968, P 17 71 044.0
Int. Cl. C10b *21/20*
U.S. Cl. 201—44 **4 Claims**

A process and apparatus for increasing the throughput of a horizontal byproduct coke oven. The coal charge in the coking chamber is subjected to a first elevated temperature in the intermediate zone between the top and bottom of the coking chamber. The coal charge in the bottom zone adjacent the base of the coking chamber is subjected to a second elevated temperature that is between 50° C. and 150° C. less than the first elevated temperature in the intermediate zone and the coal charge in the top zone adjacent the top of the coking chamber is subjected to a third elevated temperature that is about 100° C. higher than the temperature of the intermediate zone. With this process, a temperature gradient is maintained in the coal charge during the coking process with the lowest temperature adjacent the bottom and the highest temperature adjacent the top of the coal charge. The temperature gradient is obtained by either varying the thickness of the heating walls, providing high thermal conductivity refractory bricks for the portion of the heating wall adjacent the top of the chamber or modifying the burner arrangement or combustion process in the heating flues.

3,619,376
METHOD OF MAKING METALLURGICAL COKE BRIQUETTES FROM COAL, RAW PETROLEUM COKE, INERT MATERIAL AND A BINDER

Joseph J. Patel, Skokie, Ill.; Frederick L. Shea, Jr., Johnson City, Tenn., and Richard L. Stec, Chicago, Ill., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Apr. 12, 1967, Ser. No. 630,373
Int. Cl. C10b *55/02*
U.S. Cl. 201—6 **30 Claims**

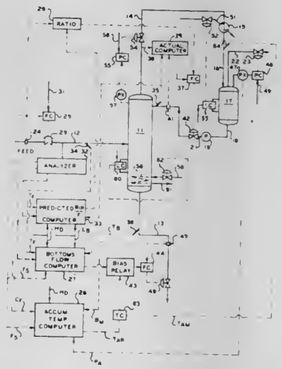


The process comprises: mixing selected carbonaceous particles with a plasticizer; heating the particles and the plasticizer to a suitable temperature; compressing the plasticized particles while they are hot into green bodies of desired shape and specified maximum porosity and minimum density; and carbonizing the formed green bodies, employing a controlled carbonization process. Care it taken to avoid any substantial amount of oxidation of the particles and/or of the formed green bodies during most of the aforesaid heating, pressing and carbonizing steps, particularly while the particles or bodies are at substantially elevated temperatures. Other elements of the process will become apparent from a detailed reading of this specification.

3,619,377
CONTROL OF COMPOSITION OF OVERHEAD VAPOROUS PRODUCT IN A PARTIALLY CONDENSING FRACTIONATION COLUMN

Jim B. Palmer, Bartlesville, Okla., and Dale E. Lupfer, Sweeny, Tex., assignors to Phillips Petroleum Company

Filed Aug. 4, 1969, Ser. No. 847,314
Int. Cl. B01d *3/42*
U.S. Cl. 202—160 **10 Claims**



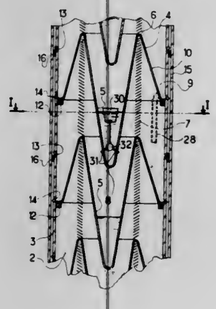
A multicomponent feed is fractionated in a distillation column to produce an overhead vapor stream, which is then

partially condensed and passed to an accumulator to obtain a liquid external reflux stream and an overhead vaporous product stream. The accumulator pressure is maintained substantially constant. A signal representative of the predicted accumulator temperature is established, based on measurements of feed flow rate, feed composition, overhead product specifications, accumulator pressure, and bottoms product flow rate. The predicted accumulator temperature is compared with the measured accumulator temperature to obtain a bias signal. This bias signal is used to manipulate the bottoms product flow rate to effect the adjustment of the accumulator temperature to a value at which the concentration of a key component of the overhead vaporous product is substantially equal to the desired concentration thereof.

3,619,378
MULTISTAGE VERTICAL FLASH DISTILLATION APPARATUS HAVING LOW HEAT CONSUMPTION

Pierre Jean Ricard, Paris, France, assignor to Compagnie Generale D'Etudes, Cegelerg, France

Filed Mar. 18, 1968, Ser. No. 713,897
Claims priority, application France, Mar. 17, 1967, 99,379
Int. Cl. B01d *3/06*
U.S. Cl. 202—173 **16 Claims**



Apparatus for distilling with low heat consumption a liquid having dissolved salts, by successive evaporation and expansion, including:

at least one cylindrical column formed of vertical sidewalls associated with external cooling means operating with laminar flow of a cooling liquid circulating from the bottom upwards and a plurality of transverse partitions each comprising a central portion collecting liquid to be distilled and a peripheral portion collecting the liquid condensed on the inner face of the said sidewall, the said portion which collects the liquid to be distilled being formed at its lower end with calibrated holes to permit the injection of the liquid to be distilled into the distillation cell defined by the volume of the column comprised between two consecutive transverse walls,

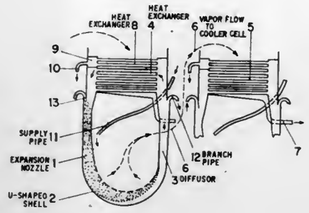
the injection being effected under the action of the pressure difference between two consecutive distillation cells, and the liquid to be distilled cooling as it descends from cell to cell through the distillation column.

3,619,379
CENTRIFUGAL, MULTIEFFECT DISTILLATION APPARATUS

Rene Bidard, Paris, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed Feb. 25, 1969, Ser. No. 802,106
Claims priority, application France, Mar. 4, 1968, 142,244
Int. Cl. B01d *3/06*
U.S. Cl. 202—174 **6 Claims**

Device for distillation of a liquid, particularly sea water, comprises a plurality of stages each of which includes at least one cell through which the liquid flows and in which steam produced by evaporation is separated from the unevaporated liquid in order to obtain a condensate. The device employs one or more expansion nozzles in each cell through which the liquid expands and is thus converted partly into its vapor phase as a result of the reduction in pressure. The composite liquid and gaseous fluid passes along a curved flow surface

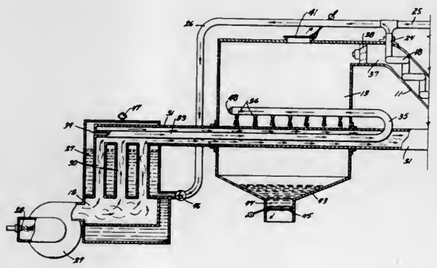


which, as a result of the centrifugal forces created effects separation of the liquid from the steam. The steam is then condensed and the remaining liquid passes through a heat exchanger and is then recycled.

3,619,380
APPARATUS FOR THE DISTILLATION OF SEA WATER

Bufford R. Stephens, 1305 Linden Ave., Boulder, Colo.

Filed Apr. 3, 1969, Ser. No. 813,099
Int. Cl. B01d *3/10*
U.S. Cl. 202—180 **7 Claims**



Impure water such as sea water is pumped through both a first preheater heated by superheated steam and a condenser heated by combustion gases from a furnace to produce wet steam which is then additionally superheated by passage through the interior of a flame tube, carrying the combustion gases from said furnace, and is then sprayed against the exterior of said flame tube within an enclosed separator to flash the contained water so as to separate and release the salts and other impurities from the steam.

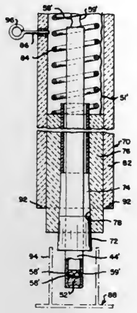
3,619,381
DETERMINING OXYGEN CONTENT OF MATERIALS

George R. Fitterer, 825 Twelfth St., Oakmont, Pa.

Continuation-in-part of application Ser. No. 570,855, Aug. 8, 1966, now abandoned. This application Dec. 23, 1968, Ser. No. 786,866
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **9 Claims**

A probe for use in apparatus for determining oxygen content of a material comprises an elongated envelope, a mass of solid electrolyte material supported in one end of said envelope, at least a portion of one side of said mass being exposed through a relatively small opening in said envelope for contact with said material, reference means for contacting an

apposed side of said mass with an oxygen-reference material, and circuit means for electrically contacting said apposed

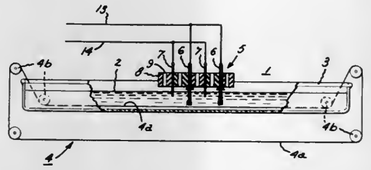


side of said mass, said envelope being fabricated electrically insulated material.

3,619,382
PROCESS OF REDUCING METAL COMPOUNDS TO METAL IN A MATRIX

John H. Lupinski, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 27, 1970, Ser. No. 6,196
Int. Cl. C23b *5/64*; **C23f** *17/00*
U.S. Cl. 204—30 **10 Claims**

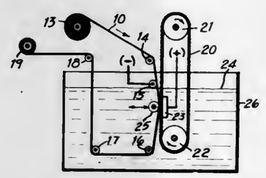


An improved process is described for electrochemically reducing specified metal oxides, and/or hydroxides, including hydrated metal oxides, in an elastomeric matrix to metal to provide an electrically conductive surface which can be metal plated. The matrix can be the entire composition or it can be a surface coating on a nonconductive substrate. The process is especially suitable for producing a multiplicity of conductive surfaces separated from each other by a nonconductive surface.

3,619,383
CONTINUOUS PROCESS OF ELECTRODEPOSITION

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of application Ser. No. 718,468, Apr. 3, 1968, now abandoned. This application May 4, 1970, Ser. No. 34,295
Int. Cl. C23j *5/50*
U.S. Cl. 204—35 R **8 Claims**

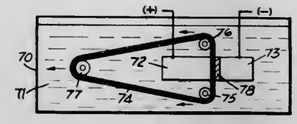


Process and apparatus for continuously electrodepositing metal of relatively uniform thickness on a moving metal substrate at extremely high plating rates.

3,619,384
ELECTRODEPOSITION

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, Mass.

Continuation-in-part of application Ser. No. 718,468, Apr. 3, 1968, now abandoned. This application May 4, 1970, Ser. No. 34,500
Int. Cl. C23b *5/50, 3/06, 5/50*
U.S. Cl. 204—35 R **17 Claims**

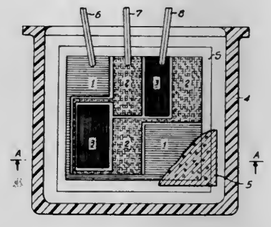


An activating medium comprising a matrix containing small, dynamically hard particles held in spaced fixed relationship to one another is continuously moved under pressure against a surface being subjected to electrodeposition of metal from aqueous or low boiling electrolytes. The dynamically hard particles repetitively contact the electrodeposit at extremely short time intervals generating new surface defect sites and increasing the areas available for nucleation, allowing the use of very high current densities and a consequent rapid rate of dense, compact metal deposition. The matrix may also serve to feed fresh electrolyte to the surface being plated thereby insuring an adequate supply of metal ions required for the rapid plating action.

3,619,385
PROCESS FOR MANUFACTURING AN ARTICLE WITH A POLYCHROME PICTURE IMPOSED ON THE SURFACE THEREOF

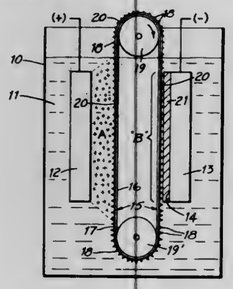
Nadezhda Vasilievna Rjumshina, obl., poselok Solntsevo, alitsa Sovelskaya 13, kv. 1, Moskovskaya; Gennady Fedorovich Vasiliev, K-482, Korpus 331, kv. 93, Moscow, and Georgy Markovich Vozlinsky, K-482, Korpus 447, kv. 30, Moscow, all of U.S.S.R.

Filed Feb. 5, 1968, Ser. No. 702,877
Int. Cl. C23b *9/00*
U.S. Cl. 204—35 N **3 Claims**



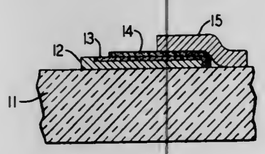
A polychrome image is produced on the surface of an article by depositing on a solid dielectric layer a thin film of a unilaterally conducting metal or alloy thereof to a thickness of at least 500 A followed by breaking the film into separate areas in conformity with the shape of the picture to be reproduced, the areas being electrically insulated from one another. Thereafter the areas are subjected to selective anodic oxidation at a constant current density of less than 10 ma./cm.^{2} and at working voltages which vary from one area to another in a range of 5 to 250 volts.

3,619,386
ELECTRODEPOSITION PROCESS USING A BIPOLAR ACTIVATING MEDIUM
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Continuation-in-part of application Ser. No. 718,468, Apr. 3, 1968, now abandoned, Continuation-in-part of application Ser. No. 863,509, Oct. 3, 1969, Continuation-in-part of application Ser. No. 863,499, Oct. 3, 1969. This application Dec. 29, 1969, Ser. No. 888,678
Int. Cl. C23j 5/50
U.S. Cl. 204—35 R 5 Claims



A bipolar activating medium having a metallic surface through which protrudes a plurality of small, dynamically hard, nonconductive particles held in spaced relationship to one another is insulated from any direct electrical contacts and is continuously moved under pressure against a cathodic surface being subjected to electrodeposition of metal from aqueous or low boiling electrolytes. The dynamically hard particles repetitively contact the electrodeposit at extremely short time intervals generating new surface defect sites and increasing the areas available for nucleation while the surface of the activating medium in the zone adjacent the cathodic surface acts as an anode. As the activating medium moves, that portion which acted as an anode reverts to act as a cathode while a fresh portion of the activating medium becomes anodic as it approaches the cathodic workpiece. In the zone of influence of the anode, the activating medium picks up a deposit of metal and an equal amount of metal dissolves from the portion of the activating medium which is in the zone of influence of the cathode thereby insuring an adequate supply of metal ions immediately adjacent the cathodic workpiece.

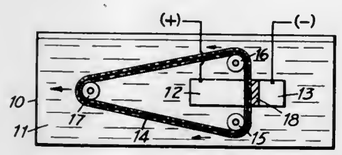
3,619,387
TECHNIQUE FOR THE FABRICATION OF THIN FILM CAPACITOR INCLUDING LEAD DIOXIDE CONDUCTIVE FILMS
Wolfgang Friedrich Hermann Mindt, Dornach, Switzerland, and George Ignatius Parisi, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Continuation-in-part of application Ser. No. 843,920, July 23, 1969, now abandoned. This application Jan. 27, 1970, Ser. No. 6,166
Int. Cl. C23f 17/00, 9/00
U.S. Cl. 204—38 A 6 Claims



Lead dioxide films are deposited upon a substrate with mechanical properties such as to permit fabrication of capacitors in which they are used as the solid electrolyte over a metal oxide dielectric. The lead dioxide is produced by the oxidation of a divalent lead compound in solution by means of a persulfate.

3,619,388
PROCESS FOR ELECTROLYZING NITRILES
Akira Yomiyama, Tokyo; Shinsaku Ogawa, Miyazaki-ken; Muneo Yoshida, Miyazaki-ken, and Takamasa Sakai, Miyazaki-ken, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan
Filed Feb. 5, 1969, Ser. No. 796,912
Int. Cl. C07b 29/06
U.S. Cl. 204—73 3 Claims
A process of electrohydrodimerizing α,β-mono-olefinic nitriles in a divided cell in which catholyte containing α,β-mono-olefinic nitriles is separated from anolyte of an aqueous acid solution while reducing the concentration of hydrogen cyanide in the anolyte for preventing corrosion of the anode.

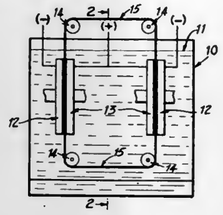
3,619,389
ELECTRODEPOSITION SYSTEM
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Continuation-in-part of application Ser. No. 718,468, Apr. 3, 1968, now abandoned. This application Oct. 3, 1969, Ser. No. 863,509
Int. Cl. B23p 1/00
U.S. Cl. 204—143 G 15 Claims



A method for maintaining anode activity in electrodeposition systems by continuously and repetitively contacting the surface of the anode during the electrodeposition reaction with a plurality of small, dynamically hard particles held in spaced, fixed relationship to one another in or on a supporting matrix.

3,619,390
AQUEOUS ELECTROLYTIC STRIPPING BATH TO REMOVE METAL COATINGS FROM BASES OF STEEL
Horst Dillenberg, Kaiser-Wilhelm-allee 26, 36, Wuppertal-Elberfeld, Germany
Filed Feb. 9, 1970, Ser. No. 10,034
Claims priority, application Germany, Feb. 21, 1969, P 19 08 625.0, Dec. 18, 1969, P 19 63 415.2
Int. Cl. B01k 1/00
U.S. Cl. 204—146 14 Claims
An aqueous electrolytic stripping bath to remove metal coatings from stainless and nitrided or hardened steel comprising ammonium nitrate buffered to a critical pH range between about 5.0 and 6.8, preferably 6.0–6.8, to prevent erosion of the base metal, this pH range causing a retardation of stripping action which is overcome by adding a small amount of an accelerator to the bath. Ammonium chloride, sodium hypochlorite and ammonium thiocyanate are effective accelerators for stripping stainless steel, and water-soluble phenols are effective as accelerators for stripping nitrided or hardened steels. Erosion is slightly less at pH between 6.0 and 6.8 than at pH 5.0 to 6.0, and at pH below 5.0, erosion is substantial.

3,619,391
ELECTROCHEMICAL TREATMENT OF LIQUIDS
Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,104
Int. Cl. C02b 1/82
U.S. Cl. 204—149 5 Claims



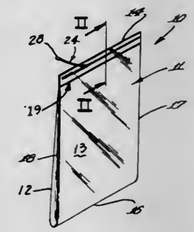
This invention relates to improvements in apparatus and methods for electrochemically treating industrial waste water and other polluted water such as sewage. The invention also relates to the electrochemical treating of noncontaminated liquids whereby chemically active materials are synthesized and dispersed into the liquid by electrochemical action. In addition to the conventional electrodes, there is provided a nonconductive, hard particle activating and abrading means which contacts the surface of the electrodes so as to activate the electrode surface, to remove any films adhering to the electrodes, to dislodge gas bubbles and to disperse by mechanical means any viscous liquid or solid layer of sludge which tends to form near the electrodes. The present improvement allows the use of very high current densities whereby the efficiency of the system is markedly improved, and the efficiency does not deteriorate during the process.

3,619,392
PROCESS FOR THE CURING OF MOLDING AND COATING MASSES BASED ON UNSATURATED POLYESTERS AND COPOLYMERIZABLE MONOMERIC COMPOUNDS BY ELECTRON RADIATION AND ADDITIONALLY CONTAINING PHOSPHINES, ARSINES AND STIBINES
Wolfgang Metzner, Krefeld; Hans Rudolph, Krefeld-Bockum; Wolfgang Deninger, Krefeld-Bockum, and Manfred Patheiger, Krefeld-uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 17, 1969, Ser. No. 842,728
Claims priority, application Germany, Aug. 10, 1968, P 17 69 952.4
Int. Cl. C08d 1/00; C08f 1/16
U.S. Cl. 204—159.15 2 Claims
The present invention relates to molding and coating masses comprising mixtures of unsaturated polyesters and copolymerizable monomers which are curable by electron radiation. According to the invention small amounts of phosphines, arsines or stibines are added to such masses, whereby the radiation dose necessary for curing the masses may be remarkably reduced.

3,619,393
PROCESS FOR THE PREPARATION OF SHELF-STABLE, PHOTOCURABLE POLYTHIOLS
Eldon E. Stahly, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,340
Int. Cl. C08d 1/00; C08f 1/16; C08g 23/00
U.S. Cl. 204—159.15 14 Claims
Free-radical scavenger-vinyl stabilizers are incorporated into photocurable compositions to give the composition storage stability for months. The photocurable composition contains a polythiol that adds to the vinyl group of the stabilizers upon photocuring with U.V. light, so that the stabilizer is chemically bound in the polymer molecules. The photocurable compositions can contain polyenes that also polymerize with the polythiol and can contain photocuring rate accelerators. A preferred stabilizer is triallyl phosphite. The incorporated stabilizers can be present in sufficient amounts to make the cured polymeric systems burn-resistant.

3,619,394
TRIALLYLAMINE POLYMERIZATION
Hendrik Adriaan Jacobus Battaerd, North Clayton, Victoria, Australia, assignor to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia
Filed Dec. 5, 1969, Ser. No. 882,496
Claims priority, application Australia, Dec. 20, 1968, 48200
Int. Cl. C08f 1/16, 3/84, 15/02
U.S. Cl. 204—159.22 15 Claims
This invention relates to a new class of polymeric amines and to a method for their manufacture. More particularly, the invention concerns polyallylamines, especially homo and copolymers of triallylamine and their application in the so-called "Sirotherm" process.

3,619,395
METHOD OF MAKING A PILFER PROOF PACKAGE
Milorad Skendzic, New York, N.Y., assignor to Minigrip Inc., Orangeburg, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,080
Int. Cl. B65d 17/20, 33/00
U.S. Cl. 264—171 10 Claims



A plastic fully enclosed container having a colored plastic ribbon or bead formed integrally thereon and extending adjacent one end thereof. The ribbon is removable to open the container by pulling it at one end across the width of the container. Until the ribbon is removed, however, the container is completely sealed and airtight. Removal of the ribbon not only provides a visual indication that the container has been opened but also provides a narrow slit or gap across one wall to provide access to the container. The edges of the slit or gap are jagged and irregular, thus facilitating location of the slit not only visually but by finger touch of the user.

3,619,396
ENZYMATIC PRODUCTION OF GLUCONIC ACID
Raoul Walon, Brussels, Belgium, assignor to CPC International Inc.
Filed Jan. 29, 1969, Ser. No. 795,024
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 7 Claims
A process for the enzymatic production of gluconic acid is disclosed. In the process, an electrodialysis step is used to recover active enzyme.

3,619,397
PROCESS FOR THE PURIFICATION OF LACTIC ACID
Jean-Claude Jacquemet, Lyon, France, assignor to Rhone-Poulenc S. A., Paris, France
Filed Nov. 14, 1969, Ser. No. 877,050
Claims priority, application France, Nov. 14, 1968, 173,743
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 7 Claims
Lactic acid obtained by fermentation of carbohydrates is purified by electrodialkysis followed by extraction with an organic solvent immiscible with water.

3,619,398
ELECTRODEPOSITION PROCESS

Joseph F. Bosso, Lower Burrell, Pa., and Gerald R. Gacesa, Franklin, Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 31, 1968, Ser. No. 772,353
Int. Cl. B01k *5/00*
U.S. Cl. 204—181 **8 Claims**

A method of applying coatings by electrodeposition utilizing a water-dispersed composition in which the major resinuous component is a reaction product of a polyepoxide and a boron ester substituted with an amino group. These compositions deposit on the cathode and provide coatings of improved properties, including a high degree of corrosion resistance.

3,619,399
ACRYLIC PRIMER

Werner Josef Blank, and Gerhard Josef Pietsch, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

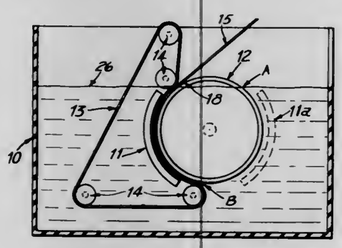
Filed Oct. 29, 1969, Ser. No. 872,353
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **10 Claims**

A method for priming electrodeposited acrylic resin coatings to increase their adhesion to epoxy coatings which comprises treating said acrylic coatings with a polyamine and the resultant coated articles, are disclosed.

3,619,400
ELECTRODEPOSITED METAL FORMATION

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,124
Int. Cl. B23p *1/100*
U.S. Cl. 204—216 **11 Claims**



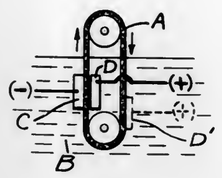
This invention relates to apparatus and methods for continuously producing a strip or sheet of metal by depositing metal from an electrolyte upon a moving, cathodic surface and stripping the deposited metal as a strip or sheet from said surface, wherein in addition to the cathode, anode and electrolyte supply means, there is also provided a nonconductive, hard particle activating means which contacts the surface of the initially electrodeposited metal film to activate the surface of the electrodeposited metal allowing the use of very high current densities to rapidly deposit an increased thickness of dense, compact, smooth and bright metal on the initially deposited film.

3,619,401
APPARATUS FOR ELECTRODEPOSITION

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of application Ser. No. 718,468, Apr. 3, 1968, now abandoned. This application Oct. 3, 1969, Ser. No. 863,499
Int. Cl. B23p *1/00*
U.S. Cl. 204—217 **9 Claims**

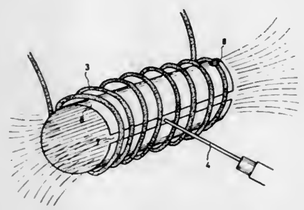
Electrodeposition apparatus where, in addition to the conventional cathode, anode and electrolyte supply means, there is also provided a nonconductive hard particle activating means and associated driving means to contact the surface of the electrodeposit under controlled pressure throughout its formation and to both activate the surface of the electrodeposit and also to maximize the supply of fresh electrolyte directly to the activated surface.



3,619,402
PROCESS AND DEVICE FOR DEPOSITING ON SURFACES

Joseph Wurm; Pierre Beucherie, and Michel Block, all of Varese, Italy, assignors to European Atomic Energy Community, Brussels, Belgium

Filed Oct. 11, 1968, Ser. No. 766,682
Claims priority, application Belgium, Nov. 10, 1967, 50663
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **6 Claims**



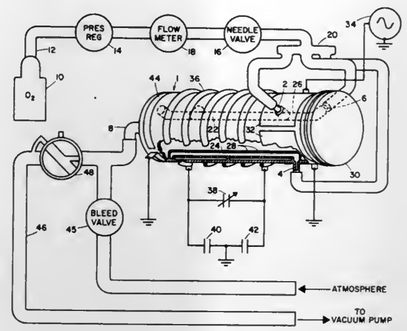
Apparatus for depositing a thin layer of a conducting or partially conducting material on the surface of a body which includes a vacuum chamber, a high-frequency coil located within the chamber for generating an electromagnetic field and means for supplying gas into the chamber in the vicinity of the electromagnetic field. A substantially tubular wall, which may be in the form of a cylinder or a truncated cone, is disposed within the high-frequency coil and electrically connected thereto. The tubular wall is slit from end to end to prevent heating by direct induction with a consequent reduction in the formation of the plasma and lowering of the efficiency of the coating operation.

3,619,403
GAS REACTION APPARATUS

Georges J. Gorin, Waltham, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed June 30, 1970, Ser. No. 51,275
Int. Cl. B01k *1/00*
U.S. Cl. 204—312 **6 Claims**

A gas, such as oxygen, is fed to a cylindrical reaction chamber to which an intense high-frequency electromagnetic radiation field is applied. As the gas enters the reaction chamber it is ionized by the high-frequency electromagnetic field. The ionized gas reacts with a nongaseous material inserted within the chamber to decompose the material. The resultant products, together with any unreacted species of the gas, are withdrawn from the chamber by a vacuum pump. The reaction chamber is constructed so as to provide a uniform distribution of the gas throughout the reaction zone of the chamber.



3,619,404
COAL LIQUEFACTION

Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,118
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **6 Claims**

Normally solid coal is hydrogenated using certain supported hydrogenation catalysts in the substantial absence of externally supplied liquid slurry medium and in a catalyst/coal weight ratio of from about 0.1/1 to about 2/1.

3,619,405
GAS COMBUSTION OIL SHALE RETORTING WITH EXTERNAL INDIRECT GAS HEAT EXCHANGE

John H. Smith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 10, 1968, Ser. No. 743,702
Int. Cl. C10g *1/00*
U.S. Cl. 208—11 **4 Claims**

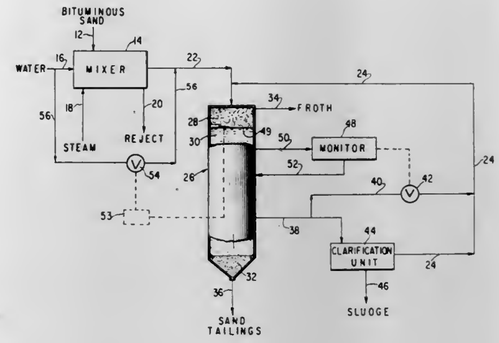
A gas retorting system for recovering oil from shale including a vertical retort having a raw shale preheating zone at the top; an external circuit for cooling and separating product vapor and gas and an external circuit for heating cold recycle gas (from the top of the shale preheating zone) and reintroducing it into the bottom of the raw shale preheating zone.

3,619,406
CONTROL OF SOLIDS IN PROCESSING BITUMINOUS SAND

Clement W. Bowman, Westfield, N.J., and Victor P. Kaminsky, Edmonton, Alberta, Canada, assignors to Canada-Cities Service, Ltd., Calgary, Alberta, Canada; Imperial Oil Limited; Atlantic Richfield Corporation and Royalite Oil Company Limited, part interest to each

Filed May 28, 1969, Ser. No. 828,681
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **9 Claims**

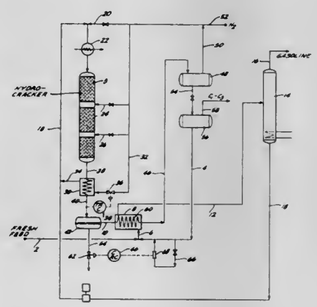
The invention concerns an improvement in water separation processes for the recovery of bitumen from bituminous sand containing the same. In such processes, a fluid slurry of bituminous sand is introduced into a separation zone containing a body of water and bitumen is floated to the top of the water in the form of a froth for recovery therefrom, while sand is allowed to settle to the bottom for removal. In accordance with the invention, controlled amounts of fine solids are maintained in an intermediate layer of water in the separation zone. Between 10 and 17 weight percent fines are preferably maintained in the intermediate water layer and such fines are mostly less than 20 microns in size. The desired concentration of fines in the water layer is maintained by recycling water from the water layer back to the separation zone or to an earlier stage of the process with removal of fines from the recycle stream in response to measurements of the amounts of fines in the water layer to maintain the desired concentration of fines in the water layer. Fresh water addition to the process is minimized by removing from the process only that water which is contained in the bituminous froth and the minimum amount of water needed to withdraw solids from the process.



3,619,407
HYDROCRACKING PROCESS WITH BENZCORONENES BLEEDSTREAM

Grant W. Hendricks, Brea; Edward C. Attane, Orange, and James W. Wilson, Brea, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 17, 1969, Ser. No. 885,896
Int. Cl. C07c *15/00*; **C10g** *9/16, 13/02*
U.S. Cl. 208—48 R **9 Claims**

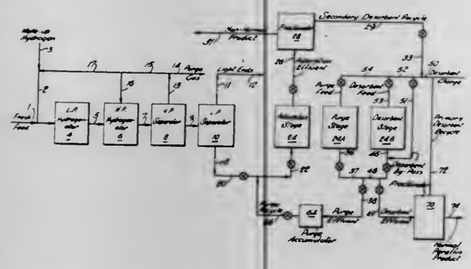


Mineral oil feedstocks which contain dissolved benzcoronenes are subjected to recycle catalytic hydrocracking over crystalline zeolite-type catalysts while bleeding from the system a small proportion of a partial condensate from the hydrocracker, the volume of the withdrawn bleedstream being controlled so as to keep the concentration of benzcoronenes in the liquid product stream from building up to a level at which they will precipitate and "plate out" in the cooler parts of the system such as heat exchange surfaces. Novel means of controlling the bleed rate are also disclosed.

3,619,408
HYDROISOMERIZATION OF MOTOR FUEL STOCKS
Lewis G. Larson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Sept. 19, 1969, Ser. No. 859,561
Int. Cl. C07c 5/24; C10g 39/00
U.S. Cl. 208—80 5 Claims

A method of obtaining an improved octane rating by hydroisomerization which involves separating a stock into two portions, individually hydroisomerizing the portions for olefin conversion and combining the two hydroisomerized streams.

3,619,409
HYDROCARBON SEPARATION PROCESS
Richard W. Stokeld, Jr., Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed June 9, 1969, Ser. No. 831,535
Int. Cl. C10g 23/00, 25/04
U.S. Cl. 208—95 3 Claims



Improved method of separating straight chain hydrocarbons from mixtures thereof with nonstraight chain hydrocarbons involving a mild hydrogenation step, a severe hydrogenation step, followed by the molecular sieve separation and recovery of the straight chain hydrocarbons.

3,619,410
SLURRY PROCESS FOR CONVERTING HYDROCARBONACEOUS BLACK OILS WITH HYDROGEN AND HYDROGEN SULFIDE
William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 26, 1970, Ser. No. 5,915
Int. Cl. B01j 11/74; C10g 13/06, 23/16
U.S. Cl. 208—108 4 Claims

A catalytic slurry process for hydrorefining a hydrocarbonaceous charge stock containing hydrocarbon insoluble asphaltenes. The process is effected in slurry fashion with the charge stock being admixed with an aqueous solution of a double salt of the catalytically active metal sulfite and ammonium sulfite. The slurry is reacted at conditions including a temperature above about 225° C. and a pressure greater than about 500 p.s.i.g., and in the presence of hydrogen and hydrogen sulfide. The particularly preferred double salt is vanadyl sulfite-ammonium sulfite, and is employed in an amount of 1.0 percent to about 25.0 percent by weight, computed as elemental vanadium.

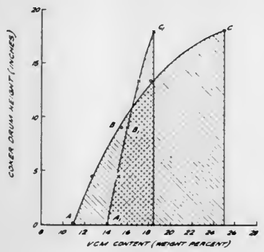
3,619,411
PROCESS OF CONVERTING HIGH-BOILING HYDROCARBON TO LOWER-BOILING FLUID PRODUCTS
Milton M. Wald, Walnut Creek, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed July 15, 1969, Ser. No. 841,842
Int. Cl. B01j 11/78; C10g 13/08, 23/16
U.S. Cl. 208—108 10 Claims

Very high-boiling hydrocarbon, such as petroleum residue, is converted to low-boiling liquid products by passing it through a continuous phase of a catalyst system selected from antimony trichloride, tribromide or triiodide; bismuth trichloride or tribromide; or arsenic triiodide; maintained at a temperature between 200° and 550° C. and under hydrogen partial pressure of at least 250 p.s.i. whereby the catalyst system performs the functions of acting as a hydrogenation catalyst, acting as a cracking catalyst, and providing a medium for maintaining the reactants in suitable relation to one another to promote reactions and obtain beneficial product distribution.

3,619,412
MORDENITE-CONTAINING HYDROCRACKING CATALYST
Claude Clement; Emmanuel E. Neel, and Andre P. Anselme, all of Petit-Couronne, France, assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 5, 1968, Ser. No. 781,622
Claims priority, application France, Dec. 5, 1967, 130,974
Int. Cl. C10g 13/02; B01j 11/78
U.S. Cl. 208—111 16 Claims

A catalyst particularly suitable for hydrocracking is prepared by impregnating a support consisting of a mixture of mordenite and amorphous silica-alumina with a solution of a fluorine compound, drying, and treating with a solution containing one or more hydrogenative metals.

3,619,413
PROCESS FOR MAKING DELAYED PETROLEUM COKE
Hillis O. Folkins, Claremont, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Apr. 16, 1970, Ser. No. 29,070
Int. Cl. C10g 9/14
U.S. Cl. 208—131 10 Claims



A method of making quality coke having improved uniformity is obtained by coking a high boiling hydrocarbon in the presence of a halogen, a hydrogen halide or a hydrocarbyl halide under delayed coking conditions comprising a temperature from 800° to 1200° F. and a pressure from 1 to 10 atmospheres and sufficient to convert the coking feedstock to vapors and dry coke.

3,619,414
CATALYTIC HYDROFINISHING OF PETROLEUM DISTILLATES IN THE LUBRICATING OIL BOILING RANGE
Ivor W. Mills, Media; Merritt C. Kirk, Jr., Thronton, and Albert T. Olenzak, Media, all of Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 622,398, Mar. 13, 1967, now Patent No. 3,462,358, Continuation-in-part of application Ser. No. 636,493, May 5, 1967, Continuation-in-part of application Ser. No. 652,026, July 10, 1967, Continuation-in-part of application Ser. No. 730,999, May 22, 1968. This application Feb. 19, 1969, Ser. No. 812,516
Int. Cl. C10g 23/02
U.S. Cl. 208—143 17 Claims

A process for the catalytic hydrofinishing of petroleum distillate in the lubricating oil boiling range (e.g., to produce lube oils, rubber oils, refrigerator oils, transformer oils, cable oils ATF and friction drive transmission fluids, etc.) com-

prises contacting a lubricating oil distillate stock with hydrogen, in the presence of a catalyst comprising a hydrogenating component selected from the group consisting of sulfides and oxides of (a) a combination of molybdenum and at least one iron group metal (e.g., Co, Ni, Fe, W) and (b) a combination of nickel and tungsten.

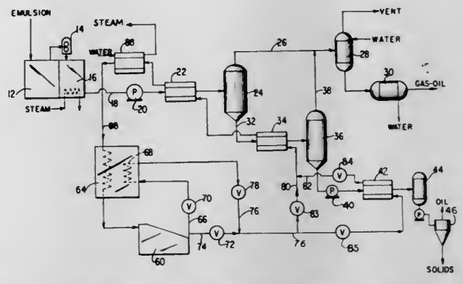
Preferably, the hydrogenating component is composited with an inorganic oxide support (preferably refractory), and the contacting carried out at an average catalyst temperature of about 650–765° F. and with at least from 500 p.s.i. of hydrogen (preferably 800–3000 p.s.i.). The combination of conditions is so selected as to effect appreciable hydrogen consumption but no substantial cracking. Clay finishing of the catalytically hydrofinished product can be advantageous where it is desired to have such additional improvement as better electrical properties or lighter color.

3,619,415
METHOD AND APPARATUS FOR FLUID CATALYTIC CRACKING
Henry B. Jones; Dorrance P. Bunn, Jr., and Dale Williams, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed July 29, 1969, Ser. No. 845,824
Int. Cl. C10g 13/18
U.S. Cl. 208—164 20 Claims

This invention relates to an improved method and apparatus for fluid catalytic cracking of hydrocarbon oils, for example, virgin gas oils from petroleum sources and cycle gas oils from the cracking thereof. More particularly, this invention relates to fluid catalytic cracking of at least one feedstock in transfer line risers terminating in a multidiameter reactor-separator chamber with attendant stripping and regenerator of the catalyst.

3,619,416
DEHYDRATION OF BITUMINOUS EMULSION
Robert D. Hendry, Edmonton, Alberta, Canada, assignor to Canada-Cities Service, Ltd., Calgary, Alberta, Canada; Imperial Oil Limited; Atlantic Richfield Corporation and Royalite Oil Company Limited, part interest to each
Filed Oct. 1, 1968, Ser. No. 764,188
Int. Cl. C10g 33/00
U.S. Cl. 208—187 3 Claims

A process for the thermal dehydration of a bituminous emulsion with heat from exhaust steam while simultaneously condensing the exhaust steam is disclosed herein. The process comprises heating a stream of bituminous emulsion by heat transfer from partially cooled steam turbine exhaust steam, to vaporize low boiling materials, principally water, and condense the steam, separating the vapor from the bituminous emulsion to partially dehydrate the emulsion, heating the partially dehydrated emulsion to a higher temperature by heat transfer from the exhaust steam of the steam turbine to vaporize the remaining water, and separating the water



vapors from the bituminous stream. Preferably the turbine exhaust steam is first reheated and utilized to heat the fully dehydrated bitumen emulsion prior to subjecting the bitumen to solid-liquid separation by cycloning.

3,619,417
SPLIT FEED HYDRODENITRIFICATION
Marc J. Sims, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Aug. 29, 1969, Ser. No. 854,275
Int. Cl. C10g 23/00
U.S. Cl. 208—254 H 5 Claims

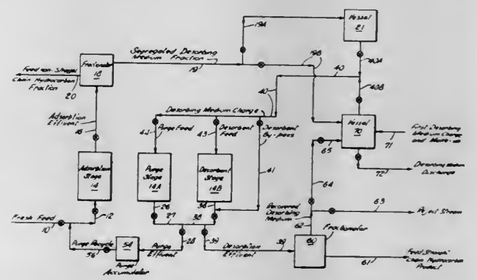
In a split feed hydrodenitrification process, the improvement is made which comprises:

a. maintaining the L.H.S.V. in the heavy oil conversion zone at less than 75 percent of the L.H.S.V. in the light oil conversion zone;

b. maintaining the inlet temperature to the heavy oil conversion zone at least 25° F. below the inlet temperature in the light oil conversion zone; and

c. reducing the organic nitrogen content to an average of less than 50 p.p.m. on a nitrogen weight basis for the light oil and heavy oil hydrodenitrified fractions.

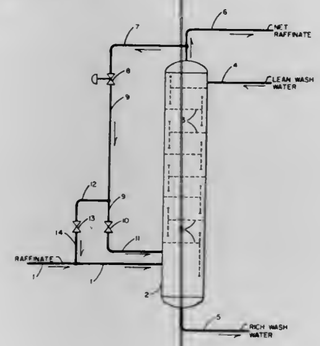
3,619,418
STORING DESORBENT SEPARATED FROM ADSORPTION EFFLUENT
Ralph M. Lewis, Weston, Conn., assignor to Texaco Inc., New York, N.Y.
Filed June 30, 1969, Ser. No. 837,798
Int. Cl. C07c 7/12; C10g 25/04
U.S. Cl. 208—310 6 Claims



Improved process for the separation of straight chain hydrocarbons from petroleum fractions containing same admixed with nonstraight chain hydrocarbons by a molecular sieve selective adsorbent of Type 5A structure wherein a first desorbing medium of relatively low purity with respect to its straight chain hydrocarbon content is used as the first desorbing medium of the process to produce a final desorbing medium having a relatively high purity in straight chain

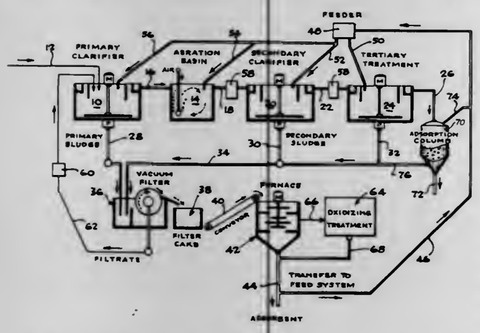
hydrocarbon content while producing straight chain hydrocarbon products.

3,619,419
SOLVENT RECOVERY PROCESS
Herbert Lytle Thompson, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 23, 1969, Ser. No. 835,544
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 **15 Claims**



An improved process for the extraction of water soluble primary solvent contained in a raffinate hydrocarbon stream produced by a primary extraction process, wherein the primary solvent is contacted with an aqueous secondary solvent under extraction conditions in an extraction zone comprising an extraction tower containing a plurality of perforated extraction decks. The improvement comprises passing the solvent-containing raffinate through the perforations of the extraction decks at a hole velocity greater than 2 feet per second, and preferably in the range of from about 5 to about 8 feet per second. The process has particular application where the raffinate stream comprises nonaromatic hydrocarbons, the primary extraction process comprises an aromatic process, the secondary solvent comprises water, and the primary solvent comprises a sulfolane-type chemical solvent or a polyalkylene glycol solvent. One preferred application is in the recovery of sulfolane from nonaromatic raffinates in the water wash tower of an aromatic extraction processing plant.

3,619,420
SEWAGE TREATMENT PROCESS
Frank N. Kemmer, La Grange; Reed S. Robertson, Glen Ellyn, and Rodney D. Mattix, Lemont, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed Aug. 22, 1969, Ser. No. 852,421
Int. Cl. C02c *5/02*
U.S. Cl. 210—6 **2 Claims**



A continuous sewage treatment process for upgrading the quality of sewage plant effluent by converting sewage sludges to active substances and returning these active substances to the sewage system whereby removal of dissolved contaminants occurs by the addition of the active substances.

3,619,421
SEWAGE TREATMENT PROCESS AND APPARATUS
Millice Floyd Hobbs, Monte Sereno; Rayburn W. Prettyman, San Jose; John H. Blake, Portola Valley, and Robert A. Fisher, Los Gatos, all of Calif., assignors to FMC Corporation
Filed Jan. 31, 1969, Ser. No. 795,704
Int. Cl. C02c *1/12*
U.S. Cl. 210—7 **11 Claims**

The process of this invention deals with the operation of tanks in which sewage is aerated to accomplish homogeneous mixing and fast B.O.D. removal. In the illustrative embodiment, air injection is proportioned so that air dispersers positioned adjacent the effluent side of the aeration tank receive at least 51% of the total air input.

3,619,422
PROCESS OF DRYING SEWAGE SLUDGE
Roman Rummel, deceased, late of Bruhl; by Elsa Rummel, Heir, Bruhl; Irmgard Rummel, Heir, Backnang; Heinz Rummel, Heir, Bruhl, and Inge Rummel, Heir, Bruhl, all of Germany, assignors to Von Roll AG, Gerlafingen, Switzerland
Filed Aug. 30, 1968, Ser. No. 758,185
Claims priority, application Switzerland, Sept. 4, 1967, 12321/67
Int. Cl. C02c *3/00*
U.S. Cl. 210—10 **4 Claims**

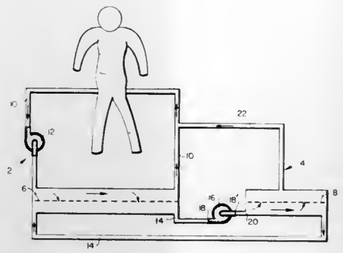


A novel process is disclosed for the transfer of heat and/or matter between two or more gaseous or liquid agents, the process utilizing a carrier substance continuously circulated in closed cycle successively through at least two working spaces wherein heat and/or mater is respectively taken up and yielded. The carrier substance is present in a thin layer and the agents are caused to flow across the layer of carrier substance at both working spaces. Novel mechanical assemblies for the performance of said process are also disclosed herein.

3,619,423
CASCADE DIALYSIS APPARATUS AND METHOD
Pierre M. Galletti, Providence, R.I.; Larry Martel, Boston, Mass., and Michael T. Snider, Providence, R.I., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare
Filed Apr. 20, 1970, Ser. No. 30,112
Int. Cl. B01d *3/00, 13/00*
U.S. Cl. 210—22 **10 Claims**

A system, such as an artificial kidney, is disclosed which facilitates the removal of undesirable substances found in a fluid material, such as blood. The system utilizes a dialyzer and an ultrafilter having selectively permeable membranes and having an endless fluid material recirculating flow path and pump. The dialyzer and ultrafilter are joined together by a dialysate endless loop recirculating flow path containing a chemical agent, such as an enzyme, which is utilized for the reduction of undesirable substances present in the blood. No

chemical agents are introduced into the blood stream, nor

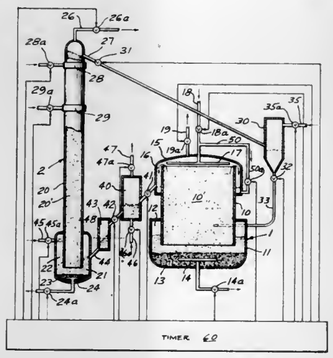


are any of the desirable components of the blood removed in the practice of the invention.

3,619,424
SEMIPERMEABLE MEMBRANES
Alain Blanchard; Andre Rio, and Gilbert Vivant, all of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Oct. 6, 1969, Ser. No. 864,186
Claims priority, application France, Oct. 7, 1968, 168,986
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **8 Claims**

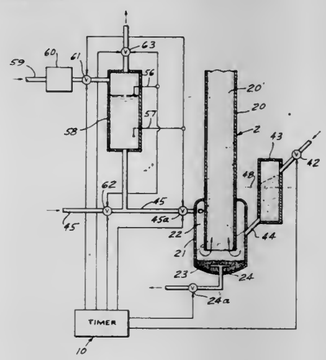
Polyamides of diamines with amino-isophthalic acid make semipermeable membranes of good stability and salt rejection.

3,619,425
COUNTERFLOW LIQUID-GRANULAR MATERIAL TRANSFER PROCESS AND APPARATUS
Claude Blain, Palaiseau; Paul Minart, Grenoble; Roger Platzer, Chattillon-Sous-Bagneux, and Marc Pelletier, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique (C.E.A.), Paris and Societe Grenobloise D'Etudes et D'Applications Hydrauliques, Grenoble, France
Division of Ser. No. 639,777, May 19, 1967, abandoned. Filed Feb. 9, 1970, Ser. No. 9,831
Claims priority, application France, July 9, 1966, 4970
Int. Cl. B01d *15/02, 33/16*
U.S. Cl. 210—33 **15 Claims**



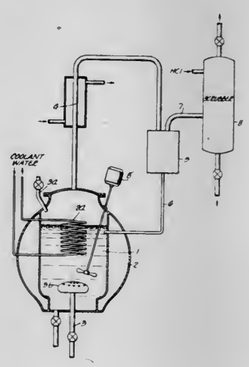
In the closed cycle, mobile bed, liquid-solid treatment installation disclosed herein, a given volume of the solid material is periodically displaced in the treatment chamber by a given volume of liquid under a given pressure. The solid material is advanced in the cycle through two columns which are separated from each other by at least one intermediate receiver that is located between two isolation valves through which the solid material passes without being crushed, and that receives from one of the columns a constant volume constituted of one or more batches of said given volume of solid material.

3,619,426
COUNTERFLOW LIQUID-GRANULAR MATERIAL TRANSFER PROCESS AND APPARATUS
Claude Blain, Palsaiseau; Paul Minart, Grenoble; Roger Platzer, Chattillon-Sous-Bagneux, and Pierre Pouchot, Lancey, all of France, assignors to Commissariat A L'Energie Atomique (C.E.A.), Paris, France and Societe Grenobloise D'Etudes Et D'Applications Hydrauliques, Grenoble, France
Division of Ser. No. 639,777, May 19, 1967, abandoned. Filed Feb. 9, 1970, Ser. No. 9,846
Claims priority, application France, May 20, 1966, 4940
Int. Cl. B01d *15/02, 33/16*
U.S. Cl. 210—33 **6 Claims**



In the closed cycle, mobile bed, liquid-solid treatment installation disclosed herein, a given volume of the solid material is periodically displaced in the treatment chamber by a given volume of liquid under a given pressure.

3,619,427
METHODS OF SCALE INHIBITION USING POLYALKYLENE POLYAMINO POLYKIS METHYLENE PHOSPHONIC ACIDS AND THEIR SALTS
George J. Kautsky, Los Angeles, Calif., assignor to Textilana Corporation, Hawthorne, Calif.
Filed June 22, 1970, Ser. No. 48,164
Int. Cl. C02b *5/06*
U.S. Cl. 210—58 **24 Claims**

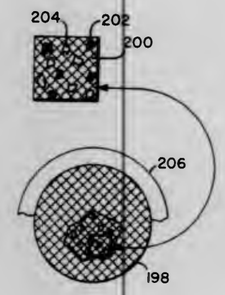


This invention relates to methods of scale inhibition using polyalkylene polyamino polykis methylene phosphonic acids and their salts.

3,619,428
POROUS PARTICLE FABRICATION PROCESS

Constant V. David, 2625 Loring St., San Diego, Calif.

Filed Apr. 5, 1968, Ser. No. 719,069
Int. Cl. G21c *21/00*
U.S. Cl. 264—.5 13 Claims

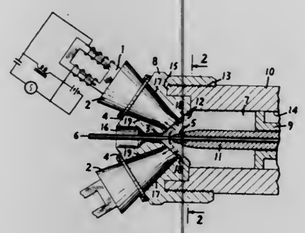


The method of fabricating spheroid-shaped particles of porous carbon with metal or metallic compound powder dispersed therein, which particles have controlled size, shape and porosity, by dispersing powdered metal or metallic compound material that may comprise fissionable material in precured resin particles, heating the particles in a suspended condition in a fluid medium to spherically shape and cure the particles and then pyrolyzing the cured particles to produce the spheroid-shaped porous char matrix binding the metal or metallic compound powder together.

3,619,429
METHOD FOR THE UNIFORM EXTRUSION COATING OF WELDING FLUX COMPOSITIONS

Yasuo Torigai, Funabashi-shi, and Keizo Ishizaki, Tokyo, both of Japan, assignors to Yawata Welding Electrode Co., Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 656,969, May 22, 1967, now Patent No. 3,456,295, dated July 22, 1969, Division of Ser. No. 656,969, May 22, 1967, Pat. No. 3,456,295, which is a division of application Ser. No. 552,655, Mar. 29, 1966, now abandoned, which is a continuation of application Ser. No. 337,644, Jan. 15, 1964, now abandoned. Filed June 4, 1969, Ser. No. 830,332
Int. Cl. B06b *3/00*; B29f *3/10*
U.S. Cl. 264—23 8 Claims



A method and apparatus are provided for the uniform extrusion coating of flux mixtures on welding rod or wire, in which a sonic or ultrasonic wave vibration at a frequency from about 5,000 to about 400,000 c.p.s. is applied to the flux mixture to maintain its uniformity, and thereby prevent the obstruction to the smooth extrusion coating of the welding flux mixture as the flux mixture is fed under pressure to the extrusion nozzle.

3,619,430
METHOD OF MAKING A METAL IMPREGNATED CARBON PRODUCT

Toshio Hiratsuka, Yokohama; Toyonosuke Kanemaru, Zushi, and Hiroshi Yamazoe, Yokohama, all of Japan, assignors to Nippon Carbon Company Limited, Tokyo, Japan

Filed June 6, 1969, Ser. No. 831,160
Claims priority, application Japan, Apr. 22, 1969, 44/30706
Int. Cl. C04b *41/24*, *35/52*
U.S. Cl. 264—29 4 Claims

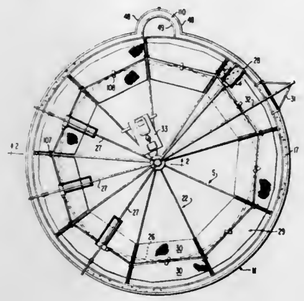


A seal material having an improved wear resistance under a severe rotary and vibration condition at elevated temperatures can be produced by the steps of providing a mass of coke powder with a particle size less than 40 micron, mixing the coke powder and a binder by a mixer of Banbury type, molding the mixture to shape, selecting a product having a bulk density of in the range of 1.68–1.79, impregnating the product with a molten metal, and cooling it to room temperature.

3,619,431
METHOD AND APPARATUS FOR CONSTRUCTING A MONOLITHIC SILO

Richard L. Weaver, and Benjamin K. Smoker, both of Myerstown, Pa., assignor to Weaver by said Smoker

Filed Apr. 11, 1968, Ser. No. 720,687
Int. Cl. E04b *1/16*; E04h *7/22*
U.S. Cl. 264—32 16 Claims



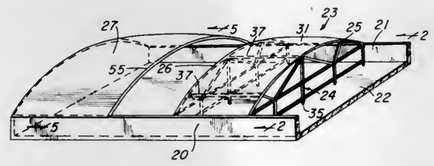
System for constructing concrete silos wherein molds are sequentially erected and filled as a three tiered mold unit with a crane scaffold supported on the top mold by radial arms which rest on ledges extending inwardly from the interface thereof. The outer form of the bottom mold is then dismantled into semicircular sections, raised by using the three jib cranes of the crane scaffold and erected as the fourth tier. The inner form of the bottom mold is then dismantled in predetermined length sections for passage

through the restricted space between the crane scaffold and the third tier and then erected to complete the fourth tier mold. The crane scaffold is then elevated by suspending it from the top of the fourth tier; the radial arms are then seated on the horizontal ledges of the fourth tier. A cart is rotatably mounted about the center post of the scaffold for evenly feeding concrete into the molds. Safety means are provided.

3,619,432
METHOD AND APPARATUS FOR CONSTRUCTION OF CONCRETE SHELLS

Horrall Harrington, Pittsburgh, Pa., assignor to Ivan Himmel, Chicago, Ill., a part interest

Filed Sept. 17, 1968, Ser. No. 760,297
Int. Cl. B28b *7/32*; E04g *11/04*
U.S. Cl. 264—32 10 Claims

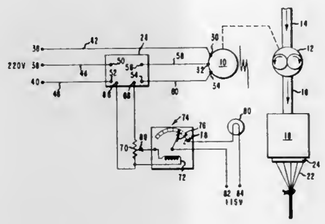


A method of constructing a concrete shell, employing a form assembly comprising a rigid structural frame with an inflatable fabric form mounted on the frame, the frame having a configuration generally conforming to one segment of the concrete shell. The form assembly is aligned with a portion of a building foundation structure and is inflated; metal reinforcements are then positioned on the external surface of the form. Concrete is deposited over the form and allowed to set, after which the form is deflated and the form assembly moved to a new position adjacent the completed shell segment for construction of the next segment of the shell. Small precast concrete chair members, used to support the metal reinforcement of the fabric form, become a part of the completed shell.

3,619,433
METHOD FOR DETERMINING FILAMENT DENIER OF FILAMENTS SPUN FROM A SPINNING PACK

William Thomas Windley, Seaford, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 641,598, May 26, 1967, now abandoned. This application Oct. 13, 1969, Ser. No. 871,745
Int. Cl. D01d *1/08*, *5/10*; F04b *13/00*; G01d *1/06*
U.S. Cl. 264—40 2 Claims

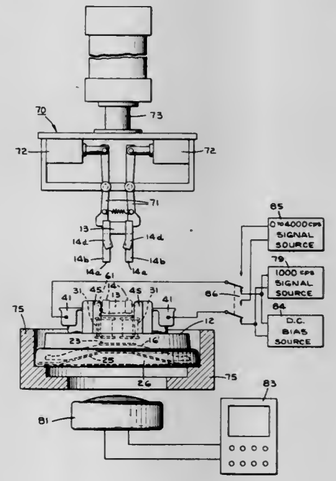


A method for determining the minimum acceptable average filament denier of filaments being extruded from a spinning pack supplied with polymer at a constant metered rate by a meter pump driven by a constant speed electric motor. The power input to the motor which has been correlated to average filament denier is continuously detected by a wattmeter that supplies a signal to a device for signalling the occurrence of power input corresponding to minimum acceptable average filament denier.

3,619,434
METHOD OF ADJUSTING THE AIRGAP OF AND FINALLY ASSEMBLING ELECTRICAL TRANSDUCERS OF THE CENTRAL ARMATURE RECEIVER TYPE

Joseph E. Blastic, Indianapolis; Norbert B. Karau, Indianapolis, and Archie F. Kerr, Noblesville, all of Ind., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 737,164, June 14, 1968, Pat. No. 3,542,974.
Filed Dec. 15, 1969, Ser. No. 889,797
Int. Cl. B32b *31/06*; H04r *29/00*; H04r *31/00*
U.S. Cl. 264—40 11 Claims

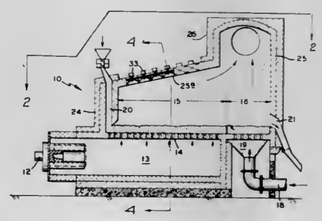


The airgap adjustment and final assembly of electrical transducers of the central armature type, such as those employed as receivers in telephone sets, is accomplished by adapting the receiver frame to engage frictionally and temporarily support the magnet pole piece assembly during the adjustment of the airgap. Both an AC signal and a selectively variable DC bias, simultaneously applied to the coils of the receiver, are employed in determining the proper airgap spacing which results in the receiver producing an optimum value of acoustic output falling within predetermined minimum limits. After adjusting the airgap, a solidifiable liquid cement or a suitable potting compound is employed to secure the magnet pole piece assembly permanently and rigidly to the frame of the receiver.

3,619,435
METHOD OF THERMALLY BLOATING CLAY PELLETS USING A FLUIDIZED BED

Henry Kepper, Heemstede, Netherlands, assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Aug. 19, 1968, Ser. No. 753,369
Int. Cl. C04b *21/00*, *21/02*, *33/32*
U.S. Cl. 264—43 3 Claims

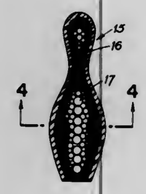


Method for producing expanded lightweight aggregate by heat-treating prepared predried clay pellets or the like in a

fluidized bed maintained by hot gases, assisted by additional radiating heat directed downwardly upon the bed, with means for separately controlling the amount of radiating heat, and the bed temperature, whereby the bed temperature is maintained substantially below the surface sintering temperature of the pellets, but above the temperature required to expand the pellets.

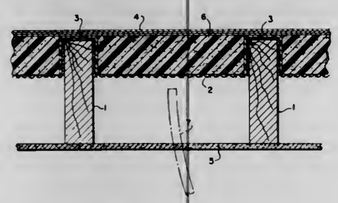
The upflow rate or velocity of gases in the fluid bed are controlled in such a manner that the pellets are constantly raised to the surface where the downwardly directed radiant heat forms a sintered or glassy outer skin on the expanded pellets. The turbulence caused by the controlled velocity of the gasses then causes these pellets to be circulated back down into the fluidized layer so that all of the expanded pellets are exposed to the radiant heat momentarily and repetitiously as they pass through the fluid bed furnace. The expanded pellets are cooled in the final section of the fluid bed furnace.

3,619,436
BOWLING PIN
George A. Gruss, Shelby, Ohio; Richard A. Smith, Cornwall-on-the-Hudson, and Joseph R. Infantino, Chappaqua, N.Y., assignors to American Machine & Foundry Company
Division of Ser. No. 396,451, June 19, 1964, abandoned, which is a division of application Ser. No. 31,161, May 23, 1960, Now Pat. No. 3,147,975, dated Sept. 8, 1964. Filed Feb. 11, 1966, Ser. No. 538,865
Int. Cl. B29d *9/00*
U.S. Cl. 264—45 **1 Claim**



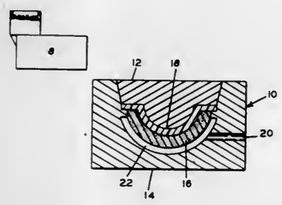
Briefly, this invention deals with the manufacture of a bowling pin wherein a shell of solid synthetic resin which has the general contour of the finished pin is inserted into a mold and thereafter a commensurate quantity of expandable synthetic resin together with an expanding agent is introducted into the shell and is expanded to entirely fill the shell and form a bowling pin.

3,619,437
METHOD OF CHARGING A CAVITY WITH UREA-FORMALDEHYDE FOAM INSULATING MATERIAL
James R. McDonald, Jr., Sacramento, Calif., assignor to U.F. Chemical Corporation, Woodside, N.Y.
Filed Feb. 25, 1969, Ser. No. 802,022
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **7 Claims**



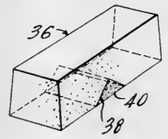
The cavities in a ceiling between the joists are charged with thermal and acoustical insulation by loosely placing burlap over the joists prior to the installation of the subflooring so that the sagging burlap, the joists, and the subflooring define cavities. Catalyzed urea-formaldehyde foam is sprayed from below against the burlap and penetrates into the cavities where it is solidified into a porous mass having excellent insulating properties.

3,619,438
PROCESS FOR FOAMING OF A MOLDED ARTICLE IN A POROUS MOLD
David R. Cistone, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Continuation-in-part of application Ser. No. 614,602, Feb. 8, 1967, now abandoned. This application Aug. 19, 1969, Ser. No. 863,738
Int. Cl. B29d *27/00*
U.S. Cl. 264—45 **1 Claim**



A process for forming and selectively foaming plastic articles comprising filling a mold with particulate polystyrene or polypropylene resin converting the resin to its plastic state by heat and pressure, passing a liquid volatile fluorocarbon foaming agent through a porous section of the mold cavity to permit permeation of the resin by the foaming agent, and then releasing the molding pressure to permit foaming. Only the portion of the article corresponding to the location of the porous mold areas is foamed.

3,619,439
METHOD OF MAKING A BRICK WITH WEAR INDICATOR
Robert F. Rea, Bloomfield Township, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio
Division of Ser. No. 533,033, Mar. 9, 1966. Filed Feb. 7, 1969, Ser. No. 797,414
Int. Cl. C04b *33/32, 35/64*
U.S. Cl. 264—56 **7 Claims**

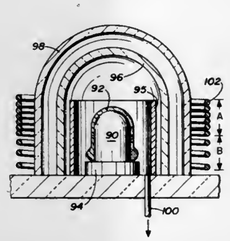


A method of making a brick with a color indicator is provided. The brick is particularly useful in the lining of a ball mill to indicate when the liner has worn to the point of possibly failing. Preferably, colored inserts are made of the same refractory material as the bricks but have a coloring material added thereto, thereby minimizing contamination of the material being ball milled. The brick and the insert are formed under the same pressures to provide similar shrinkage characteristics and the brick and insert are then fired together at an elevated temperature.

3,619,440
PREVENTION OF CRAWLING OF METAL OXIDE HOLLOW ARTICLES ALONG THE SUPPORT MANDREL DURING SINTERING
Foster Lee Gray, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 18, 1969, Ser. No. 886,253
Int. Cl. C04b *33/32, 35/64*
U.S. Cl. 264—60 **17 Claims**

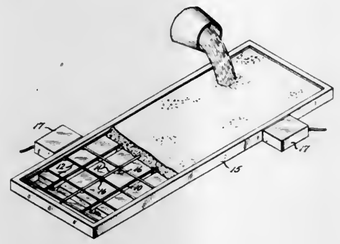
The method of sintering amorphous of amorphous metal oxide, and in a preferred embodiment crucibles and tubing of

fused silicon dioxide, by depositing a porous layer of amorphous metal oxide on a deposition surface, and thereafter partially sintering the edges of the metal oxide article to less than 90 percent of its theoretical density and substantially sintering the remainder of the metal oxide article to greater than 90 percent of its theoretical density. By only partially sintering the edge portions sufficient frictional forces are produced with the mandrel to exceed the surface



tension forces created in the remainder of the metal oxide article by the higher sintering temperature thus preventing longitudinal contraction and crawling encountered in the prior art processes. For a silicon dioxide article, the edges of the mandrel are sintered at a temperature in the range of 1,250° C. to 1,350° C.; the remainder of the article is sintered at a temperature in the range of 1,450° C. to 1,550° C. The partially sintered portion is then severed from the fully sintered portion to produce the desired article.

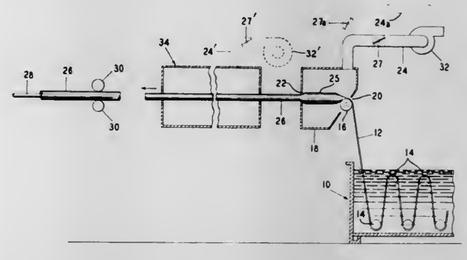
3,619,441
METAL TREATMENT TO PREVENT CORROSION AND BLEMISHES IN METAL REINFORCED CONCRETE STRUCTURES
Knox Ryan Burchett, Virginia Beach, Va., assignor to Southern Block and Pipe Corporation, Norfolk, Va.
Filed Apr. 3, 1969, Ser. No. 813,197
Int. Cl. C23f *7/26*
U.S. Cl. 264—71 **3 Claims**



Concrete reinforced with galvanized metal that has received a sodium chromate treatment that forms a protective coating on the galvanized metal to prevent blemishes in the finished concrete product caused by chemical reactions between the zinc and the alkalis of the concrete.

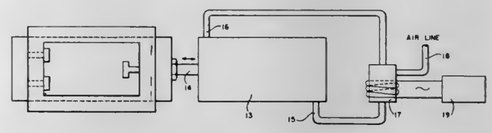
3,619,442
METHOD FOR INFLATING COLLAPSED TUBING
William E. Henderson, Hinsdale, Ill., assignor to Union Carbide Corporation
Filed Apr. 18, 1968, Ser. No. 722,384
Int. Cl. B29c *17/02*
U.S. Cl. 264—89 **8 Claims**

A method for inflating collapsed tubular material without rupturing the material or adversely affecting the elongation and stretch characteristics thereof. In a first embodiment, the collapsed material is fed into a chamber while air is introduced into the interior of the material at a pressure sufficient to maintain the material open by relaxed when inflated. The pressure in the chamber is adjusted to create an increased net internal pressure in the material which causes the material to be inflated. The material is maintained in the chamber under the increased pressure only for that time necessary to inflate the material as the increased pressure would adversely affect the material if maintained therein. In



a second embodiment, the air introduced internally of the tubular material is sufficient to inflate the material and the material, once inflated, is fed into a drying-sizing unit wherein the pressure is adjusted to create a lower net internal pressure in the material sufficient to maintain the material inflated but in a relaxed state. The tubular material can be a collagen.

3,619,443
METHOD FOR THE PRODUCTION OF NESTABLE CONTAINERS
Peter Blandford Feldman, St. Denijs-Westrem, Belgium, assignor to Monsanto Chemicals Limited, London, England
Filed Aug. 5, 1968, Ser. No. 750,225
Claims priority, application Great Britain, Aug. 15, 1967, 37519/67
Int. Cl. B29c *17/04, 24/00;* **B65d** *21/02*
U.S. Cl. 264—89 **2 Claims**

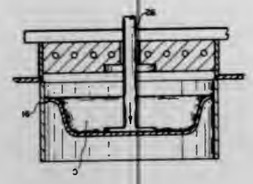


A method for altering the configuration of a series of containers produced in a mold such that the containers can be nested together without sticking. A first container is made by differential pressure forming a thermoplastic sheet in a mold having means for forming stacking lugs in the surface of the container. The means forming the stacking lugs are then automatically altered in position so as to present a mold having a different configuration at the surface where the stacking lugs are formed and a second container is formed in the mold. The containers are then nested and the stacking lugs of different configuration prevent sticking together of the containers.

3,619,444
FORMING A THICKENED SECTION ON A CONTAINER FLANGE
John K. Roth, Simsbury, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 23, 1968, Ser. No. 786,262
Int. Cl. B29c *17/04, 17/14, 23/00*
U.S. Cl. 264—89 **1 Claim**

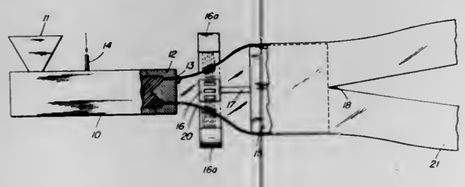
A method for forming a thickened outer section on a flange of a biaxially oriented thermoplastic container. A generally continuous polystyrene sheet is stretched in two directions and successive portions of the sheet are forced

against a heating platen so as to heat the portions while preventing any relaxation of the stresses induced by the stretching. Plural numbers of the flanged containers are then formed from each successive sheet portion by fluid pressure



and are cooled. The cooled containers are then conveyed to a trimming station where a heated cutting element is used to sever each container from the sheet, the heating and cutting causing the peripheral edge of each severed container to form a bead due to relief of the induced stresses.

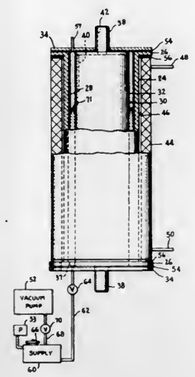
3,619,445
METHOD FOR PRODUCING BIAXIALLY ORIENTED POLYSTYRENE HEAVY GAUGE SHEET
Frank A. Carlson, Jr., Pittsford, N.Y., assignor to Mobil Oil Corporation
Filed Aug. 2, 1968, Ser. No. 749,738
Int. Cl. B29d *7/02*
U.S. Cl. 264—95 **1 Claim**



Biaxially oriented heavy gauge polystyrene sheet is produced by initially extruding a tube of thermoplastic material readily workable over a forming and cooling mandrel, preferably a foamed polystyrene tube from an annular extrusion orifice of an extruder containing polystyrene admixed with a nucleating agent and a foaming agent, passing the tube (or other workable thermoplastic) over a forming and cooling mandrel having a diameter larger than the orifice, slitting the tube and taking up sheets on takeup rolls, wherein the tube between the orifice and the mandrel is supported by injecting a gaseous medium (e.g., air) insided the tube. Thereafter, in the case of polystyrene foam initiation, the addition of nucleating agent and foaming agent is discontinued, extrusion temperature is adjusted, and the rate of injection of gas inside the tube is adjusted to an amount that a gas cushion forms between the polystyrene tube and the mandrel, and the operation is continued to produce clear oriented polystyrene sheet.

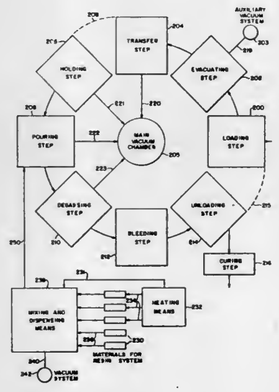
3,619,446
METHOD FOR MAKING RESILIENTLY FACED ROLLS
Jan P. Nauta, West Hartford, Conn., assignor to Rowland Products Incorporated, Kensington, Conn.
Filed Feb. 2, 1968, Ser. No. 707,005
Int. Cl. B23p *11/02*; **B29c** *1/02, 1/04, 7/00*; **B44b** *5/02*
U.S. Cl. 264—102 **13 Claims**

There is disclosed a method for making rolls to produce a controlled surface finish upon synthetic thermoplastic sheet material wherein a female mold impression is produced from a male mold member having the desired peripheral surface configuration intended for the roll to be used in the process. After the female mold impression has been made by use of a curable synthetic plastic resin, a support member is inserted into the female mold and a synthetic plastic resin is cast on the surface thereof so as to form a male impression upon its peripheral surface conforming to that of the female mold. The synthetic plastic is then cured and the resultant roll is used as at least one of a pair of rolls operating upon the surface of the heated thermoplastic sheet material so as to impress its surface characteristics thereupon.



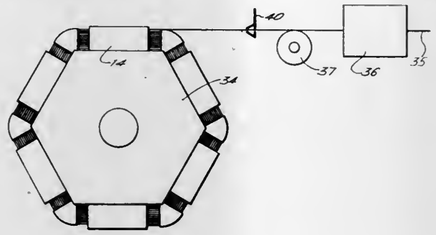
Although the surface of the roll may be mirror-polished in accordance with the disclosed procedure, generally the roll produced will have a multiplicity of cavities or protuberances thereon for embossing purposes.

3,619,447
CASTING METHODS FOR ENCAPSULATING ELECTRICAL CONDUCTORS
Bernard A. Kerns; Lawrence J. Manning, and Alexander Taleff, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 675,841, Oct. 17, 1967, Pat. No. 3,529,320.
Filed Jan. 21, 1970, Ser. No. 4,486
Int. Cl. B29c *6/02*
U.S. Cl. 264—102 **5 Claims**



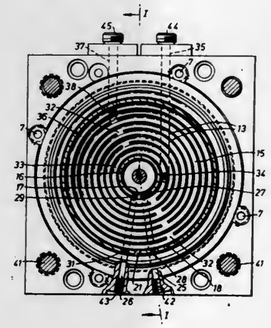
Casting methods for at least partially encapsulating electrically conductive means in an insulating resin system. The casting methods include indexing a rotary carriage which contains a plurality of vacuum chambers, loading a casting mold at one of the index positions, evacuating the loaded vacuum chamber with a first vacuum system at another index position, transferring the vacuum chamber from the first vacuum system to a second vacuum system, maintaining the vacuum provided by the second vacuum system at certain subsequent indexing positions, introducing a resin system into an evacuated vacuum chamber at one of the index positions at which the vacuum system is being maintained by the second vacuum system, to fill the mold contained therein, degassing the poured resin system at another of the index positions at which the vacuum is maintained by the second vacuum system, returning the vacuum chamber to atmospheric pressure at another index position, and unloading the filled mold at still another index position.

3,619,448
METHOD OF MAKING AN AEROFOIL-SHAPED BLADE
Jack Palfreyman, Matlock, Derby, and Henry Edward Middleton, Derby, both of England, assignors to Rolls-Royce Limited, Derby, England
Filed May 6, 1969, Ser. No. 822,259
Claims priority, application Great Britain, May 10, 1968, 22,298/68
Int. Cl. B29d *9/06*; **B29c** *27/26*
U.S. Cl. 264—103 **12 Claims**



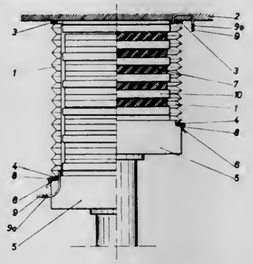
A method of making an aerofoil-shaped blade comprising positioning a pair of laminar members to provide a gap therebetween, the opposite sides of the blade profile being respectively provided on the said laminar members, thereafter winding fibrous material through the said gap, in a longitudinal direction with respect to the blade being formed and forming the assembly of laminar members and fibrous material into an aerofoil-shaped blade.

3,619,449
METHODS OF MANUFACTURING GRAMOPHONE RECORDS
Daniel Berard, Boulogne-sur-Seine, France, assignor to Les Industries Musicales et Electriques Pathe Marconi, Paris, France
Filed Nov. 22, 1967, Ser. No. 685,087
Claims priority, application France, Nov. 29, 1966, 85366
Int. Cl. B29d *17/00*
U.S. Cl. 264—106 **7 Claims**



In injection molding gramophone records, the material is injected into a cavity in which the region forming the transcription band is heated with a region around the periphery being cooled.

3,619,450
MAKING OF PRESSED BODIES
Laszlo Futo, Im Sommer 417, Klingnau, Switzerland
Filed Feb. 25, 1969, Ser. No. 802,133
Claims priority, application Switzerland, Feb. 27, 1968, 3023/68
Int. Cl. B29j *5/00*
U.S. Cl. 264—109 **1 Claim**

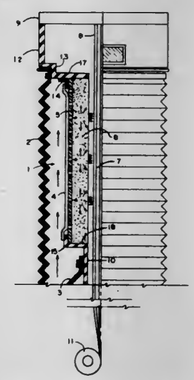


A method of making composite pressed bodies, such as panels. Material for making a composite pressed body is introduced into a tightly closable inner space. Pressing means is provided including two pressing members located in the inner space movable toward and away from one another, for exerting pressure on the material to convert the same into a composite pressed body. Means is provided which serves for regulating at the will of an operator the ambient atmosphere prevailing in the inner space.

3,619,451
POWDERED CELLULOSE ETHER
John Ernest Gill, Saltcoats, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 19, 1968, Ser. No. 761,002
Claims priority, application Great Britain, Sept. 29, 1967, Dec. 18, 1967, 44,477/67; 57369/67
Int. Cl. B29j *5/00*
U.S. Cl. 264—109 R **13 Claims**

There is provided a method of preparing free-flowing cellulose ether comprising in press rolls a dried particulate partially gelled cellulose ether at a pressure in excess of 3 tons total load per linear foot of roll at a feed rate such as to give flakes with a thickness of 0.003–0.015 inches.

3,619,452
FILAMENT QUENCHING APPARATUS AND PROCESS
David M. Harrison, Chester, and Thomas E. Miles, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 7, 1969, Ser. No. 805,261
Int. Cl. B28b *3/20*; **B29c** *25/00*
U.S. Cl. 264—176 F **26 Claims**



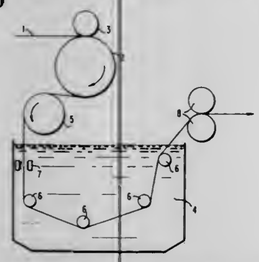
An apparatus and process for producing a substantially nonturbulent stream of cooling gas for quenching a melt ex-

truded filament which comprises a quenching chamber, wherein a melt extruded filament is passed therethrough, and a gas entry chamber, the gas entry chamber being provided with means for introducing a cooling gas. The quenching chamber and the gas entry chamber are separated from each other by a porous, multicellular, polymeric foam diffuser which is capable of diffusing gas entering from the gas entry chamber and permitting the diffused gas to pass therethrough into the quenching chamber as a substantially nonturbulent stream of gas thereby quenching the melt extruded filament and producing greater cross-sectional uniformity in the filament.

3,619,453
WET SPINNING PROCESS FOR THE PRODUCTION OF POLYBENZIMIDAZOLE FILAMENTS
John P. Riggs, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,670
Int. Cl. D01d 5/06
U.S. Cl. 264—184 **15 Claims**

An improved wet spinning process is provided which is capable of producing highly uniform polybenzimidazole filaments which are substantially free of internal voids and radial incursions. A solution of the polybenzimidazole is extruded into a coagulation bath of certain polyhydroxy aliphatic alcohols to form an as-spun filament which is at least initially washed in a relatively cool wash medium, followed by drying, and stretching. The uniform filaments formed in the process are useful as precursors in the formation of carbon or graphite fibrous materials or as a substrate for metal deposition. When heavy denier filaments are formed in in the present process, these are particularly suited for use in the formation of fibrous closures.

3,619,454
METHOD OF PREPARING POLYPROPYLENE SHEET
Rikita Sakata, Yokkaichi-shi; Kohei Masuda, Masanori, Takashi, and Sadao Nagase, Yokkaichi-shi, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1968, Ser. No. 771,027
Claims priority, application Japan, Oct. 27, 1967, 42/68820
Int. Cl. B29c 25/00
U.S. Cl. 264—210 **4 Claims**

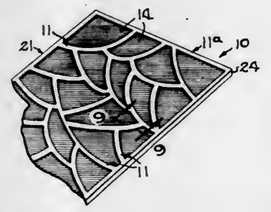


Method of preparing polypropylene sheets by contacting at least one surface of a molten polypropylene sheet with a quenching roller to cool the surface of the sheet to a temperature below the melting point of the polypropylene while the inner portion of the sheet is allowed to remain in the molten state, and then contacting the sheet with quenching water maintained at a temperature lower than 40° C.

3,619,455
HEAT DEFORMABLE ELASTOMERIC ARTICLES
Ira T. Clement, Glen Mills; Anthony L. Tuno, Philadelphia, and Edmond R. Ayella, Philadelphia, all of Pa., assignors to Pennsylvania Fluorocarbon Company, Inc., Clifton Heights, Pa.
Filed Apr. 19, 1968, Ser. No. 722,539
Int. Cl. C08d 9/04; C08f 29/22; B29c 13/00
U.S. Cl. 264—230 **10 Claims**

Elastomeric articles which can be shrunk by the application of heat are made from a blend of a cured polychloroprene elastomer and a polychloroprene elastomer having a Williams Plasticity Number of more than 1,000° at 100° F. and less than 350° at 150° F.

3,619,456
SIMULATED STAINED GLASS ASSEMBLY AND METHOD OF MAKING THE SAME
Charles L. Taylor, Jr., c/o Creative Concepts Co., 626 Second Ave., Dixon, Ill.
Filed Mar. 26, 1969, Ser. No. 810,742
Int. Cl. B29c 9/00; B44f 1/00
U.S. Cl. 264—245 **9 Claims**



An assembly made from plastic which appears to be of stained glass set in lead, and the assembly can be made in any design that can be made by stained glass set in lead. The primary method for making the assembly is to arrange horizontally grooved plastic cames on a horizontal surface in the framework of the design desired, then to fill the design with a filler material to the bottom of the grooves, then to place variously colored liquid plastics in the design to fill it to the top of the grooves, next to cure the plastic, and finally to remove the filler material. In one variation of the method, no filler material is used and the liquid plastic fills the design from the bottom of the cames to the top of the grooves. When this variation is used, the resulting assembly appears to be stained glass set in lead only when viewed from one side.

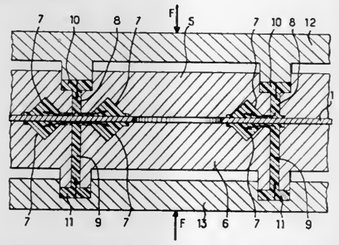
3,619,457
METHOD OF FORMING STRUCTURAL UNITS
Wesley M. Chandler, St. Paul; Paul F. Heuser, St. Paul, and Bernard T. Juba, White Bear Lakes, all of Minn., assignors to Thermoform Plastics, Inc., St. Paul, Minn.
Division of Ser. No. 625,244, Mar. 22, 1967, abandoned. Filed Sept. 20, 1968, Ser. No. 822,750
Int. Cl. B28b 1/16
U.S. Cl. 264—256 **2 Claims**



This invention relates to structural units such as structural building units, which may be used for building wall and flood panels, floor tile, prestressed concrete, building beams and columns, telephone poles, guard poles, and the like, storage silos, chemical storage vats and tanks, septic tanks, concrete steps, railroad ties, telephone and telegraph terminal boxes, building blocks, shower stalls and tubs, pipes for sewage and water transmission, burial vaults, cremation urns, and other articles and products, of superior structural and tensile strength and attractive appearance. Each of the structural units of the present invention comprises a first component which is preferably a plastic resinous component providing at least a portion of the mold surface for a second component; a second component of portland cement concrete mix or lightweight aggregate cement mix, industrial molding plaster, or so-called "tooling plaster," or like materials, formed against the mold surface of the resin component; and an adhesive bonding agent between the mold surface of the first or resin component and the second concrete or molding plaster component formed thereon and cured in situ and adhesively

bonding the resin component and the concrete or molding plaster component together to form the said structural unit.

3,619,458
METHOD OF MAKING A GASKET
Jean Alfred Engelhardt, Lyon, France, assignor to Societe Anonyme dite: Cefilac, Paris, France
Continuation-in-part of application Ser. No. 475,111, July 25, 1965, now abandoned. This application Mar. 26, 1969, Ser. No. 814,231
Int. Cl. B29f 1/06
U.S. Cl. 264—260 **3 Claims**



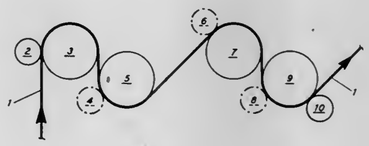
A method of providing an apertured gasket support with a ring of sealing material encircling said aperture, using a pair of mold parts, each of which has an annular recess in one face thereof connected to a sealing material reservoir, the inner diameter of the recess being greater than that of the aperture, according to which one mold part is positioned on each side of said gasket support with the recesses and aperture aligned and the inner edge of each recess spaced from the edge of the aperture and injecting liquid sealing material into both recesses, while simultaneously clamping the gasket support between the mold parts.

3,619,459
PROCESS FOR POTTING PLASTICIZED ACETYLATED CELLULOSE HOLLOW FIBER MEMBRANES
Paul G. Schrader, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 11, 1968, Ser. No. 736,012
Int. Cl. B29c 6/00, 27/30
U.S. Cl. 264—262 **5 Claims**

An improved method for potting plasticized, acetylated cellulose hollow fibers with a thermosettable resin is disclosed wherein an improved bond between the cured resin and the fiber results when the resin comprises a mixture of the following components: a polyglycidyl ether of a polyhydric phenol, a reactive diluent, a polycarboxylic acid anhydride, a bond promoter, a thixotropic agent and a flexibilizing agent.

3,619,460
PROCESS FOR UNIAXIALLY ORIENTING POLYPROPYLENE FILMS
Leonard Chill, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of application Ser. No. 648,392, July 23, 1967, now abandoned, and a continuation-in-part of 552,523, Mar. 24, 1966, now abandoned. This application Apr. 28, 1969, Ser. No. 820,706
Int. Cl. B29d 7/24
U.S. Cl. 264—288 **6 Claims**

Multistage process for uniaxially orienting stereoregular polypropylene film between rolls to ultimate draw ratios in the range of 6:1 up to fibrillation comprising in a first orientation stage adiabatically drawing cast film over a short linear path defined by the minimum tangential gap between a heated feed roll and a draw roll to a draw ratio of about 2:1 to 5:1 and in at least one additional orientation stage drawing



the film essentially isothermally to the ultimate draw ratio over a heated roll and between the heated roll and a draw roll over a partially arcuate path defined by the arc over which the film stretches on contact with the heated roll and the minimum tangential gap between the heated roll and draw roll.

3,619,461
STRETCHING PROCESS FOR POLYIMIDE FILM
Frank P. Gay, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 472,658, July 16, 1965, now abandoned. This application Mar. 25, 1969, Ser. No. 811,688
Int. Cl. B29d 7/24
U.S. Cl. 264—288 **2 Claims**

A process of immersing in a volatile liquid a polyimide film of low volatile content, and heating and stretching or restraining the treated film to increase the orientation in at least one direction.

3,619,462
TABLETING LUBRICANT
Allen I. Dines, Columbus, Ohio, and Willard Gene Brown, Stockton, Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Division of Ser. No. 672,978, Oct. 5, 1967, Pat. No. 3,518,345. Filed Dec. 29, 1969, Ser. No. 1,925
Int. Cl. A61j 3/10
U.S. Cl. 264—300 **7 Claims**

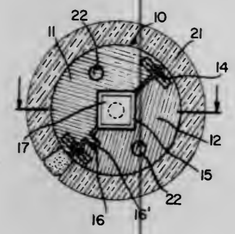
An improvement in the process of compressing powdered tabletable materials is gained by mixing with said materials prior to tableting, a lubricant comprising dry-mixable particles each having a core containing a lubricating oil and a coating of an oil-insoluble film-forming substance. The lubricant acts as both a punch face lubricant and as a diewall lubricant for said tabletable materials. The powdered tabletable materials lubricated with the above lubricant can be those intended for ingestion, such as for alkalizing of the stomach, or those intended for external use, such as for the general cleaning of solid surfaces.

ELECTRICAL

3,619,463
HEATING FURNACE

Jean-Pierre Budin, Paris, and Jean Raffy, Crosnes, both of France, assignors to Compagnie Generale E'Electricite, Paris, France

Filed Dec. 20, 1970, Ser. No. 4,369
Claims priority, application France, Jan. 20, 1969, 69 00 965
Int. Cl. G01b 9/02
U.S. Cl. 13—1 4 Claims

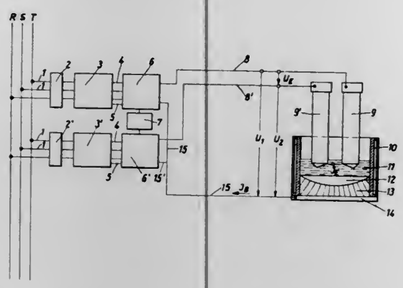


The coefficient of expansion and the thermal coefficient of the optical index in solids is measured by an interferential method employing a heating furnace consisting of two half-molds including heating elements. The half-molds are coupled together by elastic means acting perpendicularly to the axis of the half-molds which form a cylindrical housing open at both its ends.

3,619,464
APPARATUS FOR ELECTROSLAG REMELTING OF METALS AND IN PARTICULAR STEEL

Wolfgand Holzgruber, Kapfenberg; Peter Machner, Leoben; Wolfgang Hladny, Kapfenberg, and Otmar Kleinhagauer, Kapfenberg, all of Austria, assignors to Gebruder Boehler & Co. A. G., Kapfenberg, Austria

Filed Feb. 3, 1970, Ser. No. 8,379
Int. Cl. H05b 3/60
U.S. Cl. 13—12 3 Claims

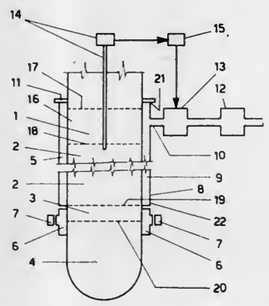


An apparatus for electroslag remelting metals, and in particular steels. Two electrodes or electrode groups are mounted in a mold containing a bath of liquid slag and are being fed with current via two or more thyristor circuits which supply the two electrodes or electrode groups with a single-phase alternating-current, the direction of which changes periodically.

3,619,465
METHOD FOR OPERATING SELF-BAKING ELECTRODES

Mario Cavigli, Mestre, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Dec. 5, 1969, Ser. No. 882,811
Claims priority, application Italy, Dec. 9, 1968, 24,795 A/68
Int. Cl. H05b 7/06
U.S. Cl. 13—18 9 Claims

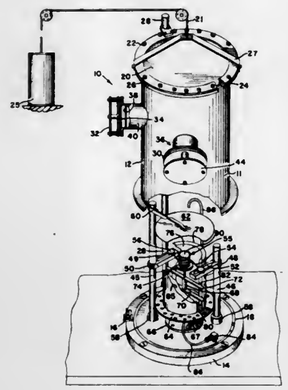


Improved results in operating self-baking electrodes are achieved by surrounding that portion of the shell which contains the solid and the molten raw, electrode-forming paste, with a stream of a hot gas, while maintaining its temperature at at least the softening point of the raw paste.

3,619,466
RADIATION FURNACE

Thomas C. Athanis, 28 Shaw St., West Roxbury, Mass., assignor to Astreon Corporation, Lowell, Mass.

Filed Sept. 21, 1970, Ser. No. 73,866
Int. Cl. H05b 3/00; F27d 1/00; F27b 5/06
U.S. Cl. 13—31 11 Claims



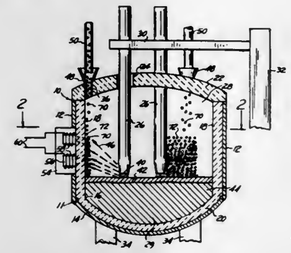
A high-temperature radiation furnace includes an aluminum cylindrical chamber, detachably clamped to an aluminum baseplate, there being gas conduits in the baseplate to supply positive or negative fluid pressure into the chamber and insulated electric conductors upstanding from the base plate to energize a resistance heating coil which encircles a workpiece. The housing cover is of easily rupturable material in case of overpressure and the heating coil is encircled by oppositely disposed, adjustable, radiation shields to restrict

and reflect the heat. A variable speed motor-driven hoist is used for raising and lowering the chamber on the baseplate. A sealed vacuum port is provided in the baseplate for connection to a vacuum station.

3,619,467
ELECTRIC ARC FURNACE AND METHOD OF PROTECTING THE REFRACTORY LINING THEREOF

Daniel J. Goodman, 23236 Westbury Drive, St. Clair Shores, Mich.

Filed Apr. 23, 1970, Ser. No. 31,201
Int. Cl. F27d 1/00
U.S. Cl. 13—35 12 Claims

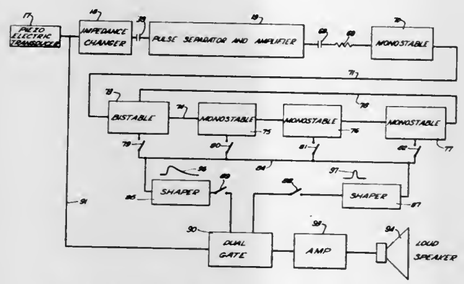


Damage to the lining of the shell of an electric arc furnace by arc flare during steel making is reduced by providing a powerful magnetic field in the vicinity of the lining sidewall area subjected to the intensive heat from arc flare and then feeding pieces, pellets or fragments of magnetically attracted ferrous material, such as iron ore or metal pieces, pellets or fragments past the magnetized lining area to the molten metal and slag bath in the bottom or hearth of the furnace. This magnetic flux causes the falling fragments, such as concentrated iron ore pellets, to be captured by and to adhere temporarily to the lining of the furnace until their temperatures reach the so-called Curie point of about 700° C. at which their capability of being magnetically attracted ceases. Thereupon the pellets fall into the molten bath but are immediately replaced by fresh pellets falling past the magnetized wall and thus providing a continuous shield of pellets or other magnetizable fragments which provide substantial protection to the sidewalls or lining of the furnace. The portions of the furnace between the electromagnets providing the magnetic flux and the furnace lining at the locations subjected to damaging arc flare are preferably formed of nonmagnetic material, so as to maintain the magnetix flux flow through the furnace wall and lining at its maximum value.

3,619,468
STRINGED MUSICAL INSTRUMENT WITH PIEZOELECTRIC TRANSDUCER PROVIDING GATE CONTROL AND MUSIC SIGNALS

Chauncey R. Evans, Costa Mesa, Calif., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,819
Int. Cl. G10h 3/00, 1/02
U.S. Cl. 84—1.16 31 Claims

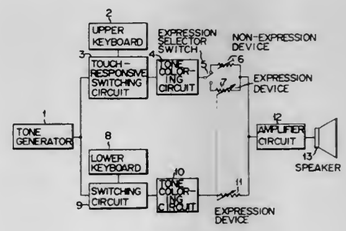


A method of creating a wide variety of player-initiated musical effects, which comprises employing a piezoelectric transducer in contact with the string of a guitar or similar plucked musical instrument, and thereby deriving from the string a control pulse upon each release of the string by the pick or fingers of the musician. The control pulse is utilized to control various gating and other means to create numerous rhythm, tonal and special effects. The apparatus comprises a string and associated piezoelectric transducer, in combination with an impedance changer for creating a very high output impedance for the transducer. Pulse separator and amplifier means are provided to separate the control pulse from the tone which is generated upon plucking of the string. Various monostable, bistable, shaper and gate means are provided to generate the desired tonal, rhythm and other effects.

3,619,469
ELECTRONIC MUSICAL INSTRUMENT WITH KEY AND PEDAL-OPERATED VOLUME CONTROLS

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 23, 1970, Ser. No. 21,796
Int. Cl. G10h 1/00, 1/02
U.S. Cl. 84—1.17 5 Claims

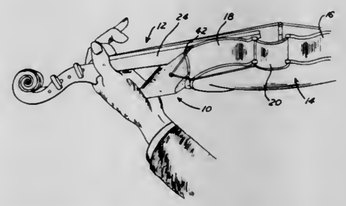


An electronic musical instrument comprises a first performance section which produces music signals by manipulation of keys in a keyboard at predetermined levels irresponsive to the forces with which the keys are depressed, a second performance section which produces music signals by manipulation of keys in a keyboard at levels responsive to the forces with which the keys are depressed, and expression control means which varies the signals from the first performance section under operation of the player, means to lead the signals from the second performance section to the output terminal of the expression control means, and an amplifier and a speaker to convert the signals from both sections into audible sound.

3,619,470
HAND-POSITIONING DEVICE FOR VIOLINISTS

George Dee Harris, Box 14, Butte Falls, Oreg.

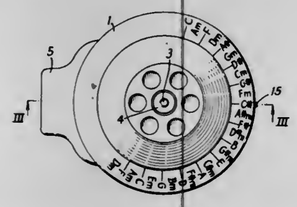
Filed Apr. 3, 1970, Ser. No. 25,419
Int. Cl. G10d 3/18
U.S. Cl. 84—281 6 Claims



A hand-positioning device is provided for student violinists including particularly beginners, designed to assist them in maintaining a proper position and posture of the hand in which the violin is held, so that the finger tips of that hand may be caused and trained to move fluently and habitually

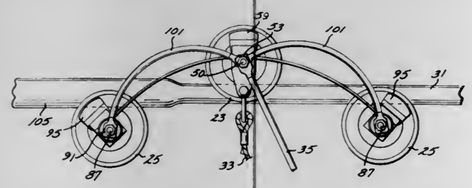
directly toward and from the strings, thereby to improve the technique generally, and particularly to facilitate the execution of the vibrato effect. The device has the following desirable characteristics: it abuts the outer end of the violin body, and straddles and substantially fits the neck anchor and a portion of the neck itself; it is yieldingly but firmly and stably held in place by elastic band means which extend around opposite sides of the outer end of the violin body and into the hollows or recesses provided at opposite sides of the waist portion; it is composed chiefly of very light, molded, nonresonant, cellular material such as styrofoam; it includes a hand engaging button or body of a dirt-resistant, cleanable material; it cannot be positively clamped in place and hence cannot crush the violin body, and it does not subject the violin to the hazard of mutilation in the event of accidental snagging of the device on a fixed object.

3,619,471
HARMONICAS
Shin-hua Tsui, Ming-Weng, 2nd Lane Hsin-Hsing, Taiwan, China
Filed Apr. 27, 1970, Ser. No. 31,989
Claims priority, application Great Britain, May 1, 1969, 22,378/69
Int. Cl. G10d *7/12*
U.S. Cl. 84—377 **6 Claims**



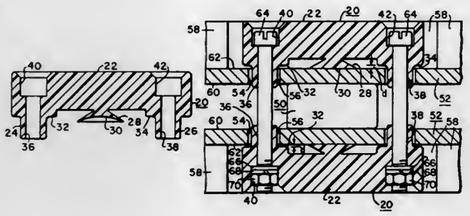
A round harmonica comprises a casing; a circular reed assembly mounted for rotation about its axis within the casing, the reed assembly having a number of circumferentially spaced reed chambers arranged so that any selected reed chamber, or group of reed chambers, is brought into alignment with at least one passage in the mouthpiece. The reed assembly is turned by hand by means of a driving gear coupled with a driven gear on the reed assembly, the gear ratio (preferably 2:1) being such that the reed assembly turns faster than the driving gear.

3,619,472
GROUNDING ROLLER
William R. Davis, Lakewood, Calif., assignor to Cunningham-Davis, Gardena, Calif.
Filed Feb. 25, 1970, Ser. No. 14,164
Int. Cl. H01r *3/00, 39/00;* **B60l** *5/06*
U.S. Cl. 174—5 SG **9 Claims**



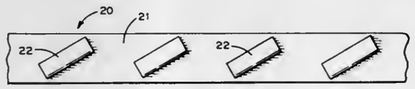
Grounding roller apparatus including a frame in the form of an elongated spring member having an electrically conductive central roller mounted thereon and an outside electrically conductive roller disposed on either side thereof in spaced relationship therewith and also mounted on the frame. Thus, Thus, the central roller may be placed on an electrical conductor and the opposite ends of the frame flexed to engage the outer rollers on the underside of the conductor and the entire apparatus grounded whereby the conductor may be fed through the apparatus thereby providing a constant ground for the conductor.

3,619,473
CLAMPING BRACKET FOR FLAT PACKAGE SEMICONDUCTOR DEVICES AND A SEMICONDUCTOR ASSEMBLY UTILIZING THE SAME
Alfred Meyerhoff, Greensburg; Peter M. Guzanick, Monroeville, and Walter E. Blake, Jeannette, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 700,940, Jan. 26, 1968, now abandoned. This application Nov. 19, 1969, Ser. No. 878,067
Int. Cl. H01l *1/12*
U.S. Cl. 174—15 R **28 Claims**



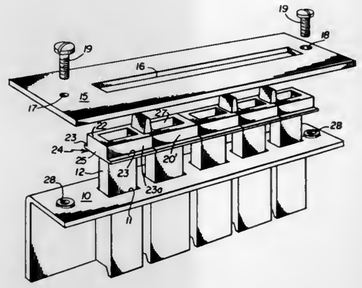
The invention relates to a mounting bracket and to an assembly for a flat-packaged semiconductor device. The primary purpose of the bracket and assembly is to apply the contacting force to a semiconductor device without distorting or bending the contacting surfaces. The mounting bracket has two spaced-apart bosses which project into apertures of each member. The boss prevents electrical short circuiting from occurring between fasteners, required to clamp the components together, and the members. The bracket has a pressure contact which may be integral with, or separate from, the assembly. The pressure contact may have either a concave flexible face or a flat face for distributing the force of the bracket to a surface of member that it is mounted on.

3,619,474
SPACER ASSEMBLY FOR COAXIAL TUBULAR SYSTEMS
August Beck, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed May 28, 1969, Ser. No. 828,481
Claims priority, application Germany, June 1, 1968, P 17 65 532.2
Int. Cl. H01b *9/04*
U.S. Cl. 174—29 **10 Claims**



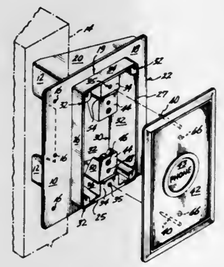
Spacer assemblies for maintaining a plurality of tubular members in concentric relation to provide maximum heat insulation and minimum temperature losses; the system of concentric tubular members being used for carrying cable components under supercooled conditions or transmitting liquids or gases under predetermined temperature conditions.

3,619,475
ESCUTCHEON MODULE
James R. Bailey, Chicago, Ill., assignor to Switchcraft, Inc., Cook County, Ill.
Filed Apr. 23, 1970, Ser. No. 31,302
Int. Cl. H05k *5/03*
U.S. Cl. 174—53 **3 Claims**



This invention provides an escutcheon module for framing individual pushbuttons in a panel window. A module provides a frame about each pushbutton with the bottom of such module being caught at the inside surface of a panel upon which a pushbutton device is mounted and through which individual pushbuttons may project.

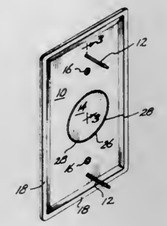
3,619,476
WALL OUTLET RECEPTACLE
Harry R. Rasmussen, 422 Fife Heights Drive N.E., Tacoma, Wash.
Filed Feb. 2, 1970, Ser. No. 7,612
Int. Cl. H02g *3/12*
U.S. Cl. 174—58 **3 Claims**



A molded-polymer outlet receptacle for low-voltage electrical and communication systems has L-shaped structure to embrace and be secured to a structural element of a wall. An apertured plate is cantilevered into space from said L-shaped structure, and buttress means therebetween stiffens and strengthens the assembly. Instanding ears in said plate variously receive and secure an escutcheon, and on occasion electric connector components.

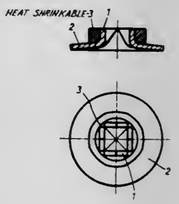
3,619,477
ESCUTCHEON
Harry R. Rasmussen, 422 Fife Heights Drive N.E., Tacoma, Wash.
Filed Jan. 26, 1970, Ser. No. 5,815
Int. Cl. H02g *3/14*
U.S. Cl. 174—66 **2 Claims**

An escutcheon to cover an electrical outlet receptacle has a pair of rear standing studs to be manually engaged to and



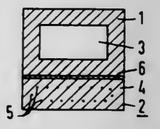
disengaged from a pair of pin-receiving openings in such a receptacle.

3,619,478
ELECTRICAL CONNECTING ELEMENT
Bruno Staiger, Erligheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,588
Claims priority, application Germany, Mar. 27, 1969, P 19 15 780.3
Int. Cl. H05k *1/18*
U.S. Cl. 174—68.5 **1 Claim**



The electrical connecting element consists of a flanged sleeve which is pushed over the terminal pins, establishing the electrical contact between a terminal pin and a printed circuit. The element is applied in a form- and force-locking manner, and is protected against external influences, such as dust and vibration, by means of a shrink-on ring.

3,619,479
ELECTRICAL CONDUCTOR OF ELECTRICALLY NORMAL CONDUCTING METAL AND SUPERCONDUCTING MATERIAL
Gunther Bogner, Tennenlohe, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed June 17, 1970, Ser. No. 46,997
Claims priority, application Germany, June 25, 1969, P 19 32 086.6
Int. Cl. H01b *5/00, 7/34*
U.S. Cl. 174—126 **16 Claims**



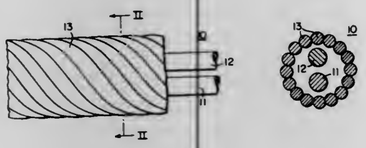
A tubular conductor of electrically normal conducting metal has an outside rectangular configuration having a plurality of external surfaces. A tape-shaped conductor affixed to the tubular conductor at an external surface thereof comprises electrically normal conducting metal and wires of superconducting material embedded in the normal conducting metal and twisted about the longitudinal axis of the tape-

shaped conductor. The tubular conductor is electrically normal conducting at the operating temperature at the superconducting material.

3,619,480
SELF-DAMPING CABLE

Mark A. Baker, Potsdam, and Charles B. Rawlins, Massena, both of N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 8, 1970, Ser. No. 70,395
Int. Cl. H01b 5/00; H02g 7/14
U.S. Cl. 174—130 6 Claims

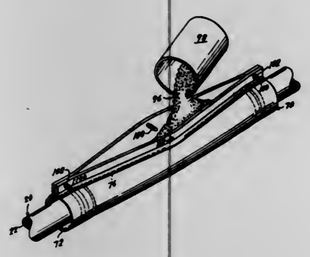


A self-damping electrical conductor for suspension between spaced supports, the conductor including a hollow conductive mantle and a conductive core loosely disposed therein. The conductive core comprises at least two substantially straight conductors extending through the mantle in essentially parallel relationship to the longitudinal axis thereof, and loosely disposed with respect to each other and to the mantle. The conductive mantle and the core conductors have several different combinations of stress-strain characteristics, density, and coefficient of thermal expansion, such that the core conductors inherently seek different sags when the mantle and core are suspended under tension between supports.

3,619,481
ENCLOSURE FOR AN ELECTRICAL CABLE SPLICE

Donald J. Smith, Canogo Park, Calif., assignor to Smith-Schreyer & Assoc., Inc.

Division of Ser. No. 615,718, Feb. 13, 1967, Pat. No. 3,499,972.
Filed Oct. 13, 1969, Ser. No. 871,030
Int. Cl. H01r 13/16; H02g 15/08
U.S. Cl. 174—138 F 3 Claims

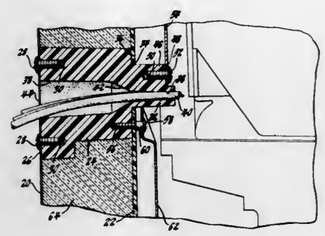


An enclosure for a cable splice in which a sheet of flexible material bearing a porous spacer mat is provided with rigid but deformable bars along its sides so that when the sheet of material is folded around the cables the bars provide a rigid support. The bars are deformable so that the centers thereof can be moved apart to form an opening to receive a charge of encapsulating resin and can then be reformed and fastened together to seal the enclosure.

3,619,482
COMBINATION STRUCTURAL SUPPORT AND ELECTRICAL DUCT

Roger M. Boor, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1970, Ser. No. 17,508
Int. Cl. H01b 17/58
U.S. Cl. 174—152 G 2 Claims

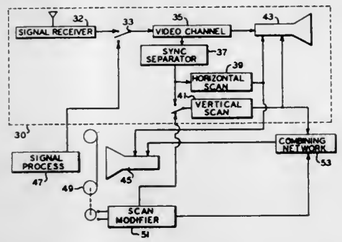


In the preferred form, a support formed of polyester resin containing glass fibers has fastened to opposite ends thereof an outer sheet metal wall and an inner plastic liner of a refrigerator. The support has a protrusion extending through an opening in the liner containing a wide flat passage therein and an external flat surface to which is fastened another sheet metal wall spaced from the liner. The wide flat passage broadens as it extends from the liner to an outer wall which has an opening of similar size. Electrical conductors extend through the passage to the interior of the refrigerator.

3,619,483
CONTINUOUS ELECTRONIC FILM SCANNER

Wendell K. Boots, and William D. Murphy, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated

Filed Feb. 13, 1970, Ser. No. 11,065
Int. Cl. H04n 9/02, 5/86
U.S. Cl. 178—5.2 D 9 Claims



In a visual image display system, apparatus is included for deriving electrical signals representative of image information from a film of film frames, for transporting the film frames through a scanning zone at a predetermined film frame repetition rate, and for effecting continuous modification of electron beam scanning of the film frames at a rate substantially equal to the repetitive rate of film frame movement through the scanning zone.

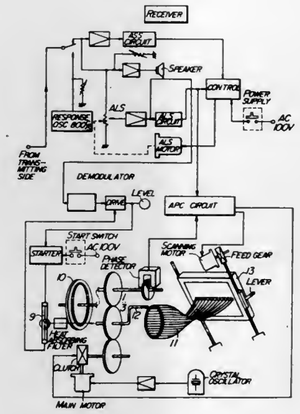
3,619,484
A COLOR FACSIMILE SCANNING SYSTEM

Yutaka Tanaka, Chofu-shi, and Kokhi Kobitsu, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan and Matsushita Graphic Communication System, Inc., Tokyo, Japan

Filed May 20, 1969, Ser. No. 826,129
Claims priority, application Japan, June 4, 1968, May 24, 1968; 43/38936, 43/43738
Int. Cl. H04n 1/06
U.S. Cl. 178—5.2 R 4 Claims

A color facsimile system wherein, in its receiving side, each of the color signals R, G and B (red, green and blue

respectively) is received to vary the intensity of a light radiated from a light source depending on the intensity thereof, then, through a circular to linear scanning conversion device employing optical fibers, the above-mentioned light is scanned in a plane scanning system to be recorded on a recording material moving in the direction (an auxiliary scanning direction) perpendicular to the linearly arranged

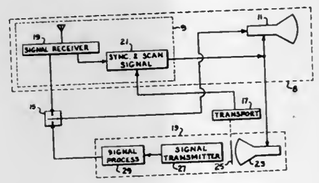


portion of the optical fibers thereby, performing color reproduction through reception scanning by partly overlapping scanning lines two thereof over the other, also having compatibility for receiving black-and-white signals, furthermore comprising a mechanism to hold the recording material at a constant position while the auxiliary scanning is being carried out.

3,619,485
TELEVISION AND SCANNED FILM COLOR IMAGE DISPLAY SYSTEM

Donald John Cross, Tonawanda, and Robert Roy Eckenbrecht, East Bethany, both of N.Y., assignors to G.T.E. Sylvania Incorporated

Filed Dec. 30, 1968, Ser. No. 787,880
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 4 Claims

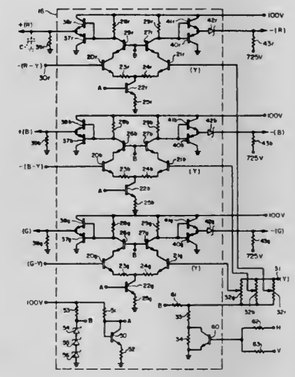


A system for providing a color image display derived from color television signals and photographic film includes a color image reproducer; first signal source means responsive to color television signal to provide signals representative of luminance, chrominance and synchronizing information; second signal source means responsive to light-scanned photographic film to provide signals representative of luminance and chrominance information; transport means for effecting conveyance of a film through said second signal source means and synchronization of said film conveyance and said first signal source means; and switching means for selective coupling of signals representative of luminance and chrominance information from said first and second signal source means to said color image reproducer.

3,619,486
MATRIX AMPLIFIER FOR DEVELOPING PUSH-PULL COLOR CONTROL SIGNALS

George J. Tzakis, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 26, 1969, Ser. No. 853,156
Int. Cl. H04n 9/52
U.S. Cl. 178—5.4 MA 9 Claims

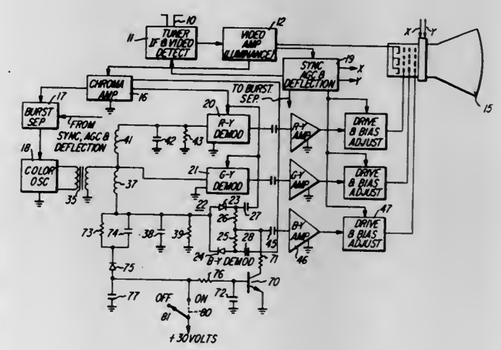


A monolithic structure includes three transistorized differential amplifiers having a common bias network so that they all conduct the same amount of current. An additional pair of transistors connects with each of those amplifiers in cascode fashion and a color-difference signal is applied to one side of each differential amplifier while the luminance signal is applied to the opposite side with such polarity that push-pull primary color signals are developed at the outputs of the cascode circuits for application to a color picture tube. Retrace blanking pulses are applied along with the luminance signal to accomplish retrace blockout.

3,619,487
SELECTIVELY OPERATED TINT CORRECTION CIRCUIT

Ronald Richard Norley, and Robert Dale Altmanshofer, both of Indianapolis, Ind., assignors to RCA Corporation

Filed May 11, 1970, Ser. No. 36,045
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 HE 9 Claims



A tint correction circuit utilizes a unidirectional current conducting device which is coupled to the input of a demodulator circuit, and a transistor whose collector electrode is coupled through a resistive impedance to the output

terminal of the demodulator. The anode of the diode and the base electrode of the transistor are coupled together through a suitable impedance to which is also coupled a switch. The cathode of the diode is returned to reference potential through a capacitor.

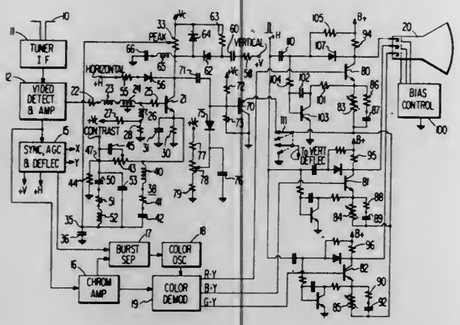
During a first mode of operation, with the switch in the "off" position, the diode rectifies certain polarity AC signals applied to the input of the demodulator and produces a DC voltage across the capacitor. This DC voltage renders the transistor nonconductive. This results in a normal demodulation operation for the demodulator.

When the switch is closed or in the "on" position, a voltage is applied to forward bias both the diode and the transistor. This action serves to shift the phase of the signals applied to the inputs of the demodulators while reducing the amplitude of the demodulated signals obtained at the output terminal of the demodulator.

3,619,488
VIDEO AMPLIFIERS

Donald Henry Willis, Indianapolis, Ind., assignor to RCA Corporation

Filed May 15, 1970, Ser. No. 37,780
Int. Cl. H04n *9/52*
U.S. Cl. 178—5.4 R **5 Claims**



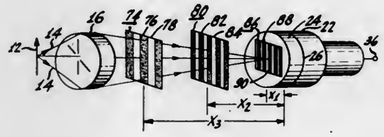
A video amplifier, for driving a kinescope, employs two transistors of opposite conductivity arranged in a series path and further having their emitter electrodes coupled together. The amplifier is biased stabilized by a third transistor having the collector electrode coupled to the emitter connection of the two transistors and having a capacitor coupled between the collector and base electrodes. The emitter electrode of the third transistor is returned to a source of reference potential. A unidirectional current conducting device is coupled between the base electrode of the third transistor and the collector electrode of one of the series transistors. The unidirectional device is caused to conduct a signal applied thereto and occurring during a repetitive interval, to charge the capacitor to a level determined in accordance with the quiescent voltage at the collector of said one series transistor. This level and the magnitude of said capacitor is sufficient to cause the third transistor to also conduct for the absence of said signal. This maintains the collector current of said one series transistor at the value necessary to regulate the potential at the collector electrode thereof.

A further transistor stage provides peaking, contrast control and blanking functions for the video amplifier, as described above, by operating on the luminance component of the composite signal for application thereto to the base electrode of the other one of said series transistors.

3,619,489
SHADOWING SYSTEM FOR COLOR ENCODING CAMERA

Hugh F. Frohbach, Sunnyvale; Albert Macovski, Palo Alto, and Philip J. Rice, Atherton, all of Calif., assignors to RCA Corporation

Filed Feb. 12, 1969, Ser. No. 798,677
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **9 Claims**

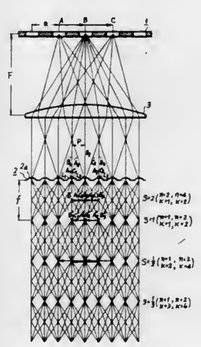


In a color-encoding camera utilizing a color-encoding strip filter arrangement in the optical path to separate light from an object into its component colors, a shadowing grating arrangement is utilized to image the encoding filter strips efficiently onto a photosensitive medium without the use of a relay lens.

3,619,490
COLOR IMAGE PICKUP DEVICE

Setsuo Usui, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 28, 1969, Ser. No. 803,388
Claims priority, application Japan, Mar. 1, 1968, 43/13268
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **4 Claims**

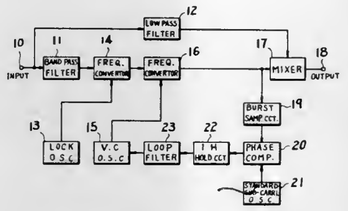


In a color image pickup device a banded color filter and a lens screen are interposed between an object to be televised and the photosensitive conversion layer of an image pickup tube to provide a striped color-separated image of the object on the photosensitive layer, with the color filter at a finite distance in front of the lens screen and with the distance from the lens screen to the layer being selected in relation to such finite distance, the pitch of the lens elements making up the lens screen and the pitch of the filter elements of the banded color filter, so that images of the color filter are overlappingly projected on the photosensitive conversion layer for optimum brightness and contrast of the reproduced picture.

3,619,491
SYSTEM FOR CORRECTING THE PHASE OF A CARRIER CHROMA SIGNAL

Mitsuo Fujita, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Kanagawa-ku, Yokohama, Japan

Filed Oct. 1, 1969, Ser. No. 862,708
Claims priority, application Japan, Oct. 3, 1968, 43/71731
Int. Cl. H04n *5/76, 9/46, 5/21*
U.S. Cl. 178—5.4 CD **6 Claims**

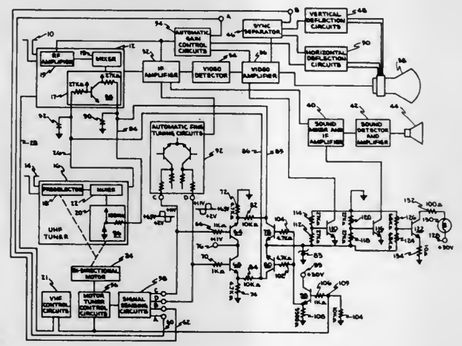


The invention provides a system for correcting the phase of a carrier chroma signal having a timing axis variation contained in a color video signal reproduced by a magnetic recording and reproducing apparatus. The correction removes the timing axis variation. The system comprises frequency converter means for frequency converting the carrier chroma signal twice, means for sampling a burst signal from the output of said second frequency converter means, a phase comparator for comparing the phase of the burst signal with the phase of the output of a reference subcarrier oscillator, and voltage control oscillator means adapted to be controlled by the output of said phase comparator to oscillate and produce an output which is fed back to said frequency converter means.

3,619,492
AUTOMATIC FINE TUNING CIRCUITRY

Wayne Wheeler Evans, Indianapolis, Ind., assignor to RCA Corporation

Filed June 2, 1969, Ser. No. 829,191
Int. Cl. H04n *5/44, 5/60*
U.S. Cl. 178—5.8 R **22 Claims**

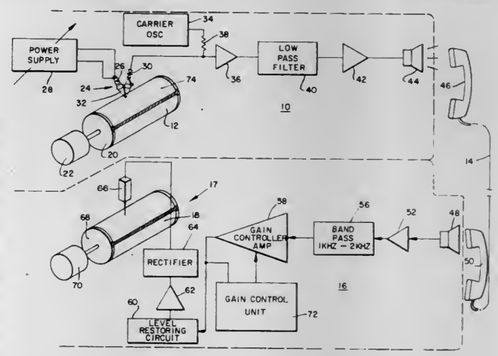


A television system includes means for disabling the application of an automatic fine tuning correction voltage to the television tuner while the tuner's tunable resonant circuits are being adjusted to tune from a first to a second frequency during channel change. During this period, the disabling means establishes a voltage across a variable capacitance device in the tuner's oscillator tunable resonant circuit to approximate the crossover frequency voltages normally applied to the device from the automatic fine tuning circuits. The automatic fine tuning circuit operation is not affected during channel change, and the correction voltage output signals may be employed in a signal seeking system to help detect the presence of a desired television signal. Whenever the disabling means becomes operative, it actuates other circuitry to cause a muting of the television video and sound signals to occur, as well as the energization of a channel change indicator.

3,619,493
AUTOMATIC GAIN CONTROL FOR GRAPHIC DATA TRANSMISSION SYSTEM

Robert E. Krallinger; Edward G. Keplinger, and Jerry W. Terrell, all of New Milford, Conn., assignors to Graphic Sciences, Inc., Danbury, Conn.

Filed Dec. 20, 1968, Ser. No. 785,495
Int. Cl. H04n *1/32, 1/06*
U.S. Cl. 178—6 **14 Claims**

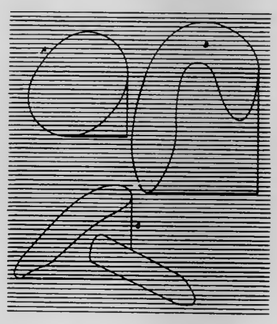


A facsimile transmission system in which the content of an original document is transmitted by means of an amplitude modulated carrier includes a transmitter that periodically transmits a gain standardizing signal having a predetermined level relative to a given document tone. The receiver includes a gain control circuit that responds selectively to the gain standardizing signal by charging or discharging a storage capacitor to a control voltage that controls the receiver gain so as to provide a standard input voltage for a printer that prints a facsimile of the original document.

3,619,494
COUNTING SYSTEMS IN IMAGE ANALYSIS EMPLOYING LINE SCANNING TECHNIQUES

Colin Fisher, Meldreth, Royston, England, assignor to Metals Research Limited, Melbourn, Royston, England

Filed Apr. 29, 1969, Ser. No. 820,180
Claims priority, application Great Britain, May 1, 1968, 20,613/68
Int. Cl. H04h *7/02*
U.S. Cl. 178—6.8 **35 Claims**



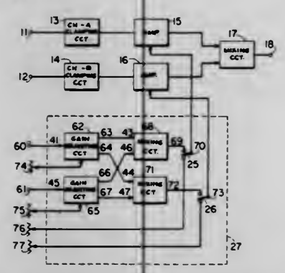
Systems for counting features in image analysis systems employing line scanning in which a single pulse is generated

and the end of the scan of each feature. Information associated with each feature can also be retained for release at the same instant as the count pulse. In some systems means are provided for advancing information in the frame scan direction against the line scan direction to thereby advance the instant at which information is available in the next line subject to the local shape of the feature. The preferred feature of such systems is a degree of option whereby the circuit can select the best of a number of alternative time intervals by which information can be advanced so as to reduce the area of paralysis beyond the feature in the line scan direction.

A system is disclosed for producing a signal having a parameter whose value is representative of one or more geometrical properties of a feature under analysis in which increments of information are obtained from each line scan intersecting the feature and accumulated in a memory device for processing. The final information signal is then released by the count pulse.

A further system is disclosed by which a size criterion can be placed on the intersects of line scans with a feature and a count pulse generated only if at least one of the intersects exceeds the size limitation.

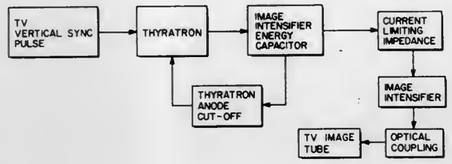
3,619,495
TELEVISION PICTURE MONTAGE CIRCUIT
Yutaka Ito, Saitama-ken; Jun Hirate, Tokyo, and Takeshi Saito, Kawasaki-shi, all of Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Aug. 21, 1969, Ser. No. 851,802
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 **10 Claims**



A method and apparatus are described for the preparation of a common television program signal from different line scan signals. Line scan signals are generated such as of the conventional video type employed in the transmission of television programs. Each line scan signal has a like period and is applied along different channels for combination after passing through variable gain channel amplifiers. Control voltages are generated for the gain control of the channel amplifiers. The control voltages are produced from a keying signal and a composite keying signal which pass through variable gain circuits to produce directly related and complementary related outputs. Correspondingly related outputs are added with the added signals applied through a switching network for varying the gain of the channel amplifiers. By selectively controlling the keying signal particular time portions of each line scan may be controlled in the common television program signal for the superimposing of several programs. Gradual control may be obtained by varying the gain of the variable gain circuits with faders.

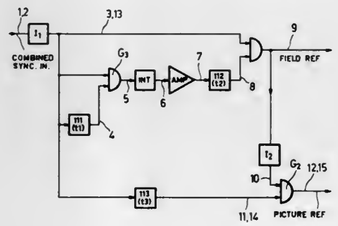
3,619,496
TELEVISION BRIGHTNESS CONTROL SYSTEM
Bernard Lichtenstein, Fair Lawn, N.J., assignor to Ocean Metrics, Inc., Fairfield, N.J.
Filed May 29, 1969, Ser. No. 828,838
Int. Cl. H04n *5/72*; **H01j** *31/50*
U.S. Cl. 178—7.3 D **1 Claim**

A circuit arrangement for providing an output image of constant brightness on the television tube image of a television receiving system over a wide range of illuminations. The system comprises image intensifier means coupled to the television image tube, and a current limiting impedance on the input side thereof. Feeding a control signal to the image intensifier means across the current limiting impedance is a thyratron means, e.g., a thyratron tube or SCR transistors. The control electrode of the thyratron means serves to



receive a sync pulse. In parallel with said thyratron means and said current limiting impedance is a capacitor disposed to charge when the control electrode maintains the thyratron means in a nonconductive state, the capacitor means controlling the thyratron means anode electrode. A diode is interposed between the thyratron cathode and the capacitor to prevent feedback into the thyratron means cathode.

3,619,497
FIELD AND PICTURE SYNCHRONIZING PULSE SEPARATORS
Richard John Godwin Ellis, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Aug. 28, 1969, Ser. No. 853,667
Claims priority, application Great Britain, Aug. 28, 1968, 41,056/68
Int. Cl. H04n *5/04*
U.S. Cl. 178—7.3 S **8 Claims**

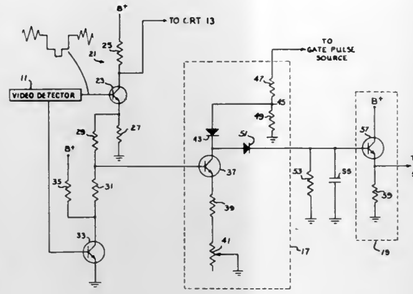


A synchronization signal separator circuit features an AND gate which has a synchronization signal applied to one input. The second input receives an enabling signal that starts during the first and ends during the second pulses of the vertical synchronizing pulse group.

3,619,498
KEYED AUTOMATIC GAIN CONTROL CIRCUITRY
Dong Woo Rhee, Williamsville, N.Y., assignor to Sylvania Electric Products, Inc.
Filed Apr. 1, 1969, Ser. No. 822,787
Int. Cl. H04n *5/56*
U.S. Cl. 178—7.3 DC **10 Claims**

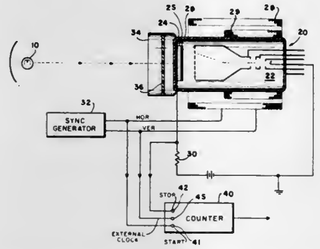
A signal receiver includes gated automatic gain control (AGC) circuitry having an amplifier stage coupled by a first unidirectional conduction device to a gate pulse signal source and by a second unidirectional conduction device to RF and IF amplifier stages whereby the first unidirectional conduction device prevents ringing in the gate pulse signal source

from affecting the AGC action and the second unidirectional conduction device tends to sustain a substantially constant



level of AGC signal intermediate the period of gated pulse signal application.

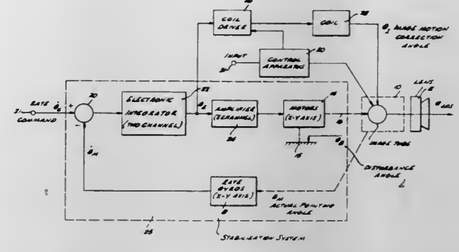
3,619,499
TELEVISION SURVEYING SYSTEM FOR MEASURING MINUTE DISPLACEMENTS
Edward A. Petrocelli, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 4, 1970, Ser. No. 8,570
Int. Cl. H01j *29/89*
U.S. Cl. 178—7.85 **1 Claim**



Minute relative movements of two bodies can be continuously detected and quantatively recorded in digital numbers by fixing a light source on one body and directing the light to the viewing screen of a television camera tube. All light except a small discrete spot is excluded from the screen, and the number of lines swept from one edge of the raster to the spot is counted during each frame.

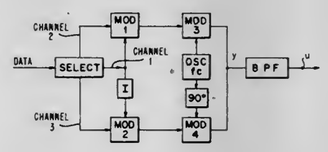
3,619,500
ELECTRONIC IMAGE MOTION STABILIZATION SYSTEM
Richard F. Bouley, Hermosa Beach; Jay M. Hansen, Santa Monica, and Robert Zwirn, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 4, 1969, Ser. No. 831,273
Int. Cl. H01j *29/02, 29/86*
U.S. Cl. 178—7.8 **8 Claims**

The apparatus of the present invention provides image motion stabilization of a displayed scene generated by a lens system on a transportable body for apparent line-of-sight motions that occur from coupled vehicle body motions and also to provide accurate pointing commands with respect to the displayed line-of-sight. In implementing the system, a single set of gyros is used as a sensor to provide a feed forward image motion correction signal, as well as a sensor motion feedback signal. This feedback signal is summed with a rate command to form an error voltage which causes the sensor to the slewed to the desired position at the commanded rate. The addition of this feedback loop with the image motion compensation error sensor provides a substantial reduction of the image motion correction angle and concomitant pointing error during slewing that is limited only by the servo bandwidth. In addition to the foregoing, implementation also



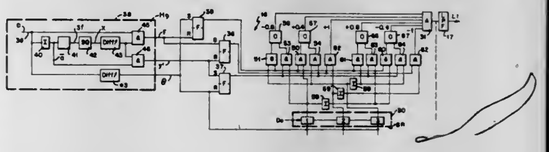
requires the use of an improved deflection coil and apparatus for properly scaling driver signals thereto to accommodate changes in field-of-view and light levels within the image intensifier portion of the sensor.

3,619,501
MULTIPHASE MODULATED TRANSMISSION ENCODER
Henri J. Nussbaumer, La Gaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 18, 1970, Ser. No. 47,406
Claims priority, application France, June 27, 1969, 6921899
Int. Cl. H04l *27/20*
U.S. Cl. 178—67 **4 Claims**



A multiphase modulated transmission can be obtained with three data sets X, Y, and Z such that data elements of the set Y+Z drive two phase channels and data elements from the set Y^1+Z^1, derived from the three sets X, Y, Z and selected according to a predetermined logical function, drive two other phase channels. By adjusting the weighting of algebraic adders terminating corresponding channel pairs, multiphases up to eight can be approximated.

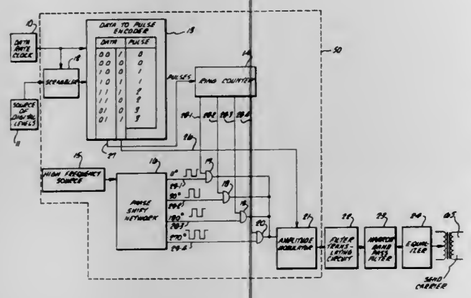
3,619,502
PROCESS FOR DIRECTLY GENERATING A DATA REPRESENTING SIGNAL HAVING ITS MAIN COMPONENTS IN ONE FREQUENCY OCTAVE
Alain Croisier, Cagnes sur Mer, and Henri Jean Nussbaumer, La Gaude, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 3, 1969, Ser. No. 855,010
Claims priority, application France, Sept. 4, 1968, 009409
Int. Cl. H04l *27/24*
U.S. Cl. 178—67 **5 Claims**



A method for directly generating a data representing signal corresponding to a single sideband of a data modulated carri-

er signal and suitable for transmission over a limited frequency network. The signal comprises the summation of a number of bit representing pulse sequences, each sequence including a central bit indicating pulse and both preceding and following echo pulses. The pulses are generated by digital techniques and their spacing and amplitude are so selected that after passing through a low-pass filter, the resultant signal has no frequency components outside of a predetermined frequency band.

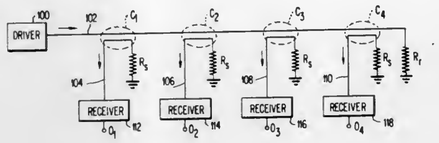
3,619,503
PHASE AND AMPLITUDE MODULATED MODEM
Robert Gordon Ragsdale, Hollywood, Fla., assignor to International Communications Corporation, Miami, Fla.
Filed Nov. 18, 1969, Ser. No. 877,880
Int. Cl. H04l 27/10
U.S. Cl. 178—66 **17 Claims**



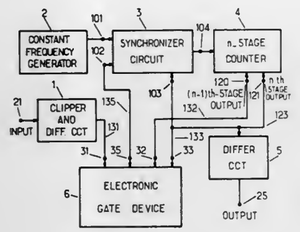
A method and apparatus for generating phase and amplitude modulated signals to be transmitted and for demodulating the transmitted signals with improved reliability and accuracy is disclosed. A modulator at the transmitter is adapted to continuously group digital data into multibit words of equal length. The modulator is responsive to predetermined multibit subgroups within each multibit word to differentially phase modulate a carrier signal during successive modulation periods. The modulator is further responsive to the remaining bits within each multibit word to amplitude modulate the carrier signal during successive modulation periods. A demodulator is provided at the receiver. A differential phase detection portion of the demodulator reconstitutes the multibit subgroup digital data phase encoded at the modulator. A variable gain amplifier at the receiver varies the amplitude of the received signal in accordance with derived gain selection commands. The gain selection commands are derived from an amplitude detection portion of the receiver. The amplitude detection portion also provides a digital output indicative of the remaining portion of the multibit words originally encoded. The derived gain selection commands vary the gain of the receiver amplifier to cause the output amplitude levels of the amplifier to accurately correspond to the originally encoded amplitude levels. The accurately corresponded amplitude levels insure correct amplitude detection at the receiver.

3,619,504
DIRECTIONAL NONRETURN TO ZERO COMPUTER BUSSING SYSTEM
John A. De Veer, Olney, and Howard H. Nick, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,965
Int. Cl. H04b 1/58
U.S. Cl. 178—68 **6 Claims**

A high-speed data transmission network employing data representations as changes in voltage along a transmission line. Directional coupling elements are spaced along the transmission line to couple information from the transmission line to stub lines. Each stub line is connected to a receiver circuit designed to interpret pulses on the stub line as one binary state and no pulses on the stub line as a second binary state.



3,619,505
CLOCK PULSE DIGITAL SYNCHRONIZATION DEVICE FOR RECEIVING ISOCHRONOUS BINARY CODED SIGNALS
Jacques K. Meile, Paris, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France
Filed July 20, 1970, Ser. No. 56,432
Claims priority, application France, July 25, 1969, 6,925,411
Int. Cl. H04l 7/00, 7/02
U.S. Cl. 178—69.5 R **5 Claims**

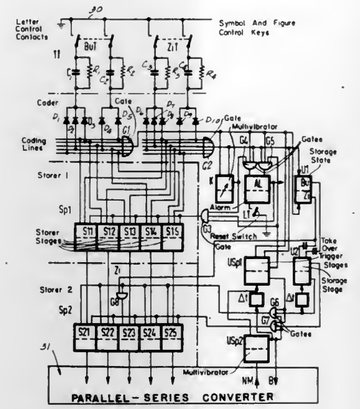


A device for the synchronization of a clock pulse generator located in a receiving equipment for isochronous binary pulses, comprising means for deriving a brief control pulse from each transition in the received modulation, a local periodic pulse generator having a repetition rate equal to an integral multiple of the modulation speed, a synchronizing circuit receiving said periodic pulses and brief control pulses and delivering pulses to the input of a binary counter, said circuit having an extra input fed from the output stage of said counter, and electronic gate means controlling the transmission of said brief control pulses to said synchronization circuit and themselves controlled by the two last stages of said counter, whereby control of said clock pulse generator by untimely control pulses is prevented.

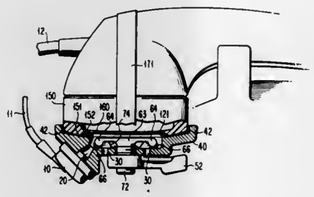
3,619,506
SWITCHING ARRANGEMENT FOR THE AUTOMATIC DELIVERY OF TELEGRAPHIC IDENTIFICATION IMPULSE SEQUENCES
Camillo Bodenstein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 21, 1968, Ser. No. 754,418
Claims priority, application Germany, Sept. 18, 1967, P 15 37 374.7
Int. Cl. H04l 17/02
U.S. Cl. 178—81 **3 Claims**

A switching arrangement for a teletypewriter system that allows automatic transmission of telegraphic identification

impulse sequences. The invention has an electronic shift register with an electronic transmission circuit in which the individual register stages are connected in parallel to keys associated with switch means.

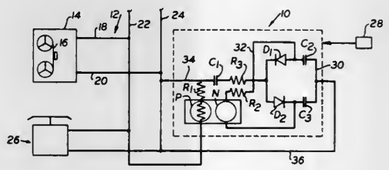


3,619,507
TRANSMIT ONLY ACOUSTIC COUPLER
Philip B. Metz, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,314
Int. Cl. H04m 1/06
U.S. Cl. 179—1 C **4 Claims**



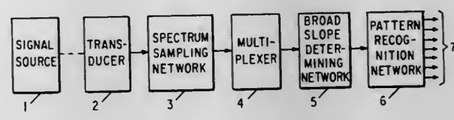
A transmit-only acoustic coupler for semipermanent attachment to the microphone cover of a telephone handset, permitting selective transmission of live voice or recorded voice and/or tone encoded data, includes a hearing aid type of dynamic speaker with no back venting, and a valve arrangement adjustable between open and pneumatically sealed positions.

3,619,508
TELEPHONE BURGLAR ALARM
Benjamin Neiger, 20 Saint Pauls Ct., Brooklyn, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,920
Int. Cl. H04m 1/04
U.S. Cl. 179—5 P **2 Claims**



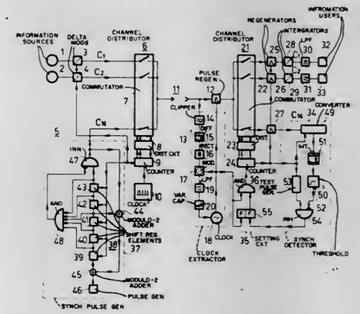
An alarm system which is effective to transmit a call for assistance over the telephone lines of the premises in which, in one improved embodiment, an incoming call which ordinarily is effective to "tie up" the telephone lines and thus render it impossible to send the outgoing message for assistance is eliminated as a shortcoming of the system. Specifically, the current causing ringing of the bell system which is produced by the incoming call is used to illuminate a light source which, in turn, causes the diminishment of the resistance of a photocell in a telephone line shunting circuit, all to the end of restoring the outgoing message interval of service to the system.

3,619,509
BROAD SLOPE DETERMINING NETWORK
James Robert Barger, Haddon Heights, and Phillips Brooks Scott, Haddonfield, both of N.J., assignors to RCA Corporation
Filed July 30, 1969, Ser. No. 845,987
Int. Cl. G10l 1/02
U.S. Cl. 179—15 A **10 Claims**



A network which determines whether the slope of a pattern, representing an input signal, is positive going or negative going in selected portions of the pattern. The existence of positive or negative slopes is determined by sampling amplitude components from a sequence of channels representing the pattern and then comparing a plurality of adjacent components with a successive plurality of adjacent components to decide whether the amplitude of the pattern is increasing or decreasing in selected portions of the pattern. Signals, compatible with digital circuitry, are provided to indicate the existence of positive and negative slopes. The invention herein described was made in the course of or under a contract or subcontract thereunder with the department of the Air Force.

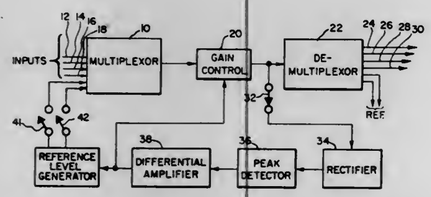
3,619,510
TIME DIVISION MULTIPLEX TRANSMISSION SYSTEM FOR THE TRANSMISSION OF SIGNALS BY MEANS OF PULSE CODE MODULATION
Leo Eduard Zegers, and Frank De Jager, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Feb. 19, 1969, Ser. No. 800,644
Claims priority, application Netherlands, Feb. 23, 1968, 6802653
Int. Cl. H04j 3/04
U.S. Cl. 179—15 AP **22 Claims**



A time multiplex transmission system has a pseudorandom synchronization generator coupled to one of the multiplexer inputs. At the receiver, a synchronization detector is coupled

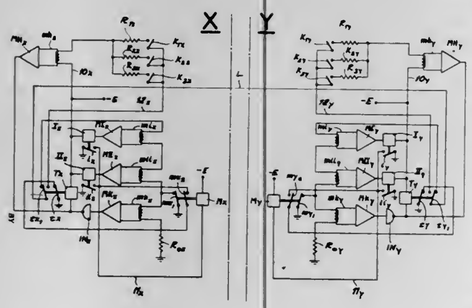
to a demultiplexer output. A pulse is generated if there is no synchronization which causes the demultiplexer to lag behind the multiplexer by one channel per sync cycle until synchronization is achieved.

3,619,511
DATA NORMALIZING APPARATUS
Ken Y. Ishikawa, Bellflower, Calif., assignor to North American Rockwell Corporation
Filed July 17, 1969, Ser. No. 842,502
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 AD **10 Claims**



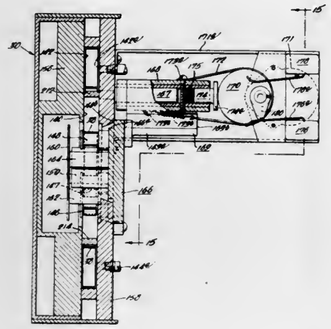
There is disclosed an electronic circuit for operating upon a number of input signals that may be subject to widely varying magnitudes, to provide an optimum magnitude of all of the signals and at the same time retain the relative signal values and an indication of the absolute signal value. A number of input signals are passed through a multiplexor and thence through a gain control amplifier of which the gain is controlled by the maximum signal identified by a peak detector. After normalizing, the signals are fed through a decoder of demultiplexor together with a reference level signal that identifies the absolute value of signals passed through the gain control amplifier. Provision is made for coding the reference level signal to indicate the absolute magnitude of the reference level signal and provision is also made to ensure that the reference level signal does not modify the operation of the peak detector.

3,619,512
DC SIGNALING SYSTEM UTILIZING MAGNETIC AMPLIFIERS
Alberto Ciaccia, and Franco DeMarco, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy
Filed Oct. 6, 1969, Ser. No. 864,144
Claims priority, application Italy, Oct. 4, 1968, 22063 A/68
Int. Cl. H04m *1/26*; **H04q** *9/00*
U.S. Cl. 179—86 **9 Claims**



A pair of magnetic amplifiers have their input windings serially connected to the receiving end of a transmission line for distinguishing between four different levels of direct current transmitted across that line, each amplifier also having an excitation winding energized by a pulse train and a biasing winding normally maintaining the amplifier core in saturation to minimize the magnetic coupling between the excitation winding and an output winding working through a transistor into an associated relay. The pulse amplitude and the winding turns are so chosen that both cores remain saturated with input currents below a first threshold whereby the two relays are unoperated, between the first and a second threshold, the first core is desaturated to energize one relay; between the second and a third threshold, both cores are desaturated with energization of both relays; and above the third but below a fourth threshold the first core is saturated with opposite polarity while the second core remains saturated to maintain only the other relay energized.

3,619,513
RETRACTABLE TAPE HEAD STRUCTURE
Herbert Morello, Phoenixville, and Leonard J. Kelly, Norristown, both of Pa., assignors to Digital Information Devices, Inc., Norristown, Pa.
Filed Dec. 4, 1968, Ser. No. 781,165
Int. Cl. G11b *5/54*
U.S. Cl. 179—100.2 **19 Claims**

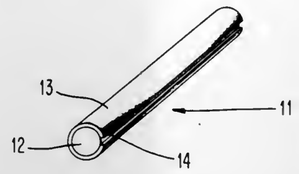


A tape head assembly is made retractable from the perpendicularly deck in order to permit passage of the tape during automatic threading of the tape deck. The tape is preferably supplied in a cartridge which is automatically positioned and tape is drawn from the cartridge into a tape loop box in which the head assembly is locate and from which it is withdrawn as tape is drawn into the loop box. The head assembly is replaced after the tape loop is past, whereupon the tape is drawn back into operating position over the tape head assembly. The mounting plate for the tape head assembly in this case is withdrawn perpendicularly from the tape deck, using a king post as a guide. The mounting plate for the head assembly is attached to a slidable support which rides on the king post. The slidable support is moved up by attachment to the slidable support of a flexible band which extends about the periphery of an eccentrically mounted circular cam. The band is made adjustable by including in its length a tension spring. Compression spring means is also provided between the cam and the slidable support, whereby the slidable support is urged downwardly away from the cam. The compression spring is further compressed, however, when the head mounting plate bottoms against an indexing surface of the tape deck urging said plate more firmly against the indexing surface.

3,619,514
MULTICHANNEL PLATED WIRE MAGNETIC HEAD
Eugene B. Barcaro, Norristown, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Continuation of application Ser. No. 560,353, May 2, 1966.
This application Aug. 18, 1969, Ser. No. 852,973
Int. Cl. G11b *5/20, 5/22*
U.S. Cl. 179—100.2 C **1 Claim**

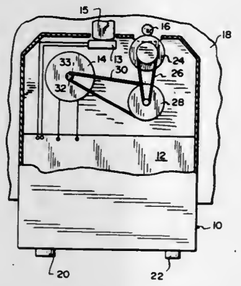
The present device is a magnetic read-write head which is formed from an electrically conductive wire which is plated

circumferentially with a thin film of magnetizable material and which has a gap formed in the thin film along the length of the wire. The gap serves to provide a break in the flux path in order to effect a recording on a magnetizable recording medium placed in proximity to the gap and also serves as



a path for magnetic flux to effect a read out of information from such a magnetizable recording medium. In the preferred embodiment the magnetizable material is plated to the electrically conductive wire under conditions that form an easy axis of magnetization circumferentially around the wire.

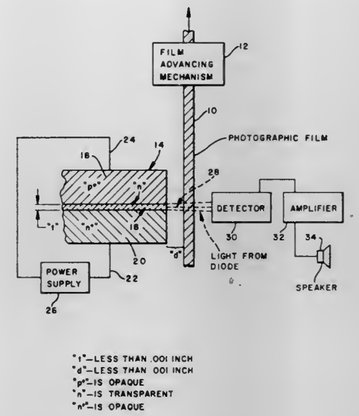
3,619,515
SELF-POWERED ADAPTER CARTRIDGE FOR TAPE PLAYERS
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed June 3, 1970, Ser. No. 43,046
Int. Cl. G11b *31/00*
U.S. Cl. 179—100.11 **6 Claims**



An adapter cartridge of the type having a radio built therein to be inserted into a tape player to convert the same into a radio receiver. The adapter is provided with a generator to rotate under the influence of the capstan drive of the tape player receiving the cartridge and the generator supplies operating power to the radio.

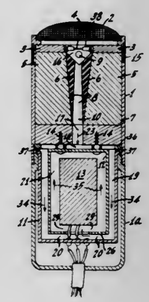
3,619,516
ELECTROLUMINESCENT DIODE SOUND REPRODUCING SYSTEM
Allan S. Miller, Wellesley, and Paul L. Vitkus, Bedford, both of Mass., assignors to Norton Research Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 556,408, June 9, 1966, now Patent No. 3,508,015, Continuation-in-part of application Ser. No. 646,057, June 14, 1967, now abandoned.
This application Mar. 13, 1970, Ser. No. 19,412
Int. Cl. G01d *9/42*; **G11b** *7/12*; **H05b** *33/16*
U.S. Cl. 179—100.3 Z **4 Claims**

A system for reading out data, such as sound, recorded on a photographic film. A light-emitting diode is positioned with its light-emitting edge less than 0.001 inch from the path of travel of the film. The diode has a transparent region adjacent the PN junction, this transparent region being less than 0.001 inch thick as measured in the direction of film travel and being sandwiched between two opaque layers. A



detector is provided on the opposite side of the film to detect the light modulated by the recorded image in the film.

3,619,517
LABYRINTH FOR UNIDIRECTIONAL MICROPHONE
John C. Bleazey, Trenton, N.J., assignor to RCA Corporation
Filed Dec. 23, 1968, Ser. No. 786,265
Int. Cl. H04r *9/08*
U.S. Cl. 179—138 VL **7 Claims**



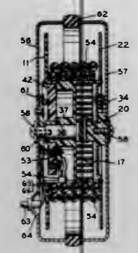
A labyrinth structure for a unidirectional ribbon-type microphone comprises an outer shell-like member and at least one inner member, each having open and closed ends, the space enclosed by the outer member being divided into at least two communicating chambers by the inner member.

The inner chamber, in addition to being the end of the labyrinth path, can be used to house microphone components therein and also to shield these components by making at least one member of a good electrical conductor.

3,619,518
ELECTRIC CORD REEL CONSTRUCTION
Charles H. Blanch, Maple Heights, and James W. Kovacik, Parma, both of Ohio, assignors to Alert Stamping and Mfg., Inc., Bedford Heights, Ohio
Filed Sept. 22, 1969, Ser. No. 859,701
Int. Cl. H02g *11/02*
U.S. Cl. 191—12.2 R **11 Claims**

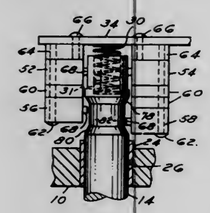
An improved electric cord reel construction of simplified structure is provided that is lightweight, relatively inexpensive to manufacture and assemble, and requires no lubrica-

tion. Most of the component parts of the reel are molded from plastic and have combined features normally supplied by additional, different parts secured together by various fasteners, thereby avoiding in the present structure the usual overall heavy, relatively bulky assembly. One important



plastic component of the present construction is a plastic hub portion having an integral plastic flange adjacent one end and an internal plastic wall member extending generally radially across the hub portion to divide it into housing chambers on opposite sides of the wall member. The remaining parts are mounted with respect to this component.

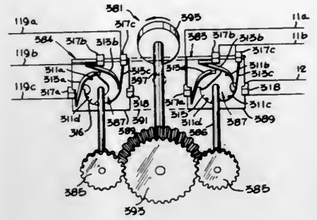
3,619,519
MACHINE TOOL SWITCH UNIT ACTUATED BY LONGITUDINALLY AND ANGULARLY MOVABLE HANDLE
Harold E. Wiggins, Clarkston, Mich., assignor to Wells-Index Corporation, Three Rivers, Mich.
Filed Jan. 16, 1970, Ser. No. 3,348
Int. Cl. H01h *25/06, 9/06*
U.S. Cl. 200—4 **5 Claims**



A switch unit for a machine tool having a handle which is manually movable in various directions from a neutral position to control the operation of a cutting tool. Upward and downward vertical displacement and counterclockwise and clockwise rotation of the handle from its neutral position actuates switches controlling electrical and/or hydraulic circuits which move the tool upward and downward vertically and rotate the tool counterclockwise and clockwise respectively. The handle can be rotated from any vertical position, and vertically displaced from any angular position.

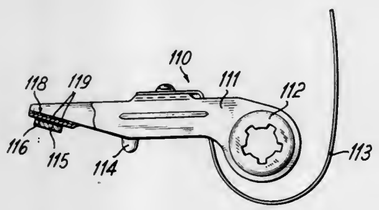
3,619,520
BALLAST CIRCUIT AND SWITCH THEREFOR
Willard R. Garnett, Bellefontaine Neighbors, and Murray L. Quin, Overland, both of Mo., assignors to Emerson Electric Co., St. Louis County, Mo.
Filed Mar. 4, 1969, Ser. No. 804,231
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 F **10 Claims**

A pair of fluorescent lamps operated from a single tow-lamp ballast. The ballast circuit includes a switch for operation of each lamp individually and both together. In some embodiments, the switch has a pair of electrically insulated rotors, one of which makes and breaks an electrical connection to the ballast primary and to the other of which makes and breaks electrical contact between a common lead to one end of each lamp and alternatively a lead to the first lamp and a lead to the second lamp, thereby shorting leads to



these lamps. The switch thus causes the second lamp and the first lamp respectively to operate singly and together in a predetermined sequence.

3,619,521
IMPROVED CIRCUIT-BREAKING CONTACT ASSEMBLY FOR AUTOMOTIVE DISTRIBUTORS
Oskar Schlossstein, Sonthofen, and Leo Steinke, Hegnach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 11, 1969, Ser. No. 884,199
Claims priority, application Germany, Dec. 13, 1968, G 68 11 233.4, Dec. 13, 1968, G 68 11 235.6
Int. Cl. H01h *19/00*
U.S. Cl. 200—19 R **9 Claims**

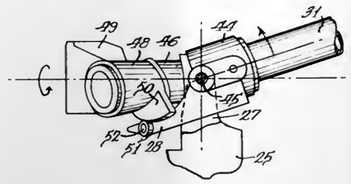


A circuit-breaking lever used in conjunction with ignition arrangements in internal combustion engines. The lever is made of stamped and formed sheet metal which is pivoted at one end about a plastic insulated bushing. The free end of the lever carries a contact which is soldered to the sheet metal member. The contact covers a hole through the sheet metal, and the soldered joint forms a ring-shaped portion about the rim of the hole on one side thereof. The area of the lever on which the contact is located, is formed with a plurality of indentations resulting in a checkered pattern. The hole and the indentations weaken the area to prevent stress-influenced damage to the contact and the area of the lever on which the contact is located.

3,619,522
SWITCH CONSTRUCTION
Roy T. Swanson, North Riverside, Ill., assignor to H. K. Porter Company, Inc., Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,408
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **12 Claims**

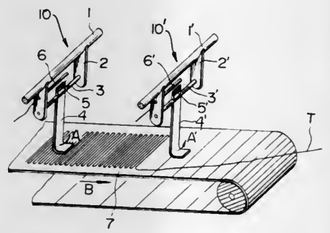
Disconnecting switch means for high-tension electrical power installations having a switch blade pivoted for movement by crank means about an arc and rotatable about its own axis into and out of pressure engagement with a fixed remotely spaced contact, and characterized by cam means

for increasing the load-lifting ability when the switch is opened and the arm extends horizontally to transfer torque



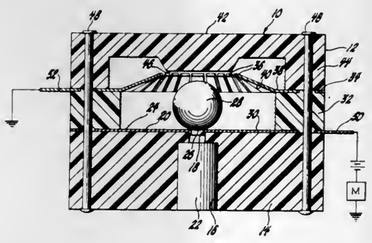
from the crank means to the switch blade to provide increased load-lifting ability.

3,619,523
APPARATUS FOR AUTOMATIC CONTROL OF TOW TAKEUP MEANS BY DETECTING THE AMOUNT OF TOW ON CONVEYOR
Tatsumi Tanabe, Ehime-ken, Japan, assignor to Teijin Limited, Osaka, Japan
Filed July 15, 1969, Ser. No. 841,813
Claims priority, application Japan, July 23, 1968, 43/51967
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.41 **6 Claims**



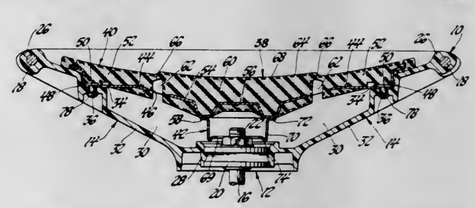
Apparatus for automatically detecting changes in the amount of tow on a conveyor and thereby automatically controlling the start or stop of the operation of tow takeup means and maintaining the amount of tow on the conveyor at a specified value.

3,619,524
SENSOR
Arden G. Gillund, Oak Creek, Wis., assignor to General Motors Corporation, Detroit, Mich.
Filed May 8, 1970, Ser. No. 35,674
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 **4 Claims**



A sensor includes a cylindrical housing having an apertured planar base wall and contact plate. An axial pole magnet is mounted on the base wall and located normal to the aperture. The magnetic flux of the magnet maintains a ball in seated relationship within a ball seat provided by the embossed opening of the apertured plate. The OD of the ball is greater than that of the magnet. A contact ring is mounted on a circular sidewall of the housing and includes a peripheral series of integral cantilevered thin flexible axially tapered spring fingers which extend radially of the ball seat and overlie the contact plate in spaced relationship. The distal portions of the fingers terminate radially outwardly of the ball seat and are spaced from the contact plate a distance, greater than the OD of the ball. An intermediate portion of each finger is spaced from the contact plate a distance substantially equal to the OD of the ball. The contact plate and the contact ring are connected to a source of power and a mechanism to be actuated. Upon an acceleration pulse of predetermined amplitude and time being applied to the ball, the ball moves radially outwardly of the ball seat and into wiping engagement with the contact plate and at least one of the spring fingers to complete the circuit across the source of power and the mechanism to be actuated. The wiping engagement of the ball with the intermediate portion of the one finger flexes the one finger about its proximal portion and creates a spring biasing force returning the ball toward the ball seat when the acceleration pulse is reduced. A cover for the housing seats on the sidewall and includes a stop projecting transverse of the distal portion of the fingers and overlying the ball seat to limit movement of the ball axially of the seat.

3,619,525
STEERING WHEEL CUSHION INSTALLATION
Roy H. Sjoberg, Jr., Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 28, 1970, Ser. No. 67,745
Int. Cl. H01h *9/00*
U.S. Cl. 200—61.55 **3 Claims**

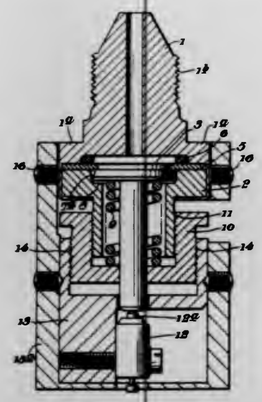


An improved vehicle steering wheel cushion installation, the installation including a cushion assembly having separated resilient inner and outer pads covered by a relatively solid skin which forms a self-biased hinge connecting the inner pad to the outer pad for reciprocating movement relative thereto. The outer pad of the cushion assembly is secured to the steering wheel generally over the spokes thereof and the self-biased hinge normally maintains the inner pad in a retracted position wherein a first switch terminal on the inner pad is spaced from a second switch terminal on the steering wheel. Pressure on the cushion assembly over the inner pad initiates movement of the latter against the hinge bias to an extended position wherein the two switch terminals make contact to complete the vehicle horn circuit.

3,619,526
PRESSURE-ACTUATED SWITCHES
Terence Alexander Riley, Farnham, England, assignor to Simplifix Couplings Limited, Maidenhead, Berkshire, England
Filed July 23, 1969, Ser. No. 843,997
Claims priority, application Great Britain, Aug. 19, 1968, 39,622/68
Int. Cl. H01h *35/38*
U.S. Cl. 200—83 J **1 Claim**

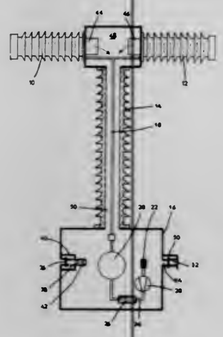
A pressure-operated electric switch, consisting of a housing having a spring loaded piston therein and a diaphragm

moved by pressure change, with a microswitch having its operating pin coaxial with the piston and axially adjustable in



relation to the piston, with the loading of the spring on the piston also adjustable independently of the pin to the piston.

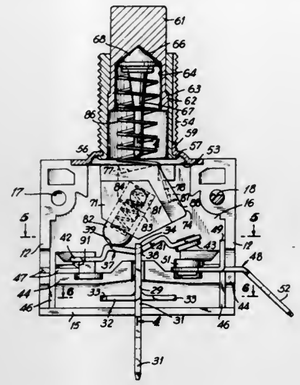
3,619,527
COMPRESSED-AIR ELECTRIC APPARATUS EMBODYING A DRYING DEVICE
Gerald Billion, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Oct. 16, 1969, Ser. No. 867,012
Claims priority, application France, Nov. 6, 1968, 172,839
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 E **4 Claims**



Compressed-air electric apparatus such as a circuit interrupter having a compressor to compress air taken from a low-pressure vessel. The pressure in said vessel is close to the atmospheric pressure and an inlet valve controls the admission of atmospheric air to said vessel as the pressure therein drops below a predetermined value upon functioning of the compressor in case of leakage of high-pressure air. A drying device dries the air supplied by the compressor. The result is a substantially closed-circuit air circulation relieving the drying device without needing an absolutely hermetic sealing.

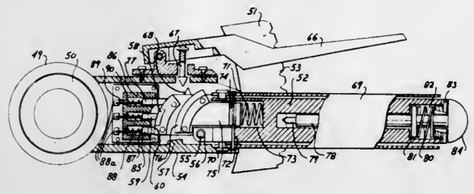
3,619,528
MOMENTARY PLUNGER SWITCH
Richard W. Sorenson, West Hartford, Conn., assignor to Carling Electric Inc., West Hartford, Conn.
Filed Aug. 14, 1970, Ser. No. 63,715
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 J **6 Claims**

A momentary plunger-type electric switch in which a single plunger return spring performs the simultaneous additional function of returning the switch lever to its initial position. The switch case is made of a pair of identical juxtaposed half-shells which accommodate a unitary contact terminal in



either of two positions according as a normally open or a normally closed switch is specified or desired. The device can be utilized as a single-circuit or a two-circuit switch.

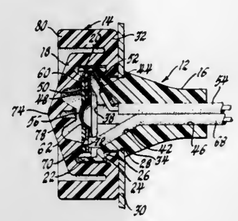
3,619,529
THROTTLE MECHANISM FOR USE IN TRAIN SLACK CONTROL
Raymond N. Nealis, 16 Deepdale Drive, Levittown, Pa.
Filed Nov. 17, 1969, Ser. No. 877,105
Int. Cl. H01h *9/06*
U.S. Cl. 200—157 **3 Claims**



A manually operated locomotive power control throttle constructed in two parts. The engineer can move one part relative to the other for controlling slack between the cars and can move the two parts in unison for controlling the speed of the locomotive with or without effecting the slack.

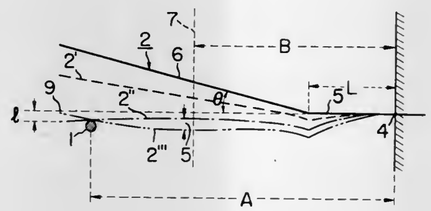
3,619,530
DOORJAMB SWITCH
Patsy De Vincent, and Sidney G. Dunford, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,310
Int. Cl. H01h *13/48, 13/06, 13/52*
U.S. Cl. 200—159 B **4 Claims**

A doorjamb switch includes an annular housing comprised of an annular support portion and an annular flexible portion. Interlocking flanges on the portions cooperate to secure the portions to each other and assemble the housing. In one embodiment, the support portion includes an annular contact receptacle which receives a generally planar first contact and a disklike second contact separated by an insulating washer. Upon assembly of the housing, an annular mounting surface of the flexible portion engages the periphery of the first contact and seats the periphery of the second contact of an annular mounting surface of the support portion. The first contact is fixed with respect to the support portion and the periphery of the second contact is slidable between the insulating washer and the surface of the support portion. As mounted, the second contact is concave and has a central projection received within central apertures of the insulating washer and the first contact. The concavity of the second contact biases the central projection into engagement with the first contact to close the switch. A central portion of the flexible portion is engageable by a door during closing movement to flex the central portion and cause it to abut the central projection of the second contact. This increases the concavity of the second contact and moves it out of engagement



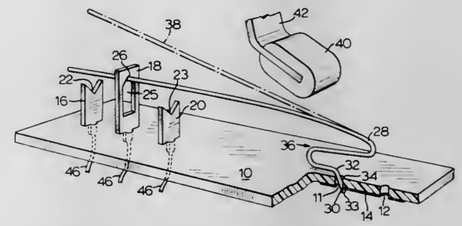
with the first contact to open the switch. The periphery of the second contact slides between the washer and the surface of the support portion when the concavity of the second contact is increased. An outer protective flange on the flexible portion prevents excessive flexing of the flexible portion and possible damage to the contacts. In another embodiment, a housing includes a flexible portion that acts on peripheral portions of a concave disklike contact to decrease the concavity thereof and move the disklike contact out of engagement with a fixed contact.

3,619,531
CONTACT ASSEMBLY FOR AN ELECTRONIC MUSICAL INSTRUMENT
Shin-ichi Murakami, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuaka-ken, Japan
Filed Jan. 19, 1970, Ser. No. 3,905
Claims priority, application Japan, Jan. 21, 1969, 44/3835
Int. Cl. H01h *1/18*
U.S. Cl. 200—166 J **2 Claims**



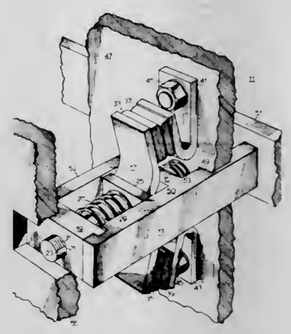
An improved contact assembly for an electronic musical instrument in which the distance between a fixed element and the fixed end of a movable element, the distance between an actuator and the fixed end of the movable element, the stroke length of the actuator between the position of first contact of the movable element with the fixed element and the most depressed position of the actuator, the length of a horizontal portion of the movable element, the angle of an inclined portion of the movable element with respect to a horizontal base line, and the distance between the fixed element and the horizontal base line are such that the ratio of the amount of slide of the movable contact element on the fixed contact element in a push direction to that in a pull direction during operation of the contact assembly is from about 1:1 to about 1:2.

3,619,532
SELF-ALIGNING CONTACT FOR SWITCH
Fritz L. Lyvang, Wallenstein, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada
Filed Sept. 17, 1969, Ser. No. 858,742
Int. Cl. H01h *1/00*
U.S. Cl. 200—166 J **6 Claims**



A resilient elongated wirelike contact which is self-aligning in an aperture in a base member. The aperture is circular and has a greater diameter than the wirelike contact, so that an end portion of the latter can be inserted in the aperture, oriented in a desired direction so as to make the end portion bind angularly in the aperture, and then fixed to the base member as by soldering.

3,619,533
CONTACTOR WITH TIP WEAR INDICATOR
George L. McFarland, Salem, Va., assignor to General Electric Company
Filed May 15, 1970, Ser. No. 37,581
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 R **4 Claims**



A contactor, with a contact tip wear indicator for visually denoting the status of contact tips, includes a calibrated member coacting with a movable contact assembly to project externally from the contactor a distance proportional to the distance traveled by the movable contact to engage stationary contacts.

3,619,534
SNAP ACTION CIRCUIT BREAKER
Richard E. Perkins, South Windham, Maine, assignor to Sylvania Electric Products Inc.
Filed Jan. 2, 1970, Ser. No. 281
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **1 Claim**

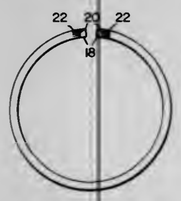
A snap action circuit breaker having encapsulating means such as a casing and a support secured within the encapsulat-

ing means. The support is designed to accommodate the components of circuit breakers such as the lead-in wires,



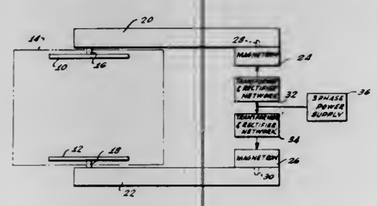
snap blade and contact in predetermined fixed positions within the encapsulating means.

3,619,535
PIPE-WELDING PROCESS
Vincent J. Sullivan, 21 Evergreen Drive, Kentfield, Calif.
Filed Sept. 19, 1969, Ser. No. 859,421
Int. Cl. H05b 5/00; B23k 31/06
U.S. Cl. 219—8.5 **9 Claims**



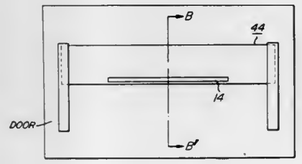
This is an improved process of induction welding of steel pipe and an improved product of such process. After steel skelp is formed into a tubular blank with an open longitudinally extending seam, the seam edges are continually heated, converged and pressure-welded. Heat is applied to the converging edges in a novel manner to eliminate entrapment of harmful scale during welding, to prevent thermal stressing or cracking of the seam after welding, to arrest the growth of martensite and to produce a pipe product characterized by a substantially pure metal interface extending the width of the pipe wall.

3,619,536
MICROWAVE OVEN WITH SEPARATELY DRIVEN ANTENNA ELEMENTS
Helmut Boehm, Thousand Oaks, Calif., assignor to Bowmar/Tic Inc., Newbury Park, Calif.
Filed May 14, 1970, Ser. No. 37,279
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **10 Claims**



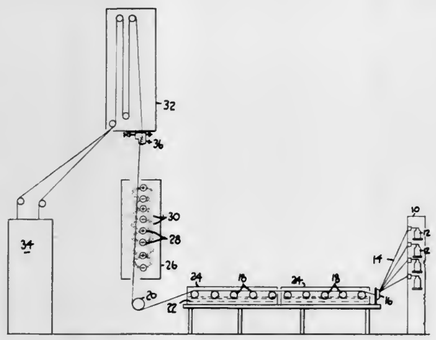
There is disclosed a respective magnetron and waveguide feed for antenna elements that are adjacent and parallel to opposed walls in an oven cavity. In one embodiment, a pair of antennas have their magnetrons simultaneously operated from a three-phase power supply. Another embodiment illustrates a plurality of opposed pairs of antenna elements with respective magnetron and waveguide feeds, and switching means connected between a power supply source and each of the magnetrons for selectively multiplexing their operations in pairs.

3,619,537
HIGH-FREQUENCY HEATING DEVICE
Tomoyuki Hosokawa, Nara; Hazime Mori, Toyonaka, and Shigeru Kusunoki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 12, 1970, Ser. No. 79,919
Claims priority, application Japan, Oct. 18, 1969, 44/83415, Nov. 20, 1969, 44/110738, Dec. 8, 1969, 44/98798, Dec. 8, 1969, 44/98799, Dec. 29, 1969, 45/288, Dec. 29, 1969, 45/682, Dec. 29, 1969, 45/750
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **7 Claims**



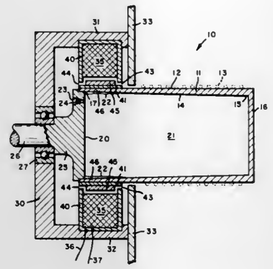
A high-frequency heating device in which an electromagnetic contactor for controlling a high-voltage circuit of a high-frequency wave oscillator is provided with a touch switch circuit which is energized by detecting an electric variation caused when brought into contact with a human body, and said electromagnetic contactor is controlled when a human body touches and leaves contact electrodes provided in said touch switch circuit.

3,619,538
PROCESS AND APPARATUS FOR HIGH-FREQUENCY ELECTRICAL DRYING OF FIBROUS STRAND
John Kallenborn, Murrysville, and George B. Zurheide, Upper St. Clair, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 3, 1970, Ser. No. 16,070
Int. Cl. H05b 5/00
U.S. Cl. 219—10.61 **9 Claims**



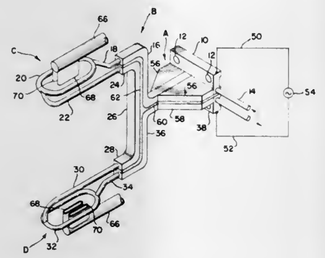
A process and apparatus for drying a liquid adhesive composition on a fibrous substrate. The apparatus comprises a dielectric heater having a grid of spaced, parallel electrodes with a high-frequency electrical field extending therebetween, means for conveying the fibrous substrate through the electrical field in a plane spaced from the plane of the electrodes and means to adjustably position the plane of the substrate and the plane of the electrodes at an angle relative to each other and to dampen vibration of the substrate in a direction perpendicular to the direction of its path of travel.

3,619,539
FLUID HEATED ROLL
Daniel G. Taylor, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 22, 1970, Ser. No. 39,834
Int. Cl. H05b 9/06, 5/00
U.S. Cl. 219—10.61 **8 Claims**



A roll for continuously heating an article of indefinite length such as a textile filament or fiber is disclosed. A source of heating is localized at a fluid filled chamber so the fluid can be boiled off and condensed on a tapered surface that is in heat exchange relationship with the exterior working surface of the roller means. The interior tapered surface acts to return the condensed fluid under the centrifugal action caused by the rotating roll means. This closed cycle fluid heating arrangement provides for uniform application of heat as it is removed from the surface of the heated roll, either by windage losses or by transfer to the moving article that is being heat treated.

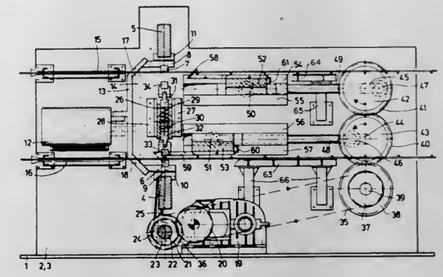
3,619,540
HEATING ZONE DUAL INDUCTOR
David Robert Soworowski, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Aug. 10, 1970, Ser. No. 62,578
Int. Cl. H05b 5/00, 9/06
U.S. Cl. 219—10.71 **8 Claims**



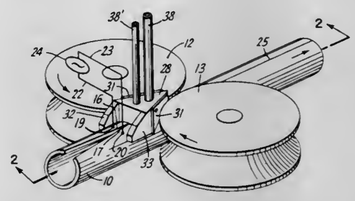
An induction heating device including an inductor defining two separate heating zones and means for alternately inserting a workpiece into each of these heating zones.

3,619,541
APPARATUS FOR THE WELDING OF GRID STRUCTURES COMPOSED OF INTERSECTING LONGITUDINAL AND TRANSVERSE RODS
Heinz Webers, Osterath, Germany, assignor to Bau-Stahlgewebe GmbH, Dusseldorf-Oberkassel, Germany
Filed Apr. 10, 1970, Ser. No. 27,335
Claims priority, application Germany, Apr. 12, 1969, P 19 18 601.7
Int. Cl. B23k 11/00
U.S. Cl. 219—56 **4 Claims**

Apparatus for spot welding the intersection points of grids composed of sets of parallel longitudinal and transverse rods comprises double action vertically reciprocable, movable, welding beam carrying aligned upper and lower welding electrodes spaced by distances equal to the spacing distance of the longitudinal rods and a pair of upper and lower stationary welding beams carrying cooperating electrodes aligned with the electrodes of the movable beam, for the welding of a pair of grids fed in different horizontal planes in the direction of the longitudinal rods between each pair of cooperating stationary and movable welding electrodes. The grids are fed intermittently at the rhythm of the welding operations from one to the next welding position by distances equal to the spacing distance of the transverse rods, the arrangement being such as to feed one grid during the welding of the other grid, and vice versa, by means of a pair of gripping and feeding devices operated in phase opposition in the direction parallel to the longitudinal rods.



3,619,542
METHOD AND APPARATUS FOR WELDING IN CONTROLLED ATMOSPHERE
Edgar D. Oppenheimer, Mamaroneck, N.Y., assignor to AMF Incorporated
Filed Dec. 23, 1969, Ser. No. 887,716
Int. Cl. B23k 31/06
U.S. Cl. 219—67 **17 Claims**

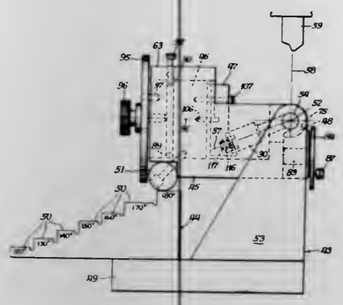


First and second gas shoes are placed respectively, on opposite surfaces of two adjacent portions to be welded. Shoes have recesses therein to form cavity which includes spaced edges of two portions upstream of weld zone. Tips of shoes are upstream of weld zone. Gas under pressure is admitted to cavity to bathe edges in controlled atmosphere and gas in a jet escapes at tips of shoes and is directed into weld zone to envelop weld zone in controlled atmosphere.

3,619,543
POSITIONING FIXTURE TO FACILITATE NOZZLE DRILLING BY EDM
Edward A. Slindee, Elmhurst, and Geroge E. Nicoletti, Berwyn, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 18, 1970, Ser. No. 12,218
Int. Cl. B23b 1/12, 47/28
U.S. Cl. 219—69 R **10 Claims**

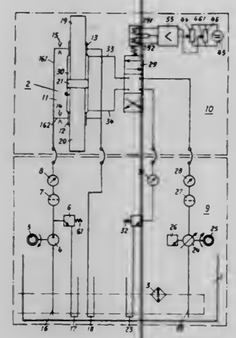
Fixture assembly for holding a nozzle blank on which spray openings are to be formed by electric-discharge machining. The fixture assembly comprises a base, a gage block, a pivot block, an adapter block, an adapter, and a headblock. The nozzle blank is held between the adapter and a conical recess in the headblock. The headblock is adjustably positioned so

as to accommodate nozzle blanks of different sizes. The adapter is selected so as to give the desired angle between the nozzle blank axis and the axis of the imaginary cone on



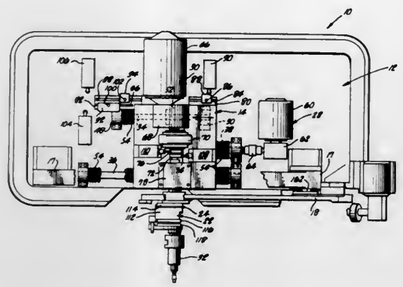
which the spray openings are to be formed. The gage block determines the angle at which the pivot block is held and thus the angle of the cone of the spray openings.

3,619,544
ELECTROEROSION MACHINE WITH SEPARATELY CONTROLLED ELECTRODE FEED MEANS AND FLUID BEARING FILM FOR ELECTRODE SUPPORT MEANS
Werner Ullmann, Locarno; Rudolf Ineichen, Effretikon, and Fritz Lutolf, Losone, all of Switzerland, assignors to A.G. Fur Industrielle Elektronik Agie Losone B. Locarna, Losone-Locarno, Switzerland
Division of Ser. No. 574,028, Aug. 22, 1966, Pat. No. 3,521,021.
Filed Nov. 19, 1969, Ser. No. 878,028
Claims priority, application Switzerland, Aug. 20, 1965, 11753/65
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 G 4 Claims



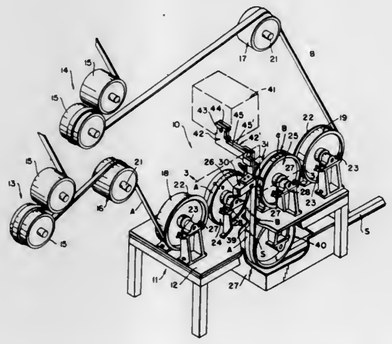
An electroerosion machine including a cylinder means, piston means with the cylinder means. The piston embodies oppositely directed projecting rod portions, one of which constitutes an electrode support controllable means serve to establish a fluid film-bearing surface at axially spaced locations of the rod portions. There are also provided separate and independently controllable means for supplying and exhausting pressure fluid to and from the cylinder means on opposite sides of the piston including electromagnetically operated valve means. A control circuit is provided for the valve means operable to actuate said valve means to impart axial movement to the piston means and thus the electrode support to effect any one of a manually controlled electrode feed movement, an automatically regulated constant feed movement, and a feed movement including imparting vibratory movement to the electrode.

3,619,545
HARD FACING MACHINE
Rolland Ernest Borden, Inglewood, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Mar. 12, 1969, Ser. No. 806,433
Int. Cl. B23k *9/04*
U.S. Cl. 219—77 12 Claims



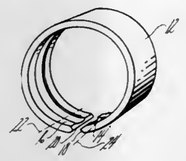
Hard facing is applied to the end of a workpiece in the form of a chain saw blade by a heliarc torch while the blade is traversed twice and rotated between traverses. The traverses are produced by a table which is moved on a base. Rotation is effected by a motor mounted on the table. A control circuit determines the initiation and termination of the traverses and rotation at predetermined points in the hard face application cycle and during a return cycle. Weld wire is positively advanced into the welding zone by a weld wire feed assembly. A clamp holds the workpiece blade during the hard facing application. The torch, being carried with the weld wire feed assembly, is maintained in proper relationship to the workpiece by a cam which moves in index with the workpiece.

3,619,546
LONGITUDINAL STRIP EDGE BUTT WELDING
Sidney Briggs, III, Bay City, Mich., assignor to Amtel Inc., Providence, R.I.
Filed May 12, 1969, Ser. No. 823,716
Int. Cl. B23k *11/04*
U.S. Cl. 219—102 25 Claims



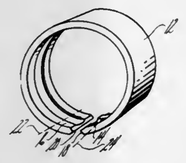
A pair of wide, elongated strips to be butt welded together pass convergently into a weld zone, as partially wrapped about large diameter rubber covered rolls, thus placing the converging strips in an arcuate cross section in reaching the apex of the weld zone, rather than approaching it in convergent flat planes. Transverse deflection of the strips normal to their planes, tending to cause their edges to snap past one another to an excessive overlap, is eliminated. The strips are heated to welding temperature by either sliding contact electrodes or inductive heating means. Each strip edge laterally overhangs slightly an edge of its large diameter wrapping roll.

3,619,547
PREHEATING AND WELDING METHOD FOR BEARING RACES AND OTHER ARTICLES
Erman V. Cavagnero, Torrington, Conn., assignor to Torin Corporation, Torrington, Conn.
Division of Ser. No. 706,217, Feb. 12, 1968, Pat. No. 3,522,644.
Filed Dec. 18, 1969, Ser. No. 886,208
Int. Cl. B23k *11/02*
U.S. Cl. 219—104 7 Claims



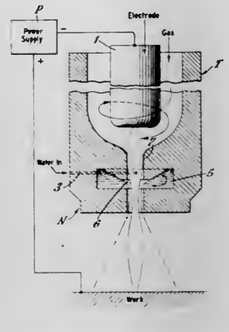
A fusion welding method for steel exceeding 0.4 percent carbon content where all such steel in the article which is integral with the weld surfaces is heated above the upper transformation temperature resulting in a superior weld and a sound article absent localized areas of martensite and other detrimental characteristics. Preheating, simultaneous heating, and/or post heating is employed and when an article is preheated, surfaces to be welded are maintained relatively cold to minimize oxidation.

3,619,548
PREHEATING AND WELDING METHOD
Erman V. Cavagnero, Torrington, Conn., assignor to Torin Corporation, Torrington, Conn.
Division of Ser. No. 706,217, Feb. 12, 1968, Pat. No. 3,522,644.
Filed Dec. 18, 1969, Ser. No. 886,082
Int. Cl. B23k *11/02*
U.S. Cl. 219—105 28 Claims



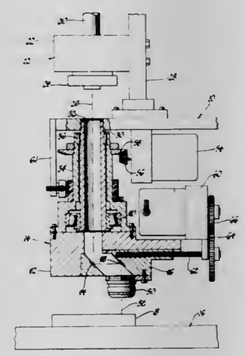
A fusion welding method for steel exceeding 0.4 percent carbon content where all such steel in the article which is integral with the weld surfaces is heated above the upper transformation temperature resulting in a superior weld and a sound article absent localized areas of martensite and other detrimental characteristics. Preheating, simultaneous heating, and/or post heating is employed and when an article is preheated, surfaces to be welded are maintained relatively cold to minimize oxidation. Surfaces to be welded are freshly exposed immediately prior to welding and in an extremely rapid sequence of operations and when preheating is employed; surface exposure, preheating and welding steps are carried out in rapid sequence to minimize oxidation. Surfaces are provided with V-shaped configurations novel to resistance upset butt welding.

3,619,549
ARC TORCH CUTTING PROCESS
John A. Hogan, Somerset, and Robert M. Gage, Summit, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed June 19, 1970, Ser. No. 47,840
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P 6 Claims



High quality, square cuts are obtained in metals by an arc process wherein an arc is struck between an electrode and workpiece, a gas vortex is passed around the electrode and is directed into a constricting nozzle passage where a liquid, usually water, vortex swirling in the same direction as the gas vortex is introduced. The arc passes through the gas and liquid vortex and through the nozzle and is directed in a highly constricted state against the workpiece to be cut.

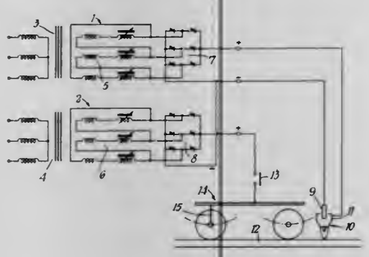
3,619,550
LASER BEAM MACHINE TOOL WITH BEAM MANIPULATING APPARATUS
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.
Filed Sept. 25, 1969, Ser. No. 860,986
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L 7 Claims



A machine tool using a laser cutting beam is disclosed. The machine tool includes apparatus for directing the laser beam onto a workpiece at a desired location and for generating a predetermined pattern. A rotatable toolhead is provided with a beam passage along its axis of rotation and beam deflecting and beam forming means rotatable with the toolhead are operative to direct the beam onto the workpiece. The beam may be axially and radially offset as desired by reflectors movable with the toolhead so that the beam is manipulated in a highly efficient manner. The apparatus is capable of machining a workpiece surface with the cutting beam

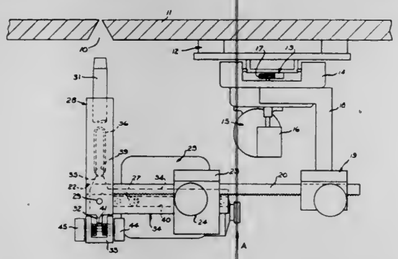
directed perpendicularly thereto at any desired radius ranging from zero upwards. It is also capable of machining a workpiece surface inclined at any angle with reference to the axis of toolhead rotation. The apparatus is especially adapted for use in automatically controlled machine tools for programmed movement of the cutting beam.

3,619,551
CLEANING OF RAILS
David John Miller Dobbs; Derek Linder, and Leslie John Giles, all of London, England, assignors to British Railways Board, London, England
Filed Nov. 26, 1969, Ser. No. 880,197
Claims priority, application Great Britain, Dec. 5, 1968, 57782/68
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **5 Claims**



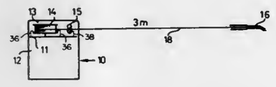
A method of cleaning a rail comprises subjecting the head of the rail to the gas jet from a plasma-arc torch operated in the nontransferred mode, but with an additional current passed between the torch and the head of the rail.

3,619,552
OSCILLATING WELDING ELECTRODE WITH DWELL CONTROL
Richard Allan Gordon Cape, Lachine, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed Sept. 30, 1969, Ser. No. 862,292
Claims priority, application Canada, Sept. 5, 1969, 061,318
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **18 Claims**



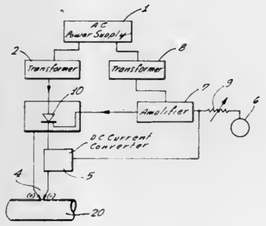
An automated welding machine has a welding gun support and first drive means for moving the support in a longitudinal direction, second drive means to produce an oscillatory motion of the support transverse to the longitudinal direction, so that the combined effects of the drive means causes the support to trace out a weaving path. The oscillatory motion of the support, and hence the weave amplitude of the path traced by the support is controlled by adjustable abutment means which cooperate with the support. A resiliently yieldable torque-transmitting element couples the support to the oscillatory driving means to provide lost motion between this driving means and the support when the latter engages the adjustable abutment means. The adjustable abutment means can thus be adjusted to vary the weave amplitude of the support, and is selectively adjustable to alter the dwell period of the support at either or each extremity of its oscillatory motion.

3,619,553
REMOTELY DISPOSABLE ADVANCE AND SUPPLY UNITS FOR ARC WELDING
Gunter Wilkens, Kelkheim/Taunus, and Werner Becker, Frankfurt/Main, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed Apr. 17, 1969, Ser. No. 816,948
Claims priority, application Germany, Apr. 20, 1968, P 17 65 224.3
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **10 Claims**



An electric arc welding device utilizes a current source housing, a wire storage device and a wire advance device. The wire storage and advance devices are mounted in such a manner that they can be either within or outside the current source housing.

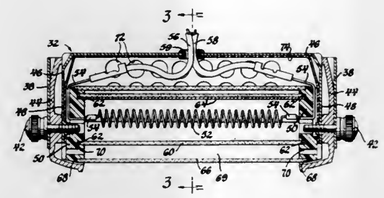
3,619,554
DC ARC WELDING CURRENT CONTROL RESPONSIVE TO CURRENT AND WORKPIECE FEED RATE
Wolfram Klebl, Isernhagen, and Heinrich Schrieber, Leeste Ueber Bremen, both of Germany, assignors to Kabel-und Metallwerke Gulehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Jan. 20, 1970, Ser. No. 004,355
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 WR **1 Claim**



A feedback control system for DC arc welding wherein signals representative of current, and workpiece feed rate, are combined to control the current supplied through a thyristor rectifier, from a leakage reactance transformer providing a smoothed AC output current, to provide fast response current control.

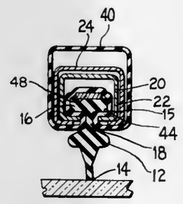
3,619,555
INFRARED CAR HEATER
Arthur T. Bassett, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 22, 1970, Ser. No. 5,057
Int. Cl. B60l *1/02*; **H05b** *3/02*
U.S. Cl. 219—202 **1 Claim**

An infrared heater for warming the passenger compartment of an automobile is adapted to be adjustably supported from the underside of the dashboard. The heater includes an elongated resistance heating element which is encircled by an inner filter tube which is transparent to infrared radiation from the heating element, but which blocks visible light from passing into the passenger compartment. A semicircular reflector within the filter tube directs radiation from the element into the compartment. An outer, larger diameter, protective tube encircles the filter tube in spaced relation thereto. The protective tube is also transparent to infrared radiation from the element but may or may not filter visible light as does the inner tube. The space between the tubes is



vented to thermally insulate the outer tube and to prevent undesirable temperature increase during heater operation. A control circuit is provided which permits the heater to be energized only when the vehicle engine coolant is below a predetermined temperature and the ignitions switch is on.

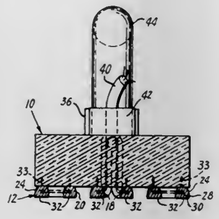
3,619,556
ELECTRICALLY HEATED WEATHERPROOF WIPER BLADE
Raymond A. Deibel, West Falls, and William C. Riester, Williamsville, both of N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,266
Int. Cl. B60l *1/02*
U.S. Cl. 219—203 **2 Claims**



A windshield wiper blade and arm assembly in which the blade comprises a pressure-distributing superstructure including a number of pivotally connected levers and a flexible backing strip for retaining a rubber squeegee element. The superstructure and backing strip is enclosed by an envelope of rubber or rubberlike material with a squeegee element extending exteriorly thereof. A heating element is disposed in heat exchange relationship with respect to the envelope and is connected to a source of electrical energy through a detachable connection exteriorly of the rubber element. An electrical conductor extends from the above-mentioned connection along the length of the wiper arm to a connecting terminal on the cowl of a motor vehicle.

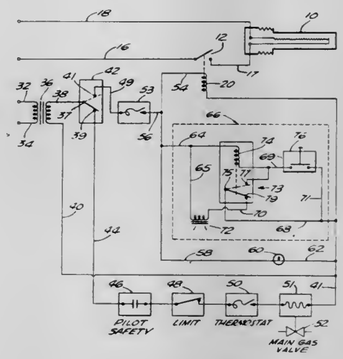
3,619,557
DEVICE FOR FACILITATING REMOVAL OF ASPHALT TILE
Lawrence D. McClure, 1321 Louis Drive, Antioch, Calif.
Filed Apr. 25, 1969, Ser. No. 819,342
Int. Cl. H05b *1/00*
U.S. Cl. 219—228 **1 Claim**

An elongated, generally rectangular thermally and electrically insulative body is provided at the top with a handle. At least one elongated sheathed electric heating element is fixed against the flat bottom surface of the body. The heating element includes a plurality of parallel looped portions having flat, coplanar, bottom extremities in spaced relation across the width of the bottom. The heating element is coextensive with at least three edges of the bottom of the body. The heating element is regulated by a heat control on the body. In use, the device is moved over the surface of asphalt tiles to



heat the tiles and bonding agent therebeneath. The softened tiles are easily lifted with a putty knife or similar tool.

3,619,558
ANTIFREEZE BOILER CIRCUIT
Leo Block, Temple City, Calif., assignor to Raypak Inc.
Filed Apr. 6, 1970, Ser. No. 25,646
Int. Cl. F22b *37/42*
U.S. Cl. 219—280 **4 Claims**

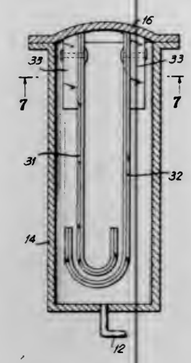


The invention is a system comprising an electric heating element installed in a boiler header and control circuitry therefor so as to protect a nonfunctioning boiler from damage caused by freezing of water therein if the boiler pump becomes inoperative and the ambient temperature drops below the freezing point.

3,619,559
STEAM GENERATOR
Nat Camp, Homestead Place, Harrison, N.Y.
Continuation-in-part of application Ser. No. 826,870, May 22, 1969, now abandoned. This application Feb. 17, 1970, Ser. No. 11,986
Int. Cl. H05b *3/60*
U.S. Cl. 219—288 **5 Claims**

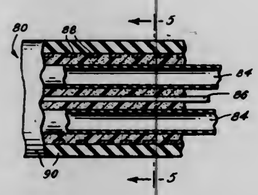
A steam generator has a boiling chamber receiving water from a reservoir through a capillary tube and discharging steam through an outlet having a selectively variable orifice size. A pair of spaced electrodes in the form of metal strips are suspended within the chamber and are connected across a voltage source. The lower portion of each metal strip has conductive portion of larger area than the upper portion thereof. The enlarged area extends from the vicinity of the chamber bottom to about the middle third of the chamber. The electrodes can be formed by a pair of flat metal strips disposed in parallel vertical planes and each having an enlarged portion of either constant or variable width. Alterna-

tively, each electrode can be formed from a strip bent in its dimension of thickness to form a "J" configuration. The pair



of J-shaped electrodes are vertically supported in nested relationship in either identical or inverted orientation.

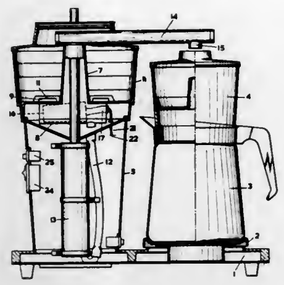
3,619,560
SELF-REGULATING THERMAL APPARATUS AND METHOD
Francis P. Bulting, Plainville, and Joseph W. Waseleski, Jr., Mansfield, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 732,717, May 28, 1968, Pat. No. 3,501,619. Filed Dec. 5, 1969, Ser. No. 888,189
Int. Cl. H05b *1/02, 3/12*
U.S. Cl. 219—300 **8 Claims**



Electrical heating devices and methods of making same employing polymeric materials which display a steep-sloped positive temperature resistivity coefficient (PTC) which serves to self-regulate the amount of heat produced. The materials are ductile and can be molded, extruded, machined and formed in complex shapes including the following embodiments: A utensil formed of a PTC heater element defining a cavity therein; the heating element encapsulated in an electrical insulating jacket preferably formed of material having the same thermal coefficient of expansion and also serving as thermal insulation where desired. Another embodiment employs a plurality of PTC elements having different anomaly temperatures to provide a choice in temperature selection. Yet another embodiment shows either open or closed ended passages formed in a PTC heating element.

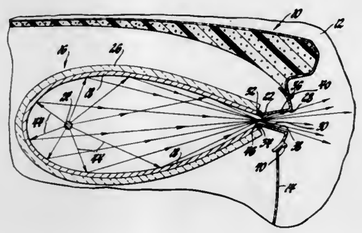
3,619,561
COFFEE-MAKING APPARATUS
Gerard Clement Smit, Utrechtse Straatweg 26, Amerongen, Netherlands
Filed May 9, 1969, Ser. No. 823,443
Claims priority, application Netherlands, June 20, 1968, 6,808,675
Int. Cl. F24h *1/08*
U.S. Cl. 219—333 **1 Claim**

A coffee-making apparatus comprising an electric throughflow heater, connected to a water reservoir, is



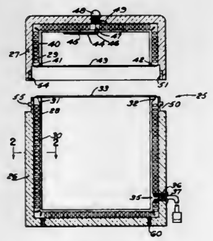
switched on and off in dependence on the water level by means of a swiveling float incorporating a mercury switch.

3,619,562
MOVABLE REFLECTOR INFRARED HEATER
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 22, 1970, Ser. No. 4,948
Int. Cl. H05b *1/00*
U.S. Cl. 219—348 **3 Claims**



An infrared heater for warming the interior of an automobile having a stationary reflector which directs infrared radiation from a resistance wire element to pivotal reflecting surfaces adjacent and connected to the stationary reflector to redirect the infrared radiation into alternate portions of the automobile interior.

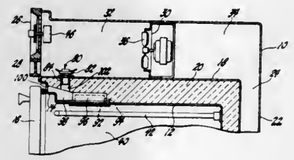
3,619,563
ELECTRICAL HEATER FOR A BEVERAGE
Robert E. Hirst, 68 Massasoit Ave., Cranston, R.I.
Filed Nov. 6, 1969, Ser. No. 874,507
Int. Cl. F24c *7/10*
U.S. Cl. 219—386 **4 Claims**



An electrical resistance element heater for a beverage adapted to be mounted upon a tray for use in an automobile

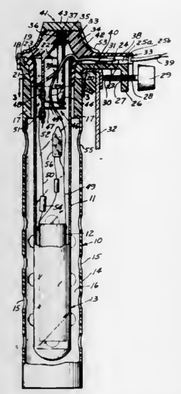
with electric current being supplied from the cigar lighter socket of the automobile or the like. The heater has an enclosing means comprising two sections with a heating coil in each section, the arrangement being such that when the sections are in closed positions, the coils are in series and connected to the source of electrical energy, whereas the circuit is broken when the sections are separated.

3,619,564
SELF-CLEANING OVEN WITH TEMPERATURE LIMITING PROTECTION SYSTEM
George W. Schauer, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 20, 1970, Ser. No. 56,485
Int. Cl. F27d *11/02*; **A21b** *1/00, 1/22*
U.S. Cl. 219—413 **4 Claims**



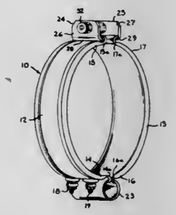
A self-cleaning oven having a single high limit thermostat which protects against an over-temperature condition inside the oven and a cooling fan failure outside the oven.

3,619,565
ELECTRIC IMMERSION HEATER
Anthony N. D'Elia, New York, and Edward M. Stolarz, Yorktown Heights, both of N.Y., assignors to Sternco Industries, Inc., Harrison, N.J.
Filed Aug. 19, 1970, Ser. No. 65,132
Int. Cl. H05b *3/06, 3/08, 3/02*
U.S. Cl. 219—523 **7 Claims**



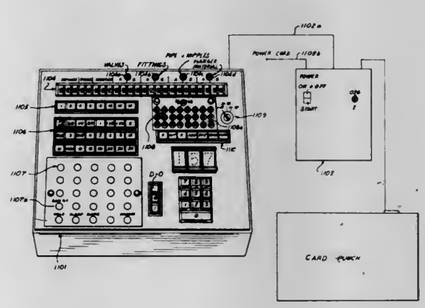
An electric immersion heater for use with home aquarium tanks. A glass tube containing at the bottom thereof an electric heating element is yieldably suspended within and in spaced relation to a heat-resisting apertured casing, the casing having a cover member with a depending bar extending into the tube and supporting the terminals of a thermostat. The casing and its said cover member have two complementary lateral extensions together forming a channelled passageway for electric conductors extending into the tube and connected to said terminals, said heating element being connected in series with said thermostat, there being a fuse in adjacent relation to and connected in series with said heating element. A knob member is rotatably mounted over said cover member and has a control rod in threaded engagement with the latter, the rod extending down into the tube and being operatively engageable with a contact arm of said thermostat, said knob being engageable with said cover member and thereby serving as a stop to prevent the control rod from excessively bending the engaged thermostat contact arm.

3,619,566
CYLINDRICAL ELECTRIC HEATER WITH CLAMPING MEANS
Thomas E. Finch, Acton, Ind., assignor to General Electric Company
Filed June 22, 1970, Ser. No. 48,051
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 **8 Claims**



A cylindrical or band heater for heating a cylindrical object includes a pair of arcuate heater means each having a pair of ends with the ends of one heater means adjacent the ends of the other heater means when the heater means surround the object. Hooks are provided on the ends of both heater means and a spring is releasably received by the hooks on one pair of adjacent ends to connect such ends. An adjustable clamping means is releasably received by the hooks on the other pair of ends to adjustably connect such ends, the clamping means including a rotatable screw which when tightened draws the associated hooks and also said other pair of ends towards each other whereby the spring is placed in tension.

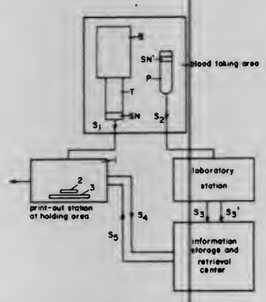
3,619,567
METHOD AND APPARATUS FOR ENCODING AND RECORDING ESTIMATING DATA
Richard T. Scott, 6161 Grove St., Omaha, Nebr.
Filed May 1, 1969, Ser. No. 820,892
Int. Cl. G06k *1/02, 15/18*
U.S. Cl. 235—61.1 **42 Claims**



A method and system apparatus for encoding the description of items and individual quantities thereof which are described by related variables. The system includes a control panel, remote power source and a terminating device such as a card punch or an online computer. When the system uses a card punch as the terminating device, punch cards are produced which have sufficiently encoded the description and quantity of components (used in building construction) thereon to enable the cards to be processed in small computers or bookkeeping machines for estimating purposes.

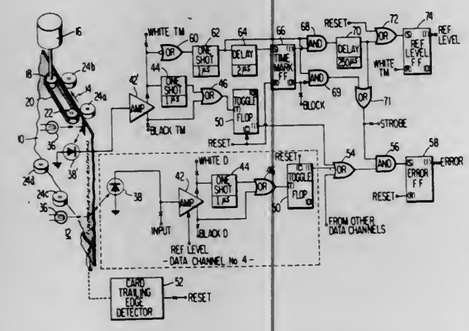
The method includes the steps of presetting the relationships between dependent and independent variables, labeling the origin of said items, describing the characteristics of each of said items, quantitizing the amount of each item described by said variables, and displaying visually the related variables prior to the final encoding processing of the information.

3,619,568
SYSTEM AND METHOD FOR IDENTIFYING AND LABELING BLOOD PACKS
John F. Taplin, 15 Sewall St., West Newton, Mass.
Filed May 6, 1969, Ser. No. 822,257
Int. Cl. G06k *3/02, 7/08;* **B41j** *3/28*
U.S. Cl. 235—61.9 R **11 Claims**



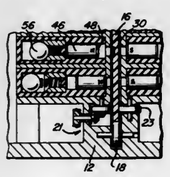
A system for automatically identifying and labeling the contents of blood packs designed to avoid human errors in the process of identifying and labeling of the contents of blood packs. The system includes an information storage and retrieval center having means for storing information at predetermined addresses and retrieving information from said addresses. It further includes a laboratory station having means for supplying all pertinent data needed for labeling blood packs to the aforementioned information storage and retrieval center. In addition the system includes a printout station where information is being retrieved from the information and retrieval center and automatically imprinted upon blood packs. The labeling of blood packs involves identification of the blood type and serologic data.

3,619,569
OPTICAL CARD-READING APPARATUS
Jacob George Hoehn, North Palm Beach, and Ronald Alfred Mancini, Palm Beach Gardens, both of Fla., assignors to RCA Corporation
Filed July 15, 1970, Ser. No. 55,171
Int. Cl. G06k *7/10, 5/00;* **G01n** *21/48;* **G06k** *9/02*
U.S. Cl. 235—61.11 E **6 Claims**



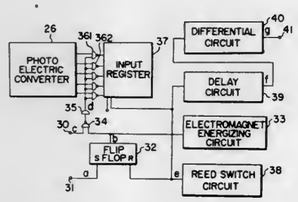
A mark sense card reader employs dual-threshold circuitry to indicate the presence, absence or inability to determine the presence or absence of marks such as pencil marks on a card. The circuitry includes a light-sensing transducer coupled to first and second differential amplifiers. The first such amplifier produces an indication only when a mark is definitely present. The second such amplifier produces an indication both when a mark is present and when the light level is such that no decision can be made as to whether or not a mark is present. The presence of this last indication concurrently with the absence of the other such indication means that no decision can be reached as to whether or not a mark is present. This situation may occur in cases of a poor erasure, or very light marks and in such cases the circuitry of the present disclosure causes the card to be rejected.

3,619,570
MAGNETIC READING APPARATUS
Gregory Grosbard, Long Beach, N.Y., assignor to International Research Development Inc.
Filed May 1, 1969, Ser. No. 820,997
Int. Cl. G06k *7/08, 19/08;* **H01h** *43/08;* **H04q** *3/72*
U.S. Cl. 235—61.11 D **16 Claims**



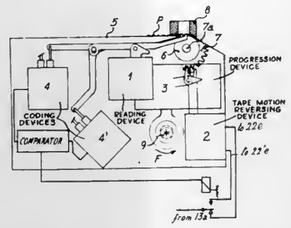
A code reading device for data processing cards employing magnetic cores that are displaceable transversely of a card inserted into an air gap between the confronting pole faces of the magnetic cores. In a code reading position of the card, information on the faces of the card may be read by exposure to the magnetic cores to establish, decrease or increase repulsive or attractive forces between the pole faces causing displacement of the cores to produce digital output signals.

3,619,571
TAPE READING-OUT SYSTEM
Soichiro Kage; Kenzo Takahashi; Tadahiro Tanaka, and Yutaka Nakazima, all of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 27, 1969, Ser. No. 869,774
Claims priority, application Japan, Oct. 29, 1968, 43/78452
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **19 Claims**



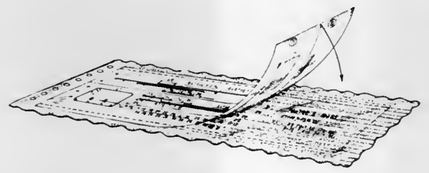
A tape reading-out system comprising a tape driving means equipped with a clutch having rotary shafts for allowing a tape stored with information to be moved forward, means for detecting signals directing the travel and stop of said tape from the displaced rotation of the rotary shaft of said clutch and a circuit enabling the rotary shafts of said clutch to rotate or stop and controlling the reading of information out of the tape by controlling the operation of said clutch using said detected directing signals.

3,619,572
PUNCHED TAPE READER UNIT
Jean-Pierre Murat, Argenteuil, France, assignor to Societe D'Applications Generals D'Electricite Et De Mecanique, Paris, France
Filed Nov. 28, 1969, Ser. No. 880,688
Claims priority, application France, Nov. 29, 1968, 175,882
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 C **3 Claims**



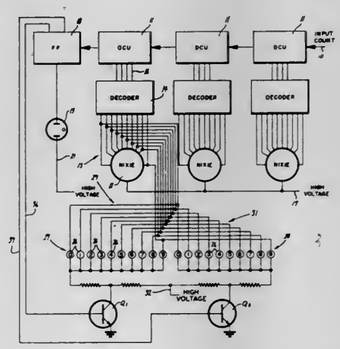
Reader unit for reading holes punched in a tape along rows transverse thereto comprising means for selectively advancing step-by-step in forward or backward directions, a group of readout levers terminated at their first ends by feelers of the punched holes of the tape, magnetic shield caps carried by the second ends of the readout levers, a group of reed switches each associated with a readout lever, a permanent magnetic field producing means for activating said reed switches and means for selectively positioning said readout levers and magnetic shield caps which they carry responsively to the punched holes of the tape in a first position in which the feelers pass through the holes and the caps shield the reed switches from the permanent magnetic field and a second position in which the feelers contact the tape and the caps do not shield the reed switches. The group of readout levers is divided into two subgroups respectively reading two words written in two successive rows of the tape. One word is stored and the word actually readout is compared to the stored word in a comparator. The comparator controls the direction of the advancing means.

3,619,573
DIRECTLY USABLE DOCUMENTS OR DRAWINGS OBTAINED BY MEANS OF COMPUTERS
Francois Philip, Saint-Mande; Jean Laporte, Avon, and Jean Clerc-Renaud, la Rochette, all of France, assignors to Etudes Techniques De Constructions A Fontainebleau, Saint-Mande, Val de Marne, France
Filed Apr. 23, 1969, Ser. No. 818,480
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 R **17 Claims**



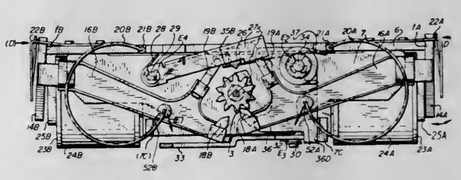
A system and method of producing documents composed of tabular data developed by means of a computer and also composed of other data, such as graphic data, produced separately from the first data by manual techniques or otherwise; the system and method include the coding of standard documents bearing the graphic or other data and arranging the graphic data on the standard documents in certain predetermined locations; developing tabulations of data by means of a computer and forming tabulation documents with the data in a predetermined arrangement and keyed to the standard document by means of coding and the relative locations of the data; preselecting by means of the coding the standard document corresponding to a particular tabulation document and displaying the data of said documents in overprinting relationship, whereby, if desired, a single combined document may be produced.

3,619,574
DIGITAL METER WITH AUXILIARY VISUAL ANALOG DISPLAY
Daniel J. Mindheim, San Jose, Calif., assignor to Time Systems Corporation, Mountain View, Calif.
Continuation-in-part of application Ser. No. 719,438, Apr. 8, 1968, now abandoned. This application Oct. 14, 1968, Ser. No. 767,311
Int. Cl. G06m *3/06;* **H03k** *21/18*
U.S. Cl. 235—92 EA **10 Claims**



Digital meter having at least one decimal counting unit, digital display means giving a multidigit digital display of the count registered by the decimal counting unit, and analog display means giving an auxiliary display of the registered count. In the preferred embodiment, the auxiliary display is provided by the illumination of a light in a position corresponding to the value of the count displayed by the digital display means.

3,619,575
MAGNETIC COUNTER
Nagao Mizutani, No. 20-1 Asahigaaka-Danchi, 1376-46 Sandahigashicho, Hachioji-shi; Yoshiro Shimada, 1206 Matsuno Kimachi, Suginami-ku, Tokyo, and Masamitu Nojima, 1046 Ina Itsukaichimachi, Nishitama-gun, Tokyo, all of Japan
Filed Feb. 25, 1969, Ser. No. 802,055
Int. Cl. G06m *1/10, 3/14*
U.S. Cl. 235—92 C **4 Claims**

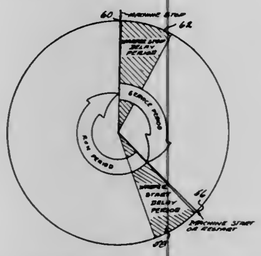


A magnetic counter capable of performing addition or subtraction, or both operations at a high speed, said magnetic counter being so designed that a cycle of advancing rotation of a counting element is effected in two steps, i.e., the first half of the advancing rotation is effected by one advancing pawl and the second half of the same is effected by another advancing pawl, and said first half of the advancing rotation in a plus and a minus directions are effected by different advancing pawls respectively.

3,619,576
APPARATUS AND METHOD FOR SEGREGATING THE COUNTS OF SERVICE STOPS OF INDIVIDUAL OPERATORS AND FOR PREVENTING INACCURATE COUNTS

John V. Cauthen, Fayetteville, and Fujio Abe, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of application Ser. No. 484,622, Sept. 2, 1965. This application Nov. 18, 1969, Ser. No. 877,854
Int. Cl. G06m 3/12
U.S. Cl. 235—92 FP 37 Claims

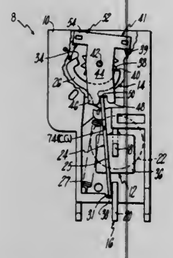


Apparatus and method for preventing fraudulent or inadvertent actuation of a counter and for segregating the counts of service stops attributable to individual operators of associated textile machines. Upon the occurrence of a yarn break a time delay relay is energized after a predetermined time interval. This, in turn, activates a second relay which couples pushbuttons on each of the machines to respective counters wherein each operator is assigned to a specific pushbutton on each machine and wherein one counter is associated with each of a respective set of pushbuttons. Upon completion of the mending operation the operator's pushbutton is depressed which records a count on the associated counter at the same time that the machine is restarted. Also, upon depression of the push button another time delay relay is activated after a predetermined time interval has passed from the depression of the pushbutton. This predetermined time interval is computed to be approximately equal to that time in which a yarn break cannot occur after starting the machine. During this time interval the depression of the pushbutton at the machine will not register a count on the counter. Thus, upon starting up the machine a predetermined time interval must pass before a yarn break can occur, and when a yarn break does occur, a second predetermined time interval must elapse, while the operator is repairing the break, before depression of the associated pushbutton on the machine will result in the recording of an additional count on a respective counter.

3,619,577
CLAPPER COUNTERWEIGHT

Ernest G. Hoffman, Hamden, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed May 21, 1969, Ser. No. 826,395
Int. Cl. G06m 1/10, 3/12
U.S. Cl. 235—92 C 7 Claims

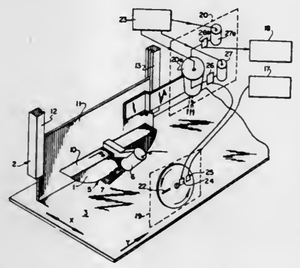


An electromagnetic counting device having a rotary counter, an electromagnet with a U-shaped core and a coil encircling one of the legs of the core, a one-piece pivotal armature mounted aside the ends of the core legs and functioning as a clapper for the electromagnet and a verge for indexing the counter in stepwise fashion upon momentary energization of the electromagnet, and an inertial member rotatable on the counter shaft and having a radial arm with a bifurcated end receiving an edge of the clapper which provides for rotating the inertial member back and forth in conjunction with the pivotal movement of the clapper.

3,619,578
INDICATING SURFACE DEPRESSIONS IN A MATERIAL

Paul George, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Sept. 22, 1969, Ser. No. 859,965
Int. Cl. G06m 3/02, 1/272
U.S. Cl. 235—92 V 4 Claims

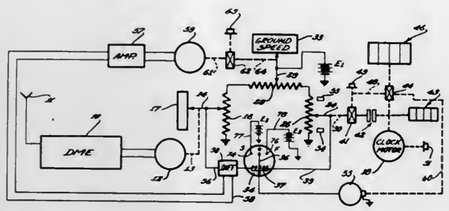


An apparatus for indicating the surface depression, for example, softwood veneer, wherein light from a microscope illuminator is directed between a straightedge and a surface of the veneer passing in sliding contact underneath the straightedge, a silicon diode detects light reflected above a predetermined intensity from underneath the straightedge as an indication that the depth of the depression is above a minimum, and an electronic counter counts the number of such depressions per unit length of veneer. A marker attached to the counter applies a black mark to the veneer whenever a predetermined number of such depressions is exceeded per unit length, and a further marker may be used to mark the veneer with a red dot at each unit length.

3,619,579
TIME OF ARRIVAL AND GROUND SPEED COMPUTER

Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed Oct. 28, 1969, Ser. No. 871,819
Int. Cl. G06g 7/78; G01s 9/44
U.S. Cl. 235—150.2 9 Claims

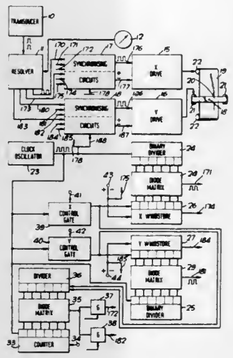


A computer for indicating ground speed and which receives input from distance measuring equipment and a clock and has an output which indicates if an indicated ground speed is high or low so that ground speed indicator may be adjusted to a correct value. A modification allows the estimated time of arrival to be indicated and a further modification includes a servo motor which is driven by any unbalance signals to indicate the correct ground speed.

3,619,580
NAVIGATION AIDS

Roy Thurston Swale, deceased, late of London, England, and Edwin Jack Barber, executor, Haslemere, England, assignors to Deca Limited, London, England

Filed Nov. 19, 1969, Ser. No. 878,070
Claims priority, application Great Britain, Dec. 3, 1968, 57,292/68
Int. Cl. G06f 15/50
U.S. Cl. 235—150.27 7 Claims

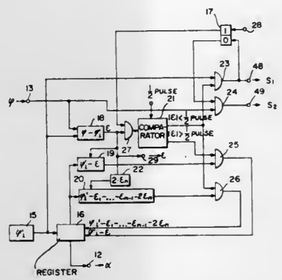


A navigational aid including a position display device driveable to indicate orthogonal position coordinates of an aircraft in response to received pulses from a resolver fed by a transducer that responds to air speed. For each coordinate direction a bidirectional counter stores an estimated component of wind velocity and controls by a diode matrix the feeding to drive means for the display of additional pulses at a rate proportional to the component of wind velocity. At the end of an elapsed time pulses are fed to the counters to correct the stored component of wind velocity and a number of pulses proportional to the product of the elapsed time and the correction to a respective counter is fed to the drive means for correcting each indicated coordinate. Thus the stored components of wind velocity are accurately adjusted automatically by correcting the indicated coordinates.

3,619,581
NUMERICAL CONTROL PULSE DISTRIBUTING SYSTEM FOR GENRATING AN APPROXIMATED PROFILE ON A WORKPIECE

Rokuro Kimura; Mikishi Kurimoto, and Tsuyoshi Koide, all of Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, by said Kimura and Toyoda Koki Kabushiki Kaisha, by said Kurimoto and said Koide

Filed July 14, 1969, Ser. No. 841,401
Int. Cl. G05b 19/18
U.S. Cl. 235—151.11 28 Claims

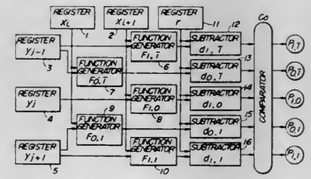


A pulse distributing system for generating an approximated profile on a workpiece by controlling the co-operational movements of the workpiece and a tool of a numerically controlled machine tool according to input data. Said system comprises computing means which may calculate one of each number-pair which represents a point used for pulse distribution and consists of pulse representation workpiece rotary angle and pulse representation distance between the axes of the workpiece and the tool when the other thereof is given. Another embodiment of the invention further comprises error checking means operable to maintain the error of approximation within allowable tolerance.

3,619,582
NUMERICAL CONTROL PULSE DISTRIBUTION METHODS

Takayoshi Iwamoto, Moriguchi-shi; Hiroaki Shiraki, Fuse-shi; Yoshitaka Nishimura, Neyagawa-shi, and Takuya Nasu, Hirakata-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 429,259, Feb. 1, 1965, now abandoned. This application May 23, 1968, Ser. No. 731,447
Claims priority, application Japan, Jan. 31, 1964, Jan. 31, 1964; 39/5124, 39/5125
Int. Cl. G06f 15/46; G06g 7/28
U.S. Cl. 235—152 11 Claims

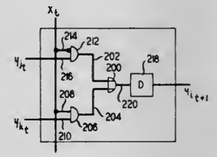


In a line tracing apparatus under the control of pulses distributed in at least one of the *X* and *Y* directions, a digital control pulse distribution method in which several possible points are imagined for transfer from a reference point. These points are compared with each other to discriminate the most approximate point among them. The next succeeding pulse is distributed based on the result of the discrimination.

3,619,583
MULTIPLE FUNCTION PROGRAMMABLE ARRAYS

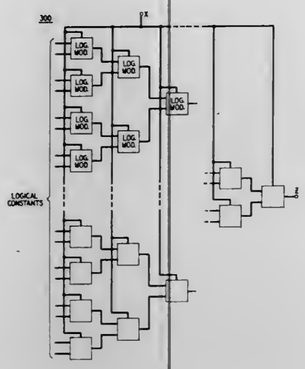
Thomas F. Arnold, Plainfield, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 11, 1968, Ser. No. 766,922
Int. Cl. G06f 1/02
U.S. Cl. 235—152 19 Claims



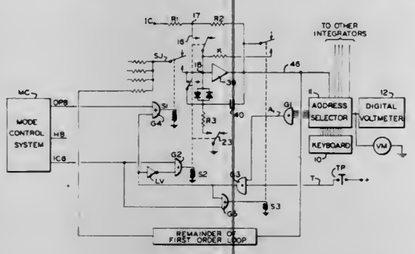
A circuit for generating an arbitrary sequential switching function includes an array comprising regularly intercon-

nected identical logic modules, each of which has a memory associated with it. Adaptations made at an edge of a two-dimensional construction of the array program the circuit to



generate a particular sequence of output signals in response to a sequence of input signals. Feedback paths may be included to increase the function-generating capability of the circuit.

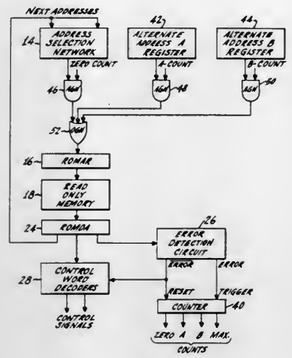
3,619,584
COMPUTER PROBLEM SETUP TESTING SYSTEM
Edward O. Gilbert, and Garnel F. Graber, both of Ann Arbor, Mich., assignors to Reliance Electric Company
Filed Oct. 13, 1969, Ser. No. 865,780
Int. Cl. G01r *15/00*; **G06g** *7/00*
U.S. Cl. 235—153 **10 Claims**



The method and apparatus for checking the connections and adjustments of an analog computer involves switching all integrators to a reset or initial condition mode, and then monitoring the output voltages of the integrators in succession. As the output voltage of a given integrator is monitored, the given integrator is connected to receive its integrand inputs and converted into a lag summer by connecting a resistor in parallel with the integrator capacitor, so that the output voltage changes from the initial condition value to a final steady-state value which may be precalculated. Observation of the change of the output voltage provides both static and dynamic testing. Since amplifier summing junction currents need not be monitored, the amplifier addressing structure may be much less expensive.

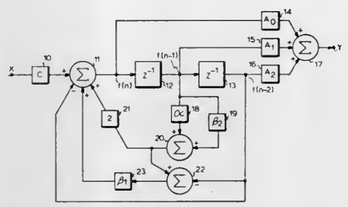
3,619,585
ERROR CONTROLLED AUTOMATIC REINTERROGATION OF MEMORY
Richard Harvey Edmondson, Cherry Hill, N.J., assignor to RCA Corporation
Filed Nov. 17, 1969, Ser. No. 877,237
Int. Cl. G11c *29/00*
U.S. Cl. 235—153 **10 Claims**

If an error is detected while reading data from a particular location in a memory, that same location is automatically read a given number of times. If an error does not occur during the reread cycles, the program continues and the succeeding memory locations are read in normal sequence. If an error still occurs in the data after the given number of reread cycles, however, a timer or counter automatically causes a



second memory location to be accessed. The latter can institute instructions for program recovery or for performing some other task such as causing a printout of the address at which the error occurred. The second location may also be preset to a given bit pattern so that if an error continues, the data read can be used to analyze the cause of error.

3,619,586
UNIVERSAL DIGITAL FILTER FOR LINEAR DISCRETE SYSTEMS
Marcian E. Hoff, Jr., Mountain View, and Patrick E. Mantey, San Jose, both of Calif., assignors to Research Corporation, New York, N.Y.
Filed Nov. 25, 1968, Ser. No. 778,643
Int. Cl. G06f *7/38, 1/02*
U.S. Cl. 235—156 **21 Claims**

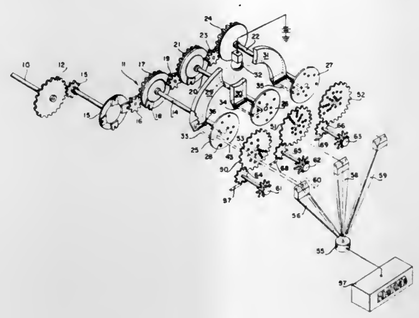


A second-order recursive digital filter is disclosed for use as a universal building block in which a first summing means is provided for cyclically computing the function $f(n)=$ band gain of the filter. The coefficients α and β_2 together determine the center frequency of the filter passband while the coefficient β_1 controls the bandwidth of the filter. The coefficient α is limited to the values +1, 0 and −1 in order that implementation of a multiplier for the coefficient β_2 may result in some cost savings. The product $\alpha f(n-1)$ is then added to the product $\beta_2 f(n-1)$. A second summing means is provided for cyclically computing the digital filter output in accordance with the following equation:

$Y(n)=A_0 f(n)+A_1 f(n-1)+A_2 f(n-2)$

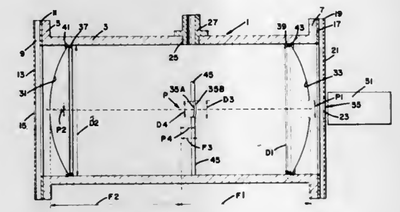
where A_0, A_1 and A_2 are coefficients which control the "zeroes" of the filter response, and are set equal to +1, 0 and −1 respectively for a narrow-band digital filter. The coefficient β_1 is set equal to zero for the filter to operate as an oscillator. A first order digital filter may be readily provided by modifying the first and second summing means to cyclically compute the functions $f(n)=(n)+(n-1)+aDf(n-1)$ and $Y(n)=A_0 f(n)+A_1 f(n-1)$, where D is a coefficient equivalent to $\alpha+\beta_2+1$.

3,619,587
RATE MULTIPLIER
Francis T. Chambers, III, Princeton, N.J., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 6, 1969, Ser. No. 874,828
Int. Cl. G06f *7/56*
U.S. Cl. 235—164 **27 Claims**



A rate multiplier wherein the multiplicand is a shaft rotation and the multiplier is typically a manually inserted value. One or more code wheels having coded apertures formed therein for the passage of radiant energy are coupled to an input shaft for rotation. In one form, stationary selector wheels with decode apertures formed therein representing different multiplier values are adjusted to index with desired apertures in the code wheels to produce a pulse train representing the product. In another form, a bank of photosensors detect the radiant energy passing the code wheel apertures, and the decoding function is performed by an electromechanical switching system which establishes the desired multiplier values.

3,619,588
HIGHLY COLLIMATED LIGHT BEAMS
Keith W. Chambers, Pinawa, Manitoba, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed Nov. 18, 1969, Ser. No. 877,752
Int. Cl. F21k *2/00*
U.S. Cl. 240—1 R **10 Claims**



This application discloses a light source consisting of a gas-filled pressure vessel to which light from a laser is admitted and focused to a point. Light emitted by the gas at the focal point is directed by a mirror system to an output pupil to provide a highly collimated light beam.

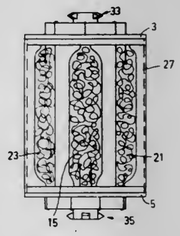
3,619,589
PHOTOGRAPHIC FLASHLAMP UNIT
Donald W. Hartman, Warrensville, Pa., assignor to GTE Sylvania Incorporated
Filed June 1, 1967, Ser. No. 642,954
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **3 Claims**

A flashcube in which the reflectors are of a thermoplastic material which will become distorted in the area around the



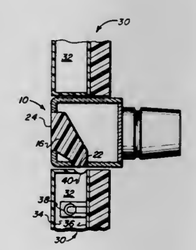
lamp by the heat from flashing to thereby provide ready recognition of a used lamp.

3,619,590
FLASHLAMP HOLDER
Charles Cornelis Edward Meulemans, and Cornelis Prijn, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 3, 1969, Ser. No. 813,153
Claims priority, application Netherlands, Apr. 4, 1968, 6804718
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **7 Claims**



A flashlamp holder for a plurality of flashlamps arranged in two series, with circuits and couplings for sequentially igniting the lamps in one series prior to igniting the lamps of the second series. Two separate couplings permit ignition of each series of flashlamps separately.

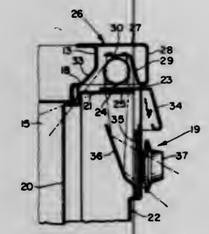
3,619,591
ILLUMINATED PUSHBUTTONS USING PIPED LIGHT
Victor E. Korski, Fort Worth, Tex., assignor to General Dynamics Corporation, Ft. Worth, Tex.
Filed Feb. 19, 1970, Ser. No. 12,762
Int. Cl. F21r *33/00*
U.S. Cl. 240—2 **2 Claims**



A pushbutton-type switch providing illuminated indication of position or mode through utilization of piped light energy the energy being that previously unused excess light which was contained within the opaque coating of a transilluminated unit upon which these pushbuttons are employed. Through controlled escape of this excess light energy and piping of same to the desired pushbutton or surface the

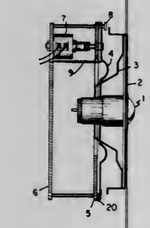
switch or pushbutton is self-illuminated, thus obviating any necessity for inclusion of supplemental lighting means.

3,619,592
WASHING MACHINE WITH ILLUMINATED INTERIOR
Robert M. Lamb, Jr., Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Filed Mar. 9, 1970, Ser. No. 17,471
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **3 Claims**



A washing appliance comprising a housing defining a washing chamber, a door hinged at the front of said housing, a trim member mounted on said housing above said door, illumination means mounted within said trim member, switch means electrically connected to said illumination means, means for actuating said switch and thus the illumination means in response to opening of the door, with the illumination means substantially fully illuminating the washing chamber in the open position of the door. The light may also illuminate the machine front with the door closed.

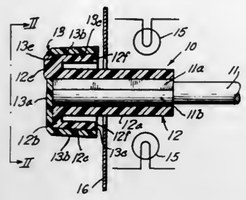
3,619,593
AUTOMOBILE HEADLIGHT COMPENSATOR
Arthur J. Hollis, Danvers, and Ronald Dana Cluett, Gloucester, both of Mass., assignors to Sylvania Electric Products, Inc.
Filed Apr. 14, 1969, Ser. No. 815,904
Int. Cl. B60q *1/10*
U.S. Cl. 240—7.1 LJ **1 Claim**



A pivotally mounted headlight is supported against a thermostatic bimetal pile. Upon the application of an electrical current to a resistance heater associated with the pile, the pile is activated and vertically deflects the headlight in a predetermined manner.

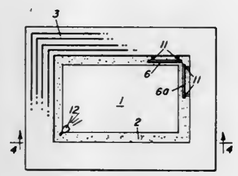
3,619,594
ILLUMINATED KNOB
Eugene S. Morez, River Grove, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed Jan. 30, 1970, Ser. No. 7,118
Int. Cl. E05b *17/10*
U.S. Cl. 240—2.13 **7 Claims**

A knob assembly for angular positioning of a rotatable control shaft comprising an outer opaque cap member having an eccentric aperture through a face portion thereof and an inner light transmitting sleeve member fitting within the cap and onto the control shaft. The sleeve member has an end projection protruding into the aperture so that light striking the sleeve member away from the end projection is transmitted through the sleeve member and is visible at the aperture on the cap face. The cap and sleeve members are rigidly attached to one another and the sleeve member end projection is angularly movable as part of the knob assembly to illu-



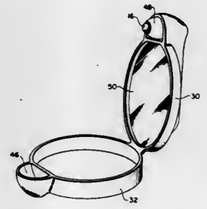
minatingly indicate relative control shaft position in dimly lit environments. Variously colored light-transmitting materials, such as acrylic resins comprise the sleeve member and variously colored or coated opaque materials, such as acrylonitrile-butadiene-styrene resins comprise the cap member.

3,619,595
INSTALLATION FOR THE ILLUMINATION OF PLAYING FIELDS
Richard A. Ott, Dotzheimer Landstr. 130, Wiesbaden-Frauenstein, Germany
Filed June 28, 1968, Ser. No. 741,100
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 **2 Claims**



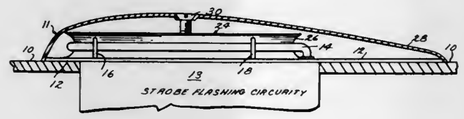
Illumination for a playing field is provided by a single source of artificial light supported at an elevated location at one side of the field. A portion of the light from the source is directed downwardly onto the entire surface of the field, and a portion of the light is reflected onto the field from a low-level substantially vertical reflector at the opposite side of the field.

3,619,596
ILLUMINATING COMPACT AND LIGHT SOURCE
Jack D. Jackson, 4102 Dauphine St., New Orleans, La.
Filed Jan. 29, 1970, Ser. No. 6,863
Int. Cl. A45d *42/10, 42/02*
U.S. Cl. 240—6.45 R **5 Claims**



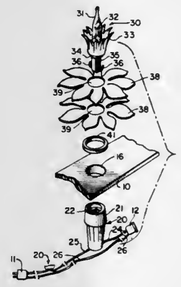
A battery and lamp are mounted externally on a compact and under an ornamental housing that may be integral with the top of the compact and with the end of the said lamp extending beyond the edge of the housing and the case, and an electric switch completing an electric circuit between the lamp and battery and mounted on said housing.

3,619,597
STREAMLINED GAS DISCHARGE ANTICOLLISION AIRCRAFT BEACON
Charles Adler, Jr., 1506 Sutton Pl. Apt., 1111 Park Ave., Baltimore, Md.
Filed Apr. 15, 1970, Ser. No. 28,908
Int. Cl. B64d *47/02*
U.S. Cl. 240—7.7 **3 Claims**



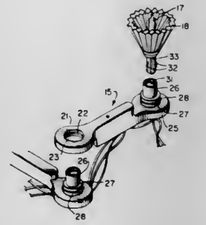
A streamlined gas discharge, anticollision aircraft beacon for high-speed aircraft which is adapted for mounting on an external portion of the aircraft and which includes an elongated concave trough reflector mounted adjacent to a gas discharge tube which can be excited to provide a stroboscopic light. The reflector and gas-discharge tube are mounted relative to each other so as to provide a light field of 360° in a horizontal plane and of at least 140° in a vertical direction. A tear drop or oval-shaped light transmitting cover over the reflector and discharge tube provides extremely low aerodynamic drag, particularly when utilized with high-speed aircraft. A second embodiment of the beacon provides a light field of at least 180° in the vertical direction.

3,619,598
DECORATIVE LIGHT ORNAMENTS
Merril Hermanson, New York, N.Y., assignor to Mr. Christmas, Incorporated, New York, N.Y.
Filed Feb. 27, 1969, Ser. No. 803,011
Int. Cl. A47g *33/16*
U.S. Cl. 240—10 T **5 Claims**



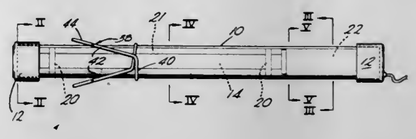
A decorative ornament formed with lights mounted on a shaped plastic holder having tapered holes therein with the socket press fitted from one side of the holder while the bulb is plugged in from the opposite side of the holder, in addition with the base portion of the bulb shaped to retain deflectors and washer as an aid for retaining socket and bulb in the holder.

3,619,599
DECORATIVE LIGHT SETS
Merril Hermanson, New York, N.Y., assignor to Mr. Christmas, Incorporated, New York, N.Y.
Filed Oct. 28, 1969, Ser. No. 871,818
Int. Cl. A47g *33/08*; **F21s** *7/00*
U.S. Cl. 240—10 R **14 Claims**



A hinged extensible multilight fixture having linking arms pivotally connected at their opposite ends with each linking member having a sleeve for receiving a lamp therein mounted on a base. The opposite end of the linking member has an end portion adapted to connect with the sleeve of the next pivotally attached linking member and with connecting wires between the terminals attached at each sleeve.

3,619,600
DIRECT CURRENT FLUORESCENT ILLUMINATING DEVICE
Roger L. Kryder, Fort Wayne, Ind., assignor to General Manufacturing, Inc., Fort Wayne, Ind.
Filed Apr. 9, 1969, Ser. No. 814,630
Int. Cl. F21l *3/00*
U.S. Cl. 240—11.4 R **4 Claims**

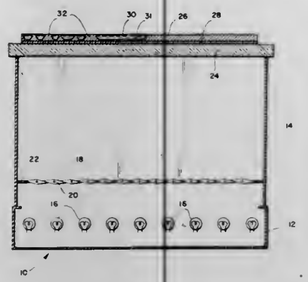


A portable illuminating device utilizing a fluorescent lamp tube adapted to be powered by direct current and particularly suitable for use with automobiles, boats, and the like. The device basically consists of a light-transmitting housing tube of synthetic material which houses the lamp, and a direct current oscillator circuit is located at one end of the housing tube wherein the overall configuration of the device is cylindrical as to be readily handled and stored. The components of the circuit are arranged and constructed to permit accommodation to the configuration of the housing tube. Additionally, a metallic reflector is disposed adjacent the lighting tube which functions as a circuit output conductor to minimize the voltage required to initiate an arc in the lamp.

3,619,601
METHOD AND APPARATUS FOR POSTERIOR PHOTOCURING
Donald Paul Gush, Hyattsville, and Forrest Ashton Wessells, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 735,588, June 10, 1968. This application Oct. 28, 1968, Ser. No. 771,099
Int. Cl. F21v *9/00, 11/04*; **G03b** *27/04*
U.S. Cl. 240—20 **11 Claims**

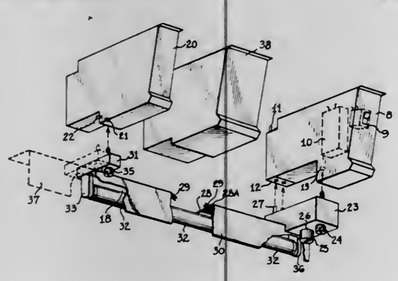
The disclosed invention is for an apparatus and improvements in a method of operating an apparatus for posterior photocuring a photocurable composition. The apparatus includes a housing having an actinic light source therein and

near one end is disposed a platform adapted to receive thereon a supported liquid photocurable composition which has been exposed to actinic light through an image bearing transparency and which is selectively insolubilized in the ex-



posed portions thereof. The invention is especially useful for posterior photocuring a selectively exposed lamination in preparing a developable printing plate from a liquid photocurable composition.

3,619,602
MODULAR LIGHTING FIXTURE
Leon G. Wilde, 3 Chandler Cir., Andover, Mass.
Continuation-in-part of application Ser. No. 707,084, Feb. 21, 1968, now Patent No. 3,497,281. This application Dec. 29, 1969, Ser. No. 888,677
Int. Cl. F21v *21/08*
U.S. Cl. 240—52.1 **6 Claims**



A modular lighting assembly including an elongated support member, a similarly elongated light directing shade and modular enclosures for supporting the ends of the support members. At least one of the modular enclosures contains the lamp ballast, switch elements and electrical connectors necessary to control the supply of electrical power to the lighting assembly. The assembly also has an elongated channel which carries the electrical wiring for interconnecting the end members of the lamp sockets. Alternatively, the lighting assembly may have several lamps arranged in end-to-end alignment.

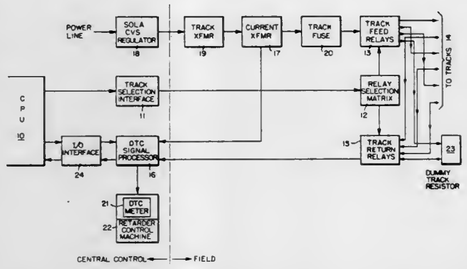
3,619,603
STREET-LIGHTING LUMINAIRE
Herbert A. Odle, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.
Continuation of application Ser. No. 581,579, Sept. 23, 1966, now abandoned. This application May 7, 1969, Ser. No. 824,743
Int. Cl. F21v *5/00*
U.S. Cl. 240—106 R **2 Claims**

A luminaire to be used in low mounted rail units. The luminaire has a refractor which directs light from a light source onto a road, and this refractor has a first area for lifting light toward a beam direction under the horizontal and includes a cutoff prism structure for limiting the lateral distribution of this light to approximately 60°. The refractor has a second area for transmitting light, with substantially no effect thereon, over a lateral distribution spread substantially through a 90° fan. The refractor also has a third area for



directing light above the horizontal and also having a cutoff prism structure for limiting the lateral spread of light to approximately 60°. With this construction, the light distribution will assist in three-dimensional delineation of automobiles on a highway.

3,619,604
DIGITAL DISTANCE TO COUPLING DETECTION
John H. Auer, Jr., Fairport, and Jerry P. Huffman, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,520
Int. Cl. B61l *25/02, 29/32*
U.S. Cl. 246—122 R **7 Claims**



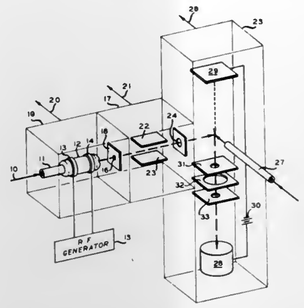
Apparatus for detecting the impedance of an electrically energized track circuit has been provided wherein a receiver coupled to the track circuit at a reference point is responsive to received energy from the track circuit and means coupled to the receiver provides direct current signals representative of current and voltage components of the received energy. The improvement of the present invention includes an interface responsive to initiatory signals and to the direct current signals for providing an output signal, the occurrence of which relative to the initiation of the interface means gives indication of track impedance with respect to time.

The present invention relates to apparatus for detecting and transmitting information relative to the impedance of an electrical system and particularly to apparatus for detecting the impedance characteristic of a railroad track circuit in order to determine the distance from a reference point to a shunt occasioned by the presence of a railroad vehicle.

3,619,605
MASS SPECTROMETER METHOD AND APPARATUS EMPLOYING HIGH ENERGY METASTABLE IONS TO GENERATE SAMPLE IONS
Charles F. Cook; Thomas W. Schmidt, and Jack P. Guillory, all of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed June 25, 1969, Ser. No. 836,444
Int. Cl. H01j *37/08;* **B01d** *59/44*
U.S. Cl. 250—41.9 **8 Claims**

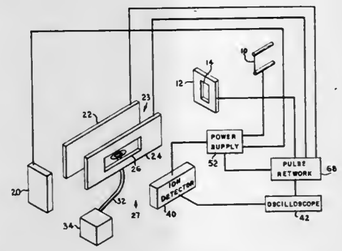
Metastable particles of high kinetic energy are produced by accelerating a stream of charged rare gas molecules, and contacting the accelerated stream of charged rare gas

molecules, thereby producing metastable high kinetic energy particles which are directed perpendicularly into contact



with a target beam of molecules moving at thermal velocities, the resulting ions being analyzed by a mass spectrometer.

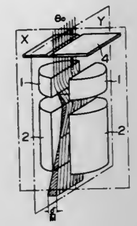
3,619,606
ION SOURCE FOR TIME-OF-FLIGHT MASS SPECTROMETER
William H. Shriner, Blanchester, Ohio, assignor to The Bendix Corporation
Filed Oct. 6, 1969, Ser. No. 863,880
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 TF **7 Claims**



A method and apparatus for eliminating unwanted signals (noise) at a mass spectrometer output by improving the formation of ions in a mass spectrometer with a pulse forming network which applies voltage pulses to the control electrode and the backing plate and accelerating electrode of the ionization region. The pulses are oriented in time so that voltages are approximately zero at the backing plate and accelerating electrode during the presence of voltage pulses at the control electrode which accelerate electrons into the ionization region. The magnitudes of the pulses applied to the backing plate and accelerating electrode are such that an electric field is periodically established therebetween to accelerate ions from the ionization region with the durations of the pulses oriented in time so that the electric field established by the pulses has a duration less than the duration of the negative voltage pulse applied to the backing plate.

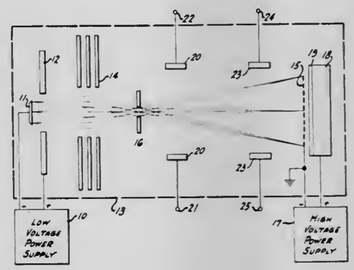
3,619,607
ELECTRON MICROSCOPE INCLUDING AN ELECTROMAGNETIC ELECTRON ENERGY ANALYZING LENS
Takeo Ichinokawa, Yurigaoka Danchi 35-304, No. 716 Takaishi, Kawasaki-shi, Kanagawa-ken, Japan
Continuation of application Ser. No. 708,851, Feb. 28, 1968, now abandoned. This application June 24, 1970, Ser. No. 49,575
Claims priority, application Japan, Mar. 30, 1967, 42/19534
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 A **4 Claims**

Apparatus for analyzing the energy of an electron beam in an electron microscope includes a cylindrical lens of the magnetic field type inserted additionally or in place of a conventional intermediate lens, and a slit member cooperating



with said cylindrical lens, said cylindrical lens being excited under preselected conditions.

3,619,608
MULTIPLE IMAGING CHARGED PARTICLE BEAM EXPOSURE SYSTEM
Eugene R. Westerberg, Menlo Park, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Aug. 4, 1969, Ser. No. 847,326
Int. Cl. H01j *37/12*
U.S. Cl. 250—49.5 C **7 Claims**



An electron source illuminates a pattern mask having a desired aperture pattern therein. Electrons passing through the pattern mask impinge upon a mesh screen. A high-voltage electrical source is connected between the mesh screen and an electron-sensitive resist coated substrate to produce a strong electrical field therebetween. Each hole in the mesh screen acts as an electron lens for producing an image of the pattern mask on the electron-sensitive resist, thus resulting in an array of exposed images on the electron-sensitive resist. Alternatively, an ion source may be used with an ion-sensitive resist coated substrate or ions may be implanted directly into a substrate.

3,619,609
CORONA DISCHARGE DEVICE FOR ELECTROPHOTOGRAPHY EMPLOYING INTERLEAVED DISCHARGE ELECTRODE ELEMENTS AND COUNTER ELECTRODE ELEMENTS
Shiro Uehara, Tokyo-to, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan
Filed Nov. 21, 1969, Ser. No. 878,788
Claims priority, application Japan, Nov. 25, 1968, 43/102602
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 GC **3 Claims**

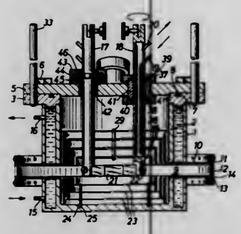
In a corona discharge device for electrophotography comprising a corona discharge electrode and a counter electrode for depositing electric charge on a photosensitive element upon which a light image is projected through the corona discharge device, both the corona discharge electrode and counter electrode are composed of parallel conductors which

are moved at high speed while the light image is being projected upon the photosensitive element through the corona



discharge device to eliminate the effect of the shadow thereof.

3,619,610
SAMPLE SUPPORTING MEANS FOR HIGH-TEMPERATURE X-RAY DIFFRACTOMETER
Constantin Politis, Hochstetten, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany
Filed May 8, 1969, Ser. No. 823,131
Claims priority, application Germany, May 8, 1968, P 17 73 377.6
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **5 Claims**



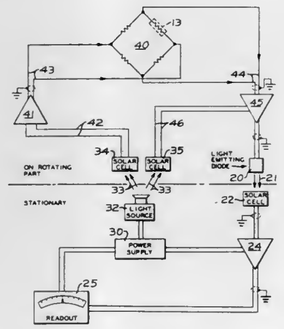
In a diffractometer where a sample carrier is in the form of a strip or wire spanned between two electrodes for resistance heating of the carrier, one of the electrodes is placed under a torsional bias to accommodate thermal expansion of the carrier by a winding of added length of carrier onto the torsionally biased electrode.

3,619,611
X-RAY FILM MARKER COMPRISING AN X-RAY FILTER AND RECESSED INDICES FILLED WITH X-RAY OPAQUE MATERIAL
Graham Hall, 21111 Dolores St., Sp. 125, Torrance, Calif.
Filed Nov. 12, 1969, Ser. No. 875,785
Int. Cl. G03b *41/16*
U.S. Cl. 250—67 **16 Claims**



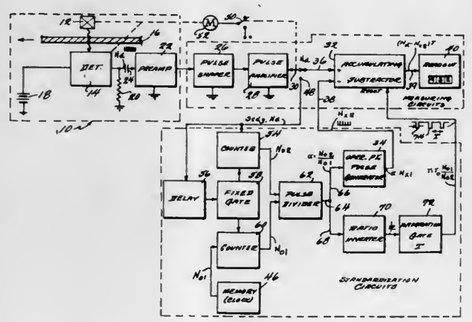
A marker positionable adjacent recording material and between the material and a source of X-ray radiation, the marker having a body of material relatively transparent to the radiation with a broad area depression in which recesses in the form of film identifying characters are provided. A metallic material relatively opaque to the X-ray radiation is disposed in the recesses and a cover plate of material relatively transparent to this radiation is disposed in the depression over the recesses, the plate having in an exposed surface thereof indentations corresponding to the aforementioned identifying characters.

3,619,612
MONITORING DEVICE FOR ROTATING SYSTEMS
William H. Belke, Peoria, and William E. Dearlove, Washington both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 19, 1969, Ser. No. 878,107
Int. Cl. H01j *39/12*
U.S. Cl. 250—83.3 H **7 Claims**



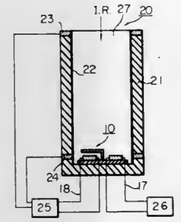
A system for measuring physical properties of rotating devices and transmitting the measurements from the rotating member to an unconnected stationary circuit by means of electromagnetic waves having a frequency above 3×10^{12}Hz.

3,619,613
DIGITAL MEASURING SYSTEM UTILIZED IN STANDARDIZING A NUCLEONIC MEASURING GAUGE
Henry R. Chope, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Continuation of application Ser. No. 559,128, June 21, 1966, now abandoned. This application Dec. 8, 1969, Ser. No. 883,247
Int. Cl. G01n *23/16*
U.S. Cl. 250—83.3 D **41 Claims**



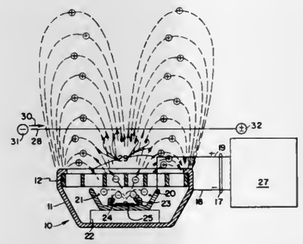
A system for measuring the basis weight per unit area using a nucleonic gauge with a digital measuring circuit for counting detector output pulses to obtain a digital indication of the instant measurement. The pulse-counting circuit operates to take the difference between the detector output pulses during a counting period and the pulses from and operating point or reference pulse generator. To effect standardization, any decrease in the detector output pulse rate is measured while the material is out of the radiation path and the reference pulse rate is decreased accordingly or the counting periods are increased inversely of that decrease, or both.

3,619,614
AN INFRARED INTENSITY DETECTOR
Eiso Yamaka, Osaka, Japan, assignor to Matsushita Electric Industrial Company Limited, Osaka, Japan
Filed Dec. 19, 1969, Ser. No. 886,573
Claims priority, application Japan, Dec. 25, 1968, 44/277
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H **2 Claims**



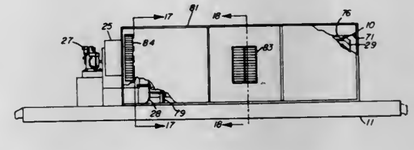
An infrared intensity detector having a pair of detector elements, one shielded from and the other exposed to an incoming infrared radiation, and a thermostatted black body reference source of a characteristic temperature. The detector elements are made of a semiconductor having a remarkable temperature dependence of resistivity within a limited temperature range around the characteristic temperature. The detector offers increased detection sensitivity and finds a wide variety of applications especially where it is intended to measure an object of relatively low temperature.

3,619,615
METHOD AND APPARATUS FOR CONTROLLING ELECTRIC CHARGES ON MOVING WEBS
Walter Y. Fish, Tucson, Ariz., assignor to Nucleonic Industries, Tucson, Ariz.
Filed June 16, 1969, Ser. No. 833,307
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 **28 Claims**



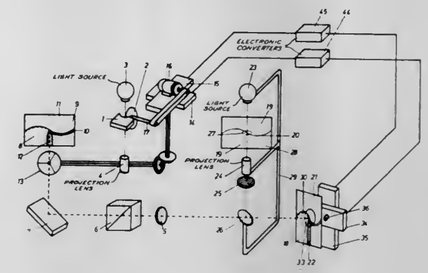
Ions of determinable polarity and concentration are applied to a material or member, such as a nonconductive moving web, to impart a resultant or residual charge, in a preferred embodiment a neutral charge. The resultant charge is continuously monitored and fed back to a power source and controller, which invert the polarity of the monitored charge and apply it to an ion emitter, preferably comprising a radioactive isotope. To obtain a predominance of selected ions for application to the member, an electrostatic field is created in the immediate vicinity of the ion emitter and the member. One pole of this field is within the emitter and the sign of this pole is made to correspond to that of the selected ions. Ions of the opposite, unselected, polarity are attracted to this pole and it repels the selected ions. The opposite pole of the field is so disposed in relation to the emitter and the member that the selected ions seeking this pole are directed into contact with and are captured by the member.

3,619,616
FORCED AIR COOLED RADIOACTIVE MATERIALS CONTAINER
Carrel W. Smith, San Jose, Calif., assignor to General Electric Company
Filed Jan. 24, 1969, Ser. No. 793,670
Int. Cl. G21f *5/00*
U.S. Cl. 250—108 **2 Claims**



An improved radioactive materials container system having a system of ducts and nozzles for efficient forced air cooling of a finned radioactive materials container.

3,619,617
PROJECTED IMAGE GRINDING MACHINE
Alfred Kolb, Haus am Tannenberg, Wertheim(Main), Germany
Filed July 23, 1969, Ser. No. 843,965
Claims priority, application Germany, July 26, 1968, P 17 52 859.5
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 **4 Claims**

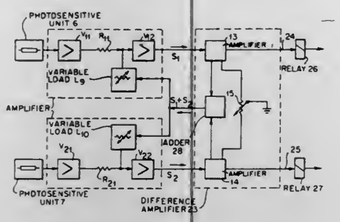


The tool of a grinding machine is guided by a color-sensitive photoelectric sensor which scans an image of the actual shape of a workpiece in one color superimposed on an image of the desired shape of the workpiece in another color complementary to said one color.

3,619,618
LASER SYSTEM FOR CONTROLLED GUIDANCE OF MOBILE MACHINE
Jurgen Thorn, Haar, and Horst Moritz, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 6, 1970, Ser. No. 17,174
Claims priority, application Germany, Mar. 17, 1970, P 19 13 398.3
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 **4 Claims**

A receiver affixed to a mobile machine comprises at least two spaced photosensitive units, positioned transversely to a reference plane formed by a flared modulated laser guide beam, on on each side of the reference plane. An initial amplifier having a variable load is connected to the photosensi-

tive units and a difference amplifier is connected to the amplifier. The difference amplifier varies the load of the initial

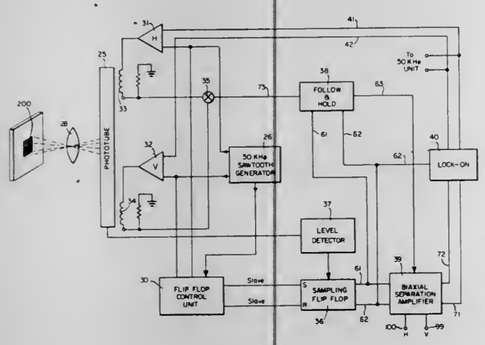


amplifier so that saturation of such amplifier is avoided at strong intensities of the laser beam.

3,619,619
AUTOMATIC BIAXIAL ELECTROOPTICAL DISPLACEMENT INDICATOR

John P. Skurla, Warminster, Pa., assignor to Physitech, Inc., Willow Grove, Pa.

Filed June 27, 1969, Ser. No. 837,243
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 CT **6 Claims**

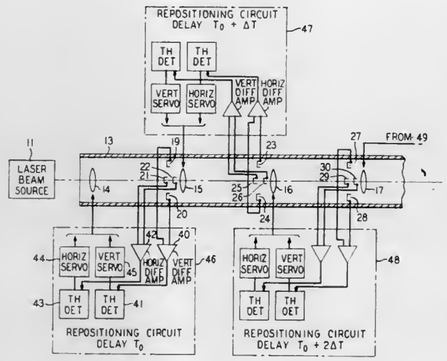


An apparatus is disclosed for simultaneously detecting and measuring biaxial displacement, as for example, vibration of a physical body, or angular rotation of a shaft. An image analyzer tube is employed which is focused on the optical discontinuities of a two-dimensional target placed on the body. For measurement of angular rotation, a mirror placed on the shaft reflects the image of the remotely placed target to the tube. Control circuitry causes the system to sweep the field of view until orthogonal optical discontinuities are detected, and then to lock onto and follow the location of the target. Deflection signals are applied alternately to the horizontal and vertical yokes of the tube to scan the image across the tube aperture at a rate which is high relative to the expected rate of vibration. The value of the deflection signal is measured at the instant the optical discontinuity crosses the aperture and from this sampled measurement of the deflection signal an information signal is derived which is indicative of the position of the image at that instant. The resulting signal, which carries combined information of both axial positions, is processed by a biaxial separation amplifier which yields two distinct signals representing the orthogonal movements.

3,619,620
OPTICAL GUIDING APPARATUS COMPRISING AN OPTICAL TRANSMISSION PATH AND CONTROLLERS HAVING DELAY TIMES THAT VARY IN A SELECTED SEQUENCE

Douglas H. Ring, Middletown Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 29, 1968, Ser. No. 756,274
Int. Cl. G01b *11/27*; **H01j** *39/12*
U.S. Cl. 250—208 **5 Claims**

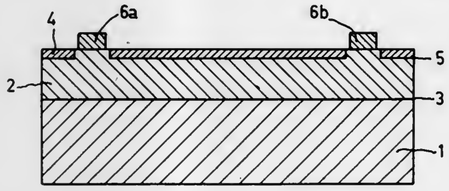


Coordinated control of light beam repositioning elements in an optical guiding apparatus is achieved by stepped controllers having delay times that increase in the downstream order. Such sequences of stepped controllers are separated by linear controllers that are relatively precise but few in number.

3,619,621
RADIATION DETECTORS HAVING LATERAL PHOTOVOLTAGE AND METHOD OF MANUFACTURING THE SAME

Gerard Maret, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1968, Ser. No. 775,781
Claims priority, application France, Nov. 14, 1967, 128112
Int. Cl. G01t *1/24*
U.S. Cl. 250—211 **7 Claims**

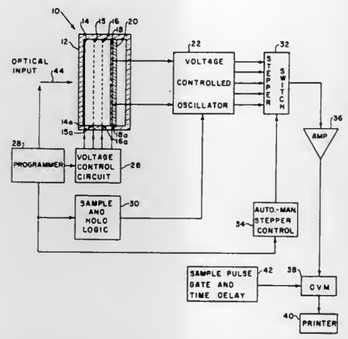


A radiation detector is described utilizing the lateral photovoltage effect. It comprises a semiconductor body having parallel to its major surface there zones alternating in conductivity type forming two PN-junctions, which become back biased during operation. The middle zone is accessible at a major surface and two contacts are made to it, with the result that the potential difference existing across these contacts is an indication of the point of impact of the incident radiation. The construction described of three zones forming two junctions offers the advantage of increasing the useful volume of the detector and increasing its sensitivity.

3,619,622
BRIGHTNESS DISTRIBUTION ELECTRON STORAGE TUBE

Harry O. Pfeiffer, North Canton, and Richard H. Wills, Tallmadge, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 10, 1969, Ser. No. 883,707
Int. Cl. H01j *39/12*
U.S. Cl. 250—213 VT **5 Claims**

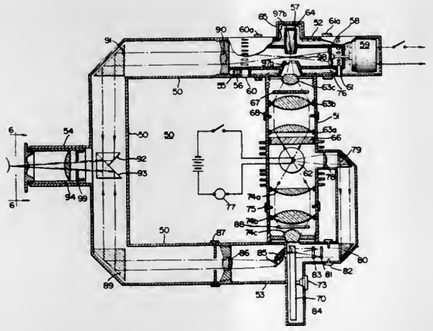


The tube of the invention is a device which is designed to perform the function of indicating the scene brightness distribution information of an input image in a graphic configuration by utilizing a storage grid in proximity focus to an anode and cathode and collector mesh so that deflection circuitry and coils are not necessary. A uniform flood is utilized to erase and project image information stored on the grid. Suitable logic control to effect sampling on a solid or segmented anode provide the readout characteristic desired.

3,619,623
EXAMINATION OF FLUID SUSPENSIONS OF PARTICULATED MATTER

Roy W. Huston, 21 James St., Winchester, Mass.

Filed Aug. 20, 1968, Ser. No. 753,920
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **9 Claims**

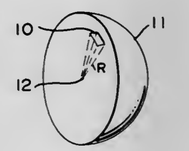


Apparatus for the examination of fluid suspensions of particulate matter includes means establishing a thermally stabilized region for containing a sample of the fluid to be examined, means for passing a beam of light into the region and means for viewing fluid in the region at an angle to the beam of light. The means defining the region may include thermal energy traps and may include thermal energy traps and may include parallel spaced members establishing a narrow thermally stabilized viewing region. The apparatus may include comparator means comprising graded reference standards which can be illuminated by an independent light source or by an independently adjustable beam from the light source which illuminates the viewing region. A photosensitive monitor, such as a photodetector cell, can be illuminated by light from the viewing region to provide a comparison with the reference standards of fluid suspensions of particulate matter.

3,619,624
INSTRUMENT FOR MEASUREMENT OF OPTICAL CHARACTERISTICS OF WATER

Glenn P. Sorenson, Woodside, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Jan. 10, 1969, Ser. No. 790,280
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **6 Claims**



Apparatus for determining underwater optical characteristics is disclosed. One is the absorption coefficient (a) using a small cosine detector of area A at a distance R from a small (quasi-point) source based on the equation:

$$P_d = P_0 \frac{Ae^{-aR}}{4\pi R^2}$$

where P_d is the radiant power incident upon the detector and P_0 is the radiant output of the source. Another is the backscattering coefficient (b) using either the same detector rotated 180° or a second detector based on the equation:

$P_{bZ} = P_0 e^{1mZ} b\, dZ$

where P_{bZ} is the radiant power of all backscattered light from a volume element dZ thick at radius Z, and a is the absorption coefficient. Allowance is made in determining b for the fact that a small cosine detector is employed of area A in accordance with the equation

$$P_D = bP_0 \frac{A}{4\pi R^2} e^{aR} \int_R^\infty e^{-2aZ}\left(1 - \sqrt{\frac{R^2}{Z^2}}\right) dZ$$

where P_D is the radiant power incident upon the detector. By using spectral filters in the detectors, coefficients a and b can be measured as functions of optical wavelength. The coefficient of total scattering s may be determined by measuring the coefficient of attenuation α and subtracting from it the absorption coefficient a.

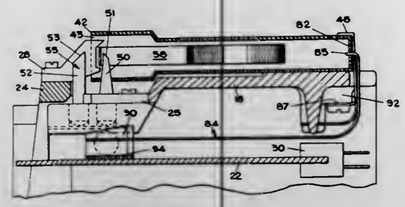
3,619,625
TAPE RECORDER APPARATUS WITH OPTICAL SENSING MEANS FOR TAPE CONTROL

Robert E. Wood, Ann Arbor, Mich., assignor to Sycor Inc., Ann Arbor, Mich.

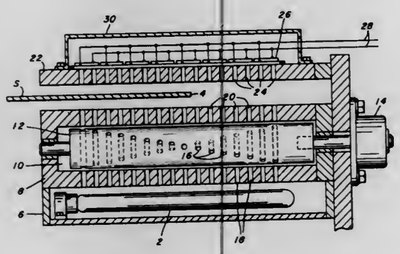
Filed Jan. 21, 1969, Ser. No. 792,281
Int. Cl. G11b *5/00*
U.S. Cl. 250—219 F **18 Claims**

A tape recorder/reproducer apparatus, generally including spindles for mounting recording tape reels and drive means for moving the tape from one reel to the other, and particularly including light sources and light sensors positioned immediately beneath the position of the tape and light guide means for directing the light from such source to that portion of tape positioned between the reels and back to one sensor, and also with light guide means for directing light from such

source to the tape wound on one of the reels and back to another such sensor, for extremely accurate, automatic recording and reproducing control functions with respect to tape position.



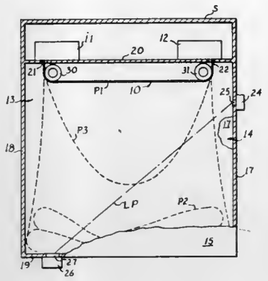
3,619,626
DIGITAL EDGE POSITION DETECTOR
Ralph G. Rudolph, Edgewood Borough, Pa., assignor to United States Steel Corporation
Filed Mar. 17, 1969, Ser. No. 807,543
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 WD **3 Claims**



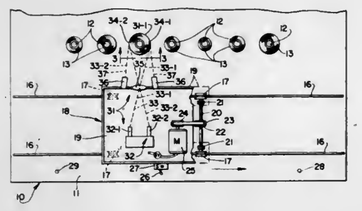
An edge position detector includes a sequencing cylinder positioned on one side of a moving strip. The cylinder is rotated around its longitudinal axis and has a plurality of spaced apart radial holes through it, arranged in a helical pattern. Light from a light source passes through the holes in the cylinder and matching collimating holes. Where the resultant light pulses are not obscured by the strip, they pass through another set of matching collimating holes and impinge upon a photoelectric cell. The light pulses are converted into electrical pulses and counted during a given angular rotation of the cylinder to indicate the position of the edge of the strip as the number of holes beyond the edge of the strip during the counting period.

3,619,627
RECORDING-REPRODUCING SYSTEM WITH PHOTOELECTRIC TAPE LOOP SENSING
Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.
Continuation-in-part of application Ser. No. 727,784, May 9, 1968, now abandoned. This application Aug. 18, 1969, Ser. No. 852,970
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 L **10 Claims**

What is disclosed is a tape control device for a recording-reproducing system in which a tape is pulled from a tape magazine by a tape driving device. The tape control device includes a radiation means for emitting energy to which the tape is opaque and a control means responsive to the energy from the radiation means for rendering the tape driving device inoperative when further operation of the tape driving device will cause tape breakage. The radiation means and the control means are positioned relative to each other so that in some positions of the tape within the tape magazine the tape is between the radiation means and the control means while in other positions of the tape within the tape magazine the tape is not between the radiation means and the control means.



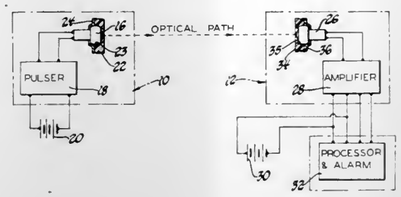
3,619,628
RADIATION SENSITIVE MEANS FOR INDICATING THE SIZE OF A PACKAGE BEING WOUND
William R. Whitney, Cranston, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation-in-part of application Ser. No. 671,918, Sept. 15, 1967, now abandoned. This application Nov. 18, 1969, Ser. No. 877,678
Int. Cl. G01b *7/12*
U.S. Cl. 250—219 S **8 Claims**



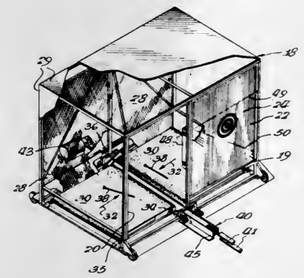
A machine for winding yarn packages and including a device for scanning a series of packages being wound on a spinning or twisting machine, or the like, and providing a signal for initiating doffing of full packages. A pair of sensing elements are responsive to signals from opposite portions of a full package for actuating a signal device to commence the doffing operation. These sensing elements are sensitive, one to the signals from each of opposite portions of the full package, and are connected so that only when both of the sensing elements are actuated is a circuit completed to the signal device which initiates doffing.

3,619,629
SECURITY SYSTEM
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.
Filed Apr. 30, 1969, Ser. No. 820,378
Int. Cl. G08b *13/00*
U.S. Cl. 250—221 **10 Claims**

An electrooptical intruder detection system including alignable emitting and detecting elements, such as semiconductor diodes. Each element is disposed in a holder member having a semispherical head portion which cooperates with a mounting plate and retainer member to provide the alignment function. In addition, the emitting element may be mounted in an adapter member which is axially adjustable relative to the holder member. Installation in an electrical outlet having various apertures for exposing the electrooptical element and permitting connection to external electrical devices is preferred.



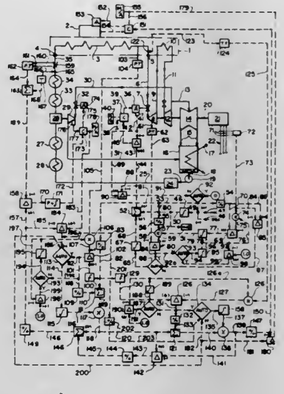
3,619,630
ARROW DETECTION SYSTEM EMPLOYING A SWEEPING LASER BEAM
David P. J. McLeod, and Patrick J. Murphy, both of Muskegon, Mich., assignors to Brunswick Corporation
Filed Feb. 14, 1969, Ser. No. 799,453
Int. Cl. G06m *7/00*; **G01p** *3/68*
U.S. Cl. 250—222 **13 Claims**



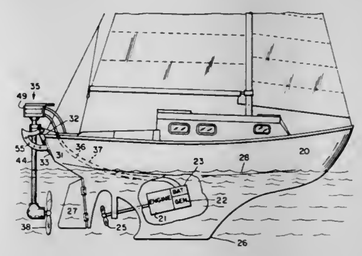
An automated archery range including a firing line from which arrows are shot toward a penetrable target, a backstop behind the target for stopping arrows, an arrow collector beneath the backstop, an arrow return conveyor for receiving arrows from the collector and returning them toward the firing line, and an arrow storage quiver adjacent the firing line for receiving arrows from the conveyor and storing the arrows in upright positions readily accessible to the archer.

3,619,631
TRACKING MEANS FOR A STEAM ELECTRIC GENERATING PLANT AUTOMATIC CONTROL SYSTEM
Charles Strohmeyer, Jr., Reading, Pa., assignor to Electrodyne Research Corporation, Reading, Pa.
Filed Aug. 21, 1970, Ser. No. 65,886
Int. Cl. G05b *7/00*
U.S. Cl. 290—40 R **6 Claims**

The invention provides a means for balancing a complex steam electric generating plant automatic control system when in the manual tracking mode before transfer to automatic. The tracking system utilizes the normal automatic integral functions to set demands for generation, governor valve position, feedwater flow and heat input to the steam generator equal to actual conditions prior to transfer. Thus, after transfer the system is immediately ready to perform its normal control functions without having to reposition normal working integrals from generation, pressure or temperature errors to satisfy unbalances internally within the system which existed at time of transfer.



3,619,632
OUTBOARD GENERATOR UNIT FOR SAILBOATS
Raymond A. Labombarde, Daniel Webster Hwy., Nashua, N.H.
Filed June 2, 1969, Ser. No. 829,240
Int. Cl. F03b *13/10*
U.S. Cl. 290—43 **9 Claims**

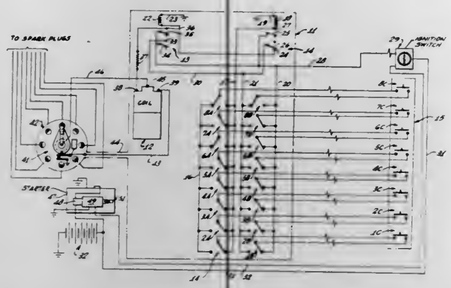


Power generating apparatus suitable for use on sailboats and the like comprising a relatively large propeller means used as a submerged prime mover and rotatably mounted on the lower end of a substantially vertical, tubular housing containing a drive shaft, a gear assembly for converting said rotary motion of said propeller into a substantially increased rate of revolution for driving an alternator or generator mounted proximate the other end of the shaft above water level. The alternator is used to charge a battery carried inboard the sailboat.

3,619,633
THEFT-DETERRENT IGNITION SYSTEM
Delbert L. Brandon, 4813 Beadle, Las Vegas, Nev.
Filed Jan. 19, 1970, Ser. No. 3,865
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 **17 Claims**

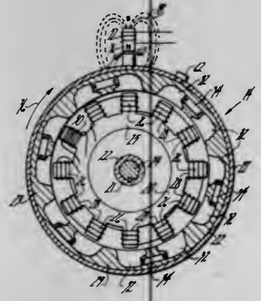
A theft-deterrent ignition system for automotive vehicles in which the ignition coil and pairs of coding switches are locked in an enclosing box with run and lockout relays, and in which the ignition coil is connected to the distributor through armor covering. The coding switches are interconnected through momentary contact switches which are grouped together in the vehicle to be readily accessible to the driver. The setting of the coding switches determines which of the momentary contact switches must be simultaneously

closed to secure closing of the run relay and energization of the ignition system. Closing of a momentary contact switch



other than a coded one closes the lockout relay and prevents closing of the run relay.

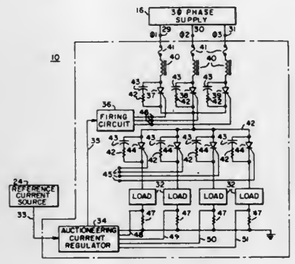
3,619,634
ALTERNATOR AND COMBINED BREAKERLESS IGNITION SYSTEM
Bob O. Burson, East Longmeadow, Mass., assignor to R. E. Phelan Company Inc., East Longmeadow, Mass.
Continuation of application Ser. No. 834,847, June 19, 1969, now abandoned, Original application Oct. 16, 1967, Ser. No. 675,429. Divided and this application July 10, 1970, Ser. No. 56,182
Int. Cl. F02p *3/06*
U.S. Cl. 307—10 R **9 Claims**



An alternator for use with an internal combustion engine includes a rotor having a plurality of generating magnets and a stator carrying a number of coils in which voltages are induced by the movement of the generating magnets therepast. One of these coils is used to charge the capacitor of an associated capacitor discharge ignition system for the engine, and triggering of the ignition system to control the discharge of the capacitor and firing of the associated spark plug is achieved by a trigger signal producing means including a magnet separate from the generating magnets, a trigger coil, and irregularities such as pins on the rotor for varying the flux of the trigger magnet through the trigger coil in response to rotation of the rotor.

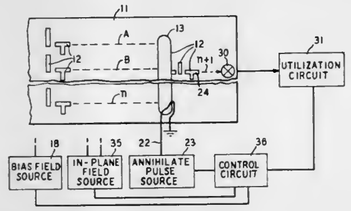
3,619,635
POWER REGULATION SYSTEM
Francis T. Thompson, Murrysville, and Andre Wavre, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 13, 1969, Ser. No. 798,912
Int. Cl. H02j *1/00*
U.S. Cl. 307—11 **22 Claims**

A system is disclosed for providing a desired energizing current, according to a reference current signal, to a load or group of load elements. Three-phase energizing current is rectified by a plurality of controlled switching devices such as thyristors, and means are provided for varying the firing angle of the thyristors in accordance with the reference current signal to regulate the resulting output voltage therefrom and thereby regulate the energizing current through the load. Digital transmission means are provided to transmit digital



signals in a high noise level environment. A plurality of error detecting circuits provide alarm signals in the event that the desired current is exceeded, maximum current is called for, or one of the power phases is missing, for more than predetermined time periods. Improved means are also provided for synchronizing asynchronous generators to provide a single three-phase power source.

3,619,636
MAGNETIC DOMAIN LOGIC CIRCUIT
Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 1, 1970, Ser. No. 42,333
Int. Cl. G11c *11/14*
U.S. Cl. 307—88 TF **7 Claims**

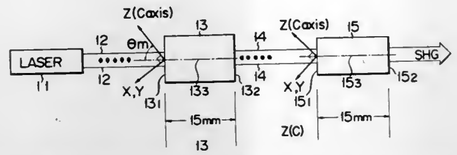


A multiple input magnetic domain OR circuit is described. The circuit is defined in a sheet of material in which single wall domains can be moved by changing magnetic pole patterns in a magnetically soft overlay. The overlay includes a common element which serves as a terminus for a number of domain shift registers. The element is structured to accept only a single domain for providing an output.

3,619,637
HARMONIC GENERATOR HAVING CASCADED CRYSTALS
Kenya Goto, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Nov. 19, 1969, Ser. No. 877,961
Claims priority, application Japan, Nov. 20, 1968, 43/84520
Int. Cl. H02m *5/16*
U.S. Cl. 307—88.3 **11 Claims**

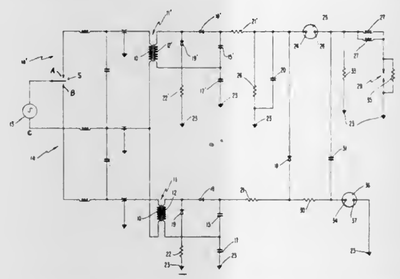
A harmonic generator comprises at least two nonlinear dielectric crystals of which the planes of incidence and exit are parallel to each other and controlled to match the phase of the electromagnetic waves inciding the plane of incidence prependicularly thereto with the phases of the harmonic wave. These crystals are disposed in cascade such that the

projections of the optical axes of the crystals upon their incidence planes intersect each other at right angles whereby



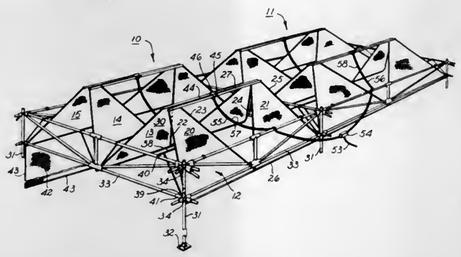
to generate approximately double the output harmonic waves at high efficiency irrespectively of the orientation of the plane of polarization of the incident light ray.

3,619,638
PULSE GENERATING APPARATUS
Earl M. Phinney, Oneonta, N.Y., assignor to The Bendix Corporation
Filed Sept. 25, 1969, Ser. No. 860,890
Int. Cl. H02m *3/18*
U.S. Cl. 307—106 **13 Claims**



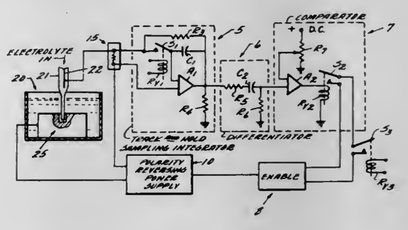
A condenser discharge type electrical pulse generating circuit, such as for a combustion engine ignition system, wherein two storage capacitors are charged in parallel to discharge across a relatively low-voltage trigger gap which connects the condensers in series to discharge across a higher voltage control gap and through a relatively low-voltage ignition gap which is connected in series with the control gap. The above circuit is disclosed herein as being used in combination with a second, alternatively employed ignition circuit which supplies higher energy pulses for short periods, as during the starting of the engine.

3,619,639
ANTENNA ARRAY AND METHOD FOR GENERATING A HIGH INTENSITY ELECTROMATIC PULSE
Jacob J. Gustincic, Los Angeles, Calif., assignor to Radyne, Inc., Chatsworth, Calif.
Filed Mar. 6, 1970, Ser. No. 17,148
Int. Cl. H01q *13/00, 21/00, 21/10*
U.S. Cl. 307—109 **12 Claims**



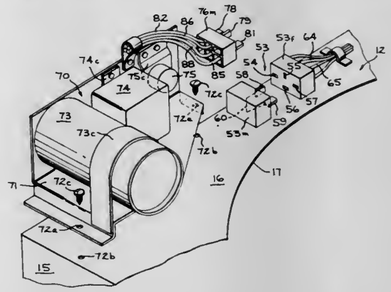
An apparatus and a method for providing a uniform, high intensity, transverse electromagnetic pulse for illuminating a large area, such as a zone 40 meters by 40 meters. An array of horn radiators constructed in modules and fed from parallel transmission lines. A pulse generator including a plurality of high voltage capacitors, a DC supply for charging the capacitors, and a switch for discharging the capacitors into corresponding transmission lines to provide voltage pulses at each horn, with the resulting electromagnetic pulses producing a composite electromagnetic pulse of total voltage many times the voltage of the supply.

3,619,640
STEM OVERCURRENT PROTECTION
Emmet Mitchell Fulkerson, Cincinnati, Ohio, assignor to General Electric Company
Filed June 6, 1968, Ser. No. 734,971
Int. Cl. H02h *3/08*
U.S. Cl. 307—131 **3 Claims**



A sensing circuit for use in an electrochemical machining apparatus for prevention of damage to said apparatus caused by a short circuit during the machining process wherein said sensing circuit includes a tracking and comparison circuit.

3,619,641
AUXILIARY STARTER DEVICE FOR AIR CONDITIONER COMPRESSOR
James L. Ballard, Tyler, Tex., assignor to General Electric Company
Filed July 29, 1970, Ser. No. 59,305
Int. Cl. H02j *1/00*
U.S. Cl. 307—149 **4 Claims**

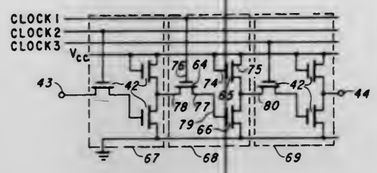


This invention is directed to a factory-assembled device which provides field installation personnel with accurate, quickly installed means for adding extra capacitance to the starting circuit of the electric motor for the fluid compressor of an air conditioner.

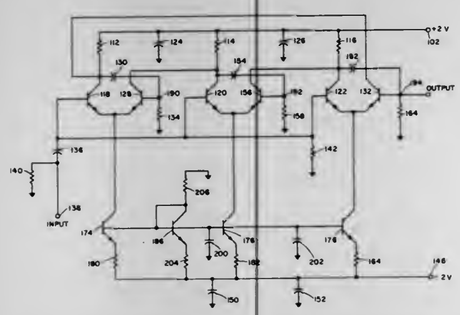
3,619,642
MULTIPHASE BINARY SHIFT REGISTER
Roger S. Dunn, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 12, 1969, Ser. No. 875,866
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 **8 Claims**

A high stability, binary data, multiphase shift register of at least three phases, stores and shifts "N" bits of binary infor-

mation in approximately $(N \times n)/(n-1)$ binary switches, where n is the number of phases utilized in the register, and N is the maximum number of bits capable of being stored in the shift register at all times during its operation. The binary switches are connected in series and each is then selectively connected to one of the n phases.



3,619,643
LOW-POWER HIGH-FREQUENCY DIVIDER
William Folsom Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed June 11, 1970, Ser. No. 45,433
Int. Cl. H03k *23/08*
U.S. Cl. 307—225 **6 Claims**



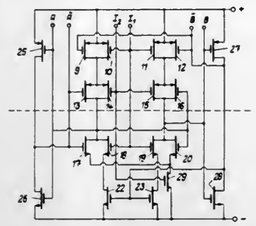
A frequency divider is disclosed in which six transistors are connected in three pairs, the collector of the second one of each pair of transistors is connected to the collector of the first transistor of another pair of transistors providing a ring-like configuration, while the collector of the first one of each pair is coupled via a capacitor to the base of the other one of that pair of transistors and the current through the emitters of each of the pairs is supplied from a constant current source. The resultant frequency divider when using good high-frequency low-current transistors requires power in the order of one-seventieth of the power required by known similar frequency dividers.

3,619,644
FREQUENCY DIVIDING CIRCUIT
Eric Andre Vittoz, Cernier, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland
Filed Oct. 14, 1970, Ser. No. 80,696
Claims priority, application Switzerland, Oct. 31, 1969, 16264/69
Int. Cl. H03k *21/06*
U.S. Cl. 307—225 **4 Claims**

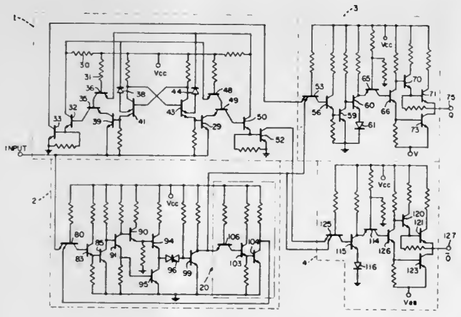
A frequency dividing circuit comprises at least one logic structure satisfying the Boolian relationships

$A=Bl_1+Al_2$ and $B=Bl_1+Al_2$

in which l_1 and l_2 are two complementary input quantities and A and B two output quantities. The logic structure comprises three pairs of field effect transistors each having a source, a drain and a gate, and two outputs each connected to the drains of the two transistors of the first pair and the second pair respectively. The sources of one transistor of the first pair and of one transistor of the second pair are separately connected to the drain of one of the transistors of the third pair, the sources of the two other transistors of the first and second pairs are connected together to the drain of a seventh transistor, and the sources of the two transistors of the third pair and of the seventh transistor are connected to a terminal of a voltage source.

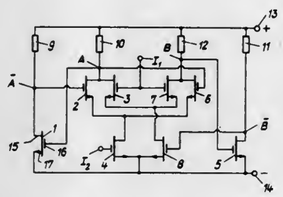


3,619,645
FREQUENCY DIVIDER
Anthony J. Chernoske, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Apr. 18, 1969, Ser. No. 817,349
Int. Cl. H03k *21/10*
U.S. Cl. 307—225 **7 Claims**



The disclosure is directed to an integratable and programmable frequency divider including a bistable, fixed period generator, a NAND circuit and an AND circuit interconnected so as to provide, among other things, an output of fixed and determinable pulse widths independent of frequency.

3,619,646
FREQUENCY DIVIDER CIRCUIT
Eric Andre Vittoz, Hauterive, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland
Filed Nov. 12, 1969, Ser. No. 875,680
Claims priority, application Switzerland, Nov. 11, 1968, 16,822/68
Int. Cl. H03k *21/00*
U.S. Cl. 307—225 **8 Claims**



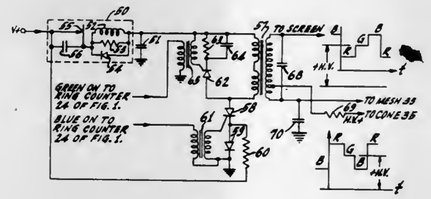
A frequency divider circuit including at least one logical structure complying with the Boole Relations:

$A=Bl_1+Al_2$ and $B=Bl_1+Al_2$

in which l_1 and l_2 are two complementary input quantities and A and B two output quantities.

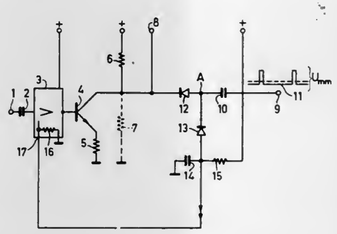
The logical structure comprises three pairs of field effect transistors, such as MOS-transistors having isolated gates. A cascade of binary frequency divider circuits can be made as an integrated circuit.

3,619,647
STAIRCASE VOLTAGE GENERATORS
William H. Barkow, Pennsauken, N.J., assignor to RCA Corporation
Filed Sept. 20, 1968, Ser. No. 761,199
Int. Cl. H03k *3/35, 4/02*
U.S. Cl. 307—227 **11 Claims**



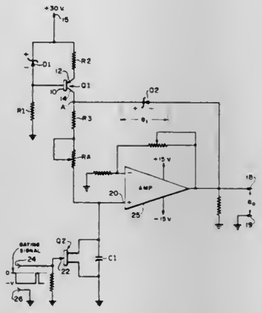
A multilever staircase generator employs a transformer having a core fabricated from a square loop magnetic material. The secondary winding of the transformer is shunted by a capacitor while the primary winding forms part of a controllable current loop, whose path is selected by activation of a suitable thyristor. During a first mode the secondary capacitor is charged to a stepped up, high-voltage level by causing a lower voltage to appear across the primary winding, after the activation of a first thyristor. A second mode occurs after the secondary capacitor transfers sufficient energy to saturate the secondary winding inductance and cause core switching; at which time the capacitor is charged to an opposite polarity. A third mode is provided by activating a second thyristor, which causes the secondary capacitor to transfer the energy stored thereby to a reactive impedance element located in the primary winding and switched into a suitable path by said thyristor activation.

3,619,648
CIRCUIT ARRANGEMENT FOR RESTORING THE DIRECT-CURRENT COMPONENT BY THE CONTROL OF A REFERENCE VALUE
Jorg Wolber, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,764
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **4 Claims**



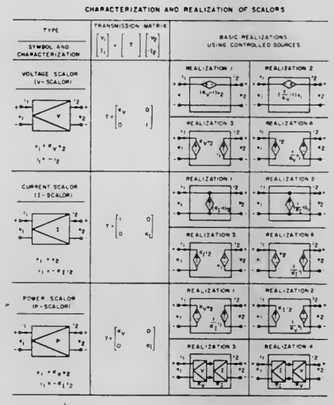
A clamping circuit for video signals features a DC amplifier having an output coupled to a diode to which a sampling signal is applied. Another diode is coupled to the first diode and to a control input of the amplifier to maintain constant clamping.

3,619,649
SLOW-SPEED BOOTSTRAP SWEEP CIRCUIT
Melvin R. Hoffman, New York, N.Y., assignor to The Western Union Telegraph Company, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,802
Int. Cl. H03k *4/24*
U.S. Cl. 307—228 **7 Claims**



A bootstrap sweep circuit generates slow-speed sweeps of approximately 150 milliseconds or longer, with ramps having good linearity and short recovery time. A transistor and two zener diodes are employed to generate a stable sweep voltage during the sweep cycle regardless of temperature variations. A square top gating pulse spaces the successive linear ramps which are sharply saw-toothed.

3,619,650
LINEAR ACTIVE TWO-PORT NETWORK FOR EXPANDING OR COMPRESSING CHARACTERISTIC CURVE OF TWO-TERMINAL DEVICE
Leon O. Chua, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed May 27, 1968, Ser. No. 732,185
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **12 Claims**

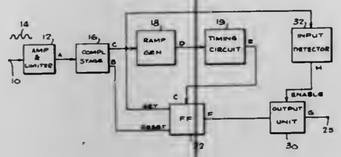


A linear active two-port network element for synthesizing nonlinear network components with arbitrarily prescribed characteristics. The elements, by themselves or in combination, can be utilized for a variety of applications, and are particularly useful in integrated circuit technology. The element included herein is the Scalor. The Scalor expands or compresses the characteristic curve of any two-terminal device along a predetermined axis or axes without altering the shape of the curve.

3,619,651
DIGITAL FREQUENCY DISCRIMINATOR

Richard A. Aldrich, Sunnyvale, Calif., assignor to Anderson Jacobson, Inc., Mountain View, Calif.

Filed Nov. 7, 1969, Ser. No. 874,763
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **10 Claims**

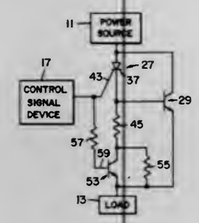


A digital frequency discriminator providing an output of a first level when the frequency of an input signal is above a known frequency, while providing an output of a second level when the input signal frequency is below the known frequency. The discriminator provides two complementary square waves with frequencies corresponding to the input signal frequencies. The two square waves are supplied to set and reset a flip-flop which is clocked by clock pulses, produced by a timing circuit, which is activated by a ramp voltage generator. The latter controls the timing circuit to provide each clock pulse a fixed period after the start of each input signal cycle, the period being equal to one-half the period of one cycle at the known frequency. Added circuitry may be included to control the digital output to be provided only if the input signal is of not less than a minimum frequency.

3,619,652
MOTOR CONTROL DEVICE

Hugh M. Ogle, Palo Alto, Calif., assignor to Integrated Motorcontrol, Inc.

Filed Mar. 10, 1969, Ser. No. 805,665
Int. Cl. H03k *17/04, 17/10, 17/72*
U.S. Cl. 307—252 N **1 Claim**

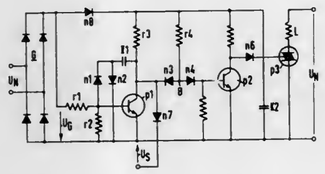


A motor control device employing a low-power silicon-controlled rectifier in parallel with a power transistor. The silicon-controlled rectifier initially conducts current from the power source to the load and then triggers the power transistor so that they together conduct the power to the load with the power transistor handling most of the current. The power transistor is turned on by the voltage across a resistor, on a capacitive or inductive reactance element in series with a silicon-controlled rectifier. In another embodiment a diode is used in series with the base of the power transistor and an external pulse is used to back bias the diode to turn off the circuit. In a further embodiment a low-power transistor is used in series with the silicon-controlled rectifier wherein the circuit is turned off by turning off the low-power transistor.

3,619,653
PULSE GENERATOR FOR PRODUCING A SYNCHRONOUS PULSE SEQUENCE WITH ALTERNATING VOLTAGE OF ADJUSTABLE PHASE ANGLE

Herbert Poppinger, and Manfred Liska, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 29, 1969, Ser. No. 845,722
Claims priority, application Germany, Aug. 1, 1968, P 17 63 751.3
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **8 Claims**

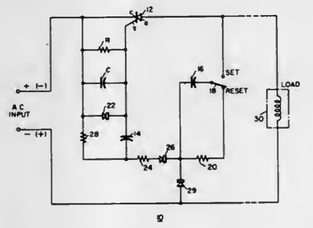


A pulse generator comprises a circuit arrangement including first and second transistors, five diodes, a capacitor and a plurality of resistors. The pulse generator produces a synchronous pulse sequence with alternating voltage and adjustable phase angle and drives a Triac. The Triac is connected through a load to a source of alternating voltage.

3,619,654
CONTROLLED AC PULSE CIRCUIT

Edward W. Nichols, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1969, Ser. No. 848,658
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 UA **7 Claims**



The invention is an AC switching circuit comprising a potential source, a controlled conduction means having a control electrode and a control bias circuit for gating the controlled conduction means to a conductive state during a single half cycle of the AC potential.

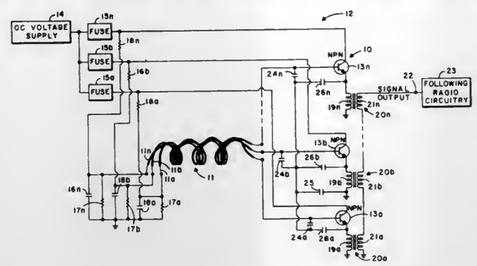
3,619,655
NOISE PARALLELED SIGNAL SERIESED MULTISTAGED AMPLIFIER

Paul M. Cunningham, Richardson, Tex., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Dec. 19, 1969, Ser. No. 886,505
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **7 Claims**

A noise paralleled signal seriesed multistaged amplifier with a plurality of transistors each with an antenna sensed AC signal connection to the base as a control element input and with this including a DC bias connection through an individual antenna wire conductor and with these antenna wires insulated mutually from each other. Each transistor includes a collector connection to a voltage supply, and an emitter follower connection through an individual transformer primary coil to ground. The transformer secondary coils are connected in series in a signal output circuit to, in

combination, provide the desired device noise paralleled and signal seriesed result for an optimized system signal to noise

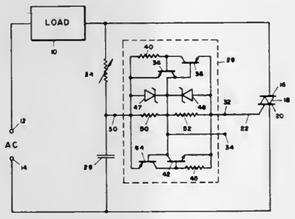


ratio in the output from an H-vector loop VLF-LF antenna to amplifier system.

3,619,656
BILATERAL VOLTAGE RESPONSIVE SWITCH

Douglas C. Domke, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 27, 1970, Ser. No. 15,050
Int. Cl. H03r *17/56;* **G05f**
U.S. Cl. 307—255 **4 Claims**

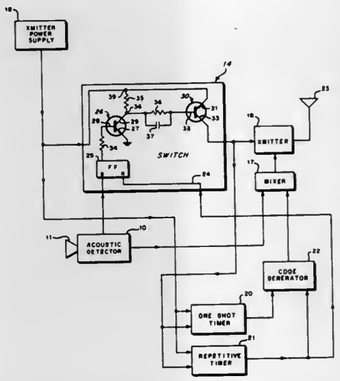


An improvement is disclosed for a known bilateral voltage responsive switch comprising a pair of high resistors connected across the voltage responsive terminals thereof.

3,619,657
POWER CONTROL SWITCH

Henry Naubereit, Brown's Mill, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 710,702, Feb. 27, 1968.
Filed Apr. 2, 1969, Ser. No. 812,936
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **1 Claim**

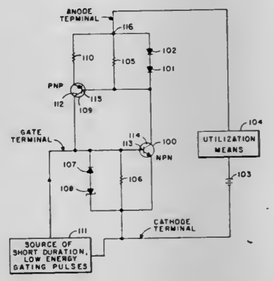


A switching network inhibiting the flow of current from a power supply to a load until the receipt of an actuating signal at the set terminal of a flip-flop within the switching network. The flow of current continues until the actuating signal is removed, an inhibiting signal is received at the reset terminal of the flip-flop and a predetermined fixed period of time has lapsed after receipt of the inhibiting signal.

3,619,658
GATE CONTROLLED SWITCH EMPLOYING TRANSISTORS

Ralph A. Prunty, Anamosa, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed June 17, 1969, Ser. No. 833,984
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **2 Claims**

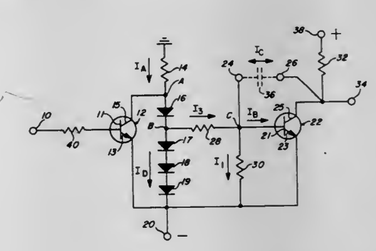


A power transistor is connected in series with diode means, DC source means, and utilization means, with the diode means having its forward impedance presented to current flow through the transistor. A control transistor is connected in series with a current limiting resistor, said DC source and said utilization means. The collector of each transistor is connected to the base of the other to form a feedback loop. Said diode means is connected to provide a constant voltage across the series arrangement of the resistor and the emitter-base electrode circuit of the control transistor, thereby limiting the current through the control transistor. A pulse of proper polarity applied to the collector of the control transistor will divert the collector current thereof from the base of the power transistor, thereby interrupting the feedback loop and turning off the circuit. A pulse of opposite polarity will turn on the circuit.

3,619,659
INTEGRATOR AMPLIFIER CIRCUIT WITH VOLTAGE REGULATION AND TEMPERATURE COMPENSATION

Bernard H. Meyer, Scottsdale, Ariz., and Robert R. Greenwood, North Syracuse, N.Y., assignors to Honeywell Information Systems Inc.

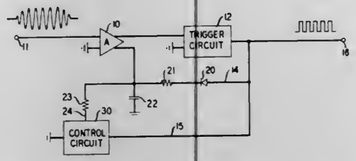
Filed Dec. 2, 1969, Ser. No. 881,562
Int. Cl. H03k *5/12*
U.S. Cl. 307—263 **4 Claims**



An integrator amplifier circuit for producing signal pulses of a trapezoidal shape having leading and trailing edges with constant rise and fall slopes during variations in operating potentials supplied to the circuit and equal rise and fall slopes during ambient temperature variations. The circuit is suitable for fabrication by integrated circuit technology and

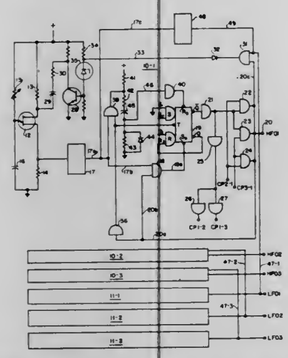
for use in a bipolar transmitter which derives bipolar signals from monopolar signals. Controlled input current flow from a switched voltage regulator and a component configuration designed to balance ambient temperature effects provide for constant and equal rise and fall times, respectively.

3,619,660
AUTOMATIC GAIN CONTROL UTILIZING CONTROLLED SAMPLING
John James Rugo, Middletown, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.
Filed Apr. 14, 1970, Ser. No. 28,441
Int. Cl. H03k *1/14*; **H03g** *3/30, 3/20*
U.S. Cl. 307—264 **9 Claims**



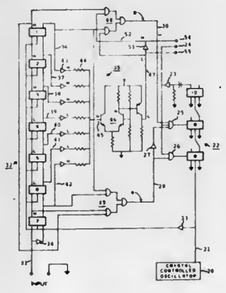
Automatic gain control for burst signals is achieved by converting a burst signal into a pulsating signal having a duty cycle proportional to the amplitude of the burst signal, and by integrating the pulse signal to obtain a direct current control voltage. To prevent unwanted variations in the control voltage during no-signal intervals, adjustment of the control voltage amplitude takes place on a cycle-by-cycle basis of the burst signal by providing a discharge path for the integrator circuit for a predetermined interval only after each pulse of the pulsating signal.

3,619,661
MULTICHANNEL CONTROL CIRCUIT
Luther C. Butler, Jr., Garden Grove, Calif.; Thomas W. Grasmehr, Costa Mesa, Calif., and Robert S. Jamieson, assignors to Lorain Products Corporation, Lorain, Ohio
Filed Feb. 5, 1970, Ser. No. 8,877
Int. Cl. H03h *17/26*
U.S. Cl. 307—269 **16 Claims**



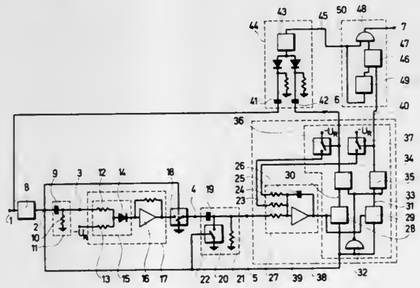
A control signal generating circuit for producing a plurality of phase-coordinated trains of pulses despite any single failure in the control signal generating circuitry. A plurality of control signals are generated by respective channels of signal generating circuitry in accordance with timing signals from respective timing signal generating circuits. Delay circuitry within each timing signal generating circuit prevents any one of such generating circuits from producing a timing signal until a majority of the timing signal generating circuits are ready to produce their respective timing signals, at which time simultaneous timing signals are caused to appear at the outputs of all timing signal generating circuits. Synchronizing circuitry within each timing signal generating circuit causes the latter to assume an operative state in conformity with the operative states of the majority of the timing signal generating circuits, this conforming activity occurring simultaneously in all timing signal generating circuits when the latter produce their respective timing signals. A plurality of signal generators each adapted to produce a plurality of respective outputs normally operate under the control of respective timing signal generating circuits but such control can be overridden to cause each signal generator to assume an operative state in conformity with the operative state of a majority of the signal generators. A plurality of mixing circuits combine corresponding outputs from the different signal generators and provide a plurality of control signals at a plurality of respective output terminals as long as a majority of the outputs of each type from the signal generators are in phase.

3,619,662
DATA RECEIVER AND SYNCHRONIZING SYSTEM
Francis J. E. Vachon, Hull, Quebec, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Nov. 23, 1970, Ser. No. 91,650
Int. Cl. H03l *17/00*
U.S. Cl. 307—269 **7 Claims**



Pulse synchronizing apparatus for non-return-to-zero data signals using a counter driven by a crystal controlled oscillator. The counter output is phase-locked to incoming data signals by enabling various feedback gates to alter the total count. The data signal is sampled and stored in a shift register. A logic circuit determines the binary number represented by the majority of the samples. A comparator responsive to the first and last samples and a comparator responsive to the first sample and the majority sample value determine which counter gates should be enabled to achieve synchronization.

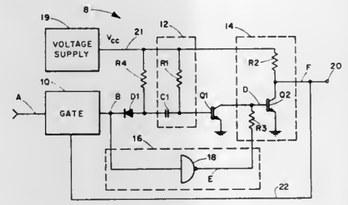
3,619,663
LINEARITY ERROR COMPENSATION CIRCUIT
Kalman Molnar, Budapest, Hungary, assignor to Merestechnikai Kozponti Kutato Laboratorium, Budapest V, Hungary
Filed May 15, 1970, Ser. No. 37,807
Claims priority, application Hungary, May 15, 1969, ME 1072
Int. Cl. H03k *1/10*
U.S. Cl. 307—271 **9 Claims**



The linearity error compensation circuit for a meter converter includes a monostable multivibrator for receiving an

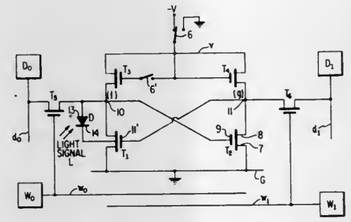
output frequency signal from the meter converter which varies in response to a function being metered. The multivibrator controls a switch which passes either a reference input to a function transformer or a level regulator which are connected between a voltage blocking circuit connected to the multivibrator output and a voltage-frequency converter. The output of the voltage-frequency converter is connected to an arithmetic unit which is also connected to the output of the meter converter.

3,619,664
MONOSTABLE MULTIVIBRATOR CIRCUIT EMPLOYING A FEED FORWARD CIRCUIT
Albert H. Ashley, Holliston, Mass., assignor to GTE Sylvania Incorporated
Filed Nov. 4, 1969, Ser. No. 873,797
Int. Cl. H03k *3/284*
U.S. Cl. 307—273 **11 Claims**



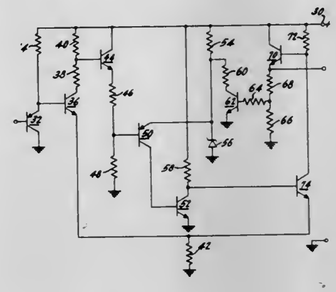
An improved monostable circuit employs a first gating circuit which, in response to an input trigger signal, activates the timing cycle of a timing circuit. A buffer output circuit supplies a second input signal to the first gating circuit to render the monostable circuit nonresponsive to another input trigger circuit until the timing circuit has completed the timing cycle. A feed forward circuit is connected between the output of the first gating circuit and the buffer output circuit to prevent false triggering of the monostable circuit due to noise signals on the circuit power supplies.

3,619,665
OPTICALLY SETTABLE FLIP-FLOP
Walter Frank Kosonocky, Skillman, N.J., assignor to R.C.A. Corporation
Filed Oct. 15, 1969, Ser. No. 866,565
Int. Cl. H03k *3/26*
U.S. Cl. 307—279 **5 Claims**



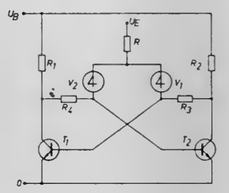
An electrically and optically settable flip-flop is disclosed which includes, in integrated circuit form, an MOS flip-flop memory cell including first and second cross-coupled transistors coupled through respective third and fourth load transistors to a source of potential. A photodiode is connected from the cross connection between the output of said first transistor and the input of said second transistor to the substrate, whereby the photodiode is charged substantially to the source potential when the flip-flop is in its reset state with the first transistor cut off and the second transistor conductive. Interruption of the coupling of potential to the first transistor isolates the photodiode. Light energy directed to the photodiode renders it conductive to reduce the voltage at the input of the second transistor until its output turns on the first transistor, whereby the flip-flop is set. Restoring the coupling of bias potential to the first transistor causes the existing electrical state of the flip-flop to be maintained.

3,619,666
TRIGGER CIRCUITS HAVING UNIFORM TRIGGERING VOLTAGES
Adel Abdel Aziz Ahmed, Somerville, and Mark Berwyn Knight, North Caldwell, both of N.J., assignors to RCA Corporation
Filed May 16, 1969, Ser. No. 825,193
Int. Cl. H03k *3/15*
U.S. Cl. 307—290 **8 Claims**



A trigger circuit is disclosed of a type which can be constructed using integrated, semiconductor chip technology and which includes a thresholding circuit arranged to fix the triggering voltages thereof, whereby a large number of trigger circuits having uniform triggering voltages from chip-to-chip may be produced.

3,619,667
BISTABLE MULTIVIBRATOR
Albrecht Gerlach, Emmendingen, Germany, assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 30, 1970, Ser. No. 23,644
Claims priority, application Germany, Apr. 17, 1969, P 19 19 540.5
Int. Cl. H03k *3/26*
U.S. Cl. 307—291 **3 Claims**

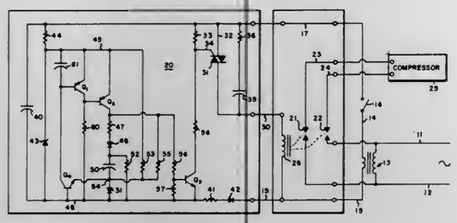


A bistable multivibrator in which the base of first and second transistors are coupled to the collectors of said second and first transistors respectively. One terminal of first and second elements exhibiting thyratron characteristics are coupled to the base of the respective first and second transistors. The other terminal of said first and second elements are coupled to a control voltage.

3,619,668
MINIMUM OFF-TIME CIRCUIT
Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 27, 1970, Ser. No. 67,445
Int. Cl. H03k *17/26, 17/28*
U.S. Cl. 307—293 **8 Claims**

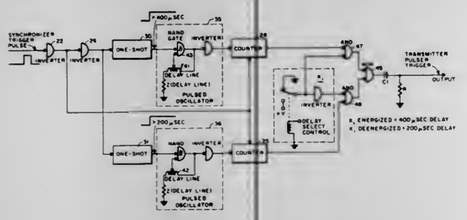
An alternating current contactor or relay which can be used for control of equipment such as refrigeration compressors is disclosed with a minimum off-time control. The minimum off-time control includes a resistor-capacitor tim-

ing circuit which charges initially from a power source through a transistor, and this is held in a charged condition while the current continues to flow through the transistor to energize a solid-state switch which energizes the contactor.



In the event that a momentary interruption of power occurs, or in the event that power is removed, the capacitor starts to slowly discharge activating a second transistor circuit that shorts out the first transistor so that the output switch cannot be reenergized for some minimum period of time.

3,619,669
PULSED DIGITAL DELAY
Richard D. Wheeler, Norco, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 20, 1970, Ser. No. 39,953
Int. Cl. H03k 17/28
U.S. Cl. 307—293 **4 Claims**

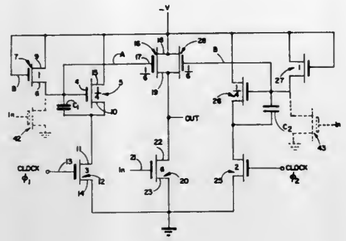


A pulsed digital delay circuit using a pair of pulsed oscillators for generating extremely accurate, jitter free, continuously adjustable delay for pulse-timing circuits, and which can be synchronized with other system-timing pulses.

The invention herein described may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

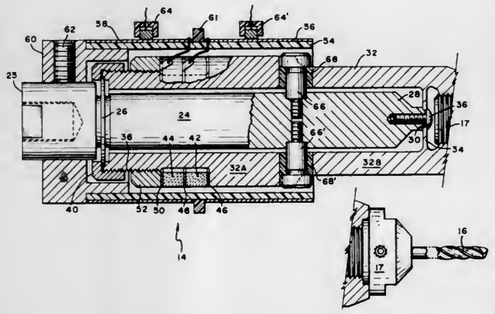
3,619,670
ELIMINATION OF HIGH VALUED "P" RESISTORS FROM MOS LSI CIRCUITS
Gary L. Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed Nov. 13, 1969, Ser. No. 876,513
Int. Cl. H03k 3/26
U.S. Cl. 307—304 **8 Claims**

The circuit of the invention is capable of maintaining a static output, the level of which is at least as great as the circuit's potential supply. The circuit is comprised of complementary transistorized bootstrap circuits each of which uses a storage capacitor between the output of the transistorized bootstrap circuit and the gate of the output transistor of the bootstrap circuit, to temporarily maintain the output from each bootstrap circuit at the potential supply. Clocking means are provided to overlap the outputs from each bootstrap circuit so as to maintain the component's output at the level of the potential supply. Gating means are provided for



logically switching the output between a reference potential such as ground and the potential supply.

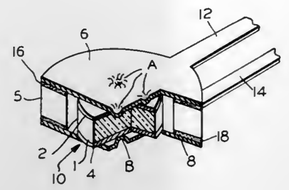
3,619,671
TRANSDUCER FOR ULTRASONIC MACHINE TOOL
Andrew Shoh, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Dec. 29, 1969, Ser. No. 888,468
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 **16 Claims**



An ultrasonic transducer for machine tool purposes comprises two elongated coaxially disposed members coupled to each other with one of the members being adapted to oscillate as a half-wavelength resonator at the predetermined frequency, typically 20 kHz. The transducer is designed to be coupled to a drill of conventional design and when so coupled causes a tool bit to rotate while undergoing axial oscillation at the predetermined frequency.

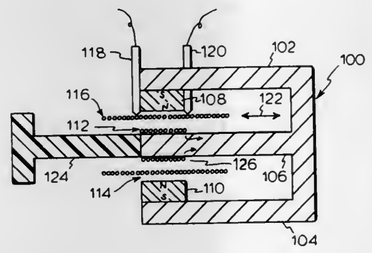
3,619,672
PIEZOELECTRIC CERAMIC RESONATOR AND MOUNTING
Takashi Nagata, Ikeda; Michio Ishibashi, Suita, and Yasuo Nakajima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Continuation of application Ser. No. 711,292, Mar. 7, 1968, now abandoned. This application Sept. 11, 1970, Ser. No. 71,367
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 **5 Claims**

A ceramic resonator and mounting comprising a ceramic resonator having electrodes on both flat major opposite surfaces thereof, and a pair of cover plates of elasto-conductive material, each of which has an electric terminal and at least one contact means. Said resonator is supported between said contact means of said pair of cover members so as to be subjected to contact pressure by said contact means. An insulating spacer surrounds the periphery of said resonator and



securely joins said pair of cover members to each other so as to form a housing around said resonator.

3,619,673
MOVING COIL LINEAR MOTOR
Clifford J. Helms, Calabasas Park, Calif., assignor to Data Products Corporation, Woodland Hills, Calif.
Continuation-in-part of application Ser. No. 704,291, Feb. 9, 1968, now Patent No. 3,505,599. This application Apr. 7, 1970, Ser. No. 26,330
Int. Cl. H02k 41/02
U.S. Cl. 310—13 **5 Claims**

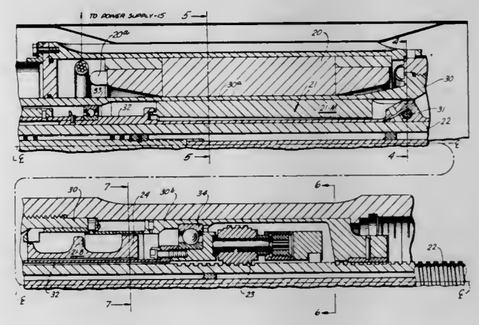


A linear motor capable of providing a reasonably long stroke and rapid acceleration. The motor is comprised of a core structure defining an airgap around a central leg. Means are provided for developing a substantially uniform magnetic field through the gap. A substantially rigid drive coil structure is concentrically disposed around the central leg with the turns thereof threading the gap. The coil is mounted for reciprocal movement along the central leg in response to a propelling force developed on the coil by driving a current therethrough. In order to minimize inductance, a bucking coil is also wound around the central leg and connected in series opposition to the movable drive coil.

3,619,674
ROTATING ELECTRIC MACHINE WITH DIRECTLY LIQUID-COOLED STATOR WINDING
Bror Daimo; John Franked; Hans Landhult, and Birger Nordberg, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Oct. 23, 1969, Ser. No. 868,741
Claims priority, application Sweden, Oct. 28, 1968, 14526/68
Int. Cl. H02k 9/00
U.S. Cl. 310—54 **7 Claims**

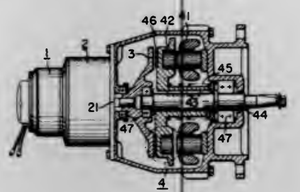
A stator core with a directly liquid-cooled stator winding has a plurality of slits axially spaced along it perpendicular to the axis. Each slit contains a plurality of cooling blocks arranged together to extend around the periphery of the core. A substantially annular cooling tube is arranged in grooves in the blocks extending substantially tangentially, and is clamped in these grooves.

3,619,675
CONTROL ROD DRIVE MECHANISM
Silveus M. Baker, Tustin, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed June 16, 1969, Ser. No. 833,377
Int. Cl. H02k 7/12
U.S. Cl. 310—80 **7 Claims**



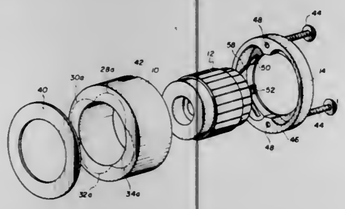
A control rod drive mechanism for positioning a control rod in a nuclear reactor. The control rod having a part length poison portion for positioning in the reactor core. The mechanism coacting with a pressure housing and including an energizable stator mounted on the outside of the pressure housing and a rotor responsive to the stator mounted on the inside of the pressure housing for positioning a control rod. A rotor tube is movably mounted with a translating leadscrew and positioned within the rotor to be rotatably responsive to the magnetic field coupled thereto from the stator. The part length control rod is connected to the leadscrew and movable therewith. The rotor carries a nut assembly for engagement with the leadscrew to cause the leadscrew to be responsive to the rotations of the rotor and thereby the positioning of the control rod. The rotor is constructed of two pivoted segments adapted to pivot in opposite directions in response to the energization and deenergization of the stator for providing an unlocking and locking action of the rotor by moving one of the segments against the pressure housing to effect the braking action of the rotor and effective for preventing translation of the leadscrew.

3,619,676
DUPLEX SERVOMOTOR
Hiroshi Kawakami, and Juichi Tatsumi, both of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Yahata-ku, Kitakyushu-shi, Fukuoka-ken, Japan
Filed Mar. 24, 1970, Ser. No. 22,215
Int. Cl. H02k 7/20
U.S. Cl. 310—112 6 Claims



A duplex servomotor suitable for use in machine tools requiring automatic position control, feed control and the like, and other applications, which comprises a constant speed AC motor adapted to be coupled with a load to drive said load and a low-inertia DC servomotor adapted to be coupled with said load through speed reduction means and clutch means. The AC motor and DC motor are combined and arranged as a compact unit in a machine frame so that high-speed operation and low-speed operation can be independently transmitted to the load according to requirement.

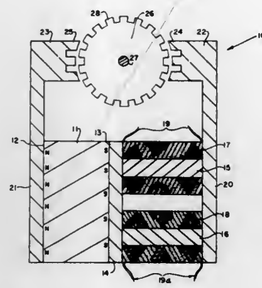
3,619,677
TORQUER WITH MULTIPOLE PERMANENT MAGNET PRODUCED FROM A METAL RING
William Hargreaves, Jenkintown, Pa., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Mar. 19, 1969, Ser. No. 808,485
Int. Cl. H02k 21/26
U.S. Cl. 310—154 2 Claims



A torquer includes a cylindrical stator, a cylindrical rotor designed to rotate within the stator and a brush block ring assembly disposed over the rotor and alongside the stator, the stator is made by first magnetizing the stator with a magnetizing fixture so as to form poles in the stator solely by using the fixture. Usually four poles are so formed but more can also be formed. A ring-shaped keeper is mounted alongside the stator on the side opposite the brush block assembly side of the stator. The stator and the other components can then be shipped unassembled in this manner with the keeper alongside the stator. When assembled, the keeper is removed and the stator retains its magnetism.

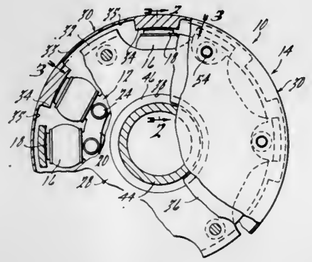
3,619,678
DUAL OUTPUT AC TRANSDUCER
Edgar J. Ruof, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 22, 1970, Ser. No. 4,934
Int. Cl. H02k 21/38
U.S. Cl. 310—155 4 Claims

The transducer includes a permanent magnet with opposite poles on a pair of opposite face surfaces thereof, a pair of inductive coil assemblies operatively positioned with corresponding ends thereof adjacent one of the magnet poles, a rotatable magnetic disc with a plurality of uniformly spaced teeth thereon, and elongate pole pieces operatively engaging the remaining pole of the magnet and the other ends of the coil assemblies. The pole pieces are positioned in opposed



relation with the magnetic disc therebetween and have uniform, circumferentially equally spaced teeth thereon corresponding to teeth on the magnetic disc to induce electrical pulses in the coil assemblies with rotation of the magnetic disc.

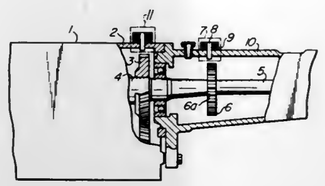
3,619,679
GENERATOR STRUCTURE
Thomas F. Carmichael, Drayton Plains, Miss., assignor to Syncro Corporation, Oxford, Mich.
Filed Apr. 10, 1970, Ser. No. 27,270
Int. Cl. H02k 17/00
U.S. Cl. 310—159 10 Claims



A generator having a pair of armature bodies with interdigitating fingers on each of the armature bodies defining magnetic poles of opposite polarity with one of the armature bodies being a preexisting rotary member such as a flywheel and with the other armature body being a separate fabricated member nested in the one member and with the fingers of each extending in the same axial direction.

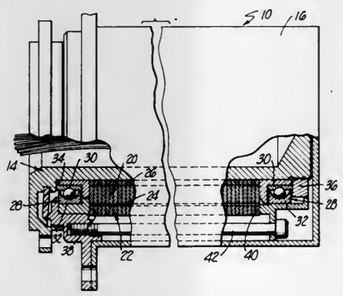
3,619,680
DEVICE FOR DETECTING THE WHEEL SPEED OF AN AUTOMOBILE
Atutoshi Okamoto, Toyohashi, Japan, assignor to Nippondenso Kabushiki Kaisha Kariya-shi, Aichi-ken, Japan
Filed Feb. 26, 1970, Ser. No. 14,564
Claims priority, application Japan, Mar. 26, 1969, 44/26910
Int. Cl. H02k 19/24
U.S. Cl. 310—168 3 Claims

A device for detecting the wheel speed of an automobile including a rotary disc of magnetic material having projections in the periphery thereof and attached to a transmission shaft in combination with a pulse signal generator having a magnet and a coil wound around the magnet. The pulse signal generator is mounted on the housing of an extension



adjacent the rotary disc so that the rotation of the rotary disc produces a high-voltage level pulse signal proportional in number to the wheel speed.

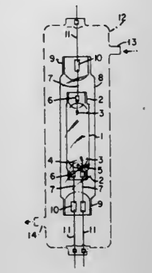
3,619,681
ROTARY SEAL AND ROTARY ELECTRICAL COUPLING EMBODYING SAME
Frank Ginkel, and Ernst Richard Ginkel, both of 502 West Comstock Ave., Glendora, Calif.
Filed June 1, 1970, Ser. No. 41,794
Int. Cl. H01r 39/08
U.S. Cl. 310—232 12 Claims



A rotary seal assembly having relatively rotatable inner and outer members and a number of sheet thin, laterally resilient, radially inner and outer sealing discs surrounding the inner member within an annular clearance space between the members. The inner and outer discs are secured and sealed to the inner and outer members, respectively, and have radially overlapping circumferential portions which bear yieldably against one another to form a fluid seal between the members. A viscous slipring construction embodying the rotary seal assembly.

3,619,682
ARC DISCHARGE LAMP INCLUDING MEANS FOR COOLING ENVELOPE SURROUNDING AN ARC TUBE
John M. Lo, Newton; Warren Calvin Gungle, Danvers, and John F. Waymouth, Marblehead, all of Mass., assignors to Sylvania Electric Products Inc.
Filed Apr. 1, 1969, Ser. No. 811,990
Int. Cl. H01j 61/18, 61/52
U.S. Cl. 313—22 10 Claims

The arc tube of an arc discharge device is closely surrounded by, but spaced from, an optically transmissive envelope. The space between the tube and the envelope is filled with a transparent, inert, heat-transfer fluid. Forced cooling of the exterior envelope wall permits the arc tube to be

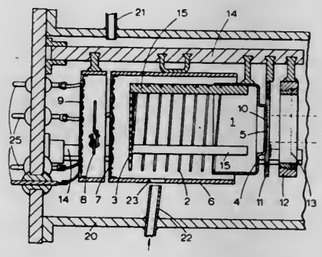


operated at a substantially uniform wall temperature, at a high efficiency and high-wall loading.

3,619,683
ARC TUBES
Robert Frederick Weston, and Kenneth Frederick Furmidge, both of London, England, assignors to British Lighting Industries Limited, London, England
Filed May 23, 1969, Ser. No. 827,287
Int. Cl. H01j 61/52
U.S. Cl. 313—47 3 Claims

A high-pressure mercury vapor lamp with a fused silica pinch sealed arc tube containing metallic additions in halide form is provided with ceramic screens mounted on the pinch seals to cover parts of the envelope of the tube behind the electrodes to reduce the heat loss from these parts.

3,619,684
ION SOURCE
Derek Andrew, Charlwood; Lawrence Graham Pittaway, Crawley, and Thomas Chrisholm, Crawley, all of England, assignors to U.S. Philips Corporation
Filed Apr. 23, 1970, Ser. No. 31,147
Claims priority, application Great Britain, Apr. 28, 1969, 21453-69
Int. Cl. H05h 1/00
U.S. Cl. 313—63 4 Claims



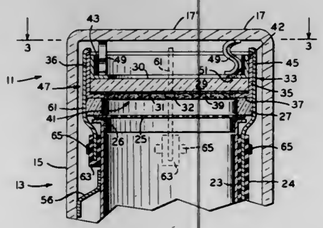
A nonmagnetic, electron impact ion source comprising an evacuated envelope having means for passing ionizing gases

through the envelope. Within the envelope, an electron emitting cathode is positioned adjacent a grid-shaped ionization chamber. A conducting wall section of the ionization chamber that is impenetrable to ions has an ion exiting aperture, which is adjacent to a grid-shaped electrode for extracting ions. The extracting electrode is positioned at a distance of a few tenths of a mm. from the ion exiting aperture, and kept at a small negative voltage not exceeding 5 volts relative to the ionization chamber. An acceleration electrode adjacent to the extracting electrode forms ions from the ionization chamber into beams. A screen grid placed between the extracting and acceleration electrodes prevents the high negative voltage of the acceleration electrode from affecting the electric field within the ionization chamber.

3,619,685
PHOTOCONDUCTIVE PICKUP TUBE WITH UNITIZED ELECTRODE STRUCTURE HAVING THE PHOTOCONDUCTIVE TARGET ELECTRODE SPACED FROM THE TUBE FACEPLATE

John J. Miller, Seneca Falls, and Carl W. Penird, Waterloo, both of N.Y.

Filed Feb. 16, 1970, Ser. No. 11,616
Int. Cl. H01j *1/18, 1/92, 19/46, 31/26*
U.S. Cl. 313—65 A **9 Claims**

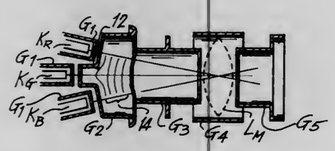


A photoconductive pickup tube utilizes a one-piece envelope, with a closed-end faceplate portion, wherein a unitized mount structure is positioned. The integrated mount includes a beam forming portion with a mesh electrode oriented relative to the frontal end thereof. The unitized array continues whereof a target substrate, having a photoconductive target electrode formed thereon, is insulatively spaced from the mesh electrode. Resilient means are terminally employed to space the target substrate from the interior surface of the envelope faceplate, and a connective means for the target electrode is extended in an insulated manner along the mount to emerge from the base portion of the envelope.

3,619,686
COLOR CATHODE-RAY TUBE WITH IN-LINE PLURAL ELECTRON SOURCES AND CENTRAL SECTION OF COMMON GRID PROTRUDING TOWARD CENTRAL SOURCE

Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,211
Claims priority, application Japan, Mar. 7, 1969, 44/17321
Int. Cl. H01j *29/50, 31/20, 29/32*
U.S. Cl. 313—70 C **3 Claims**

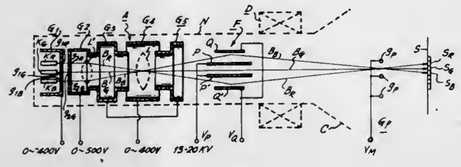


In a cathode-ray tube of the single-gun, plural-beam type in which the plurality of beams are made to intersect each other substantially at the optical center of a main focusing lens, a beam-generating assembly is provided in which the respective beams are generated at suitable distances from the main focusing lens to correct for any disparity in the focusing effects imparted to the respective beams by the main focusing lens and any auxiliary lens and thereby to cause the beams to be precisely focused on the screen.

3,619,687
COLOR TV TUBE HAVING CURVED CONVERGENCE DEFLECTION PLATES

Senri Miyaoka, Kanagawa-ken, and Minoru Morio, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1969, Ser. No. 813,827
Claims priority, application Japan, Apr. 14, 1968, 43/24592
Int. Cl. H01j *29/72, 31/20*
U.S. Cl. 313—78 **4 Claims**

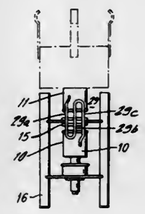


In a color picture tube of the single-gun, plural-beam type in which a central beam and two side beams originate in a common plane and are all made to pass through the center of an electron lens for focusing the beams on the color screen with the central beam emerging from the lens along the optical axis of the latter and the side beams emerging from the lens along paths that are oppositely divergent from the axis, the divergent side beams are acted upon by an electrostatic convergence deflecting device constituted by pairs of spaced plates arranged along the divergent paths and having voltages applied thereacross to produce electric fields by which the divergent side beams passing therethrough are deflected to converge at a common spot with the central beam on the apertured grill or mask associated fields the screen, and a main deflection yoke produces magnetic fields in the direction of the common plane of the beams and orthogonally thereto for causing the beams to scan the screen; the distances between the plates of each pair are varied in the direction perpendicular to the common plane in which the beams originate to correspondingly vary the strengths of the electric fields and thus correct distortions in the rasters of the side beams.

3,619,688
ELECTRON GUN WITH CONNECTOR OF ALTERNATE ELECTRODES SHIELDING INTERMEDIATE ELECTRODE

John McQueen, Bloomfield, and Leonard D. Minutillo, Sayreville, both of N.J., assignors to Griffiths Electronics Inc., Linden, N.J.

Filed Mar. 28, 1969, Ser. No. 811,507
Int. Cl. H01j *29/02, 19/42, 29/46*
U.S. Cl. 313—82 **3 Claims**



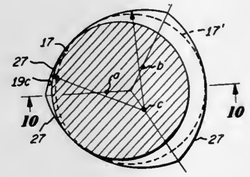
A substantially U-shaped electrical wire configuration intercoupling the pair of second anodes in a cathode-ray kinescope electron gun assembly for preventing arcing and

reducing electron beam drift in the presence of high-potential electric fields.

3,619,689
CATHODE-RAY TUBE WITH ELECTRODE SUPPORTED BY STRAPLIKE SPRINGS

Thomas Roy Martin, Lancaster, Pa., assignor to RCA Corporation

Filed Apr. 6, 1970, Ser. No. 25,654
Int. Cl. H01j *29/06*
U.S. Cl. 313—85 **8 Claims**

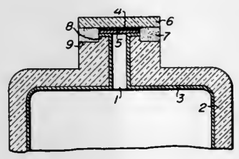


In a shadow mask-type color picture tube, the mask is detachably mounted in the faceplate cap by means of at least three metal studs, Having frustoconical tips, embedded in the cap sidewall, and a corresponding number of leaf springs each attached at one end to the mask and having a specially shaped aperture at the other end fitting over one of the stud tips. The aperture has the shape of a figure having three sides each of which is bowed outwardly in the plane of the spring with a curvature somewhat less than the curvature of adjacent curved stud surface, and also is curved convex to the normally straight stud surface, in planes normal to the sides. Alternatively, a tapered stud having a transverse cross section similar in shape to the specially shaped spring aperture may be used with a circular spring aperture that is curved convex to the stud surface in planes normal to the aperture.

3,619,690
THIN WINDOW CATHODE-RAY TUBE

Kaoru Tomii, and Hiroshi Miyama, both of Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1968, Ser. No. 785,632
Claims priority, application Japan, Dec. 28, 1967, 43/112, Sept. 13, 1968, 43/66410
Int. Cl. H01j *29/18*
U.S. Cl. 313—92 R **5 Claims**

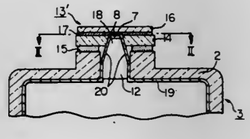


A thin window cathode-ray tube for recording the emission from a fluorescent material on a recording material placed before a faceplate in high resolution by using a very thin transparent plate as faceplate, in which an adhesive can be prevented to flow into a slit portion by a step structure provided at a junction surface between and envelope and the face.

3,619,691
PHOTOGRAPHIC RECORDING TUBE WITH A PHOSPHOR LAYER IN A THIN-WINDOW NARROW-SLIT FACEPLATE

Kaoru Tomi, Tokyo; Hiroshi Miyama, Tokyo; Tadao Muto, Chofu-shi, and Masahiko Kaneko, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1969, Ser. No. 798,408
Claims priority, application Japan, Feb. 16, 1968, 43/10166, May 24, 1968, 43/35855, Sept. 27, 1968, 43/70904
Int. Cl. G01d *9/42;* **H01j** *29/24*
U.S. Cl. 313—92 R **2 Claims**

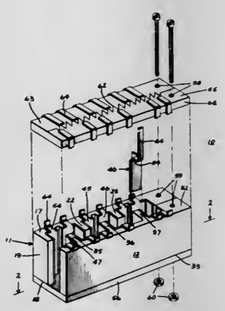


A faceplate of a thin-window photographic recording tube including a bulb face having provided therein a straight slit extending longitudinally of said bulb face. The faceplate features increased mechanical strength to withstand the atmospheric pressure and improved adhesion to the bulb face. The bonding agent for fastening the faceplate to the bulb face is advantageously isolated from the slit.

3,619,692
DYNODE ASSEMBLY FOR ELECTRON MULTIPLIER

Cyril L. Day, Huntington, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 13, 1969, Ser. No. 849,675
Int. Cl. H01j *43/04, 43/18, 39/14*
U.S. Cl. 313—105 **9 Claims**

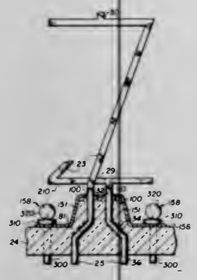


A miniature electron multiplier having a pair of complementary dynode support elements formed of ceramic material, each of the elements having a plurality of longitudinally spaced-apart projections extending transversely outwardly from a side thereof and mutually defining outwardly facing recesses therebetween. The elements are disposed with their sides in spaced, parallel facing relationship with the projections of one element located generally midway between the projections of the other element and respectively extending toward the recesses of the other element but having their outer ends spaced from the side thereof so as to define a generally serpentine channel. A plurality of dynode elements formed of relatively thin sheet metal are respectively seated in the recesses and brazed to the walls thereof. Top and bottom plate elements formed of ceramic material secure the support elements in assembled relation and close the channel. The dynode elements have integral leads which extend outwardly between the respective support element and plate element to the exterior of the assembly where they may be attached to a voltage divider resistance printed upon the outer surface of one of the cover plates.

3,619,693
INDICATOR TUBE HAVING MEANS FOR SEPARATING LEADS

Thomas D. Peterson, Somerville, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 10, 1969, Ser. No. 797,915
Int. Cl. H01j 61/36, 11/66
U.S. Cl. 313—109.5 3 Claims

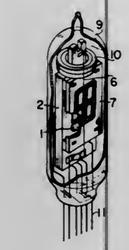


A miniature, cold cathode, gas-filled indicator tube which has an envelope of minimal diameter and length and includes an anode electrode and a stack of cathode character electrodes. The cathode electrodes include closely spaced cathode tabs to which similarly closely spaced tube pins are secured. The tube pins extend from the cathode tabs through the stem of the envelope so that they are accessible outside the tube. The tube pins are bent and spread apart as they pass through the stem so that they are relatively widely spaced outside the envelope adjacent to the tube stem.

3,619,694
CHARACTER-INDICATING ELECTRON TUBE WITH FLUORESCENT DISPLAY STRUCTURE

Mikiharu Tanji, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Continuation-in-part of application Ser. No. 676,580, Oct. 19, 1967, now Patent No. 3,508,101. This application Nov. 18, 1969, Ser. No. 877,786
Int. Cl. H01j 1/62, 63/04
U.S. Cl. 313—109.5 3 Claims

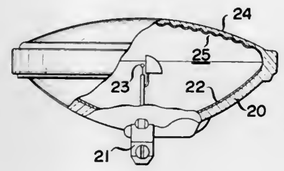


A fluorescent display tube of the triode construction is provided with an insulating substrate, an anode electrode including a plurality of fluorescent anode segments adapted to form characters and embedded in the insulating substrate, a single grid electrode disposed close to the anode segments and a filament in front of the grid electrode. The grid electrode is provided with a window common to the region of a pattern formed by the plurality of fluorescent anode segments and the window is provided with an electroconductive mesh.

3,619,695
FOG LAMP

Naoyoshi Nameda, and Tetsuhiro Kano, both of Yokohama-shi, Japan, assignors to Tokyo Shibarua Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 5, 1969, Ser. No. 804,632
Claims priority, application Japan, Mar. 9, 1968, 43/15156
Int. Cl. H01j 5/16; H01k 1/32
U.S. Cl. 313—112 4 Claims

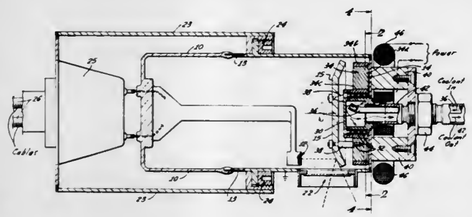


A fog lamp comprises an envelope and light source therein. Inside the transmissible part of the envelope is attached a vacuum depositing color-rendering film consisting of cadmium sulfide, cadmium selenide and inorganic material such as germanium and/or silicon.

3,619,696
ELECTRIC DRIVE MOTOR FOR ROTATABLY DRIVING THE ANODE OF AN X-RAY TUBE

Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed Nov. 17, 1969, Ser. No. 877,303
Int. Cl. H01j 1/44, 35/10
U.S. Cl. 313—149 9 Claims



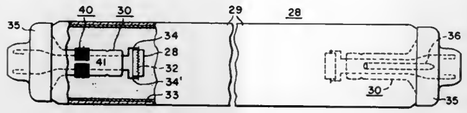
A high-voltage, high-vacuum X-ray tube is provided which includes a rotating target electrode for increased target life, and which also includes a unique and improved electric motor for rotatably driving the target electrode, the motor having a flat, "pancake" configuration, with a rotor inside the evacuated envelope of the X-ray tube, and with an externally positioned stator.

3,619,697
MERCURY VAPOR DISCHARGE LAMP AND PRESSURE-REGULATING MEANS THEREFOR

George S. Evans, Caldwell, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 9, 1964, Ser. No. 381,503
Int. Cl. H01j 61/24
U.S. Cl. 313—174 20 Claims

The mercury vapor pressure within an operating fluorescent lamp or similar device is controlled by a quantity of mercury-amalgamative material that is retained at a predetermined location within the lamp by holding means secured to one of the mount assemblies or the lamp envelope. The amalgamative material preferably comprises indium and is held in place by a formaminous assembly. In the case of indium, the formed indium-mercury amalgam contains from about 80 to 95 atomic percent indium and both the lamp performance (light output versus ambient temperature) and amalgam retention are significantly improved with indium contents at the high end of the aforesaid atomic percent range. Various amalgam-holding structures, including

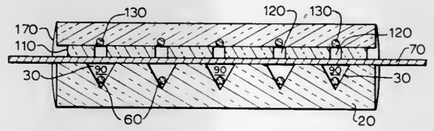


temperature-compensating types employing bimetal elements, and a method of fabricating the vapor-pressure control components are also disclosed.

3,619,698
DISPLAY PANEL

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 850,841, Aug. 18, 1969, now abandoned. This application Feb. 5, 1970, Ser. No. 8,773
Int. Cl. H01j 61/30
U.S. Cl. 313—210 9 Claims

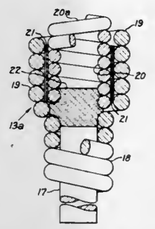


A display panel includes a plurality of gas-filled cells which comprise apertures in an insulating plate, and each cell has a cathode at its lower end and an anode at its upper end, from which light exits to a viewer. The walls of the cells are made of light-reflecting material so that nonaxial light rays generated at each cathode reflect back and forth upwardly along the cell walls and exit at different angles. With light rays thus exiting at a wide range of angles, an effective wide viewing angle is presented to a viewer. The surface of the apertured plate which faces the viewer is also light-absorbent to minimize light reflection therefrom toward the viewer.

3,619,699
DISCHARGE LAMP HAVING CAVITY ELECTRODES

John E. White, Cleveland Heights, Ohio, assignor to General Electric Company. Continuation-in-part of application, Ser. No. 769,037, Oct. 21, 1968.

Filed May 25, 1970, Ser. No. 40,134
Int. Cl. H01j 61/06
U.S. Cl. 313—211 16 Claims

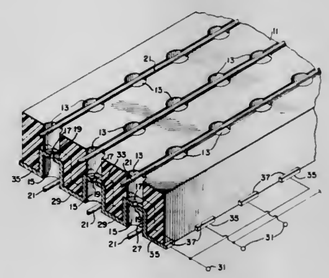


A high-intensity electric discharge lamp having cavity electrodes operating in the hollow cathode mode. Penetration of the arc terminus into the electrode cavity is assisted by vapor breathing which injects plasma into the cavity during AC reignition after current zero. Breathing is favored by a cavity which is gastight and which has a depth not substantially greater than the terminus penetration. Relatively low temperatures deep within the cavity are avoided by providing enhanced thermal coupling between the forward end of the cavity member and the radiation shield surrounding it, and also by thermal insulation between the sides of the cavity member and the shield. Emission material located within the lower portion of the cavity favors deep terminus penetration. Projection of the radiation shield beyond the cavity member toward the other electrode is avoided.

3,619,700
GAS CELL DISPLAY PANEL UTILIZING CORRUGATED ELECTRODES

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 8, 1970, Ser. No. 53,145
Int. Cl. G11c 11/28
U.S. Cl. 313—217 8 Claims

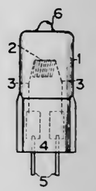


A display panel utilizing an array of gas-filled cells in an insulator sheet the cells being arranged in upper and lower layers of aligned cells with pairs of upper and lower cells separated by a common cathode electrode. The cathode electrodes are parallel strips corrugated in a series of rectangular waves, each flat elevated portion of a corrugation being embedded in an aperture of the insulator sheet and dividing the aperture into upper and lower cells interconnected by a tiny hole in the cathode. The parallel sides of a corrugation form walls of a cell. A single corrugated electrode thus forms a column of upper and lower cells across the panel. Pairs of associated anodes cross opposite ends of the apertures perpendicular to the common cathodes preferably in slots in the insulator to form rows of cells. Pairs of baseplates are sealed to the insulator sheet to form an hermetic unit.

3,619,701
HALOGEN CYCLE INCANDESCENT LAMPS

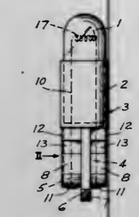
Keiichi Sugano; Takashi Ohmori, and Yoji Yuge, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 23, 1969, Ser. No. 887,610
Claims priority, application Japan, Dec. 27, 1968, 43/95779
Int. Cl. H01k 1/50
U.S. Cl. 313—222 8 Claims



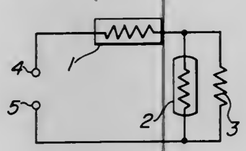
A halogen lamp exhibiting a good regenerative halogen cycle is sealed with an inert or nitrogen gas, chlorine and fluorine, preferably, in the form of a hydrocarbon halide. Quantities of chlorine and fluorine are respectively from 0.05 $\times 10^{16}$ to 1.00 $\times 10^{16}$ gram atoms of chlorine and from 0.05 $\times 10^{16}$ to 1.50 $\times 10^{16}$ gram atoms of fluorine per cubic centimeter of the inner volume of the lamp.

3,619,702
MINIATURE LIGHT BULB
Paul Albrecht, Bamberg, Germany, assignor to W. Albrecht-KG. Bamberg, Bamberg, Germany
Filed Mar. 26, 1969, Ser. No. 810,762
Claims priority, application Germany, Apr. 6, 1968, A 29602
Int. Cl. H01j *5/48, 5/50*
U.S. Cl. 313—318 **10 Claims**



A miniature light bulb has a hollow cylindrical base into which the envelope of the bulb is inserted and from which a flat plug extends downwardly. The connecting wires of the bulb filament extend through the base to the plug to which they are mechanically and conductively secured.

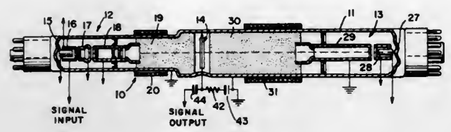
3,619,703
DEGAUSSING DEVICE HAVING SERIES CONNECTED PTC AND NTC RESISTORS
Hiroshi Yamashita, Neyagawa-shi; Kazuo Ishikawa, Kadoma-shi, and Masanori Fujimura, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 9, 1969, Ser. No. 831,451
Claims priority, application Japan, June 17, 1968, 43/42396
Int. Cl. H01f *13/00*; **H01c** *7/02*
U.S. Cl. 315—8 **3 Claims**



A degaussing device for the picture tube of a color television receiver magnetized by terrestrial magnetism causing color-contamination is described. The device comprises a resistor having a positive temperature coefficient of resistance (PTC resistor), a resistor having a negative temperature coefficient of resistance (NTC resistor), and a coil wound on the picture tube for degaussing, the PTC resistor being connected in series to a parallel circuit of the NTC resistor and the degaussing coil, wherein the PTC resistor and the NTC resistor are in good thermal contact. A sufficiently large current for degaussing first flows through the coil and then the PTC resistor, the resistance of which is thereby raised, reduces the current. The NTC resistor heated by the PTC resistor therefore shows a lower resistance than that of the coil. Consequently, a further reduced current flows through the coil which gives little interference with the working of the picture tube.

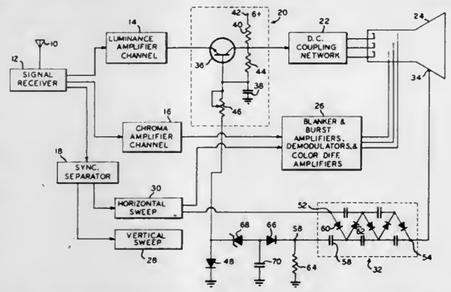
3,619,704
SIGNAL STORAGE TUBE SYSTEM WITH ENHANCED SIGNAL-TO-NOISE RATIO
James W. Schwartz, Western Springs, Ill.
Filed July 9, 1969, Ser. No. 840,419
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 ST **6 Claims**

Alternative systems are disclosed for enhancing the signal-to-noise ratio in a signal storage tube. The intensity of the write beam is amplitude-modulated and it sweeps the target in a vertical raster. The read beam has a constant intensity and sweeps the target in a horizontal raster. In one embodiment, the video signal for one of a predetermined number of write lines is inverted and stored on the target in this inverted



form thus translating the frequency band of the read signal to a higher value and out of the frequency range of noise caused by the physical characteristics of the target and the collection optics. In a second embodiment, a signal representative of the background noise is generated and subtracted from the output signal.

3,619,705
AUTOMATIC BEAM CURRENT LIMITER CIRCUITRY
George Cleveland Waybright, Batavia, N.Y., assignor to GTE Sylvania Incorporated
Filed Oct. 13, 1969, Ser. No. 865,774
Int. Cl. H01j *29/70*
U.S. Cl. 315—22 **8 Claims**



In a television receiver in which a video amplifier is DC coupled as a signal source to the one or more cathodes of a picture tube and the high-voltage power supply for the picture tube includes a voltage tripler coupled between the retrace pulse output of a high-voltage circuit and the second anode of the picture tube, a circuit for automatically limiting picture tube beam current comprising a resistor connected between the tripler reference terminal and ground, and a rectifier and Zener diode connected between that resistor and a bias circuit for the video amplifier. The resistor develops voltage pulses from the tripler which when rectified provide a control voltage which is a function of picture tube beam current. Application of this control voltage to the bias circuit via the Zener diode, which functions as a threshold device, provides a degenerative feedback signal operative to limit beam current and thereby provide overload protection for the picture tube.

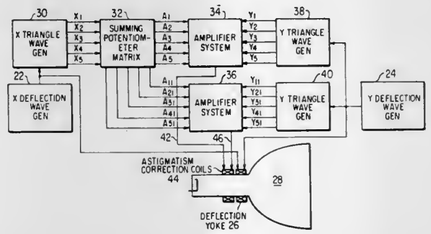
3,619,706
CATHODE-RAY TUBE IN WHICH SCREENING ELECTRODES ARE PROVIDED AT THE ELECTRON GUN TO PRODUCE A BEAM OF UNIFORM DENSITY OVER ITS CROSS SECTION ALONG ITS PATH TO THE DISPLAY SCREEN
Douglas S. Hills, Tonbridge, England, assignor to The Rank Organization Limited, London, England. Continuation of Ser. No. 670,328, Sept. 25, 1967.
Filed Feb. 26, 1970, Ser. No. 14,610
Claims priority, application Great Britain, Sept. 28, 1966, 43,364/66
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 **5 Claims**

A discharge system including a device such as a cathode-ray tube has an electron gun in which an accelerating electrode is placed close to a planar emissive surface of a cathode and is held at a small positive potential to provide an accelerating electric field having unipotential surfaces which are parallel to the electron emissive surface of the cathode. To screen the accelerating field having these unipotential surfaces from the further accelerating electrodes in the gun



or in the cathode-ray tube a screening electrode or electrodes is placed in front of the accelerating electrode. In consequence the accelerating electric field close to the electron emissive surface is undistorted by the fields beyond the screening electrode(s), so that the electron beam is devoid of crossover and has a substantially uniform current density over its cross section.

3,619,707
ASTIGMATISM CORRECTION FOR ELECTRON BEAM DEVICES
Elvin Dean Simshauser, Columbus, N.J., assignor to RCA Corporation
Filed Aug. 8, 1969, Ser. No. 848,598
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 R **12 Claims**



The correction field applied to a cathode-ray beam device substantially fully cancels astigmatism at a plurality of discrete, known in advance positions of the beam, preferably uniformly spaced over the area swept by the beam. The value of the field automatically is changed as the beam moves as a function of the relative distances of the beam from a plurality of said discrete positions to at least partially cancel astigmatism at the remaining positions of the beam.

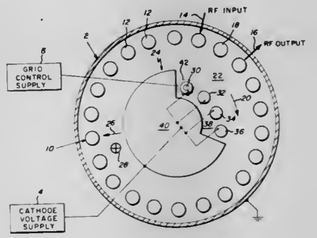
3,619,708
SURGE VOLTAGE ARRESTER ASSEMBLY HAVING INTEGRAL CAPACITOR MOUNTING AND CONNECTING MEANS
Earl M. Stetson, and Thomas J. Carpenter, both of Pittsfield, Mass., assignors to General Electric Company
Filed Jan. 12, 1970, Ser. No. 2,147
Int. Cl. H02h *7/24, 9/06*
U.S. Cl. 315—36 **16 Claims**

A sparkgap assembly for a low-voltage lightning arrester is provided with a sparkgap-shunting capacitor mounting and connecting means that is an integral part of the sparkgap assembly. The integral capacitor mounting and connecting



means comprises a highly reliable yet economically manufactured arrangement that is well adapted to mass production techniques for making lightning arresters.

3,619,709
GRIDDED CROSSED FIELD TRAVELING WAVE DEVICE
Kenneth W. Dudley, Sudbury, and George H. MacMaster, Waltham, both of Mass., assignors to Ratheon Company, Lexington, Mass.
Filed July 6, 1970, Ser. No. 52,321
Int. Cl. H01j *25/34*
U.S. Cl. 315—39.3 **5 Claims**

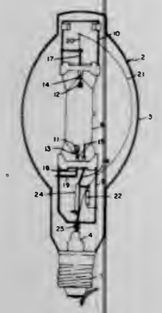


A high-power high-frequency device is disclosed having a thermionically actuated cold cathode secondary electron source and means for controlling electron beam current interacting with energy on either a reentrant or nonreentrant propagating structure. In an exemplary embodiment a grid-controlled primary electron source is coupled to an array of individual secondary electron emissive members biased at sequentially varying voltages. The primary and secondary electron emitters are spaced apart a distance of approximately one electron cycloid path. Such emitters are disposed within a section of a cold cathode source of substantial size. Impingement of electrons upon each successive secondary electron emitting surface results in an electron emission multiplication process heretofore unattainable with cold cathode structures actuated simply by pulses of the input RF energy to be amplified. Operation of the device may be rapidly terminated by biasing of the grid-controlled electrode having very low voltage requirements with the current in the electron beam and power output decaying to zero in a relatively few revolutions of the electron spoke around the cathode structure.

3,619,710
HIGH-PRESSURE ELECTRIC DISCHARGE LAMP HAVING ELECTROLYSIS-PREVENTING MEANS

John F. Waymouth, Marblehead, Mass., assignor to Sylvania Electric Products Inc.

Filed Oct. 29, 1969, Ser. No. 872,269
Int. Cl. H01j 17/34
U.S. Cl. 315—47 1 Claim

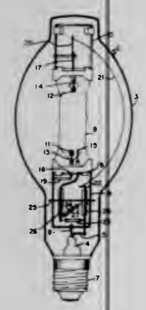


The arc tube of an arc discharge lamp has two main electrodes and a starter electrode adjacent one of them, the starter electrode being electrically connected to the adjacent electrode through a resistor external of the arc tube. The starter electrode is electrically connected to the other main electrode through a thermally operative switch and a second resistor. In normal operation, the switch opens after lamp ignition to isolate the starter electrode from the circuit of the other main electrode and to place the starter electrode at substantially the same potential as the adjacent main electrode.

3,619,711
HIGH-PRESSURE METAL HALIDE ELECTRIC DISCHARGE LAMP

Robert W. Freese, Jr., Manchester, N.H., assignor to Sylvania Electric Products, Inc.

Filed Oct. 27, 1969, Ser. No. 869,630
Int. Cl. H01j 17/34
U.S. Cl. 315—60 1 Claim

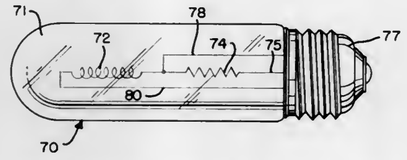


The arc tube of an arc discharge lamp has two main electrodes and a starter electrode adjacent one of them, the starter electrode being electrically connected to the adjacent electrode through a rectifying device, such as a diode, external of the arc tube. The polarity of the rectifier is such as to permit the starter electrode to attain a voltage positive with respect to the adjacent electrode but to substantially prevent a negative voltage therebetween.

3,619,712
FILAMENT-PROTECTING DEVICE AND SHOCK RESISTANT LAMP

Ronald C. Koo, Weehawken, and Joel Shurgan, Washington Twp., both of N.J., assignors to Duro-Test Corporation, Bergen, N.J.

Filed Oct. 22, 1969, Ser. No. 868,506
Int. Cl. H01j 7/44; H05b 39/00
U.S. Cl. 315—94 13 Claims

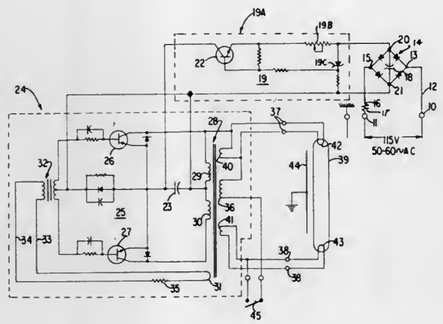


Incandescent lamps connected in circuits to keep a maintenance current flowing through the lamp filament when the lamp is off to improve the ductile-brittle properties of the filament. Lamps are also disclosed which have an internal impedance element to be used in the circuits for producing the maintenance current.

3,619,713
HIGH-FREQUENCY LAMP CIRCUIT FOR COPYING APPARATUS

Boleslaw C. Biega, Deerfield, and Bodo M. Wolfframm, Clarendon Hills, both of Ill., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Apr. 1, 1969, Ser. No. 811,831
Int. Cl. H05b 41/29, 41/391
U.S. Cl. 315—105 6 Claims



A high-frequency power supply for the light source of a xerographic-type copying machine in which power from a normal 50-60-cycle AC input is rectified and regulated to provide a constant current or constant voltage DC input to a high-frequency oscillator-inverter providing output power at a frequency in the order of 20,000 c.p.s. or above to a light source comprising one or more gaseous-type lamps. In a modified circuit the DC input to the inverter is regulated by a solid-state chopper controlled by a magnetic amplifier pulsed by a free-running multivibrator and modulated by the input current.

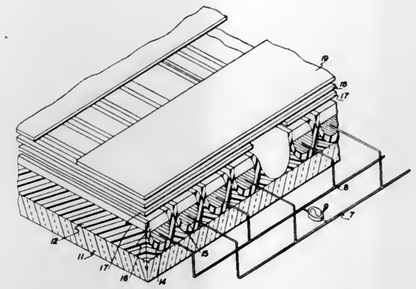
3,619,714
PANEL DISPLAY DEVICE

Paul F. Evans, Pittsford; Harold D. Lees, Rochester, and Martin S. Maltz, Fairport, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,570
Int. Cl. H05b 37/00; H01j 1/62
U.S. Cl. 315—169 9 Claims

An electroluminescent display panel having solid state storage layers, an excitation source and an ion-generating

source. The application of excitation current causes luminescence of the panel. Ions carried through a dielectric layer are injected into a semiconductor control layer to alter the impedance state thereof. The change in the impedance state of the control layer alters the current flow within the

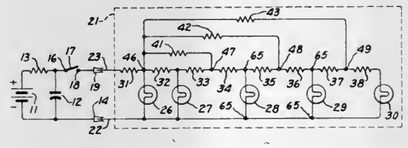


panel resulting in a corresponding change in the level of luminescence. By selectively addressing the conductors either sequentially or simultaneously a pattern or image is formed on the panel face. The panel may be erased by the addressing voltage or by a separate erasing voltage source.

3,619,715
RESISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed May 21, 1970, Ser. No. 39,418
Int. Cl. H05b 37/00
U.S. Cl. 315—232 12 Claims



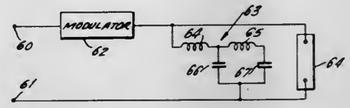
A resistor circuit for causing sequential flashing of photoflash lamps from pulses of electrical energy. Resistors are successively connected in series between the individual photoflash lamps, and additional resistors are connected across portions of the aforesaid series combination of resistors and function to equalize the firing pulse energy successively applied in turn to each lamp.

3,619,716
HIGH-FREQUENCY FLUORESCENT TUBE LIGHTING CIRCUIT AND AC DRIVING CIRCUIT THEREFOR

Joel S. Spira, Allentown, and Joseph Licata, Schnecksville, both of Pa., assignors to Lutron Electronics Co., Inc., Emmaus, Pa.

Filed July 23, 1969, Ser. No. 843,927
Int. Cl. H05b 41/233, 41/392
U.S. Cl. 315—244 15 Claims

A sinusoidal voltage source in series with a fluorescent, mercury vapor, sodium vapor device, etc. is pulsed at a given pulse repetition rate with the pulse having a given conduction time. Two or more tubes can sequentially conduct pulses with the current input being a continuous sinusoid. A particular pulsing circuit contains a modified pulse-forming network consisting of one or more stages of a closed series connection of a choke and two capacitors. The chokes of each stage are connected in series. The modified pulse-forming network is used as a frequency converter per se, as DC to AC

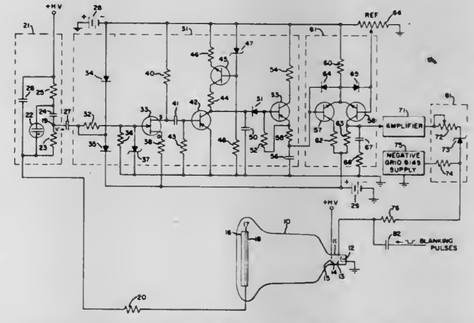


converter, or specifically is in parallel with a fluorescent tube load.

3,619,717
ELECTRON BEAM CURRENT REGULATOR FOR A LIGHT VALVE

Ho-chol Lee, and Thomas P. L. Liu, both of Liverpool, N.Y., assignors to General Electric Company

Filed Mar. 2, 1970, Ser. No. 15,618
Int. Cl. G05f 1/00
U.S. Cl. 315—307 7 Claims

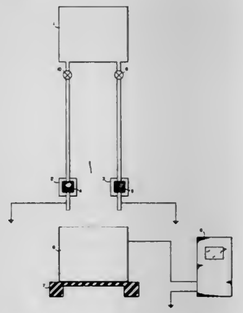


Electron beam current in a light valve is maintained at a uniform value by feedback apparatus which senses current at the medium upon which a raster is generated by the beam and controls the rate of electron emission from an electron gun in accordance with amplitude of sensed current. Initial cathode current surges, occurring upon each initiation of energization of the light valve, are suppressed within the feedback apparatus, leaving operation of the light valve essentially unaffected by such surges.

3,619,718
METHOD AND APPARATUS FOR NEUTRALIZING ELECTROSTATIC CHARGES ON FLOWING LIQUIDS

Joseph T. Leonard, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy

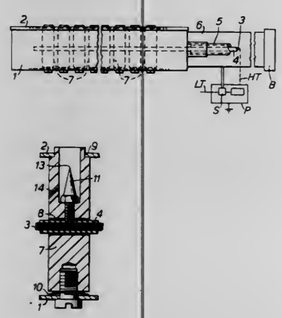
Filed Feb. 20, 1970, Ser. No. 12,947
Int. Cl. B65g 53/34; B01d 25/04; H05f
U.S. Cl. 317—2 R 12 Claims



A method and apparatus whereby electrostatic charges contained in a liquid hydrocarbon are neutralized by utilizing

filters which impart opposite charges to the liquid. An organic filter element causes a positive charge and an inorganic filter element causes a negative charge. When properly arranged in series or parallel, the filters allow the electrostatic charges acquired during liquid flow to cancel each other and cause the liquid to become neutralized.

3,619,719
STATIC ELIMINATORS
John Reginald Waller, and John Richard Radington-Meech, both of London, England, assignors to Industrial Electrical Company Limited, London, England
Filed June 12, 1969, Ser. No. 832,605
Claims priority, application Great Britain, June 17, 1968, 28,744/68, Feb. 28, 1969, 10,755/69
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 F **7 Claims**



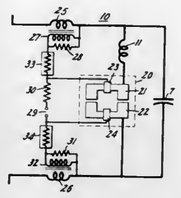
A static eliminator for blowing a stream of ionized air on to an exposed surface having a static charge to neutralize its charge and blow off attracted particles, the eliminator comprising an electrode within an insulating sleeve through which air under pressure is passed and ionizing voltage being applied between the electrode and a metal surface hidden from the electrode by the sleeve.

3,619,720
ELECTRICALLY ASSISTED PRINTING SYSTEM
Daniel A. Coberley, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.
Filed Aug. 28, 1969, Ser. No. 853,672
Int. Cl. B41f *9/06*; **B41m** *5/20*
U.S. Cl. 317—3 **1 Claim**



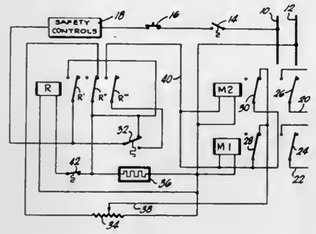
A printing system having an electric circuit supplying an output potential to assist transfer of ink to a dielectric substrate, the potential being gradually increased up to a breakdown potential of the substrate, for example of a rate of 10 percent per hour. Each time breakdown potential is reached, the applied potential is set back 10 percent and the increase started again, so that the applied potential will follow variations in the breakdown potential of the substrate. A severe fault in the substrate results in removal of the output potential during a timed interval followed by a rapid potential buildup toward breakdown potential, after which the normal cycle is resumed.

3,619,721
TRIGGERED VACUUM GAP KEEP-ALIVE CIRCUIT
Willem F. Westendorp, Schenectady, N.Y., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 42,327
Int. Cl. H02h *7/16*
U.S. Cl. 317—12 A **7 Claims**



This disclosure relates to a "keep-alive" circuit for a triggered vacuum gap wherein the duration of the usual trigger pulse is insufficiently long to maintain the vacuum gap in an active state for more than one half cycle at the power line frequency. A circuit utilizing current transformers is described wherein a current transformer provides the trigger pulse necessary to maintain the vacuum gap in an active state for as long as necessary to protect electrical equipment shunted by the vacuum gap.

3,619,722
REFRIGERATION PROTECTIVE SYSTEM
Melvin C. Gill, and William M. Dartt, both of Jackson, Mich., assignors to Acme Industries, Inc., Jackson, Mich.
Filed May 4, 1970, Ser. No. 34,412
Int. Cl. H02h *7/08*
U.S. Cl. 317—13 R **11 Claims**

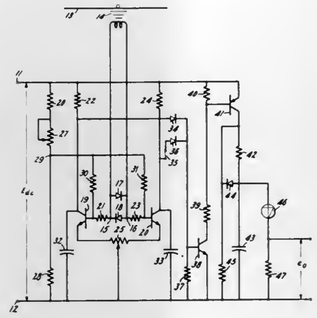


A protective control system for a refrigeration circuit incorporating a current-sensitive, manually resettable switch employed in conjunction with a time delay switch and a resistor wherein the current-sensitive switch is adapted to be selectively connected to the resistor, and tripped open thereby, in the event a malfunction occurs in the compressor motor starter means, or an abnormal condition exists at the compressor motor, as sensed by a protective motor switch. The use of the time delay switch prevents short cycling of the refrigeration circuit and upon the current-sensitive switch being connected in series across the load for a predetermined time interval with the resistor, the current-sensitive switch will open to protect the circuit, requiring manually resetting, and provide an opportunity for inspection of the apparatus prior to restarting of the compressor motor.

3,619,723
SENSITIVE PEAK CURRENT DETECTOR FOR GROUND FAULT PROTECTION CIRCUITS
John P. Walden, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 30, 1970, Ser. No. 76,828
Int. Cl. H01h *47/18*; **H02h** *1/04*
U.S. Cl. 317—18 R **12 Claims**

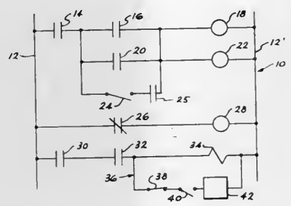
A full- or half-wave peak current detector of a few milliamperes of power circuit fault current includes, for each

polarity, a normally conducting first transistor continuously supplied with base current. In response to sensing an instantaneous above-threshold fault current, the base current is diverted through a mirror-image connected second transistor, turning off the first transistor for so long as the above-



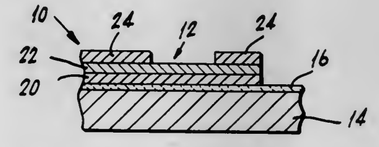
threshold current exists. For full-wave detection the role of the transistors is reversed on the other polarity. This actuates one or more series RC filter networks to delay the output indication and reduce the detector sensitivity to high-frequency transients or noise. The valid power frequency output signal opens a circuit interrupter.

3,619,724
FUEL BURNER SAFETY CONTROL CIRCUIT
Thomas W. Brown, Vernon; Michael A. Delin, West Simsbury, and Robert D. Scoville, Torrington, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed June 11, 1970, Ser. No. 45,369
Int. Cl. H02h *3/24*
U.S. Cl. 317—36 TD **7 Claims**



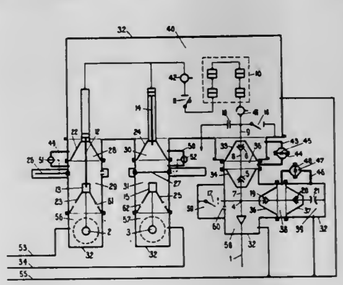
A fuel burner safety control circuit for burner safety shutoff valves functioning in different operational modes depending upon the occurrence of an interruption in power to the circuit or an unsafe operating condition in the overall system so as to be capable of distinguishing between a momentary power interruption where the burner should not be shut down and an emergency condition where the burner should be shut down substantially immediately. The safety control circuit has a deenergize-to-trip burner safety shutoff valve with an integral time delay to maintain burner safety shutoff valve energization during momentary power interruption, and a bypass arrangement permitting the time delay to be bypassed during emergency trip conditions to provide substantially immediate burner safety shutoff valve deenergization for closing down the burner system. This capability of distinguishing between momentary power interruptions and emergency trip conditions is accomplished by using a circuit having parallel time delay relays to activate switches set in series in a time delay circuit. The time delay relays function in opposite energization senses (i.e., energize to trip and deenergize to trip) in activating the switch with which it is associated, one switch being normally closed and the other closed on application of power to the safety control circuit. On a power interruption, both relays would assume a deenergized state maintaining the switches closed for a set period of time to continue the integrity of the time delay circuit to prevent trip of the deenergize-to-trip burner safety shutoff valve. This is accomplished by the deenergize-to-trip relay holding in the powered closed switch for a discrete period of time and the energize-to-trip relay (being deenergized) having no effect on the normally closed switch. In an emergency unsafe operating condition the deenergize-to-trip relay would again be deenergized to maintain the powered closed switch closed, but the energize-to-trip relay would assume an energized state substantially immediately opening the normally closed switch to trip the deenergize-to-trip burner safety shut off valve for closing down the burner system.

3,619,725
ELECTRICAL FUSE LINK
Ralph Robert Soden, Mendham, and William John Greig, Somerville, both of N.J., assignors to RCA Corporation
Filed Apr. 8, 1970, Ser. No. 26,627
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 A **3 Claims**



A fuse link is included in the interconnection circuit pattern of an integrated circuit. The fuse link includes a thin film of titanium with or without a thin film of platinum on the titanium film. The highly conductive metal film of the interconnection circuit pattern extends over the fuse film at the end of the fuse link and provides the contacts for the fuse link.

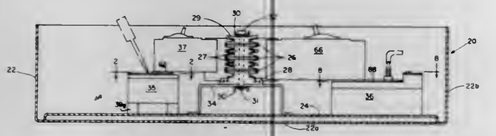
3,619,726
METAL CLAD SWITCH PLANTS FOR HIGH VOLTAGES WITH OBTURATING MEANS FOR PREVENTING DESTRUCTIVE PRESSURE RISE
Rintje Boersma, Harmelen, Netherlands, assignor to N.V. COQ, Utrecht, Netherlands
Continuation of application Ser. No. 747,313, July 24, 1968, now abandoned. This application June 5, 1970, Ser. No. 41,781
Int. Cl. H01h *33/82*, *33/54*
U.S. Cl. 317—103 **14 Claims**



The metal envelope of a gas insulated switch plant is divided into a number of detachably interconnected compartments which are separated from each other in gastight manner and insulating gas is supplied to these compartments. Some of the compartments are of such small volumes that the heat generated by a short circuit therein, for example, might cause a pressure rise of the insulating gas which is sufficient to rupture the compartment. A conduit is provided between each of these small compartments and another com-

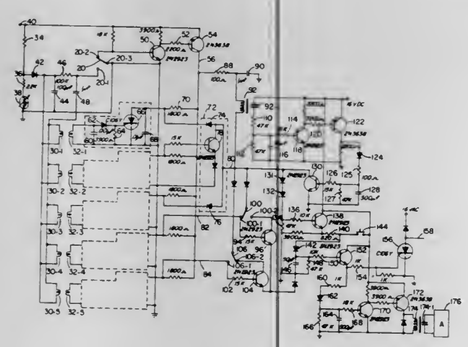
partment which is itself of large enough volume, or which is cumulatively with the first compartment of large enough volume, so as to prevent such destructive pressure rise. Each such conduit is normally blocked or substantially blocked by a rupturable diaphragm which breaks, in response to the inception of a destructive pressure rise, to allow full flow communication between the two compartments so connected.

3,619,727
ELECTRICAL PANELBOARD HAVING PLUG-IN LINE AND LOAD CONNECTIONS TO CIRCUIT BREAKER
Wilhelm T. Hackenbroch, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Jan. 12, 1970, Ser. No. 2,149
Int. Cl. H02b *1/04*
U.S. Cl. 317—119 **9 Claims**



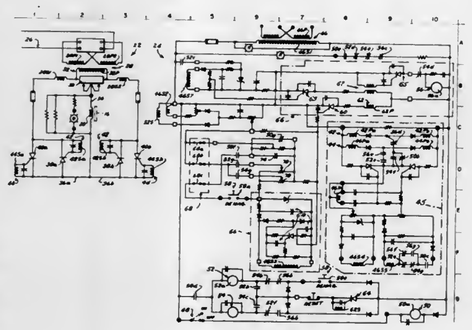
The panelboard has flat bus bars stacked in a direction perpendicular to a mounting pan and is provided with plug-in load-side connectors. Circuit breakers having line-side jaws for plugging onto the bus bars by movement parallel to the mounting pan are provided with stab terminals for plugging into jaws of the connectors. Load wires are secured to terminals of the connectors and need not be disturbed when a circuit breaker is plugged into or removed from the panelboard.

3,619,728
AUTHORIZATION TYPE OF CONTROL SYSTEM
Irving B. Cooper, Jr., Marblehead, Mass., assignor to Notifier Company, Lincoln, Nebr.
Filed Oct. 27, 1969, Ser. No. 869,788
Int. Cl. E05b *49/02*
U.S. Cl. 317—134 **20 Claims**



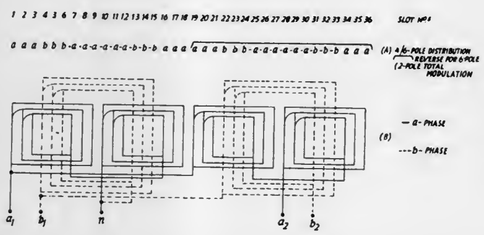
An authorization type of control system includes a data sensor having a plurality of data sensing positions, first circuitry for generating an output signal as a function of data sensed by each of the data positions, second circuitry responsive to a request signal to actuate the first circuitry to sense each of the data positions, third circuitry for producing an authorization signal in response to output signals from the first circuitry indicating a predetermined data item at each of the data positions, and fourth circuitry responsive to an incorrect output signal from the first circuitry from any one of the data positions for preventing generation of the authorization signal by the third circuitry for a predetermined period of time after termination of the request signal.

3,619,729
SOLID-STATE ELECTRIC CIRCUIT FOR REVERSING POLARITY
Arthur K. Littwin, Lincolnwood, Ill., assignor to Littwin Family Trust No. 1, Chicago, Ill.
Filed Apr. 14, 1969, Ser. No. 815,638
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **10 Claims**



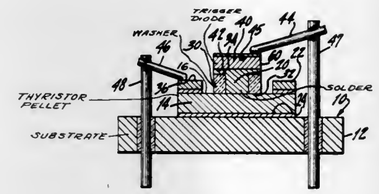
Electric circuit for reversing polarity, by solid-state components and without physically or mechanically opening the circuit establishing the polarity, such as by switches.

3,619,730
TWO-SPEED, SINGLE-PHASE ELECTRIC MOTOR
Alexander R. W. Broadway, Westbury-on-Trym, Bristol; William Fong, Westbury-on-Trym, Bristol, and Gordon H. Rawcliffe, Bristol, all of England, assignors to National Research Development Corporation, London, England
Filed Sept. 24, 1969, Ser. No. 860,743
Claims priority, application Great Britain, Sept. 25, 1968, 45,449/68
Int. Cl. H02k *17/14, 17/16*
U.S. Cl. 318—224 R **9 Claims**



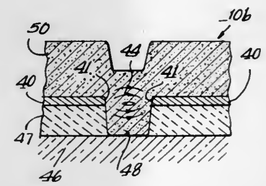
A two-speed, single-phase, alternating current motor having a concentric wound stator winding comprising a main energizing winding and an auxiliary starting winding, the main winding (or both windings) being tapped and arranged for reconnection at one speed to provide current reversal in selected winding parts, thus providing pole-changing by the known method of pole-amplitude modulation.

3,619,731
MULTIPLE PELLET SEMICONDUCTOR DEVICE
Lawrence K. Baker, Clinton, and Lawrence R. Shardlow, South Plainfield, both of N.J., assignors to RCA Corporation
Filed Oct. 11, 1968, Ser. No. 766,786
Int. Cl. H01l *1/08, 1/10, 1/14, 1/22*
U.S. Cl. 317—234 R **5 Claims**



A semiconductor device comprises a substrate, a first semiconductor pellet mounted on the substrate, an insulating material washer mounted on the first pellet, and a second semiconductor pellet mounted on the washer. The second pellet is rigidly secured to the washer and the first pellet, and electrically connected to the first pellet, by means of a solder filling the washer central opening and bonded to both pellets.

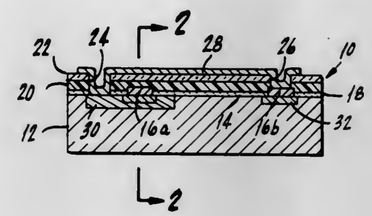
3,619,732
COPLANAR SEMICONDUCTOR SWITCH STRUCTURE
Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc.
Filed May 16, 1969, Ser. No. 825,236
Int. Cl. H03k *17/00;* **H01l** *5/02, 3/00*
U.S. Cl. 317—234 R **11 Claims**



A coplanar semiconductor switch structure comprises a pair of electrodes deposited as a film on a suitable substrate with a gap formed between the ends of the electrodes, and an active semiconductor material deposited as a film in the gap between the ends of the electrodes. The ends of the deposited electrodes are so formed as to provide a minimum gap distance therebetween with increasing gap distance on each side thereof to provide a preferred location for the conducting path or paths through the active semiconductor material between the electrodes. The film thickness of the deposited acting semiconductor material is greater than the largest transverse dimension or diameter of the conducting path or paths so to be totally confined in the material. The active semiconductor material may be made to extend substantially equally from each side of the gap between the electrodes so that the current conducting path or paths may be symmetrical about an axis between the electrodes.

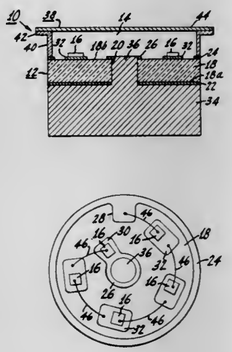
3,619,733
SEMICONDUCTOR DEVICE WITH MULTILEVEL METALIZATION AND METHOD OF MAKING THE SAME
William John Greig, Somerville, N.J., assignor to RCA Corporation
Filed Aug. 18, 1969, Ser. No. 850,822
Int. Cl. H01l *5/06*
U.S. Cl. 317—234 R **5 Claims**

A semiconductor device including a flat wafer of a semiconductor material, a first level metallization pattern on the wafer, a dielectric on the wafer and covering the first level metallization pattern, and a second level metallization pattern on the dielectric. The dielectric comprises a layer of



a plastic coated on the wafer and covering the first level metallization pattern and a layer of silicon oxide coated on the plastic layer. The second level metallization pattern is on the silicon oxide layer.

3,619,734
ASSEMBLY OF SERIES CONNECTED SEMICONDUCTOR ELEMENTS HAVING GOOD HEAT DISSIPATION
Jacques Mayer Assour, Princeton, N.J., and Arye Rosen, Elkins Park, Pa., assignors to RCA Corporation
Filed Dec. 17, 1969, Ser. No. 885,757
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **8 Claims**

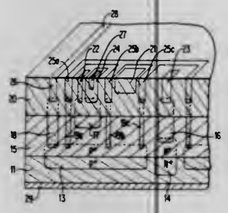


A high power semiconductor device comprising a housing having an enclosed chamber therein and a plurality of semiconductor elements mounted in the chamber and electrically connected in series. The semiconductor elements are individually mounted in spaced relation on a plate of an electrically insulating material which is a good conductor of heat and are electrically connected between a metal body secured to one side of the plate and a metal cover secured to the other side of the plate.

3,619,735
INTEGRATED CIRCUIT WITH BURIED DECOUPLING CAPACITOR
Charles Y. Chen, Putnam Valley; Vir A. Dhaka, Hopewell Junction, and Walter F. Krolikowski, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,453
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 **9 Claims**

An integrated circuit and process for making it wherein a decoupling capacitor is provided beneath devices in the surface of the integrated circuit by the formation of a first epitaxial layer between an N^+ substrate having a P^+ zone diffused therein and an N^1 device-containing epitaxial layer. A

P+ channel diffusion to the P+ zone formed in the substrate will serve as a damping resistor in combination with the coupling capacitor. The process for forming such a decoupling capacitor in an integrated circuit comprises, inter alia, diffusing P+ impurities into the substrate to form a large junction which will subsequently function as a decoupling capacitor. A first intrinsic, P1 or N1 epitaxial layer is then grown on the semiconductor substrate. Subsequently, an N1 epitaxial layer is grown on the first epitaxial layer. A P+

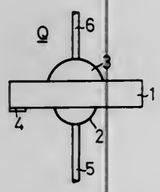


channel is then driven through the N1 epitaxial layer and the first epitaxial layer to contact the P+ diffused zone w hich serves as the decoupling capacitor. This P+ channel diffusion will serve as a damping resistor in combination with the decoupling capacitor. Device diffusion, i.e., transistors, resistors, etc., will take place into the N1 epitaxial layer, and during growth of the epitaxial layers the P+ zone will significantly outdiffuse into the first epitaxial layer. Appropriate channels, isolations and contacts are also provided.

3,619,736
ALLOY JUNCTION TRANSISTOR AND A METHOD OF MAKING THE SAME

Takeo Miyata, Atsugi, Japan, assignor to Mitsumi Electric Company, Limited, Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,018
Int. Cl. H011 *3/12, 7/34*
U.S. Cl. 317—235 3 Claims



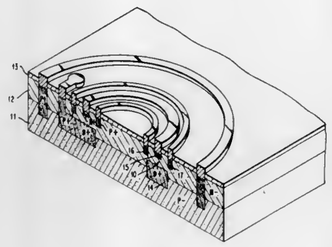
An alloy junction transistor in which an indium dot serving as an emitter impurity and an indium antimony alloy dot containing 1 to 0.01 percent by weight of antimony relative to indium and serving as a collector impurity are alloyed with an N-type germanium wafer serving as the base to form emitter and collector junctions and the base grounded current amplification factor (emitter-collector current amplification factor) is greater than 1.

A method of making an alloy junction transistor having a base grounded current amplification factor exceeding 1 comprising the steps of alloying the indium dot and the indium-antimony dot with the N-type germanium wafer to form emitter and collector junctions therebetween, in which the heating temperature for alloying the indium-antimony alloy dot with the wafer is controlled such that it is relatively rapidly raised up to a value high enough to cause the contact portion of the wafer and the alloy dot to be liquid-phase and is held at this value for a predetermined time, thereafter being gradually lowered in accordance with an upwardly convex temperature curve or upwardly convex polygonal line.

3,619,737
PLANAR JUNCTION-GATE FIELD-EFFECT TRANSISTORS

Te-Long Chiu, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1970, Ser. No. 35,785
Int. Cl. H011 *11/14*
U.S. Cl. 317—235 R 10 Claims

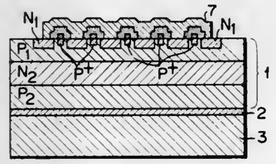


A junction-gate field-effect transistor is provided with its channel extending from the source to the drain in a direction normal to the plane of the substrate. The length of the channel is thereby substantially shorter than where the channel extends parallel to the plane of the substrate. The shorter channel provides faster switching speed and increased transconductance of the transistor.

3,619,738
SEMICONDUCTOR DEVICE WITH IMPROVED CONNECTION TO CONTROL ELECTRODE REGION

Michio Otsuka, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 12, 1970, Ser. No. 80,110
Claims priority, application Japan, Oct. 13, 1969, 44/81156, Nov. 7, 1969, 44/88695, Nov. 22, 1969, 44/93364
Int. Cl. H011 *5/02*
U.S. Cl. 317—235 8 Claims



In a semiconductor device with a control grid and comprising at least three semiconductor layers of alternately different conductivity types, portions of the second layer are protruded through the first layer to be exposed on the surface of the first layer, second electrode is mounted on the exposed portions in ohmic contact therewith, a third electrode is mounted to insulating cover the second electrode and the exposed portions containing the same, and the third electrode is in ohmic contact with the first layer.

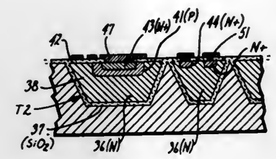
3,619,739
BULK RESISTOR AND INTEGRATED CIRCUIT USING THE SAME

Hans R. Camenzind, and David F. Allison, both of Los Altos, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 16, 1969, Ser. No. 791,660
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R 4 Claims

Bulk resistor formed in a semiconductor body by the use of dielectric isolation which forms an isolated island and in

which contact elements are provided at two spaced points to provide a predetermined resistance. The bulk resistor is of a

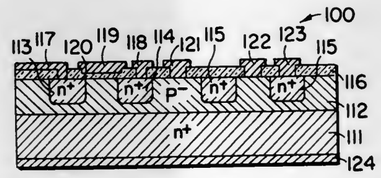


type which can be readily incorporated into an integrated circuit.

3,619,740
INTEGRATED CIRCUIT HAVING COMPLEMENTARY FIELD EFFECT TRANSISTORS

Sho Nakanuma; Yuichi Haneta, and Toshio Wada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 28, 1969, Ser. No. 871,826
Claims priority, application Japan, Oct. 29, 1968, 43/79173
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R 5 Claims

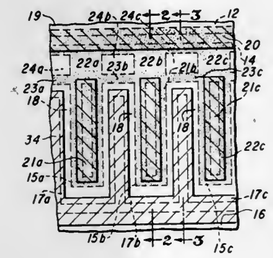


An integrated circuit is disclosed in which the drain and source regions of an integrated gate-type field-effect transistor and the gate region of a junction-type field-effect transistor are formed in common within a semiconductor layer of one conductivity type formed on a substrate of the opposite conductivity type.

3,619,741
METHOD OF PROVIDING INTEGRATED DIFFUSED EMITTER BALLAST RESISTORS FOR IMPROVED POWER CAPABILITIES OF SEMICONDUCTOR DEVICES

Ian Hambry Morgan, Eaton Socon, St. Neots, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1969, Ser. No. 879,119
Int. Cl. H011 *11/06*
U.S. Cl. 317—235 R 7 Claims

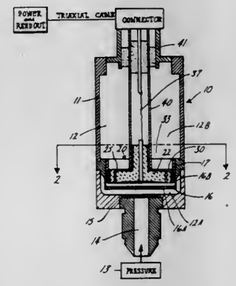


The disclosure is directed to planar transistors which include an emitter region disposed in a base region, the emitter region comprising an elongated spine from which spaced parallel emitter stripes project. The emitter electrode comprises a spine contact and individual electrode strips extending from the distal ends of the emitter fingers to locations spaced apart from the spine contact leaving discontinuities in the emitter electrode such that the sheet resistance of the emitter fingers underlying the discontinuities is utilized to form electrical ballast resistances in the emitter contact sufficient to prevent localized thermal runaway during operation of the transistor. The base contact has contact strips interdigitating with the emitter contact strips and extending from a common base electrode portion. Adjacent the discontinuities in the emitter contact, webs of emitter region material extend across the ends of the base contact strips and join adjacent ones of the emitter fingers to prevent deleterious localized current injection during operation of the transistor. An embodiment is also described in which the emitter region does not have a spine but consists of a series of spaced-apart, parallel extending fingers.

3,619,742
SHIELDED CAPACITANCE PRESSURE SENSOR

Stanley E. Rud, Jr., Hopkins, Minn., assignor to Rosemount Engineering Company, Eden Prairie, Minn.

Filed May 21, 1970, Ser. No. 39,336
Int. Cl. H01g *7/00*
U.S. Cl. 317—246 19 Claims



A capacitance-type pressure sensor having a reference capacitor plate and embodying a shield surrounding the lead wire and reference plate support assembly and maintained at substantially the same potential as the lead wire and reference plate. The shield extends substantially coplanar with the reference capacitor plate so that errors due to shunt capacitances are eliminated.

3,619,743
IMPREGNATED CAPACITOR WITH ALL-FILM DIELECTRICS AND AT LEAST ONE FOIL ELECTRODE HAVING A CHEMICALLY PRODUCED PATTERN OF PASSAGES FOR PROMOTING IMPREGNATION

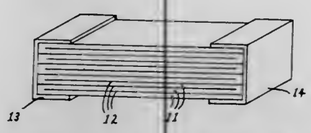
Joseph F. Ferrante, Dover, Mass., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Jan. 26, 1970, Ser. No. 005,661
Int. Cl. H01g *3/21*
U.S. Cl. 317—258 10 Claims



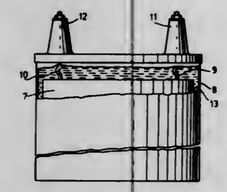
Impregnated capacitors having all-film dielectrics utilize one or more foil electrodes whose surfaces are etched or coeered with a porous oxide to provide entry passages for impregnating liquid. The passages are too fine for the film to fill before or during the impregnation process.

3,619,744
MONOLITHIC CAPACITORS
Budd James Stephenson, Niagara Falls, N.Y., assignor to National Lead Company, New York, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,464
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 **3 Claims**



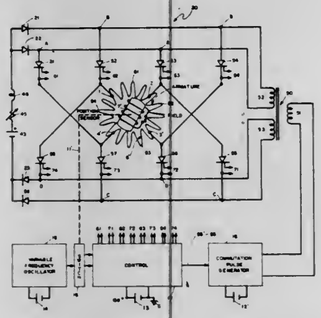
A low-cost monolithic capacitor having a high resistance to capacity change over the temperature range from −50° to 130° C. comprises superimposed alternate layers of a fired ceramic dielectric composition containing from about 93 mol % to about 96 mol % $BaTiO_3$, from about 2.5 mol % to about 4.75 mol % $PbBi_4Ti_4O_{15}$ and from about 1.0 mol % to about 2.25 mol % of an additive selected from the group $BaO{\cdot}Nb_2O_5$, $BaO{\cdot}Ta_2O_5$, $PbO{\cdot}Nb_2O_5$ and $PbO{\cdot}Ta_2O_5$, and electrodes containing up to about 90% palladium, the remainder being gold and/or platinum.

3,619,745
CAPACITOR HAVING AN IMPREGNATED DIELECTRIC
Michel Perigord, Joue Les Tours, France, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,538
Claims priority, application France, Oct. 10, 1968, 169422
Int. Cl. H01g *3/04*
U.S. Cl. 317—258 **2 Claims**



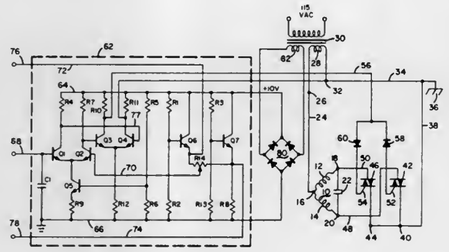
A capacitor having a dielectric impregnated with a nonthermohardening epoxy resin.

3,619,746
ELECTRONIC COMMUTATION SYSTEM FOR MOTORS
Richard D. Thornton, Concord, and William S. Brown, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed July 25, 1969, Ser. No. 844,947
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **16 Claims**



An electronic motor to connect to a DC power source and to provide a variable speed or a controllable fixed speed motor. There is disclosed a novel arrangement for effecting commutation of current in the armature windings of the motor. Commutation is initiated by signals from a variable frequency generator or from a position sensor. In either case, in the described embodiment, commutation is effected by silicon-controlled rectifiers, diodes, a transformer and drive circuitry therefor, the rectifiers being connected serially in pairs to the motor armature such that current is introduced to the armature winding through a rectifier of one pair and removed therefrom through a rectifier of another pair, the two current-carrying rectifiers changing with each commutation and the transformer being in part connected to the rectifiers such that during commutation a commutating voltage from the transformer is introduced through four rectifiers to the two armature coils undergoing commutation.

3,619,747
ELECTRONIC MOTOR CONTROL CIRCUIT EMPLOYING TRIACS
Daryl R. Pedersen, Wayzata, Minn., assignor to Novatron, Inc., St. Paul, Minn.
Filed Jan. 19, 1970, Ser. No. 3,640
Int. Cl. H02p *3/20*
U.S. Cl. 318—202 **1 Claim**

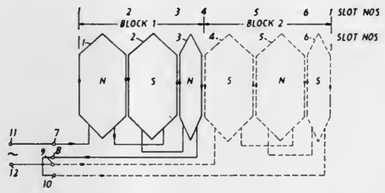


A motor control circuit for controlling the direction of rotation of a reversible alternating current motor wherein a pair of symmetrical silicon negative resistance switches, commonly known as triacs, are used to control the excitation of such motor, the firing of the triacs, in turn, being controlled by the output of a transistor difference amplifier.

ERRATUM

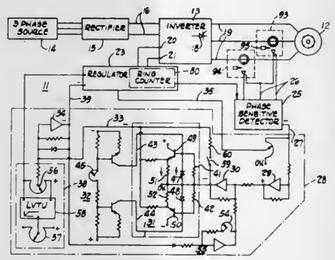
For Class 318—224 R see:
Patent No. 3,619,730

3,619,748
TWO-SPEED, SINGLE-PHASE ELECTRIC MOTORS
John F. Eastham, Long Ditton, England, assignor to National Research Development Corporation, London, England
Filed Sept. 24, 1969, Ser. No. 860,744
Claims priority, application Great Britain, Oct. 2, 1968, 46,789/68
Int. Cl. H02k *17/14, 17/16*
U.S. Cl. 318—224 R **9 Claims**



A close ratio, two-speed, pole-changing single-phase electric motor having a stator winding tapped and connected for pole-changing by the so-called phase-mixing or step-phase modulation technique and including means for providing starting torque comprising, preferably, shading rings or gap variation at every pole.

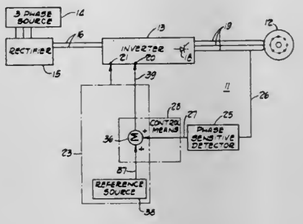
3,619,749
MOTOR CURRENT CONTROL CIRCUIT UTILIZING REAL CURRENT COMPONENT
Robert G. Schieman, Cleveland Heights, Ohio, assignor to Reliance Electric Company
Filed Oct. 6, 1969, Ser. No. 863,922
Int. Cl. H02p *5/40*
U.S. Cl. 318—231 **15 Claims**



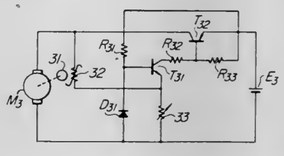
A control circuit obtains a signal proportional to current supplied to an induction motor from a variable-frequency inverter. A phase-sensitive detector discriminates between the real and reactive components of the motor current and the real component is fed back to control the current to the motor, preferably in a current limit circuit which limits the torque output of the motor. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,619,750
SPEED COMPENSATION MOTOR CIRCUIT UTILIZING REAL CURRENT COMPONENT
Boris Mokrytzki, Highland Heights, and Peter W. Hammond, Chagrin Falls, both of Ohio, assignors to Reliance Electric Company
Filed Oct. 6, 1969, Ser. No. 863,946
Int. Cl. H02p *5/40*
U.S. Cl. 318—231 **12 Claims**

An induction motor energization circuit id disclosed with energization from a variable frequency device such as an inverter. The load current to the induction motor has a considerable lagging power factor and a phase-sensitive detector detects only the in-phase or 180° out-of-phase component of this load current and applies it as a control to regulate the variable frequency device. The typical induction motor action is one where the speed droops because the slip increases as the torque increases and may be 2 to 3 percent of base speed. A signal such as the in-phase component of load current which is virtually proportional to torque is used in this invention to correct the frequency output of the inverter by 2 or 3 percent, therefore virtually eliminating the speed or slip error. By the present invention the use of only the real component of the motor load current as a feedback signal results in a substantially constant speed of the motor. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.



3,619,751
MOTOR SPEED CONTROLLING APPARATUS
Kaoru Sasabe, Ikeda-shi, and Fujio Oda, Ashiya-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 22, 1969, Ser. No. 859,724
Claims priority, application Japan, Sept. 27, 1968, 43/70673, 43/70674
Int. Cl. H02p *5/08*
U.S. Cl. 318—325 **2 Claims**

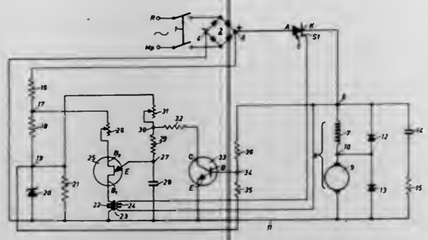


An apparatus for controlling the speed of an electric motor, wherein use is made of an element sensitive to a pressure, the electrical resistance of said element or a voltage developed thereacross being varied in accordance with the pressure imparted thereto, and a centrifugal force produced by a rotary member is imparted to said sensitive element so that the speed of said electric motor is controlled in accordance with variations in the electrical resistance of said sensitive element.

3,619,752
PULSATING CURRENT CONTROL SYSTEM FOR SERIES MOTORS AND THE LIKE USING A CONTROLLED RECTIFIER
Gediminas Bateika, Grotzingen, Baden-Wurttemberg, Germany, assignor to G.M. Pfaff AG, Kaiserslautern, Pfalz, Germany
Filed Jan. 24, 1969, Ser. No. 793,719
Claims priority, application Germany, June 1, 1968, P 17 63 460.5
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **6 Claims**

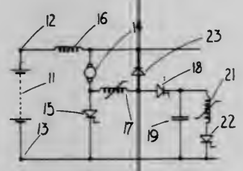
In a series-wound motor speed control system comprising a solid state controlled rectifier connected in series with the motor and a source of pulsating rectified current, the rectifier is controlled by a synchronized unijunction transistor triggering pulse former including an RC timing network. The time position of the triggering pulses is subject to a threefold

control, namely, a manual control, by varying the resistance of the network, to adjust the motor speed, a first automatic control in dependence upon variations of the motor load, and



a second automatic control depending upon supply voltage variations, to maintain the adjusted motor speed constant independently of said variations.

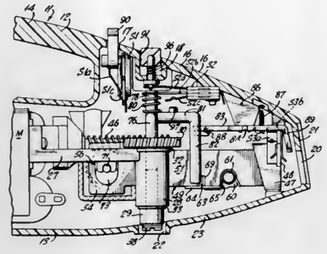
3,619,753
THYRISTOR CIRCUITS
Michael Ainley Thompson, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 10, 1969, Ser. No. 840,675
Claims priority, application Great Britain, Dec. 23, 1968, 60989/68
Int. Cl. H02m *7/52*
U.S. Cl. 318—345 **1 Claim**



A thyristor circuit has an inductive load and a first thyristor connected in series across a DC source. Connected across the first thyristor is an inductor, a second thyristor and a capacitor, and means is provided for reversing the charge on the capacitor at a convenient time so that the charge on the capacitor can be used to turn off the first thyristor. A diode is connected across the series combination of inductive load and inductor.

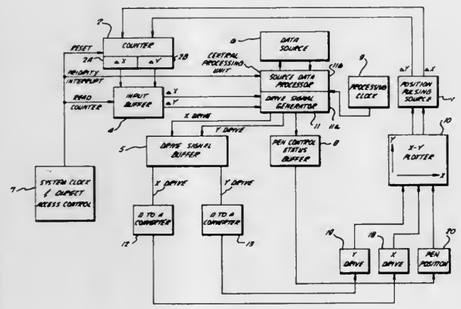
3,619,754
MULTIFUNCTIONAL ELECTRIC HOME APPLIANCE
Nathan Fuchs, Brooklyn, N.Y., assignor to Van Wyck International Corporation, New York, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,486
Int. Cl. H02p *1/00*
U.S. Cl. 318—445 **11 Claims**

An electrical mixer and knife combination appliance includes a pair of rotary chucks for releasably engaging mixer member shanks and a pair of oppositely reciprocating coupling channels for releasably engaging corresponding knife blade shanks, a motor, and transmissions connecting the motor to the chucks and coupling channels respectively to rotate and reciprocate these. Ejector slide rods register with the chucks and a gate is movable across the front of the channels and these are interconnected so as to be alternatively advanced to positions preventing the engagement of implements by the chucks or channel members. The drive motor is connected to a current source through a first manual switch in series with a switch closed by retraction of the slide rods



and through a second manual switch in series with a switch closed with retraction of the gate.

3,619,755
DIGITAL DRAFTING CONTROL SYSTEM
Ronald Verlin Munro, Woodland Hills; Stephen R. Seccombe, Northridge, and Cesar Baray, Los Angeles, all of Calif., assignors to Computer Industries, Inc., Sherman Oaks, Calif.
Filed Apr. 24, 1969, Ser. No. 819,016
Int. Cl. G05b *19/28*
U.S. Cl. 318—568 **17 Claims**

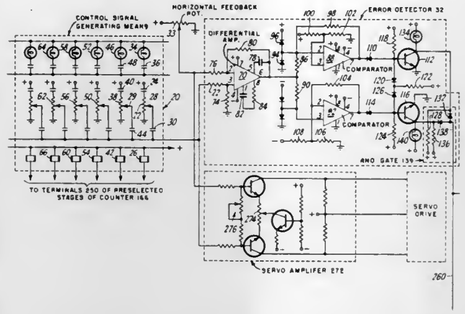


A digital drafting control system adapted to control an X-Y precision plotter is disclosed. The system is responsive to digital input data defining the end coordinates of a plurality of straight line segments. The straight line segments define the graphic display desired. The control system selectively senses the position of the drawing pen and generates drive signals to X-drive and Y-drive motors associated with the X-Y plotter. The X-drive and Y-drive motors optimally drive the drafting pen in a rectilinear manner to each successive end point coordinate defined by the digital data source.

3,619,756
SERVO DRIVE PROGRAM CONTROL
Ernest M. Rossini, Bronxville, N.Y., and Edgar R. Lodi, York, Pa., assignors to AMF Incorporated
Filed July 18, 1969, Ser. No. 843,013
Claims priority, application Great Britain, Aug. 22, 1968, 40,207/68
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **19 Claims**

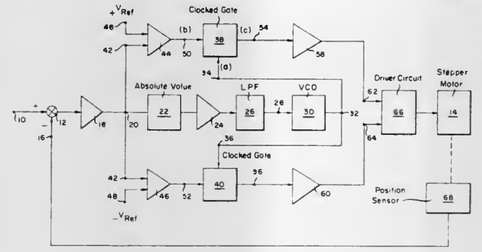
In this invention, a servo drive coupled to drive a member such as an articulated arm along a desired path is controlled (programmed) by a counter which sequentially selectively

couples signal generating means such as impedances to the servo drive, where each impedance generates a signal which



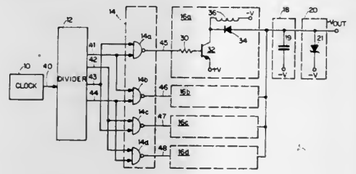
is representative of a discrete physical displacement, of the servo drive.

3,619,757
VARIABLE SPEED CLOSED LOOP DIGITAL SERVOSYSTEM
Steven R. Ioerger, North Hollywood; Dun H. Nelson, Jr., Sunland, and Irvin M. Starr, Granada Hills, all of Calif., assignors to The Bendix Corporation
Filed Apr. 22, 1969, Ser. No. 818,350
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 **5 Claims**



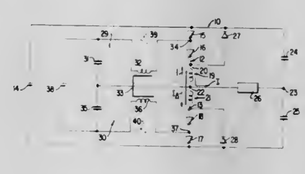
An analog, condition responsive, bidirectional stepper motor position servosystem in which the rate of response is a function of the absolute value of the instantaneous error signal. Clocked gates are utilized in lieu of AND gates to prevent the application of excessive pulses from the VCO to the motor and step integrity is insured by the utilization of a filter circuit at the input to the VCO.

3,619,758
DC VOLTAGE CONVERSION APPARATUS
Minas Deranian, Sudbury, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 29, 1970, Ser. No. 76,397
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **10 Claims**



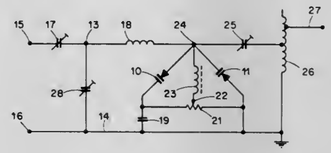
A plurality of DC to DC converter circuits are coupled to respond to pulses occurring at substantially different points in time, each circuit producing a high level DC voltage from a low level DC voltage. The high level DC voltage from each of the converter circuits are coupled to a filter which provides a transient free waveform at an output terminal. The duty cycle provided for each of the converter circuits allows minimal size components to be used while obtaining a high power output.

3,619,759
INVERTER DEVICE
Nagataka Seki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co, Ltd., Kawasaki-shi, Japan
Filed Sept. 28, 1970, Ser. No. 76,194
Claims priority, application Japan, Sept. 29, 1969, 44/77053
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **6 Claims**



A bridge type inverter which has two arms connected in series across a DC power supply. Each of the arms respectively includes first and second thyristor units which are serially connected with the same polarities. A load is provided and is connected between a common connecting point of the arms and an electrically neutral point. The second thyristor units of the two arms are located at positions adjacent to the common connecting point of the two arms and are respectively provided with first and second commutation circuits which are electromagnetically coupled to each other. When it is desired to turn off a presently turned on arm, it is necessary to turn on only the second thyristor unit of the other off arm. At such time, commutation current will flow from the second commutation circuit through the second thyristor unit of the off arm. Commutation current will thereby be induced in the first commutation circuit to turn off the arm which was turned on. In a similar manner the other arm when conducting can be turned off.

3,619,760
ELECTRONIC WAVE FREQUENCY MULTIPLIER WITH VARACTORS HAVING GAMMA ABOUT 0.56
Digjut Singh, and Eugene S. Lysak, both of Waltham, Mass., assignors to Bell & Howell Communications Company, Waltham, Mass.
Filed May 15, 1970, Ser. No. 37,666
Int. Cl. H02m *5/20*
U.S. Cl. 321—69 NL **10 Claims**

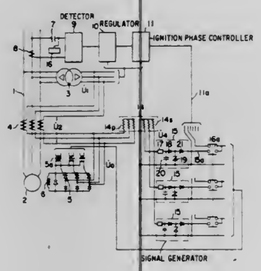


A pair of varactors connected antiparallel across a source of fundamental frequency power to provide third harmonic power with essentially suppressed even harmonics minimizes the fifth harmonic with varactors having gamma about 0.56.

3,619,761
EXCITATION CONTROL DEVICE OF SELF-EXCITING, COMPOUND SYNCHRONOUS MACHINE

Masaomi Nagae, and Sumio Yokokawa, both of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Mar. 10, 1970, Ser. No. 18,102
Claims priority, application Japan, Mar. 13, 1969, 44/18986
Int. Cl. H02p 9/30, 9/10
U.S. Cl. 322—25 9 Claims

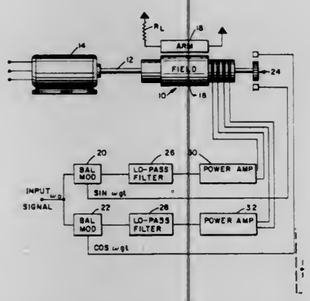


An excitation control device of a self-exciting, compound synchronous machine, particularly a synchronous generator, excited by way of a rectifying device including at least one thyristor, which device includes a stable ignition signal source for the thyristor of the rectifying device and is capable of supplying an exciting current even when a short circuit failure occurs in a system connected to the synchronous machine. By this device, a generator can continue to supply a short circuit current, whereby the operation of an overcurrent relay and resynchronization with the system without undue conditions at the time of recovery from the failure are assured.

3,619,762
FREQUENCY RESPONSIVE ROTARY LINEAR AMPLIFIER FOR ALTERNATORS

Billy D. Pitchard, Springfield, Va., assignor to The Technical Materlal Corporation

Filed Jan. 2, 1970, Ser. No. 34
Int. Cl. H02p 9/30, 9/42
U.S. Cl. 322—31 8 Claims

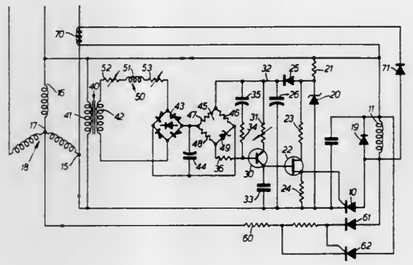


Output signals from high-frequency alternators are stabilized by a quadrature mixing process. A plurality of modulating signals are applied to the fields of an alternator in such a fashion as to cause the field flux to either rotate with or against the mechanical rotation of the rotor; the field modulating signals having a predetermined phase relationship and a frequency identical to the difference between the generated signal frequency and the desired output frequency.

3,619,763
FREQUENCY-RESPONSIVE CONTROL APPARATUS FOR ELECTRIC ALTERNATORS

Peter J. Wyles, Stamford, England, assignor to Newage Lyon Limited, Stamford, England

Filed July 19, 1968, Ser. No. 746,140
Int. Cl. H02p 9/30
U.S. Cl. 322—32 4 Claims

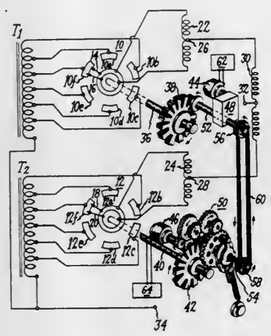


In automatic regulating apparatus for an electric alternator a main thyristor is connected in series with an excitation winding across the alternator terminals and is controlled by a sensing circuit to which a signal corresponding to alternator output voltage is passed through an inductor to give frequency-responsive control.

3,619,764
PARALLEL CONNECTED TAP CHANGERS EMPLOYING SIMULTANEOUSLY MOVABLE CONTACTS

Robert H. Brennan, Pittsfield, Mass., assignor to General Electric Company

Filed Mar. 19, 1970, Ser. No. 21,107
Int. Cl. H02p 13/06; G05f 1/14
U.S. Cl. 323—43.5 R 4 Claims

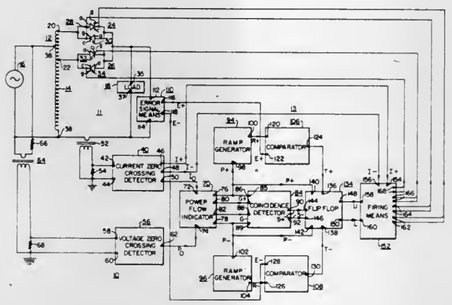


A pair of mechanical tap changers supply current to a load from pairs of transformer taps having like voltages. Corresponding stationary contacts of the tap changers are simultaneously coupled to transformer taps having identical voltages, and current is supplied to the load from the center tap of a limiting reactor connected between the output terminals of the tap changers. Actuation of the tap changers is synchronized by means of a chain drive coupling the movable elements of the tap changers.

3,619,765
ELECTRICAL CONTROL APPARATUS USING DIRECTION OF CURRENT AND POWER FLOW TO GATE SWITCHING DEVICES

Peter Wood, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1970, Ser. No. 49,318
Int. Cl. G05f 1/20
U.S. Cl. 323—43.5 S 19 Claims

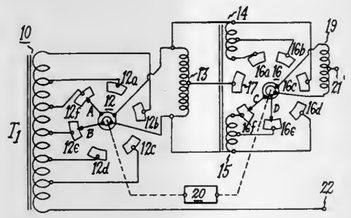


Electrical control apparatus including a transformer having a winding connectable in a power circuit which includes a source of alternating potential and a load circuit. The transformer winding includes at least two tap connections which are selectively connected into the power circuit with solid-state switching devices. The solid-state switching devices are gated at a firing angle responsive to an error signal. Tap-to-tap short circuits are obviated, regardless of the type of connected load, by firing control which senses the direction of instantaneous power flow, and the direction of instantaneous current flow in the power circuit.

3,619,766
VERNIER VOLTAGE REGULATOR

James W. Simpson, Pittsfield, Mass., assignor to General Electric Company

Filed June 25, 1970, Ser. No. 49,709
Int. Cl. H02p 13/06; G05f 1/14
U.S. Cl. 323—43.5 R 7 Claims

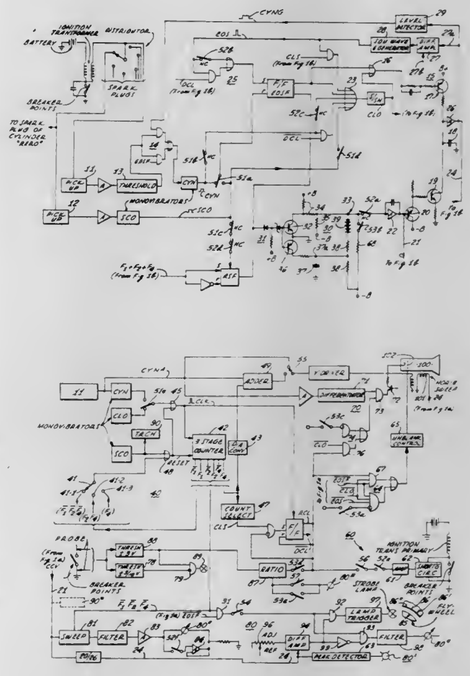


A split, tapped transformer winding and a current limiting reactor are connected between the two movable fingers of a conventional tap changer. Contacts of a second tap changer are coupled to the taps of the split transformer winding and to the center tap of the equalizing reactor, and engaged by two movable fingers for providing a vernier adjustment of output voltage.

3,619,767
SYSTEM FOR TESTING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

Edmond R. Pelta, 567 Erskine Drive, Pacific Palisades, Calif., and Kenneth Stewart Gold, 7721 Nevada Ave., Canoga Park, Calif.

Filed June 10, 1966, Ser. No. 556,710
Int. Cl. F02p 17/00
U.S. Cl. 324—17 9 Claims



When a first cylinder in a multicylinder engine is fired, it triggers an oscilloscope sweep which produces a linearly rising voltage representing the sweep. When the voltage rises to a particular level, the sweep is discontinued and a new sweep is not initiated until the first cylinder is triggered in the next cycle of firings in the multicylinder engine. By providing this arrangement, the slope of the sweep is changed as the speed of the engine changes. This causes a substantially constant ratio of time to be produced in each cycle between the duration of the sweep and the time remaining until the initiation of the next sweep.

A particular cylinder in the engine is tested in each cycle of engine firing. The testing occurs when the sweep voltage reaches a particular value dependent upon the relationship between the first cylinder and the particular cylinder.

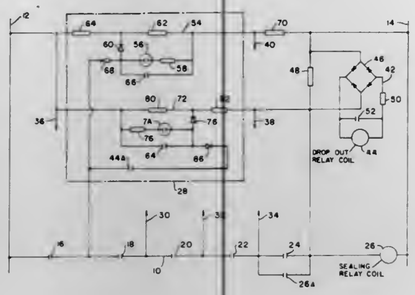
3,619,768
APPARATUS FOR DETERMINING THE LOCATION OF A FAILURE IN A SERIES RELAY CIRCUIT AND THE TYPE OF FAILURE

Robert B. Harte, Taylor, Mich., assignor to Buhr Machine Tool Corporation

Filed Apr. 15, 1968, Ser. No. 721,388
Int. Cl. G01r 31/02
U.S. Cl. 324—28 4 Claims

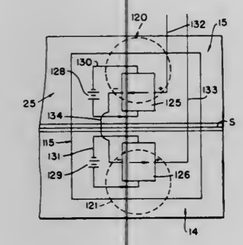
Structure for and a method of analyzing failure of a series relay circuit is disclosed. The location of the failure of the circuit may be determined with the structure and by the method disclosed as well as the type of failure occuring. Thus, in a series relay circuit, lights are provided in conjunction with each of the contacts in the circuit and a circuit is provided associated therewith to for turning an the lights on

as the relay contacts pick up and for maintaining the lights in an on condition, even though the circuit may subsequently be broken. A second light is provided in conjunction with each



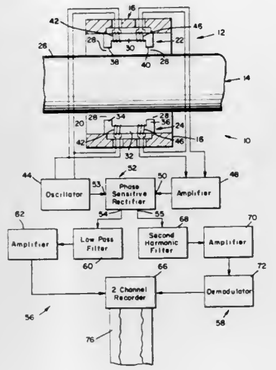
of the contacts in the series relay circuit, together with a circuit for lighting each of the lights in conjunction with each of the contacts positioned in the circuit after the contacts in the series relay circuit which drop out after initially picking up.

3,619,769
HALL EFFECT WELD CONDITION INSPECTION EQUIPMENT WITH MEANS TO LATERALLY POSITION THE EQUIPMENT RELATIVE TO THE WELD
Felix N. Kusenberger; John R. Barton, and Robert R. King, all of San Antonio, Tex., assignors to Amtel, Inc., Providence, R.I.
Filed June 10, 1969, Ser. No. 831,935
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **17 Claims**



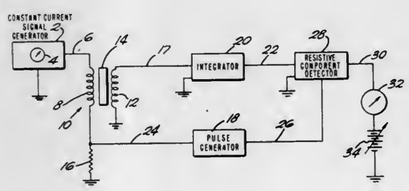
A longitudinally welded ferrous bimetal strip passes continuously at production speed from a welding machine successively through safety head and inspection head units, in the latter of which the strip is magnetized and electromagnetically monitored by an inspection probe for the purpose of detecting magnetic perturbations occasioned by leakage of flux, such as might be caused by various conditions of the weld zone as monitored by the probe. The latter operates under the principle of the Hall effect. The signal from the inspection probe is built-up and fed through signal processing circuitry, then imposed on indicating meter equipment of a readout monitor unit located adjacent the welding machine, where an attendant may make any needed adjustment as indicated at the monitor unit. The safety head unit protects the inspection probe head unit by removing surface accumulation on the strip apt to damage the probe of the inspection head, and by detecting major flaws in the weld, lifting the probe to a safe position to avoid such damage by a flaw. The safety and inspection head units are mechanically similar in many respects and have provisions for a proper lateral positional relationship between the longitudinal weld zone and detecting components of the safety and inspection units.

3,619,770
EDDY CURRENT TEST SYSTEM FOR INDICATING THE OVAL SHAPE OF A CYLINDRICAL WORKPIECE
Friedrich M. O. Forster, Der Schoene Weg 144, 7410 Reutlingen, Germany
Filed Mar. 2, 1970, Ser. No. 15,524
Int. Cl. G01r *33/00*
U.S. Cl. 324—40 **2 Claims**



An eddy current system is disclosed herein for inspecting pipes, bars, wire, etc., measuring the diameter and the ovality thereof. The system includes a search unit having a probe which spins around the pipe and generates a signal which is a function of the spacing between the pipe and probe.

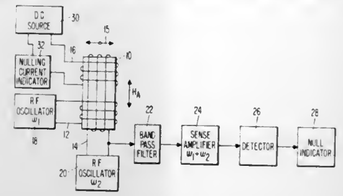
3,619,771
METHOD OF AN APPARATUS FOR SELECTING THE OPTIMUM TEST FREQUENCY IN EDDY CURRENT TESTING
Rudolf G. Hentschel, 2002 Wayne, Ann Arbor, Mich.
Filed Sept. 2, 1969, Ser. No. 854,613
Int. Cl. G01r *33/14*
U.S. Cl. 324—40 **11 Claims**



A method and apparatus for measuring the metallurgical characteristics of a material by sensing the eddy current characteristics of the material through an extremely wide range of frequencies, selecting that frequency at which the resistive component of the eddy current device output signal is greatest, and then testing various similar shapes of material for variation in metallurgical characteristics.

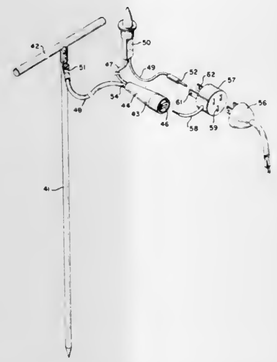
3,619,772
MAGNETOMETER EMPLOYING MEANS RESPONSIVE TO VARIATIONS OF MAGNETIZATION VECTOR POSITION IN A THIN FILM SENSOR
David M. Ellis, South Burlington, Vt., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 29, 1969, Ser. No. 854,197
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **20 Claims**

A thin magnetic film magnetometer is described in which the thin film sensor element is driven in both its easy and hard axes directions by oscillators having different frequencies. The nature of the signal appearing on a winding coupled to the thin film along its easy direction depends upon the angular position of the thin film magnetic moment or magnetization (M) vector and the film easy axis; which in turn is a function of an external field applied to the film along its



hard axis. Both manual and automatic means are described for sensing the position of the M vector and restoring it to its rest position along the thin film easy axis—such action producing a measure of the magnitude and direction of the external applied field.

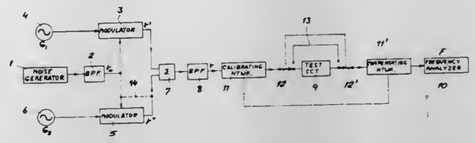
3,619,773
GROUNDING AND TEST DEVICE INCLUDING A GROUNDING STAKE AND TEST LAMP
William M. Lathrop, 602 Pool Drive, Norton, Kans.
Continuation-in-part of application Ser. No. 789,831, Jan. 8, 1969, now abandoned. This application Jan. 6, 1970, Ser. No. 000,926
Int. Cl. G01r *31/02, 19/16*
U.S. Cl. 324—51 **2 Claims**



An electrical grounding device for use at "on-site" locations to protect mobile equipment and personnel from the hazards of static electricity discharges, lightning or stray currents which provides a grounding stake having an insulated handle to facilitate insertion into the earth or other receptacle, a clip for attachment to the equipment or vehicle to be protected, and a cable interconnecting said stake and clip. Alternate embodiments provide a test lamp with a terminal connected to said cable and a test prong separate therefrom whereby the polarity of connectors is determined for proper equipment connection and useage. The cable itself may also be connected to alternate electrical ground components.

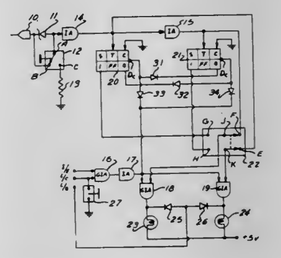
3,619,774
SYSTEM FOR MEASURING NONLINEARITY OF A SIGNAL-TRANSMITTING NETWORK
Franz Josef Landwehr, Munster, Germany, assignor to Wandel & Goltermann, Reutlingen, Germany
Filed July 29, 1969, Ser. No. 845,738
Claims priority, application Austria, July 30, 1968, A 7430/68
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 DE **8 Claims**

The output of a random-noise generator is modulated with the aid of two fixed reference frequencies G_1, G_2 (one of which may be zero) to yield two mutually transposed but correlated noise bands overlapping in a frequency range which substantially coincides with a band of signal frequencies to be transmitted through a test circuit to be examined for nonlinearity. With the sum or difference of any two correlated signal frequencies f_i', f_i'' in the two noise bands equal to a



fixed beat frequency $F=G_2\pm G_1$, the amplitude of a signal of this beat frequency in the output of the test circuit receiving the two wholly or partly coincident noise bands is a measure of the nonlinearity of that test circuit throughout the signal band. A broadband of signal frequencies may be substituted for the noise frequencies if the system is to be tested in actual operation.

3,619,775
POLARITY AND VOLTAGE LEVEL DETECTING TEST PROBE
Robert J. Naylor, Cape May Point, and Leroy H. Werner, Burlington, both of N.J., assignors to Pulse Monitors, Inc., Moorestown, N.J.
Filed Nov. 25, 1969, Ser. No. 879,865
Int. Cl. G01n *15/12*
U.S. Cl. 324—73 **13 Claims**

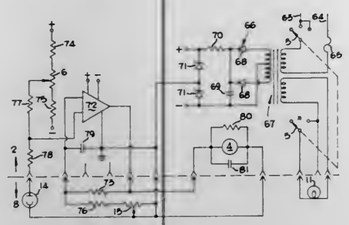


An electrical test instrument for use in servicing digital computers which provides a digital output by means of two lamps indicating the characteristics of a voltage level or pulse or train of pulses at a point in the computer. The instrument comprises a test probe connected through a selectively inserted zener diode to a pair of cascaded amplifiers each of which drives a gating circuit and a control circuit for providing a conditioning signal to the gates. The gate circuits in turn control the indicating lamps. A pair of flip-flops may be selectively placed in the circuit between the amplifiers and the gates when the test instrument is used to indicate statically the condition of the first pulse received by the probe.

3,619,776
MULTIFUNCTION INSTRUMENT INCLUDING PLUG-IN MODULES HAVING AMPLIFIER RESPONSE CONTROL ELEMENTS
Warren G. Kinninger, 6 Cornflower, St. Louis, Mo.
Filed June 9, 1969, Ser. No. 831,355
Int. Cl. G01r *15/08, 1/30*
U.S. Cl. 324—115 **1 Claim**

The present invention relates to a multifunction instrument in which the measurement of such quantities as conductivity, oxygen uptake or evolution, temperature, pH and colorimetry is accomplished by utilizing an instrument, comprising a common unit and function modules which are removably mountable to said common unit wherein the com-

mon unit is provided primarily with those functional elements normally used in any laboratory instrument designed for measurement of quantities in the field of use contemplated

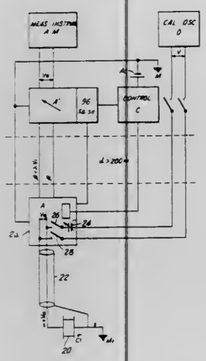


by the invention and the function modules are provided primarily with those elements normally associated with the measurement of a specific quantity.

3,619,777
PRECISION MEASURING NETWORK HAVING PRIMARY ELEMENTS OF HIGHLY CAPACITIVE IMPEDANCE

Jacques Terry, 14 Allee Diamont Foret de Vernon, 26 Vernon 6, France

Filed Mar. 17, 1969, Ser. No. 807,666
Claims priority, application France, Mar. 15, 1968, 143895
Int. Cl. G01r *7/00*; G01r *35/04*
U.S. Cl. 324—140 R **3 Claims**



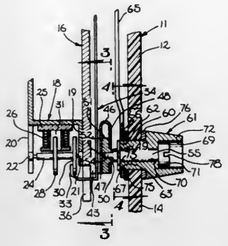
Precision measuring network including a plurality of piezoelectric detectors and associated circuits and a control and calibrating apparatus including a calibrating oscillator, a measuring instrument and a control. The circuits are connected to the detectors by calibrated cables. A calibration signal from the oscillator is applied to a capacitive voltage divider constituted by the detector and cables and stray capacitances. The circuits are packaged in sealed cylindrical housings.

3,619,778
ADJUSTING DEVICE FOR AN ELECTRICAL MEASURING INSTRUMENT

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Feb. 4, 1970, Ser. No. 8,667
Int. Cl. G01r *1/00*
U.S. Cl. 342—154 R **2 Claims**

An adjusting device having a knob and an adjusting shaft which are concentric and accessible from the exterior of an electrical measuring instrument. The knob positions a preset pointer at a selected value on the scale of the instrument and the adjusting shaft independently locates a control magnet for zero adjustment of the instrument. The control magnet is rotatably retained in a U-shaped front wall of a bracket which is opposite the end of the adjusting shaft. The knob

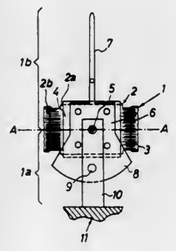


and adjusting shaft are mounted in a face panel of the instrument to be rotated independently of one another.

3,619,779
UNBALANCED COIL ASSEMBLY FOR MOVING-COIL INSTRUMENTS

Willy Kisselmann, Grunwald; Fritz Rumpelein, Guido-Schneble, and Paul Kopf, Unterhaching, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed Mar. 26, 1969, Ser. No. 810,587
Claims priority, application Germany, Mar. 30, 1968, P 17 66 083.2
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 PB **9 Claims**



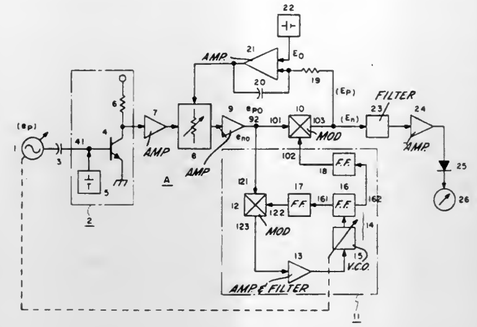
An unbalanced coil assembly for use in moving-coil instruments comprises a frame which carries the coil, two coaxial staffs, a pointer and platelike balance weight. When the coil assembly is mounted for turning movement about the common axis of its staffs and when such axis is located in a horizontal plane, the balance weight is caused by gravity to move to a level below the staffs. This balance weight extends beyond the outline of the frame so that some of its material can be removed by one or more milling or like tools until the coil assembly is properly balanced.

3,619,780
TRANSISTOR NOISE MEASURING APPARATUS

Bas Hoeks, Palo Alto; Paul E. Stoft, Menlo Park, Calif.; Nobuo Numasaki; Haruo Ito; Takayuki Sato, Tokyo, Japan, and Knud Knudsen, Los Altos Hills, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 2, 1970, Ser. No. 168
Claims priority, application Japan, Jan. 24, 1969, 44/04813
Int. Cl. G01r *31/22, 27/00*
U.S. Cl. 324—158 T **2 Claims**

An improved instrument measures noise power generated by a transistor under selected test conditions. Automatic adjustment of gain from the input of the transistor under test

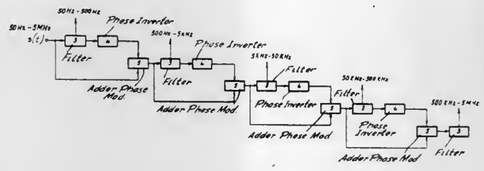


through succeeding stages provides an accurate readout of noise generated within the transistor under test.

3,619,781
SYSTEM FOR THE TRANSMISSION OF A RADIO-FREQUENCY SIGNAL WITH SEPARATION INTO INDIVIDUALLY TRANSMITTABLE SUBBANDS

George P. Cartianu, and Aurin A. G. Popea, both of Bucharest, Romania, assignors to Ministerul Industriei Constructiilor de Masini, Bucharest, Romania

Filed Dec. 30, 1968, Ser. No. 788,701
Claims priority, application Romania, Dec. 30, 1967, 55542
Int. Cl. H04b *7/14*
U.S. Cl. 325—1 **4 Claims**

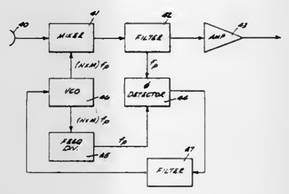


A method of and system for separating a wide-band signal into individually transmittable subbands. The wide-band signal is iteratively filtered in a plurality of stages each adapted to tap off a respective subband. Phase conversion is effected between the filter stages upon the signals iterative from each stage to a successive stage in the iterative filtering of said wide-band signal. The output of a preceding stage is used to phase-modulate the input to a succeeding stage.

3,619,782
COHERENT CATV TRANSMISSION SYSTEM

Lyle S. Stokes, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 28, 1966, Ser. No. 523,653
Int. Cl. H04h *1/04*; H04b *7/14*
U.S. Cl. 325—9 **3 Claims**

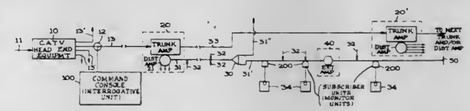


A community antenna television system wherein one or more microwave transmission links are used between the CATV receiving unit and the user's receivers. In accordance with the invention, the undesirable effects caused by slight frequency differences between the directly transmitted television signals and the relayed television signals are eliminated. This is accomplished by providing at the microwave transmitter a pilot signal having a frequency which is an integral submultiple of the microwave carrier frequency. This pilot signal is transmitted, together with the television broadcast signals over the microwave transmission link or links. At the microwave receiver the pilot signal, together with an integral submultiple of the local oscillator, is utilized in a phase-locked loop to synchronize the local oscillator frequency with the microwave carrier frequency.

3,619,783
MEANS FOR DETERMINING TELEVISION CHANNEL USE IN A COMMUNITY ANTENNA TELEVISION SYSTEM

Thomas H. Ritter, Lompoc, Calif., assignor to H & B Communications Corporation, Beverly Hills, Calif.

Continuation of application Ser. No. 613,249, Feb. 1, 1967, now abandoned. This application Sept. 30, 1970, Ser. No. 77,019
Int. Cl. H04h *9/00*
U.S. Cl. 325—31 **6 Claims**

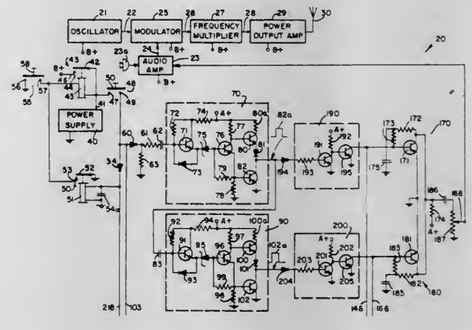


Means to determine the channel to which a subscriber on a community antenna television system is tuned utilizing various embodiments of command console and subscriber units utilizing a radio frequency carrier wave generated by the local oscillator of the subscriber's sets and receiving the information upon interrogation of the subscriber unit by the command console. Interrogation and return signals may be either modulated radio frequency signals or audio tones.

3,619,784
TRANSMITTER WITH MEANS FOR GENERATING THE CARRIER WAVE BEFORE GENERATING THE MODULATION COMPONENTS

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.

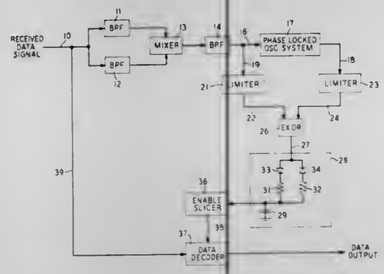
Filed Mar. 3, 1970, Ser. No. 16,037
Int. Cl. H04b *1/02*
U.S. Cl. 325—155 **18 Claims**



There is disclosed an electronic switching device having a transmitter-energized position for coupling a source of operating voltage to a carrier-wave-generating circuit, a further switch coupled to the electronic switch having one

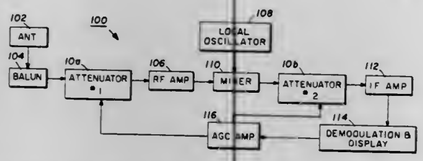
position causing the electronic switch to be placed in its transmitter-energized position, a control circuit which provides energizing signals when the further switch is placed in its first position and then in its second position, which energizing signals cause a circuit to generate information for modulation on the carrier wave, a holding circuit which, in the presence of the energizing signals, maintains the energizing switch closed, despite placement of the further switch in its second position.

3,619,785
SYSTEM FOR DETECTING THE PRESENCE OF A RECEIVED DATA SIGNAL
Cecil W. Farrow, Monmouth Hills, and Louis N. Holzman, Lincroft, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 26, 1969, Ser. No. 836,741
Int. Cl. H04h *1/10*; **H03g** *5/100*
U.S. Cl. 325—323 **1 Claim**



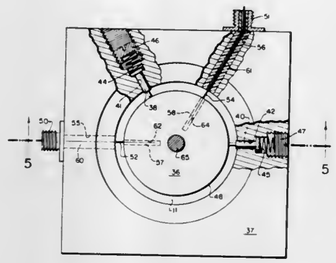
A system is disclosed for detecting the presence of a received data signal in which a pair of band-pass filters is employed to separate out two pilot tones from the received signal. A mixer is employed to generate a difference frequency which drives a phase-locked oscillator system. The phase-locked oscillator system provides an output signal having the same frequency and phase as the average value of the difference signal. The phase relationship between the difference signal and the output from the phase-locked oscillator system is compared to provide a signal for enabling a data decoding circuit.

3,619,786
SOLID-STATE VHF ATTENUATOR AND TV RECEIVER
Donald L. Wilcox, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 28, 1969, Ser. No. 859,600
Int. Cl. H04b *1/18*
U.S. Cl. 325—411 **8 Claims**



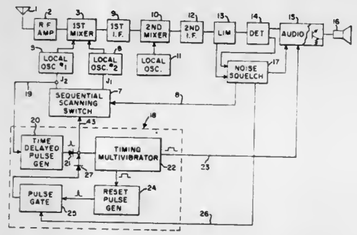
Disclosed are television receivers of the type having voltage-controlled AC signal attenuators including diodes which are advantageously suitable for use as an automatic gain control in a television receiver, for example, or for attenuating any UHF or high-frequency signals. These novel attenuators, when incorporated in a television receiver, (1) substantially eliminate pole-shifting distortion by permitting the RF and IF amplifiers to be operated at one biaspoint, (2) protect the amplifier from overload by preamplification attenuation of the incoming signals, (3) improve system cross modulation, (4) permit use of field effect transistors, and (5) assure minimum degradation of the amplifier noise figure.

3,619,787
MICROWAVE HYBRID WHEEL
Edward Salzberg, 19 Black Oak Road, Wayland, Mass.
Filed May 14, 1970, Ser. No. 37,144
Int. Cl. H03h *7/46*; **H01p** *5/12*
U.S. Cl. 325—446 **11 Claims**



A microwave hybrid ring in modified coaxial line in which the inner conductor is the rim of a wheel mechanically fixedly mounted and electrically grounded at its geometrical center. The electrical grounding at the center may be at the design frequency through a choke.

3,619,788
CIRCUIT FOR GIVING PRIORITY TO ONE OF A PLURALITY OF AUTOMATICALLY MONITORED CHANNELS IN A RECEIVER
Olin S. Giles, Jr., and Seymour Paul, Jr., both of Lynchburg, Va., assignors to General Electric Company
Filed Apr. 14, 1969, Ser. No. 815,998
Int. Cl. H04b *1/28*
U.S. Cl. 325—465 **7 Claims**

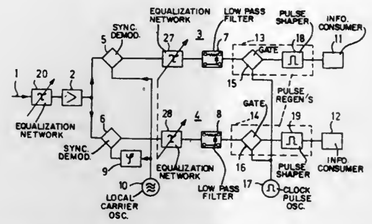


A receiver is recurringly switched between channels until a signal is received and the receiver is locked onto that channel. If the receiver is locked on the nonpriority channel, a circuit is actuated to sample the priority channel repeatedly to determine whether a signal has since been received on the priority channel. If a signal is sensed on the priority channel during the sampling intervals, the receiver is switched from the nonpriority channel to the desired priority channel in spite of the presence of the signal on the nonpriority channel.

3,619,789
RECEIVER WITH PRE AND PAST DETECTION PHASE EQUALIZATION
Frank De Jager, and Petrus Josephus Van Gerwen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 30, 1968, Ser. No. 787,744
Claims priority, application Netherlands, Jan. 3, 1968, 6800093
Int. Cl. H04b *1/10*
U.S. Cl. 325—480 **7 Claims**

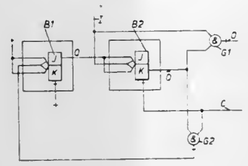
A receiver for use with orthogonal modulation signals transmitted along a transmission link having a particular phase shift characteristic features predetection and postdetection phase equalizers. The predetection equalizer

produces with the link phase characteristic a symmetrical about the carrier frequency phase characteristic. The postde-



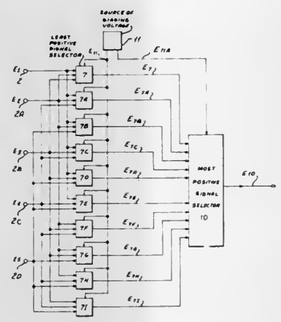
tection equalizer produces with both the transmission link and predetection equalizer a linear phase characteristic.

3,619,790
CIRCUIT FOR SELECTIVELY SUPPRESSING A PULSE IN A PULSE TRAIN
Richard N. Brooksbank, Beeston, England, assignor to The Plessey Company Limited, Ilford, Essex, England
Filed Mar. 13, 1970, Ser. No. 19,187
Claims priority, application Great Britain, Apr. 26, 1969, 21,425/69
Int. Cl. H03k *17/26*
U.S. Cl. 328—99 **1 Claim**



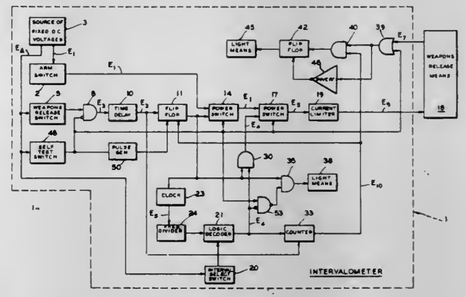
A circuit for selectively suppressing a pulse in a pulse train utilizing first and second bistable devices and first and second two input gates. The circuit normally permits the passage of a train of pulses from an input terminal, but upon the application of a command signal at a command terminal, a pulse of the train is suppressed without mutilating the other pulses, actual suppression being accomplished by the response of said second bistable device to the trailing edge of the pulses of said pulse train.

3,619,791
INTERMEDIATE AMPLITUDE SIGNAL SELECTOR
Harold Morelnes, Springfield, N.J., assignor to The Bendix Corporation
Filed Sept. 23, 1969, Ser. No. 860,315
Int. Cl. H03k *5/20*
U.S. Cl. 328—117 **9 Claims**



An intermediate amplitude signal selector for selecting the *r*th ranking signal from *m* applied signals, where *m* is greater than three and *r* is the ranking in amplitude, comprising a plurality of gating circuits each receiving a different group of signals less than *m* and providing a signal corresponding to one of the applied signals whose amplitude is related to the other signals of the group, the circuit receiving a group including the *r*th ranking signal providing a signal corresponding thereto, and a gating network connected to the gating circuits and receiving the signals therefrom and providing a signal corresponding to the *r*th ranking signal.

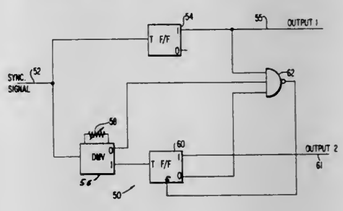
3,619,792
ADJUSTABLE INTERVALOMETER INCLUDING SELF-TESTING MEANS
John M. Capeci, Little Ferry; Roger J. Talish, Fairfield, and Kenneth J. Urgovitch, Clifton, all of N.J., assignors to The Bendix Corporation
Filed Oct. 1, 1969, Ser. No. 862,823
Int. Cl. G01r *29/02*; **H03k** *5/00*; **F41f** *5/00*
U.S. Cl. 328—130 **7 Claims**



An intervalometer in which a direct current voltage is modulated to provide a release pulse train to object release means, each pulse releasing an object, which may be a weapon such as a bomb, or a similar type of weapon. The intervalometer includes a time interval select circuit for controlling the time interval between object releases and providing a control pulse train output. A start release sequence circuit, when manually activated, modulates the direct current voltage in accordance with the control pulse train to provide the release pulse train.

The intervalometer also includes a circuit for self-testing the intervalometer and indicators for indicating that a release sequence is occurring and for indicating a failure to release an object.

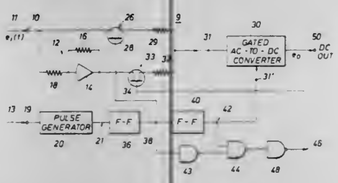
3,619,793
DIGITAL WAVEFORM GENERATOR WITH ADJUSTABLE TIME SHIFT AND AUTOMATIC PHASE CONTROL
Marshall B. Broome, Tulsa, and William W. Burress, Broken Arrow, both of Okla., assignors to Atlantic Richfield Company
Filed Nov. 5, 1969, Ser. No. 874,206
Int. Cl. H03k *1/18*
U.S. Cl. 328—155 **2 Claims**



A circuit for generating two pulse waveforms having a desired time and phase relationship, and an optically pumped

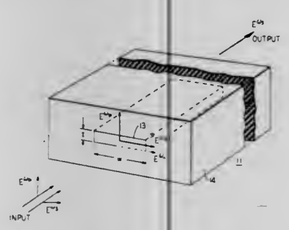
magnetometer utilizing that circuit. A synchronization signal toggles a bistable multivibrator to provide one pulse waveform. The synchronization signal also triggers a monostable multivibrator, the output of which toggles a second bistable multivibrator to provide the second pulse waveform. The time the monostable multivibrator remains in its unstable state determines the desired time relationship between the two waveforms. Should the waveforms assume the wrong phase relationship, gating circuitry returns them to the proper phase relationship. The circuit can be utilized to provide a phase reference signal and a sweep control signal in an optically pumped magnetometer, giving the desired time and phase relationship between those two signals.

3,619,794
METHOD AND SYSTEM FOR DETECTING NOISE-CONTAINING SIGNALS
Peter L. Richman, 22 Barberry Road, Lexington, Mass.
Filed Feb. 13, 1970, Ser. No. 11,179
Int. Cl. H03b *1/04*; H03k *17/60*
U.S. Cl. 328—165 **23 Claims**



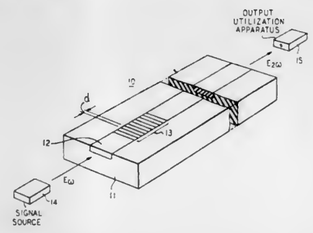
This invention concerns detectors or rectifiers which are insensitive to superimposed noise, as well as to DC and varying DC signals. The detectors of this invention provide insensitivity to higher-order time functions by gating with different gain factors the successive half-cycles, or successive groups of half-cycles, in the input AC signal, the AC value of which it is desired to detect. The insensitivity can be extended as well to sums of higher-order time functions. The invention is particularly adapted to high-speed AC measurements in situations whose characteristics include noise, drift, or "-drool" phenomena.

3,619,795
PHASE MATCHING IN DIELECTRIC WAVEGUIDES TO EXTEND THE INTERACTION DISTANCE OF HARMONIC-GENERATORS AND PARAMETRIC AMPLIFIERS
Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 10, 1970, Ser. No. 27,331
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.6 **4 Claims**



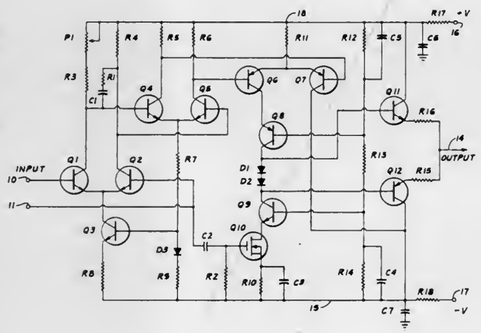
The interaction distance in harmonic generators and parametric amplifiers is extended over a sufficiently long distance to effect optimum frequency conversion by forming the nonlinear dielectric medium into a waveguide, and proportioning its cross-sectional dimensions such that the relevant waves propagate with the same phase velocity. In an harmonic generator, the waveguide is proportioned such that the applied fundamental frequency wave and the orthogonally polarized, harmonic wave induced in the medium propagate with the same phase velocity. In a parametric amplifier, the applied signal and the induced idler wave propagate with the same polarization, while the pump wave is orthogonally polarized.

3,619,796
PHASE-MATCHING ARRANGEMENTS IN PARAMETRIC TRAVELING-WAVE DEVICES
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 27, 1970, Ser. No. 32,190
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.6 **8 Claims**



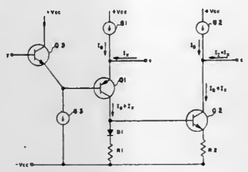
The phase deficiency in a parametric traveling-wave device, due to dispersion in the wavepath, is compensated by means of a grating distributed along a surface of an otherwise uniform nonlinear material. In one embodiment of the invention the grating is fixed. In a second, tunable embodiment of the invention, an acoustic surface wave serves as a moving grating.

3,619,797
OPERATIONAL AMPLIFIER
James W. Merrick, El Paso, Tex., assignor to Globe Universal Sciences, Inc., El Paso, Tex.
Filed Jan. 21, 1970, Ser. No. 4,622
Int. Cl. H03f *1/02*, *3/16*, *3/04*
U.S. Cl. 330—9 **1 Claim**



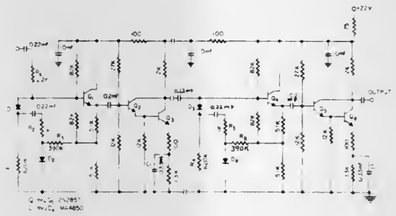
A high-gain, broad bandwidth differential operational amplifier is described. High-frequency response is increased by means of a feed-forward path, which bypasses the cascaded low-frequency differential stages at high frequencies and feeds the signal directly to a common base cascade output stage so that the rolloff of the low-frequency cascaded stages does not affect the high-frequency response of the amplifier.

3,619,798
THREE-PORT ELECTRICAL NETWORK
Kenneth C. Smith, Weston, Ontario, and Adel S. Sedra, Toronto, Ontario, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Nov. 20, 1969, Ser. No. 878,823
Int. Cl. H03f *3/42*
U.S. Cl. 330—19 **4 Claims**



A three-port electrical network that has a first port whose impedance is high and whose voltage controls the potential of a second port which has low or zero impedance and through which an independent current flows to reappear at a third port at high impedance which consists of a unity gain amplifier having high input impedance and low output impedance and means for deriving a current related to the current flowing in the output port of the amplifier and means for conveying this current to a third port. The latter two means are current followers energized from constant current sources.

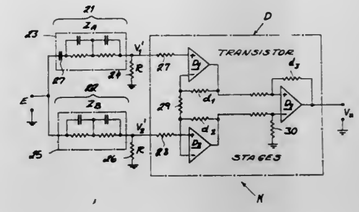
3,619,799
NUCLEAR HARD VIDEO AMPLIFIER
Harlan J. Oelke, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Army
Filed Jan. 22, 1970, Ser. No. 5,075
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **7 Claims**



A video amplifier circuit which exhibits stability of gain under neutron bombardment. Nuclear radiation in the order of 10^{15} neutrons/cm.^{2} (nvt) causes changes up to 90 percent in transistor beta. The amplifier includes a bias circuit for compensation of the beta change to maintain near constant gain.

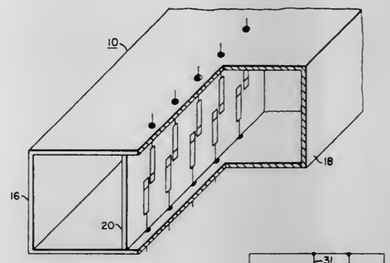
3,619,800
PHASE-SHIFTING NETWORK FOR SINGLE-SIDEBAND MODULATION
Evangelo Lyghounis, and Giovanni Barbieri, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy
Filed June 20, 1969, Ser. No. 835,189
Claims priority, application Italy, June 26, 1968, 18230A/68
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **5 Claims**

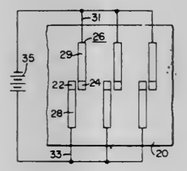
Two phase-shifting networks of identical construction, differing only in the magnitudes of their impedances, comprise each two L-sections with partly capacitive series arms and resistive shunt arms working into a differential amplifier to generate, in response to an input voltage applied to both networks in parallel, two output voltages maintaining a constant amplitude and phase relationship through a wide band of frequencies; the two L-sections of each network, connected



in parallel to a common voltage source, differ from each other by the presence of a series condenser in one L-section.

3,619,801
SOLID-STATE TRANSFERRED ELECTRON EFFECT DEVICE
Wayne E. Hughes, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 23, 1967, Ser. No. 662,712
Int. Cl. H03f *3/60*
U.S. Cl. 330—56 **4 Claims**



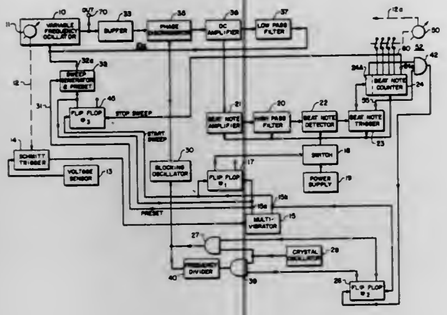


This invention is directed to a microwave solid-state device incorporating semiconductor devices of the type which exhibit the transferred electron effect. A plurality of these devices provided within a transmission line may provide greater amplification or a larger oscillator output for microwave applications over that of a single device.

3,619,802
FREQUENCY SYNTHESIZER, assignor to Dieter R. Lohrman, Eatontown, N.J.
Filed May 20, 1969, Ser. No. 826,114
Int. Cl. H03b *3/04*
U.S. Cl. 331—4 **5 Claims**

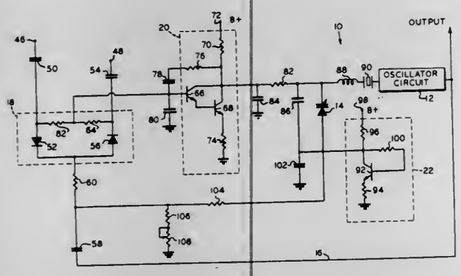
A digital frequency synthesizer using a sampling principle for phase locking a variable frequency oscillator to a desired one of several spectral lines of a series of accurately obtainable spectrums created by a standard frequency source such that the line to which the oscillator has to be locked is determined by successively counting a predetermined number of spectral lines of each spectrum, starting from the known reference point at each spectrum established by using another one of said spectrums with lines spaced farther apart in frequency than the spectral lines of the given spectrum, the counting being done without opening the oscillator phase lock loop and by imposing a slow frequency drift on the vari-

able frequency oscillator, thus beating it with successive lines of a given spectrum and deriving an output from the counting means for counting lines of the spectrum of closest frequency spacing, terminating the sweep of the variable frequency oscillator frequency and locking onto the desired spectral



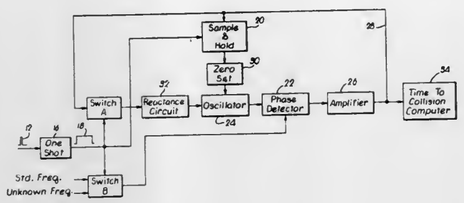
line of said spectrum of closest spacing which is that line reached by the variable frequency oscillator when the predetermined count has been achieved. Steadiness and accuracy in pulling the variable frequency oscillator frequency controlloop is achieved by a diode used in conjunction with the sweep circuit for the variable frequency oscillator.

3,619,803
TEMPERATURE AND VOLTAGE COMPENSATION FOR TRANSISTORIZED VCO CONTROL CIRCUIT
Arthur Harold Klein, Batavia, N.Y., assignor to GTE Sylvania Incorporated
Filed Mar. 16, 1970, Ser. No. 19,650
Int. Cl. H03b *3/04*; H04n *9/44*
U.S. Cl. 331—8 **11 Claims**



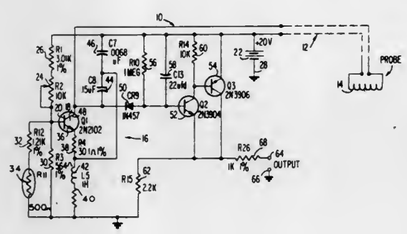
Compensation for the effects of both ambient temperature and supply voltage variations upon a transistorized DC amplifier delivering a control voltage to the varactor frequency determining element of a voltage-controlled oscillator is provided by a regulator transistor connected to provide a source of reference potential for the varactor and a source of base bias voltage for the DC amplifier, whereby temperature of supply voltage induced changes in the output voltage of the DC amplifier and the reference potential provided by the regulator tend to track each other so as to stabilize the voltage difference across the varactor. In a phase lock loop application, the bias voltage provided by the regulator is applied through a phase detector to the input base electrode of the DC amplifier so as to utilize the high-impedance properties of the phase detector at the amplifier input.

3,619,804
FREQUENCY DISCRIMINATOR USING AN INTERMITTENTLY PHASE-LOCKED LOOP
William E. Mears, Kansas City, Kans., assignor to Wilcox Electric Company, Inc., Kansas City, Mo.
Filed Jan. 23, 1969, Ser. No. 793,325
Int. Cl. H03b *3/04*
U.S. Cl. 331—8 **26 Claims**



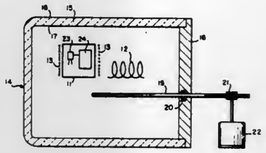
A frequency discriminator which compares a standard and an unknown frequency and generates a pulse output, the amplitude of which is proportional to the difference between the two frequencies. An amplitude sampling bridge is employed as a phase detector and is insensitive to harmonics, in that the standard frequency may be a subharmonic of the actual frequency with which the unknown frequency is to be compared. The standard frequency and the unknown frequency are delivered to the bridge in succession and individually compared with the output of an electrically controllable, variable frequency oscillator which is initially frequency-locked to the standard frequency, via a first control circuit and then via a second control circuit frequency-locked to the unknown frequency by the output pulse, the amplitude of that pulse being proportional to the frequency change of the oscillator output in proceeding from its first frequency-locked condition to its ultimate frequency.

3,619,805
NONCONTACTING DISPLACEMENT TRANSDUCER INCLUDING AN OSCILLATOR WITH CABLE-CONNECTED INDUCTIVE PROBE
Stephen F. Bean, Worthington, Ohio, assignor to Reliance Electric and Engineering Company, Columbus, Ohio
Filed Jan. 9, 1969, Ser. No. 790,011
Int. Cl. C01r *33/12*; H03b *3/02*
U.S. Cl. 331—65 **14 Claims**



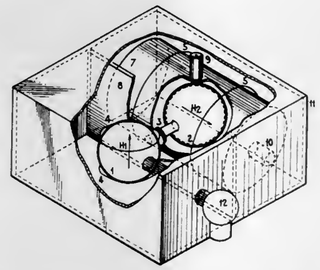
Disclosed is an eddy-current-type noncontacting displacement transducer and gage for gaging the distance between a probe tip and a metallic surface. The transducer comprises a modified common base transistor oscillator incorporating the probe coil as the oscillator resonant circuit. The base is unbypassed to increase linearity and operation at low frequency, i.e. 25 kHz. reduces capacitive sensitivity so that the transducer may be used with long cables.

3,619,806
TEMPERATURE-CONTROLLED CRYSTAL OSCILLATOR
David H. Phillips, Accokeek, Md., assignor to the United States of America as represented by the Secretary of the Navy
Filed Nov. 21, 1969, Ser. No. 878,729
Int. Cl. H03b *5/32*; H05b *1/00*
U.S. Cl. 331—69 **3 Claims**



A crystal-controlled oscillator located within an (inner) oven is maintained at a temperature such that the crystal resonates at the desired frequency. The temperature controller for the oven and the oven are located within a second (outer) oven maintained at a constant temperature by a second temperature controller. In order to correct for any temperature variations in the heat path within the outer oven such that the inner oven is not at the desired temperature, a rod extending from outside the outer oven is positioned near the inner oven temperature controller. The rod may then be adjusted (manually or by remote control) from outside the outer oven thereby varying the heat path to the controller without requiring disassembly of the composite device.

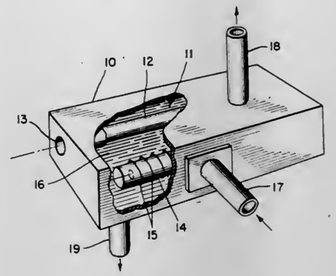
3,619,807
MASER OSCILLATOR HAVING TWO CONNECTED GAS CELLS WITH DIFFERENTLY ORIENTED MAGNETIC FIELDS
Henri Brun, Paris, France, assignor to Thomson-CSF
Filed Mar. 23, 1970, Ser. No. 21,859
Claims priority, application France, Mar. 24, 1969, 69/08549
Int. Cl. H01s *1/06*
U.S. Cl. 331—94 **8 Claims**



A maser oscillator comprises two cells, connected to each other through a duct, which are filled with atomic hydrogen and respectively subjected to crossed magnetic fields. One of the cells is lined internally with a film of a substance preventing atom misalignment and is located inside an UHF cavity.

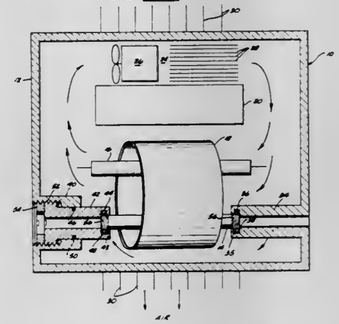
3,619,808
LASER HEAD COOLING SYSTEM
Gary David Tomkins, Cypress, and Donald Victor Smart, Redondo Beach, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.
Filed July 6, 1970, Ser. No. 52,407
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **2 Claims**

An improved laser head cooling system is provided by circulating a special liquid coolant which is substantially chemically inert to avoid contamination, is electrically nonconducting, and has a substantially greater optical coupling transmission characteristic than water. To prevent deterioration of



the liquid coolant itself, the quartz envelope for the light pump in the laser head is especially designed to be substantially opaque to short ultraviolet radiation.

3,619,809
SEALING ARRANGEMENT FOR LASER COOLING SYSTEM
Peter S. Ozzimo, Hawthorne; William F. Stokes, Jr., Buena Park, and Donald R. Dewhirst, Compton, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 13, 1970, Ser. No. 54,139
Int. Cl. H01s *3/04*, *3/02*
U.S. Cl. 331—94.5 **5 Claims**

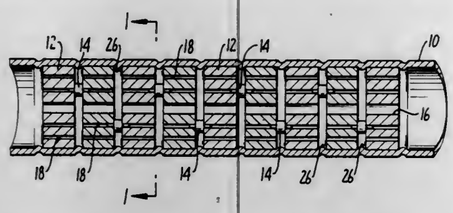


A laser cooling system is disclosed wherein high-pressure coolant gas is circulated past a rod of laser material, and a readily removable arrangement is provided for sealing the ends of the rod to the device housing in a manner preventing the emitter laser radiation from passing through the coolant gas. The ends of the laser rod are supported in tubes extending inwardly from opposite walls of the housing, and O-rings are used to seal the rod to the tubes. Chromium bands disposed on the lateral surface of the rod adjacent the O-rings protect the O-rings from damage by scattered radiation.

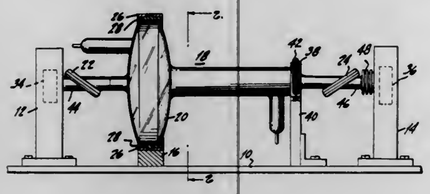
3,619,810
ION LASER CORE
Wayne S. Mefferd, Palo Alto, Calif., assignor to Coherent Radiation Laboratories, Inc., Palo Alto, Calif.
Filed Aug. 19, 1968, Ser. No. 753,684
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **1 Claim**

An ion laser core and method of making the same where the core is formed of a plurality of spaced-apart graphite

blocks containing aligned central bores on the optical axis of a laser tube. The graphite blocks are keyed to the tube so that the blocks do not rotate, and the tube is shrunk fit onto the the peripheries of the graphite blocks. Shrink fitting is accomplished by supporting the graphite blocks on a wire which is held under tension while a vacuum is drawn on the interior of the tube and the tube is heated to a temperature at which it flows.

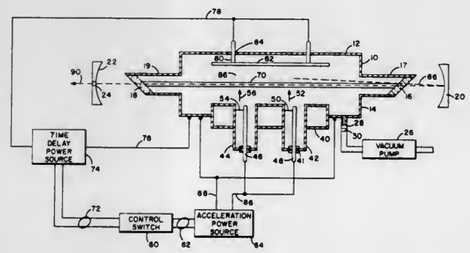


3,619,811
GAS LASER TUBE MOUNT
Donald B. Kaiser, and John A. Powell, both of Lancaster, Pa., assignors to RCA Corporation
Filed Oct. 17, 1968, Ser. No. 768,409
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **5 Claims**



A gas laser tube has an an integral part thereof mounting means including a rigid girdling member disposed intermediate the ends of the tube, which girdling member circumferentially surrounds the envelope of the tube. This girdling member is in its entirety spaced from the envelope by a plurality of circumferentially spaced pads of a resilient adherent material, such as silicone rubber, which bonds and mechanically couples the girdling member to the envelope. This permits a prealigned gas laser to be shipped without loss of alignment due to vibration of the laser tube during shipping. It also protects the frangible envelope of the laser tube from breakage.

3,619,812
METALLIC VAPOR LASER
John F. Asmus, McLean, Va., assignor to General Dynamics Corporation, Pomona, Calif.
Filed Aug. 25, 1969, Ser. No. 852,533
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **7 Claims**

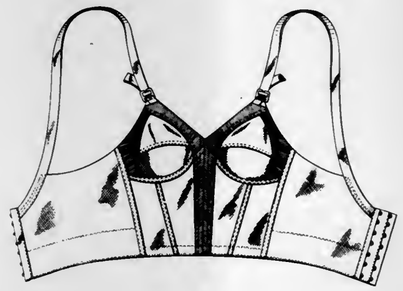


The method and apparatus for pulse-broadening metallic vapor lasers having self-terminating laser transitions by flowing excited metal vapor or atoms through an optical resonator. A high-velocity metallic vapor in the form of a plasma coagulum is created by exploding wires and magnetic fields, or by ablating metal through explosive or plasma techniques. When the vapor front reaches the laser chamber, a cross-excitation discharge is initiated along the direction of the flow vector to generate the population inversion as the vapor flows across the optical axis of the optical resonator.

DESIGNS

NOVEMBER 9, 1971

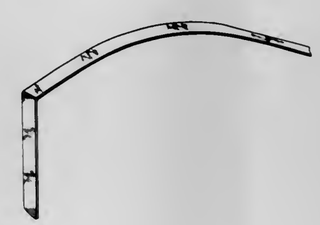
222,573
BRASSIERE
Charles M. Sachs, Teaneck, N.J., and William C. Hittel, New Hyde Park, N.Y., assignors to International Playtex Corporation, New York, N.Y.
Filed Sept. 21, 1970, Ser. No. 25,094
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



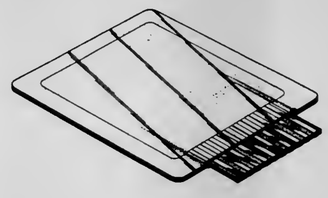
222,574
GARDENING IMPLEMENT
John F. Fielden, Pear Tree Cottage, 21 Victoria St., Fleckney, Leicestershire, England
Filed Aug. 3, 1970, Ser. No. 24,259
Claims priority, application Great Britain Feb. 10, 1970
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—7



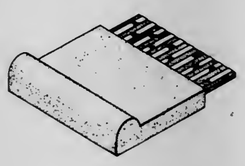
222,575
TOOL FOR UNLOCKING AUTOMOBILE DOORS
George L. Steck, Dayton, Ohio, assignor to Steck Manufacturing Company, Inc., Dayton, Ohio
Filed Nov. 12, 1970, Ser. No. 25,926
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—16



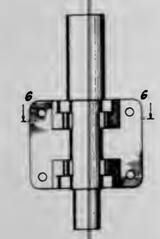
222,576
ELECTRICAL CARD KEY
Alfiero F. Balzano, Sunland, Calif., assignor to R. B. Phinizy, Anaheim, Calif.
Original design application Dec. 12, 1969, Ser. No. 20,484, now Patent No. 220,557, dated Apr. 20, 1971. Divided and this application Aug. 5, 1970, Ser. No. 24,318
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—136



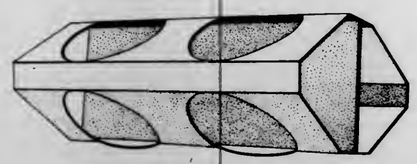
222,577
ELECTRICAL KEY
Alfiero F. Balzano, Sunland, Calif., assignor to R. B. Phinizy, Anaheim, Calif.
Original design application Dec. 12, 1969, Ser. No. 20,484, now Patent No. 220,557, dated Apr. 20, 1971. Divided and this application Aug. 5, 1970, Ser. No. 24,322
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—136



222,578
TUBE SUPPORT BRACKET
James H. Walker and James F. Murphy, South El Monte, Calif., assignors to Akra Stamp Machine Co., Inc., South El Monte, Calif.
Filed June 19, 1970, Ser. No. 23,870
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



222,579
CARTON FOR GLASSES
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 17, 1970, Ser. No. 25,037
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



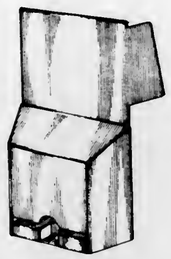
222,580
DISPLAY PACKAGE FOR BATTERIES OR THE LIKE
Keiichi Nakakuma, Tokyo, Japan, assignor to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed June 30, 1970, Ser. No. 23,763
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—183



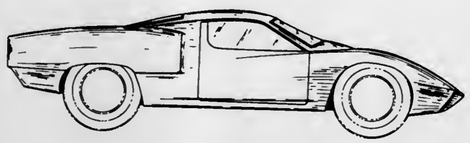
222,581
DISPLAY PACKAGE FOR BATTERIES OR THE LIKE
Keiichi Nakakuma, Tokyo, Japan, assignor to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed June 30, 1970, Ser. No. 23,762
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—183



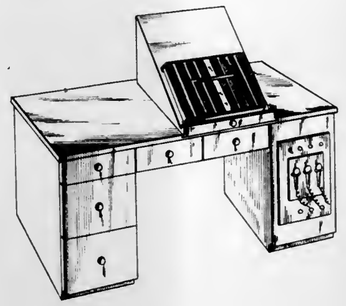
222,582
DISPLAY CONTAINER
Patrick Petrie, 12210 Malone St., Los Angeles, Calif. 90066
Filed Dec. 8, 1970, Ser. No. 26,357
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



222,583
VEHICLE BODY
Robert E. Watson, Evergreen, Colo., assignor to Dune Buggy, Inc., Englewood, Colo.
Filed Dec. 7, 1970, Ser. No. 26,329
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



222,584
OCULIST'S DESK
David M. Lieberman, 9 Prospect Park W., Brooklyn, N.Y. 11215
Filed Aug. 5, 1970, Ser. No. 24,331
Term of patent 14 years
Int. Cl. D24—*02*; D6—*01*
U.S. Cl. D16—2

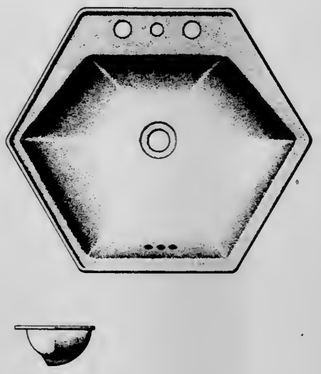




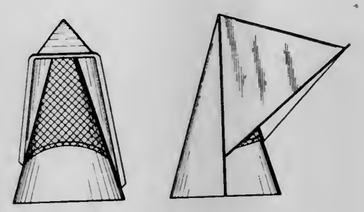
222,585
FISHING LURE
Jack K. Smithwick, P.O. Box 1205, Shreveport, La. 71102
Filed Sept. 15, 1970, Ser. No. 25,012
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



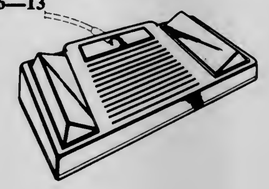
222,586
LAVATORY WASH BASIN
Paul M. Hives, 770 NE. 128th St., North Miami, Fla. 33161
Filed Aug. 11, 1970, Ser. No. 24,416
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



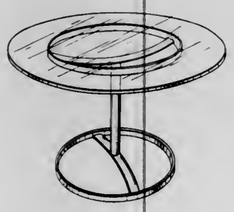
222,587
VENTILATOR HOODS
Lester L. Miller, 2226 Rogero Road, Jacksonville, Fla. 32211
Filed June 24, 1970, Ser. No. 23,649
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153



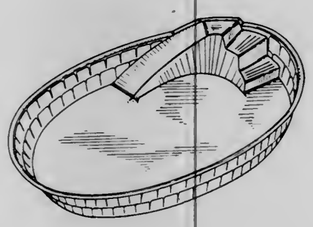
222,588
FOOT CONTROL FOR DICTATING MACHINE
Edgard R. Wiklund, 1681 Kingsdown Circle, Dunwoody, Ga. 30338, and Robert N. Fink, 2660 Laurel Ridge Drive, Decatur, Ga. 30033
Filed Nov. 27, 1970, Ser. No. 26,179
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



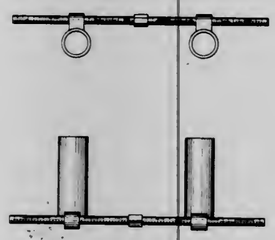
222,589
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Gardner Leaver, New York, N.Y., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed June 22, 1970, Ser. No. 23,580
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



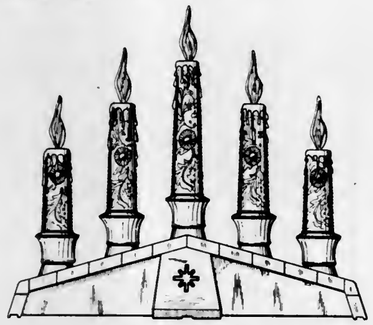
222,590
MOLDED POOL WITH INTEGRALLY MOLDED SLIDE
Ascher Chase, Norfolk, Va., assignor to General Foam Plastics Corp., Norfolk, Va.
Filed Sept. 22, 1970, Ser. No. 25,144
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



222,591
WHEEL CHOCK
Joseph F. Steinke, Brandon Road, Rte. 4, Joliet, Ill. 60436
Filed June 22, 1970, Ser. No. 23,607
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D41—1



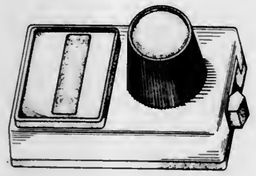
222,592
CANDOLIER
Norman C. Lee, Rocky Mount, N.C., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed July 6, 1970, Ser. No. 23,843
Term of patent 14 years
Int. Cl. D26—*05, 01*
U.S. Cl. D48—20



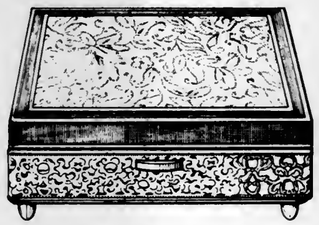
222,593
VACUUM CLEANER
Charles H. McFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Apr. 1, 1970, Ser. No. 22,194
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—14



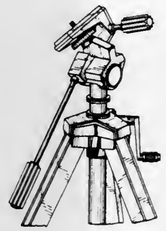
222,594
TURNS COUNTING DIAL
Paul R. Trautmann, Whittier, Roger G. Ignon, Santa Monica, and Ronald E. Loosen, Woodland Hills, Calif., assignors to Spectrol Electronics Corporation, Industry, Calif.
Filed Feb. 24, 1970, Ser. No. 21,568
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



222,595
COMBINED MUSIC BOX AND CLOCK
Waldemar Blessing, Waldkirch, Breisgau, Germany, assignor to Blessing-Werke KG, Waldkirch im Breisgau, Germany
Filed Jan. 30, 1970, Ser. No. 21,164
Claims priority, application Germany Aug. 5, 1969
Term of patent 14 years
Int. Cl. D17—*05*
U.S. Cl. D56—1



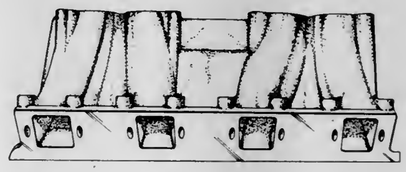
222,596
CAMERA TRIPOD
Courtney A. Leubner, Oak Brook, Ill., assignor to Quick-Set, Incorporated
Filed Sept. 4, 1969, Ser. No. 19,020
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



222,597
PENCIL
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,163
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—24



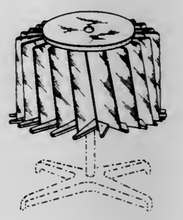
222,598
INTAKE MANIFOLD
Philip Weiand, Glendale, Calif. (2737 San Fernando Road, Los Angeles, Calif. 90065)
Filed Dec. 11, 1970, Ser. No. 26,412
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



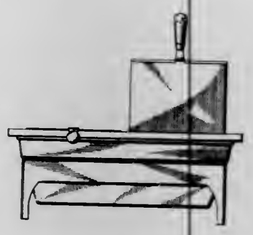
222,599
INTAKE MANIFOLD PLENUM CHAMBER
Philip Waiand, Glendale, Calif. (2737 San Fernando Road, Los Angeles, Calif. 90065)
Filed Dec. 11, 1970, Ser. No. 26,403
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



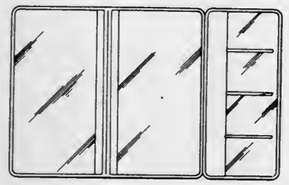
222,600
DISPLAY RACK FOR PERIODICALS
Stanley Wells, Bridgewater, Conn., assignor to Mar-Line Displays, Inc., Mount Vernon, N.Y.
Filed July 2, 1970, Ser. No. 23,810
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



222,601
FOOD COOKING GRILL
Edward M. Marshall, 8107 SW. 72nd Ave., Apt. 102 E, Miami, Fla. 33143
Filed Nov. 16, 1970, Ser. No. 26,033
Term of patent 3½ years
Int. Cl. D07—*02*
U.S. Cl. D81—10



222,602
STORAGE WALLET FOR WATCHBAND CALENDARS
Patrick Petrie, P.O. Box 66425, Los Angeles, Calif. 90066
Filed Jan. 12, 1970, Ser. No. 20,872
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3



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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A Brassard, Hans-Joachim; and Jutten, Heinz-Josef, to Glanzstoff AG. Apparatus for the melt extrusion of linear fiber- forming or film-forming thermoplastic polymers. 3,618,167, Cl. 18-855.

AB Akerlund & Rausing: *See—*
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AB Tetra Pak: *See—*
Delme, Johan Vilhelm R., 3,618,290.

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Abeel, Peter C.: *See—*
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Abell, William A., Jr.; Isaacs, Charles M.; and O'Daniel, Jerome B., to International Business Machines Corporation. Variable force impact printer with backspace mechanism. 3,618,736, Cl. 197-17.

Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for opening flattened tubes of flexible sheet material. 3,618,476, Cl. 93-8.

Acme Industries, Inc.: *See—*
Gill, Melvin C.; and Dartt, William M., 3,619,722.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with key and pedal operated volume controls. 3,619,469, Cl. 84-1.17

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Addressograph-Multigraph Corporation: *See—*
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Germuska, Richard W., 3,618,934.

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Aero-Go, Inc.: *See—*
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Agnew, Kenneth Leslie. Verification of three-dimensional shapes by means of contour lines. 3,619,065, Cl. 356-120.

Ahmed, Adel Abdel Aziz; and Knight, Mark Berwyn, to RCA Corporation. Trigger circuits having uniform triggering voltages. 3,619,666, Cl. 307-290.

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Akhunov, Albert Musagitovich; Maxutov, Rafkhat; Gubarev, Yakov Fedorovich; Zalyaliev, Mansur Abdullovich; Sabirov, Ilgiz Mullayanovich; and Imamutdinova, Khalida Khatimovna. Apparatus for welding glass rods, particularly tubular glass rods. 3,619,158, Cl. 65-152.

Akiyama, Hideaki: *See—*
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Alcock, David Gerald; and Piccotti, Enzo, to Ilford Limited. Bleach-fix processing. 3,619,188, Cl. 96-50.

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Wood, Alan, Steel Company: *See—*
Semel, Frederick J,, 3,619,303.
Wood, Peter, to Westinghouse Electric Corporation. Electrical control apparatus using direction of current and power flow to gate switching devices. 3,619,765, Cl. 323-43.5
Wood, Richard G. Cable release mechanism. 3,618,177, Cl. 24-201.
Wood, Robert E., to Sycor Inc. Tape recorder apparatus with optical sensing means for tape control. 3,619,625, Cl. 250-219.
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Woods, Stephen. High velocity pressure diaphragm carburetor. 3,618,904, Cl. 261-23.
Woodworth, Robert D.; and Birkenbach, Eugen J., to International Harvester Company. Tool for adjusting disk harrow gangs. 3,618,674, Cl. 172-584.
Woolery, Robert G., to Union Carbide Corporation. Laminated felted sheets and asbestos containing coating composition for use therein. 3,619,354, Cl. 162-129.
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Wright, Archibald N.; and Mathewson, Wilfred F., Jr., to General Electric Company. Photopolymerized film, composite thereof, and method of forming. 3,619,259, Cl. 117-93.31
Wright, Donald R., to Dow Chemical Company, The. Extrusion apparatus for the preparation of walled structures. 3,619,329, Cl. 156-500.
Wright, Norman H., to Wright, Norman Productions, Inc. Production of color films from monochromatic film. 3,619,051, Cl. 355-32.
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Wurm, Joseph; Beucherie, Pierre; and Block, Michel, to European Atomic Energy Community. Process and device for depositing on surfaces. 3,619,402, Cl. 204-298.
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Yamamoto, Nobuo; Nikawa, Akikazu; and Sonoda, Minoru, to Fuji Photo Film Co., Ltd. Silver halide emulsions containing hydroxy-substituted alicyclic compounds. 3,619,198, Cl. 96-107.
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Zecher, Robert F., to Hull Corporation. Apparatus for injection molding proportioned liquid synthetic thermosetting resins. 3,618,171, Cl. 18-30.
Zegers, Leo Eduard; and de Jager, Frank, to U.S. Philips Corporation. Time division multiplex transmission system for the transmission of signals by means of pulse code modulation. 3,619,510, Cl. 179-15.
Zehnder, Gottlieb, to Aktiengesellschaft Brown, Boveri & Cie. Method of and apparatus for supercharging an internal combustion engine. 3,618,313, Cl. 60-13.
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Zocher, Josef, to Singer Company, The. Multi-needle unit. 3,618,542, Cl. 112-79.
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Zurmuehlen, Robert C., to American Air Filter Company, Inc. Duct connector arrangement. 3,618,988, Cl. 285-312.
Zuurveen, Frans, to U.S. Philips Corporation, mesne. Dry-shaving apparatus having a deformable curved shear plate. 3,618,210, Cl. 30-43.6
Zviak, Charles; and Ghilardi, Giuliana, to L'Oreal. Dyeing keratinic fibres with aqueous solutions of direct dyes and organic solvents. 3,619,102, Cl. 8-10.1
Zwirn, Robert: *See—*
Bouley, Richard F.; Hansen, Jay M.; and Zwirn, Robert,3,619,500.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF NOVEMBER, 1971

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Brown, Morris E.: *See*—
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Brundage, Robert W. Pressure balanced bearing loads in hydraulic devices. Re. 27,228, 11–9–71, Cl. 418—71.

Crucible Inc.: *See*—
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Eastman Kodak Co.: *See*—
Mitchell, John D., Thomson, and Brown. Re. 27,229.

Esco Elevators, Inc.: *See*—
Johnston, Everett E. Re. 27,233.

Farmer, John, to Ward Foods, Inc. Juice extraction apparatus. Re. 27,230, 11–9–71, Cl. 127—3.

Fletcher, Peter S. Reclining and rocking chair. Re. 27,231, 11–9–71, Cl. 297—259.

Harnsberger, Bobby G., to Texaco Inc. Permeable cementing composition and method. Re. 27,227, 11–9–71, Cl. 166—276.

Home Metal Products Co.: *See*—
Stalker, James E. Re. 27,225.

Johnston, Everett E., to Esco Elevators, Inc. Hydraulic elevator control systems. Re. 27,233, 11–9–71, Cl. 137—608.

Koehring Co.: *See*—
Parrett, John T. Re. 27,224.

Kovach, Curtis W.: *See*—
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McLorg, Terence W. Air supported shelter. Re. 27,232, 11–9–71, Cl. 52—2.

Mitchell, John D., K. W. Thomson, and M. E. Brown, to Eastman Kodak Co. Motion picture apparatus with automatic rewind. Re. 27,229, 11–9–71, Cl. 352—124.

Moskowitz, Arthur, C. W. Kovach, and R. G. Wells, to Crucible Inc. Free-machining austenitic stainless steels. Re. 27,226, 11–9–71, Cl. 75—128.

Nelson, Victor R. Press loader and unloader. Re.27,223, 11–9–71, Cl. 214—16.4.

Parrett, John T., to Koehring Co. Fluid feed lines. Re. 27,224, 11–9–71, Cl. 91—462.

Smieja, Alois J. Hydraulic lifting device with weight estimator. Re. 27,234, 11–9–71, Cl. 177—146.

Stalker, James E., to Home Metal Products Co. Flow control for ventilating hood. Re. 27,225, 11–9–71, Cl. 55—470.

Texaco Inc.: *See*—
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Weaver, W. R., Co.: *See*—
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Wells, Ralph G.: *See*—
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Balzano, Alfiero F., to R. B. Phinizy. Electrical card key. 222,576, 11–9–71, Cl. D8—136.

Balzano, Alfiero F., to R. B. Phinizy. Electrical key. 222,577, 11–9–71, Cl. D8—136.

Blessing, Waldemar, to Blessing-Werke KG. Combined music box and clock. 222,595, 11–9–71, Cl. D56—1.

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Fielden, John F. Gardening implement. 222,574, 11–9–71, Cl. D8—7.

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Hittel, William C.: *See*—
Sachs, Charles M., and Hittel. 222,573.

Hives, Paul M. Lavatory wash basin. 222,586, 11–9–71, Cl. D23—58.

Ignon, Roger G.: *See*—
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International Playtex Corp.: *See*—
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Leaver, Gardner, to Steelcase Inc. Table. 222,589, 11–9–71, Cl. D33—14.

Lee, Norman C., Carolina Enterprises, Inc. Candolier. 222,592, 11–9–71, Cl. D48—20.

Leubner, Courtney A., to Quick-Set, Inc. Camera tripod. 222,596, 11–9–71, Cl. D61—1.

Lieberman, David M. Oculist's desk. 222,584, 11–9–71, Cl. D16—2.

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McFarland, Charles H., to The Scott & Fetzer Co. Vacuum cleaner. 222,593, 11–9–71, Cl. D49—14.

Miller, Lester L. Ventilator hoods. 222,587, 11–9–71, Cl. D23—153.

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Oglesbee, Richard K., to Anchor Hocking Corp. Carton for glasses. 222,579, 11–9–71, Cl. D9—176.

Petrie, Patrick. Display container. 222,582, 11–9–71, Cl. D9—191.

Petrie, Patrick. Storage wallet for watchband calendars. 222,602, 11–9–71, Cl. D87—3.

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Smithwick, Jack K. Fishing lure. 222,585, 11–9–71, Cl. D22—27.

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Walker, James H., and J. F. Murphy, to Akra Stamp Machine Co., Inc. Tube support bracket. 222,578, 11–9–71, Cl. D8—235.

Watson, Robert E., to Dune Buggy, Inc. Vehicle body. 222,583, 11–9–71, Cl. D14—3.

Weland, Philip. Intake manifold. D222,598, 11–9–71, Cl. D77—1.

Weland, Philip. Intake manifold plenum chamber. 222,599, 11–9–71, Cl. D77—1.

Wells, Stanley, Mar-Line Displays, Inc. Display rack for periodicals. 222,600, 11–9–71, Cl. D80—9.

Wiklund, Edgard R. Foot control for dictating machine. 222,588, 11–9–71, Cl. D26—13.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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351	3,618,146	75	3,618,184	294	3,619,149	106	3,619,168	76	3,619,177	86	3,618,503
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Design Patents

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39 : 222,575
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U.S. GOVERNMENT PRINTING OFFICE: 0—1971

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

United States Adopted Names

List No. 28

November 1, 1970 to February 28, 1971

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association, and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distinguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill., 60610.

albuterol: bronchodilator
alclofenac: anti-inflammatory
berythromycin: antibiotic
capobenate sodium: treatment of acute myocardial infarction
carbenicillin indanyl sodium: antibiotic
dinoprost: action on smooth muscle
dinoprostone: action on smooth muscle
fenoprofen: anti-inflammmatory; analgesic
fluperamide: antiperistaltic antidiarrheal
glibornuride: oral hypoglycemic
glucosamine: pharmaceutic aid
guanabenz: antihypertensive
ketazolam: anti-anxiety
loperamide: antiperistaltic antidiarrheal
mebendazole: anthelmintic
padimate: sunscreen
pancuronium bromide: neuro-muscular blocking agent; peripheral muscle relaxant
penfluridol: neuroleptic
polymacon: contact lens material

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,129,332, D. Mastini, TELEPHONE SYSTEM, **filed** July 21, 1971, D.C. Md. (Baltimore), Doc. 71–784–N, *Domenico Mastini* v. *American Telephone & Telegraph Company and International Telephone & Telegraph Company.*

2,467,607, L. G. Bates, FILM FASTENING REEL, **filed** Apr. 27, 1966, D.C., S.D.N.Y., Doc. 66–C–1212, *Union Trust National Bank* v. *Audio Device, Inc.* Stipulation and order, case dismissed with prejudice, June 22, 1971.

2,749,267, J. W. Gill, METHOD OF COVERING THE JOINT BETWEEN WALLBOARD AND THE RESULTANT PRODUCT, **filed** July 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1682, *United States Gypsum Co.* v. *Palmer Wallboard Tapes, Inc. et al.* **Same, filed** July 29, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–1442, *Marco Paper Products Company* v. *United States Gypsum Company.*

2,761,178, Doorn and Pease, OPERATING MECHANISM FOR GIN BREASTS AND MULTIPLE GIN SYSTEM, **filed** June 18, 1971, D.C., M.D. Ala. (Montgomery), Doc. 3355–N, *Lummus Industries, Inc.* v. *Continental/Moss-Gordin, Inc.*

2,765,699, J. La Torre, BLIND BOLT UTILIZING DISTORTABLE COLLAR AND DEFORMABLE LOCKING NUT MEMBER, **filed** July 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1774–LLT, *Lockheed Aircraft Corporation* v. *The National Screw & Mfg. Co. and Monogram Industries, Inc.*

3,039,370, King and Margraf, PORTABLE CARTON BOTTOM SEALERS, **filed** June 10, 1966, D.C., S.D. Calif. (Los Angeles), Doc. 66–995–WB, *Bud Antle, Inc., etc.* v. *Stoddard Jess et al.* Default judgment, in favor of plaintiff and against defendant, June 21, 1971.

3,082,292, R. W. Gore, MULTICONDUCTOR WIRING STRIP, **filed** June 17, 1971, D.C. Del. (Wilmington), Doc. 4160, *W. L. Gore & Associates, Inc.* v. *Carlisle Corporation.*

3,089,301, S. J. Przekop, LAWN MOWER HANDLE SUPPORT, **filed** Dec. 8, 1969, D.C., E.D. Mich. (Detroit), Doc. 34030, *Fairway Construction Co.* v. *Brody-Bilt Construction Co., Morton Brody, doing business as Brody-Bilt Con. Co and Bonafide Garage Builders, Inc.* Consent permanent injunction, June 11, 1971.

3,104,799, D. J. Steidinger, ENVELOPE ASSEMBLY, **filed** June 15, 1971, D.C., E.D. Mich. (Detroit), Doc. 36658, *Perry Printing Co.* v. *Uarco, Inc.*

3,109,537, D. C. Larkin, REFUSE CONTAINER FOR MOTOR VEHICLE BODY, **filed** June 10, 1965, D.C., E.D. Mich. (Detroit), Doc. 26982, *Sterling Products Co., Inc.* v. *Crest Mfg. Co. and Daniel C. Larkin.* Judgment and order, plaintiff's Counts II and III are dismissed with prejudice, June 2, 1971.

3,121,006, Middleton and Reynolds, PHOTO-ACTIVE MEMBER FOR XEROGRAPHY, **filed** June 14, 1971, D.C., S.D.N.Y., Doc. 71–C–2630, *Xerox Corporation* v. *Saxon Business Products, Inc.*

3,147,904, L. P. Larson, DISPENSING CARTON WITH RECLOSABLE POUR SPOUT, **filed** June 14, 1971, D.C., E.D. Mich. (Detroit), Doc. 36652, *Riegel Paper Corp.* v. *Ex-Cell-O Corp.*

3,164,129, P. D. Rigterink, AUTOMATIC NEST GUARD, **filed** June 21, 1971, D.C., S.D. Mich. (Detroit), Doc. 4–71–C–298, *Storm Systems, Inc.* v. *U.S. Industries, Inc.*

3,169,615, L. Stein, CARRYING CASE WITH FREELY HINGED CLOSURE, **filed** June 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1456, *Stebco Products Corporation* v. *Faircraft Engineering, Inc. and Sears, Roebuck & Co.*

3,174,869, Roberts and Faulkner, FLAKED COMESTIBLES AND PROCESS FOR PREPARING SAME, **filed** Apr. 23, 1969, D.C., E.D. Wash. (Spokane), Doc. 3255, *Vacu-Dry Company* v. *Tree Top Inc. et al.* Order of dismissal with prejudice, June 10, 1971.

3,175,288, Garwick and Clark, TRAY PACK PROCESSING CUTTER, **filed** June 18, 1971, D.C., N.D. Ill. (Freeport), Doc. 71c34, *Ray E. Clark and William N. Garwick* v. *Kutz-Kwik, Inc.*

3,181,205, Frommelt and Frommelt, PAD STRUCTURES, **filed** May 29, 1969, D.C., N.D. Ohio (Cleveland), Doc. 69–418, *Dubuque Awning & Tent Company* v. *Timbers & Associates, Inc., Nuckley Covers.* Consent judgment, June 9, 1971.

3,182,389, R. R. Rossi, WARNING LIGHT CONTROL SYSTEM, **filed** June 16, 1971, D.C.N.J. (Newark), Doc. C–896–71, *Arrow Safety Device Company* v. *Nassau Fastening Co. and Emanuel Mendelsohn and Carol Brown, doing business as School Bus Parts Co.*

3,219,207, A. R. Chasar, LOAD SENSING AUTOMATIC STORAGE APPARATUS, **filed** June 3, 1966, D.C., W.D.N.Y. (Buffalo), Doc. C–11,860, *The Triax Company* v. *Hartman Metal Fabricators, Inc.* Decision, Findings of Fact and Conclusions of Law dismissing plaintiff's complaint, June 16, 1971.

3,265,092, Ely, Burley and Clement, FEP-FLUOROCARBON TUBING; **Re. 27,028,** same, **filed** June 18, 1971, D.C. Del. (Wilmington), Doc. 4161, *Fluorodynamics, Inc.* v. *Penntube Plastics Company.*

3,297,155, Gattenby, D'Amato, Golner and Feinstein, TUBULAR CORES, **filed** Apr. 15, 1968, D.C. Del. (Wilmington), Doc. 3517, *Ethyl Corporation* v. *The Borden Company.* Stipulation of dismissal with prejudice as to Ethyl Corp. and without prejudice as to Borden, Inc., June 14, 1971.

3,327,852, Mortsell, deceased, by G. Ahlstrom, administrator, DRUM TYPE MAGNETIC SEPARATOR, **filed** June 24, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–645, *Sala Maskinfabriks Aktiebolag* v. *The Hanna Mining Company, Inc.*

3,361,150, J. E. Horner, WATER CONDITIONING CONTROL SYSTEM, **filed** June 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1394–CC, *Universal Interloc, Inc.* v. *Hawkins Chemical Company et al.*

3,392,875, K. R. Bockenstette, STACKING TRAY WITH 90° NESTING, **filed** June 21, 1971, D.C., S.D. Ohio (Dayton), Doc. 4074, *Dare Plastics, Inc.* v. *Ekco Products, Inc.*

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, **filed** Apr. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1026, *Advance Transformer Co.* v. *Sears, Roebuck & Co. and Litton Industries, Inc.*

3,409,175, Miller and Miller, PORTABLE WASHER AND COLLECTION TANK ASSEMBLY, **filed** Oct. 23, 1969, D.C., E.D. Wis. (Milwaukee), Doc. 69C491, *Hy-Way Heat Systems, Inc.* v. *Jadair Inc. and John H. Schmutzler.* Stipulated order dismissing plaintiff's complaint and defendants' counterclaim with prejudice, June 23, 1971.

3,409,916, Billig and Schleeweiss, OVAL SWIMMING POOL, **filed** June 3, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71–C–677, *Bilnor Corporation* v. *Atreo Manufacturing Co., Inc.*

3,447,351, C. W. Werntz, ROLL FORMING MACHINE INCLUDING DIVIDED ROLL PARTS AND SPACERS THEREFOR, **filed** May 18, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C314(2), *The Lockformer Co.* v. *Engel Equipment, Inc.*

3,452,300, Cappucci and Seidel, FOUR PORT DIRECTIVE COUPLER HAVING ELECTRICAL SYMMETRY WITH RESPECT TO BOTH AXES; **3,452,301,** same, LUMPED PARAMETER DIRECTIONAL COUPLER, **filed** Nov. 12, 1970, D.C.N.J. (Newark), Doc. 1523–70, *Merrimac Research & Development, Inc.* v. *Western Electric Co. and Bell Telephone Labs., Inc.* Consent order of dismissal of complaint and amended complaint, June 14, 1971.

3,452,301. (See 3,452,300.)

3,485,018, Beckering, Duran and Lessig, LAWN MOWER DECK HOUSING, **filed** June 14, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1427, *Black & Decker Mfg. Co.* v. *Sunbeam Corporation.*

3,495,492, Gerber and Pearl, APPARATUS FOR WORKING ON SHEET MATERIAL, **filed** June 21, 1971, D.C., S.D. Ohio (Cincinnati), Doc. 8020, *Gerber Garment Technology, Inc.* v. *Cincinnati Milacron, Inc.*

Re. 26,740, P. V. Millard, METHOD OF MAKING SEALING MEMBERS, **filed** June 8, 1971, D.C., E.D. Mich. (Detroit), Doc. 36610, *Arco Industries Corp.* v. *Marlette Coatings, Inc.*

Re. 27,028. (See 3,265,092.)

Certificates of Correction for the Week of Nov. 16, 1971

3,373,390	3,565,912	3,578,369	3,584,667
3,499,033	3,566,273	3,579,069	3,584,837
3,531,497	3,566,944	3,579,286	3,584,877
3,531,973	3,567,453	3,579,884	3,584,959
3,536,317	3,568,182	3,580,228	3,585,117
3,538,085	3,568,637	3,580,442	3,585,199
3,539,192	3,568,873	3,580,494	3,585,273
3,543,137	3,569,604	3,580,872	3,585,368
3,549,365	3,569,849	3,581,063	3,585,430
3,553,244	3,570,553	3,581,714	3,585,476
3,553,493	3,570,685	3,582,618	3,585,635
3,553,612	3,571,694	3,582,672	3,585,702
3,554,125	3,573,282	3,582,863	3,586,108
3,554,978	3,573,305	3,583,154	3,586,286
3,555,774	3,574,341	3,583,463	3,586,311
3,556,001	3,574,960	3,583,500	3,586,657
3,557,144	3,575,234	3,583,797	3,587,095
3,558,991	3,575,345	3,583,860	3,587,209
3,559,564	3,576,444	3,584,059	3,588,969
3,560,057	3,576,633	3,584,244	3,589,285
3,560,263	3,576,818	3,584,255	3,589,892
3,560,341	3,576,840	3,584,257	3,590,389
3,561,983	3,576,866	3,584,414	3,591,644
3,561,984	3,578,145	3,584,575	3,596,024

Erratum

All references to Patent Number 3,578,244 to Lennart G. Erickson, Intermittent Sprinkler Irrigation System, appearing in the OFFICIAL GAZETTE of May 11, 1971, should be deleted as the application should not have been issued.

Disclaimers

3,306,864.—*Edward J. Lang,* Grand Island, *Frank S. Grazen,* North Tonawanda, and *Frank W. Less,* Kenmore, N.Y. PHENOL FORMALDEHYDE-UREA RESIN COMPONENT BINDER. Patent dated Feb. 28, 1967. Disclaimer filed Aug. 30, 1971, by the assignee, *Hooker Chemical Corporation.*

Hereby enters this disclaimer to claims 1 to 4, inclusive, of said patent.

3,422,068.—*Roland E. Kreibich, Harlan G. Freeman,* and *Gene F. Baxter,* Seattle, Wash., and *Karl F. Kumli,* Chico, Calif. METHOD OF PRODUCING AN ORTHO-DIRECTED PHENOLIC RESIN BY CONDENSING PHENOL AND HCHO IN THE PRESENCE OF A BIVALENT METAL ION AND THEN ADDING RESORCINOL, AND THE RESULTANT PRODUCT. Patent Dated Jan. 14, 1969. Disclaimer filed July 29, 1971, by the assignee, *Weyerhaeuser Company.*

Hereby enters this disclaimer to claims 1–7 of said patent.

3,581,754.—*Robert B. Adams,* Tredyffrin Township, Chester County, Pa. LIQUID LEVEL CONTROL APPARATUS USING FLUIDIC SENSOR. Patent dated June 1, 1971. Disclaimer filed Feb. 1, 1971, by the assignee, *Moore Products Co.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 23, 1983.

Dedications

3,579,442.—*Jack N. Gerwig,* South Charleston, W. Va. COAL CONVERTING PROCESS. Patent dated May 18, 1971. Dedication filed July 1, 1971, by the assignee, *Bird Machine Company.*

Hereby dedicates to the Public the entire term of said patent.

3,581,858.—*William J. Haley,* Muncie, Ind. FLUID ACTUATOR. Patent dated June 1, 1971. Dedication filed July 26, 1971, by the assignee, *Borg-Warner Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,593,443.—*Julius Christ Demetrius, Jr.,* Lansdale, and *Wayne Martin Grim,* Chalfont, Pa. LABEL FOR USE IN BLIND CLINICAL STUDIES OF A MEDICAMENT. Patent dated July 20, 1971. Dedication filed July 29, 1971, by the assignee, *Merck & Co., Inc.*

Hereby dedicates to the Public all the remaining portion of the term of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 2, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-08-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-25-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-01-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-13-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-14-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-31-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	8-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during November 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

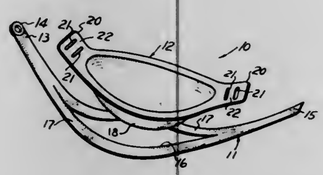
Patents ..... Numbers 2,692,987 to 2,695,997, inclusive
Plant Patents ..... Numbers 1,312 to 1,327, inclusive

PATENTS

GRANTED NOVEMBER 16, 1971

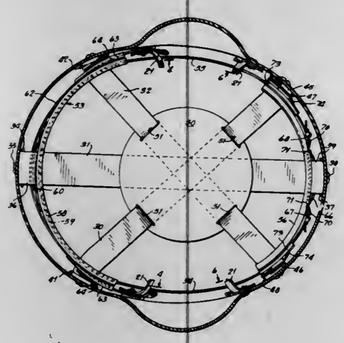
GENERAL AND MECHANICAL

3,619,813
HELMET CHIN STRAP
John L. Marchello, 56405 Grand River, New Hudson, Mich. 48165
Filed Nov. 19, 1969, Ser. No. 878,159
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **2 Claims**



A chin band having a central, elongated, slit receiving the bulged portion of a chin cup so that the band slit portions are arranged along the edges of the cup and converge together and tightly extend through band receiving slots formed on the opposite ends of the chin cup, with the cup being slidably movable within the band slit for adjusting its position along the band.

3,619,814
PROTECTIVE HELMET WITH ADJUSTABLE HEADBAND
Jackson Anthony Alleo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.
Filed Dec. 11, 1969, Ser. No. 884,237
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 A **3 Claims**



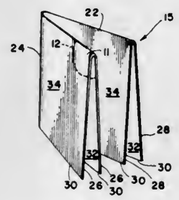
A rigid shell helmet having a pair of earcups mounted within the shell and an internal rigging including an adjustable headband for supporting the shell in spaced relation to a wearer's head. The headband structure comprises a front headband anchored at its ends to the shell and of fixed length shorter than the distance between its anchorage point as measured along the shell circumference; a rear headband loosely suspended within the shell; and a pair of side headbands respectively extending rearwardly from the front headband along opposite sides of the shell interior outwardly of the earcups. The side headbands are respectively secured to the rear headband by a pair of buckles which are carried by the rear headband on opposite sides of the helmet center line, and the extent of engagement of the side headbands with the buckles may be adjusted to vary the effective size of the headband structure.

3,619,815
EYELID SHIELD
Daniel D. Towner, Jr., 4953 Auburn Drive, San Diego, Calif. 92105
Filed Oct. 31, 1969, Ser. No. 872,977
Int. Cl. A61f *9/00*
U.S. Cl. 2—12 **4 Claims**



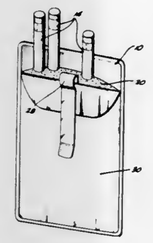
A highly flexible shield securable directly onto the eyelid and moving therewith. When the eyes are closed as in sunbathing the shield, being substantially opaque supplements the natural eyelids in protecting the eyes from harmful rays. Combined with an integral eyeshade the item has a second function and is also suitable for use by outdoor workmen and others exposed to bright sunlight or overhead lighting. The eyeshade is a unilateral forwardly extending translucent portion shading the eyes when open.

3,619,816
CONTOURED NECK TOWEL
Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio
Filed Jan. 29, 1970, Ser. No. 6,782
Int. Cl. A41d *13/04;* **B32b** *27/10*
U.S. Cl. 2—49 **2 Claims**



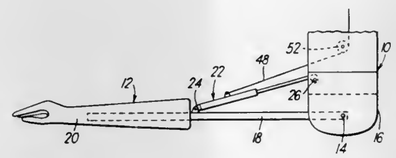
A folded contoured neck towel is disclosed which is formed of a laminate of absorbent paper and liquid-impervious plastic. The towel is particularly folded and constructed such that a corner portion may be readily removed prior to use as a protective bib.

3,619,817
INSERT RETAINER FOR RETAINING PENCILS, PENS, AND THE LIKE
Thomas D. Rockwell, 11147 Lull St., Sun Valley, Calif. 91352
Filed Oct. 10, 1969, Ser. No. 865,236
Int. Cl. A41d *27/00*
U.S. Cl. 2—250 **3 Claims**



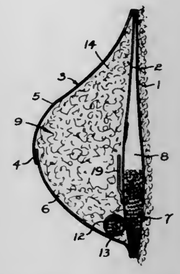
An insert for use in a pouch or case which is capable of retaining pens, pencils, and other utility equipment within the pouch or case is described. The insert is comprised of a foam rubber or sponge like material which is retained in a rigid position by a stiff backing material. A further stiffening means in the form of a spring-like member is positioned laterally across the backing material to prevent the sponge from collapsing. The sponge material is then placed in a pocket or case and clipped thereto by suitable clip means and pencils, pens and other articles are resiliently retained in the pocket pouch or case behind the insert.

3,619,818
ARTIFICIAL LIMBS
Dennis W. Collins, Kingston-upon-Thames, England, assignor to Hugh Steeper (Roehampton) Limited, London, England
Filed Oct. 1, 1969, Ser. No. 862,667
Claims priority, application Great Britain, Oct. 3, 1968, 47,045/68
Int. Cl. A61f *1/06*
U.S. Cl. 3—12 **2 Claims**



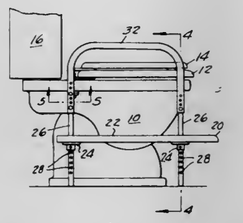
An articulated artificial limb having two pivotally-connected limb members representing, for example, the upper arm and the fore-arm respectively of a human arm, the two limb members being further linked together by a telescopic link having a readily-releasable locking device to permit the angle between the two limb members to be varied as required.

3,619,819
MAMMARY PROSTHESIS
Joyce Mann, Prospect, South Australia, Australia, assignor of a fractional part interest to Lance L. Mann, Prospect, South Australia, Australia
Filed June 3, 1969, Ser. No. 830,017
Claims priority, application Australia, June 3, 1968, 38,645/68
Int. Cl. A41c *3/10*
U.S. Cl. 3—36 **1 Claim**



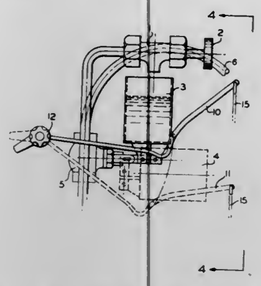
A mammary prosthesis in which loose granular material is held in a pocket to give minimum moving weight to the prosthesis but in which weights can be added to increase the total weight according to conditions of the patient existing at the time, a further feature being the use of sheepskin as the backing member with the wool in contact with the body and the use of a woven wool fabric for the forward part which is cut diagonally to the lines of the thread and sewn together to give the required shape but allowing stretch because of the diagonal positioning. A forward pocket is provided to take the added weights and also to contain wool top padding material by means of which the shape can be varied so that a prosthesis is provided in which both shape and weight can be altered at will.

3,619,820
TOILET SEAT AUXILIARY
Thomas R. Cain, 22320 Funston, Hawaiian Gardens, Calif. 90716, and Odas V. Medlock, 19907 S. Jersey Ave., Lakewood, Calif. 90715
Filed Apr. 24, 1970, Ser. No. 31,619
Int. Cl. A47k *17/02*
U.S. Cl. 4—9 **7 Claims**



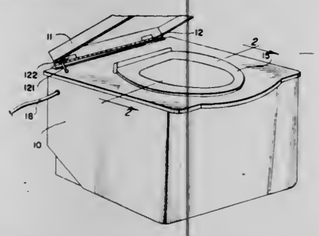
A toilet seat comprising a U-shaped member supported at a level below a toilet seat by collars vertically adjustable on supporting legs, said legs penetrating said U-shaped member and having telescopic engagement with downwardly extending portions of a pair of arm rests, said telescopic engagement being vertically adjustable. A portion of said arm rests and a portion of the cross part of said U-shaped member being finished with a highly frictional surface.

3,619,821
PLUMBING OF A TANK FILLER VALVE FOR A COMMODE
Evan H. Bobo, 501 N. Pearl St., McArthur, Ohio 45651
Filed Mar. 9, 1970, Ser. No. 877,178
Int. Cl. E03d *1/36*
U.S. Cl. 4—41 **2 Claims**



A control for the filling of a flush tank for a commode depending on the weight of a proportionate part of the water flowing into the flush tank. The control includes a three-way valve allowing water, when the valve is open, to flow into three separate conduits. One conduit leads to the flush tank, one to the commode, and the third to a relatively small auxiliary weight tank. The valve has its control stem connected to and operated by the relatively small auxiliary weight tank (which is sometimes herein designated as a water weight control box) into which a relatively small proportion of the water flowing through the valve flows. The amount of water flowing through the third conduit is controlled by a needle valve.

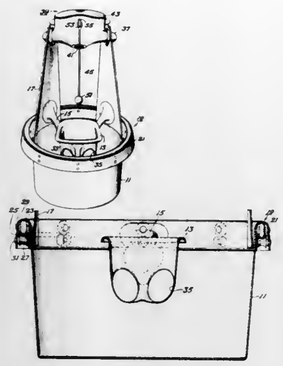
3,619,822
SANITARY CLOSET
Thomas Carmichael, 2311 Blanton Drive, San Antonio, Tex. 78209
Filed Nov. 18, 1969, Ser. No. 877,647
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 **3 Claims**



The disclosure relates to a sanitary closet equipped with a supply of continuous tubular synthetic plastic film which is drawn over the seat and downwardly into a toilet bowl to an automatic sealing and advancing mechanism. The film is advanced after each use to provide a sanitary and replenishable seat cover and a plurality of individually sealed containers of waste.

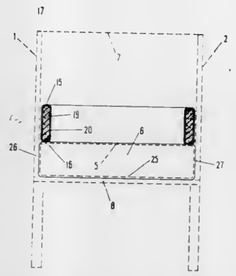
3,619,823
BABY SHOWER-BATH AND PLAY TUB
Alma R. Sackett, 4707 Gaston Ave., Dallas, Tex. 75246
Continuation-in-part of application Ser. No. 598,250, Dec. 1, 1966. This application Oct. 9, 1969, Ser. No. 865,152
Int. Cl. A47k *3/164, 3/22*
U.S. Cl. 4—148 **5 Claims**

A baby shower-bath and play tub having a seat mounted to swivel within the tub, the seat having a configuration to prevent a baby from toppling, and an overhead water dispenser and depending handle element to



enable its selective activation and play by a bathing and showering baby.

3,619,824
CRIB BUMPER
Maura Jean Doyle, Woburn, Mass., assignor to Bunny Bear, Inc., Everett, Mass.
Filed Feb. 10, 1970, Ser. No. 10,238
Int. Cl. A47l *22/20*
U.S. Cl. 5—93 **6 Claims**

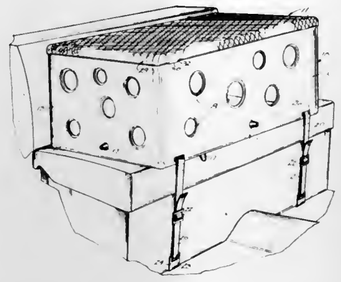


A crib bumper for use in infants' cribs having side rails and a mattress, with an upper surface of the mattress below the upper edges of the side rails of the crib. The bumper is provided with a sheet attached at its side edges to the lower edges of opposite sides of the bumper. The sheet may extend across the crib below the mattress to secure the bumper.

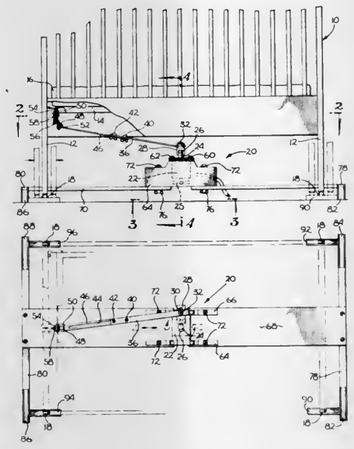
3,619,825
INFLATABLE CRIB FOR BABIES
Jack E. Taub, 770 Twisted Oak Lane, Buffalo Grove, Ill. 60090, and Michael J. Zidman, 9138 N. Bellefort, Morton Grove, Ill. 60053
Filed Sept. 12, 1969, Ser. No. 857,344
Int. Cl. A47c *9/00, 27/08*
U.S. Cl. 5—94 **1 Claim**

A plurality of inflatable side panels and an inflatable bottom panel are secured together to form an inflatable crib for babies. The side panels are provided with ventilating apertures that are randomly spaced to maintain maximum structural rigidity of the crib in its inflated condition. The crib is secured on the back seat of an automobile by straps, each of which has a hook secured to one end

and a holding bar secured to its other end. The hooks are suitably anchored to either the front or rear of the back seat structure and each holding bar is inserted endwise through a slot provided therefor in one of the side panels of the crib. Each slot is shorter than the holding bar, and after each holding bar passes completely through its slot, its strap is twisted to move it out of axial alignment with its slot to prevent accidental separation of the strap from the crib. The bottom panel of the crib may be integral with the side panels, or may be separate from the side panels and secured thereto by snap fasteners. The fastener elements on the bottom panel are spaced from its edges to permit the use of a fitted sheet on the bottom panel.

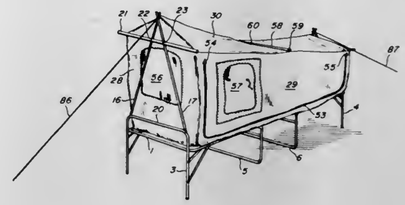


3,619,826
BABY CRIB ROCKER
Albert R. Lizotte, Sr., 14307 Tiara St., Van Nuys, Calif. 91401
Filed Apr. 2, 1970, Ser. No. 25,184
Int. Cl. A47d *9/02*
U.S. Cl. 5—109 **9 Claims**



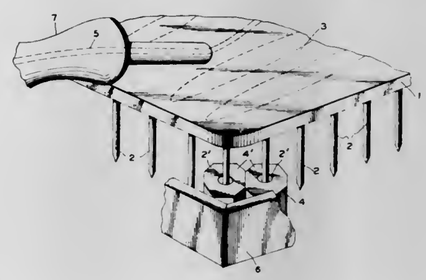
A motor actuated baby crib rocking apparatus wherein the castered legs of the baby crib are to optionally cooperate with either riding tracks permitting horizontal longitudinal crib movement or rocking tracks permitting transverse arcuate crib movement. The motor operates through a linkage assembly to transmit rotary motion into lineal motion, the linkage assembly including connections permitting two-dimensional movement incurred during the rocking movement.

3,619,827
LIGHTWEIGHT DETACHABLE TENT-COT MEANS
Albert H. Mackenzie, 1632 E. Claremont St., Phoenix, Ariz. 85016
Filed Oct. 2, 1970, Ser. No. 77,602
Int. Cl. A45f *1/00, 3/00*
U.S. Cl. 5—113 **12 Claims**



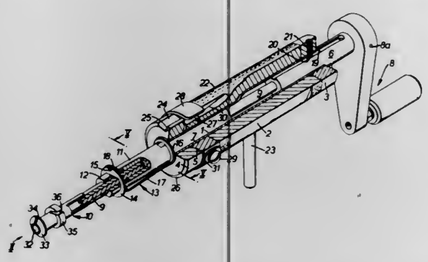
While sleeping out in difficult terrain, a tent-cot combination is provided which is sufficiently compact for ready transport upon the user's back while nonetheless providing complete protection when erected. A lightweight cot frame is provided at each end with studs or equivalent means for supporting tubular end frame structure in an upright position. A fully enclosed tent is supported off the ground by the cot frame and is held upright between the end frame structures at the head and foot ends of the assembly. Three basic embodiments disclosed use diverse end frame structures; viz: a modified A-frame, a trapezoid frame, and a straight pentagonal frame. All the embodiments disclosed fold into a compact unit for carrying by articulating the head and foot ends of the cot frame inwardly to form a "sandwich" unit with the tent proper disposed within the cot frame. An attachment to one of the cot frame leg means permits it to be disposed horizontally outwardly to function as a carrying platform for additional supplies.

3,619,828
HONEY-EXTRACTING METHOD AND APPARATUS
Lydia Phippen Ogilby, 306 Washington St., Belmont, Mass. 02178
Filed July 7, 1969, Ser. No. 839,409
Int. Cl. A01k *59/02*
U.S. Cl. 6—12 **3 Claims**



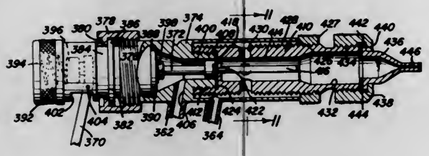
This disclosure involves the extraction of honey from wax-capped honey-filled honeycombs and the like with the aid of electrically heated probes and flat surfaces that automatically and rapidly remove the cap to expose the honey within the honeycomb cells.

3,619,829
WIRE WRAPPING TOOLS
Frederick George Finn, Sevenoaks, and Charles John Gaut, Morden, England, assignors to The Post Office, London, England
Filed Sept. 16, 1969, Ser. No. 858,276
Claims priority, application Great Britain, Sept. 17, 1968, 44,076/68
Int. Cl. B25f *1/00*; H02g *1/12*; B21f *3/00*
U.S. Cl. 7—14.1 **9 Claims**



A wire wrapping tool comprising a wrapping head mounted upon a driving shaft and an insulation stripper device mounted upon tubular means through which the driving shaft passes. The insulation stripper is slidable axially upon the driving shaft thereby enabling a wire to be stripped of insulation before the wire is wrapped.

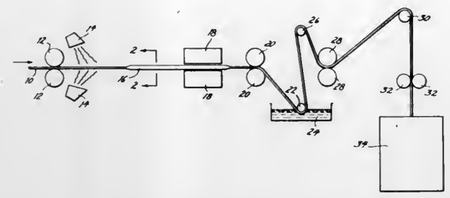
3,619,830
COMBINED SPOTTING BOARD AND SPOTTING GUN INCORPORATING NOVEL SPOTTING METHOD
William M. Harris and Julian Reese, Spartanburg, S.C., assignors to Spotting Equipment Co., Inc., Spartanburg, S.C.
Continuation of application Ser. No. 781,649, Sept. 9, 1968, which is a continuation of application Ser. No. 274,104, Apr. 19, 1963. This application Mar. 25, 1970, Ser. No. 20,474
Int. Cl. B05b *7/04*
U.S. Cl. 8—149.1 **7 Claims**



A spotting gun including a selectively controlled chamber adapted to receive quantities of fluid and air under pressure wherein the same is mixed and discharged in atomized condition against a spot or stain for removing the same from a piece of fabric.

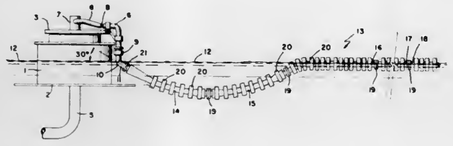
3,619,831
PROCESS FOR AVOIDING CREASES IN TUBULAR KNIT ACRYLIC FABRICS
Robert M. Oberholtzer, Wyomissing, Pa., assignor to O. B. Dyers, Inc., Reading, Pa.
Filed May 29, 1969, Ser. No. 828,893
Int. Cl. B08b *3/00*
U.S. Cl. 8—149.1 **5 Claims**

A process for avoiding creases in tubular knit acrylic fabric intended for use in the manufacture of clothing comprising heating a moving wet knitted tube of said fabric so that the temperature of the fabric's surface water is raised to between 130° to 160° F., exposing said moving fabric to the action of live steam whereby the temperature of the surface water is raised to between



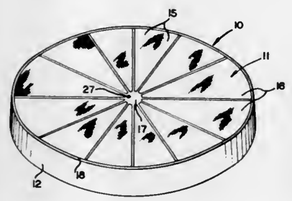
180° to 210° F., and then rapidly chilling the fabric by quenching it in tap water, and then plaiting and drying the fabric.

3,619,832
SINGLE BUOY MOORING FOR USE IN LOADING AND UNLOADING SHIP
Simon Westra, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed July 25, 1969, Ser. No. 844,998
Claims priority, application Great Britain, Aug. 2, 1968, 37,053/68
Int. Cl. B63b *21/50*
U.S. Cl. 9—8 P **1 Claim**



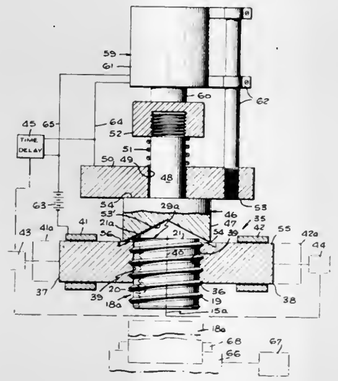
Single buoy mooring for facilitating the loading and unloading of ships which includes a floating buoy having floatable flexible conduit means operatively associated therewith in such a manner that the conduit means is rotatable about the vertical axis of said buoy and additionally rotatable about a vertical axis offset from said buoy vertical axis.

3,619,833
PLASTIC RAFT
Ervin J. Keller, G–4382 Lippincott, Flint, Mich. 48507
Filed May 13, 1969, Ser. No. 824,101
Int. Cl. B63c *9/04*
U.S. Cl. 9—11 **8 Claims**



A lightweight plastic raft including a top support surface with a dependent rigid foam plastic ring side providing flotation and defining a central air chamber. Slightly spaced, segment shaped, rigid cores are provided for the top joined by the fibre glass resin composition with which the top is coated. A valve communicates the air chamber with atmosphere and permits the raft to be vacuum locked to the water.

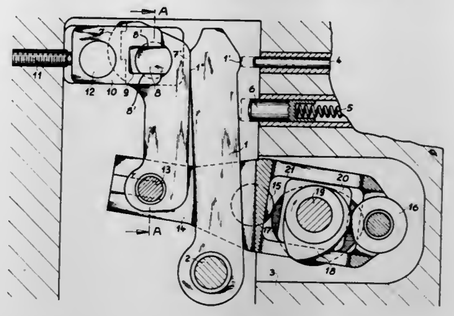
3,619,834
MANUFACTURE OF FASTENER UTILIZING DEFORMED THREAD AS STOP SHOULDER
Robert Neuschotz, 1162 Angelo Drive, Beverly Hills, Calif. 90210
Filed Dec. 23, 1968, Ser. No. 786,075
Int. Cl. B21d *53/24*; B23g *9/00*
U.S. Cl. 10—2 **18 Claims**



Methods and apparatus for manufacturing a fastener having an external thread with an axially outer end turn deformed to a condition in which the deformed thread portion will serve as a stop shoulder for limiting the extent to which the fastener can be screwed into a carrier part, and with the end turn being contacted directly at its axially inner side during deformation by a shaping surface, which controls precisely the position and configuration of the axially inner side of that end turn after deformation, so that the effective stopping surface of the deformed thread will accurately locate the fastener in a predetermined flush or slightly underflush position relative to the carrier part.

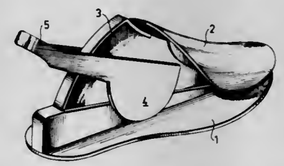
3,619,835
EJECTING DEVICE FOR BOLTS FROM THE MATRIX OF A BOLT PRESS
Heinrich Nebendorf, Wuppertal-Ronsdorf, Germany, assignor to Gebr. Hilgeland, Wuppertal-Ronsdorf, Germany
Filed Jan. 28, 1969, Ser. No. 794,716
Claims priority, application Germany, Jan. 29, 1968, P 16 52 860.2
Int. Cl. B21d *45/00*; B21k *1/44*; B23g *9/00*
U.S. Cl. 10—11 **10 Claims**

A bolt press which includes ejector pin means reciprocably supported by the press frame which latter supports an ejector lever operable to actuate an ejector pin for ejecting a bolt while an intermediate lever is operable to actuate the ejector lever. First pivot means pivotally supports the intermediate lever at one end portion thereof while slide means supporting said first pivot means is slidably supported by the frame means so as to be movable in axial direction of and toward and away from said ejector pin means. The said slide means supports abutment means for abutting engagement with a cam surface area on said intermediate lever and adjusting means are provided for adjusting the slide means, actuating means supported by said frame means including movable arm means carrying second pivot means pivotally



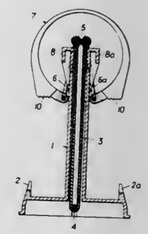
connecting the other end portion of the intermediate lever to said arm means.

3,619,836
SHOETREE
Woldemar Heinrich Tank, Bandhagen, Sweden, assignor of a fractional part interest to Toomas Tank, Bandhagen, Sweden
Filed Apr. 1, 1970, Ser. No. 24,783
Claims priority, application Sweden, Apr. 1, 1969, 4,644/69
Int. Cl. A43d *5/00*
U.S. Cl. 12—117.2 **7 Claims**



The present invention relates to a shoetree device comprising upper and lower members that are disengageably interconnected by a supporting arm. An adjustment means is provided to permit adjustment of the angle between the supporting arm and the lower member.

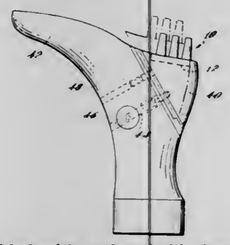
3,619,837
SHOETREE
Thomas G. Smolka, Vienna-Mauer, Austria, assignor to Wiener Metallwarenfabrik Smolka & Co., Vienna-Mauer, Austria
Filed Jan. 13, 1970, Ser. No. 2,474
Claims priority, application Austria, Jan. 13, 1969, A 273/69
Int. Cl. A43d *5/00*
U.S. Cl. 12—120.5 **11 Claims**



A shoetree primarily for ski boots. Same includes a central post with means on each side thereof rigid with respect to the post for receiving one end of each of a pair of ski boots. An elongated elastic device such as

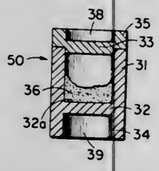
a rubber band is hung at its midpoint on or near said post. Independent clamp structures are arranged to engage the other ends of each of said ski boots and are connected to respective ends of said rubber band for being held thereby in tension against said ski boots.

3,619,838
LAST WITH DETACHABLE HEEL CORE
Julius G. Winkler, Lexington, Mass., assignor to Compo Industries, Inc., Waltham, Mass.
Filed May 6, 1970, Ser. No. 35,144
Int. Cl. A43d *3/00*
U.S. Cl. 12—135 **10 Claims**



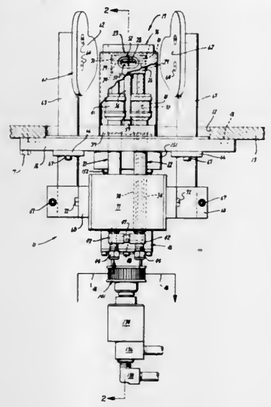
A last provided with a detachable heel core for shoe molding operations, the heel core being connected to the last during the molding operation and automatically detachable therefrom when the finished shoe is stripped from the last to allow the last to be removed and thereafter to be extracted from the stripped shoe.

3,619,839
ELECTRICALLY HEATABLE CYLINDRICAL SAMPLE CONTAINER
Thaddäus Kraus, Vaduz, and Gerold Paesold, Balzers, Liechtenstein, and Elmar Metzler, Feldkirch, Austria, assignors to Balzers Patent- Und Beteiligungs-AG, Balzers, Furstentum, Liechtenstein
Filed Feb. 4, 1970, Ser. No. 8,521
Int. Cl. F27d *11/02*
U.S. Cl. 13—20 **6 Claims**



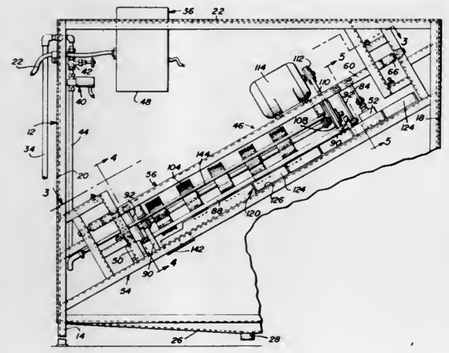
An electrically heatable cylindrical sample container made of a graphite or carbon material is designed as a closed capsule. The device is used for testing samples, particularly for the analytical determination of the gas content of the sample and it is adapted to be clamped by its upper and lower ends between two current supply electrodes in a vacuum furnace and be heated in the furnace by the direct passage of current therethrough. The container is made of a barrel-like or cylindrical configuration and a zone of the container which attains the highest temperature when in a vertical position of use is designed so that the bottom face of the interior of the container will be located at a level so that it is embraced by the highest temperature zone during operation. For this purpose the container may be designed as a tubular or barrel-like member having a recessed bottom wall so that this wall which contains the material being tested will be located toward the hottest furnace zone. A further possibility for shifting the hottest furnace zone toward the lower end of the container in order to intensify the generation of heat at this lower end is to provide a tapering of the lower end of the container.

3,619,840
ELECTRON BEAM EVAPORATION SOURCE
Vernon C. Spellman, Santa Rosa, Calif., Nils H. Bergfelt, Stockholm, Sweden, and Edward A. Small, Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed July 10, 1969, Ser. No. 840,777
Int. Cl. H05b *7/00*
U.S. Cl. 13—31 **22 Claims**



Electron beam evaporation source having at least one electron gun and in which each electron gun is provided with a water-cooled cathode assembly and means is provided for rotating the body of material which is to be evaporated to achieve a more uniform rate of evaporation. To permit operation for long periods of time, means is provided for continuously supplying material to be evaporated. In addition, in order to achieve greater evaporation rates, a plurality of electron guns are utilized for evaporating material from the same body of material.

3,619,841
GOLF CLUB WASHER
George F. Russell, 25 Palmer Ave., Kenmore, N.Y. 14217, and Richard McWain, 21 Union St., Batavia, N.Y. 14020
Filed Oct. 9, 1969, Ser. No. 865,067
Int. Cl. A46b *13/04*
U.S. Cl. 15—21 D **8 Claims**

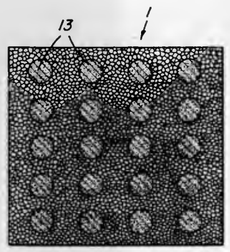


A set of golf clubs are cleaned by insertion into guide troughs extending downwardly at an angle from the front panel of a washing machine having a pivotally supported brush assembly. Upon displacement of the brush assembly into contact with the heads of the inserted golf clubs, water jets are discharged into the brush elements while being rotated by a motor. The club heads are properly positioned in the guide troughs by stops.

3,619,842
METHOD, ARTICLES AND COMPOSITIONS OF MATTER CONTAINING LARGE CAPSULES
Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,440
Int. Cl. A47l *23/05;* **B01j** *13/02;* **B08b** *1/00*
U.S. Cl. 15—104.93 **19 Claims**

This disclosure is directed to a method for forming articles containing large (500 to 5000 microns) capsules in a flexible matrix by depositing large capsules upon various support substrates while minimizing premature capsule cell wall rupture at the time of deposition and prior to use; articles of manufacture containing these large capsules and thixotropic compositions used to prepare such articles. The forming process employs a thixotropic aqueous matrix containing an organic polymer gel-former, a flexible binder (usually a readily water-soluble or water-dispersible elastomeric binder) and various optional adjuvant fillers. According to a preferred embodiment, the thixotropic gel containing the large capsules is extruded onto a flexible substrate support followed by drying.

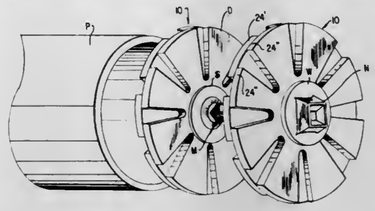
3,619,843
SPONGES WITH DRY IMPREGNANTS
Ferdinand Joseph Richter, Danbury, and Philip Joseph Messer, Brookfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed May 26, 1969, Ser. No. 827,804
Int. Cl. A47l *13/17*
U.S. Cl. 15—104.93 **4 Claims**



Impregnated sponges prepared by a process which comprises depositing particulate material on one surface of the sponge, piercing the sponge with at least one spike per square inch of sponge surface to form crevices between the sponge and outer surface of each spike, the spikes extending into the particulate material, drawing particulate material into each crevice, and removing the sponge from the spikes after the crevices are substantially filled with particulate material.

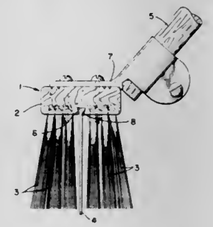
3,619,844
DISC TYPE PIPELINE SCRAPER AND BATCH SEPARATOR
Wilbur W. Collins and Jack L. Yost, Arlington, Tex., assignors to Oil States Rubber Co.
Filed Aug. 3, 1970, Ser. No. 60,549
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **5 Claims**

A pipeline scraper and batch separator employing multiple similar molded plastic scraper discs having interlocking patterns on their faces for holding the discs in predetermined mutual circumferential orientation when the patterns are mated and the discs are clamped together on a mandrel, the discs having outwardly extending scraper segments alternating with notched-out



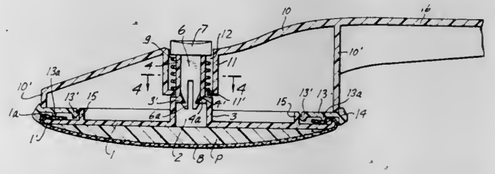
segments, and the interlocking patterns holding the scraper segments of one disc over the notched-out segments of an adjacent disc so as to form a composite substantially-sealing structure useful either as scraper or as a batch separator.

3,619,845
SQUEEGEE BRUSH
Melvin H. Partridge, Hadley, Mass., and George R. Hargis III, Cookeville, Tenn., assignors to Vistron Corporation, Cleveland, Ohio
Filed Nov. 17, 1969, Ser. No. 877,106
Int. Cl. A46b *15/00*
U.S. Cl. 15—117 **3 Claims**



A squeegee push broom or brush is described which has a bristle-squeegee combination in which the bottom of the squeegee extends beyond the ends of the bottom of the bristles.

3,619,846
BRUSH WITH ROTATABLE BASE
Kurt Krusche, Frankfurt am Main, and Hubert Zimmermann, Mannheim, Germany, assignors to Allstar Verbrauchsguter G.m.b.H. & Co. KG, Frankfurt am Main, Germany
Filed Apr. 24, 1970, Ser. No. 31,670
Claims priority, application Germany, May 10, 1969, G 69 19 050.7
Int. Cl. A46b *9/10*
U.S. Cl. 15—172 **11 Claims**

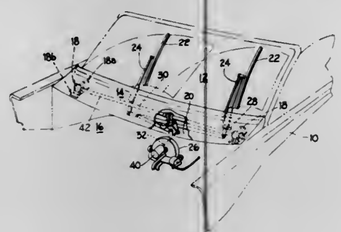


Improved brush with a main body and a selectively rotatable bristle-bearing base on the body. The brush is of the type having at least a predominant part of its

bristles inclined in the same direction and is adapted for cleaning purposes. The brush of the invention employs a fabric to carry the bristles, the fabric preferably being backed by a resilient pad. The invention provides improved means for securing the fabric to the base of the brush, improved means for rotatably mounting the base of the brush on the brush body whereby the brush base can be turned by manipulations above the brush body, and means for indicating from above the body of the brush the position of the brush base relative thereto.

This invention relates to a brush having a body and a bristle-carrying base rotatable thereon. The bristle-carrying base is directional in its operation as by having all, or a predominant part of the bristles inclined in the same direction.

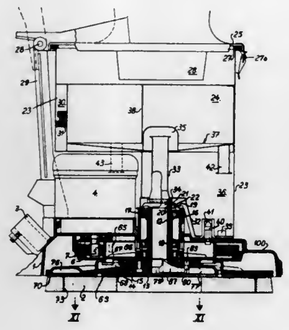
3,619,847
CONCEALED WINDSHIELD WIPER SYSTEM
Dionysios D. Papadatos, Kenmore, Raymond A. Deibel, West Falls, and William C. Riester, Williamsville, N.Y., assignors to Trico Products Corporation, Buffalo, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,627
Int. Cl. A47l *1/00*, B60s *1/02*
U.S. Cl. 15—250.16 **12 Claims**



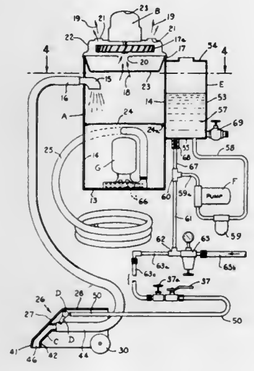
A motor vehicle includes a transversely extending hinged cowl panel adjacent the lower edge of the windshield for concealing therebelow the windshield wiper arms and blades when parked. The hinged cover or cowl panel is movable from a closed position when the wipers are parked to an open position when the wipers are operating. A fluid pressure windshield wiper motor oscillates the wiper arms and blades through a linkage transmission. The motor includes an auxiliary linearly reciprocating drive shaft for moving the cowl to open position when the wiper motor is started before the arms and blades move out of parked position and to closed position when the wiper motor is switched off following movement of the wiper arms and blades to a depressed park position. The linearly reciprocating drive shaft is coupled to the hinged cowl panel through a releasable coupling assembly which can be uncoupled to permit manual movement of the cowl panel to an extreme open detent position for access to the equipment stowed therebelow. The coupling assembly is provided with an intermediate detent position for returning the cowl to a position to permit wiper operation in case of failure of the cowl retracting mechanism.

3,619,848
APPLIANCE FOR CLEANING FLOORS
Alfred M. Salzmann, 70 Chemin du Bois-Gentil, 1004 Lausanne, Switzerland
Filed Oct. 6, 1969, Ser. No. 864,055
Claims priority, application Switzerland, Oct. 9, 1968, 15,069/68
Int. Cl. A47l *11/162, 11/283*
U.S. Cl. 15—320 **16 Claims**

A floor cleaning appliance has a brush rotating about a hollow vertical spindle and a feed tank located in a recovery tank above the brush. Cleaning fluid fed from the feed tank to a central portion of the brush is dispersed radially outwardly through the brush by centrifugal force but its outward movement is checked by a vertical annular wall spaced inwardly from the periphery of the brush. In a peripheral portion of the brush outside the wall there are liquid-recovery cavities which are connected by passageways with the hollow vertical spindle which leads to the recovery tank. Liquid collected in the cavities is conducted to the recovery tank by the evolute shape of the connecting passageways and a suction turbine in the recovery tank.

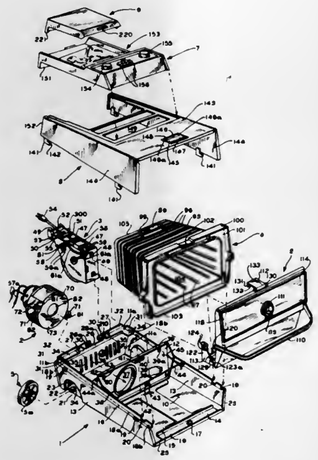


3,619,849
WET PICK-UP PORTABLE CLEANING APPARATUS
Judson O. Jones, 17 Inglewood Drive, Greenville, S.C. 29609
Continuation-in-part of application Ser. No. 818,876, Apr. 24, 1967. This application Feb. 24, 1970, Ser. No. 13,444
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **1 Claim**



A low profile portable wet pick-up cleaning head includes a sprayer positioned ahead of a suction nozzle for spraying a cleaning medium on a carpet and the like, closely adjacent a relatively wide nozzle as the head is moved across the carpet for drawing the used cleaning solution and foreign matter from the carpet using a centrifugal blower, creating circulation of a large volume of air through the wide nozzle leaving the piles of pile carpet in standing position, a special handle mounting facilitating manipulation of the head.

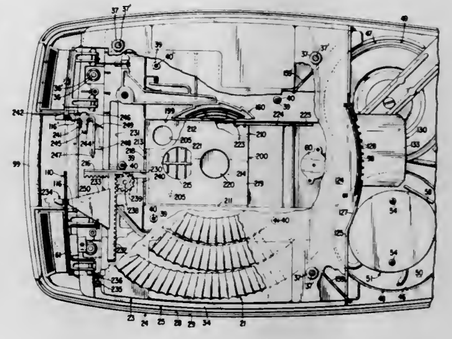
3,619,850
VACUUM CLEANER
Gerald E. Rideout, Danvers, and Clifford R. Walker, Peabody, Mass., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.
Filed May 22, 1969, Ser. No. 827,010
Int. Cl. A47l *5/00*
U.S. Cl. 15—323 **16 Claims**



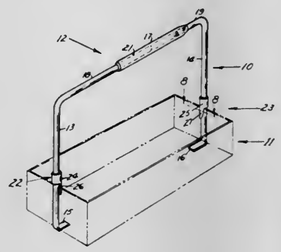
A vacuum cleaner has a plurality of components adapted to be assembled and disassembled manually without the use of tools. The components include an upper and a lower shell, a vacuum chamber housing, a motor with housing, a cord rewind mechanism, a tool caddy, and a door; the vacuum chamber and motor housings and the cord rewind mechanism being adapted to releasably interrelate with the lower shell; and the tool caddy and door being adapted to releasably interrelate with both the upper and lower shells. The arrangement of components is such that the interrelation of the tool caddy component with the other assembled components is requisite to an operable electrical circuit.

3,619,851
CONVERTIBLE CANISTER VACUUM CLEANER
James J. Bolzan, Jr., and Charles T. Fromknecht, Anderson, S.C., assignors to The Singer Company, New York, N.Y.
Original application Jan. 8, 1970, Ser. No. 1,498. Divided and this application Aug. 5, 1970, Ser. No. 61,206
Int. Cl. A47l *5/14*
U.S. Cl. 15—330 **16 Claims**

A vacuum cleaner of the canister variety for domestic use having lower and upper housings secured together by U-shaped clips, and an intermediate housing. Between the upper and intermediate housings is disposed a hose storage compartment within which the hose is coiled when the cleaner is not in use. A dust bag is located within a vacuum chamber between the intermediate and lower housing. For converting the cleaner from suction to blower operation and vice versa there is provided a selectively operable lever controlled slide valve disposed between the hose and the vacuum chamber. In the suction mode the valve is positioned to communicate the hose with the filter bag and an exhaust door is positioned to communicate the blower exhaust with the room. A blower control lever extending out the front of the cleaner may be manually engaged to slide the valve to its blower position to thereby close the communication between the hose and the bag, close the exhaust door and communicate the hose to the blower exhaust. To revert to suction operation a blower control release lever is engaged to return the valve to its suction position. A front panel, mounted on the intermediate housing and secured to the lower housing, operably mounts the suction/blower levers.



3,619,852
REMOVABLE BOX BAIL
Eric A. Eckberg, 509 S. Irwin St., Green Bay, Wis. 54301
Filed Nov. 10, 1970, Ser. No. 88,387
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 **14 Claims**

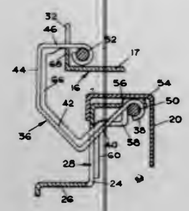


An attachable-removable bail or handle attachment, for a container, such as a vessel, basket, tray, box, carton, or the like, said bail having slidable clamp members operative to cam or wedge an intervening rim portion of such container directly against said bail to secure said bail immediately to said carton.

3,619,853
DOUBLE ACTING DOOR HINGE
Frederick F. Merrill, Grand Rapids, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.
Filed Jan. 13, 1969, Ser. No. 790,536
Int. Cl. E05d *3/06*
U.S. Cl. 16—164 **13 Claims**

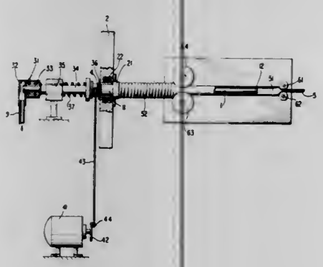
This disclosure relates to a door hinge for a cabinet and the like to permit flush mounting of the door within the cabinet and to permit rotation of the door about an angle of 180° with respect to the cabinet. One end of the hinge is concealed within the door and supports the door through a hinge pin which is fixed to the door. At the hinge pin, the hinge extends at an acute angle away from the door and away frrom a slot in the door through which

slot the hinge projects to permit rotation of the door relative to the hinge pin through an angle greater than 90°. The hinge is supported at the other end through a second



hinge pin which is fixed within the cabinet frame. A vertical rod within the frame is fixed to all hinges at one side of the door so that all hinges move in unison.

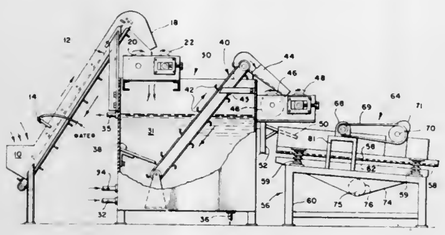
3,619,854
PROCESS FOR SHIRRING ARTIFICIAL SAUSAGE CASINGS
Erich Ilgen, Niedernhausen, and Horst Michl, Wallau, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Sept. 29, 1967, Ser. No. 671,866
Claims priority, application Germany, Oct. 1, 1966, K 60,371
Int. Cl. A22c *3/00*
U.S. Cl. 17—42 **4 Claims**



This invention relates to a process and apparatus for shirring a sausage casing, which process comprises slipping the casing over a mandrel rotating to and fro while maintaining an internal gas pressure in the casing, and compressing the casing against a stop with the formation of pleats.

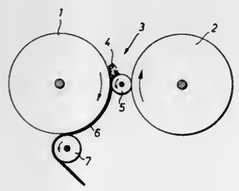
3,619,855
SCALLOP PROCESSING
Elmer Dryden Willis, Williston, N.C., assignor to Willis Bros., Inc., Williston, N.C.
Original application May 27, 1968, Ser. No. 732,247, now Patent No. 3,562,855, dated Feb. 16, 1971. Divided and this application Mar. 11, 1970, Ser. No. 23,530
Int. Cl. A22c *29/00*
U.S. Cl. 17—74 **5 Claims**

A method and apparatus are provided for extracting the adductor muscle from scallops. Scallops are subjected to a heat shock and are then mechanically agitated to disengage the muscle and attached viscera from the shell. The muscle and viscera are removed from the shells and separated from unfragmented portions of the shells on a vibrating screen and are then contacted with water before being separated from small shell fragments by flotation in a brine solution. Viscera is removed from the muscles by pulling on the viscera while restraining movement of the muscles. The invention also includes a method and apparatus for removing viscera from the adductor muscle of shucked scallops. Scallop muscles and attached viscera are placed on the upper surface of an inclined path formed by a plurality of rollers. Viscera is pulled from the scallop muscle and through the nip formed by adjacent rollers by rotating the upper portion of adjacent



rollers towards each other. Detached viscera is cleaned from the rolls below the inclined path. Advance of scallop muscles down the path is controlled by intermittently rotating the upper portion of adjacent rollers away from each other to permit the lower of the adjacent rollers to advance the muscle down the path and by spraying a flow of fluid on at least some of the muscles on the path to affect their rate of movement down the path.

3,619,856
DEVICE FOR MANUFACTURING PLASTIC FOILS, STRIPS AND THE LIKE
Michael Wienand, Siegburg, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed May 3, 1968, Ser. No. 726,494
Claims priority, application Germany, July 19, 1967, D 53,631
Int. Cl. B29h *9/00*
U.S. Cl. 18—2 C **2 Claims**

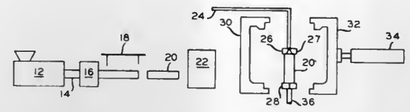


The device includes glazing rollers or roller assemblies used to produce plastic foils, strips or the like from viscous plastic masses. The mass is inserted between the rollers or in the roller assemblies so that the plastic material passes between the rollers and is produced in the requisite form of a foil, strip or the like.

3,619,857
SEALING OPEN END PARISONS
Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Aug. 18, 1969, Ser. No. 850,957
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 BQ **7 Claims**

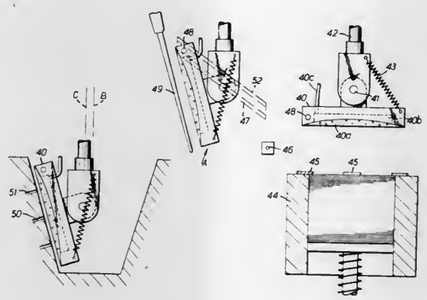
Open end parisons are held at one end and sealed by means of a device which cooperates with mold parts to thereafter sever the parison. The sealing and severing

device can be used to place the parison in the molding zone initially, or the parison can be placed in the molding zone by a separate means with the sealing and severing means reaching in to grasp an open end of the parison



and pull it axially to effect longitudinal orientation. In either event, the sealing and severing means maintains sealing pressure against the parison for a sufficient length of time for a seal to form.

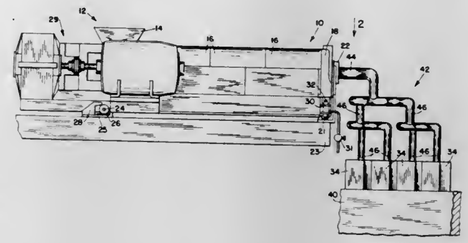
3,619,858
INSERT CONVEYING DEVICE FOR AN INJECTION MOULDING MACHINE
Brian Leo Chudleigh Sutch, Great Bookham, England, assignor to Kingston Plastics Limited
Filed Mar. 27, 1969, Ser. No. 811,042
Claims priority, application Great Britain, Mar. 27, 1968, 14,644/68
Int. Cl. B29c *1/00*
U.S. Cl. 18—5 R **7 Claims**



A mould insert feeding mechanism wherein a head which is coupled to a variable pressure source of gas is movable between an insert loading station and an insert discharge station, drive means being provided to move the head at the loading station to an extraction position at which the head is adjacent an insert store and at the discharge station to a delivery position adjacent a mould cavity, the store including means to sequentially offer inserts to the head and a control being provided to operate the drives and the pressure source to carry out location of an insert in a mould as a part of a moulding cycle.

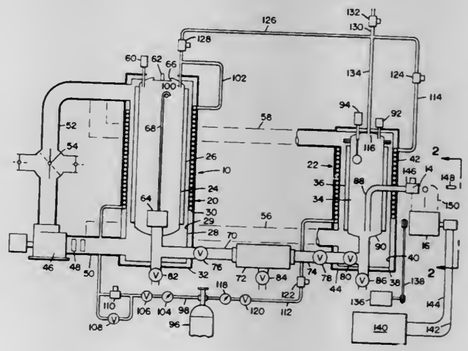
3,619,859
EXTRUSION APPARATUS
Alden W. Nelson, West Mystic, Conn., assignor to Crompton & Knowles Corporation, Worcester, Mass.
Filed Dec. 1, 1969, Ser. No. 881,037
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 R **10 Claims**

An extrusion apparatus wherein one or more extrusion dies are located at a vertical distance from a generally horizontally elongated extruder having an entrance end and an exit end connected to the die by a manifold pipe system. The extruder is pivotally supported and balanced so that thermal expansion of the manifold pipes will lift the exit end of the extruder barrel with a minimum of stress on the pipes. Means are also provided to allow for horizontal thermal expansion of the extruder along its length from its exit end and means such as an air cylinder



or spring are provided for supporting the unbalanced moment of the extruder where the extruder is slightly unbalanced.

3,619,860
APPARATUS FOR PRODUCING PLASTIC FILM
Marvin E. Wallis, San Luis Obispo, Calif. (873 S. Kellog Ave., Goleta, Calif. 93017)
Filed May 2, 1969, Ser. No. 821,203
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 SJ **10 Claims**

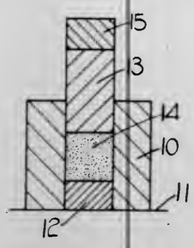


In a method and apparatus for producing plastic film, the step of and means for forming viscous thermoplastic resin into a film, the step of and means for heating a thermoplastic resin to a viscous liquid state, and the step of and means for supplying the heated viscous thermoplastic resin to the film-forming means under substantially constant pressure.

3,619,861
DIE AND PUNCH SETS
Roland John Lumby, Northfield, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 21, 1969, Ser. No. 792,608
Claims priority, application Great Britain, Jan. 22, 1968, 3,220/68
Int. Cl. B30b *11/02, 15/06*
U.S. Cl. 18—16 R **1 Claim**

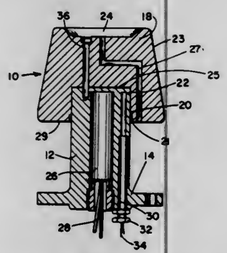
A die and punch set for pressure sintering refractory non-metallic material comprising a hollow die, a punch intended to enter the interior of the die to compress powdered material therein, a plug against which the material

is compressed by the punch and a spacer between the punch and the portion of the associated machine (not



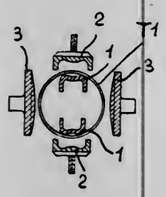
shown), by means of which pressure is applied, the spacer being formed from silicon nitride.

3,619,862
THERMOFORMING PLUG ASSEMBLY
Sidney Cholmar, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 23, 1968, Ser. No. 786,282
Int. Cl. B29c *1/00*
U.S. Cl. 18—19 P **4 Claims**



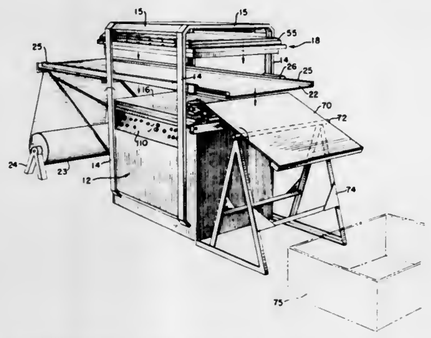
A plug assembly for use in thermoforming containers which includes plug sections mounted on a shaft portion adapted to accommodate different plug configurations to simplify tooling changes so that containers of different sizes and shapes may be formed at reduced cost.

3,619,863
APPARATUS FOR PRODUCING TUBE PORTIONS OF NON-CIRCULAR CROSS-SECTION
Dina Ciabani, 3 Via Donatello, Parma, Italy
Filed Aug. 14, 1969, Ser. No. 850,097
Claims priority, application Italy, Aug. 23, 1968, 7,264/68, Patent 841,636
Int. Cl. B29c *17/02*
U.S. Cl. 18—19 TM **8 Claims**



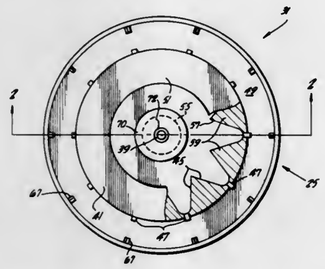
A tube portion of non-circular cross-section, and of thermoplastic material, is produced by shaping a prefabricated tube portion of circular cross-section. The shaping takes place under the action of heat, using stretching and pressing co-operating mould parts. During shaping the sides of the tube portion are curved inwardly so that they are caused to assume plane form by cooling and shrinking.

3,619,864
THERMOPLASTIC SHEET FORMING MACHINE
David W. Birch, East Aurora, N.Y., assignor to Essex Recon Corporation, Lancaster, N.Y.
Filed Sept. 24, 1969, Ser. No. 860,674
Int. Cl. B29c *17/04, 17/10*
U.S. Cl. 18—19 F **4 Claims**



A thermoplastic sheet molding machine is provided, comprising a perforated top table supporting a molding pattern; the interior of the table being subjected selectively and alternatively to vacuum and pressured air condition. A plastic sheet transport frame is provided including means for gripping opposite side edges of a stock sheet to be molded and holding it in horizontal attitude above the table. A radiant heater is mounted above the transport frame, and the power supply means is separately operable to move the transport frame and heater vertically on the machine relative to the table. A vacuum source and a cooling air supply are selectively operable through the table and act upon the sheet in process to provide an improved thermoplastic sheet molding operation.

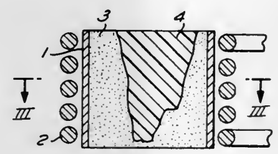
3,619,865
CENTRIFUGAL IMPREGNATOR APPARATUS FOR IMPREGNATING ELECTRICAL COMPONENTS
Harry I. Hazzard, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Mar. 12, 1969, Ser. No. 806,520
Int. Cl. B29c *5/04*
U.S. Cl. 18—26 RR **9 Claims**



A motorized centrifugal impregnator insulates and mechanically pots coils and the like by centrifuging resin and catalyst into the interior of the coils' casings. The

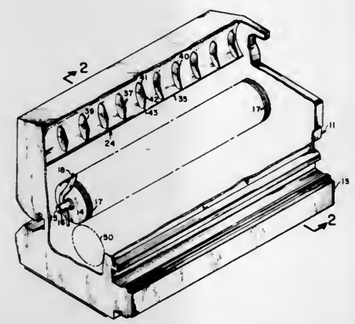
casings are mounted with their interiors to be filled facing radially inward on a circle about the rotational axis of the impregnator. An inner, generally flat surface of the impregnator is surrounded by equally spaced dividers which define distribution passages or channels leading to each coil casing. The passages are configured to produce radial resin and catalyst flow without resin pocketing. A lip or tube at the outer radial limits of each channel direct the resin into the coil casings. Resin and catalyst poured onto the inner surface are thoroughly mixed and distributed to the coils with the resin compound being equally divided by the equally spaced divider walls.

3,619,866
MAGNETIZABLE MASS CASTING DEVICE
Richard Hofmann, Oberscheld, and Adalbert Wittmoser, 684 Lampertheim, Germany; said Hofmann assignor to said Wittmoser
Continuation of application Ser. No. 680,698, Nov. 6, 1967. This application Mar. 31, 1970, Ser. No. 22,125
Claims priority, application Germany, Nov. 11, 1966, H 60,967
Int. Cl. B29c *1/16*; B22d *27/02*
U.S. Cl. 18—34 R **6 Claims**



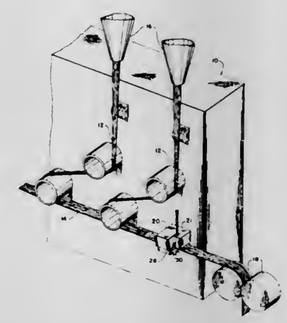
A mold of particulate material including magnetizable particles is made shape-retaining by subjecting the shaped mold to a magnetic field of sufficient strength to fix the position of the particulate magnetizable mold-forming material.

3,619,867
SEED COTTON ROLL BOXES FOR COTTON GIN STANDS
John A. Hays, Mercedes, Tex.
(P.O. Box 795, Raymond, Tex. 78580)
Continuation-in-part of application Ser. No. 707,891, Feb. 23, 1968. This application Mar. 23, 1970, Ser. No. 21,761
Int. Cl. D01b *1/08*
U.S. Cl. 19—55 **4 Claims**



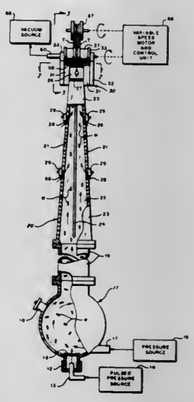
An improved roll box for cotton gin stands incorporating vanes in the scroll sheet of the roll box for laterally shifting the seed cotton roll over the ginning ribs and saws with the purpose of increasing the ginning rate, reducing spindle twist and improving staple quality.

3,619,868
METHOD AND APPARATUS FOR ASSIMILATING A YARN END IN TOW
Merton L. Dibble, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,742
Int. Cl. D01b *3/10*
U.S. Cl. 19—65 T **14 Claims**



Method, and apparatus for practicing the method, for assimilating a moving yarn end of filamentary material into a moving tow by entangling individual filaments of the yarn end with filaments of portions of the tow by false twisting such filaments, and automatically cutting the yarn end at a location immediately adjacent to and downstream of the resulting false twist.

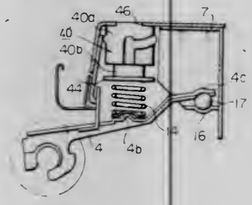
3,619,869
FIBER ALIGNING APPARATUS
Rimvydas P. Jakas, Norristown, Pa., and Joseph V. Mullin, Cherry Hill, N.J., assignors to the United States of America as represented by the Secretary of the Navy
Filed Jan. 2, 1969, Ser. No. 789,103
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **15 Claims**



Apparatus for aligning fibers such as α-alumina whiskers and for forming strands or tapes of the longitudinally-aligned whiskers including a cone; pneumatic apparatus for delivering the whiskers to the cone; and endless, transversely movable, permeable belt for collecting aligned

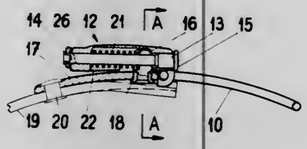
whiskers for the cone; a vacuum head positioned for accelerating the delivered fibers through the cone for collection on the belt; and stripping apparatus for collecting the tapes of longitudinally-aligned whiskers wherein the cone includes slots for establishing a whisker-accelerating flow field directed toward the belt and an influx slot for establishing a transverse flow immediately adjacent the belt causing the whiskers to be reoriented in a plane including the direction of belt movement immediately prior to collection.

3,619,870
DRAFTING MECHANISM FOR A SPINNING MACHINE
Nobugi Ooki and Hideo Okoshi, Fujisawa-shi, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,250
Int. Cl. D01h *5/50*
U.S. Cl. 19—282 **3 Claims**



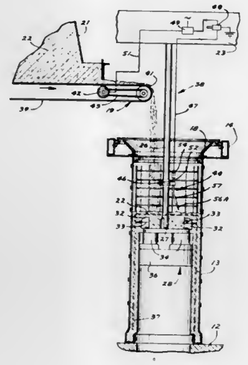
An improvement of the common carrier arm utilized for drafting mechanisms of a spinning machine. The carrier arm of the invention is provided with guide arms which are supported in a three dimensionally supporting condition thereon and with adjustable spring loading means of top rollers which permits changes in pressure with which the top rollers are urged against in cooperating bottom rollers.

3,619,871
ADJUSTABLE SHOE CLOSURE DEVICE HAVING A SPRING SHACKLE
Robert Schoch, Singen-Hohentwiel, Germany, assignor to Wienman A.G., Schaffhausen, Switzerland
Filed Aug. 24, 1970, Ser. No. 66,289
Claims priority, application Germany, Aug. 29, 1969, G 69 34 052.9
Int. Cl. A43c *11/14*
U.S. Cl. 24—68 SK **4 Claims**



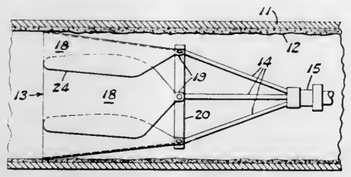
An adjustable closure device for a shoe upper has two inter-engageable closure means, one of which includes a pin disposed in a housing and is axially movable with the housing between a rest position and an extended position and immovable longitudinally relative to the housing, and resilient means in the housing biasing the pin to the rest position. A support plate is mounted on the shoe upper and carries a turnable post; the post projects through an opening into the interior of the housing, the pin is in slidable engagement with the post and revolvable therewith, thereby pivoting the housing relative to the support plate.

3,619,872
FEED CONTROL FOR CONCRETE PIPE MACHINE
Navarro T. Fosse, Nashua, Iowa, assignor to Hydrotile Machinery Company, Nashua, Iowa
Filed July 22, 1969, Ser. No. 843,588
Int. Cl. B28b *21/26*
U.S. Cl. 25—36 **25 Claims**



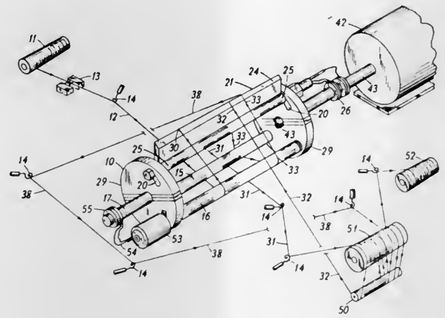
A packer head concrete pipe machine for making a cylindrical concrete pipe in an upright mold. Concrete is moved from a hopper by a conveyor into an upright mold on top of a rotatable packer head. A power driven carriage operates to move the rotatable packer head upwardly to continuously move and pack the concrete outwardly against the cylindrical mold to form the cylindrical pipe. A control means, operable to sense the amount of concrete on the packer head, controls the conveyor speed, or starts and stops it, so that a substantially constant supply of concrete is available over the packer head.

3,619,873
TROWEL FOR PIPE LINING MATERIAL
Albert G. Perkins, Watkins Glen, N.Y., assignor to Perkins Pipe Linings, Inc., Watkins Glen, N.Y.
Filed July 31, 1969, Ser. No. 846,380
Int. Cl. B28b *21/18*
U.S. Cl. 25—38 **10 Claims**



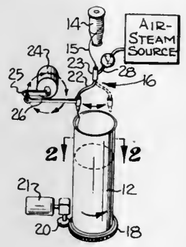
A frusto-conical drag trowel for smoothing mortar in an interior generally cylindrical surface. The trowel body comprises laterally overlapping plate members and a mounting member at the small end of the frusto-conical travel body. The adjacent end of each trowel plate is pivoted to the mounting member on an axis extending radially of the trowel body to permit relatively free intersliding movement of adjacent overlapping trowel plates at the large end of the trowel body and such adjacent end of each trowel plate being relatively flexible whereby each of the trowel plates may swing about an axis generally tangent to the mounting member to vary the diameter of the large end of said trowel body. Resilient means are provided within the large end of the trowel body to exert a perimeter-increasing force at said large end for resiliently urging the plate members radially outwardly to urge their trailing ends into yieldable troweling contact with the mortar.

3,619,874
TRAVELLING-EDGE CRIMPER AND PROCESS
Hsin Lang Li, Parsippany, and Dusan C. Prevorsek and Hendrikus Johan Oswald, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,444
Int. Cl. D02g *1/10*
U.S. Cl. 28—1.5 **10 Claims**



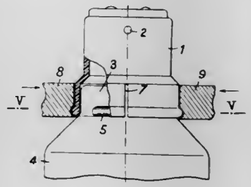
A thermoplastic yarn is crimped at increased speeds by guiding a running length of the yarn under controlled tension and temperature at an acute angle over an edge in an apparatus in which the crimping edge itself travels in a direction with the moving yarn.

3,619,875
METHOD OF PROCESSING THERMOPLASTIC YARN
Terry Lee Gates, McAdenville, N.C., assignor to Pharr Yarns, Incorporated, McAdenville, N.C.
Filed Mar. 9, 1970, Ser. No. 17,498
Int. Cl. B65h *55/04*
U.S. Cl. 28—72 SP **8 Claims**



A method of handling a pre-bulked yarn during a process involving heat treatment in a manner to maintain uniformity of bulk. The process comprises the steps of forming the yarn into a loose mass, enclosing the yarn mass within a flexible bag, heat treating the yarn while it is positioned within the bag, and finally withdrawing the heat treated yarn from the bag and winding it into a more condensed package form.

3,619,876
METHOD OF MANUFACTURING ELECTRIC LAMPS, BASES FOR CARRYING OUT SAID METHOD AND LAMPS THUS OBTAINED
Jean Besacier, 4 Rue de Gaillon, Marolles-en-Hurepoix, France
Filed May 22, 1969, Ser. No. 826,858
Claims priority, application France, June 14, 1968, 155,078
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **2 Claims**



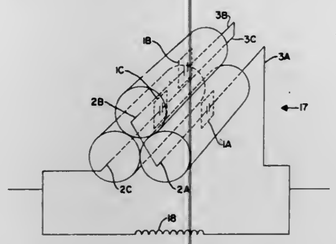
A method of manufacturing an electric lamp of which the bulb has formed in its neck portion a pair of separate grooves extending in a common transverse plane. According to said method each lamp base is made of a suitable flexible material by forming in the base skirt on the one hand a pair of internal anchoring beads adapted to fit into the grooves of the bulb neck and on the other hand one or two longitudinal slits. Then, this base is fitted to the bulb neck by momentarily expanding the portions of the base skirt which are formed therein by said slit or slits, so that the internal anchoring beads of said skirt can fit into the grooves of the bulb neck. Finally, the edges of the longitudinal slit or slits formed in the base skirt are sealed together.

This disclosure is also concerned with lamp bases designed for carrying out the manufacturing method set forth hereinabove, and with electric lamps manufacturing by carrying out this method.

3,619,877
CAPACITOR ASSEMBLY
Wilbur O. Hansen, Waynesboro, Va., assignor to General Electric Company
Original application Jan. 22, 1968, Ser. No. 699,399, now Patent No. 3,527,988, dated Sept. 8, 1970. Divided and this application Feb. 2, 1970, Ser. No. 7,624
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.41 **2 Claims**

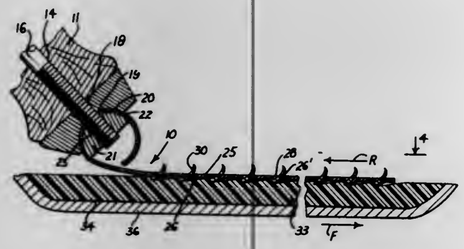
A capacitor assembly having a large heat transfer surface and housing a plurality of capacitors which may be connected as a lumped capacitance. A plurality of thermally conductive tubes are mounted substantially parallel, adjacent tubes contacting each other to define passages for a cooling medium. At least one capacitor is supported within each tube. The capacitors are thermally connected to the walls of the tubes in which they are contained in order to provide for heat transfer thereto. Leads extending from capacitor terminals may protrude from opposite ends of each tube. The tubes may also be electrically conductive so that capacitors may be conveniently connected in parallel by electrically connecting one terminal of each capacitor to the wall of the tube in which it is contained and the other terminal of each capacitor to a common

wire. Wires to which the other terminal of each capacitor is to be connected may pass through each tube in spaced



relationship thereto so that a short lead is required to make the connection.

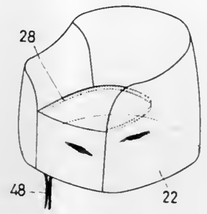
3,619,878
SHEET METAL SPEED FILE
Isak Benis, 1933 Fowler Ave., Bronx, N.Y. 10462; William Benis, 304 Washington Ave., Tappan, N.Y. 10983; and Moshe Shrage, 2160 Matthews Ave., Bronx, N.Y. 10462
Filed Dec. 2, 1969, Ser. No. 881,480
Int. Cl. B23d *71/00*
U.S. Cl. 29—78 **9 Claims**



A tool for smoothing a hardened plastic filling in an indentation of a vehicle body, includes a handle, a flexible sheet metal cutter plate and attachment means for detachably and replaceably securing the plate to the handle. The cutter plate has sharp, inclined semicircular teeth struck out of one side of the plate. Holes adjacent the teeth pass chips cut loose by the teeth. The flexible plate conforms to the curvature of the vehicle body. The unflexed plate may be flat or curved. The plate may be longer than it is wide with the direction of length perpendicular or parallel to the handle. The teeth extend in the direction of length of the cutter plate.

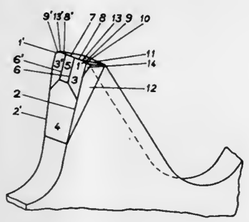
3,619,879
METHOD OF UPHOLSTERING
Katsuya Shirakawa, % Katsuyi Sawara, patent atttorney, 50 Jokiura-Bank Bldg., 5, 4-chome, Iidabashi, Tokyo, Japan
Filed Apr. 27, 1970, Ser. No. 32,095
Int. Cl. B68g *7/00*
U.S. Cl. 29—91.1 **4 Claims**

A method of upholstering a chair of almost any desired shape by employing a zipper or a fastener which is attached to the padding or body of the chair and to the backside of the covering cloth or upholstery, including the technique of attaching a fastener to the chair body when the synthetic foaming material is made into the chair body of the desired shape by being injected into a mold, and the technique of contouring the upholstery tightly to the chair body not by seaming but by employing a fastener. This method makes it possible to cover the chair body



tightly even if it is concave in the center like a shell, though it was difficult or impossible to upholster the concave body tightly by seaming work.

3,619,880
CIRCULAR SAW BLADES OR SIDE-MILLING CUTTERS WITH TEETH OF FACET DESIGN
Gotthold Pahlitzsch, Braunschweig, Germany, assignor to National Twist Drill and Tool Company, Canton, Ohio
Filed Mar. 25, 1969, Ser. No. 838,721
Claims priority, application Germany, Nov. 28, 1968, P 18 11 374.1
Int. Cl. B26d *1/12, 1/00*
U.S. Cl. 29—103 **1 Claim**



This invention concerns improved cutting teeth for circular disk shaped tools such as circular saws or side-milling cutters for cutting or slot-milling or for key-way milling of metallic material. The cutting teeth include bevels or facets arranged symmetrically relative to the saw blade middle plane so that the corners of the cutting surface are trailing behind the composed principal cutting edges in the cutting direction and are essentially reinforced through the cutting and clearance angle which is altered over the original principal cutting edge, and that guiding planes are formed at the secondary cutting edges which are lying in parallel with the saw blade middle plane.

3,619,881
COLD ROLLING WORK ROLL
Max E. Bills, Pleasant Hills Borough, Pa., and Henry J. Hansen, Jr., Portage, Ind., assignors to United States Steel Corporation
Filed Jan. 17, 1969, Ser. No. 792,079
Int. Cl. B21b *27/02*
U.S. Cl. 29—121 R **5 Claims**

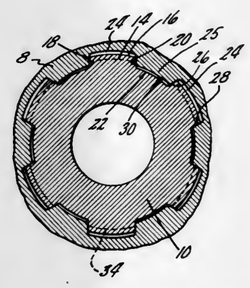
A work roll for cold rolling steel sheets or strip has a plurality of shallow generally frustospherical depressions in its outer surface. The vast majority of the depressions are of substantially uniform shape and depth, but may be randomly spaced over the roll surface. When the sheet

is rolled between two rolls, at least one of which has the described surface, low generally frustospherical projec-



tions of substantially uniform shape and height are obtained on that side of the strip in contact with the surfaced roll.

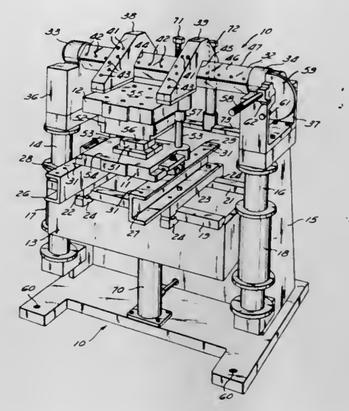
3,619,882
METHOD OF BROACHING A BLANK UPON A SHAFT
Stanley J. Sobanski and Otil F. Mastriforte, Newington, and Godwin L. Noell, New Hartford, Conn., assignors to Chandler Evans Inc., West Hartford, Conn.
Filed Oct. 27, 1969, Ser. No. 869,641
Int. Cl. B21d *53/28;* **B21h** *5/00;* **B21k** *1/30*
U.S. Cl. 29—159.2 **4 Claims**



A steel shaft having peripheral lands is broached by a splined carbide blank to form a broached assembly having interfaces between the lateral flanks of the lands and lateral flanks of the splines. The inner and outer peripheral portions of the steel shaft are spaced from the carbide blank to prevent radial stresses from being produced during broaching and to accommodate thermal expansions in the broached assembly. Circumferential chip grooves are provided in that portion of the shaft which is to be broached by the carbide blank to prevent continuous chips from forming during the broaching process which could seize on the cutting face of the carbide blank. The carbide blank of the broached assembly resists displacements relative to the steel shaft. The interfaces may be angularly disposed to alleviate large circumferential thermal stresses.

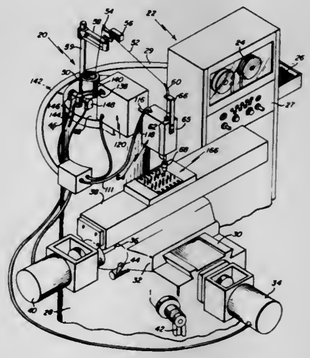
3,619,883
DIE ASSEMBLER
Herbert J. Venables III, Cleveland, Ohio, assignor to The Venables Machine and Tool Company, Cleveland, Ohio
Filed June 9, 1969, Ser. No. 831,525
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 R **6 Claims**

An apparatus to facilitate the assembly of die sets including a vertically movable carriage to which a die holder may be provisionally mounted and a support shaft to which an opposite die holder may be correspondingly mounted. The shaft is horizontally offset from the carriage



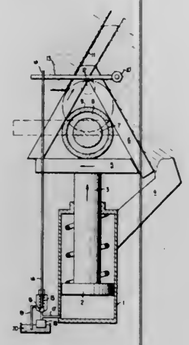
area to support its associated die holder assembly either directly above the other die holder assembly for fitting or in a horizontally displaced position to permit access to the inner surfaces of both assemblies.

3,619,884
APPARATUS FOR PERFORMING A PLURALITY OF WINDINGS
Harold W. Bennett, Stoughton, and Barry E. Richards, Marlboro, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 30, 1969, Ser. No. 837,628
Int. Cl. H05k *13/04;* **B23p** *19/04*
U.S. Cl. 29—203 MW **8 Claims**



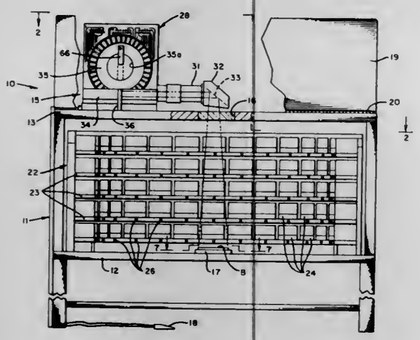
A wiring apparatus including a control console having means for receiving a programmed series of instructions and a wiring machine electrically controlled by the console and having means for continuously moving a fixture below a simultaneously movable head carrying a tube through which a continuous wire is paid out onto the fixture, said fixture having means for guiding the wire through core positions and across terminal pads carried on the fixture.

3,619,885
VARIABLE-DIAMETER CRIMPING TOOL
Helmut Dischler, Neuss-Uedes-Heim, Germany, assignor to Novopress G.m.b.H. & Co. KG., Dusseldorf, Germany
Filed Nov. 18, 1969, Ser. No. 877,802
Claims priority, application Germany, Nov. 20, 1968, P 18 09 853.8; Aug. 11, 1969, P 19 40 854.9
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **13 Claims**



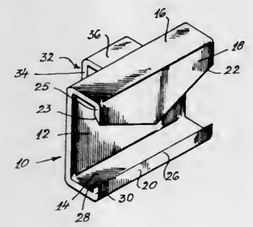
A device to assemble electrical connectors, cable shoes, fittings and sleeves onto electric conductors, cables, wire ropes, rods and ropes of different nominal sizes and diameters, by a crimping deformation operation where the correct depth of crimping and clamping deformation is automatically determined. The crimping jaw arrangement of said device is generally triangular in shape and is either power-hydraulically or manually plier-like actuated in a rapid approach and slow crimping and penetrating operating cycle.

3,619,886
OPTICAL ASSEMBLY SYSTEM
Herbert A. Sauvé, Santa Cruz, and David C. O. Sloan, Boulder Creek, Calif., assignors to Sylvania Electric Products Inc.
Filed Feb. 2, 1970, Ser. No. 7,742
Int. Cl. H05k *13/04*; B23g *17/00*
U.S. Cl. 29—203 B **11 Claims**



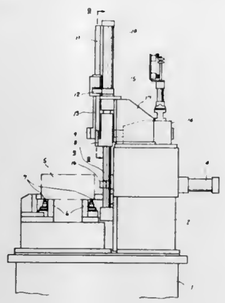
The system comprises a standard slide projector arranged to project images of components from transparent slides to a workpiece, such as a printed circuit board, on a worktable. A plurality of storage bins containing different components and located close to the work area have indicator lights under the bins, respectively, and are connected to a power source through a multi-contact switch plate mounted adjacent to the rotatable slide holder of the projector. Movable contacts on a slide in the holder successively close switches to lamps adjacent to respective bins containing components corresponding to component images on the slides in the order in which those images are projected to the workpiece. Component location on the workpiece, the shape of the component and identification of the storage bin which contains it are communicated simultaneously to the assembler.

3,619,887
TOOL FOR FORCIBLY REMOVING A CYLINDER FROM A LOCK
William M. McLaughlin, 3400 Fort Independence St., Bronx, N.Y. 10463
Filed Oct. 9, 1969, Ser. No. 865,143
Int. Cl. B23p *17/04*
U.S. Cl. 29—207 **2 Claims**



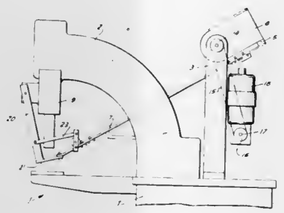
A tool for removing a cylinder from a lock in a door has a channel shaped body formed with beveled flanges to engage behind the rim of the cylinder. A loop on the back of the tool engages an implement for drawing the tool away from the door with the cylinder engaged between the beveled flanges.

3,619,888
AUTOMATIC BEARING PRESS-FIT MACHINE
Kingo Sawada, Kariya, Shoichi Kato, Hekikai, and Tadashi Ota, Okazaki, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Feb. 20, 1970, Ser. No. 12,975
Claims priority, application Japan, Dec. 28, 1969, 44/505
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—208 **9 Claims**



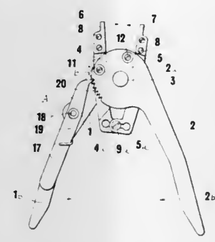
An automatic bearing press-fit machine including bearing indexing means for indexing the oil hole of a bearing in a predetermined angular position, bearing inserting means for inserting the bearing indexed by the indexing means into the bore of a workpiece in press-fit relationship, and bearing position-ensuring means for ensuring the alignment of the oil hole of the bearing inserted into the bore of the workpiece with respect to that of the workpiece.

3,619,889
APPARATUS FOR AFFIXING SMALL DISCRETE ARTICLES TO SUPPORTS
Maurice M. Balsam, 27 W. 24th St., New York, N.Y. 10010
Filed Oct. 2, 1969, Ser. No. 863,212
Int. Cl. B23g *7/10*; B23p *19/04*
U.S. Cl. 29—208 R **10 Claims**



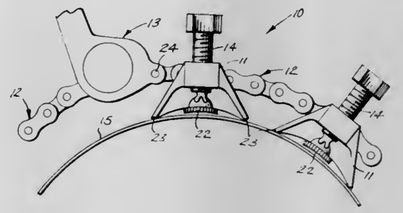
A hopper has a bottom wall downwardly inclined and provided with an opening of predetermined outline. A slideway extends from below the opening downwardly inclined, and has a lower end portion. Guide means is provided on the slideway so as to receive and position for sliding movement articles which are accommodate in the hopper, and which are ejected therefrom with predetermined orientation through the opening in the bottom wall by an agitating device arranged in the hopper. A die is located adjacent the lower end of the slideway for affixing the articles moving along the slideway to a support, such as a woman's handbag or the like. Means is provided for letting only the respectively leading article on the slideway advance to the die while retarding or restraining the others on the slideway until the respectively leading article has been processed, such as by being affixed via the die to a support.

3,619,890
PLIERS FOR STOP RINGS
Masaharu Kubokawa, 3–11–8 Minaminagasaki, Toshima-ku, Tokyo, Japan
Filed Mar. 4, 1970, Ser. No. 16,401
Claims priority, application Japan, Nov. 11, 1969, 44/90,640
Int. Cl. B25b; B23p *19/04*
U.S. Cl. 29—229 **7 Claims**



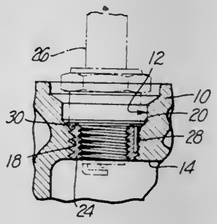
Pliers for stop rings having two handles pivotally connected to each other, and two blade supporting members each having a blade mounted thereon. The blade supporting members are pivotally connected and may each be coupled to either handle. When the two handles are moved toward each other, the blades are moved either toward or away from each other depending on the coupling arrangement. A stop ring for a hole and a stop ring for a shaft can be fitted in a hole and a groove formed on the surface of a shaft respectively by using the pliers according to this invention.

3,619,891
PIPE CLAMP
John William Harrison, 1362 Rose Ave., South Fort George, British Columbia, Canada
Filed May 27, 1969, Ser. No. 828,144
Int. Cl. B25b *27/14*
U.S. Cl. 29—272 **2 Claims**



A clamp arrangement for use in working steel pipe, the main advantage being that the device will fit all sizes of pipe. This device consists of a multiple number of aligning blocks which are slid along a roller chain held securely in place by a ratchet. The device includes a multiple number of adjusting screws which when they are slackened off will permit another pipe to abut with the pipe device placed upon it in order for them to be welded together.

3,619,892
METHOD OF REPLACING DEFECTIVE SPARK PLUG HOLE THREADS
Ronald C. Roeschlaub, Los Angeles, Calif., assignor to Irontite Products Co. Inc., El Monte, Calif.
Filed Feb. 9, 1970, Ser. No. 9,518
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **4 Claims**

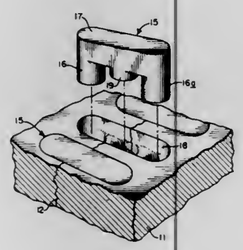


A method of replacing defective threads in a spark plug hole in a cylinder head, or the like, including the steps of: reaming out the defective threads to form an enlarged hole; tapping the enlarged hole; threading into the tapped hole an annular insert which is threaded internally to receive a spark plug of the same size as the original hole; locking the annular insert against rotation; and deforming a sealing washer into sealing engagement with the outer end of the annular insert and the cylinder head. The annular insert is then ready to receive a spark plug of the same size as the original hole, the spark plug being seatable on the sealing washer to render the spark plug gas tight under all pressure conditions within the cylinder.

3,619,893
METHOD OF REPAIRING CRACKED METALLIC CASTINGS

Cleon B. Harris, 1732 Sherwood Forest Blvd., Baton Rouge, La. 70815

Continuation-in-part of abandoned application Ser. No. 653,194, July 13, 1967. This application Sept. 8, 1969, Ser. No. 867,106
Int. Cl. B22d *19/10*
U.S. Cl. 29—402 **3 Claims**



A non-thermal method of repairing cracked metallic castings comprising the steps of forming a plurality of spaced openings laterally across the crack, removing metal from the upper portion of the openings thereby forming a groove interconnecting the upper ends of the openings and forming ribs therebetween, the walls defining the sides of the groove of a straight configuration, the opening directly intersected by the crack being substantially of less depth than the openings spaced apart on each side thereof, then depositing a load-bearing, deformable, non-thermal bonding metal element in the groove so that the entire groove and openings are completely filled. The bonding metal is strengthened and the metal element—casting wall joint is made pressure-tight by cold working the bonding metal. Preferably, a plurality of openings and grooves are formed along the crack in the above manner.

3,619,894
PROCESS FOR THE PRODUCTION OF A COMPOSITE MATERIAL Al-Mg-Al_2O_3-MgO

Dante Gualandi, Arona, and Pierre Jehenson, Varese, Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

No Drawing. Filed Aug. 6, 1968, Ser. No. 750,462
Claims priority, application Italy, Aug. 31, 1967, 39,127/67
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **2 Claims**

A method for producing sintered composite

Al-Mg-Al_2O_3-MgO

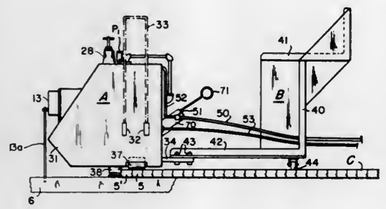
material for nuclear applications, comprising grinding an Al-Mg alloy powder in air using an aluminum mill and a grinding lubricant, cold compressing the ground powder, effecting a controlled oxidation to form a double oxide Al_2O_3-MgO product; sintering and degasifying the product, hot compressing and then extruding the product.

3,619,895
NAILING MACHINE FOR WOOD FLOORING

Einar T. Thompson, 107 White Gate Road, Pittsburgh, Pa. 15238

Filed May 13, 1969, Ser. No. 824,226
Int. Cl. B27f *7/02*
U.S. Cl. 29—432 **13 Claims**

A floor laying machine is provided having a hammer for forcing flooring members into and retaining them in a tight interlocked tongue and groove fitted relation while a nailer is employed for securing the members in position with respect to each other and on sleepers or joists. The machine is moved on a previously laid floor portion, longitudinally of a floor member to be laid, to secure it to the sleepers or joists and to a previously laid member; the machine has vertical roller means for guiding it along

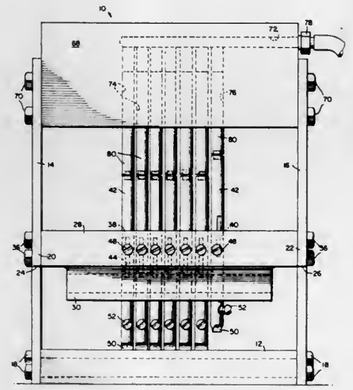


an exposed side edge of a previously laid floor member and may be manually moved back and forth across a room by an operator. Electrical control means including switches and solenoids and fluid control valve means are carried by the machine and used with a pressure fluid for controlling its hammering and nailing operations manually or automatically and, if desired, independently.

3,619,896
THERMAL COMPRESSION BONDING OF INTERCONNECTORS

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration, in respect to an invention of David R. Clarke, Bellevue, Wash.

Filed Feb. 27, 1969, Ser. No. 802,813
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **3 Claims**



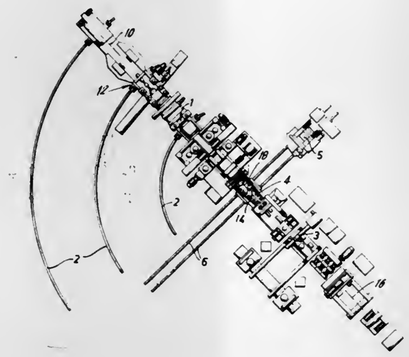
A method and apparatus for diffusion bonding of dissimilar metals wherein dissimilar metal parts to be joined are placed on a transversely slidable tray located on a table, the table being provided with a pair of spaced uprights and carrying a pressurized air manifold having a plurality of pressurized air actuated pistons depending therefrom, each of the pistons being provided at its end thereof with a refractory material of spherical configuration. In vertical spaced relationship below the manifold a cross arm is supported between the pair of upright rails. The cross arm, slidably supports a plurality of vertical plungers, each of which is provided with a longitudinal

slot for receiving the end of a set screw that retains each plunger on the cross arm. One end of each plunger engages a respective spherical end portion of a piston, the other end of the plunger being of wedge configuration and adapted to clamp the dissimilar metals to be joined between it and the top surface of the tray. The table and the cross arm are each provided with laterally extending bores therethrough for accepting a cartridge type resistance heater. The assembly is placed within an evacuation chamber wherein the dissimilar metal parts are diffusion bonded by the application heat and force transmitted through the table and the wedge-shaped end portion of the plungers.

3,619,897
ARRANGEMENT FOR A WELDED TUBE FORMING MACHINE

Wilhelm Oppermann, Duisburg, and Johann Vogt, Duisburg-Wanheimerort, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Mar. 13, 1970, Ser. No. 19,157
Claims priority, application Germany, Apr. 24, 1969, P 19 20 871.0
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **6 Claims**

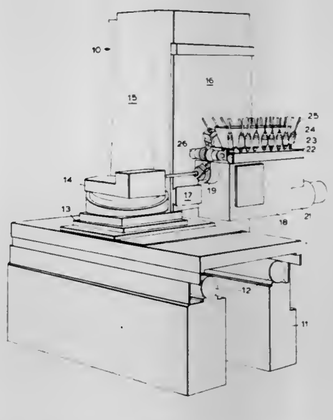


An arrangement for a welded tube forming machine includes a straight trackway forming a center point at one location for a curved trackway. The curved trackway is adapted to carry the necessary equipment for preparing strip material for forming it into a tube. This equipment may be moved on the curved trackway through an arc so that its longitudinal center line may be aligned with the longitudinal center line of tube finishing equipment, or arranged at a selected angle in respect thereto. The straight trackway provides means for shifting forming equipment for preparing helical seam tubes and forming equipment for forming longitudinal-seam tubes. The arrangement and construction as such that the strip preparing equipment may be located so that its longitudinal center line aligns with the longitudinal center line of the tube-finishing apparatus and in such instance the forming equipment for the longitudinal seam welding is interposed on the trackway at a location between the strip preparing equipment and the tube finishing equipment. When helical seam tubes are to be welded, then the strip preparing equipment is arranged at a selected angle in respect to the longitudinal center line of the tube finishing equipment and the forming equipment is shifted on the trackway until the forming equipment for preparing helical seam tubes is located between the strip preparing and tube finishing equipment, that is at a location to receive the strip material which has been prepared for the formation of the helical welding seam and then for delivering it, after welding, to the tube finishing equipment.

3,619,898
MACHINE TOOL

Charles B. Perry and Herman Horlacher, Cincinnati, Ohio, assignors to The Cincinnati Milling Machine Company, Cincinnati, Ohio

Filed Aug. 11, 1969, Ser. No. 849,107
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **7 Claims**



This invention relates to a machine tool and, more particularly, to a machining apparatus having tool changing capabilities wherein a double-armed interchanger carries successive tools from a tool storage matrix to a working spindle.

3,619,899
METHOD OF MAKING A DISK-SHAPED ARMATURE

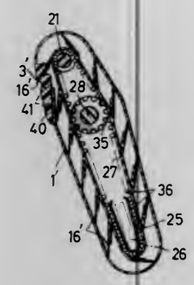
Naozi Takeda, Osaka, and Tosio Tuzihara, Kobe, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1969, Ser. No. 885,673
Claims priority, application Japan, Dec. 23, 1968, 43/94,715
Int. Cl. H02k *15/00*
U.S. Cl. 29—598 **3 Claims**



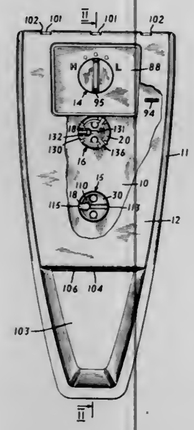
A resin is printed and attached in a doughnut shape onto a copper plate to form an insulating film. A copper film is formed on the insulating film by a non-electrolytic plating method or an evaporation method. Then, the copper plate and the copper film are respectively etched in such a pattern that half turn conductors are arranged by removing the unnecessary portions, thus an armature element is obtained in which single turn conductors in two layers are arranged having an insulating film interposed therebetween. Two such armature elements are stuck together by interposing insulating sheets therebetween and connections are made between their surfaces, thereby manufacturing an armature having two turn conductors in four layers.

3,619,900
ROTARY SPARE BLADE SAFETY RAZOR
Hirotsugu Matsuura, Nara-ken, Japan (35, 8-chome, Nishinocho, Tanabe, Higashisumiyoshi-ku, Osaka, Japan)
Filed Aug. 20, 1969, Ser. No. 851,677
Claims priority, application Japan, Feb. 13, 1969, 44/10,923
Int. Cl. B26b *21/24, 3/00*
U.S. Cl. 30—40 **4 Claims**



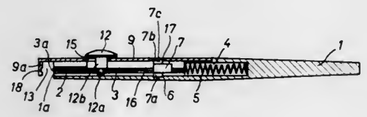
A rotary multi-blade razor. The razor has a case with a rotary member which is rotatable within the case and which can be stopped at given positions inside the case. Blades are mounted at fixed positions around the outside of the rotary member, and an aperture is provided in the case through which said blades are exposed.

3,619,901
RAZOR WITH FLEXIBLE BAND BLADE
Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,659
Int. Cl. B26b *21/26*
U.S. Cl. 30—40.1 **9 Claims**



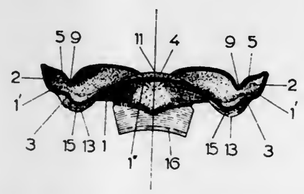
A disposable razor of the flexible band blade type in which the band is adapted to be incrementally and progressively advanced through the shaving area from a pay off spool to a manually rotatable take up spool, the operative elements being mounted in an inner frame, which is contained in a pocket in a cover member elongated to serve as a combined casing and handle, the pocket being formed by side flanges and transverse ribs, the razor having also a back plate extending over the frame and having a flange interlocked with a transverse rib of the front casing part, the razor further embodying a bridge member of elastic sheet material having a U-shape in cross-section and carrying a guard, the position of the guard being adjustable through cam means acting to compress elastically the guard carrying leg of the U-shape relative to the other leg.

3,619,902
LETTER OPENER
Josef Viktor Fleury, Rapperswil, Switzerland, assignor to Mewecco Fleury Mechanische Werkstatte
Filed Mar. 12, 1969, Ser. No. 806,523
Claims priority, application Switzerland, Mar. 15, 1968, 3,914/68
Int. Cl. B26b *29/00*
U.S. Cl. 30—294 **6 Claims**



Letter opener having a guide groove and a knife in a handle with a spring therein so that the latter can force the knife into the groove against an adjustable stop to control the extent of the knife projecting into the guide groove.

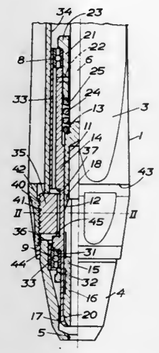
3,619,903
FACTORY MADE TRAY FOR TAKING IMPRESSIONS ON A TOOTHLESS UPPER JAW
Josephus Schreinemakers, Wilhelminastraat 43, Sittard, Netherlands
Filed Dec. 30, 1969, Ser. No. 889,137
Claims priority, application Netherlands, Dec. 31, 1968, 6818886
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **9 Claims**



A factory made tray for taking impressions on a toothless upper jaw, wherein the distal rim of both vestibular flanges of the tray entirely extends in situ beyond the action limit in the action area of the mucous membrane.

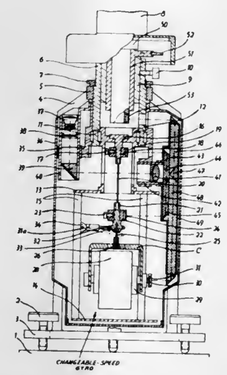
According to the invention the distal rim of both vestibular flanges comprises an upwardly directed kink positioned immediately outward of the relative hamular notch, in such manner that the base of the more or less vertically extending groove between the os maxillare and the external pterygoid plate is reproduced in the impression on the left hand side and on the right hand side in an optimum manner.

3,619,904
CHUCK CONTROL FOR DENTAL DRILLS AND THE LIKE
Karl Ivar Lundgren, Hagersten, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Dec. 19, 1968, Ser. No. 785,178
Claims priority, application Sweden, Dec. 29, 1967, 17,978/67
Int. Cl. A61c *1/10*
U.S. Cl. 32—26 **5 Claims**



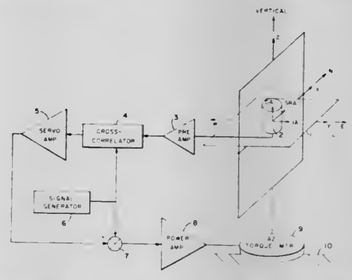
A chuck control mechanism for a dental drill or other tool having a tubular housing consisting of a ring member rotatably mounted at the outside of the housing and axially fixed in the housing and arranged upon rotation in one direction to tighten the grip of the chuck and upon rotation in the opposite direction to disengage the chuck from the shank of a working implement which may be any dental tool or other implement driven by a shaft mounted for rotation in the housing and engageable with the chuck.

3,619,905
GYRO COMPASSES
Karl Heinrich Stier, Hugo-Schultz-Strasse 55, Bochum, Germany
Filed May 13, 1968, Ser. No. 728,461
Claims priority, application Germany, May 13, 1967, St 26,875, St 26,876
Int. Cl. G01c *19/38, 1/02*
U.S. Cl. 33—72 **10 Claims**



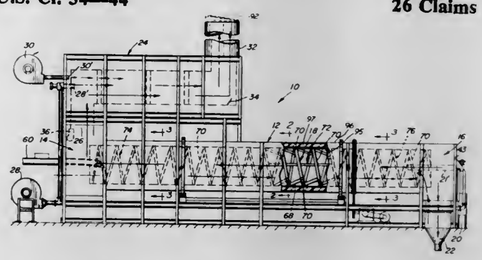
A gyro compass in which one embodiment has an inner gimbal suspended between two band systems of varying restoring torques which can be selectively damped. On the band systems are mounted mirrors, having normals capable of coincidence with optical path of a prism arrangement with enables the autocollimating telescope to optically sight on the mirrors. The combination of the band systems and the mirror results in the capability to find the null position for the compass faster than in a liquid damped compass while retaining the greater accuracy of the liquid damped compass over that of the undamped compass of prior art.

3,619,906
OSCILLATING NORTH-SEEKING PLATFORM
Robert E. Yates and Lester M. Ross, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed May 5, 1969, Ser. No. 821,900
Int. Cl. G01c *19/38*
U.S. Cl. 33—226 **2 Claims**



A self-alignment system for a gyro-stabilized platform. The system uses the earth's rotation rate, sensed by an east-west oriented rate gyro mounted on the platform, to drive the approximately aligned platform into E–W and N–S alignment with a high degree of accuracy. The accuracy is gained by employing a comparison technique to separate the gyro output signal of earth's rate from the random part of the output caused by imperfection in the gyro. A sinusoidal signal generator actuates an azimuth torque motor to oscillate the platform about a vertical axis. This sinusoidal oscillation and a sinusoidally modulated earth rate with its swings about null not accurately equal combine to form the signal picked off at the vertically oriented output axis of the gyro. This signal is compared with the generator signal and a resulting signal is added to the azimuth torque motor input such as to accurately equalize the platform swings to each side of the true alignment direction.

3,619,907
CHIP DRYER DEVICE
William C. Kallas, Park Ridge, Ill., assignor to Klefstad Engineering Co., Inc., Chicago, Ill.
Continuation of application Ser. No. 720,806, Apr. 12, 1968. This application June 8, 1970, Ser. No. 44,265
Int. Cl. F26b *13/10*
U.S. Cl. 34—44 **26 Claims**

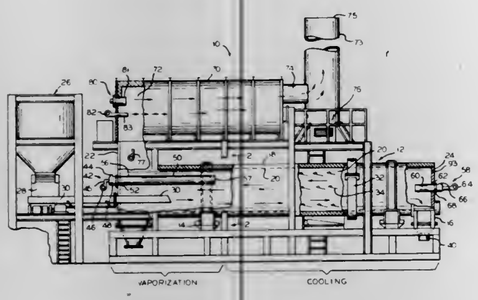


A system for cleaning and drying metal chips having an air flow moving in an opposed relationship with respect to the movement of the metal chips. A spiral auger conveys the metal chips from an input end to an output end.

3,619,908
DEVICE FOR CLEANING AND DRYING METAL CHIPS

William C. Kallas, Park Ridge, Ill., assignor to Klefstad Engineering Co., Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 720,806, Apr. 12, 1968. This application Apr. 3, 1970, Ser. No. 25,384
Int. Cl. F26b *13/10*
U.S. Cl. 34—56 8 Claims

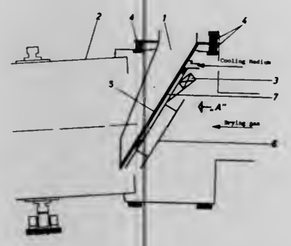


A system for cleaning and drying wet and oily metal chips within a revolving drum by vaporization and combustion. The air flow moves in an opposed direction with respect to the movement of the metal chips. A main heat means is disposed adjacent the input feed for the chips to generate heat from inside the drum to the outer walls thereof. The heat means includes means for restricting direct impingement of flame onto the oily chips. The system includes various automatic control means to control drum temperature, feed rate, air flow and afterburner temperature in a safe, efficient and economical manner.

3,619,909
DEVICE FOR THE DETACHMENT OF BUILT-UP GRANULAR MASS

Josef Driller, Dortmund-Loh, Germany, assignor to Friedrich Uhde G.m.b.H., Dortmund, Germany

Filed Sept. 23, 1969, Ser. No. 860,229
Claims priority, application Germany, Oct. 19, 1968, P 18 04 144.6
Int. Cl. F26b *9/00*
U.S. Cl. 34—164 2 Claims

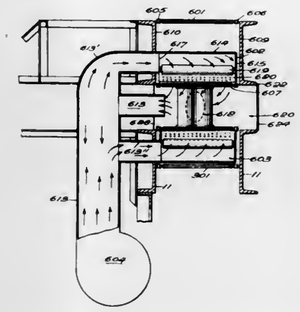


A device to exclude any build-up in a steeply inclined feed chute or prevent the growing of the material layer beyond inadmissable limits by vibrating the chute lined with adhesion-retarding material, in a longitudinal direction and protecting the chute from the hot drying gas stream by means of a heat-shielding plate and/or a cooling device.

3,619,910
PACKAGING APPARATUS

Keith Stewart Carmichael, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application July 15, 1968, Ser. No. 744,848. Divided and this application Apr. 9, 1970, Ser. No. 26,927
Int. Cl. B65b *1/02*
U.S. Cl. 34—216 2 Claims

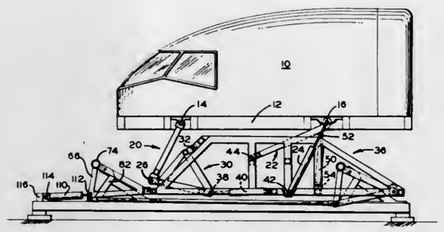


A method and apparatus for packaging articles such as cans in an overwrap of thermoplastic polymeric material is provided wherein said apparatus comprises means for grouping a pluralty of articles to be packaged, means for enwrapping said articles with said film, means for heat-sealing overlapped edge portions of said film and enclosing said articles therewithin, means for separating said film-enwrapped grouped articles, and means for shrinking said heat-sealed film to provide a package of grouped articles characterized by a substantially wrinkle-free film extending over the top, bottom, sides and portions of the ends of said grouped articles.

3,619,911
MOTION SYSTEM

Edward G. Pancoe, Chenango Forks, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed May 19, 1969, Ser. No. 825,527
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 P 4 Claims



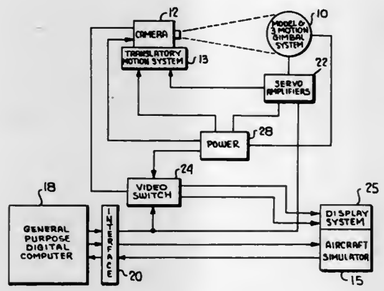
A motion system for an aircraft simulator, or the like, of the type wherein independent actuators are provided for moving the motion platform in each single axis of freedom. The present invention provides such a system with greatly improved structural rigidity and exact duplication of motion transmitted through a linkage at a number of points. In the disclosed embodiment, vertical

translation is imparted by rotating four bell crank members linked to four respective corners of a truss, the bell cranks being connected in a structurally closed-loop manner to eliminate backlash or lost motion in the linkage.

3,619,912
VISUAL SIMULATION DISPLAY SYSTEM

John E. Conant, Arlington, and Walter F. Buczek, Springfield, Va., assignors to Melpar, Inc., Falls Church, Va.

Filed Aug. 9, 1968, Ser. No. 751,522
Int. Cl. B64g *7/00*; G09b *9/08*
U.S. Cl. 35—12 5 Claims

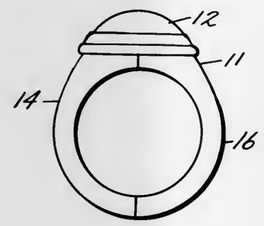


An optical image display is provided in a mosaic of contiguous individual television monitors whose rasters are suitably swept and blanked to permit translation of the desired image in any direction across the display screens or faces of the several television monitors, to simulate in a training environment a realistic view of the actual scene or visual conditions to which the trainee is to be subjected. Motion of the display image in any direction across the face of each monitor and in transition from one monitor to another in a continuous picture sequence may be accomplished by computer techniques, or by manually operated controls.

3,619,913
DEMONSTRATOR FINGER RING

Arthur B. Albrecht, Box 608, Yoakum, Tex. 77995

Filed Mar. 9, 1970, Ser. No. 17,845
Int. Cl. G09b *25/00*
U.S. Cl. 35—53 9 Claims

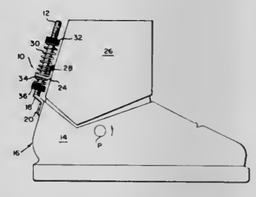


A demonstrator ring having a plurality of changeable parts comprising a male arcuate part, a female arcuate part and a top setting part. The top setting part has a plurality of joining segments projecting from its base; the male arcuate part has a plurality of joining segments projecting from it and a plurality of channel-shaped recesses therein; and the female arcuate part as a plurality of channel-shaped recesses therein. The parts are positioned so that the joining segments engage the channel-shaped recesses to form an interchangeable finger ring having a substantially circular inner surface.

3,619,914
BOOT TENSIONING DEVICE

Chris A. Hanson and Alden B. Hanson, Broomfield, Colo., assignors to The Lange Company, Dubugue, Iowa

Filed Feb. 13, 1970, Ser. No. 11,076
Int. Cl. A43b
U.S. Cl. 36—2.5 AL 10 Claims

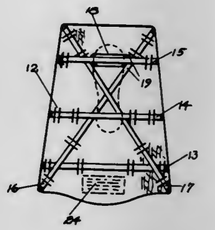


A tensioning device for a ski boot of the type having a foot receiving portion and a gaiter pivotally attached thereto comprising spring means which may be adjusted to vary the angle between the gaiter and the foot-receiving portion and/or the tension on the pivotal movement between the gaiter and foot-receiving portion.

3,619,915
SURVIVAL SNOWSHOES

Stanley O. Cheney, West Springfield, N.H. 03284

Filed July 16, 1970, Ser. No. 55,440
Int. Cl. A63c *13/00*
U.S. Cl. 36—4.5 5 Claims



The survival snowshoes of this invention comprise a detachable portion of an exterior garment, preferably the sleeve lining, provided with slittable areas or attached tab loops. If the driver of a snow vehicle is stranded, he may detach the lining, thrust sticks through the slits, loops, or other means provided, and by lacing the stick-supported lining to his boot make an emergency snowshoe.

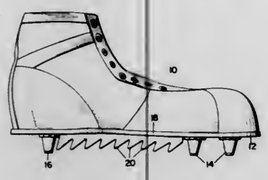
3,619,916
ATHLETIC SHOE

Anthony Neri, Dowd Road, Westbrook, Conn. 06498

Filed Mar. 19, 1970, Ser. No. 21,077
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R 1 Claim

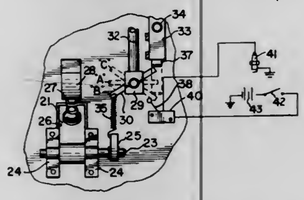
An athletic shoe for minimizing the possibility of injury to the legs or knees of the wearer comprising an upper,

a sole, tapered cleats at the toe and heel of the sole, and a safety traction block between the toe and heel cleats



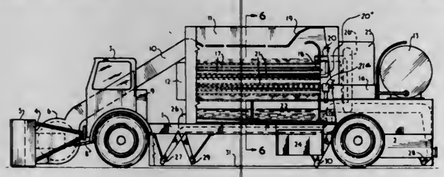
and having a plurality of ground-engaging ribs depending therefrom.

3,619,917
EARTH MOVING EXPLOSIVE DEVICE
Raymond C. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Nov. 12, 1969, Ser. No. 875,852
Int. Cl. E02f *5/00*; E21c *47/00*
U.S. Cl. 37—1 **5 Claims**



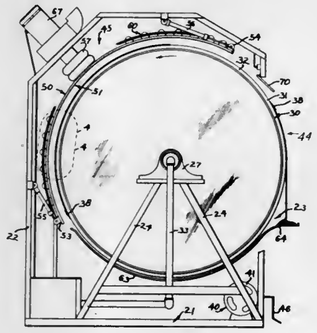
A hollow earth working implement has an opening which is closed by the earth it engages and which communicates with a combustion chamber supplied at intervals with a combustible mixture ignited by a spark plug, valve means being provided to automatically control the flow of the combustible mixture to the combustion chamber and valve control means carried by the implement being actuated by the pressure of the soil during movement of the implement to open the valve and discharge the mixture into said chamber. The pressure exerted by the expanding ignited mixture is directed through said opening to loosen and move the dirt allowing the valve to close.

3,619,918
SNOW CLEARING AND MELTING APPARATUS
Albert Z. Morin, 1411 Regina St., North Bay, Ontario, Canada
Continuation-in-part of application Ser. No. 579,282, Sept. 14, 1966. This application Mar. 5, 1969, Ser. No. 804,645
Int. Cl. E01h *5/10*
U.S. Cl. 37—12 **8 Claims**



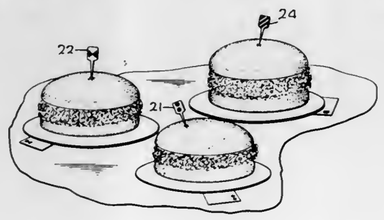
A self-propelled snow clearing apparatus embodying loading and melting mechanisms, the latter including a hopper into which the loader discharges and wherein melting is caused by a large body of hot water heated by a battery of horizontal boiler tubes immersed therein that extend longitudinally through the hopper and convey the products of combustion from a fuel fired heater in front of the hopper to an upright manifold at the rear of the hopper, from which latter a blast of hot air is conveyed to the top of the hopper and directed onto the snow being discharged into the hopper by the loader. Additional heat generated in the apparatus may be applied as hot gaseous blasts on the roadway traversed by the apparatus to the rear of the loading mechanism.

3,619,919
MACHINE FOR PRESSING SMOCK-TYPE GARMENTS
Jerry N. McMillan, P.O. Box 167, Colville, Wash. 99114
Filed Apr. 3, 1970, Ser. No. 25,390
Int. Cl. D06f *63/00, 65/06*
U.S. Cl. 38—61 **3 Claims**



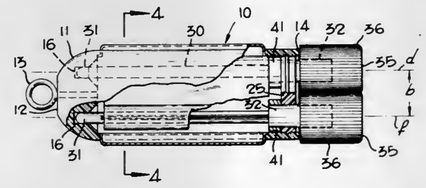
The pressing machine is utilized for pressing smock-type garments such as doctor uniforms, nurse uniforms and the like. The machine has a rotatable horizontal drum with clips mounted at evenly spaced intervals to receive the garments. The garments are attached to the drum at the front of the machine and then the drum is stepwise rotated to convey the attached garment over the top of the drum to a pressing station. A flexible chest is mounted at the presenting station for moving against the drum to press the garment.

3,619,920
DISTRIBUTION OF FOOD IN AN EATERY
Lawrence Needleman, 1300 N. Larrabee, Los Angeles, Calif. 90069
Filed Aug. 22, 1968, Ser. No. 754,702
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 G **2 Claims**



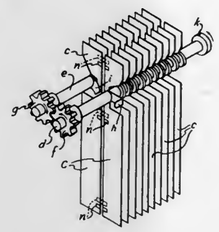
A plurality of multi-page order books, each page in the same book bearing a waitress-identifying indicium and a like number of sets of indicium-bearing flags, each set being associated with a corresponding order book, and each flag therein bearing the same indicium carried by each page in the corresponding book. A waitress records a food order on a page bearing her indicium. After the order is filled a flag with her indicium is placed on top of the ordered food which is viewable from a significant distance.

3,619,921
POCKET SIZE REFERENCE INDEX
Frank D. Marhanka, 30 Ruth Drive, St. Louis, Mo. 63031
Filed Sept. 24, 1969, Ser. No. 860,718
Int. Cl. G09f *11/24*
U.S. Cl. 40—95 **1 Claim**



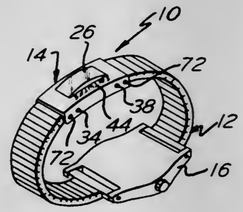
A pocket size index, useful for addresses and telephone numbers, utilizes a compact casing enclosing two spindles on which an index strip is coiled in an S-shape. The casing has a window adjacent to one of the spindles. Projecting knobs on the spindles have geared surfaces engaging each other, for rotation in opposite senses. The elasticity of the strip somewhat equalizes the other diameter of the two coils, maintaining the strip presented fairly close to the window, regardless of the extent to which the spindle adjacent to it may be unwound.

3,619,922
CHANGEABLE EXHIBITOR
Esther A. Morgan and David Morgan, both of Avenida 3, 182, Mexico City 18, Mexico
Filed July 15, 1969, Ser. No. 841,776
Int. Cl. G09f *11/26*
U.S. Cl. 40—97 **1 Claim**



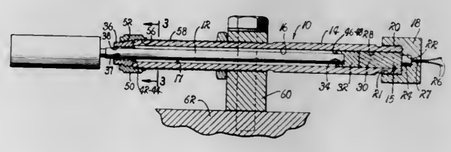
This invention refers to a multiple paging apparatus which exhibits expressions contained in a series of plates succeeding automatically one by one, to be read or observed, actioned by hand or mechanic means, characterized by a box carrying a window in its front and another window in its rear, through which are showing expressions mounted or printed on the plates supported and carried along by two screws disposed side by side in a horizontal plane and parallel to each other, and rotating in an opposite direction upon the application to the end of one of them of a circular movement which is transmitted to the other one by means of a pair of gears; characterized as well by vanes disposed at the beginning and at the ending of the screws threads, having as its purpose, those at the ending of the threads, to rotate the plates 180° on its vertical axle about the hinges joining them, being the purpose of the vanes fixed on the screws at the beginning of their threads, to accommodate them in a position to be carried along by the screws. The transport of the plates is continuous during the application of the movement causing the screws to rotate.

3,619,923
CALENDAR WATCH BAND
Mates A. Bruner, 1113 Wynnbrook Place, Secane, Pa. 19108
Filed Nov. 4, 1969, Ser. No. 873,868
Int. Cl. G09d *3/10*
U.S. Cl. 40—118 **11 Claims**



A watch band having a calendar secured thereon. The calendar comprises a housing with a transparent lens on one lateral surface thereof. A support is positioned beneath the transparent lens and a band is mounted on the support. The band has thirteen columns of numbers thereon, with any seven adjacent columns of numbers adapted to indicate all of the days of a given month. The band is movable on the support to position any seven adjacent columns of numbers beneath the transparent lens, thereby giving the user of the watch band an immediate indication of the days of a given month. Indicia are placed on the housing adjacent one edge of the transparent lens to indicate the seven days of the week.

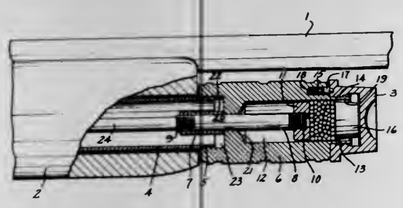
3,619,924
SELF-OBTURATING, GAS-OPERATED LAUNCHER
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Otto K. Heiney, Temple City, Calif.
Filed Sept. 17, 1969, Ser. No. 858,695
Int. Cl. F41c *11/00*; F41f *17/00*; F42b *11/42*
U.S. Cl. 42—1 F **1 Claim**



A self-obturating, gas-operated launcher particularly suited for use in launching projectiles in a decontaminated medium, characterized by the utilization of an elongated barrel including a rigid, barrel-sealing breech block, a muzzle block having a bore through which a projectile is ejected and a malleable slug disposed within the barrel adjacent to the breech block defining an expandable firing chamber within the barrel and adapted to be driven

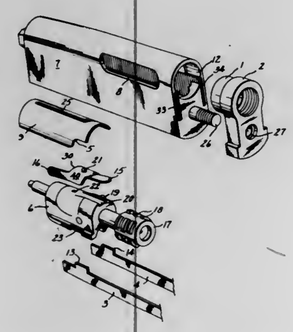
toward the muzzle block for launching a projectile as a pyrotechnic material is ignited within the chamber, a feature of the launcher being a plurality of openings formed within the muzzle block for relieving back-pressure, and an annular anvil circumscribing the bore of the muzzle block for receiving the malleable slug in impacted engagement for thus achieving an hermetic sealing of the bore thereby to retain within the barrel the residue of the ignited pyrotechnic material.

3,619,925
ADJUSTABLE SKEET WEIGHT FOR FIREARMS
James S. Martin, Wayne E. Leek, and Perry J. Pierce, Jr., Mohawk, and Thomas G. Bauman, Herkimer, N.Y., and Earl G. Larson, Fairfield, Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Nov. 4, 1969, Ser. No. 873,987
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 R **8 Claims**



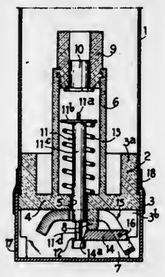
A means for changing the balance of the firearm so that a sportsman may adjust to the feel of his gun, and consequently improve the accuracy of his shot. The device adds weight below the barrel of the gun, so as to improve the accuracy of the firearm. Means are provided for quick assemblage and disassemblage of the required weights. In addition, a "piggy-back" arrangement of weighting is also contemplated in the design.

3,619,926
BOLT ACTUATED EJECTION PORT COVER
James M. Alday, Williamson, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Apr. 6, 1970, Ser. No. 25,815
Int. Cl. F41c *11/00, 27/08*
U.S. Cl. 42—16 R **7 Claims**



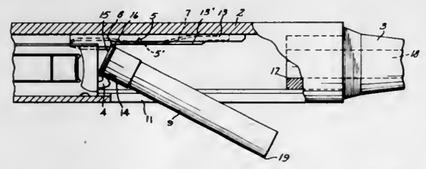
Method and apparatus for covering an ejection port in the receiver of a firearm. The cover is bolt-actuated, and telescopically moves in concert with the bolt as it is retracted from the closed breech (battery) position towards the open breech position. A point is reached in the travel of the cover, when its travel is restricted by an abutment in the interior wall of the receiver, whereupon the cover is caused to rotate with the further withdrawal of the bolt, substantially uncovering the entire ejection port area.

3,619,927
MANUALLY-CONTROLLED FIRING MEANS
Jean Robinet, Toulouse, France, assignor to Etablissement Ruggieri, Paris, France
Filed June 30, 1969, Ser. No. 837,449
Claims priority, application France, July 2, 1968, 157,528
Int. Cl. F41c *3/02*
U.S. Cl. 42—1 R **12 Claims**



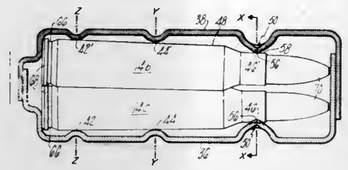
Manually-controlled firing means having a striker which is slidable in a body and capable of striking a primer under the effect of a spring. Stop means are provided on the striker and an arm pivoted to the body co-operates with the stop means for holding the striker away from the primer. A lever pivoted to the body is capable of acting on a point on the arm so as to turn the arm about its pivot and stress the spring and thus arm the striker until the arm disengages from the stop means and releases the striker.

3,619,928
FIREARM EJECTOR SYSTEM CAPABLE OF EJECTING SHELLS OF DIFFERENT LENGTHS
James S. Martin, Mohawk, and Charles H. Morse, Herkimer, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Oct. 29, 1969, Ser. No. 872,081
Int. Cl. F41c *15/00, 15/02, 15/04*
U.S. Cl. 42—25 R **7 Claims**



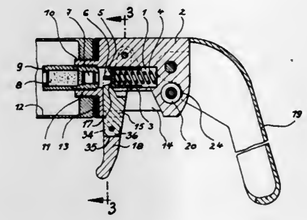
An ejection system for use in firearms comprises a plural step feature wherein shells of various lengths may be ejected. This system is adaptable to most if not all firearms having a reciprocating bolt assembly along a line in prolongation of the barrel, thus making possible fairly universal application.

3,619,929
MAGAZINE WITH ANTI-DOUBLE-FEED INDENTATIONS IN THE SIDE WALLS
Robert D. Fremont, Farmington, Conn., assignor to Colt's Inc., Hartford, Conn.
Filed Mar. 13, 1969, Ser. No. 806,806
Int. Cl. F41c *25/02, 25/04*
U.S. Cl. 42—50 **3 Claims**



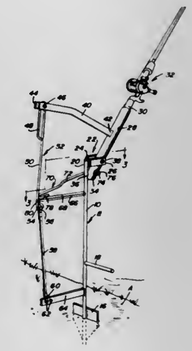
A firearm magazine for storing and feeding a staggered double column stack of cartridges and having a body and a protrusion directed inwardly from each side wall of the body adjacent but below a top edge of a front wall thereof to intentionally misalign that cartridge following the uppermost cartridge into nesting line contact engagement with adjacent cartridge casings in the opposite column to ensure automatic alignment of the uppermost cartridge in feeding position while at the same time maintaining the following cartridge in interfering confronting relation to the front wall of the magazine body.

3,619,930
FIRING MECHANISM WITH A PIVOTED FINGER PIECE MOUNTED ON A PIVOTED TRIGGER LINK
Paul Beerman, Kreis Iserlohn, and Willi Grosse-Benne, Menden, Germany, assignors to Richard Rinker, Menden, Sauerland, Germany
Filed July 8, 1969, Ser. No. 839,909
Claims priority, application Germany, July 8, 1968, P 17 03 769.3
Int. Cl. F41c *3/02, 19/00, 23/00*
U.S. Cl. 42—69 R **7 Claims**



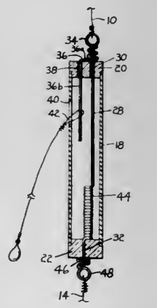
A triggering device for firing flares, illuminating and signalling ammunition, or the like includes a housing which holds a propelling charge, a firing pin mounted for axial movement to a position at which it may strike and ignite the propelling charge, spring means biasing the firing pin toward the propelling charge, a trigger link having a firing pin engaging finger thereon. The trigger link holds the firing pin in a center position against the force of the spring means and prevents its movement toward the propelling charge. The link is mounted for movement on a path in which the firing pin engaging finger pushes the firing pin back against the force of the spring means, and to a second position in which the firing pin engaging finger is moved out of the path of movement of the firing pin whereby the spring means may drive the firing pin against the propelling charge.

3,619,931
AUTOMATIC FISH HOOKING DEVICE
Carl C. Brummett, Forney, Tex., assignor to Hazel F. Brummett Shands, Brownsville, Tex.
Filed Sept. 15, 1969, Ser. No. 857,801
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **10 Claims**



An automatic fish hooker comprising a portable vertically elongated standard whose pointed lower end has a turn-preventing anchoring plate. A U-bracket on the upper end serves to pivotally cradle a sleeve providing a socket-type holder for the handgrip of a fishing rod. A lateral arm on the pivoted holder serves as a setting handle. An operating connection between the handle and standard comprises a trip rod and an elastic band. Keeper means on the standard serves to position and releasably retain the trip member in a read-to-function position. A J-shaped trigger-rod has one end pivotally connected to a lower end of the sleeve and its free end shiftably supported on a keeper carried by and projecting laterally from the standard.

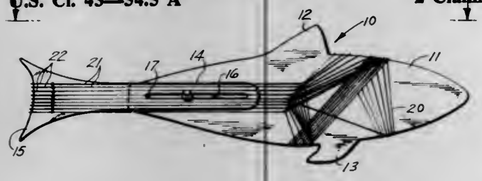
3,619,932
WEIGHT RELEASE MECHANISM
James D. Maxwell, 11001 SE. 19th St., Vancouver, Wash. 98664
Filed Mar. 17, 1970, Ser. No. 20,226
Int. Cl. A01k *91/04*
U.S. Cl. 43—43.12 **6 Claims**



A weight release mechanism includes a tubular body portion and end enclosures through which a wire-like shank slidably extends. The shank has opposite ends projecting from the body portion one of such ends being arranged to be connected to a pole line and the other end to a fish line. The shank has an offset parallel finger

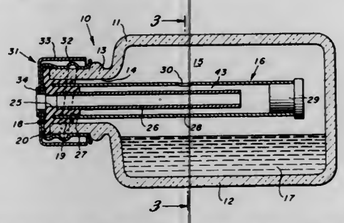
which extends interiorly of the body portion and operates in the area of a window provided in the body portion. Such finger is arranged to engage the end loop of a weight line. The shank is formed of a spring wire or the like and has spring convolutions formed directly therein which provide elongation of the shank to the extent that the weight release finger is movable out of the plane of the window to release the weight, such action occurring when a large fish is hooked and also when the weight becomes snagged.

3,619,933
TROT LINE KEEPER
Irvin Wayne Couch, 2200 Mission Hill Circle, Apt. 101, Austin, Tex. 78741
Filed Feb. 11, 1969, Ser. No. 798,384
Int. Cl. A01k *97/00*
U.S. Cl. 43—54.5 A **2 Claims**



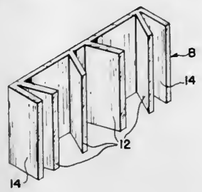
An elongated, flat trot line keeper in the shape of a fish for a trot line having a plurality of fish hooks thereon. The keeper comprises a pair of body members slidable relative to each other with means to clamp the members together at any selected position. The trot line is wrapped about the body of the keeper and the fish hooks are received by a transverse end edge of the keeper.

3,619,934
SAFETY ANT-POISON BOTTLE
Wilfred Tunstall, 12874 2nd St., Yucaipa, Calif. 92399, and Albert Wegner, 223 Sylmer Court, Calimesa, Calif. 92320
Filed Oct. 21, 1969, Ser. No. 868,104
Int. Cl. B65d *55/02*; G01m *1/20*
U.S. Cl. 43—131 **2 Claims**



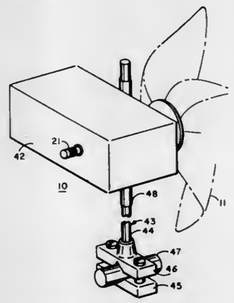
A labyrinth with which an ant poison bottle may be equipped, said labyrinth consisting in an apertured closure for the neck of the bottle, a pair of concentric tubes, outer ends of which are mounted on said closure so as to close the outer end of the outer tube while allowing the outer end of the inner tube to connect with the exterior of the bottle through the aperture in said bottle neck closure the inner end of the outer tube being closed, the outer tube having a relatively small insect access opening in the wall thereof near the mid point of the space enclosed by the bottle. The inner end of the inner tube is open and extends inwardly well beyond said insect access opening, the space between said tubes defining a reservoir with a capacity substantially in excess of the first tube thereby containing a greater quantity of the liquid poison than a child could practically manage to introduce through said insect access opening into said outer tube by manipulation of the bottle, said labyrinth thereby practically preventing admission of such poison into the inner end of the inner tube which alone could cause poison to flow through said inner tube to the outer end thereof and thus be made available to the child.

3,619,935
TOY BLOCKS
Resta S. Gregoire, Newport, Pa., assignor to Z-Loc Block Co., Inc., Newport, Pa.
Continuation-in-part of application Ser. No. 784,282, Dec. 6, 1967. This application July 3, 1969, Ser. No. 838,911
Int. Cl. A63h *33/06*
U.S. Cl. 46—19 **3 Claims**



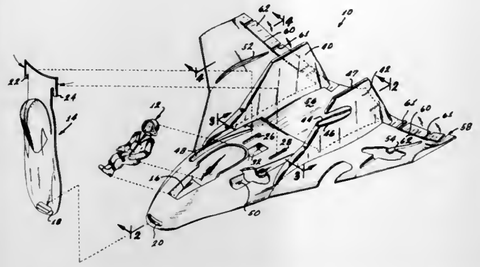
The set of eight basic forms of toy blocks includes an assortment of half height blocks of the wall layer forms, the aggregate total quantity of blocks in the set being sufficient to build a complete doll house or other building structure, with framed door and window openings in the walls and a roof, as may be desired. The blocks are laid in two interlocked layers to form the walls, by laying the rows or courses alternately in the opposite layers in vertically overlapping relation between the opposite rows, and the blocks in one layer horizontally overlapping the blocks in the other layer, and thus each block in one layer interlocks the corners of four adjacent blocks in the other layer, which it overlaps. The blocks are light and have a running fit betwen the blocks in the opposite layers into their sliding interlocks as they are laid, enabling any child to design the wall structure as he builds or removes some of the blocks, and changes the designs with the greatest of ease in accordance with his fancy, meanwhile learning while actually constructing.

3,619,936
PIN WHEEL SIREN
Fred S. Tauriello, 195 Birr St., Rochester, N.Y. 14613
Filed June 19, 1970, Ser. No. 47,749
Int. Cl. A63h *33/40*
U.S. Cl. 46—53 **10 Claims**



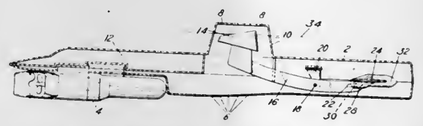
A pin wheel siren is disclosed wherein a diaphragm is driven in a flexural mode by a cantilever arm member fixed to the diaphragm at one end and displaced at the other free end in response to a rotating member having peripheral high and low regions. A wind wheel or a pin wheel rotates the rotating member to produce a siren sound as the diaphragm is vibrated in the flexural mode.

3,619,937
SPACE GLIDER
Norman C. Thompson, Bonita, and Dennis H. Merino, Harbor City, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 10, 1969, Ser. No. 883,756
Int. Cl. A63h *27/00*
U.S. Cl. 46—76 **6 Claims**



A toy airplane with a capsule at the front for holding a medium size toy figure of a type which a child may play with independently of the airplane. The airplane is vacuum formed from a sheet of plastic, with a recess near the front for holding the figure in a backwardly reclining position to more easily accommodate the figure. The figure-holding recess formed on the top of the airplane creates a protuberance on the underside, which serves as a hand hold for use in launching the airplane. The airplane walls are of single thickness, except for a pair of vertical stabilizers that have double walls to facilitate their formation during the vacuum forming process.

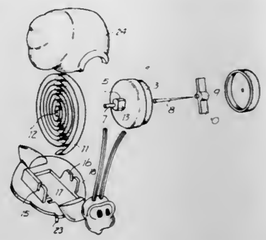
3,619,938
SUBMERGED MODELS
Duncan Tong, Hong Kong, assignor to General Electric Company
Continuation-in-part of application Ser. No. 777,435, Nov. 20, 1968. This application Dec. 4, 1970, Ser. No. 95,141
Int. Cl. A63h *23/04*
U.S. Cl. 46—94 **8 Claims**



A power driven submarine model toy for sailing wholly or partly submerged in water having a control device comprising a float pivotally connected to the body of the model to an elevator fin, the angular position of which determines the angle of inclination of the model to the water through which it is being driven.

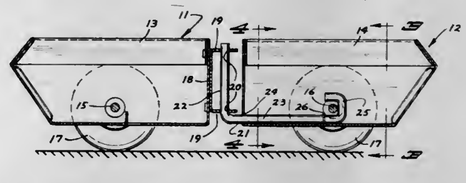
3,619,939
DRIVING DEVICES FOR TOYS
Jorge Argemi Vidal, Calle Maignon 10, Barcelona, Spain
Filed Feb. 19, 1969, Ser. No. 800,460
Claims priority, application Spain, Feb. 20, 1968, 315,150
Int. Cl. A63h *11/10*
U.S. Cl. 46—201 **3 Claims**

A driving device for a toy is formed by a rotary member to which there is attached one end of a spring which is anchored at its other end, and also one element of a braking device formed by a casing which contains a



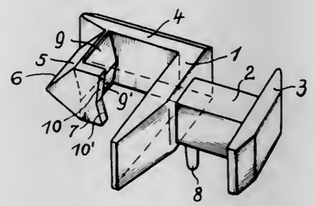
viscous substance and at least one vane which tends to move inside the viscous substance under the working force of the spring.

3,619,940
ARTICULATED TOY VEHICLE
Thomas W. Good, Golden Valley, and Theodore H. Zbikowski, Plymouth, Minn., assignors to Tonka Corporation, Mound, Minn.
Filed Nov. 25, 1969, Ser. No. 879,713
Int. Cl. A63h *11/10*
U.S. Cl. 46—201 **3 Claims**



An articulated toy vehicle comprising two wheeled vehicle units interconnected in tandem draft relation with the connection effected by a hitch link having one end pivoted on a vertical axis to a laterally central point on one vehicle and extending longitudinally of the body of the other vehicle and loosely around the wheel axle thereof to allow limited tilting of said axle and other vehicle about a longitudinal axis.

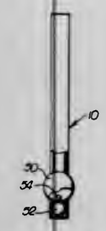
3,619,941
COUPLING FOR TOY AND MODEL RAILROADS
Max Ernst, 14 Lohengrinstrasse, 85 Nuremberg, Germany
Filed July 22, 1969, Ser. No. 843,654
Claims priority, application Germany, July 23, 1968, P 17 03 876.5
Int. Cl. A63h *19/00*
U.S. Cl. 46—216 **2 Claims**



A coupling member consisting of a single integral piece with two arms arranged substantially rectangularly with regard to each other, in which one arm has a first member with protruding surface means and has a second member with protruding surface means for nesting in a surface

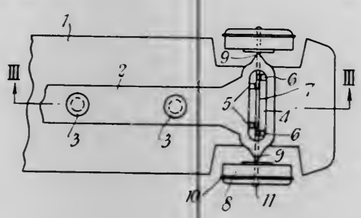
corresponding to said first surface and pertaining to a second coupling member to be coupled to the first mentioned coupling member.

3,619,942
ROLLABLE TOY
Rudy de Lara, 2700 Delor Road, Los Angeles, Calif. 90065
Filed Apr. 10, 1970, Ser. No. 27,350
Int. Cl. A63h *33/02*
U.S. Cl. 46—220 **2 Claims**



A rollable toy comprising a circular member for rolling on the ground and means for rolling and guiding the circular member along the ground comprising a handle for reaching from the hand of an operator to adjacent the ground and a controller extending from the handle and adapted to push and to vertically support the circular member as when the operator is jogging alongside of or behind the rolling circular member.

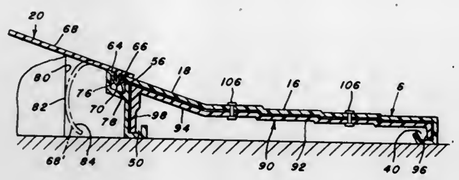
3,619,943
TOY VEHICLE WHEEL AND AXLE MOUNTING
James Goodbody, Essex, England, assignor to Lesney Products & Co., Limited, London, England
Filed Dec. 8, 1969, Ser. No. 882,823
Claims priority, application Great Britain, Dec. 10, 1968, 58,729/68
Int. Cl. A63h *17/26*
U.S. Cl. 46—221 **10 Claims**



A toy vehicle having thin wire axles with ground wheels rotatably mounted at their opposite ends. The axles are mounted on end regions of a resilient strip which has a central region secured to a chassis to provide resilient suspension. The axle mountings are afforded by resilient barbed lugs forming parts of the resilient strip and the axles are inserted between them by resilient deformation of the barbed lugs.

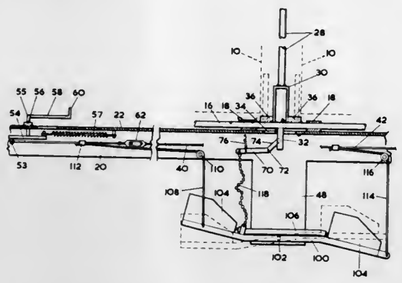
3,619,944
VEGETATION INHIBITING GUARD
Joseph J. Matvey, 208 Orin St., Pittsburgh, Pa. 15235
Filed July 2, 1970, Ser. No. 51,973
Int. Cl. A01g *1/08*
U.S. Cl. 47—33 **10 Claims**

A vegetation inhibiting member for protective placement adjacent exterior wall-like surfaces. At least one guard element having a substantially horizontal outer portion and an adjacent upwardly and inwardly directed inner portion. The guard may consist of a closed multisided frame. A plurality of guard elements defining a closed protective frame may be provided. Each guard element having an outer portion provided with a downwardly depending ground engaging leg and an inner portion having a downwardly depending inner ground engaging leg. The inner portion having a generally upwardly



open seal receiving channel. Seal means for assuming sealing contact with the wall-like element having one end secured within the channel and extending upwardly and inwardly therefrom. Hidden splice means for joining abutting edges of guard elements and corner elements which serve to define the closed frame. Concealed anchor means for penetration into the underlying earth may be provided.

3,619,945
GATE ARRANGEMENT
Gilliam Loots, 7 Windsor Drive, Durban N., Durban, Natal, Republic of South Africa
Filed Dec. 14, 1970, Ser. No. 97,503
Int. Cl. E05f *15/20*
U.S. Cl. 49—30 **11 Claims**

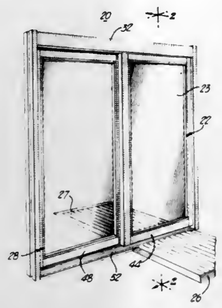


A gate arrangement is disclosed in which the gate is opened by the weight of a vehicle. Springs urge the gate to the closed position and the gate is held in the open position against the actions of the springs by a catch. Timing means for releasing the catch consists of a tilt arm on each end of which is located a tank for a liquid. The weight of the vehicle causes the arm to tilt to raise one tank above the other, causing the liquid to flow from the one to the other. After a time governed by the rate of flow of the liquid, the weight of the liquid in the other tank is sufficient to actuate the catch.

3,619,946
AUTOMATIC DOOR OPERATOR
Thomas H. Crocker, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.
Filed Nov. 27, 1970, Ser. No. 93,093
Int. Cl. E05f *13/04*
U.S. Cl. 49—264 **10 Claims**

An automatic door operator for a door mounted upon a door frame for sliding movement in a vertical plane between open and closed positions includes a drive cylinder

to open and close the door by means of a drive piston slidably movable within the drive cylinder between air inlets located at each end of the cylinder. In reponsse to the movement or absence of traffic adjacent the door, a control valve supplies compressed air to one of the air inlets and exhaust the other air inlet so that the drive



piston is moved toward the other air inlet, and the door is advanced toward its open or closed position. As the door nears either of its positions, a cushion assist switch is maintained in an operative condition for a short period of time, during which time the control valve reverses the air flow in the drive cylinder to assist in bringing the door to a gentle stop at its open or closed position.

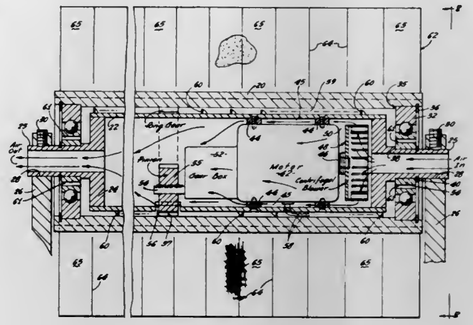
3,619,947
CORNER FASTENER AND ROLLER ASSEMBLY FOR SLIDING DOOR FRAMES
Harold J. Burum, San Leandro, Calif., assignor to Kenneth P. Byrd, West Sacramento, and Joseph G. White, North Highlands, Calif., fractional part interest to each
Filed Feb. 12, 1970, Ser. No. 10,895
Int. Cl. E05d *13/02*
U.S. Cl. 49—425 **2 Claims**



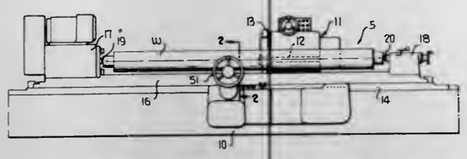
A one-piece corner fastener for securing the stile and rail together of a sliding door frame, the corner fastener being made of plastic and having an integral roller-carrying arm with sufficient resiliency to yieldingly hold the roller in engagement with a door frame guiding track. Adjustable stop means limits the extent of movement of the roller away from the door frame guiding track.

3,619,948
INTERNALLY POWERED ROTARY ABRASIVE MEANS
Russell W. Burns, Pacific Palisades, Calif., assignor to Merit Abrasive Products, Inc.
Filed Apr. 21, 1969, Ser. No. 817,773
Int. Cl. B24b *7/00, 55/02*
U.S. Cl. 51—72 **10 Claims**

A hollow mandrel powered by an internal motor carries radial abrasive leaves, the mandrel having peripheral recesses and ribs for air cooling effect, the recesses providing overhanging shoulders, the abrasive leaves being

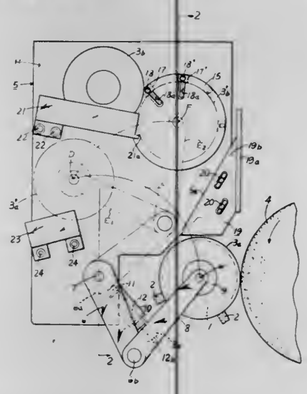

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Carry Over
Reserve
Over Box
Control Panel Mount
Control Panel Blanket
Mode Selector
Temperature Selector
Air Out
Air In
Recirculate
Defrost
Off
Heat
A/C
Fan
Lo
Med
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Cool
Warm
Hot
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Fan
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provide a resilient mounting for the rack and thus allowing the rack to tilt on the crowned surface in response



to any deviation from the full face tooth contact from the teeth of the driving gear to provide repetitive parallel movement of a carriage in machined ways.

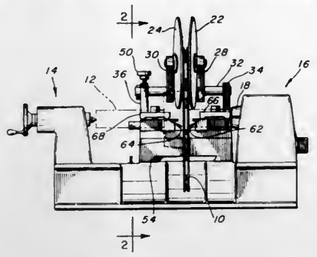
3,619,951
AUTOMATIC LOADING AND UNLOADING DEVICE FOR MACHINE TOOL OF THE TYPE HAVING AN EXTENSIBLE ARM
Makoto Kikuchi and Toyoaki Saeki, Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Apr. 24, 1970, Ser. No. 31,618
Claims priority, application Japan, Apr. 30, 1969, 44/33,483
Int. Cl. B24b *5/32*
U.S. Cl. 51—103 WH **19 Claims**



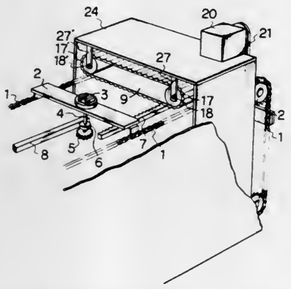
In a single-arm type automatic loading and unloading device, wherein an unoperated workpiece is carried into an operating position from a loading chute by a loading arm and an operated workpiece is moved out of the operating position to a discharge chute, the improvement wherein the device adopts an extensible arm to swing, as being shortened or extended, from a pickup position to the operating position and from the operating position to an unloading position so that unproductive time is reduced to a minimum.

3,619,952
MACHINE FOR SURFACING BRAKE DISCS
Paul W. Leming and Richard J. Flanigan, Longmeadow, Mass., assignors to Universal American Corporation, Springfield, Mass.
Filed July 10, 1969, Ser. No. 840,614
Int. Cl. B24b *5/04*
U.S. Cl. 51—117 **8 Claims**

A machine for surfacing brake discs has a transversely movable carriage upon which a pair of adjustable cutters are provided for rough surfacing of the disc, and upon which a pair of resilient sanding discs are provided for finishing the brake disc surfaces. The resilient abrasive discs are mounted on a pair of pivotal arms respectievly, which arms can be adjusted on a rockshaft so as to vary the spacing between the abrasive discs, and can also be moved pivotally on said rockshaft from and to active positions wherein segments of the facing abrasive surfaces of said discs engage segments of the opposed faces of the brake disc or workpiece to be finished.



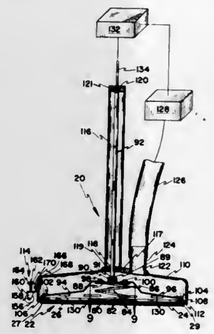
3,619,953
APPARATUS FOR ROUNDING END OF FLEXIBLE PLASTIC WIRE
Minoru Hosoya, Tokyo, and Masaaki Hayashi, Funabashi-shi, Japan, assignors to KAO Soap Co., Ltd., Tokyo, Japan
Filed Jan. 7, 1970, Ser. No. 1,094
Claims priority, application Japan, Jan. 10, 1969, 44/1,977
Int. Cl. B24b *5/00, 21/02, 29/00*
U.S. Cl. 51—145 **5 Claims**



An apparatus for rounding ends of flexible wire elements or brush hair elements, including a continuously traveling transfer chain and a wire holder means attached to the transfer means for movement therewith. The wire holder means is mounted for rotation about an axis perpendicular to the advancing direction of the transfer chain. An endless grinding means having a wave-like grinding surface thereon is disposed above the transfer chain and is moved in a direction transverse to the advancing direction of the transfer chain, whereby the tip ends of the wire elements contact the grinding surface and are continuously ground and polished.

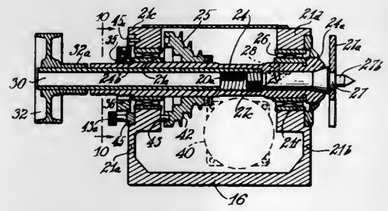
3,619,954
SURFACE-TREATING APPARATUS AND METHOD
Billy G. Miller, 1430 Lincoln, Salt Lake City, Utah 84105
Filed Feb. 7, 1969, Ser. No. 797,481
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 T **11 Claims**

A surface-treating apparatus and method, the apparatus including centrally-joined radially-extending blades comprising a fan-shaped plate, a resilient compressible coil spring, interposed between the back of the plate and a rotatable drive shaft non-rotatably joined to the plate through the spring, and a housing generally surrounding all except the front face of the radially-extending blades, the housing terminating in a hollow handle which rotatably carries the shaft. A stabilizer rod bridges between the free end of each blade and the spring. The shaft is powered by a suitable motor, and clamping structure associated with the blade is provided to maintain sheets of abrasive or other surface-treating material in taut



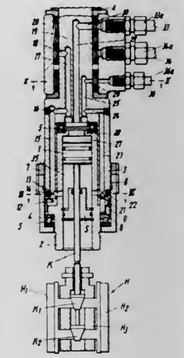
relation across the front face of each blade. A dust egress aperture is preferably provided in the housing to accommodate connection of a vacuum to continuously remove particles treated by action of the abrasive material on a surface. Preferably air ingress ports exist in the periphery of the housing adjacent the free ends of the blades. Procedurally, the blades yield fore and aft as necessary to follow variations in the surface being treated, with the stabilizer rods exerting a restraining force counter to the instantaneous fore and aft motion of the blades.

3,619,955
GRINDING ATTACHMENTS FOR SURFACE GRINDERS
Eric Fischback, Hammond, Ind.
(928 E. Broadway, Bradley, Ill. 60915)
Filed June 12, 1970, Ser. No. 45,769
Int. Cl. B24b *5/04*
U.S. Cl. 51—237 **7 Claims**



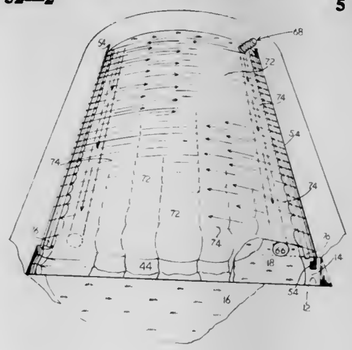
A rotatable work attachment for a surface grinder. This type of attachment has a draw-spindle journaled in bearings and carrying a center pin. The present draw-spindle is threaded where it passes through an inner bearing journal to receive a split nut; and the latter is encircled by a ring with a cluster of screws directed to the periphery of the nut to tighten the same on the draw-spindle after the nut has been advanced to the journal. The attachment also has easily changeable bolt connections at the bottom, a self-alining driving pulley, and a more durable base connection in a tail stock.

3,619,956
HYDRAULIC FEEDING DEVICE FOR A HONING TOOL
Christoph W. Gehring, 29 Gehringstrasse, 7302 Nellingen, Germany
Filed Apr. 14, 1970, Ser. No. 28,386
Claims priority, application Germany, Apr. 17, 1969, P 19 19 403.7
Int. Cl. B24b *9/02*
U.S. Cl. 51—349 **7 Claims**



The specification discloses a device for honing in which a honing tool is rotated and, while rotating, is expanded into engagement with the work. A hydraulic motor effects expansion of the honing tool and when the honing tool engages the work and is retarded in rotation thereby, a rotary valve is closed to interrupt the draining of fluid from the hydraulic motor and thereby halt the expansion of the tool. Further expansion of the tool during a work operation is effected by another valve which permits controlled incremental draining of fluid from the hydraulic motor. Reversing of the supply of fluid to the hydraulic motor permits collapsing of the tool at the end of a work operation.

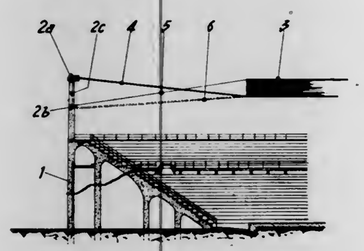
3,619,957
INFLATABLE CANOPY FOR OUTDOOR AREAS
Herbert Alexander Adam, 9800 Lougheed Highway, Burnaby 3, British Columbia, Canada
Continuation of application Ser. No. 706,047, Feb. 16, 1968. This application Dec. 11, 1969, Ser. No. 888,211
Int. Cl. E04b *1/34*
U.S. Cl. 52—2 **5 Claims**



A canopy is constructed of inflatable tubular side walls which rest on the field; the tubular side walls are connected to transverse tubular blisters which are inflated

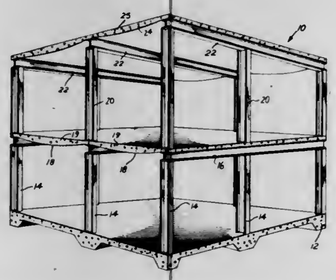
through the tubular side walls. The canopy is carried along a pair if tracks and is container in a trench which is parallel to the track; rollers are provided in the trench which squeeze the canopy so that it can be stored below the rollers, the rollers also providing a seal at that end of the canopy for the air in the tubular side walls which are positioned in the track.

3,619,958
OVERHEAD COVERING IN A DUAL CABLE SYSTEM FOR POLYGONAL, ELLIPTICAL OR CIRCULAR PLAN BUILDINGS ETC.
Aldo Viesi, Rome, Italy, assignor to Grandi Padiglioni, S.p.A., Isorelle (Brescia), Italy
Continuation of application Ser. No. 738,196, June 19, 1968. This application Mar. 24, 1970, Ser. No. 20,460
Claims priority, application Italy, Jan. 3, 1968, 806,664/68, 806,715/68
Int. Cl. E04d *13/00*; E04h *3/12*
U.S. Cl. 52—83 **9 Claims**



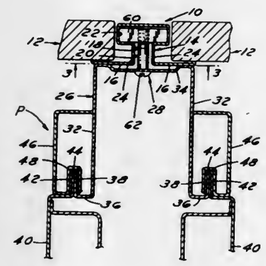
An annular overhead covering including an outside semi-rigid ring, an inside semi-rigid ring of a diameter smaller than the outside ring, a first plurality of supporting cables connecting the lower portion of the inside ring with the upper portion of the outside ring, a second plurality of tensioning cables connecting the upper portion of the inside ring with the lower portion of the outside ring, means for supporting the outside ring, and means carried by the cables for covering the space between the rings.

3,619,959
CONCRETE BUILDING
Sidney A. Parker, 5820 Diamond Oaks Drive S., Fort Worth, Tex. 76117
Filed July 7, 1969, Ser. No. 839,194
Int. Cl. E04b *1/24*
U.S. Cl. 52—223 **1 Claim**



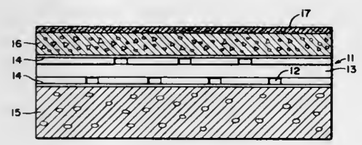
An improved elongated concrete member and a method for fabricating improved elongated prestressed or nonprestressed concrete members in situ and without form work comprising stretching a support comprising a sheet or a plurality of bands between spaced end supports, applying wet concrete onto said support, and curing the concrete to form a prestressed or nonprestressed concrete member having a flat top surface and a generally parabolic bottom surface between the end supports.

3,619,960
COMBINATION CEILING GRID AND PARTITION RECEIVER
Walter W. Thompson, P.O. Box 627, Hazlehurst, Ga. 31539
Filed Nov. 4, 1969, Ser. No. 873,880
Int. Cl. E04f *13/00*; E04b *5/52*
U.S. Cl. 52—241 **3 Claims**



A ceiling grid which is also useable as a partition receiver. The ceiling grid has laterally outwardly extending flange portions adapted to marginally support ceiling panels. It also has an elongated T-shaped slot open at the bottom for receiving fastening means adapted to mount a partition header.

3,619,961
VENTING ROOF INSULATION PRODUCT
Robert W. Sterrett, Wayland, Mass., Francis J. Jacob, New Castle, Pa., and Merle D. Chamberlain, deceased, late of Pittsburgh, Pa., by Lois M. Chamberlain, executrix, Pittsburgh, Pa., assignors to W. R. Grace & Co., Cambridge, Mass.
Continuation-in-part of application Ser. No. 610,524, Jan. 20, 1967. This application Mar. 24, 1970, Ser. No. 22,206
Int. Cl. E04b *1/70*; E04d *1/20*
U.S. Cl. 52—302 **7 Claims**



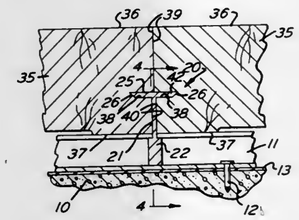
A roof deck material for use in an insulated, ventilated built-up roofing system having a relatively rigid body of foamed plastic resin (e.g. foamed polystyrene) which has oppositely facing grooved surfaces to provide venting of entrapped moisture within the system, especially from moisture-bearing construction material (e.g. vermiculite concrete) poured upon the deck material during installation of the system. The grooves are sufficiently narrow to prevent the uncured construction material from filling the grooves. Preferably, the grooves are covered with a layer

of moisture permeable material (e.g. kraft paper) to insure the prevention of filling of the grooves by the construction material.

3,619,962
METAL CLEANER
Gordon C. Combe, 16 Lyndhurst Place, London, Ontario, Canada
No Drawing. Continuation-in-part of application Ser. No. 582,538, Sept. 28, 1966. This application Sept. 25, 1969, Ser. No. 861,173
Int. Cl. C11c *3/00*; B24d *3/02*
U.S. Cl. 51—304 **7 Claims**

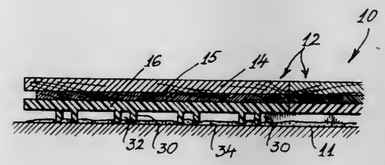
A liquid abrasive cleaner which is essentially non-acidic, is not harmful to the human skin, which is particularly useful for cleaning metallic surfaces, in particular stainless steel surfaces, and which leaves a non-corrosive protective coating thereon, which cleaner is in the form of a relatively stable homogeneous aqueous dispersion consisting essentially of, per 500 parts by weight of water and based upon the total weight of the composition, (a) from about 10–30 parts by weight of soap fatty acid (b) from about 10–30 parts by weight of dicarboxylic acid (c) a weak base in an amount at least sufficient to neutralize said acids and form salts therewith (d) from about 90–50 parts by weight of calcined diatomaceous silica of predominately colloidal particle size (e) from about 90–50 parts by weight of uncalcined diatomaceous silica of predominately colloidal particle size and (f) from about 20–40 parts by weight of a gelling agent, said gelling agent being present in an amount sufficient to maintain the calcined and uncalcined diatomaceous silica particles in homogeneous dispersion.

3,619,963
FLOORING SYSTEM
Ray E. Omholt, Berwyn, Pa., assignor to Powerlock Floors, Inc., Philadelphia, Pa.
Filed July 31, 1969, Ser. No. 846,323
Int. Cl. E04b *5/00*; E04f *15/02*
U.S. Cl. 52—483 **2 Claims**



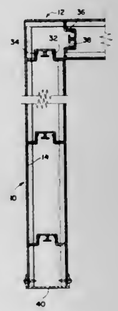
A flooring system utilizing wood floor boards, the boards being supported on transversely disposed spaced channels, metallic holding clips securing the boards in bearing engagement with the channels, the boards having side edge slots for clip engagement, the clips engaging the channels each having a web portion vertically disposed between the boards and having, at the upper margin of the body portion a horizontally extending plate portion with opposing parts on each side extending into one or more edge grooves, the horizontally extending plate portion being highly resistant to bending and distortion under stress with respect to the web. The opposing parts of the horizontal plate are in fiber penetrating relation on opposite sides, so that the bending forces in the plate portion substantially or totally balance each other to limit bending distortion which would otherwise occur in the web if the forces were not so balanced, the strength being determined by the wood in shear without appreciable reduction in holding power caused by deformation of the clip itself.

3,619,964
FLOORING PANELS
Frank Passaro, 23—54 E. 5th St. 11218; Ned Ross, 259 E. 52nd St. 11203; and Leo Mondry, 501 New York Ave. 11225, all of Brooklyn, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,828
Int. Cl. E04f *13/08*
U.S. Cl. 52—309 **8 Claims**



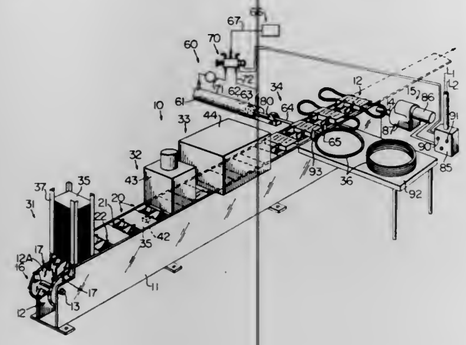
Laminated flooring panels are formed of a plurality of upper layers of plywood and a bottom layer made of synthetic plastic material. Integrally formed with the plastic bottom layer are cross bars which elevate the layers above a subfloor. The bars are spaced apart and underlap adjacent panels. The panels are secured to the subfloor by cement. The bars have longitudinal grooves into which the cement enters for improving the attachment to the subfloor. Air spaces under the panels improve sound absorption thermal insulation, and moisture resistance of the panels.

3,619,965
WALL PANEL
Joseph Andrew Thibert, 85 Chelwood Road, Scarborough, Ontario, Canada
Filed Dec. 29, 1969, Ser. No. 888,287
Claims priority, application Canada, Jan. 3, 1969, 39,179
Int. Cl. E04c *2/38*
U.S. Cl. 52—580 **3 Claims**



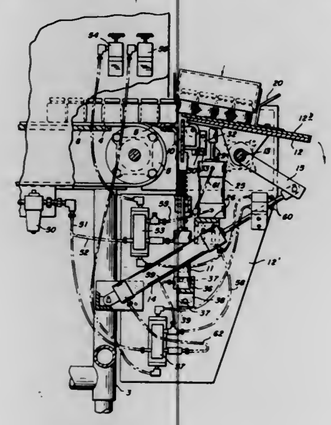
The wall panel consists of a number of panel sections connected in pairs. Each section has a flat central portion, an L-shaped portion at one side of the central portion and a somewhat C-shaped side portion at the other side. The wall panel is constructed by placing the sections in pairs so that their side portions contact one another and disposing one pair beside another. The sections may be disposed either vertically or horizontally. Provision is made for nesting one pair to an adjacent pair in order to maintan the wall panel in an assembled state.

3,619,966
APPARATUS FOR AND METHOD OF PACKAGING ENDLESS BELTS
Eugene J. Goldsberry, Cincinnati, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed May 5, 1970, Ser. No. 34,676
Int. Cl. B65b *5/04, 25/24*
U.S. Cl. 53—3 **19 Claims**



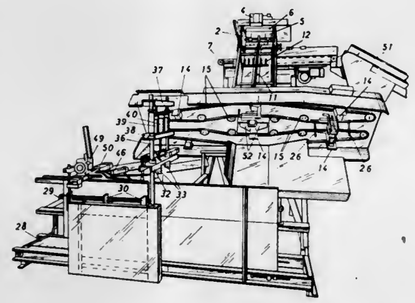
A tubular sleeve is held open at a packaging station and an endless belt is packaged therein by providing an actuator having a rod which is supported for reciprocating movements in a substantially rectilinear path and the rod has hook means at its terminal end which is adapted to engage the endless belt. The actuator operates to extend its rod through the open sleeve enabling hooking the belt on the hook means and then retracts the rod to pull the belt the required distance through the sleeve.

3,619,967
METHOD AND APPARATUS FOR NESTING BOTTLES AND OTHER CONTAINERS
Frank P. Alduk, 116 Guadalcanal Road, New Castle, Pa. 16101
Filed May 14, 1969, Ser. No. 824,639
Int. Cl. B65b *5/06, 21/22, 35/44*
U.S. Cl. 53—26 **18 Claims**



There is disclosed a machine and method for packing containers in a carton using an inverted carton type of case packing machine in what is known as a nested arrangement, in which the articles in one row are offset with respect to the articles in the adjacent rows a distance of approximately one-half the diameter of the container. The containers are conveyed between side guides, which preferably oscillate, over an unobstructed open arranging area onto a tiltable platform. By assuring the staggering of the containers in the first two rows crosswise on this platform, all containers thereafter indefinitely repeat the pattern of the first two rows if they are forced or crowded toward the platform. Also provision is made for initially tilting the platform a short distance to facilitate application of the inverted carton over the containers on the platform before the platform is tilted upright to upset the carton.

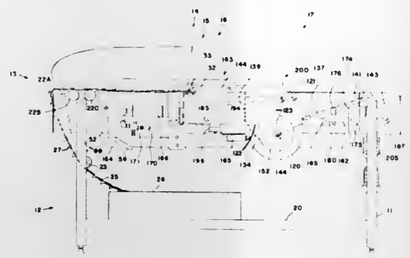
3,619,968
METHOD AND APPARATUS FOR PACKING SMALL PACKAGES HAVING VARYING CONFIGURATION AND CONTAINING ROOT-CROPS INTO LARGER RECEPTACLES
Erik Gunnar Kapare, Goteborg, Sweden, assignor to Billeruds Aktiebolag, Saffle, Sweden
Filed Nov. 17, 1969, Ser. No. 877,234
Claims priority, application Sweden, Nov. 25, 1968, 16,001/68; Nov. 11, 1969, 15,426/69
Int. Cl. B65b *35/50, 5/06*
U.S. Cl. 53—26 **17 Claims**



A method and a machine for packing small packages having varying configuration and containing root-crops, particularly potatoes into larger units. The smaller packages are fed into a step-by-step operating feeder mechanism which dispenses the packages stepwise onto a chute, one package at a time. The chute is provided with a stopper means which extends in the transverse direction of the chute so as to catch each package as it slides down the chute. The stopper means is adapted to move stepwise at the speed of dispensing of the feeder mechanism downwards along the chute and when a predetermined number of packages have aggregated the stopper means releases the unit of packages thus aggregated whereby they will fall into a sack beneath the chute as a close unit. In addition, retaining means are arranged to hold the sack in open position at the lower end of the chute and closing means for closing the sack.

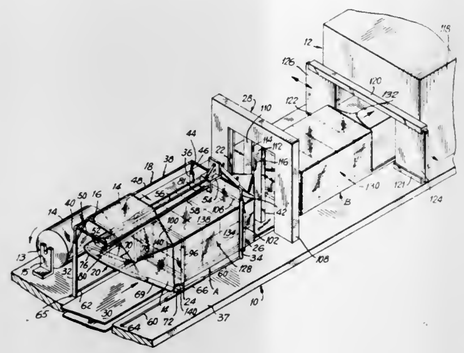
3,619,969
METHOD AND APPARATUS FOR PACKAGING
Edward L. Holcombe, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Nov. 24, 1969, Ser. No. 879,449
Int. Cl. B65b *43/36*
U.S. Cl. 53—29 **10 Claims**

This invention is directed to apparatus for automatically sequentially delivering bags to a loading station, blowing the bags open and delivering an item to and inserting the item in a bag. The invention includes in particular means for positioning a box of bags in the apparatus and delivering the bags in proper condition to the loading station, means for supplying a proper amount of air both in width of delivery and volume to open the bag, means



to control the reciprocation of the item delivery means and parts of the item delivery means and a method of packaging employing such an apparatus.

3,619,970
AUTOMATIC METHOD AND APPARATUS FOR THE WRAPPING OF ARTICLES
Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Newark, N.J.
Filed Nov. 25, 1969, Ser. No. 879,738
Int. Cl. B65b *11/08, 49/04, 43/06*
U.S. Cl. 53—30 **16 Claims**

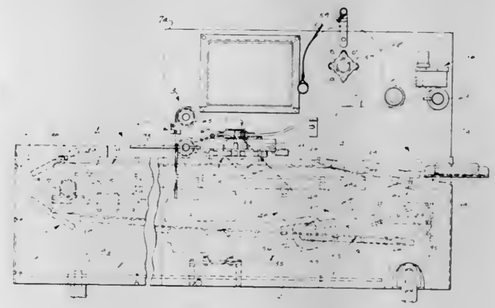


New and improved, automatic method and apparatus for the wrapping of articles in wrapping materials from a single center folded supply of the latter are provided and are effective to wrap said articles by the covering of the respective side, end and top surfaces thereof. The apparatus comprise means to withdraw the wrapping material from said supply and form an inverted, generally U shaped tube thereof, means to move articles into said tube and to advance said articles and said tube, and means to cut and seal said tube adjacent the respective leading and trailing end surfaces of the articles to complete the wrapping thereof. Gusset forming means are provided and are operable concomitantly with said cutting and sealing means to form gusset in said wrapping material tube attendant the cutting and sealing thereof to neatly control any excess wrapping material produced by said cutting and sealing and provide for the convenient containment of article identifying labels or the like in the article wrapping.

3,619,971
CONDITIONING METHOD AND APPARATUS FOR CARRYING IT INTO PRACTICE
Rene Claude, Sevres, France, assignor to Centre de Recherches Marcel Midy, Paris, France
No Drawing. Filed June 9, 1969, Ser. No. 831,717
Int. Cl. B65b *3/04*
U.S. Cl. 53—37 **1 Claim**

New conditioning method for use particularly in the pharmaceutic field, characterized in that a gelatin capsule is used in which is introduced, in the fused or unfused state, a mixture of at least one active compound and at least one non-oxidable fatty substance, of which the melting point is between about 30 and 40° C.

3,619,972
PACKAGING APPARATUS
Frank E. Pringle, David A. Wilson, and Richard H. Cochrane, Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.
Filed Dec. 5, 1969, Ser. No. 882,562
Int. Cl. B65b *7/28, 41/18*
U.S. Cl. 53—51 **8 Claims**

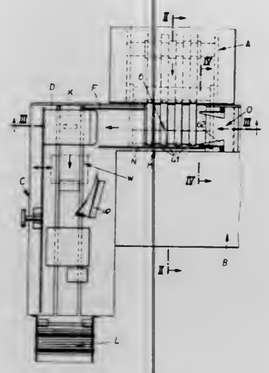


A machine for applying film covers to preformed trays in which filled trays are conveyed by a conveyor continuously through a sealing zone, a web of film is fed from a roll thereof to overlie the trays as they travel through the sealing zone, and the film is sealed to the trays by a platen which moves downward to press the film against the rim of a tray, then linearly forward in unison with the conveyor continuing to press the film against the rim for a sealing interval, then upward and then back to repeat the cycle, the film being cut between successive trays.

3,619,973
SEMIAUTOMATIC PACKING MACHINE FOR TEXTILES
Italo Della Bella, Gutenbergstrasse 9, Worrstadt (Rhine), Germany
Filed Nov. 14, 1968, Ser. No. 775,671
Claims priority, application Germany, Nov. 15, 1967, P 15 86 028.3
Int. Cl. B65h *43/36, 57/02;* **B65c** *9/18*
U.S. Cl. 53—64 **21 Claims**

A packing machine for textile goods including a bag forming device, a bag filling station, and a bag closing device which simultaneously applies suitable labels to one side of the bag. The bags may be filled manually or automatically by a novel sliding feed assembly which inserts

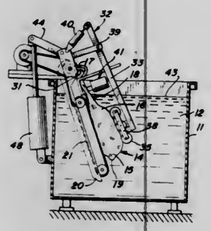
the goods into the bag and simultaneously removes the bag from a bag holding clamp. An additional novel labelling device may be provided to apply labels to the other side of the bag.



3,619,974
APPARATUS FOR EXPELLING AIR FROM A BAGGED PRODUCT

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,201
Int. Cl. B65b *31/00*
U.S. Cl. 53—79 **12 Claims**



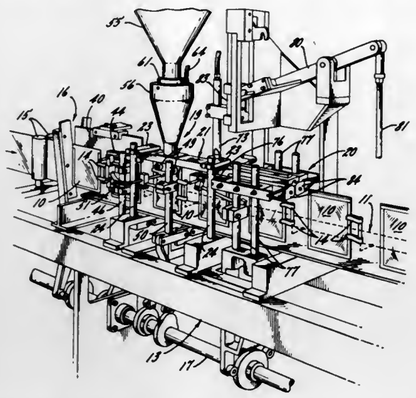
An apparatus for expelling air from a bagged product, such as a bagged meat product, is described. The apparatus includes a receptacle for containing a liquid, carrier means for immersing the bagged product in the liquid to expel the air from the bag, means for maintaining the open end of the bag above the level of the liquid while the bag is immersed in the liquid, and means for securely closing the open end of the bag while said bag is still immersed in the liquid.

3,619,975
MACHINE FOR PACKAGING PRODUCT IN A CONTROLLED ATMOSPHERE

Kenneth R. Johnson, W. Gerald Tyson, and Joe F. Soroka, Rockford, Ill., assignors to Riegel Paper Corporation, New York, N.Y.

Filed May 25, 1970, Ser. No. 40,250
Int. Cl. B65b *31/06*
U.S. Cl. 53—112 B **10 Claims**

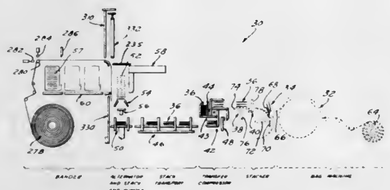
Pouches advanced along a horizontal path by a packaging machine are opened, filled and sealed while beneath a hood of comparatively small volume to which nitrogen is supplied to exclude the outside atmosphere from the pouches and the product deposited therein. The hood encloses only the upper ends of the pouches to leave the latter and various mechanisms for operating on the pouches accessible to the operator of the machine.



3,619,976
BAG BUNDLING MACHINE

William C. Kerker, deceased, late of Rye, N.Y., by Potdevin Machine Co., 200 North St., Teterboro, N.Y. 07608

Continuation-in-part of application Ser. No. 718,292, Feb. 19, 1968. This application Jan. 27, 1970, Ser. No. 6,188
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. B65h *13/20*
U.S. Cl. 53—124 C **24 Claims**



A paper bag bundling machine is provided which is adapted to remove individual bags produced by a bag-making machine, stack the bags and compress the stacks with the bag bottoms facing upwardly and thereafter to convey the stacks to a station at which the stacks are superimposed one upon the other to form a bundle of either standard configuration or long-pack configuration which bundle is further compressed and then banded to retain the compressed condition.

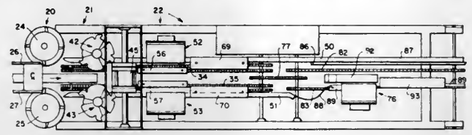
3,619,977
APPARATUS AND METHOD FOR HEAT SEALING CARTONS

Ezra E. Theys, San Mateo, Hugh B. Morse, San Jose, and Robert B. Johnson, Santa Clara, Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

Filed Mar. 10, 1970, Ser. No. 18,122
Int. Cl. B65h *7/20, 7/26*
U.S. Cl. 53—376 **22 Claims**

An apparatus comprises carton feeding, folding and sealing stations for sequentially moving partially erected top-loaded frozen food cartons along a linear path, folding adhesively treated flaps thereof into superimposed relationship and for sealing the flaps together. The feeding station comprises horizontally disposed sorting wheels for precisely spacing and positioning the cartons onto a

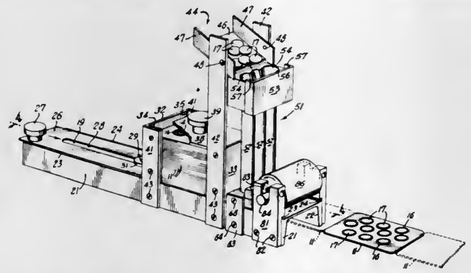
conveying means which moves the cartons through the folding station. The folded side flaps of the carton are then moved past first heat sealing means in the sealing station to subject the side flaps and adjacent side portions of a cover flap to heated air and to thereafter bond them together. The carton is then turned 90° to align a front flap and adjacent portions of the cover flap for bonding by a second heat sealing means.



3,619,978
COIN CARD LOADING MACHINE

George C. Graham, Ridgewood, N.J., assignor of a fractional part interest to I. Jordan Kunik, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,414
Int. Cl. B65b *5/10, 35/30*
U.S. Cl. 53—160 **10 Claims**

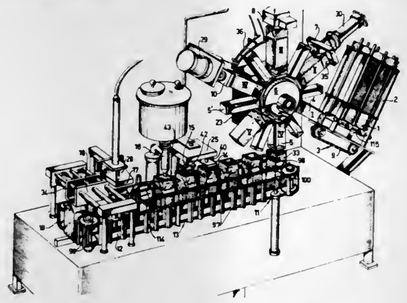


A machine for automatically loading coins in the coin receiving recesses of a coin card whereby the coins are fed by gravity and then pressed into said recesses as the card passes below a plurality of stacks of coins and thereafter said coins are further pressed into position by a weighted element.

3,619,979
PACKAGING MACHINE

Kjell Halvard Martensson, Malmo, and Lars Anders Karlsson, Akarp, Sweden, assignors to AB Tetra Pak, Lund, Sweden

Filed Oct. 17, 1969, Ser. No. 867,324
Claims priority, application Sweden, Oct. 30, 1968, 14,661/68
Int. Cl. B65b *7/10, 43/18*
U.S. Cl. 53—186 **16 Claims**



A machine for erecting, forming, filling and sealing package containers for products such as milk in which different sized packages may be employed and in which various elements of the machine may be adjusted or altered to accommodate the different sized package containers.

3,619,980
METHOD FOR REMOVING POLLUTANTS FROM THE ATMOSPHERE

Lester M. McKay, 16260 Kivitt Lane, Reno, Nev. 89502

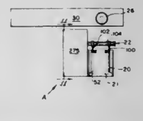
No Drawing. Filed Aug. 19, 1968, Ser. No. 753,720
Int. Cl. B01d *47/00*
U.S. Cl. 55—84 **5 Claims**

A method of removing pollutants from the atmosphere using the storm drains and/or sewer systems of a city. The downward pressure of a temperature inversion is used to cause the lower layer of the atmosphere to flow to catch basins or other openings in the drains and sewer systems. A series of low powered fans or water flow in the sewer is used to create a steady horizontal flow of air through the drains and sewer system.

3,619,981
BAG PLACER

Arthur J. Burke, Oakland, N.J., and Rudolf Keller, New York, N.Y., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed Dec. 16, 1968, Ser. No. 783,786
Int. Cl. B65b *43/30*
U.S. Cl. 53—190 **16 Claims**



A bag placer for automatically picking up a bag from a stack in a magazine, opening it and placing it on a bag holder or the spout of a supply hopper receiving material to be delivered to the bag. The apparatus for effecting the magazine-to-bag holder transfer and for opening the bag comprises a suction cup assembly which is dispalced back and forth between the magazine and the bag holder by a motor driven motion transmitting linkage mechanism. This linkage mechanism is constructed to displace the suction cup assembly along a motion path aproaching the configuration of an S and is defined by two oppositely curved portions which are smoothly joined together by a single point or region of inflexion. The linkage mechanism further translates uniform rotary motion of a power output member to accelerate the bag as it is transferred from the magazine to the bag holder along the S-shaped motion path.

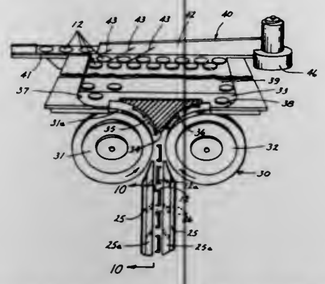
3,619,982
APPARATUS FOR ORIENTING CLOSURE CAPS AND THE LIKE

William H. Robinson, Rte. 1, New Vienna, Ohio 45159

Application Nov. 25, 1968, Ser. No. 778,441, which is a continuation-in-part of application Ser. No. 483,252, Aug. 27, 1965. Divided and this application July 31, 1970, Ser. No. 59,926
Int. Cl. B65b *7/28*
U.S. Cl. 53—314 **2 Claims**

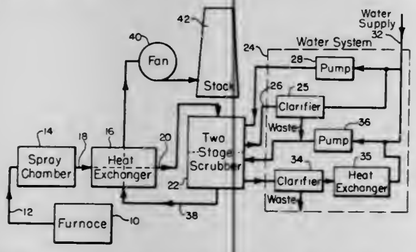
Articles which are dished or cup-like and forming an open side, for example flexible closure caps and the like, are unscrambled from a haphazard mass thereof and are positioned into a layer in which the open side of the respective closures may face in opposite directions. Articles are removed from the layer and are fed between moving

surfaces which advance the articles individually and positively to a desired oriented position. Upon removal from the moving surfaces, the oriented articles are arranged



in a moving layer from which they are thereafter separated and fed into registry with other articles for assembly therewith as in a container capping operation.

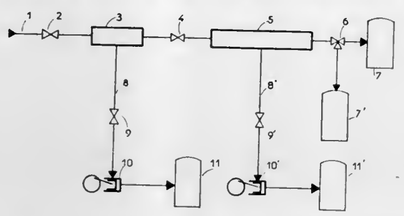
3,619,983
SUPPRESSION OF THE STEAM PLUME FROM INCINERATOR STACKS
Fred W. Rohr, Western Springs, Ill., assignor to P & W Engineers, Inc., Chicago, Ill.
Filed Nov. 26, 1968, Ser. No. 779,012
Int. Cl. B01d *47/00*
U.S. Cl. 55—89 **3 Claims**



Methods and apparatus for treating heated gases to remove particulate matter therefrom and to suppress steam plume formation upon discharge of the gases to the atmosphere are disclosed. Specifically, the gases are directed through a first heat exchanger passageway to a conventional scrubber system whereat substantially all of the particulate matter is removed from the gases. The scrubber also functions to reduce the temperature of the gases substantially below their dew point for effectively dehydrating the gases by condensation of the water vapor carried thereby. The dehydrated, scrubbed and cooled gases are passed through a second passageway of the heat exchanger and are reheated by intimate thermal contact with the gases passing through the first passageway, the gases in the first passageway being proportionally cooled. The reheated gases are then discharged to the atmosphere. Other features are disclosed.

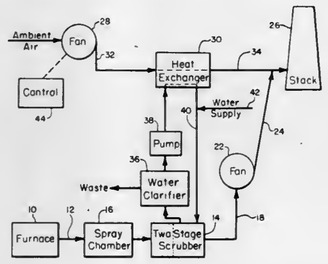
3,619,984
GAS SEPARATION BY ADSORPTION
Daniel Domine, Meudon, and Leon Hay, Paris, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Sept. 19, 1969, Ser. No. 859,446
Claims priority, application France, Sept. 27, 1968, 168,900
Int. Cl. B01d *53/04*
U.S. Cl. 55—25 **10 Claims**

A process for separating a complex gaseous mixture formed of at least three constituents and for obtaining at least three of these constituents, in which a given quantity of mixture under pressure, at a given temperature, is admitted into several successive adsorption zones which have been evacuated, the admission of the mixture is stopped and one or optionally several gaseous fractions are withdrawn from the last of the said zones at one or more intermediate pressure levels, in which the said zones, the number of which is less by at least one integral value



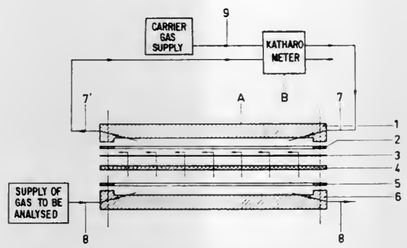
than the number of constituents to be separated, and which contain different adsorption masses capable of selectively adsorbing at least one of the constituents of the gaseous mixture, are then isolated from one another, whereupon the selectively adsorbed residual fractions are extracted in each of these zones at temperatures close to the admission temperature and preferably solely by application of a vacuum.

3,619,985
METHOD FOR TREATING HEATED GASES TO SUPPRESS STEAM PLUME FORMATION
Fred W. Rohr, Western Springs, Ill., assignor to P & W Engineers, Inc., Chicago, Ill.
Filed Nov. 26, 1968, Ser. No. 779,114
Int. Cl. B01d *47/00*
U.S. Cl. 55—89 **2 Claims**



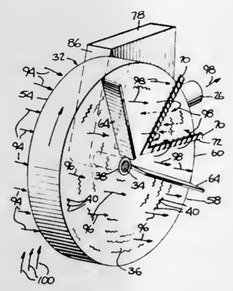
A method and system are disclosed for removing particulate matter from combustion gases and for concomitantly suppressing steam plume formation. A scrubber passes a fluid through the combustion gases to remove particulate matter therefrom and, preferably, introduces the fluid under conditions such that the temperature of the combustion gases are reduced substantially below their dew point; this latter action dehydrates the gases by condensation of the water vapor carried thereby. The relatively hot and contaminant bearing fluid discharged from the scrubber is circulated through a heat exchanger whereat it is utilized to preheat ambient air which is then intermixed with the dehydrated combustion gases delivered to the scrubber output. The intermixed air and combustion gases are discharged to the atmosphere through a conventional stack. The relatively hot scrubber fluid, cooled by its passage through the heat exchanger, is recirculated to the scrubber for repeated use, preferably after the fluid has been suitably clarified. Other features are disclosed.

3,619,986
QUANTITATIVE GAS ANALYSIS APPARATUS
Rene Mormont, Brussels, and Jean Duez, Ganshoren, Belgium, assignors to Solvay & Cie, Brussels, Belgium
Filed Mar. 7, 1969, Ser. No. 805,250
Claims priority, application Belgium, Mar. 7, 1968, 55,458
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 **6 Claims**



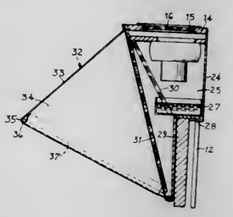
Apparatus for performing a continuous quantitative analysis of the hydrogen present in a gaseous mixture, the apparatus essentially including a diffusion cell presenting a first gas flow space for the passage of the gaseous mixture whose hydrogen content is to be analyzed, a second gas flow space for the passage of a carrier gas, and a semipermeable membrane which is essentially permeable only to hydrogen and which is disposed between the two spaces so that the hydrogen diffusing through the membrane will be entrained by the carrier gas, the apparatus further including a katharometer having one inlet connected to receive the carrier gas before it passes to the diffusion cell and a second inlet for receiving the hydrogen-laden carrier gas leaving the diffusion cell, the katharometer providing an indication of the difference between the thermal conductivities of the two gases which it receives, which difference is representative of the initial hydrogen content of the gaseous mixture being analyzed.

3,619,987
DEVAPORIZING SYSTEMS
Oliver D. Colvin, Hampton, N.H., Robert A. Taylor, Newburyport, Mass., and Samuel C. Kelly, Exeter, N.H., assignors to Oliver D. Colvin, Hampton, N.H.
Continuation-in-part of application Ser. No. 574,875, Aug. 5, 1966, now Patent No. 3,490,201. This application Nov. 10, 1969, Ser. No. 875,415
Int. Cl. B01d *19/00*
U.S. Cl. 55—196 **21 Claims**



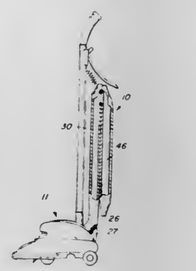
Air dehumidifier systems for containerized cargo comprising a rotating wheel containing hygroscopic lined passageways and special internal ductwork, heating and cooling apparatus arranged to dry air from the container and simultaneously reactivate the wheel passageways.

3,619,988
FILTERING AND MOISTURE CONTROL DEVICE
Dudley E. Cornell III, 221 San Pedro NE., Albuquerque, N. Mex. 87108
Filed Feb. 14, 1969, Ser. No. 799,193
Int. Cl. B01d *47/00*
U.S. Cl. 55—234 **11 Claims**



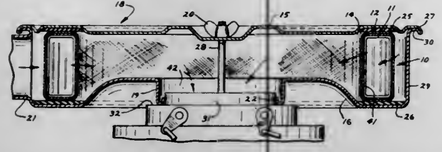
Device for filtering air and control of moisture therein, preferably by humidifying the air. The device is adapted to be supported over the head portion of a bed and includes a blower mounted in a housing. Air from the outlet of the blower flows into an enlongated chamber extending horizontally in a direction transverse to the length of the bed with a combination filtering and evaporating member of porous material forming one wall of the chamber and having a lower portion in a water pan in the lower portion of the chamber and with flexible transparent sheet forming triangular side walls and a top wall extending angularly downwardly to define a conduit extending toward a sleeper's head. A micron filter is preferably provided in the conduit and is so positioned as to produce a laminar flow of the air.

3,619,989
VACUUM CLEANER BAG
Soi Howard and Robert Schaaf, Brooklyn, N.Y., assignors to Mil-An Mfg. Corp., Brooklyn, N.Y.
Filed Apr. 3, 1969, Ser. No. 813,151
Int. Cl. B01d *46/02*
U.S. Cl. 55—368 **5 Claims**



A multi-compartment vacuum cleaner bag formed of an air permeable material comprising a first bag tube member and a second bag tube member, said bag tube members being interconnected, said first bag tube member being adapted to be connected to a vacuum cleaner, the interior of said first bag tube member being in air-flowing relation with the interior of said second bag tube member, said second bag tube member being openable at one end thereof.

3,619,990
CARBURETOR AIR FILTER UNIT
Michael L. Gayda, 11309 Kell Road, Bloomington, Minn. 55431
Filed June 12, 1970, Ser. No. 45,731
Int. Cl. B01d *27/08*
U.S. Cl. 55—482 **5 Claims**

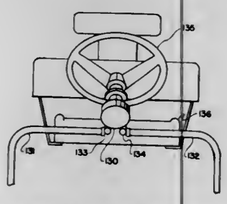


An improved air filter for internal combustion engines, including an annular skeleton support structure having flat top and bottom surfaces, carrying one or more enveloping filtering sleeves of a durable, close-woven fabric. The air filter is contained in an air filter housing commonly associated with automobile engines and attached to the air intake portion of the carburetor casting.

3,619,991
COTTON HARVESTING METHODS AND COMPOSITIONS
William A. Erby, Downers Grove, Ill., and Robert A. Walde, Emmaus, Pa., assignors to Air Products and Chemicals Inc., Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 714,761, Mar. 21, 1968. This application Sept. 9, 1968, Ser. No. 758,577
Int. Cl. A01d *45/20, 45/18*
U.S. Cl. 56—1 **9 Claims**

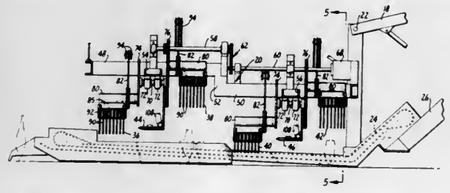
Methods of harvesting cotton are disclosed which rely upon the unique effects of salts of 2,3,5,5,5-pentachloro-4-keton pentenoic acid, particularly those salts made with ammonia and C_1–C_{18} organic amines. Depending upon the rate of application to living cotton plants, these effects vary. They include quick wilting followed by defoliation, thus permitting a first picking after initial wilting and, if desired, a second picking after defoliation. With other dosage rates, the quick wilting may be followed by desiccation rather than by defoliation, thus permitting a first picking in wilted condition followed by strip harvesting of the remaining cotton. The salts may also be used either as desiccants, per se, or as defoliants which both defoliate the plant and promote boll opening. Agricultural formulations are also disclosed.

3,619,992
STEERING WHEEL MOUNTING ON A SELF-PROPELLED COMBINE
John E. Brelsford, Terre Hill, and Edmund O. Howell, New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed July 1, 1970, Ser. No. 51,431
Int. Cl. A01d *41/02*
U.S. Cl. 56—10.1 **12 Claims**



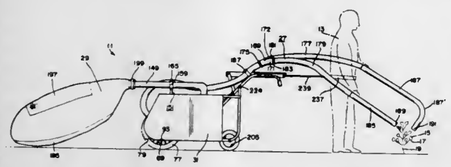
A U-shaped support on the operator's platform of a self-propelled combine has a hydraulic steering and control valve and an enclosing casing pivotedly mounted thereon. A steering wheel actuates the valve. The U-shape of the support provides a clear viewing of the forward part of the header.

3,619,993
HARVESTING MACHINE
Jack D. Maffei, Gustine, Calif., assignor to L. D. Maffei Seed Company, Newman, Calif.
Original application Oct. 17, 1966, Ser. No. 587,171, now Patent No. 3,492,799. Divided and this application Apr. 21, 1969, Ser. No. 834,924
Int. Cl. A01d *45/22*
U.S. Cl. 56—12.4 **2 Claims**



A vegetable harvesting machine having a rotary orbital vegetable beater guided by a knee action drive mechanism which holds the picking tines of the beater on one side of the beater orbital path as the beater swings around the path.

3,619,994
MANUALLY DIRECTED COTTON HARVESTING MACHINE
William E. Rohde, 2849 Invergarry Road, Memphis, Tenn. 38128
Filed Dec. 4, 1969, Ser. No. 882,040
Int. Cl. A01d *45/20*
U.S. Cl. 56—13.1 **16 Claims**

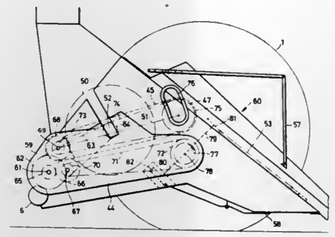


A cartlike machine to be used in harvesting seed cotton. The machine includes a centrifugal air blower powered by an internal combustion engine, a self-propelled mobile carriage assembly having a semi-automatic propulsion system which is actuated as the workman progresses along the row of cotton plants, a bifurcated hand-held nozzle assembly for pulling the cotton locks from the cotton boll and a receptacle bag which trailingly follows the machine.

3,619,995
APPARATUS CONNECTIBLE TO A TRACTOR OR AGRICULTURAL VEHICLE
Alfred Eggenmuller, Ulm, Lorenz Scherer, Oberelchingen, Heinrich Bellan, Thalfingen, and Rudolf Wöhrle, Rieden, Germany, assignors to Gebruder Eberhardt, Ulm (Danube), Germany
Filed July 10, 1969, Ser. No. 840,692
Claims priority, application Germany, July 11, 1968, P 17 82 045.0; Sept. 28, 1968, P 17 82 656.1; Jan. 21, 1969, P 19 02 761.8; Apr. 3, 969, P 19 17 307.0
Int. Cl. A01d *45/02, 49/00*
U.S. Cl. 56—13.4 **7 Claims**

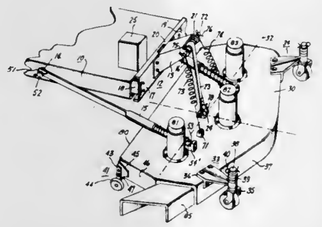
Lifting means applicable to a tractor having a three-point hydraulic lift mechanism and applicable to a tool adapted for operation alongside of the tractor, such as a

corn picker, binder or mower. It is particularly adaptable to tools having a relatively long extent in the direction of movement of the tractor, such as a corn picker. The mechanism lifts the tool at such a point in relation to the



center of gravity of the tool that the weight of the tool assists in maintaining same when lifted in a position approximately parallel with the ground. Snubbing and auxiliary support mechanism are provided for use if desired to assist further in support and guidance of the tool.

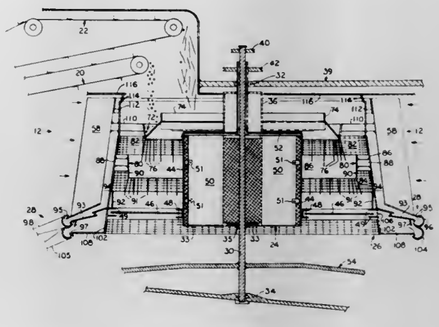
3,619,996
MOWER APPARATUS
Chester F. Jacobson, Scotia, and Edward P. Kexel, Altamont, N.Y., assignors to General Electric Company
Filed Feb. 12, 1970, Ser. No. 10,865
Int. Cl. A01d *35/26*
U.S. Cl. 56—13.6 **8 Claims**



A pair of spring loaded pusher rods connect the deck or housing of the mower to the chassis of the tractor. One end of each of the rods is pivotally connected to a respective side of the chassis and the other end of each of the rods is secured to the deck by a respective ball joint assembly. Springs also connect the deck to the front end of the chassis to facilitate operation of the mower in association with a tractor. A capability is also provided for enabling the mower to be lifted off the supporting surface without exposing the blades of the mower.

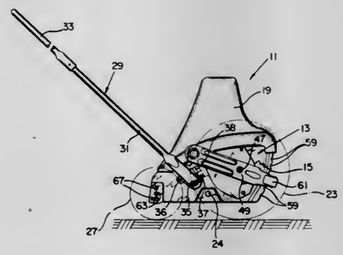
3,619,997
SEPARATOR MEANS FOR COMBINES
Kenneth D. Wood, 1826 Greenfield, Wichita, Kans. 67217
Filed Mar. 4, 1970, Ser. No. 16,464
Int. Cl. A01d *41/12*
U.S. Cl. 56—14.6 **8 Claims**

This invention is a separator means for combines which have a reel and header assembly, thresher cylinder, conveying means for moving threshed cereal grass, powering means, and a housing comprising the structure thereof. The separator means is comprised of an independently rotatable outer cylinder member mounted within and powered by the combine. In operation the outer cylinder rotates about its longitudinal axis and receives threshed material from the conveyor, disposes same through a distribution means to a grain-stalk separator, and draws air radially inward against the motion of the grain, separating same from its stalk. The separated grain passes to a grain



collector. Air is drawn through the wall of the cylinder member and is discharged downward with the separated stalk segments. The separator uses rotation and centrifugal force and opposed airflow to separate threshed cereal grass stalk and grain.

3,619,998
HANDLE HEIGHT ADJUSTMENT
Kenneth R. Wells, Joppa, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Feb. 9, 1970, Ser. No. 9,573
Int. Cl. A01d *55/20*
U.S. Cl. 56—249 **5 Claims**

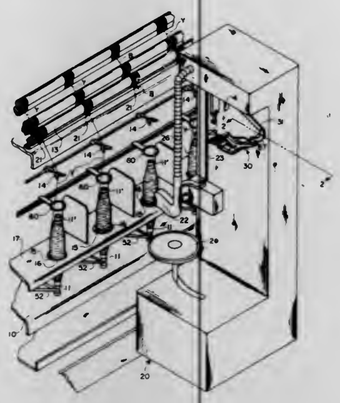


A lawn mower including a housing supported by wheels for movement over the ground. A reel is rotatably supported upon the housing and is driven by a motor also on the housing. The mower is manipulated and controlled by an upstanding handle on the housing. The cutting height of the reel is adjusted by adjusting the wheels relative to the housing and a novel means and arrangement is provided whereby a range of handle heights are provided for the different cutting heights.

3,619,999
YARN PIECING APPARATUS
Roberto Escursell-Prat, Rda. General Mitre, 105 4.°, 1.°, Barcelona 6, Spain
Filed Apr. 1, 1969, Ser. No. 812,054
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **11 Claims**

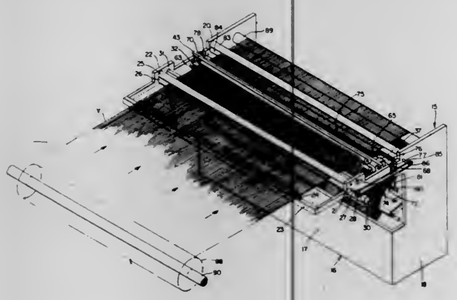
Automatic yarn piecing apparatus for textile machines, such as a spinning machine of the ring and traveller type, wherein a piecing head of improved construction joins yarn passing from the machine's delivery rolls to yarn

extending upwardly from a bobbin. The piecing head is constructed so as to consistently bring the yarn ends together while imparting twist to the bobbin yarn and



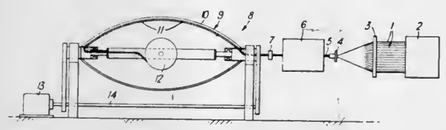
otherwise under controlled conditions calculated to reliably join the yarn ends. Tension control means are provided to discourage yarn breakage during piecing.

3,620,000
YARN TWISTING APPARATUS
William K. Wyatt, Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.
Original application Nov. 17, 1967, Ser. No. 683,908, now Patent No. 3,488,936, dated Jan. 13, 1970. Divided and this application July 28, 1969, Ser. No. 854,007
Int. Cl. D02g *1/04*; D04b *15/38*
U.S. Cl. 57—34 HS **12 Claims**



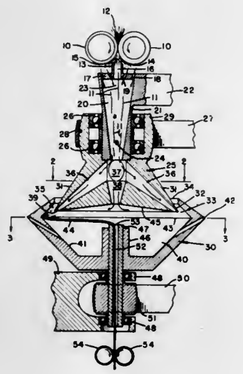
An apparatus is provided, for machine twisting a plurality of warp yarns simultaneously, the apparatus being adapted to be mounted directly onto the frame of a knitting, weaving machine or the like, for providing an initial twisting of yarns, prior to feeding the yarns into a knitting portion of a knitting machine. After the initial twist is placed in the yarns, by false twisting pairs of yarns together, the yarns are moved longitudinally through another portion of the apparatus, in which yarns in the twist zone are heated to set the filaments in their twisted condition, the twisted yarns then being cooled by a suitable means, and then being separated by passing the yarns in a twisted pair over opposite sides of a separating pin, to yield a texturized fabric.

3,620,001
METHOD OF AND APPARATUS FOR TWISTING TOGETHER A PLURALITY OF ELONGATED FLEXIBLE ELEMENTS
Horace Herbert Daker, Sidmouth, Devon, Raymond Alfred Martin, Lancashire, and John Rose, Cheshire, England, assignors to British Insulated Callender's Cables Limited, London, England
Filed May 26, 1969, Ser. No. 834,930
Claims priority, application Great Britain, May 28, 1968, 25,535/68
Int. Cl. D01h *1/10*
U.S. Cl. 57—58.57 **17 Claims**



A plurality of wires or other elongated flexible elements taken from stationary supply devices are assembled to form a bunch. The bunch is advanced and rotated by a stationary drawing device, which may be a skew roll or an endless belt, having an endless gripping surface which moves in a closed path and engages the bunch over a part of that closed path which is obliquely inclined with respect to the axis of the bunch. The rotating bunch is taken up by a double-twist bunching machine whose flyer rotates in the same direction as the bunch but at a lower speed.

3,620,002
OPEN END SPINNING ASSEMBLY AND METHOD
Peter F. Grishin, Sanford, N.C., assignor to Roberts Company, Sanford, N.C.
Filed Mar. 17, 1969, Ser. No. 807,662
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **8 Claims**



An open end spinning assembly and method in which preferably individual fibers are separated in a first zone from a fibrous supply mass to flow in a substantially non-turbulent air stream, preferably accelerated flow, in a directed path of travel for deposition on a surface of a rotating centrifugal turbine for fiber removal therefrom as a spun yarn in another zone remote from the first zone where the fibers are introduced.

3,620,003
NOVELTY YARN AND METHOD OF FORMING SAME
Sohinger Nath Chopra, Hawkesbury, Ontario, Canada, assignor to Chemcell Limited, Montreal, Quebec, Canada
No Drawing. Filed Feb. 11, 1970, Ser. No. 10,633
Int. Cl. D02g *3/04, 3/34*
U.S. Cl. 57—140 **13 Claims**

A novelty singles yarn comprising fibrillated polymeric staple fibres and non-fibrillated staple fibres, characterized in that most of the fibrillated polymeric staple fibres stay on the periphery of the yarn to form a shell surrounding the non-fibrillated staple fibres. A novelty carpet is made from said yarn.

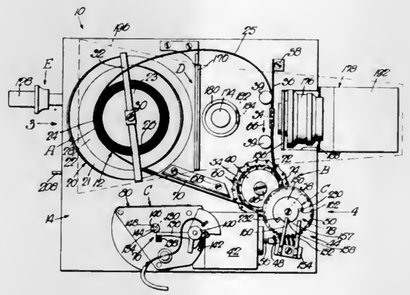
The process of making a novelty yarn made up of fibrillated polymeric staple fibres and non-fibrillated staple fibres, comprising:

(a) blending staples of at least one fibrillated polymeric staple fibre with staples of at least one non-fibrillated synthetic, or natural fibre,

(b) carding the said blend into a sliver,

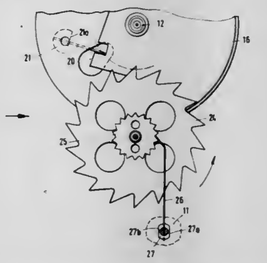
(c) drafting and spinning the sliver to form a yarn having fibrillated polymeric staple fibres mostly emerging out on the periphery of the said yarn as a shell surrounding the other filaments or fibres which form a core.

3,620,004
TIME INDICATING DEVICE OF DIRECT READ-OFF TYPE
Frank H. Marz, Delavan, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Sept. 25, 1969, Ser. No. 861,092
Int. Cl. G04c *3/00*; G04b *19/30*
U.S. Cl. 58—23 **4 Claims**



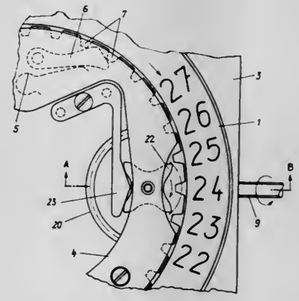
Device using film with successive frames bearing different indicia, and having means for step-by-step advancement of the film in synchronism with the passage of time, with successive frames pausing in register with a film gate for image projection of their indicia onto a screen, and the device having further provision for manually controlled rapid advance or retraction of the film.

3,620,005
RATCHET WHEEL DEVICE FOR A BALANCE WHEEL CLOCK
Wolfgang Ganter, Schramberg-Sulgen, Wurttemberg, and Heinz Otto, Rotenberg, Wurttemberg, Germany, assignors to Messrs. Gebruder Junghans Gesellschaft mit beschrankter Haftung, Schramberg, Wurttemberg, Germany
Filed Oct. 2, 1968, Ser. No. 764,450
Claims priority, application Germany, Oct. 4, 1967, J 17,022
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 D **3 Claims**



A ratchet wheel mechanism for a watch or clock having a common shaft with a balance wheel with a permanent magnet and of which a pawl wheel, and ratchet wheel with drive are composed of an anti-magnetic material resistant to wear.

3,620,006
CALENDAR WATCH SETTING MECHANISM
Roland Zaugg, Grenchen, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland
Filed Oct. 3, 1969, Ser. No. 863,442
Claims priority, application Switzerland, Oct. 11, 1968, 15,252/68; June 4, 1969, 8,523/69
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **9 Claims**



A mechanism for setting the minute and hour hands and the date indicator of a watch involving an axially shiftable setting stem and means to permit relative movement between the date indicating member and its setting drive member.

3,620,007
WATCH WINDING APPARATUS
Robert C. Kauffman, 342 Windemere Ave., Lansdowne, Pa. 19050
Filed July 13, 1970, Ser. No. 54,450
Int. Cl. G04b *5/20*
U.S. Cl. 58—80 **7 Claims**

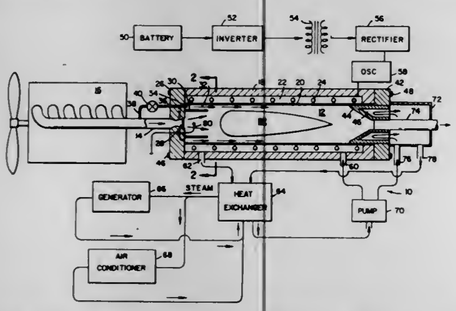
This device consists of an apparatus for winding a self-winding watch when not worn by an individual so that there is no interruption between its respective carriers, there being provided a small electric motor having a slow

speed output shaft upon which a generally cylindrical supporting device is coaxially mounted for rotation there-



with and upon which the watch to be wound may be placed for rotation to thus simulate the winding action imparted by the individual user.

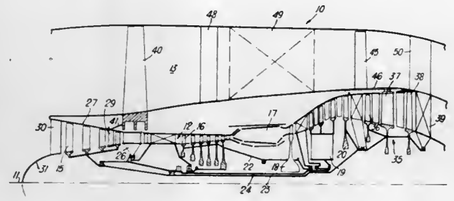
3,620,008
APPARATUS FOR REMOVING AIR POLLUTANTS FROM THE EXHAUST STREAM OF A COMBUSTION PROCESS
Robert M. Newbold, Novato, Calif.
(67 Barbaree Way, Tiburon, Calif. 94920)
Filed July 23, 1970, Ser. No. 57,588
Int. Cl. F01n *3/14;* **H05h** *1/18*
U.S. Cl. 60—30 **12 Claims**



An apparatus for removing pollutants from a combustion exhaust stream comprises a chamber having an inlet for receiving the exhaust stream lined with heat resistant material and surrounded by electrical means providing a high frequency electrical field within the chamber that produces an ignition plasma reaction to ionize the gases in the exhaust stream that flows into the chamber. The plasma of ionized gases within the chamber is at a high temperature and free from air-polluting compounds which are consumed or disassociated. Near the exit of the chamber the ionized gases are cooled and recombined to form harmless compounds such as the normal air gases of nitrogen and oxygen. In an automobile installation the high frequency electrical power is provided through a closed system from a standard battery and heat removed from the ionized gases is utilized for auxiliary power.

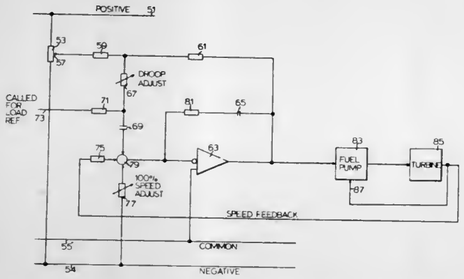
3,620,009
GAS TURBINE POWER PLANT
Geoffrey Light Wilde, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Dec. 2, 1969, Ser. No. 881,374
Claims priority, application Great Britain, Dec. 4, 1968, 57,599/68
Int. Cl. F02c; F02k
U.S. Cl. 60—39.16 R **9 Claims**

A turbo-fan power plant is disclosed in which there are two independent fans in the fan duct respectively driven by a gas generator and an independent free turbine. The gas generator includes in axial flow series low, intermediate and high pressure compressors respectively drivingly interconnected with high, intermediate and low pressure turbines, the intermediate pressure turbine being driving-



ly connected to the upstream or front fan of the two fans. The drive arrangement of the fans and their axial spacing enables them to rotate at relatively low speeds and substantially without any wake interaction therebetween, whereby the overall noise of the power plant is reduced.

3,620,010
GAS TURBINE SPEED-LOAD CONTROL
Richard K. Davis, Roanoke, Va., assignor to General Electric Company
Filed Feb. 2, 1970, Ser. No. 7,788
Int. Cl. F02c *9/06*
U.S. Cl. 60—39.28 **2 Claims**

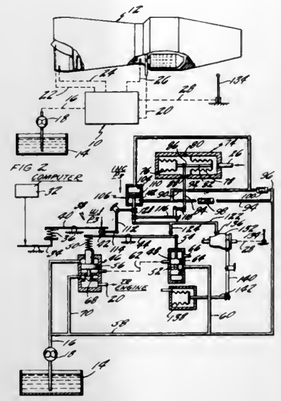


A circuit for controlling the speed-load characteristics of a gas turbine including a summing punction for algebraically adding a speed reference signal and a speed feedback signal and applying the sum thereof to an operational amplifier, the output of which controls fuel flow to the turbine for maintaining constant speed. A resistor for modifying the output of the operational amplifier is connected to a second summing junction where the modified output is added to a second reference signal representing desired loading of the turbine and a switch which when closed applies the sum of the second summing junction to the sum of the first summing junction whereby fuel flow to the turbine is controlled as a function of load.

3,620,011
COMPRESSOR PRESSURE LIMITER FOR GAS TURBINE ENGINE
Louis A. Urban, Granby, and William E. Fortmann, Simsbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation of application Ser. No. 717,194, Mar. 29, 1968. This application Mar. 25, 1970, Ser. No. 20,469
Int. Cl. F02c *9/08, 3/06, 3/24*
U.S. Cl. 60—39.28 **14 Claims**

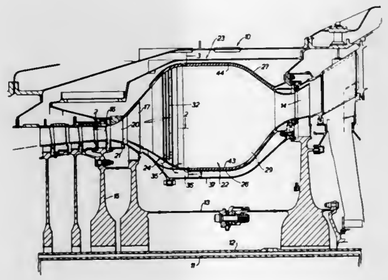
Compressor discharge pressure of a gas turbine engine is limited by closing off the fuel metering valve at a

velocity dependent on the magnitude by which the compressor discharge pressure exceeds a desired value. In this mode the fuel control becomes an integrating device



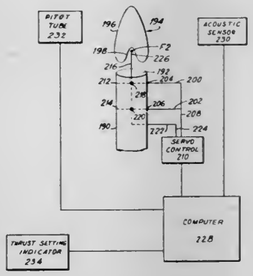
and steady state is achieved by closing the loop on compressor discharge pressure through the engine. The limit may be reset by the power lever and may be altitude pressure or temperature biased.

3,620,012
GAS TURBINE ENGINE COMBUSTION EQUIPMENT
Geoffrey Light Wilde, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Mar. 2, 1970, Ser. No. 15,721
Claims priority, application Great Britain, Mar. 21, 1969, 15,025/69
Int. Cl. F02c *3/06*
U.S. Cl. 60—39.36 **9 Claims**

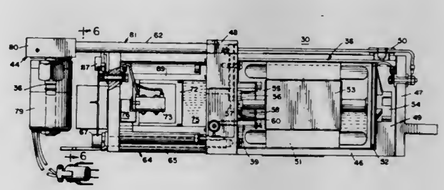


The invention concerns gas turbine engine combustion equipment comprising an annular chamber, means defining a plurality of alternately arranged, radially extending, primary combustion zones and diffusing dilution air passages, said means being mounted within an upstream portion of the flame tube, the annular chamber having a downstream portion within which mixing is effected between the combustion gases from the said zones and the dilution air from the said passages, and means for supplying fuel and air to each said zone, the annular chamber having a diffusing inlet duct which supplies dilution air to the said passages and a rotatable assembly of vanes which are located in the diffusing inlet duct and which effect diffusion of the air flowing thereover.

3,620,013
NOISE ABATEMENT METHODS RELATING TO FLAME AND JET PRODUCTION AND ASSOCIATED APPARATUS
James H. Rogers, 82 Bretton Road, and William G. Dunn, 132 Autumn Drive, both of Hauppauge, N.Y. 11787
Filed Oct. 31, 1969, Ser. No. 873,017
Int. Cl. F02c *7/00;* **F23d** *13/04*
U.S. Cl. 60—39.72 P **16 Claims**



Two noise abatement techniques are employed in connection with flame generation and the production of jets. One of these techniques involves introducing a disruption rod or needle at the focal point of the parabolic section of the apex of the inner cone of a flame. The other involves using a rod or rods for cancelling the resonant node or nodes developed in a supply tube by a combustible medium passing therethrough to the flame production zone. The apparatus uses the above techniques separately or in combination and provides controls for adjusting node cancelling rods and/or disrupting rod or needle performing the aforesaid functions. The controls take into account that the nodes and focal point vary according to fuel supply rate and other factors relating to ambient and associated conditions.

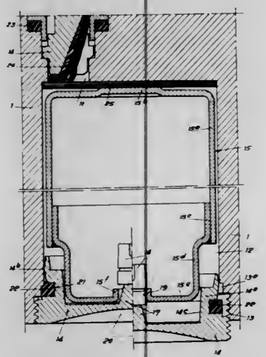


3,620,014
AUTOMATIC DOOR ACTUATOR
Richard Klein, San Lorenzo, Calif., assignor to American Metal Climax, Inc., New York, N.Y.
Filed July 7, 1969, Ser. No. 839,375
Int. Cl. F15b *15/18*
U.S. Cl. 60—51 **11 Claims**

There is provided an electro-hydraulic door actuator including an electrical control module, a power pack, and a door actuator. The power pack includes a fully submerged motor pumping fluid under high pressure into an accumulator or reservoir. The motor operates in response to the pressure demand for fluid within the accumulator. A control valve assembly responsive to signals from the electrical control module controls the flow of high pressure fluid, and the return thereof, from the door actuator. The door actuator includes a pair of pistons operable within respective cylinders, and driving a rack connected

to a pinion on the spindle of the door. When the electrical control module calls for a power opening cycle, a spool valve opens a port allowing high pressure fluid to drive one of the pistons in the door opening direction. The door actuator is also ported for a manual operation, in the normal power opening direction, and a panic opening, which would be in the opposite direction from the power opening cycle. The actuator can be readily modified from a right hand actuator to a left hand actuator by the mere reversal of a manifold plate which alters the connection of various ports within the actuator assembly.

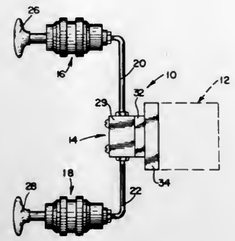
3,620,015
GAS-FUELLED DEVICES
Robert R. Hocq, Boulogne-Billancourt, France, assignor to Société Franco-Hispano-Americaine Francispam, Paris, France
Filed July 8, 1969, Ser. No. 839,835
Claims priority, application France, July 10, 1968, 158,626
Int. Cl. F17c 7/02
U.S. Cl. 60—52 **9 Claims**



A gas fuelled device, for example a cigarette lighter, which has a casing carrying an expansion valve and which is arranged to have a cartridge containing liquid gas inserted in it. The casing is provided with a chamber which is arranged so that gas from the cartridge flows into it prior to reaching the expansion valve. The casing is also provided with a detachable base which, in the assembled position, is arranged to seal the chamber and to cause gas in the cartridge to flow automatically into the chamber.

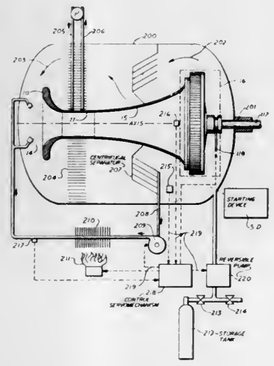
3,620,016
MACHINE CONTROL SYSTEM
Lee A. Wright, Kellering, Ohio, assignor to Mosier Industries, Inc.
Filed Jan. 21, 1970, Ser. No. 4,626
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 **11 Claims**

The control system includes at least two units which must be operated substantially simultaneously to start operation of a machine. Each unit includes a fluid displacement device, such as a device including a cylinder, a piston movable in the cylinder, a vent passage in the piston and a seal for closing the vent passage when the piston is moved in the cylinder to displace fluid therein. Each cylinder is connected to a chamber having a pressure sensitive transducer, valve or switch associated therewith which is actuated only when a predetermined minimum fluid pressure or minimum fluid volume is established in the chamber by reason of fluid displacement in the units which causes compression of the fluid in the chamber or



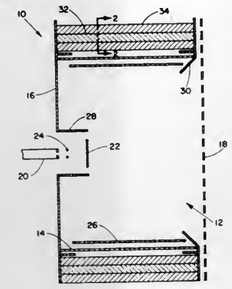
an increase in the volume of the fluid in the chamber. This minimum operating pressure or volume increase is only established when the two pistons are moved together, first to close the vent passages, and second to displace the fluid trapped in the cylinders.

3,620,017
POWER DENSITY CONTROL FOR FLUID-DYNAMIC ENGINES
Giusto Fonda-Bonardi, Los Angeles, Calif., assignor to Robert S. Estes, Emmett Steele, Jay Kurtz, James Linahan, and Carl Clement, Los Angeles, Edward S. Merrill, Palm Springs, and Royal M. Galvin, Pacific Palisades, Calif., fractional part interest to each
Filed June 24, 1969, Ser. No. 836,046
Int. Cl. F01k 3/18; F02k 1/00
U.S. Cl. 60—59 **8 Claims**



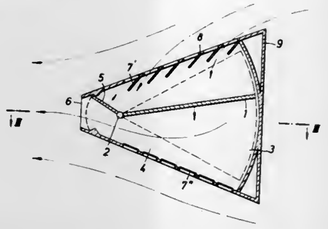
This invention relates to the method and apparatus for controlling the power density of a fluid dynamic engine wherein gas is accelerated through the engine at the speed of sound at the sonic speed of the gas and imparting energy to the gas while maintaining it at the sonic speed. The engine may comprise a duct having a sonic duct section interposed between convergent and divergent sections so that the fluid is successively accelerated to the sonic speed through the convergent section and moves through the sonic section at the sonic speed. The engine may be enclosed in order that the entire thermodynamic cycle may take place inside a pressure tight envelope.

3,620,018
ION THRUSTER MAGNETIC FIELD CONTROL
Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 28, 1970, Ser. No. 67,815
Int. Cl. F03h 5/00
U.S. Cl. 60—202 **10 Claims**



The magnetic field of an ion thruster is automatically shunted when the thruster is not operating.

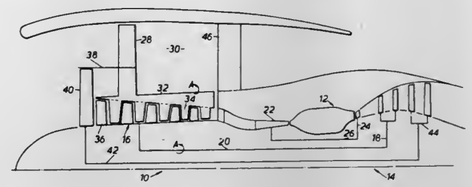
3,620,019
JET PROPULSION DRIVE FOR WATERCRAFT
Harm-Heinrich Munte, Hamburg, Germany, assignor to Blohm & Voss AG, Hamburg, Germany
Filed Dec. 15, 1969, Ser. No. 884,796
Claims priority, application Germany, Dec. 18, 1968, P 18 15 313.4
Int. Cl. B63h 11/07
U.S. Cl. 60—221 **8 Claims**



An upright housing is provided at the rear end of a watercraft and has a cross-sectional outline resembling a symmetrical trapezium.The narrowest side of the housing faces oppositely the intended movement of the watercraft and a pair of sidewalls extend from the narrowest side in the direction of intended movement. Inlet means are provided for admitting water into the housing and outlet means are in the narrowest side for expelling water from the housing. An expello vane is mounted in the housing for pivotal movement intermediate the respective side walls about an upright axis extending through the housing in the region of the outlet means.

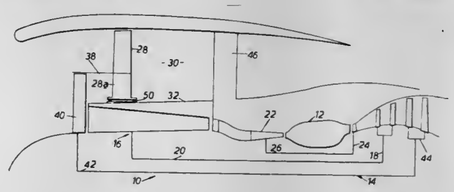
3,620,020
GAS TURBINE ENGINE
David George Halliwell, Allestree, Michael Vaughan Outram, Eggington, and Martin Hume Bryan-Brown, Etwall, England, assignors to Rolls-Royce Limited
Filed Apr. 14, 1970, Ser. No. 28,360
Claims priority, application Great Britain, Apr. 16, 1969, 19,360/69
Int. Cl. F02k 3/04
U.S. Cl. 60—226 **2 Claims**

A gas turbine by-pass engine has a compressor means, a combustion means and a turbine means, a rotatable main fan extends completely across the by-pass duct and a secondary fan is positioned upstream of the main fan and extends only partially across the by-pass duct. The second-



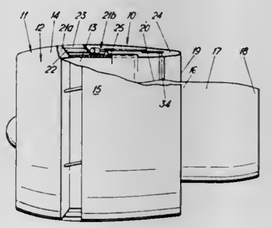
ary fan is driven by the turbine means and the main fan is mounted on a casing having blades driven by the compressor means.

3,620,021
GAS TURBINE ENGINES
Brian Wilfred Lawrie, Allestree, England, assignor to Rolls-Royce Limited, Derby, England
Filed Apr. 14, 1970, Ser. No. 28,361
Int. Cl. F02k 3/04
U.S. Cl. 60—226 **5 Claims**



A gas turbine by-pass engine has a compressor means, a combustion means and a turbine means, a freely rotatable main fan extends completely across the by-pass duct and a secondary fan is positioned upstream of the main fan and extends only partially across the by-pass duct, the secondary fan being driven by the turbine means.

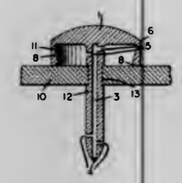
3,620,022
THRUST REVERSER FOR JET PROPULSION ENGINES
Richard D. Beale, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Oct. 7, 1969, Ser. No. 864,473
Claims priority, application Great Britain, Oct. 24, 1968, 50,568/68
Int. Cl. F02k 1/20, 3/04
U.S. Cl. 60—226 A **6 Claims**



A fan thrust reverser for a jet engine has an annular deflecting gap in the outer wall of the fan duct, and has pivotally mounted vanes at the downstream end of the

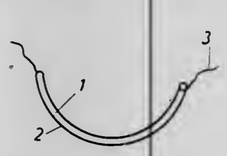
duct, a ram being provided to cause a helically movable wall member to cover or uncover the gap while also causing the vanes to unblock or block the fan duct, respectively.

3,620,023
PULSATING VALVES
Howard C. Schmid, 2700 Queen St., Missoula, Mont. 59801
Filed July 25, 1969, Ser. No. 844,857
Int. Cl. E02d *13/00*; B05b *15/02*; F16k *25/00*
U.S. Cl. 61—13 **1 Claim**



A device for use in sub-surface soil irrigators which pulsates from water pressure preventing ingress of roots and soil having a flexible feeder tube to prevent inlet clogging.

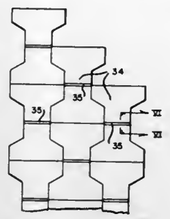
3,620,024
OPEN GUTTER
Georg Senn, Mutschellen, Switzerland, assignor to Spribag AG, Widen, Switzerland
Filed Sept. 16, 1969, Ser. No. 858,421
Claims priority, application Switzerland, Sept. 26, 1968, 14,370/68
Int. Cl. E02d *9/04*; E04d *13/06*
U.S. Cl. 61—14 **8 Claims**



A novel open gutter or drain for diverting liquids is disclosed, said gutter being characterized by the provision of a foil strip which is rigidly connected with at least one reinforcing element. The foil strip is deformed about its longitudinal axis thus bending the reinforcing element, the cross-section of the gutter so formed being arcuate in shape. The novel open gutter is such that it can easily be displaced in all directions without effecting a change in its cross-sectional configuration.

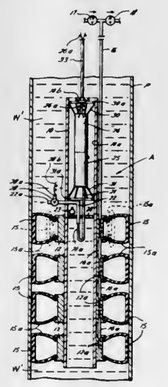
3,620,025
INTERLOCKING BOLTLESS LINING AND SUPPORT STRUCTURE FOR UNDERGROUND OPENINGS
Samuel Taradash, Liberty Township, Trumbull County, and Nicholas Chlumecky, Portland, Ohio, assignors to Commercial Shearing & Stamping Company
Filed Jan. 22, 1970, Ser. No. 5,046
Int. Cl. E21d *11/00*
U.S. Cl. 61—45 R **4 Claims**

A boltless interlocking lining and support structure for underground openings is provided made up of a plurality of segments of generally quadrilateral shape having end edges and side edges, the end edges of one such segment abutting the end edges of the next adjacent segments in generally circumferential relationship, and the side edges being provided with at least one indentation bounded by an outwardly extending lug at each end,



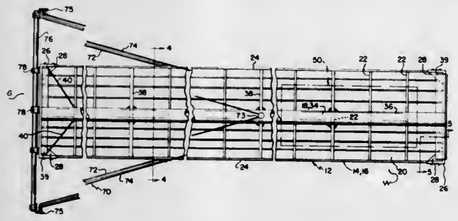
said lugs of one segment interfitting within the indentation of an adjacent side-by-side segment.

3,620,026
PILE DRIVING METHOD AND APPARATUS
J T. Mallard, 10203 Chadwick, Houston, Tex. 77029
Filed Nov. 17, 1969, Ser. No. 877,362
Int. Cl. E02d *7/18, 7/20*
U.S. Cl. 61—46.5 **5 Claims**



A pile driving method and apparatus wherein a baffle is provided in a pipe or other hollow pile, and a pressure differential is created across the baffle to move or vibrate the pile for either driving the pile into the ground or removing it from the ground.

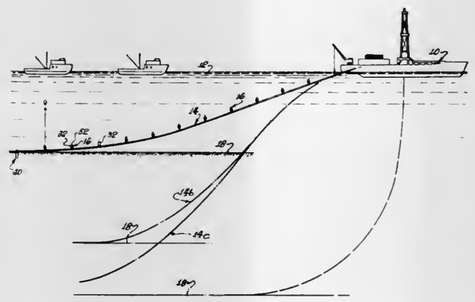
3,620,027
DOCK STRUCTURE
Edwin A. Nordell, Lyndhurst, Ohio, assignor to The Metal Craft Company, Chardon, Ohio
Filed Apr. 15, 1968, Ser. No. 721,386
Int. Cl. E02b *3/06*; E04b *5/02*; B63b *35/58*
U.S. Cl. 61—48 **7 Claims**



A dock structure wherein a dock member, forming a component of a dock, has a deck portion formed of inter-

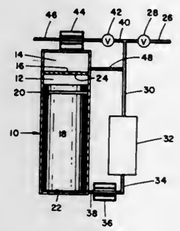
locking thin members rigidly connected together, is constructed to resist distortion and torsional twist, and is adapted to be anchored either rigidly at one end to shore or so as to rise and fall with the water level floating it.

3,620,028
PIPE LAY DOWN APPARATUS
Arthur E. Wilde, Garden Grove, Calif., assignor to Western Offshore Drilling & Exploration Company, Los Angeles, Calif.
Filed May 5, 1969, Ser. No. 821,765
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.3 **2 Claims**



A method and apparatus for laying subsea pipelines comprising the steps of attaching buoyant bodies, constructed in accordance with the present invention, at calculated predetermined distances along the pipeline to be laid; lowering the length of pipe with the bodies attached so that the curvature of the pipeline as it leaves the surface vessel, does not exceed a calculated angle; attaching the pipeline to the ocean floor; and causing the buoyant bodies of the present invention to be released and recovered. The buoyant body is of a hollow configuration with self-contained means for releasing the buoyant body from the pipe when the pipe reaches a substantially horizontal position on the subsea floor.

3,620,029
REFRIGERATION METHOD AND APPARATUS
Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals Inc., Allentown, Pa.
Filed Oct. 20, 1969, Ser. No. 867,594
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **13 Claims**

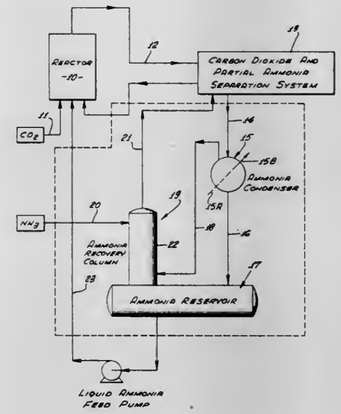


There is provided a device for cooling refrigeration fluid by expansion, comprising a displacer within a closed housing, said housing communicating through an orifice to another closed chamber so that the displacer can force a fluid through the orifice thereby doing work in the refrigeration cycle and conversely, the fluid can return through the orifice to move the displacer in the opposite direction at the proper time in the cycle. The invention is characterized in that the refrigeration is accomplished in a simplified manner without auxiliary equipment such as connecting rods, crank shafts, or the like to cycle the displacer. Also disclosed is the method of producing refrigeration by directly dissipating the expander work to heat by cycling a fluid through an orifice. Cycling of the fluid through the orifice is also the operative means of actuating the displacer.

3,620,030
METHOD OF PURIFYING VINYL FLUORIDE CONTAMINATED WITH IMPURITIES BY DISTILLATION IN THE PRESENCE OF CARBON DIOXIDE OR TRIFLUOROMETHANE
Yuichi Iikubo, Takuji Nishida, and Yoshiki Furukawa, Onoda, Japan, assignors to Onoda Cement Company, Limited, Yamaguchi, Japan
Filed Jan. 10, 1969, Ser. No. 790,416
Claims priority, application Japan, Jan. 12, 1968, 43/1,322
Int. Cl. F25j *3/08*
U.S. Cl. 62—11 **7 Claims**

Vinyl fluoride containing impurities such as acetylene and hydrogen fluoride is purified by distilling the gaseous mixture of vinyl fluoride and such impurities in the presence of a carbon dioxide gas or trifluoromethane.

3,620,031
UREA PLANT AMMONIUM RECOVERY SYSTEM
Robert N. Tennyson, Anaheim, Calif., assignor to The Fluor Corporation, Ltd., Los Angeles, Calif.
Filed June 18, 1968, Ser. No. 737,987
Int. Cl. F25j *1/00, 3/06, 3/08*
U.S. Cl. 62—17 **9 Claims**

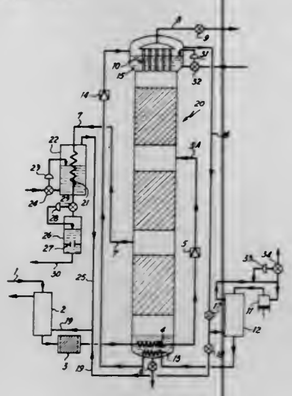


The invention is directed to a process for the recovery of ammonia from mixed ammonia and inert gaseous effluents from urea synthesis plants, by passage of such effluent through a first cooling zone to partially condense the ammonia, and then through a second cooling zone where most advantageously, the effluent from the first cooling zone is directly contacted with liquid ammonia to further deplete the inert gas of its ammonia content, liquid ammonia from both cooling zones being recovered and utilized as ammonia feed to the synthesis plant.

3,620,032
METHOD FOR PRODUCING HIGH-PURITY OXYGEN FROM COMMERCIALLY PURE OXYGEN FEED-STREAM

Guy Simonet, Paris, France, assignor to L'Air Liquide Société Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude

Filed May 16, 1968, Ser. No. 729,587
Int. Cl. F25j *3/02, 3/08*
U.S. Cl. 62—28 **1 Claim**

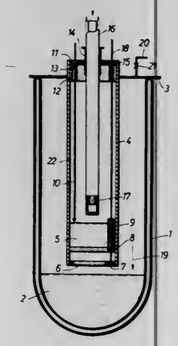


A method for producing high-purity oxygen in the liquid state through rectifying medium-purity oxygen, in which medium-purity oxygen is subjected to rectification in a column from which oxygen gas is bled below the feed, but well above the sump, the said gas being then liquefied, preferably in a constant-level liquid-nitrogen bath condenser, then withdrawn through a vessel with a flow regulator.

3,620,033
CRYOSTAT DEVICE

Albrecht Elsner, Hechtsheim, and Gustav Klipping, Berlin, Germany, assignors to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften, e.V., Gottingen, Germany

Filed Mar. 17, 1970, Ser. No. 20,163
Claims priority, application Germany, Mar. 19, 1969, P 19 13 789.4
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **4 Claims**

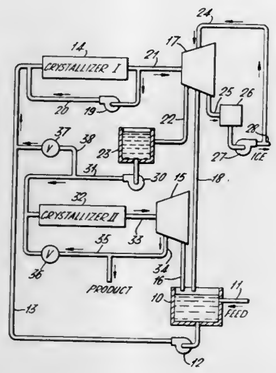


In a cryostat having a helium replenishing bath separated from a helium working bath by a first filter element made of a material which is at least partially impermeable to gaseous helium and helium I, as well as to any helium II having a temperature higher than that of the working bath, a second filter element of such material supported in the replenishing bath container spaced from and above the first filter element. The second filter element forms the normal floor of the replenishing bath. A space between the first and second filter elements is in communication with the replenishing bath container portion above the replenishing bath, whereby there is substantially no pressure difference across the second filter element so that the possibility of pressure-caused breakthrough of the replenishing helium into the working bath is eliminated.

3,620,034
MULTI-STAGE FREEZE CONCENTRATION OF COFFEE

Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Patent Corporation, Houston, Tex.

Continuation-in-part of abandoned application Ser. No. 512,365, Dec. 8, 1965, which is a continuation-in-part of application Ser. No. 321,020, Nov. 4, 1963. This application July 11, 1967, Ser. No. 652,532
Claims priority, application Great Britain, July 15, 1966, 31,831/66
The portion of the term of the patent subsequent to Nov. 8, 1983, has been disclaimed
Int. Cl. B01d *9/04;* **A23f** *1/08*
U.S. Cl. 62—58 **5 Claims**



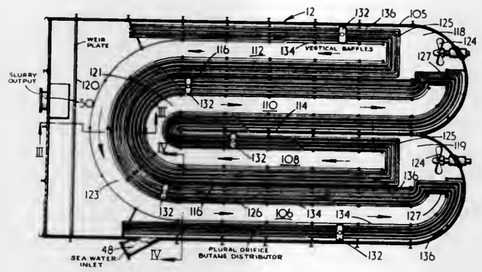
In a staged freeze concentration process for concentrating coffee solution, ice crystals are removed from the system after the first stage from less concentrated coffee solution. Ice crystals removed from the more concentrated coffee solution in the second stage are added to incoming feed. Coffee solution from which ice crystals are separated in the second stage is removed from the system as a product.

3,620,035
HELICAL FLOW CRYSTALLIZER IN A DESALINATION UNIT

Allan Martindale, Bramhall, Bryan R. Parr, Sale, and Michael J. S. Smith, Abingdon, England, assignors to Simon-Carves Limited, Cheadle Heath, Stockport, Cheshire, England

Filed Jan. 15, 1968, Ser. No. 697,762
Claims priority, application Great Britain, Jan. 17, 1967, 2,351/67
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **15 Claims**

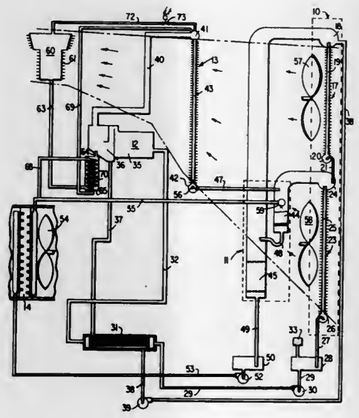
A method and apparatus for the production of fresh water from saline water wherein the saline water passes along an extended path during which a volatile liquid refrigerant is injected into the water on one side of the container only and causing boiling of the refrigerant which creates a turbulent flow about the baffles thus defining a helical flow path for the saline water, the saline water forming a slurry of ice crystals for subsequent removal and melting.



3,620,036
SOLUTION CONCENTRATION CONTROL IN ABSORPTION REFRIGERATION SYSTEMS

Louis H. Leonard, Jr., Dewitt, and William W. Bell, Jr., Marcellus, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,206
Int. Cl. F25b *15/06*
U.S. Cl. 62—101 **16 Claims**

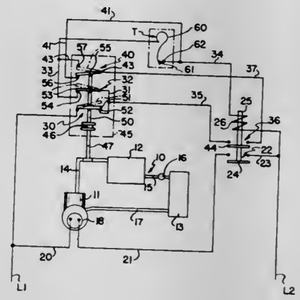


An absorption refrigeration system having a concentration control tank connected to receive refrigerant from a concentration control condenser which condenses vapor formed in the generator. A cooling medium is passed first over the absorber, then over the condenser, and finally over the concentration control tank to provide a control pressure therein. A concentration control passage, including a depending loop, extends between a region of the system which is at refrigerant condenser pressure into the concentration control tank. The difference in pressure between the concentration control tank and the refrigerant condenser is balanced by a column of liquid extending into the concentration control tank. When the cooling medium temperature drops, the difference in pressure between the concentration control tank and the refrigerant condenser is reduced, which causes refrigerant to be discharged from the concentration control tank into the strong absorbent solution. Conversely, when the cooling medium temperature rises, the difference in pressure between the concentration control tank and the refrigerant condenser increases causing the refrigerant, which is condensed in the concentration control condenser, to be stored in the concentration control tank. A vent passage is provided with a valve therein for rapidly discharging the contents of the concentration control tank into the strong solution circuit to protect against solidification in the event of an electrical power failure.

3,620,037
COMPRESSOR RESET DELAY CIRCUIT

Clyde L. Young, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed July 2, 1970, Ser. No. 51,931
Int. Cl. F25b *41/00*
U.S. Cl. 62—158 **6 Claims**



An electric motor driven refrigerating system for air conditioning a room or the like is controlled by a solenoid operated contactor. The solenoid circuit is controlled by a thermostatic switch, subjected to the air of the room, and a refrigerant head pressure operated switch so that the solenoid is energized by closing of the thermostatic switch only in the event a relatively low head pressure exists in the refrigerating system. The pressure switch is shunted out of the solenoid control circuit by a holding circuit closed by the solenoid during normal operating refrigerant pressures at which the switch is open. To prevent interruption of the solenoid circuit by possible "chattering" of the thermostatic switch contacts during initial closure thereof, the solenoid holding circuit is shunted around the thermostatic switch by a pressure operated double throw switch at relatively low refrigerant pressures and operates upon attainment of a normal refrigerant pressure in the system to connect the thermostatic switch in series with the solenoid circuit.

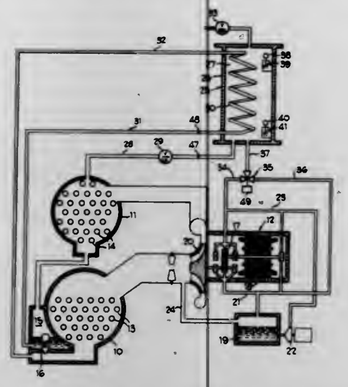
3,620,038
PURGING APPARATUS FOR REFRIGERATION SYSTEM

Paul W. Muench, Medford Lakes, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 17, 1970, Ser. No. 47,059
Int. Cl. F25b *43/04*
U.S. Cl. 62—195 **10 Claims**

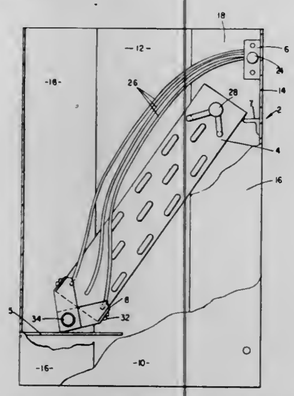
An apparatus for purging non-condensible gases from a refrigeration system and having a chamber receiving a mixture of condensible refrigerant vapor and non-condensible gases from the condenser of the system, a cooling coil in the chamber and using refrigerant from the system to condense the refrigerant vapor, and a com-

pressor lubricant pump connected to the chamber and supplying oil under pressure to the chamber and providing a liquid piston effective to force the non-condensible gases from the chamber through a relief valve to



the atmosphere and also providing means effective to draw the condensed liquid refrigerant and cooled oil mixture into the compressor lubricant reservoir and return of the refrigerant to the system.

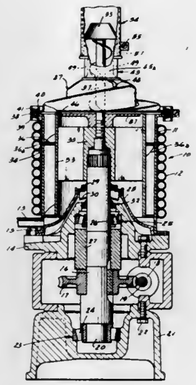
3,620,039
EVAPORATOR COIL PACKAGE
John A. Williams, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,811
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **6 Claims**



An evaporator coil package for use in an air conditioning system. The width of the evaporator coil plenum enclosure may be varied for engagement with duct or air handling device used in conjunction with the evaporator coil package.

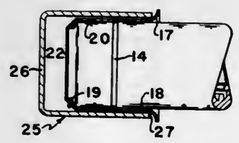
3,620,040
COMBINATION ICE AUGER AND ICE PRESS
Jack F. Clearman, Stevensville, Mich., and Leonard W. Ohlsson, St. Paul, and Robert H. Sitko, Stillwater, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Oct. 17, 1969, Ser. No. 867,223
Int. Cl. F25c *1/14*
U.S. Cl. 62—354 **27 Claims**

An ice maker machine employing a refrigerated chamber and a harvesting auger positioned with its flights in scraping relation to the inner wall of the refrigerated chamber to continuously scrape ice particles from the wall thereof, and being provided with a vertical shaft for supporting the harvesting auger. A collecting chamber receives the discharge from the harvesting auger and has a configuration characterized by one or more channels for directing flake ice product cirumferentially as well as radially inwardly into a disharge chamber. A compression



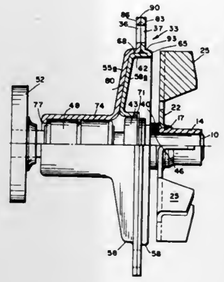
auger in the form of a screw shaft co-rotatable with the harvesting auger drives the ice product in the form of a confined columnar path through a compression device prior to discharge of the ice product from the machine. The machine is further characterized by the provision of bearing means which engage the shaft below the freezing chamber and provide a cantilever type support for the auger and the screw shaft, thereby providing for unimpeded flow of flake ice product axially of the machine.

3,620,041
RESLEEVE ASSEMBLY FOR SHAFTS
Raynor J. Waddell, 2987 Pinnacle St., Port Coquitlam, Vancouver, British Columbia, Canada, and Karl W. Eggler, 6466 Deer Lake Drive, Burnaby, Vancouver, British Columbia, Canada
Continuation-in-part of application Ser. No. 673,832, Oct. 9, 1967. This application Sept. 11, 1969, Ser. No. 871,444
Int. Cl. F16c *1/00*
U.S. Cl. 64—1 **16 Claims**



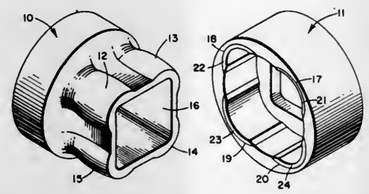
A thin walled metallic sleeve provided with an exterior flange at one end to which a tool may be applied for drawing the sleeve over an end portion of the shaft to be resleeved, the sleeve having interior shaft engaging means at its other end for engaging the end of the shaft and preventing movement of the sleeve therealong, the sleeve very slightly smaller in diameter than the end portion of the shaft so that it does not rotate thereon.

3,620,042
SHEET METAL WATER PUMP
Robert J. Gray, Fairfield, Ill., assignor to Airtex Products Div., United Industrial Syndicate, New York, N.Y.
Filed Sept. 2, 1969, Ser. No. 854,541
Int. Cl. F04d *29/00*; F16c *1/06*
U.S. Cl. 64—3 **6 Claims**



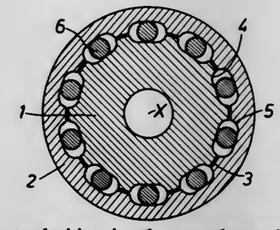
A water pump for automobiles is manufactured with a sheet metal body and impeller. The construction is highly economical by virtue of the use of stampings wherein the pump has a double thickness non-breakable structure.

3,620,043
SPLINE-TYPE PIVOTS, UNIVERSAL JOINTS AND FLEXIBLE COUPLINGS
Gottfried K. Gantschnigg, Crownsville, Md., assignor to ARINC Research Corporation, Annapolis, Md.
Filed May 12, 1970, Ser. No. 36,515
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **11 Claims**



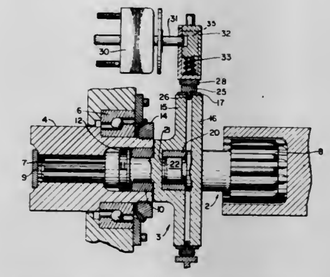
A universal joint and the like which obviates the need for the conventional double-pivot, three member arrangement by providing a plurality of equally spaced bearing surfaces on each of a pair of cooperating members. One of the members is the shaft or male portion and is provided with a plurality of substantially circular shaped and profiled segments integrally formed thereon. The other member is the housing or female portion and has a like number of recessed surfaces formed with an arcuate configuration. The shape of this arcuate configuration may be varied according to the intended use. For example, it may be circular with a radius equal to that of the circular profiled segments, if only small relative movement is desired, or of larger radius if a large amount of relative movement is desired. It may also be cylindrical if it is desirable to have movement such as that obtained with a splined shaft. The surface of the arcuate configuration is also provided with a bushing for protection against wear and for self-lubrication such as a Teflon insert.

3,620,044
POWER TRANSMITTING SYSTEM
Claude Latour, Garches, France, assignor to Société a Responsabilite Limitee Société d'Etudes et de Developpement Industriel Proclem, Levallois-Perret, France
Filed Jan. 22, 1970, Ser. No. 4,992
Claims priority, application France, Jan. 31, 1969, 6902194
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 **7 Claims**



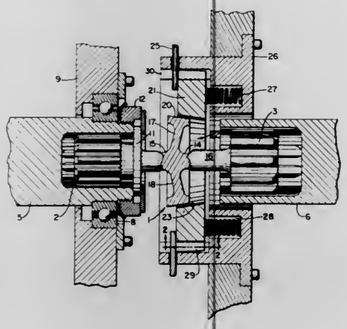
Cyclic irregularities in the angular velocity of the drive to a rotational coupling are compensated for by providing angular play in the coupling equal to the peak to peak amplitude of the irregularities in angular displacement of the drive member of the coupling. The coupling comprises inner and outer members having complementary recesses or projections on their facing surfaces, forming housing for coupling members dimensioned to permit the desired angular play. The coupling members are preferably cylindrical and may be of elastic material.

3,620,045
SHAFT DISCONNECT-NONSHEAR TYPE
John L. Butterfield, Erie, Pa., assignor to General Electric Company
Filed July 2, 1970, Ser. No. 51,980
Int. Cl. F16d *3/00*
U.S. Cl. 64—28 **6 Claims**



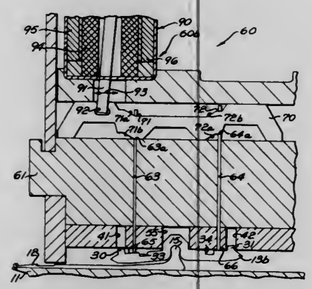
A nonresettable, disconnect arrangement is described which is particularly useful for disconnecting high speed generators such as those utilized in aircraft electrical systems. The disconnect coupling consists of two splined members which are respectively coupled to the generator and the driving source. These members include two circular flanged portions which are rigidly connected by a torque transmitting perforated ring. The perforated ring is surrounded by another ring which supports a number of inwardly extending cogs which project through the perforations in the torque transmitting line. A pair of disc brakes are selectively actuated to engage the cog carrying ring when disconnect is desired. When the brakes engage the ring, the ring and the cogs are held in a fixed position while the flange members and the perforated ring continue to rotate. The cogs act like teeth or shearing members and cut away the remaining metal between the perforations, severing the ring and disconnecting the generator from the driving source.

3,620,046
GENERATOR SHAFT DISCONNECT
James L. Wenzel, Northeast, and Lawrence Arthur Clark, Erie, Pa., assignors to General Electric Company
Filed July 2, 1970, Ser. No. 51,981
Int. Cl. F16d *3/00*
U.S. Cl. 64—28 **6 Claims**



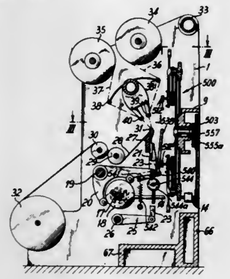
A non-resettable disconnect arrangement is described which is particularly useful for disconnecting high speed generators such as those utilized in aircraft electrical systems. A splined, disconnect coupling member is disposed between the driving and driven shafts. The shaft of the coupling contains at least one reduced diameter shear section which ruptures to disconnect the driving and driven shafts. A conical friction disc is mounted on the shaft of the disconnect coupling. An externally controlled friction ring having a corresponding inner conical surface is brought into contact with the disc during disconnect and the torque exerted on the shaft when the disc and ring engage ruptures the shear sections and disconnects the generator.

3,620,047
DIAL MECHANISM FOR KNITTING MACHINE
Horst Paepke, Rottenburg (Neckar), Germany, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed May 19, 1969, Ser. No. 825,867
Int. Cl. D04b *9/06, 9/38*
U.S. Cl. 66—25 **4 Claims**



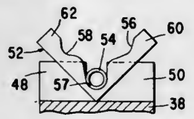
A dial mechanism for a knitting machine comprises a dial member rotatable through a plurality of knitting stations. Knitting needles are carried by the dial member. Each of the knitting needles has a needle-moving jack associated therewith. Certain of the needle-moving jacks are long butt jacks and certain of the other needle-moving jacks are short butt jacks. Cam means are located at each knitting station and define a knitting cam track and a welting cam track, respectively, into which butts on the needle-moving jacks move, depending upon the position of the needle-moving jacks as they move through each station. An electromagnetic selector mechanism is provided at each station for varying the position of the needle-moving jacks relative to their associated needle to control the operation of the needles in the station.

3,620,048
WEFT SUPPLYING DEVICE FOR A WARP KNITTING MACHINE
Stefan Furst, Monchen-Gladbach, Germany, assignor to Walter Reiners, Monchen-Gladbach, Germany
Filed Sept. 26, 1969, Ser. No. 861,250
Claims priority, application Germany, Sept. 27, 1968, P 17 85 482.9
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 **5 Claims**



Warp knitting machine having a zone wherein needles are disposed and means for supplying warp threads to the needles including a device for filling a weft having first holder members for making the weft ready outside the needle zone, means for guiding the weft to the warp threads, the first holder members having a thread guide cooperating therewith, for making the weft ready, the thread guide being displaceable in a closed travel path, means for feeding a plurality of wefts selectively to the thread guide for entrainment thereby in the closed travel path thereof, a severing member located adjacent and coordinated with the first holder members for cutting into predetermined lengths the weft to be made ready, the thread guide having a clamping member for individually gripping the thread for each weft, and second holder means located adjacent the travel path of the thread guide and adapted to receive from the latter the weft gripped by the clamping member.

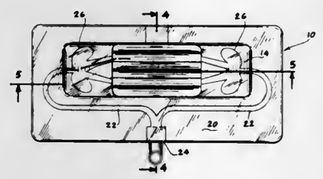
3,620,049
STRIPING BOX FOR CIRCULAR KNITTING MACHINES WITH ADJUSTABLE FINGER-ACTUATING JACKS
Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, Fla., assignors to The Singer Company, New York, N.Y.
Filed Apr. 9, 1970, Ser. No. 27,014
Int. Cl. D04b *15/58, 15/80*
U.S. Cl. 66—138 **1 Claim**



Finger-actuating L-shaped jacks for the toothed drum of a striping box are each recessed to receive a spring mounted in an annular groove of the drum such that a

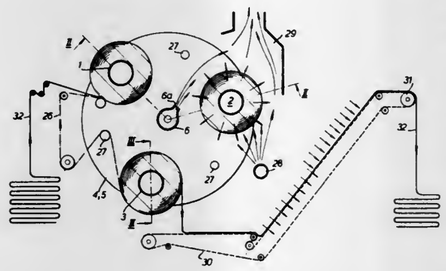
jack may be pivoted about the spring to cause one leg to project from the drum teeth on one side of the spring or the other leg from the drum teeth on the other side of the spring, and such that a jack may be moved under the spring and disposed to relocate a projecting leg in a new position on the one side or the other of the spring.

3,620,050
FLUIDIC WASHING MACHINE
Paul J. Glasgow, Woodmere, N.Y., assignor to Glasgow Products, Inc., Woodmere, N.Y.
Original application Feb. 25, 1969, Ser. No. 801,991. Divided and this application Apr. 27, 1970, Ser. No. 43,272
Int. Cl. B05c *3/05;* **D06f** *19/00*
U.S. Cl. 68—355 **4 Claims**



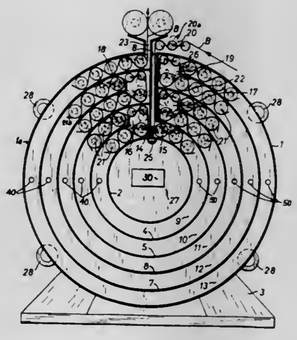
A machine for washing objects, utilizing the vibratory and oscillatory effects of fluidic oscillators including a container for articles to be washed, a plurality of fluid discharge outlets directly inwardly of the container and at least one fluidic oscillator in communication with the discharge outlets to provide pulsation of the fluid discharged into the container.

3,620,051
TEXTILE DECATISING APPARATUS
Dieter Riedel, Minden, Westphalia, Germany, assignor to Drabert Sohne, Minden, Westphalia, Germany
Filed May 7, 1970, Ser. No. 35,336
Claims priority, application Germany, Nov. 10, 1969, P 19 56 399.6
Int. Cl. D06c *1/00*
Int. Cl. 68—8 **6 Claims**



Textile decatising apparatus comprising three perforated cylinders rotatably mounted in supporting discs. The cylinders are symmetrically arranged around the axis of the discs which are rotatable to locate each cylinder sequentially at first, second and third process stations. At the first station, the cylinder is wound with material to be decatised, at the second station, the material wound on the cylinder is decatised by steam passed through the cylinder, and at the third station the decatised material is unwound from the cylinder.

3,620,052
CONTAINER FOR THE CONTINUOUS TREATMENT OF WEB- OR STRAND-LIKE TEXTILE MATERIAL WITH A TREATMENT MEDIUM
Peter Schroeder, Arni, Switzerland, assignor to Paul Weber AG, Rothrist, Switzerland
Filed Aug. 10, 1970, Ser. No. 62,572
Claims priority, application Switzerland, Aug. 15, 1969, 12,407/69
Int. Cl. B05c *3/132*
U.S. Cl. 68—9 **18 Claims**

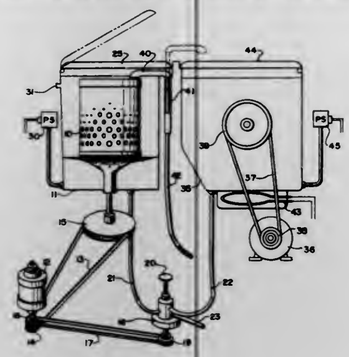


A container for the continuous treatment of web- or strand-like textile material with a treatment medium is disclosed. The container is of substantially "annular" configuration, as such term is used herein, and is subdivided into compartments by a plurality of concentrically arranged intermediate walls. The compartments are divided at their highest point into sectors by means of a radial chute or shaft which extends through the container and communicates with the innermost compartment. Each compartment opens at the region of the shaft into its neighboring compartment alternatingly to each side of the shaft. Furthermore, means are provided in the container in order to guide the textile web or the like through the shaft and thereafter successively through all of the compartments for the purpose of treating such textile web by the treatment medium which is located in each compartment.

3,620,053
SPIN DRYERS
Harold George Dunn, Ruislip, England, assignor to The Hoover Company, North Canton, Ohio
Filed Aug. 4, 1969, Ser. No. 847,304
Claims priority, application Great Britain, Aug. 15, 1968, 39,028/68
Int. Cl. D06f *29/00, 39/08*
U.S. Cl. 68—23.5 **2 Claims**

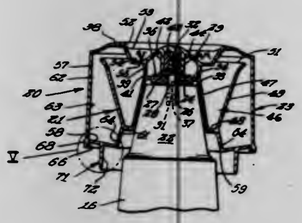
A spin extraction machine for spin rinsing, and spin extraction of water from, a clothes load to be used in conjunction with a clothes washer and having both spin rinsing and spin extraction modes of operation. The spin extraction machine comprising a rotatable perforate spin basket rotatably mounted about its axis within a stationary outer container. During spin rinse the spin basket is preferably intermittently rotated for a plurality of rinse

cycles while a continuous stream of rinse water is directed toward the interior of the spin basket. The maximum rotational speed of the spin basket during a rinse cycle is that corresponding to a radial acceleration of less



than 300 *g*. During the spin extraction mode of operation, the rinse water stream is shut off and the spin basket is accelerated to a speed substantially higher than the maximum speed during spin rinse.

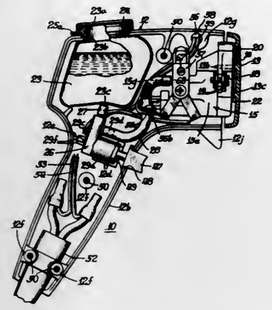
3,620,054
LIQUID DISPENSER FOR AUTOMATIC WASHING MACHINE
Reinhold A. Drews, St. Joseph, and Robert S. Trembath, Benton Harbor, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 26, 1969, Ser. No. 802,451
Int. Cl. D06f *39/02*
U.S. Cl. 68—17 A **6 Claims**



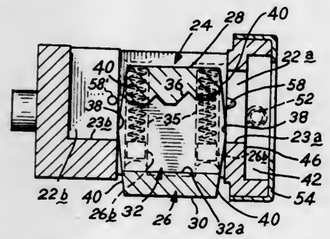
A two part centrifugal dispenser for mounting on an agitator of a laundry machine for discharging liquid into the machine. The parts are attached removably to the agitator in nested relationship and are easily assembled without the use of special fasteners or adhesives. One of the parts has a lip seal which tightly engages a peripheral flange on the other member or part. A downwardly extending, annular wall surface or guard flange is formed outwardly of discharge outlet apertures to prevent liquid spillage.

3,620,055
PORTABLE STEAMER
Donald L. Blachly, Glendale, and Richard A. Smith, Milwaukee, Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.
Filed May 20, 1970, Ser. No. 38,972
Int. Cl. A47j *51/00*; D06c *1/00*
U.S. Cl. 68—222 **13 Claims**

A portable, hand-held steamer comprising a casing with a head portion and a depending handle. A metal plate forms a front closure wall of the casing head portion and is provided with steam discharge ports therein for directing a flow of steam onto a garment. A flash type steam generating chamber is mounted in the head portion of the casing for converting water to steam and directing the steam out through steam discharge ports. Thermostatically controlled electric heating means is provided for maintaining wall surfaces of the steam generating chamber at a temperature sufficient to flash water striking the same into steam. A refillable water reservoir is provided in the head portion, and liquid pump means is in fluid communication therewith. Conduit means is provided for delivering liquid to the flash chamber, and the pump includes an actuator projecting outwardly of the handle for hand manipulation to pump water from the reservoir into the steam generating chamber.



3,620,056
LOCKING CYLINDER
John F. Weber, Jr., Chicago, Ill., assignor to E. Edelmann & Co.
Filed Feb. 25, 1970, Ser. No. 13,996
Int. Cl. E05b *15/14, 29/02*
U.S. Cl. 70—362 **6 Claims**



An inexpensive tumbler-type lock is provided by a barrel with an axially elongated tumbler slot having an elongated tumbler arranged for both translational and rocking movement therein. The two modes of movement of the tumbler, coupled with spring bias means which together with the thrust force of the entering key provides for a pitching moment on the tumbler, yields a simple and inexpensive lock that provides the security sought in tumbler-type locks.

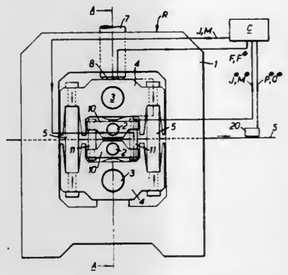
3,620,057
KEY TAG
Harold Holland, Cranston, R.I., assignor to Republic Corporation, Los Angeles, Calif.
Filed Nov. 24, 1969, Ser. No. 879,275
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **5 Claims**

A key tag including a holder molded in a one-piece construction having outwardly extending tongues formed as an integral part thereof, each of the tongues including a free end that is foldable for connection to the holder and having a key ring mounted thereon, at least one of the tongues having the free end thereof releasably connected



to the holder so that the key ring located on the releasable tongue may be removed from engagement with the holder as desired.

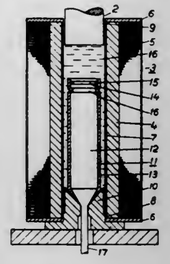
3,620,058
HOT OR COLD ROLLING OF STRIP OR PLATE
Bruno Sabatini, Thames Ditton, Surrey, and Kenneth A. Yeomans, Worksop, England, assignors to The British Iron and Steel Research Association
Filed July 7, 1969, Ser. No. 839,506
Claims priority, application Great Britain, July 9, 1968, 32,756/68
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **3 Claims**



This invention relates to the hot or cold rolling of strip or plate to a substantially constant profile, and provides a method of rolling in which the total rolling force is sensed during rolling of the material, and in which the magnitudes of roll-bending forces and moments applied to the rolls are independently and simultaneously varied in proportion to changes in the total rolling force so as to maintain substantially constant the desired profile of the rolled material.

3,620,059
HYDROSTATIC EXTRUSION OF COMPOUND MATERIAL
Jan Nilsson, Robertsfors, Sweden, assignor to Almänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Sept. 9, 1968, Ser. No. 758,308
Claims priority, application Sweden, Mar. 15, 1968, 3,513/68
Int. Cl. B21c *23/22*
U.S. Cl. 72—60 **17 Claims**

In hydrostatic extrusion of a wire or rod constituted by a casing of one material and a core of another, usually a softer material, a billet is extruded through a die from a pressure chamber provided with a conical surface, adjacent the die opening. The billet is so constructed that the axial forces created by the differences in molding resistance of the different materials are transferred between the casing and the core. This is done by pressing the rear end of the casing into a groove in the core.



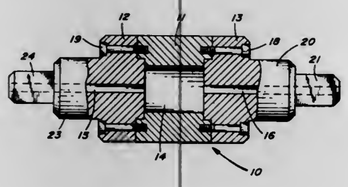
The joint between the casing and core is sealed at the rear ends. The front end of the core is shaped to match the conical surface of the die, and the casing may be brought down over this front end, the front end of the casing tapering in thickness. Successive casing and cores may be joined onto the remaining parts of casings and cores of a previous billet which has been largely extruded.

3,620,060
APPARATUS FOR FORMING CLOSING HEADS AT RIVETS
Paul Ramseier, Pfaffikon, Switzerland, assignor to Bracker AG, Pfaffikon, Switzerland
Filed Apr. 3, 1970, Ser. No. 25,513
Claims priority, application Switzerland, Apr. 11, 1969, 5,501/69
Int. Cl. B21d *1/02*
U.S. Cl. 72—112 **9 Claims**



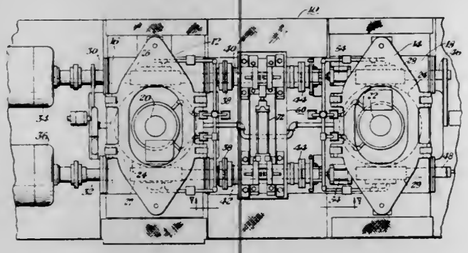
There is disclosed an apparatus for forming closing heads at rivets with the aid of a rivet set or anvil which carries out loop-like revolving movements. According to the invention, the rivet set is supported in a crank-like element which cooperates with a drive shaft, the axis of rotation of said crank-like element being inclined with respect to the axis of rotation of the drive shaft. Further, the crank axis of the crank-like element in one extreme position as least approximately coincides with the axis of the drive shaft and in the other extreme position such crank axis intersects the axis of the drive shaft at the region of the rivet.

3,620,061
DESIGN OF ULTRASONIC TRANSDUCERS FOR USE WITH ROLLING MILL ROLLS
James W. Cunningham, Vandergrift, and George R. Douglas, Pittsburgh, Pa., assignors to the United States of America as represented by the Secretary of the Navy
Filed Oct. 3, 1969, Ser. No. 863,480
Int. Cl. B21b *27/00*
U.S. Cl. 72—199 **3 Claims**



A hollowed out roller from a rolling mill with an ultrasonic transducer placed within the opening. The transducer is a circular electromagnetic or a piezoelectric type which creates vibrations that radiate outward from the center of the roller. To withstand excessive vibrational forces, the ultrasonic transducer is either babbit jointed or epoxied into position within the roller.

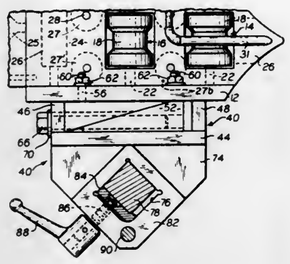
3,620,062
MILL UNJAMMING DEVICE
John L. Prokell, Bentleyville, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.
Filed May 16, 1969, Ser. No. 825,318
Int. Cl. B21b *31/24*
U.S. Cl. 72—248 **17 Claims**



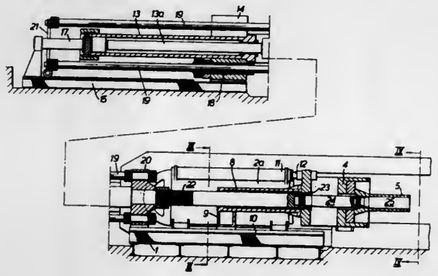
I disclose an unjamming mechanism for rolling mill screwdown means and the like, said mechanism comprising a pair of oppositely rotatable shafts coupled to said screwdown means, shaft displacing means mounted upon each of said shafts for imparting equal and opposite angular displacements thereto, and motive means coupled between said shaft displacing means for actuating said displacing means in opposite directions.

3,620,063
MICRO-ADJUSTING GUIDE
William Kursinczky, Woodbridge, N.J., assignor to General Cable Corporation, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,866
Int. Cl. B21b *39/20*
U.S. Cl. 72—250 **12 Claims**

Roll passes for rolling rods or other work pieces are supported by a platform having micro-adjusting means to shift the platform selectively in vertical and horizontal directions to obtain perfect positioning with respect to a rest bar of a hot rolling mill. A substitute rest bar provides a guide for the horizontal adjustment, and there is a clamp for crude adjustment and cam means (screw) for the micro-adjustment.



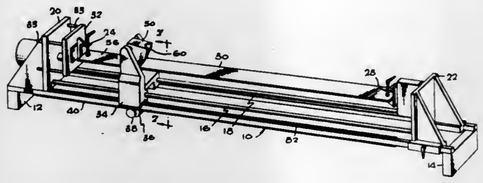
3,620,064
EXTRUSION PRESSES
Ronald John Elger, Parkstone, Dorset, and Ian Lewis Cameron, Blandford, Dorset, England, assignors to Fielding Plant Design Limited, Bournemouth, Hampshire, England
Filed July 2, 1969, Ser. No. 838,568
Claims priority, application Great Britain, July 5, 1968, 32,267/68
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **18 Claims**



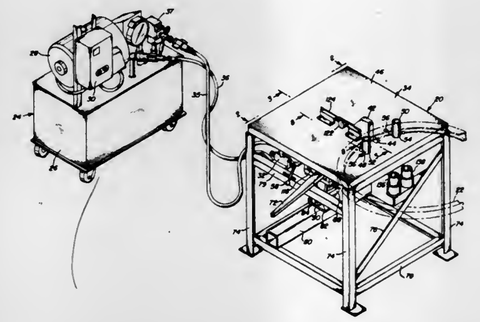
An extrusion press having two or more main cylinders in which the free space between the cylinders is used to accommodate guide means for the moving crosshead. Individual supporting means are provided for each cylinder through which the weight of that cylinder is independently transmitted to the press-bed.

3,620,065
FOIL FORMING DEVICE
Wilford A. Swanson, 11609 Pendleton St., Sun Valley, Calif. 91352
Filed Dec. 20, 1968, Ser. No. 785,580
Int. Cl. B21d *11/02*
U.S. Cl. 72—297 **10 Claims**

A machine and method is described for forming shapes in preferably elongated workpieces which are fixedly mounted between two end brackets on a bed. The machine includes a pair of arcuately shaped forming tools. One of the tools has a desired shape which mates with the shape of the other tool. The tools are mounted on either side of the material being formed and are rotated simultaneously as the carriage to which they are mounted moves along the longitudinal axis of the workpiece. The arcuate radii of the forming tools are at a dimension considerably less than the over-all length of the workpiece and the movement of the carriage and the rotation of the tools is so designed that a complete arcuate rotation of the tool is completed as the tool is moved along the entire length of the material, thus forming the desired shape.



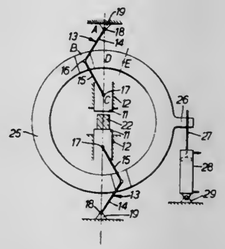
3,620,066
METAL BENDING METHOD AND MACHINE THEREFOR
Neville T. Henkel, 9582 Labrador Lane, El Cajon, Calif. 92021, and Harry Wright, El Cajon, and Herman W. Scharer, Spring Valley, Calif.; said Wright and said Scharer assignors to said Henkel
Filed June 25, 1969, Ser. No. 836,531
Int. Cl. B21d *31/00*
U.S. Cl. 72—362 **6 Claims**



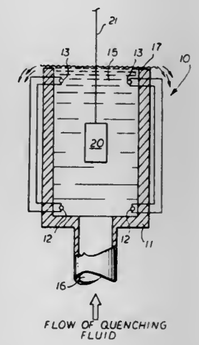
A method of bending metal which consists in applying pressure to the area where bending is to be effected, the force of the pressure having a value which approximates that at which the bending occurs, the method also including augmenting such pressure, preferably manual, to effect the ultimate degree of bending of the metal, such method being performed by a machine including a device for applying pressure, preferably a hydraulic device, and another device, preferably manually powered, for augmenting the force of the first mentioned device, but at a lesser pressure value.

3,620,067
ARTICLE SHAPING OR FORMING MACHINES
Keith Ross, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, England
Filed Sept. 17, 1969, Ser. No. 858,618
Claims priority, application Great Britain, Sept. 18, 1968, 44,376/68
Int. Cl. B21j *9/18*
U.S. Cl. 72—407 **3 Claims**

A machine for hot or cold forging of a workpiece or for compacting metal powder in a die into a solid workpiece has a support and at least one tool reciprocatable towards and away from the support, a first link is pivotally secured at one end to the tool and is pivotally jointed at the other end to one end of a second link, the second link being pivotally secured at its other end to anchor means which can be displaced towards and away from the support. The pivot joint is reciprocated through a position in which the links are in line between positions in which the links are inclined to one another. The pivot joint may be reciprocated by means of a double-acting fluid operated piston and cylinder device. A plurality of similar pivot joints may be operated simultaneously and in synchronism by connecting all the pivot joints to an annular ring which is reciprocated about its axis.



3,620,068
QUENCH CALORIMETER
Robert P. Cary, Chicago, and Philip E. Cary, Joliet, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 24, 1970, Ser. No. 13,556
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 R **8 Claims**



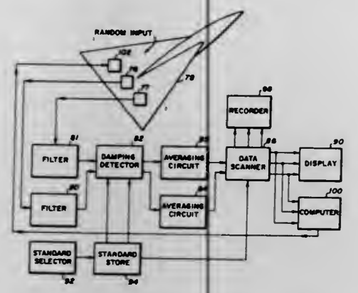
An instrument to measure and record the change in temperature of a quenching fluid during a quench cycle for a metal specimen. The instrument includes a quench tank filled with a quenching fluid into which the specimen is immersed and a plurality of thermocouples connected in series to form a thermopile which is connected to an electrical recorder. The quenching fluid is circulated into the tank at its bottom and out its top. The opposing junctions of the thermocouples are suitably located to be sensitive to the temperature of the inflowing and outflowing fluid, respectively.

3,620,069

METHOD AND APPARATUS FOR MEASURING THE DAMPING CHARACTERISTICS OF A STRUCTURE

Henry A. Cole, Jr., Los Altos, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 24, 1969, Ser. No. 793,771
Int. Cl. G01h 1/00; G01l 19/00
U.S. Cl. 73—67.2 10 Claims



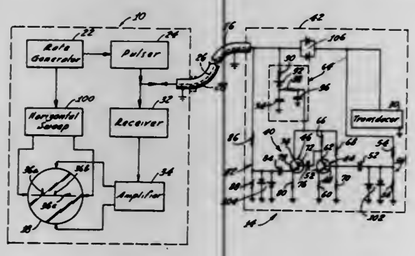
Apparatus for measuring the damping characteristics of a structure or system during excitation by random forces or influences. The "RANDOMDEC" apparatus is comprised of at least two parallel sampling circuits which perform time sequential sampling operations on predetermined portions of a given input signal. The corresponding outputs of each sampling circuit are then added together at a plurality of output terminals. From each output terminal a sampling transient indicative of a point on the damping characteristic of the structure can be obtained. In accordance with the invention, a system is also disclosed utilizing this apparatus to provide an on-the-line damping ratio and period detection and display apparatus including means for instantaneously observing the damping characteristics of the monitored structure and providing an output control signal which can be used to influence the characteristics of the structure or the forces applied thereto in a selected manner.

3,620,070

ULTRASONIC MATERIAL TESTER

Jack T. Collins, Boulder, Colo., assignor to Automation Industries, Inc., El Segundo, Calif.

Continuation of application Ser. No. 575,210, Aug. 3, 1966. This application Dec. 22, 1969, Ser. No. 883,677
Int. Cl. G01n 29/04
U.S. Cl. 73—67.8 16 Claims



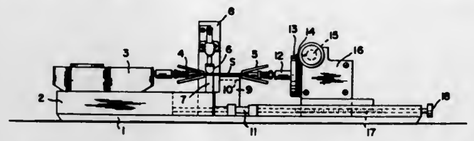
An ultrasonic tester having a pulser and receiver connected to a search unit with a transducer through a coaxial cable. A preamplifier, integral with the transducer in the search unit is provided to improve the signal to noise ratio of the returned echo signals. A power supply for the preamplifier is also provided integral with the search unit. The power supply is energized by the transmitted pulse, whereby a portion of the transmitted pulse is rectified and filtered to provide operating voltages to the preamplifier.

3,620,071

TESTING MATERIALS FOR RESILIENCE AND STIFFNESS

Louis E. Kelley, Wyncote, Raymond B. Alexander, Philadelphia, and Edward M. Sloma, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed June 5, 1970, Ser. No. 43,874
Int. Cl. G01n 3/26
U.S. Cl. 73—99 5 Claims



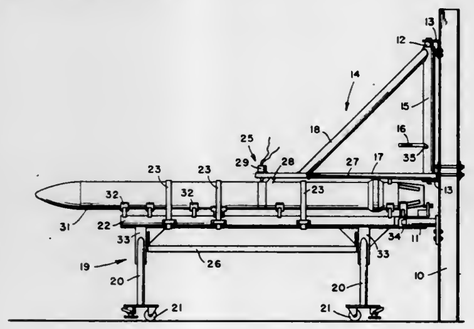
Resilience and stiffness of a fabric specimen are determined from measurements of the tensile load that induces a minimum oscillation in a fabric specimen and the time required for an initial complete oscillation cycle at the tensile load. An apparatus useful for making these measurements comprises means for subjecting the specimen to a longitudinal tensile load, means for holding an end of the specimen and means for applying a releasable torque to another end around the longitudinal axis of rotation of the specimen while the specimen is subjected to the tensile load to thereby twist the specimen through an angle of rotation, and means for measuring the time period and oscillation cycles upon release of the specimen from the applied torque. Means are provided for mechanically measuring the applied tensile load and the applied releasable torque. Means are also provided for electrically sensing and mechanically recording the oscillation periods of the specimen from application of torque to damping after release.

3,620,072

RESTRAINING COLLAR DEVICE FOR SQUIBBING MISSILE MOTORS

Allan G. Barrett and Francis L. Albers, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Apr. 23, 1970, Ser. No. 31,332
Int. Cl. G01m 17/00
U.S. Cl. 73—117.4 2 Claims



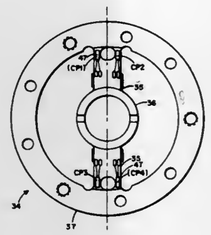
A device for restraining missile motors for squibbing. It comprises an alignment fixture and a restraining collar assembly mounted to a back plate whereby when a missile is moved into alignment the restraining collar assembly engages the missile hook or hanger on the outside of the motor casing thereby accurately positioning the missile so that current will flow. Only when accurately positioned will the missile motor be squibbed.

3,620,073

CONTROL WHEEL FORCE STEERING APPARATUS

Burnell N. Robbins, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 18, 1968, Ser. No. 760,469
Int. Cl. G01l 3/00; G05g 1/04; B64c 13/04
U.S. Cl. 73—133 4 Claims



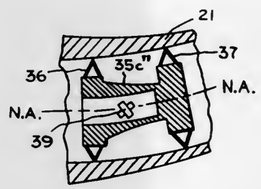
A control wheel force transducer for controlling through an automatic pilot an aircraft in pitch and roll by suitable signals, develops such signals by the use of strain gages or the like incorporated or mounted on a deformable member which is deflected from a normal position on control wheel movement in one direction to supply or generate roll control signals and is deflected on control wheel movement in a second direction at an angle to the first direction to supply or generate pitch control signals.

3,620,074

SHEAR-TYPE TRANSDUCERS COMPENSATED FOR EFFECTS OF NON-UNIFORM BENDING

Eric Laimins, Belmont, and Harry E. Lockery, Sudbury, Mass., assignors to BLH Electronics, Inc., Waltham, Mass.

Filed Jan. 19, 1970, Ser. No. 3,719
Int. Cl. G01l 5/12
U.S. Cl. 73—141 A 6 Claims



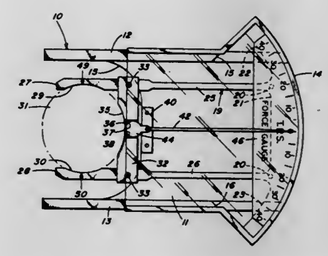
A shear-responsive strain gage transducer, mounted at spaced positions along a load-carrying member to characterize shear and the related loading, but also tending to develop error because of non-uniform bending of the load-carrying member, is structed for inherent mechanical suppression of bending-induced outputs which would not otherwise be electrically self-cancellable; in the case of a preferred weight-characterizing shear-type transducer colleted at two longitudinally-spaced positions inside a hollow non-uniform axle of an aircraft landing gear, the colleted elastically-deformable sensing element carrying the strain gages has an asymmetry of proportions and/or longitudinal orientation which reduces to insignificant amounts any shear-induced displacements resulting from the particular non-uniform bending of that non-uniform axle.

3,620,075

FORCE GAGE (PILOT'S)

William R. Edwards, California, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1969, Ser. No. 868,540
Int. Cl. G01l 5/12
U.S. Cl. 73—141 R 3 Claims



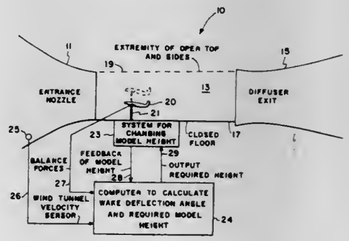
A pilot's force indicating device for positioning on the control stick of an aircraft having resiliently biased portions extending at two opposite sides of the stick and engageable therewith when the device is on the stick and force indicating structure so operatively connected to said portions that upon the pilot applying force on the device, while grasping the same, so that one of said portions pushes against one side of the control stick in connection with controlling the aircraft in flight the indicating structure operates to show the pilot the amount of force that he is then applying to the stick and upon the pilot applying force on the device, while still grasping the same, in the opposite direction so that the other of said portions pushes against the opposite side of the control stick the indicating structure operates to show the pilot the amount of force that he is then applying to the stick.

3,620,076

VARIABLE GEOMETRY WIND TUNNELS

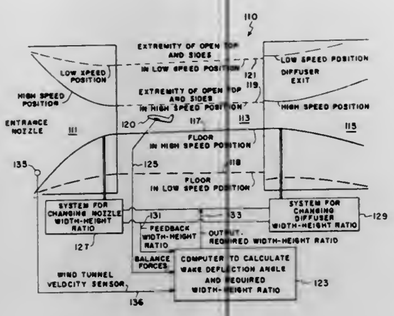
Harry H. Heyson, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 20, 1969, Ser. No. 867,841
Int. Cl. G01m 9/00
U.S. Cl. 73—147 4 Claims



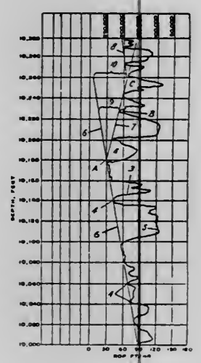
Variable geometry wind tunnels that will greatly reduce the effect of the wind-tunnel boundaries on the data obtained in subsonic tests representing the low-speed

phases of flight. In one embodiment the model in the tunnel is appropriately adjusted by a system governed by



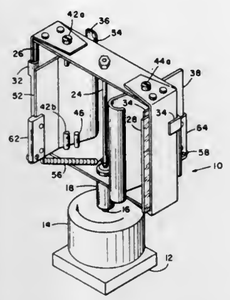
a computer. In another embodiment the width-height ratio of the tunnel is adjusted by a computer.

3,620,077
APPARATUS AND METHOD FOR MONITORING BOTTOMHOLE DIFFERENTIAL PRESSURE IN A WELLBORE
Morton E. Brown, San Antonio, Tex., Darrell W. Williams, Newport News, Va., and Albert B. Crownover, Jr., Lafayette, La., assignors to Tenneco Oil Company, Houston, Tex.
Continuation-in-part of application Ser. No. 852,057, Aug. 2, 1969, which is a continuation-in-part of application Ser. No. 688,393, Dec. 6, 1967. This application Mar. 20, 1970, Ser. No. 21,247
Int. Cl. E21b *45/00*
U.S. Cl. 73—151.5 **14 Claims**



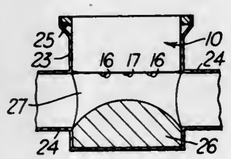
Apparatus and method for detecting and computing the magnitude of change in the rate of penetration in a wellbore being drilled with a drill string and drill bit with drilling mud being flowed therethroough. Included are means for determining the bottomhole pressure differential between the hydrostatic pressure of the mud and the formation pore pressure by reference to the change in rate of penetration of the bit. The system has particular use in computing incipient well blowout conditions and predicting the depth at which blowout could occur if conditions remained unchanged.

3,620,078
SWING SHIELD FOR ROTO-SLIDE SAMPLER
Gilbert S. Raynor, Manorville, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed June 24, 1970, Ser. No. 49,483
Int. Cl. G01w *1/00*; G01n *1/00*
U.S. Cl. 73—170 R **5 Claims**



An automatically opening shield for a particle sampler in which a pair of spring loaded shields protect the collector plates from wind impaction. When the sampler is energized the shields open under influence of centrifugal force and air pressure.

3,620,079
FLUID FLOW MEASURING APPARATUS
Jacques A. Nosley, Gercuit Ste. Ben grue Labry, Marseille, France
Filed Feb. 12, 1969, Ser. No. 798,692
Claims priority, application France, Feb. 12, 1968, 141,164
Int. Cl. G01p *5/08*
U.S. Cl. 73—194 EM **4 Claims**

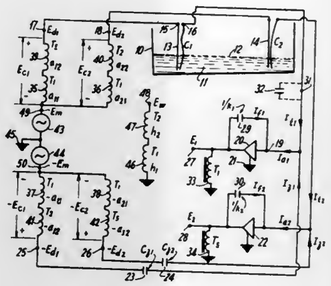


An apparatus for measuring the flow of a conductive fluid in a conduit in which a detector, having an electromagnet in a housing and four electrodes on an insulating wall, is disposed in an aperture in the conduit, with the fluid flowing in the conduit contacting the electrodes. Arrangement is made to dispose the electrodes in the flow of fluid regardless of the size of the detector relative to the conduit diameter.

3,620,080
CAPACITANCE TYPE FLUID MEASURING APPARATUS
Frederick L. Ryder, 50 Harrison Ave., Lynbrook, N.Y. 11563
Filed Jan. 15, 1970, Ser. No. 3,095
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 C **15 Claims**

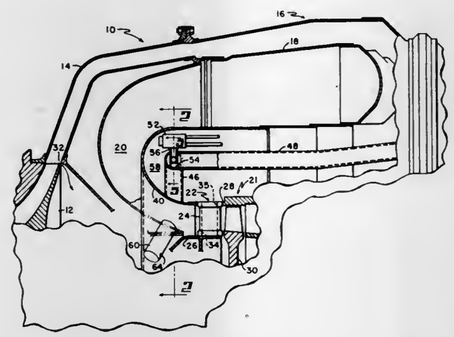
The measuring apparatus includes at least one measuring condenser immersible in fluid in a container. An A.C. driving voltage is applied to each measuring condenser to produce a current. Circuit means produce an output voltage proportional to the excess of the measuring

condenser current over the value of current which would flow through the measuring condenser, in response to the driving voltage, if the condenser were dry. The driving voltage is the sum of a fixed A.C. voltage source and a voltage proportional to the output voltage. The output



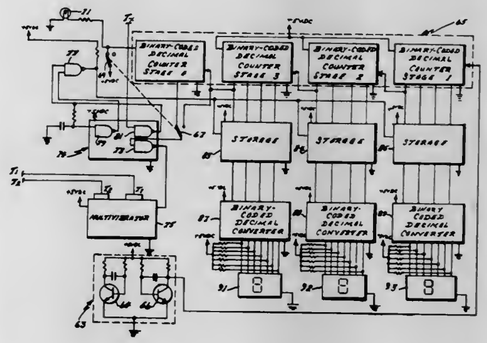
voltage is therefore proportional to the weight of fluid in the container. If more than one measuring condenser is used, an individual output voltage is produced for each, and these voltages are summed to produce a single readout voltage.

3,620,081
FLUIDIC TEMPERATURE SENSOR MOUNT FOR A GAS TURBINE ENGINE
Jay I. Black, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Feb. 2, 1970, Ser. No. 7,551
Int. Cl. G01k *3/06, 13/02*
U.S. Cl. 73—340 **8 Claims**



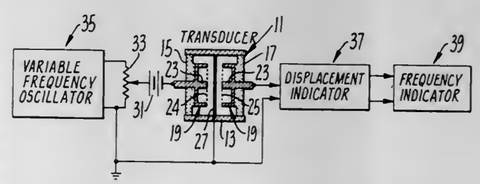
Fluidic temperature sensor assembly for use in measuring the turbine inlet temperatures in a gas turbine engine. A series of circumferentially spaced tubes extending radially into the gas stream, each with a series of spaced inlets, are connected to a circumferential conduit. A discharge conduit extends from the circumferential conduit to a low pressure discharge point so that a relatively high volume, high velocity flow is established through the tubes and conduits. A Y-shaped tubular element is positioned at the junction between the discharge conduit and the circumferential conduit so that the inlets of the Y-shaped tubular element are coaxial with branches of the circumferential conduit to receive gas having a maximum velocity and temperature. The outlet from the Y-shaped tubular element leads to a fluidic oscillator whose pressure oscillations are in direct proportion to the average turbine inlet temperature. The conduits are immersed in cooling air used for a nozzle assembly at the turbine inlet. The portions of the radial tubes extending into the gas stream are covered with a tubular shell having an outlet so that cooling air flows over the tubular elements.

3,620,082
DIGITAL THERMOMETER
Wendell R. Peters, San Antonio, Tex., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Mar. 13, 1970, Ser. No. 19,181
Int. Cl. G01d *5/245, 5/252*; G01k *7/24*
U.S. Cl. 73—362 AR **3 Claims**



Through a thermistor probe, temperature is converted into a voltage which is integrated for a fixed period of time following which a reference voltage is reverse integrated until the value in the integrator is zero. During the reverse integration a counter operates and upon completion of the reverse integration the value in the counter is converted into a decimal readout indicative of temperature. The counter triggers multivibrator circuits which produce timing pulses for activating switches that control the input to the integrator from the thermistor controlled voltage source and the reference voltage source.

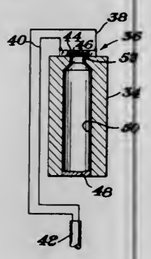
3,620,083
WIDE RANGE DYNAMIC PRESSURE SENSOR
John Dimeff, San Jose, and James W. Lane, Sunnyvale, Calif., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 4, 1969, Ser. No. 882,122
Int. Cl. G01l *9/12*
U.S. Cl. 73—398 C **4 Claims**



A dynamic pressure sensor of the type wherein a diaphragm is provided in a cavity with a driving plate on one side of the diaphragm and a sensing plate on the other side of the diaphragm wherein the driving and sensing members are perforated and spaced from the walls of the cavity so that damping and apparent stiffness increase induced by increased pressure are reduced. By reducing the

damping and apparent stiffness, the range of the instrument is greatly increased so that it can be used for measuring high and low pressures.

3,620,084
MINIATURE PRESSURE TRANSDUCER
Thomas E. Slykhouse, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 3, 1970, Ser. No. 43,158
Int. Cl. G01l 9/06
U.S. Cl. 73—398 AR **5 Claims**

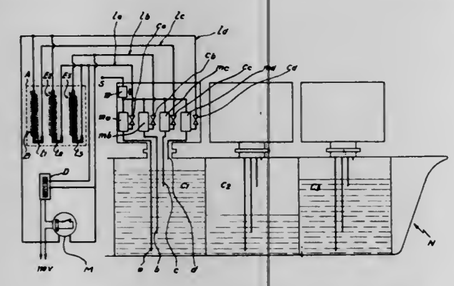


This invention relates to a diaphragm type pressure gauge which is useful for measuring pressures in a system with rapidly changing pressures.

The gauge comprises a hollow cylinder of metal which has a small hole in one end and a larger hole in the other. On the outside of the cylinder across the end having the smaller hole is bonded a strain gauge which has been previously imbedded in a thin plastic film (for example any strain gauge is usable, but a semiconductor is preferred). Any bonding material may be used, but an epoxy resin is preferred.

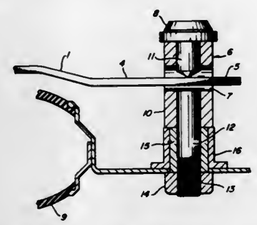
The two or more electrical leads (two if only a single gauge is used) are insulated from the metal by placing a suitable layer of material between the leads and the cylinder. Then the leads are usually secured to the cylinder by taping, potting, etc., and fastened to a suitable electronic circuit.

3,620,085
APPARATUS FOR MEASURING THE LEVEL OF LIQUID IN A RESERVOIR
Danny James Khoi, Courbevoie, France, assignor to Cermat, Courbevoie, France
Filed Oct. 15, 1969, Ser. No. 866,700
Claims priority, application France, Mar. 27, 1969, 6909078
Int. Cl. G01f 23/16; G01n 9/28
U.S. Cl. 73—439 **12 Claims**



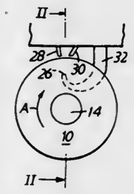
At least two manometer tubes, each tube being connected between two probes located at different levels in a reservoir. The probes may be insufflation tubes connected to a gas supply. A scale movable in relation to the manometer tubes carries at least two series of curves, each associated with one of the tubes. Each curve in each series represents the height of liquid in its associated manometer tube for a given level of liquid in the reservoir for a different liquid density. A regulator is interposed between each insufflation tube and its manometer tube for maintaining the flow of gas constant through the insufflation tubes.

3,620,086
APPARATUS FOR BALANCING SMALL WHEELS, GEARS, AND THE LIKE
David J. Jogerst, Glendale, Ariz. (5 Bedford Court NE., Fort Walton Beach, Fla. 32548)
Filed Feb. 9, 1970, Ser. No. 9,697
Int. Cl. G01m 1/14
U.S. Cl. 73—483 **1 Claim**



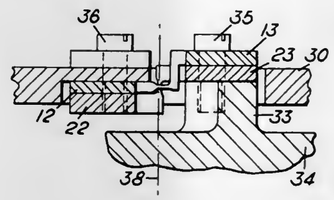
Apparatus is provided for balancing small rotating machine elements such as go-cart wheels, gears, etc. A cantilevered support member is fixed at one end in a vise or by any other suitable means such that the free end extends horizontally. At least a portion of the upper surface of the support member is planar and is adjusted to be approximately horizontal. A generally cylindrical balance assembly includes a diametrically disposed passage extending through the body of a housing portion. A pivot member disposed co-axially within the housing extends downwardly and terminates in a point which rests upon the support member when the balance assembly is guided onto the support member free end. The underslung portion of the balance assembly includes a threaded member co-axially aligned with the housing such that an adapter and the element to be balanced can be secured in place with a cooperating nut. A bubble level is fixed to the top of the housing for indicating the inclination of the element to be balanced as it pivots about the point of the pivot member resting on the planar area of the support member.

3,620,087
FLUIDIC SPEED SENSORS
John Christopher Hammond Davis and John William Leathers, Taplow, England, assignors to Plessey BTR Limited, Taplow, England
Filed Dec. 1, 1969, Ser. No. 881,002
Claims priority, application Great Britain, Apr. 15, 1969, 19,188/69
Int. Cl. G01p 3/34
U.S. Cl. 73—521 **8 Claims**



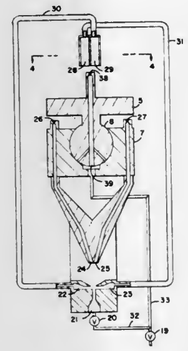
A fluidic rotation speed sensing device comprises an operating surface of a rotating body disposed perpendicular to the axis of rotation thereof, a nozzle arranged to direct a jet of fluid into the boundary layer of said operating surface in a direction having a component perpendicular to the axis of rotation and a collector disposed confronting the nozzle. Due to boundary layer interaction the jet is deflected in the direction of movement of the surface so that the pressure at the collector provides an indication of the rate of rotation.

3,620,088
IMPROVEMENTS RELATING TO RESILIENT SUSPENSION MEANS FOR VIBRATING-ROTOR GYROSCOPES
Derek William Alford, Bracknell, England, assignor to Ferranti Limited, Hollinwood, England
Filed Oct. 27, 1969, Ser. No. 869,640
Claims priority, application Great Britain, Nov. 15, 1968, 54,419/68
Int. Cl. G01c 19/18
U.S. Cl. 74—5 **9 Claims**



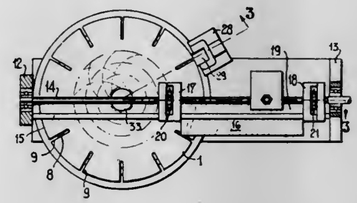
A suspension for mounting one member for limited rotation relative to another member about a required axis comprises two laminar springs each permitting rotation about a given axis. Each spring is provided with mounting blocks which may be clamped to one another and to the two members so that the given axis of each spring coincides with the required axis and the bending planes of the two springs intersect.

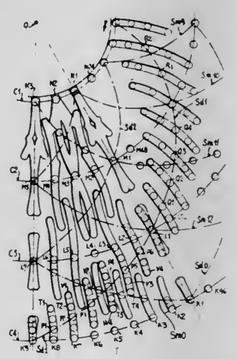
3,620,089
FLUIDIC GYRO CAGING AND NULLING DEVICE
J. C. Dunaway, Falkville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 6, 1969, Ser. No. 874,608
Int. Cl. F15c 1/14; G01c 19/28
U.S. Cl. 74—5.6 **3 Claims**



A gyro rotor having an air bearing ball is caged by a fluidic system that forces the ball against one side of its housing. The fluidic system also forces the rotor to a predetermined spin axis null position. The rotor is uncaged by inactivating the fluidic system. The rotor ball is supported by air supplied to its housing, with the air exiting along the spin axis of the rotor. The fluidic system includes a proportional amplifier having feedback pickoffs fed by the air exiting along the rotor spin axis.

3,620,090
DIGITAL INTEGRATOR
René Béguin and Christof Walter Burckhardt, Geneva, Switzerland, assignors to Test, Société Anonyme d'Etudes Techniques, Chene-Bougeries, Switzerland
Filed Oct. 1, 1969, Ser. No. 862,792
Claims priority, application Switzerland, Oct. 2, 1968, 14,736/68
Int. Cl. F16h 19/04, 25/08
U.S. Cl. 74—31 **9 Claims**

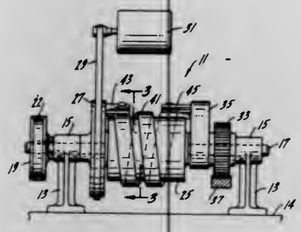




A digital intergrator includes a circular table having a toothed surface mounted for rotation about a central axis. A toothed wheel is rotatably supported for engagement with the table teeth and for displacement radially of the axis of rotation of the table. The table surface is formed with concentric circular toothed tracks interconnected by spiral toothed transfer tracks. The teeth of the various tracks are arranged so that rotation of the toothed wheel when engaged with any track is proportional to the distance of such wheel from the table axis. In one embodiment, the table surface has a central zone which is devoid of teeth and the main toothed wheel is coupled by a slide to an auxiliary wheel having teeth engageable with a guide plate when the main wheel is in the central zone, whereby the main wheel is guided back to the appropriate track of the table on leaving the central zone. Adjustment of the radial distance of the main wheel from the axis of rotation is effected by centrally pivoted fingers circumferentially spaced around the table. Each finger normally has one end engaged in a fixed circular guide track, its other end engaging a groove in the slide over a limited portion of the circular path of the finger. Actuation of a

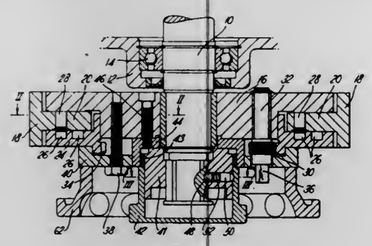
control electromagnet causes the one end of the finger to be temporarily deflected into either of two lateral guide tracks which diverge from the circular guide track and then rejoin it. The resulting movement of the other end of the finger indexes the slide a given radial distance.

3,620,091
POWER AMPLIFIER
Robert W. Schmidt, 5744 W. 77th St., Oak Lawn, Ill. 60459
Filed Oct. 22, 1969, Ser. No. 868,383
Int. Cl. F16h *19/04*
U.S. Cl. 74—34 **4 Claims**



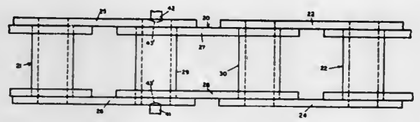
A power amplifier including a cylindrical drum mounted on a shaft which is rotatably driven by a high torque motor. An output gear is rotatably mounted on this shaft adjacent one end of the cylindrical drum and meshes with an output rack. A sheave rotatably mounted on the shaft at the opposite end of said cylindrical drum is rotatably driven by a low torque motor. A friction band is helically wound around said cylindrical drum with one end connected to said sheave and the other end connected to a crank arm formed as part of the output gear. Rotation of the sheave will tighten the frictional band in engagement with the cylindrical drum so that the cylindrical drum may drive the output gear and rack.

3,620,092
CONTINUOUS ROD MAKING MACHINES SUCH AS CIGARETTE MACHINES
Philip A. Maw, London, England, assignor to Molins Machine Company Limited, London, England
Filed June 18, 1970, Ser. No. 47,317
Claims priority, application Great Britain, June 24, 1969, 31,794/69
Int. Cl. F16h *55/54*
U.S. Cl. 74—230.23 **10 Claims**



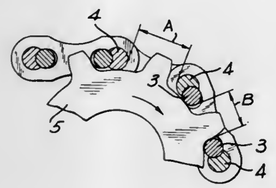
A variable diameter pulley for use in driving the garniture tape of a continuous rod cigarette-making or filter plug-making machine comprises a plurality of equally-spaced radially slidable segments each having an axial protrusion engaging in a corresponding cam slot in a cam disc. The cam disc is rotatable relative to the segments to cause radial movement of the segments and hence alter the diameter of the pulley. The cam slots are arranged in two concentric rings, of different mean radii, with the cam slots in the two rings overlapping each other; that is to say, each cam slot subtends an angle at the centre of the pulley greater than the angular spacing of the segments.

3,620,093
SQUARE LINK CHAINS, AND THE MANUFACTURE THEREOF
Robert L. Crowson, Fulton, Ill. (% Allied Chains, Inc., Green River Industrial Park, Dixon, Ill. 61021)
Filed July 30, 1969, Ser. No. 846,114
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 R **8 Claims**



A simplified form of roller-less square link chain including specially formed bushings connecting together the side bars of each square link. These bushings comprise sections cut from a steel strip preformed to produce alternate laterally projecting lugs with intermediate square notches, with the lugs at the two edges of the strip produced oppositely in pairs and the intervening notches also produced opposite to each other in pairs. Each such strip section includes two lugs and two notches. Each section cut off from the strip is rolled into cylindrical form to bring its ends together to form the cylinder. Such cylinder then includes a continuous cylindrical body having at each end two diametrically opposite axially extending lugs, separated by intermediate notches. Each square link side bar is provided with partially circular openings at its ends, and such side bar is seated onto the proximate end of the bushing, with the lugs extending through the side bar opening, and with the edge portion of the side bar seated against the notches thus limiting the seating operation of such side bar onto such bushing end portion, and thus retaining the two side bars at desired limited spacing from each other.

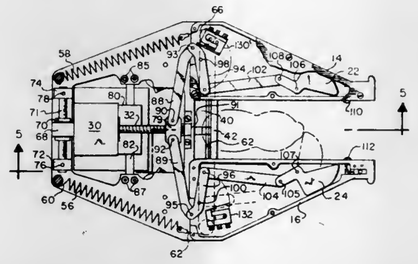
3,620,094
FLAT-LINK CHAIN
Ilya Ilich Ivashkov, 9 Parkovaya ulitsa 43/26, kv. 198, and Vasily Alexandrovich Frolovtsev, Ferganskaya ulitsa 18, kv. 263, both of Moscow, U.S.S.R.
Filed Jan. 2, 1970, Ser. No. 277
Claims priority, application U.S.S.R., Feb. 18, 1969, 54/94
Int. Cl. F16g *13/02*
U.S. Cl. 74—251 R **1 Claim**



Flat-link chains, wherein the hinge joints of the links are formed by support members secured in the end portions of the plates and contacting one another with their outer working surfaces, of which one is convex and the other is concave, whereupon the space between adjacent support members with a concave working surface being made greater than the space between adjacent support members with a convex working surface.

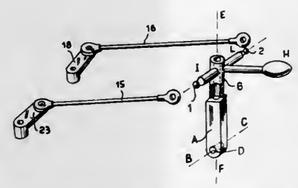
Proposed chain is highly reliable and durable.

3,620,095
MECHANICALLY ACTUATED TRIGGERED HAND
Dan H. Dane, Huntsville, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 3, 1970, Ser. No. 69,209
Int. Cl. A61f *1/06*
U.S. Cl. 74—469 **7 Claims**



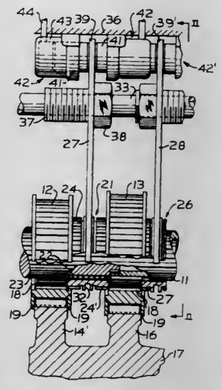
A mechanically actuated hand that can grasp an object like a trigger actuated tool and depress the trigger of the tool. The hand includes a supporting frame, a pair of jaw members slidably mounted on the frame and a drive assembly slidably mounted on the frame and mechanically coupled to the jaw members for permitting movement thereof along the frame. A trigger device mounted in each jaw member is connected by a mechanical linkage to the drive assembly so as to be actuated thereby. A brake mechanism is mounted on the frame adjacent each jaw member for selectively immobilizing the jaw members. A touch control device mounted in each jaw member is actuated by a predetermined contact force with an object being grasped and the touch control in turn actuates the brake mechanism to immobilize the jaw member relative to the frame.

3,620,096
SINGLE MANEUVERING LEVEL CONTROL FOR TRACKED VEHICLES
Gianni Scolari, Via Turati 35, Turin, Italy
Filed Aug. 27, 1969, Ser. No. 853,403
Claims priority, application Italy, Aug. 28, 1968, 52,963/68
Int. Cl. G05g *9/00*
U.S. Cl. 74—469 **4 Claims**



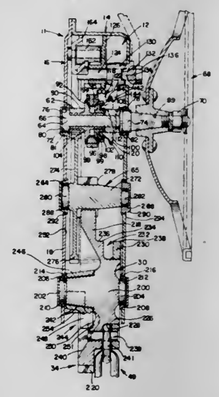
A single maneuvering lever controls the delivery or hydraulic fluid of both the variable-feed pumps of hydraulic motors employed in tracked vehicles. The several variances of mechanical assembly are, however, based on the same principle of controlling with a single lever, operable with one single hand, both tracks of a tracked vehicle.

3,620,097
SHIFT FORK MECHANISM FOR DRIVE TRANSMISSIONS
Charles H. Herr, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 15, 1969, Ser. No. 887,803
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 **4 Claims**



Shifting of clutch collars within a multiple speed ratio gear box is accomplished with simplified shift forks which are flat members slidable along a single fixed shaft by fluid operated cylinders in response to fluid control signals. All shift forks are of identical configuration and are interchangeable to provide a compact system which can be economically manufactured and repaired.

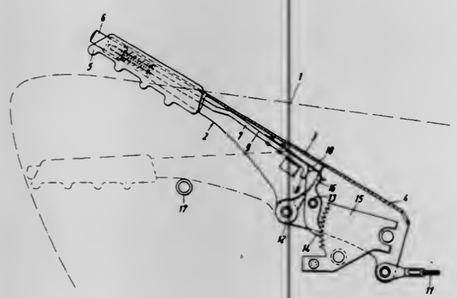
3,620,098
HIGH POWER HAND BRAKE AND CHAIN STOP THEREFOR
Eldred H. Natschke, Bourbonnais, Ill., assignor to Universal Railway Devices Company
Filed July 6, 1970, Ser. No. 52,536
Int. Cl. G05g *1/08*
U.S. Cl. 74—505 **9 Claims**



A vertical wheel hand brake which is especially arranged to provide the increased power needed for 125 ton cars and up in weight and which includes a special

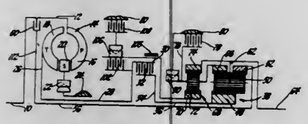
gear cluster interposed between the brake drum gear and ratchet wheel pinion for this purpose. The hand brake also includes a brake chain stop arrangement that avoids winding up of the brake chain in the wrong direction, and limits overtravel of the drum on release of the brake.

3,620,099
HINGE OPERATING LEVER FOR USE IN VEHICLES, PARTICULARLY AS A HAND BRAKE LEVER FOR AUTOMOTIVE VEHICLES
Erich Stotz, Rommelshausen, Germany, assignor to Firma Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany
Filed June 2, 1969, Ser. No. 829,172
Claims priority, application Germany, July 9, 1968, P 17 55 911.4
Int. Cl. G05g *1/04*
U.S. Cl. 74—524 **19 Claims**



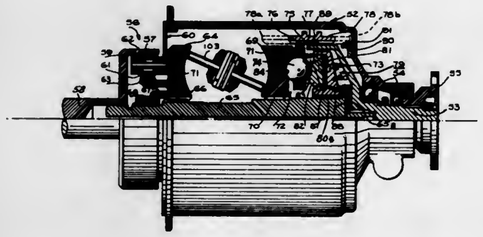
A hinged operating lever which can be used as a hand brake in an automotive vehicle has two hingedly connected parts, the first of which constitutes a handle. A pawl is rotatably mounted on the second part and is engageable in a detent plate to secure the hand brake. The pawl is also releasable by a control linkage comprising a control rod and a leaf spring which thereby permits the handle to be folded down out of the way of a passenger when exiting from the vehicle by the application of hand pressure to the handle.

3,620,100
HIGH RATIO COVERAGE AUTOMATIC TRANSMISSION
Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,779
Int. Cl. F16h *47/08, 57/10*
U.S. Cl. 74—688 **9 Claims**



Power transmission comprising a hydrodynamic torque converter operatively connected to first and second planetary gearsets connected to a plurality of friction drive establishing devices which are engageable to condition the gearsets for low, intermediate, high and overdrive. In the preferred embodiment for low speed ratio, the first gearset is conditioned to produce an underdrive by the automatic engagement of a one-way brake with a first sun gear being driven. Intermediate ratio is obtained by additionally conditioning a second one-way brake to hold a reaction gear in the second planetary gearset so that gearsets combine to increase output speed. In direct or 1:1 ratio the drive can be all converter, all mechanical or split torque. There is a front clutch engaged for the all mechanical and the split torque direct drives. Also, this clutch is engaged for a mechanical overdrive with the gearsets again combining.

3,620,101
VARIABLE GEARS
Randle L. Abbott, Leamington Spa, and Paul C. Green, Coventry, England, assignors to GKN Birfield Transmissions Limited, Birmingham, England
Filed July 9, 1969, Ser. No. 840,413
Claims priority, application Great Britain, July 16, 1968, 33,755/68; Oct. 1, 1968, 46,455/68
Int. Cl. F16h *37/08*
U.S. Cl. 74—691 **7 Claims**



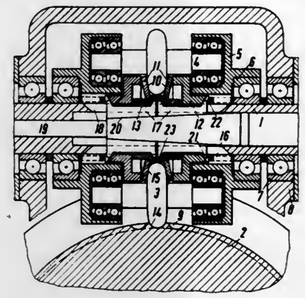
The specification discloses a steplessly-variable frictional gear which finds particular utility as an automotive transmission The gear includes a known unit comprising driving and driven co-axial discs having toroidal surfaces which are arranged in face to face relation and which are engaged by rollers whose inclinations can be varied to vary the gear ratio of the unit. Combined with the latter are first, constant-engagement drive means interposed between the input of the gear and the driving disc of the unit and second, constant-engagement drive means interposed between the output of the gear and the driven disc, the discs being arranged so that by varying the inclination of the rollers the gear gives:

(1) a reverse reduction drive in which the output member rotates in a direction opposite to, and at a speed less than, the input member;
(2) a neutral in which the output member is stationary and the first and second inputs to the second, constant-engagement drive means cancel each other out; and
(3) a forward drive in which the input and output members rotate in the same direction and in which the output member rotates at speeds both greater and less than the speed of the input member.

3,620,102
ADJUSTABLE ROLLER WORM GEAR ARRANGEMENTS
Helmut Korner, 12 Wichernstrasse, D–3340 Wolfenbuttel, Germany
Filed Apr. 10, 1970, Ser. No. 27,247
Claims priority, application Germany, Apr. 12, 1969, P 19 18 721.4
Int. Cl. F16h *15/50*
U.S. Cl. 74—796 **17 Claims**

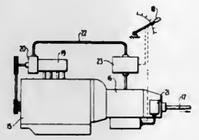
An adjustable roller worm gear arrangement is disclosed. The gear arrangement comprises an input shaft supporting a carrier carrying a number of rolling elements which rotate in a planetary path around the input shaft

when the latter is driven. The rolling elements successively engage helical grooves in a worm wheel which is mounted on an output shaft transversely inclined to the input shaft. Circumferential portions of each rolling element contact a pair of adjacent annular track members, which are mounted on the input shaft and which define the walls of



a groove for the rolling elements. The gear arrangement is provided with means for displacing at least one of the pairs of track members to vary the inclination of the walls of the groove and hence the mean radius of contact circles defined by points of contact between the rolling elements and the walls of the groove, whereby the transmission ratio of the gear arrangement may be varied.

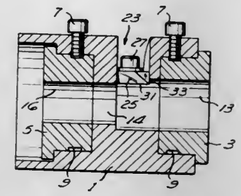
3,620,103
CONTROL SYSTEM OF AUTOMATICALLY SHIFTING TRANSMISSIONS, ESPECIALLY FOR MOTOR VEHICLES
Hans-Joachim M. Förster, Stuttgart-Riedenberg, and Ulrich Eitze, Esslingen (Neckar), Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 5, 1969, Ser. No. 882,467
Claims priority, application Germany, Dec. 5, 1968, P 18 12 931.2
Int. Cl. F02d *37/00*
U.S. Cl. 74—860 **11 Claims**



A control for automatic transmissions of vehicles driven by an engine, in which a first rotational speed controller associated with the transmission controls the shifting-up limits in the transmission and the driving engine includes a second rotational speed controller limiting its maximum rotational speed; the two rotational speed controllers are thereby so connected that one of the rotational speed controllers assumes simultaneously the function of the other.

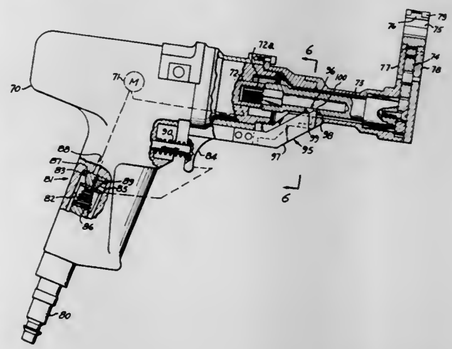
3,620,104
TOOL FOR REMOVING COVERING MATERIAL FROM AN ELECTRICALLY CONDUCTIVE CABLE
Raymond G. Horrocks, Parkview, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 846,196, July 30, 1969. This application Nov. 19, 1969, Ser. No. 870,022
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 C **10 Claims**

A hand tool for removing insulation and/or semiconductive material from an electrically conductive cable. The tool includes a cylindrical body through which a cable may be moved endwise and a blade fixed to the body and having two cutting edges positioned in planes parallel



to and transverse to the centerline of the cable respectively.

3,620,105
OFFSET DRIVER FOR THREADED FASTENERS
Ronald W. Batten, Torrance, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Continuation-in-part of application Ser. No. 666,435, Sept. 8, 1967, now Patent No. 3,477,318. This application Nov. 7, 1969, Ser. No. 874,868
Int. Cl. B25b *13/00, 17/00, 21/00*
U.S. Cl. 81—57.14 **3 Claims**

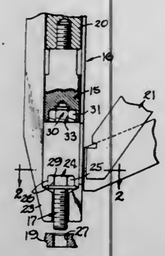


This invention relates to a driver for setting threaded fasteners in height-limited environments. The driving portion of the device need not be moved axially, but may be applied to the fastener it is to set by lateral movements, thereby significantly reducing height and manipulations. It includes a body to which are mounted a power shaft and a laterally extending gear train driven by the power shaft which gear train terminates in a pair of branches. Each branch includes a driven gear that is engaged to a driving socket. The socket and the body have alignable slots and the angular extent of the slot at the periphery is less than the angular spacing of the driving gears around the center of rotation of the socket whereby the socket is always driven by at least one of the branches. Means is provided for turning the socket independently of finger actuation so that the socket and body slots can be aligned, and detent means is provided to hold them aligned.

3,620,106
WRENCH-TYPE SOCKET
Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.
Filed Dec. 16, 1968, Ser. No. 783,865
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 **3 Claims**

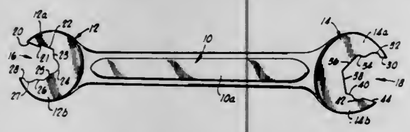
Usable with an automatic assembly device, a wrench-type socket for driving a screw with a hexagonal head includes a hexagonal recess for drivingly engaging the head

and a cylindrical counter-recess for telescopically receiving the head regardless of the relative angular positions of the socket and the screw. The bottom of the counter-recess is formed as a series of angularly spaced and in-



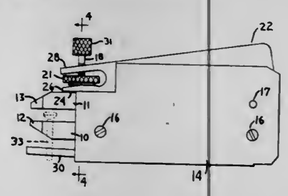
clined relief surfaces which pilot the head into driving engagement with the recess and which allow the socket to turn into driving engagement with the head while continuously telescoping over the head.

3,620,107
SPEED WRENCH
James P. Evans, 3233 SW. 23rd St., Oklahoma City, Okla. 73108
Filed May 13, 1970, Ser. No. 36,778
Int. Cl. B25b *13/00*
U.S. Cl. 81—125.1 **2 Claims**



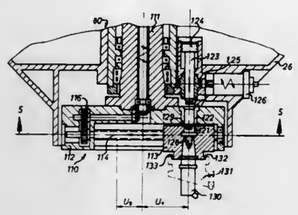
An open ended dual socket wrench having the sockets defined by jaws at the opposite ends of the wrench configured so that the wrench will grip a nut when turned in one direction and will act as a ratchet turning freely about the nut when the wrench is turned in another direction. The jaws are further configured so that various sizes of nuts may be engaged by the jaws for purposes of loosening the nuts.

3,620,108
PLIERS
Wesley R. Door, Rio Piedras, Puerto Rico, assignor to USM Corporation, Boston, Mass.
Filed Feb. 13, 1970,, Ser. No. 11,214
Int. Cl. B25b *7/04, 7/12*
U.S. Cl. 81—341 **8 Claims**



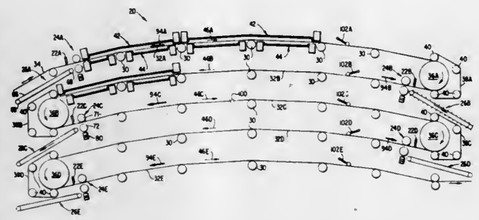
A pair of pliers comprising a first fixed rigid jaw and an adjacent elongated pivoted jaw mounted between protective side plates. A perpendicular rod mounted to the first jaw extends through the second jaw and is threadably engaged by a movable collar. A cam assembly in the form of a pivoted lever is interposed between the second jaw and the collar. A yieldable slide is mounted adjacent to the first jaw for selectively clamping a ring in place.

3,620,109
MACHINE TOOL WITH FACING TOOL SLIDE FOR AUTOMATIC TOOL CHANGING
Alfred W. Dürr, Otto Gunsser, and Hubert H. Heller, Nurtingen, Wurttemberg, Germany, assignors to Gebruder Heller Maschinenfabrik G.m.b.H., Nurtingen, Wurttemberg, Germany
Original application Sept. 13, 1967, Ser. No. 667,441, now Patent No. 3,524,248, dated Aug. 18, 1970. Divided and this application July 15, 1969, Ser. No. 841,940
Int. Cl. B23b *3/22*
U.S. Cl. 82—2 E **2 Claims**



A machine tool with automatic tool changing is described with a tool holder having a central tightening screw and lock and a face slide including an indexing pin as well as two compensating weight threaded spindles.

3,620,110
BROKE CLEARING APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed July 23, 1970, Ser. No. 57,683
Int. Cl. B26d *5/20*
U.S. Cl. 83—66 **13 Claims**

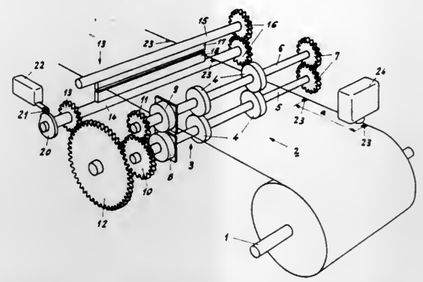


Apparatus for clearing broke from machines for drying web type materials which includes a broke conveyor, a cutter for severing the web when a break occurs, and reversing rolls for conducting the severed portion of the web to the broke conveyor.

3,620,111
DEVICE FOR THE FEEDING AND CYCLIC TREATMENT OF A BODY WITH SYNCHRONIZING OF TREATMENT DEVICE AND FEED DEVICE
Fritz Bosshard, Kaltenbach, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Dec. 1, 1969, Ser. No. 881,014
Claims priority, application Switzerland, Dec. 3, 1968, 18,004/68
Int. Cl. B23d *25/12*
U.S. Cl. 83—74 **8 Claims**

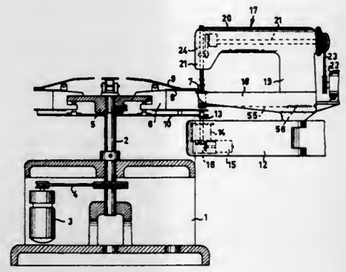
A device for feeding and cyclically processing a longitudinal body, for instance, a web of sheet material which is withdrawn from a supply roll and is to be cut into individual pieces of the desired length. A feeding device provided with rollers on at least one shaft is rotated during the operation of a processing device, such as a cutter

when a web is to be cut, alternately with a high speed and a lower speed. The processing device also has at least one shaft which is rotated always with the same speed. For synchronizing the feeding device and the processing device a photoelectric scanning head is provided which scans marks arranged in lengthwise spaced relation on



the longitudinal body and operates a relay which latter controls electro-magnetic clutches in the feeding device and a control cam for effecting a speed control of said feeding device in such manner that after a few initial uneven feed operations the longitudinal body is advanced with uniform speed in relation to the processing device.

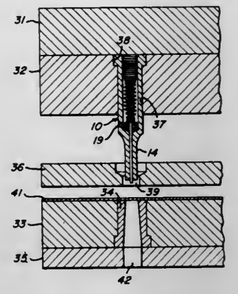
3,620,112
TRIMMING DEVICE FOR TRIMMING THE EDGES OF WORKPIECE CUTS
Hubert Jünemann, Bielefeld, Germany, assignor to Kochs Adlernahmaschinen Werke AG, Bielefeld, Germany
Filed Jan. 29, 1970, Ser. No. 6,697
Claims priority, application Germany, Jan. 30, 1969, P 19 04 385.7
Int. Cl. B26d *7/06*
U.S. Cl. 83—98 **10 Claims**



An edge trimming device for trimming the edges of workpiece cuts consisting of textiles, thin leather or similar material, at which the workpiece cuts are received in workpiece holders secured to a rotary-table. The trimming tools are arranged in a housing like a sewing machine, and the shape of the cuts is determined by templates which are placed below the workpiece holders and cooperate with a driven magnetic roller. A device for discharging the cutting scrap out of the device is provided.

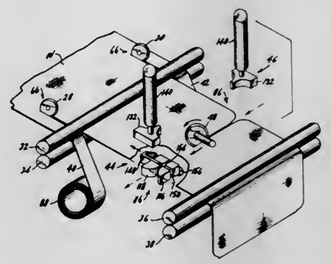
3,620,113
EJECTOR TYPE PUNCH
Robert J. Gargrave, Dayton, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio
Filed Sept. 8, 1969, Ser. No. 856,125
Int. Cl. B26f *1/14*
U.S. Cl. 83—98 **15 Claims**

A piercing or forming punch assembly having a headed reciprocable ejector member accommodated in the punch body. A uniquely formed urethane washer or like device is fitted around the shank of the ejector member to the underside of the head thereof to act as a load distributing



and shock absorbing medium. The washer is constructed to provide a pump supplying air to the working face of the punch for vacuum breaking and debris clearing purposes.

3,620,114
SHEET MATERIAL CUTTING MACHINE
George Chudyk, Woodcliff Lake, N.J., assignor to Oscar I. Judelshon, Inc., Jersey City, N.J.
Filed Mar. 9, 1970, Ser. No. 17,452
Int. Cl. B26d *9/00*
U.S. Cl. 83—107 **10 Claims**

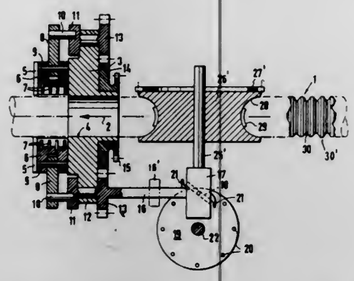


A machine for cutting a continuous web of textile material into individual rectangular sheets having rounded corners. The machine continuously cuts bands of material from each side of the web as it travels and intermittently makes transverse cuts across the web to form sheets of proper length. A die cutting device cuts rounded corners on the sheets. The machine operates automatically to provide the several functions and may be adjusted to cut rectangular sheets of various lengths and widths.

3,620,115
APPARATUS FOR MAKING PERFORATIONS IN CORRUGATED TUBES
Wilhelm Zieg, Georg Schmidt, Edgar Hauck, and Ingo Massell, Konigsberg, Bay, and Gustav Gruebel, Altershausen, Germany, assignors to Frankische Isollerrohr- und Metallwaren-Werke Gebr. Kirchner, Konigsberg, Beyern, Germany
Filed Dec. 31, 1968, Ser. No. 788,277
Claims priority, application Germany, Mar. 28, 1968, P 17 78 094.8
Int. Cl. B26d *5/22;* **B23d** *21/00*
U.S. Cl. 83—226 **15 Claims**

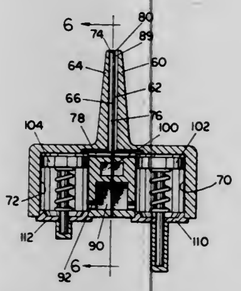
Apparatus for making perforations in helically or circumferentially corrugated plastic tubes comprises flat plate-like perforating tools which are movable radially

toward and away from the tube, a feeding mechanism which advances the tube, either stepwise or continuously, and driven carriers which support the tools and are movable radially of the tube or in planes which include the



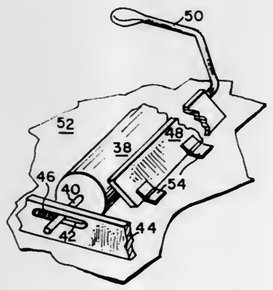
axis of the tube. Each tool has a cutting edge which is flanked by receding surfaces at both sides and is provided with pronounced teeth having tips located at the same level or at different levels.

3,620,116
KEYBOARD PLAYER APPARATUS
David N. Ulry, 4380 Donington Road, Columbus, Ohio 43220
Filed May 15, 1970, Ser. No. 37,785
Int. Cl. G10f *3/00*
U.S. Cl. 84—111 **2 Claims**



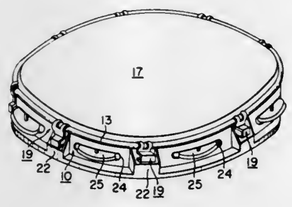
A portable pneumatic actuating apparatus for actuating the keys of a keyboard musical instrument is disclosed for automatically playing the instrument. The apparatus has a pair of mating cylinder housings extending the length of the keyboard, each housing provided with a longitudinal series of cylinders. Each cylinder housing has a longitudinal surface interfacing the longitudinal surface of the other cylinder housing. Channels are formed in the interfacing surfaces. Each channel connects the upper end of a cylinder to its inlet port on a tracker bar. The inlet ports are spaced along a portion of an edge of the interfacing surfaces and this portion of the edge serves as the tracker bar. A longitudinal outlet channel is formed in each interfacing surface for connecting the lower end of each cylinder to a vacuum pump. An undersized piston is slidably mounted in each cylinder and has a piston rod connected to the piston and extending downwardly toward a key of the keyboard. Each piston is spring biased toward the inlet end of the cylinder and away from the key. The interfacing surfaces of each cylinder housing are sealingly mounted against opposite sides of an impervious membrane. A perforated music sheet is passed across the tracker bar edge of the cylinder housing, thereby selectively blocking and unblocking the inlet passageways. Blocking of the inlet passageways prevents actuation of the pistons and thereby of the keys; unblocking of the inlet passageways permits the vacuum pump to move the piston and actuate the key.

3,620,117
MANUAL VIBRATO FOR STRINGED INSTRUMENTS
William T. Rusch, Hollis, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 3, 1969, Ser. No. 873,553
Int. Cl. G01d *3/04*
U.S. Cl. 84—313 **1 Claim**



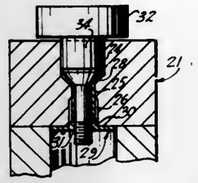
A manual vibrato is herein disclosed, comprising a bar which is positioned below or above the strings of the instrument at the normal position of the bridge on conventional instruments, whereby rotating or sliding of the bar along the strings causes pitch variation.

3,620,118
TAMBOURINE
Yoshiyuki Koishikawa, 2365 Kawarado-cho, Yokkaichi, Mie, Japan
Filed Nov. 16, 1970, Ser. No. 89,948
Int. Cl. G10d *13/02*
U.S. Cl. 84—418 **4 Claims**



A tambourine comprising a cylindrical frame having a plurality of recesses formed in the upper surface thereof at a predetermined interval, a tightening ring having a plurality of projections formed on the surface confronting said cylindrical frame at a predetermined interval for interlocking engagement with said recesses respectively, a tambourine sheet having a plurality of through-holes formed in the peripheral edge portion at a predetermined interval for receiving said projections respectively when it is clamped between said cylindrical frame and said tightening ring at its peripheral edge, and a tightening member for tightening said tightening ring around said cylindrical frame.

3,620,119
FASTENERS AND METHOD AND APPARATUS FOR FORMING FASTENERS
John O. King, Jr., 110 Lake Forrest Lane NE., Atlanta, Ga. 30305, and Charles F. Marschner, 595 Wisteria Drive, Mairetta, Ga. 30060
Continuation-in-part of application Ser. No. 711,368, Mar. 7, 1968. This application Aug. 21, 1968, Ser. No. 754,194
Int. Cl. B21c *23/22;* **B28b** *1/24;* **B29f** *1/10;* **F16b** *35/00*
U.S. Cl. 85—1 C **16 Claims**



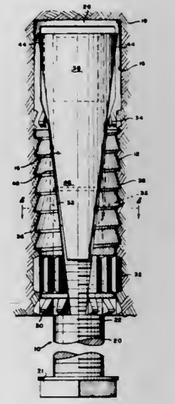
A fastener and method and apparatus for protectively coating the working surfaces of same wherein the method comprises the step of extruding a thin metallic material onto the unthreaded shank portion of a fastener in intimate contact therewith to enlarge the effective diameter of the fastener while producing an anti-corrosive material between the material of the fastener proper and the work pieces which the fastener connects after the fastener is installed. The method may also include plating covering the surface of the fastener with a material which acts as a lubricant during the extrusion of the surface material about the shank portion of the fastener, or the lubrication of the dies used to extrude the material about the shank portion of the fastener prior to the extrusion operation, or lubricating the surfaces of the metallic material that is to be extruded onto the fastener prior to the extruding operation.

The apparatus of the invention includes a die defining a passage therethrough which has an extruding section with a diameter slightly larger than the diameter of the fastener onto which the material is to be extruded, a means for maintaining the fastener centered within the passage through the die, means for forcing the fastener and the material to be extruded thereon through the extruding section of the passage and means for ejecting the fastener from the passage after the extruding operation. Alternatively, the apparatus of the invention may include a die defining a passage therethrough having a diameter slightly larger than the diameter of the fastener onto which the material is to be formed. The die further includes a second passage in communication with the first passage through which the material to be coated on the fastener is introduced into the first passage and means for positioning the fastener in the first passage and centering the same while the material is forced from the second passage into the first passage and around the fastener to coat the same.

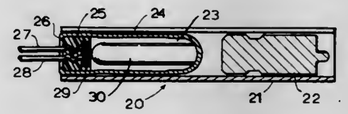
The fastener has a thin surface material formed directly onto the unthreaded shank portion and the underside of the head of the fastener. The unthreaded shank portion may have a reduced diameter from the normally standard one, and the thin coating material may enlarge this portion to the normal standard diameter.

3,620,120
MINE ROOF BOLT ASSEMBLY
Richard H. Warner, Landmark Apartments, 6303 Indian School Road NE., Albuquerque, N. Mex. 87110
Filed May 1, 1969, Ser. No. 820,770
Int. Cl. F16b *13/06*
U.S. Cl. 85—76 **6 Claims**

A mine roof bolt assembly including a roof bolt having a head at one end and threaded at the other end, a wedge member having tapering walls threadedly engaged with the roof bolt, and an expansion shell positioned over the wedge member and actuated thereby, the expansion shell including a pair of ears connected by a bale, the inner surface of the ears being engageable with the wedge member and expanded thereby upon passage of the wedge member through the shell. The outer surface of the shell is provided with a series of ribs which are angularly disposed transversely of each ear, for effecting "tbreading" of the shell into rock surrounding the hole into which the assembly is placed. The wedge member is provided with an alignment notch near the upper limit thereof, for engagement with the bale of the shell, and the lower end is provided with alignment lugs engageable with the inner surface of the shell, the aligment notch and lugs preventing lateral misalignment of the ears and wedge.



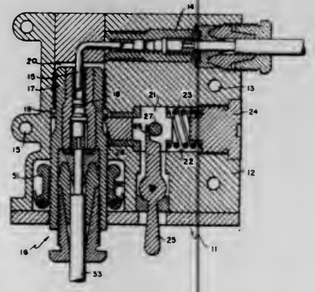
3,620,121
RADIAL ACTUATOR AND RELEASE MECHANISM
Charles R. Olsen, 2020 Cypress St., Philadelphia, Pa. 19103
Filed Apr. 15, 1969, Ser. No. 816,272
Int. Cl. F16b *1/00*
U.S. Cl. 89—1 **5 Claims**



A hollow tube or radial actuator containing an explosive charge, or a means of pressurizing the interior of the tube from an external source, is deformed by flattening, indenting, or fluting, so that the volume of the tube is substantially reduced. When the tube is pressurized by firing the explosive charge, or by an external pressure source, the tube inflates, and attempts to resume a cylindrical shape. In resuming a cylindrical shape, the split tubular retainer is expanded releasing a and performs a useful function. In the application shown in this disclosure, the tube is situated within a split tubular retainer of a release mechanism which is indented to match the initial flutes, or deformation of the

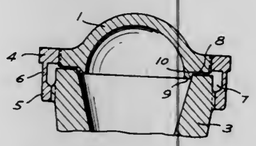
actuator. When the actuator resumes its cylindrical shape, the tube transfers force to an external mechanism, pin, or device, which was held captive in the retainer.

3,620,122
CONNECTOR ASSEMBLY FOR DISPOSABLE BOMB ARMING DEVICE
William K. Kuntz and George E. Souviner, Indianapolis, Ind., assignors to the United States of America as represented by the Secretary of the Navy
Filed Aug. 14, 1969, Ser. No. 850,147
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 D **1 Claim**



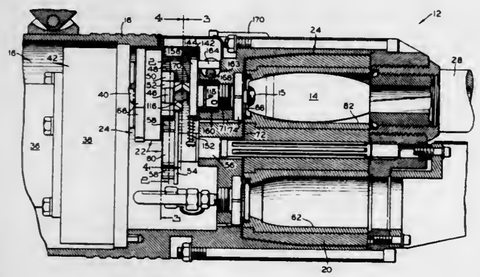
A connector assembly having a stationarily mounted connector section with one or more connector pins and a removable connector section with one or more mating connector pins. The removable connector section is provided with a deformable locking flange and a spring-biased plunger is slidably mounted in the stationarily mounted connector section and engageable with the locking flange to lock the two connector sections together. Upon release of a bomb arming device, the locking flange is deformed or ruptured and the two connector sections are separated. A pivotal lever is provided for separating the two connector sections without deforming the locking flange.

3,620,123
CLOSING DEVICE FOR THE NOZZLE OF A PROJECTILE FURNISHED WITH A ROCKET-MOTOR
Per-Olof Davidsson and Karl Gösta Högberg, Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Apr. 16, 1970, Ser. No. 29,119
Claims priority, application Sweden, Apr. 23, 1969, 5,817/69
Int. Cl. F41f *3/00*
U.S. Cl. 89—1.8 **8 Claims**



A cap for closing the nozzle of the rocket engine in a rocket-propelled projectile which is to be launched by means of a barrel and an external drive charge. The cap has a main portion for making a sealing contact with the edge of the nozzle, a threaded portion screwed onto the outside of the nozzle, and a weakened circumferential portion between the main portion and the threaded portion. During the travel of the projectile through the barrel the weakened portion is ruptured by the pressure exerted by the combustion gases produced by the drive charge whereby the holding connection between the nozzle and the main portion of the cap is severed.

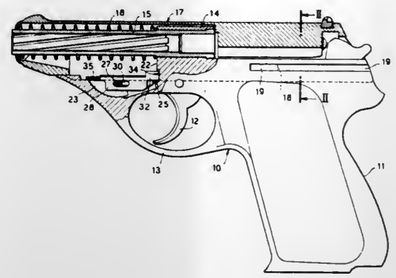
3,620,124
FIRING MECHANISM FOR REVERSIBLE AUTOMATIC CANNON
Harold H. Wiese, Davenport, Iowa, assignor to the United States of America as represented by the Secretary of the Army
Filed Jan. 12, 1970, Ser. No. 2,305
Int. Cl. F41d *7/04, 11/04*
U.S. Cl. 89—13 R **7 Claims**



In an automatic cannon comprising a chambered drum driven in either direction through a Geneva movement for successively indexing the chambers at feeding and firing positions, such Geneva movement including a continuously rotated crank wheel and an intermittently rotated star wheel connected to the drum, a firing mechanism includes a firing pin normally biased from a retracted to a striking position and mounting a sear normally biased thereon from a retracted to a latching position for releasably holding the firing pin cocked. A trigger assembly includes a sleeve telescopically mounted to the firing pin and a cam lobe contactable by the cam lobe on the crank wheel for converting rotation thereof to translational displacement of the sleeve for compressing the firing pin spring and acting against the sear for displacement thereof to release the firing pin when rotation of the drum is stopped to index each of the chambers therein at the firing station. The cam lobes on the crank wheel and in the trigger assembly are symmetrically designed to permit smooth camming contact therebetween when the drum is driven in either direction.

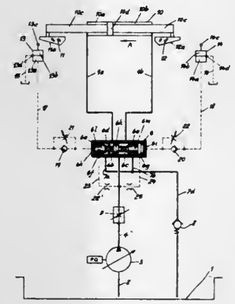
3,620,125
FIXED-BARREL AUTOMATIC PISTOL HAVING A STOPPING DEVICE FOR THE CARRIAGE
Pier Carlo Beretta, Gardone Val Trompia, Italy, assignor to P. Beretta-Armi-Roma S.p.A., Rome, Italy
Filed Apr. 21, 1970, Ser. No. 30,383
Int. Cl. F41d *11/00*
U.S. Cl. 89—196 **4 Claims**

A stopping device for the bolt and carriage assembly of a fixed-barrel automatic pistol is disclosed, in which latching means are provided to prevent the accidental disassembly of the automatic pistol when this is fired. Due to the presence of a latch which can be rotated about a fixed pin, a manipulation is necessary, and cannot be dispensed with, for separating the carriage and bolt assembly from the pistol frame. The disengagement of the carriage



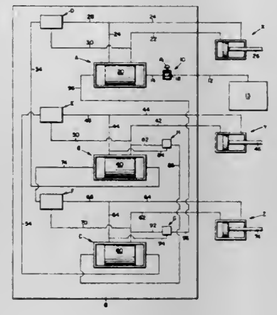
and bolt from the frame can never occur, even in the presence of the usual shocks due to firing.

3,620,126
HYDRAULIC REVERSING SYSTEM FOR A RECIPROCATING WORKING MEMBER
Paul Fuhrimann, Romanshorn, Switzerland, assignor to Hydrel AG Maschinenfabrik, Romanshorn, Switzerland
Filed June 4, 1969, Ser. No. 830,261
Claims priority, application Switzerland, June 19, 1968, 9,462/68
Int. Cl. F01l *25/02*
U.S. Cl. 91—280 **6 Claims**



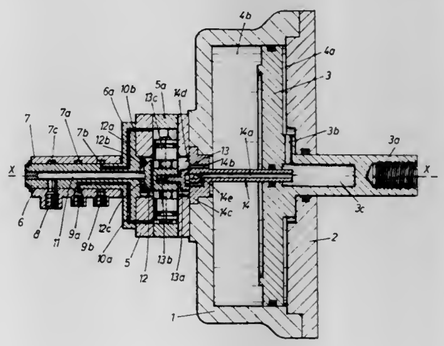
A hydraulic reversing system for a reciprocating working member which is connected with a power cylinder receiving a main piston which subdivides the cylinder into displacement chambers. The main control valve comprises a piston with a central spool separating two working chambers from one another the working chambers being connected to the displacement chambers of the main cylinder. In addition, a pair of control spools separate the main chambers of the valve from control chambers which are respectively connected to hydraulic impulse transmitters cooperating with the movable member for alternate operation on reciprocation thereof. Immediately upon tripping of one of the impulse generators, an oil flow from the main valve inlet to the corresponding control compartment is terminated and the spool valve shifted in the opposite direction to reverse the flow of fluid to the displacement compartments of the main cylinder. After an initial clearance is formed in communication with the control chamber, the main hydraulic pressure serves to bias the control valve.

3,620,127
SEQUENTIAL PULSING SYSTEM
Kenneth R. Blaisdell, 17 Savoy Ave., East Longmeadow, Mass. 01028
Filed Nov. 17, 1969, Ser. No. 877,245
Int. Cl. F15b *11/22, 21/02*
U.S. Cl. 91—412 **1 Claim**



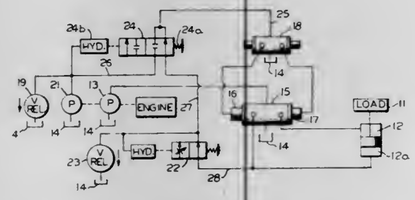
A system of programming a sequential series of mechanism-actuated operations independent of any external timing or switching or limiting valve means.

3,620,128
ROTATING DOUBLE ACTING CHUCK CYLINDER FOR MACHINE TOOLS
Günter Heckmann, Sprockhovel, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany
Filed Oct. 8, 1969, Ser. No. 864,589
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—446 **12 Claims**



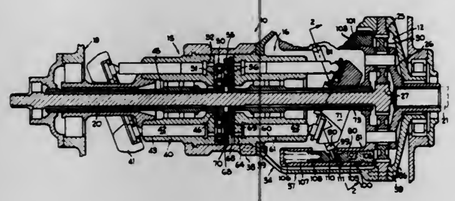
A chuck actuating device having a body with a cylindrical cavity and a double acting piston in the cavity. A main compressed air passage supplies air to the body through a rotary fluid connector and a four-way valve in the body controls the supply of compressed air to the opposite sides of the pistons. The valve is shiftable by fluid pressure supplied thereto via control passages also extending into the body through said rotary fluid connector. A resilient sealing ring check valve is interposed in the main air passage upstream of said four-way valve.

3,620,129
HYDRAULIC POWER CIRCUIT WITH EMERGENCY LOWERING PROVISIONS
Waldo G. Fruehauf, Kalamazoo, Mich., assignor to General Signal Corporation
Filed July 15, 1970, Ser. No. 55,028
Int. Cl. F15b *11/08, 15/18*
U.S. Cl. 91—449 **3 Claims**



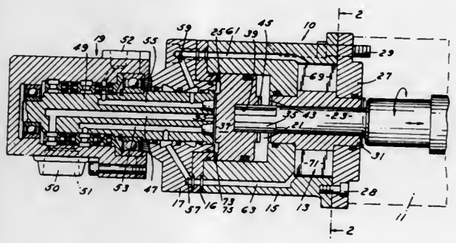
Hydraulic power circuit including a lift cylinder for raising a load, and a directional control valve for the cylinder which is actuated by a low pressure remote control system. The remote control system normally receives motive fluid from a pump, but, when the pump is disabled or idle, the controls may be adjusted to effect lowering of an elevated load utilizing the fluid under load pressure in the cylinder. For this purpose, the circuit includes a switch valve which alternately connects the inlet conduit of the remote control system with the pump or the cylinder depending upon whether pump output pressure is above or below a predetermined value, and a pressure regulator for reducing the pressure of the fluid delivered to the remote control system from the cylinder. In applications where the power pump for the cylinder serves also as the normal source of motive fluid for the remote control system, the pressure regulator may be arranged between the switch valve and the remote control system so that it can serve to reduce the pressure of the fluid supplied to that system from either the power pump or the lift cylinder.

3,620,130
HYDROSTATIC TRANSMISSION MECHANISM
Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 30, 1969, Ser. No. 837,594
Int. Cl. F01b *3/00, 13/04;* **F16d** *33/00*
U.S. Cl. 91—506 **1 Claim**



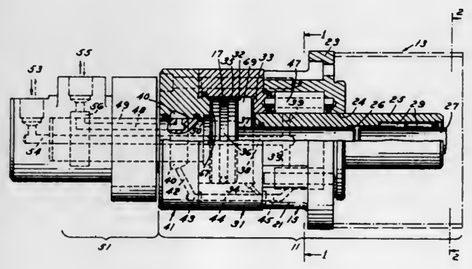
A combined mechanical and hydrostatic transmission having the sun gear of the planetary gear set driven by the input shaft the carrier of the planetary gear set driving the output shaft and a pair of hydraulic units, one of which has relatively rotating elements connected to two of the planetary gear set elements, namely, the planetary carrier and the ring gear, the other hydraulic unit being in fluid communication with the first hydraulic unit and being connected between the fixed element of the case and the ring gear. Both hydraulic units have variable displacement whereby with one of said hydraulic units being at a given displacement, and the other hydraulic unit at zero displacement the ring gear of the planetary gear set will be locked against rotation whereby the full reduction ratio of the planetary gear set is utilized and, in the situation where the said one hydraulic unit is at zero displacement, and the first hydraulic unit has a given displacement, the first hydraulic unit will lock up the planetary carrier and the ring gear to provide a 1:1 direct drive. In addition, infinitely variable speed ratios are available by having the pair of hydraulic units in various displacement positions relative to the above limits whereby a full range of speed ratios is available between the full reduction ratio of the planetary gear set and a 1:1 direct drive.

3,620,131
ROTARY-LINEAR DUAL-DIRECTIONAL ROTATING ACTUATOR
Joseph Nitkiewicz, Farmington, and Nathan Mendelsohn, Oak Park, Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.
Filed Dec. 4, 1969, Ser. No. 881,973
Int. Cl. F01b *21/00*
U.S. Cl. 92—2 **1 Claim**



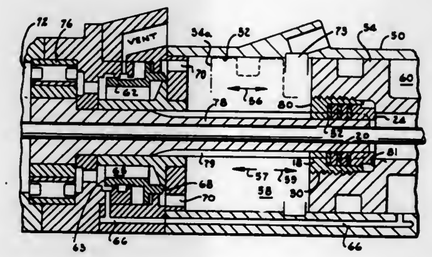
A rotary-linear actuator to permit retraction of a cutting tool in a boring bar and size compensation of the cutting tool in either clockwise or counterclockwise direction.

3,620,132
ROTARY-LINEAR ACTUATOR
Joseph Nitkiewicz, Farmington, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed Sept. 25, 1969, Ser. No. 861,109
Int. Cl. F01b *21/00*
U.S. Cl. 92—2 **1 Claim**



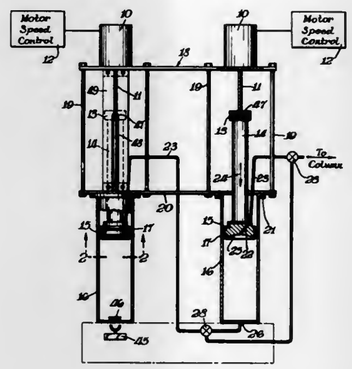
A rotary-linear actuator to permit retraction and size compensation of a cutting tool.

3,620,133
HEAT DISSIPATING BEARING WITH WEAR COMPENSATING MEANS
Jacob E. Feucht, Sidney, Ohio, assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,608
Int. Cl. F01b *3/06;* **F16c** *31/00, 37/00*
U.S. Cl. 92—33 **1 Claim**



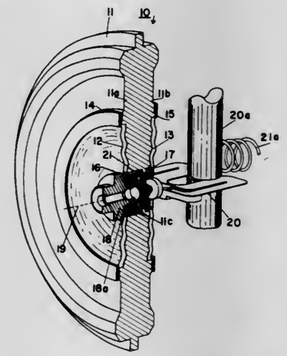
A bushing type shaft bearing for use in the piston of a percussion drill comprising spaced plastic bearing elements disposed in slots in a metallic heat conductive retainer. The retainer dissipates frictional heat developed in the plastic, and also reinforces the plastic against warpage, deformation or cold flow out of the slots. The retainer being threaded into the piston so that an endmost element forcibly abuts against a piston surface to apply an axial squeezing force on the trapped elements.

3,620,134
MATERIAL TRANSPORT SYSTEM
Ralph D. Conlon, Wilmington, and William M. Fleisher IV, Harmony Hills, Newark, Del., assignors to Nester & Faust Manufacturing Corp., Newark, Del.
Filed Sept. 30, 1968, Ser. No. 763,632
Int. Cl. F15b *21/04;* **B67d** *5/46;* **G01f** *11/02*
U.S. Cl. 92—79 **3 Claims**



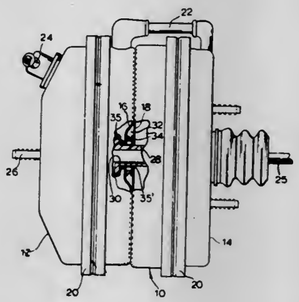
This invention provides a positive displacement apparatus that allows one to repeat automatically in a precise manner the eluting or transporting of material from a reservoir, such as a column, to a second column or a second reservoir. A motor is driven, under controlled speed, to drive a piston into the first reservoir at a precise rate. As the piston enters the reservoir, material therein, such as a liquid, is forced upwardly through an aperture in the piston which co-acts with a tubular element connected to the second reservoir. Preferably, the bottom of the piston is concave and the passageway through the piston head begins at the apex of the concavity.

3,620,135
DIFFERENTIAL PRESSURE CAPSULE WITH TEMPERATURE COMPENSATION
Hoel L. Bowditch, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Feb. 7, 1969, Ser. No. 797,545
Int. Cl. F16j *3/00*
U.S. Cl. 92—97 **5 Claims**



In a motion balance capsule for measurement of differential pressures in process applications, a pair of matched diaphragms each exhibiting a similar change in effective area with stroke are employed to compensate temperature effects; the diaphragms are set to a stroke yielding equal effective areas for no differential pressure; with the application of pressure, and with a temperature change affecting fill volume, the fill will act upon the difference in effective areas of the stroked diaphragms to produce a tendency to off-set the temperature effect upon the spring rate of the capsule assembly, including the motion balance spring.

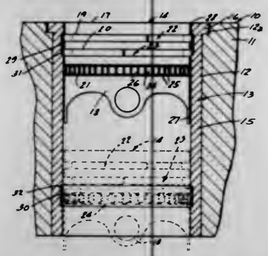
3,620,136
FLUID SEALS
Charles Brian Weatherhogg, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Aug. 13, 1969, Ser. No. 849,756
Claims priority, application Great Britain, Aug. 21, 1968, 39,974/68
Int. Cl. F01b *7/00*
U.S. Cl. 92—151 **5 Claims**



A tandem servo motor housing is provided which comprises a pair of separate cells having end walls which are secured together to form a composite unit, the end walls constituting a partition dividing the interior of the composite housing into two separate chambers. The end walls have portions which are spaced slightly from one another to define an axially situated and generally annular space serving to receive an annular fluid seal. The

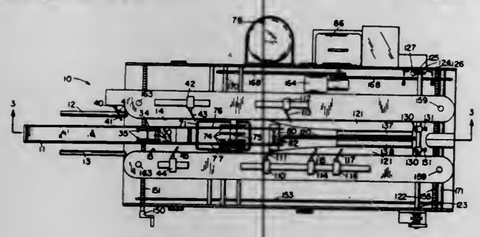
fluid seal preferably comprises an annular body portion, a pair of axially spaced and generally radially directed lips located adjacent the periphery of said body portion, and a radially inner and generally axially directed lip which defines the inner margin of the body portion.

3,620,137
PISTON SLEEVE
Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Continuation-in-part of application Ser. No. 696,647, Jan. 9, 1968. This application Oct. 6, 1969, Ser. No. 868,966
Int. Cl. F16j *11/02, 11/04*
U.S. Cl. 92—169 **9 Claims**



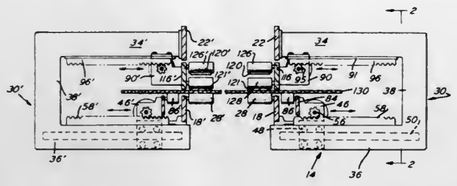
A piston cylinder, particularly an internal combustion engine cylinder liner sleeve, having a band of hard-facing metal such as molybdenum, refractory metal carbide alloys, preferably tungsten carbide, or the like, embedded in the inner surface of the sleeve to provide a corrosion and wear resisting bearing face around the piston rings at the top end of the piston stroke and, if desired, also at the bottom end of the piston stroke. The hard-facing metal band preferably surrounds the top ring of the piston at the top end of the piston stroke. If a hard-facing metal band is provided at the bottom of the piston stroke, it is located to surround the bottom oil ring of the piston at the bottom of the piston stroke. The band is applied by a plasma arc flame spray and has a total porosity level and pore size range able to retain lubricant without retaining grit of a size which would damage the sleeve or piston rings.

3,620,138
METHOD OF CARTON SEALING
Morris P. Neal, deceased, late of Clearwater, Fla., by James L. Neal, executor, Clearwater, Donald G. Reichert, Tarpon Springs, and John Fradenburgh, Tampa, Fla., assignors to A-B-C Packaging Machine Corporation, Largo, Fla.
Original application May 24, 1967, Ser. No. 641,033, now Patent No. 3,482,489, dated Dec. 9, 1969. Divided and this application Nov. 3, 1969, Ser. No. 873,495
Int. Cl. B31b *1/26, 1/62, 49/02*
U.S. Cl. 93—36.3 **3 Claims**



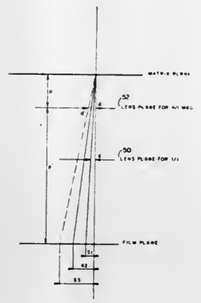
A machine is provided which seals the bottom flaps of empty cardboard cartons. It comprises means to receive partially set up cartons, means to first apply melted thermoplastic polymeric resinous adhesive (known normally as "hot melt" adhesive) to close forward and rear lower flaps, means to then apply water soluble adhesive to other areas of the same flaps, means to then close the side lower flaps against the flaps to which adhesive has been applied, means to square the carton prior to applying pressure, and means to apply pressure from above through the interior of the carton against the bottom of the carton comprising said flaps while at the same time supporting said flaps from the bottom to resist the pressure applied from above.

3,620,139
FOLDER-GLUER AND AUXILIARY CONVEYORS THEREFOR
Henry E. Kulwicki, Willingboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed May 5, 1969, Ser. No. 821,625
Int. Cl. B31b *1/04, 1/36, 3/26*
U.S. Cl. 93—50 **4 Claims**



A machine for processing paperboard blanks such as a folder-gluer is provided with auxiliary feed conveyors at the inlet end of the machine. The auxiliary conveyors are movable toward and away from each other so that the area of contact between the auxiliary conveyors and the paperboard blanks may be varied.

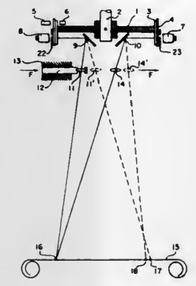
3,620,140
PHOTOGRAPHIC TYPE COMPOSING MACHINE
Louis M. Moyroud, Medford, Mass.
(202 Grove Way, Delray Beach, Fla. 33444)
Continuation-in-part of application Ser. No. 506,936, Nov. 9, 1965. This application July 22, 1969, Ser. No. 843,297
Claims priority, application Great Britain, Aug. 6, 1968, 37,488/68
Int. Cl. B41b *15/34, 17/14*
U.S. Cl. 95—4.5 **7 Claims**



A system for rapidly imaging characters having different relative widths of a radiation-sensitive surface using the concept of optical leverage is disclosed. Character images are projected from one or more projection zones on a character matrix to a receiving surface such as a

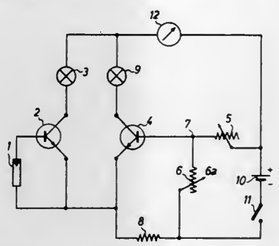
film. Prior to being focused on the film, each of the projected character images are variably spaced from one another in accordance with their respective relative widths in order to form lines of composition having proportionately spaced characters. The focusing system normally includes a size-changing mechanism. Character spacing may be accomplished by any of several embodiments which employ the optical leverage concept. One embodiment comprises at least one movable right-angle prism which is associated with a fixed, rotating character matrix—the prism spaces projected images of selected characters on the film by straight-line movement in a plane parallel to the film plane.

3,620,141
PHOTOGRAPHIC TYPE COMPOSING MACHINE
Louis M. Moyroud, Medford, Mass.
(202 Grove Way, Delray Beach, Fla. 33444)
Filed July 22, 1969, Ser. No. 843,298
Claims priority, application Great Britain, July 25, 1968, 35,575/68
Int. Cl. B41b *17/14*
U.S. Cl. 95—4.5 **8 Claims**



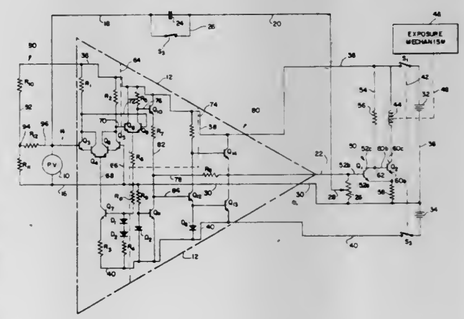
A photocomposing machine is disclosed. A character presentation means, which can be a character bearer such as one or more discs, drums, endless bands, or matrix plates, includes at least two separate character generating stations. Images of selected characters are flash-projected from each station to an associated lens-carriage system which positions proportionately-spaced characters on a film in order to form lines of composition thereon.

3,620,142
ILLUMINATING CONTROL ARRANGEMENT FOR PHOTOGRAPHIC CAMERAS
Dieter Engelsmann, Unterhaching, and Günter Pawlik, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 18, 1968, Ser. No. 737,895
Claims priority, application Germany, June 23, 1967, A 56,077
Int. Cl. G03b *7/16*; G01j *1/44*
U.S. Cl. 95—10 C **9 Claims**



An arrangement for adapting flash equipment in photographic cameras to daytime use as well as nighttime conditions. Two transistors have their emitters connected together and are, in turn, connected to a single source of current. The base-emitter path of one transistor includes a light sensor for the purpose of controlling the transistor as a function of the prevailing light conditions. The second transistor includes a variable resistor in its base-emitter path, which is set in accordance with the object distance. This setting of the variable resisor produces control of the diaphragm of a camera to thereby limit the amount of light received by the film from the object to be photographed as a function of the applicable guide number. Each collector of the two transistors includes an indicating lamp in its circuit so as to provide a visual indication of the current or conducting state of a transistor. The combined action of the two transistors is such that as the prevailing light intensity decreases the transistor associated with the variable resistor becomes increasingly conductive.

3,620,143
AUTOMATIC EXPOSURE CONTROL SYSTEM WITH FAST LINEAR RESPONSE
John P. Burgarella, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 16, 1968, Ser. No. 783,855
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 C **13 Claims**

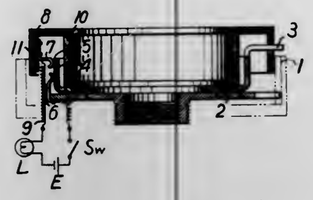


An automatic exposure control system for regulating one or more variable photographic exposure parameters. The light levels of a scene are evaluated using one or more photovoltaic cells. The cells are operated in a current mode through use of an operational amplifier having an input circuit which incorporates a capacitive feedback path. With the system, a highly responsive linear output representative of scene light levels is derived for use in controlling an exposure.

3,620,144
SYSTEM FOR INDICATING THE DISTANCE LIMIT FOR FLASH PHOTOGRAPHY
Toshio Hayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 29, 1969, Ser. No. 870,690
Claims priority, application Japan, Oct. 30, 1968, 43/79,469
Int. Cl. G03b *17/20*
U.S. Cl. 95—11 R **4 Claims**

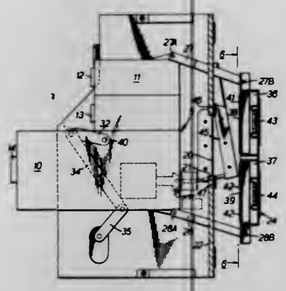
A system for indicating distance limits to flash photography which comprises an electrically conductive surface provided on a guide number changing member of the camera and a contact attached to a distance adjusting member and disposed in mating relationship with the conductive surface. During operation of the guide number changing member and distance adjusting member, the distance between the conductive surface and the contact is

varied. The contact and conductive surface are brought into engagement with each other to close the electric cir-



cuit of an electrical member for indicating a warning when the distance limit of proper exposure for flash photography has been reached.

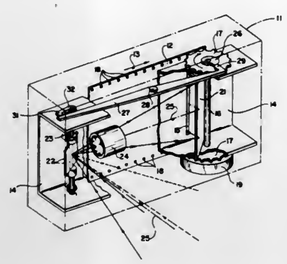
3,620,145
FILM SUPPORT WITH INTERCHANGEABLE CAMERA MEANS
Charles W. Clark, Kings Grove, Maidenhead, Berkshire, England
Filed Nov. 19, 1968, Ser. No. 776,871
Claims priority, application Great Britain, Nov. 20, 1967, 52,748/67
Int. Cl. G03b *17/53*
U.S. Cl. 95—11 **8 Claims**



Photographic apparatus including a single support arranged to locate and support a sheet of photo-sensitive material in a light-tight manner in an exposure position and two cameras adjacent to one another. A guide is provided for moving the cameras and the support relative to one another between positions in which the support is behind one or other of the cameras. The guide is constructed so that the initial and terminal relative movements between the cameras and the support means are generally parallel with the axes of the cameras.

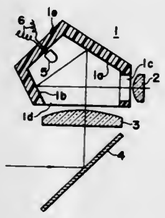
3,620,146
COMPACT SCANNING CAMERA
Jasper S. Chandler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 15, 1970, Ser. No. 46,051
Int. Cl. G03b *37/00*
U.S. Cl. 95—15 **7 Claims**

A compact camera using film of relatively large image format is provided with a scanning mirror or the equivalent and with a relatively long focal length multiple element lens, the first principal point of which is located at or near the scanning pivot axis of the scanning mirror. This arrangement prevents or substantially corrects image smearing caused by the apparent shifting of the lens viewpoint during scanning of the photographed scene and



also reduces other types of distortion inherent in scanning cameras of equivalent size by increasing the focal length of the optical system.

3,620,147
PHOTOMETRIC DEVICE FOR PHOTOMETERING WITHIN A POLOMIRROR BODY FOR USE WITH A SINGLE-LENS REFLEX CAMERA
Hisanori Ataka and Yohei Ikezu, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 19, 1968, Ser. No. 760,865
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **6 Claims**

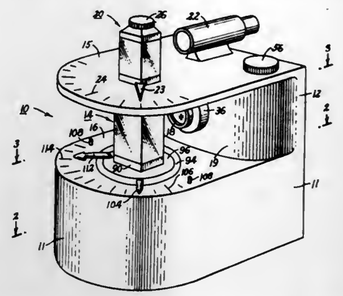


An exposure meter device for use with a single-lens reflex camera wherein the viewfinder system includes a polomirror body (hollow polyhedron formed of plastic material or the like and provided with internal light reflecting surfaces), and a light receiving member is located within or movable into the polomirror and positioned in the optical path of the viewfinder.

3,620,148
PANORAMIC CAMERA
Samuel S. La Rocco, 312 Thornridge Drive 06903, and Daniel B. Ventre, 24 Anderson St. 06851, both of Stamford, Conn.
Filed Oct. 20, 1969, Ser. No. 867,468
Int. Cl. G03b *37/00*
U.S. Cl. 95—15 **15 Claims**

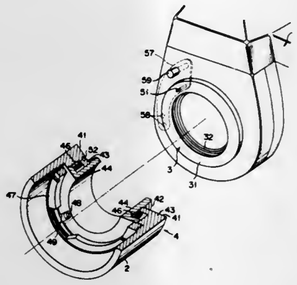
The disclosed panoramic camera includes a pair of optical scanners, each comprising two dove prisms back-to-back with a mirror interface. One scanner is associated with a viewfinder for determining the angle of the desired field of view, which angle may approach 300°. The other scanner is associated with the camera objective lens and is

rotated in synchronism with the advance of film to scan the field of view. Physical stops are provided for adjustably



establishing the starting and terminating points of the scan as determined by the viewfinder scanner.

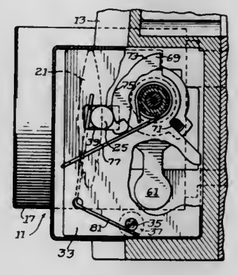
3,620,149
THREADED TYPE COUPLING DEVICE FOR COUPLING A LENS BARREL WITH A CAMERA BODY
Akira Ogihara, Tokyo, Japan, assignor to Olygin Optical Corporation, Tokyo, Japan
Filed July 31, 1970, Ser. No. 60,077
Claims priority, application Japan, Aug. 4, 1969, 44/61,207, 44/88,256; Aug. 18, 1969, 44/64,844; Dec. 28, 1969, 44/123,736
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **6 Claims**



In a threaded type coupling device for coupling a lens barrel with a camera body, either of the lens barrel and camera body is provided with an independent threaded cylindrical member contained therein to be movable axially but not in the circumferential direction, and the independent threaded cylindrical member is resiliently urged back from the other of the lens barrel and camera body so as to cause them to abut on each other a little before the predetermined relative axial and circumferential position is reached. Further, a stop mechanism is provided for locking the lens barrel and camera body against relative rotation when they are coupled at said predetermined point.

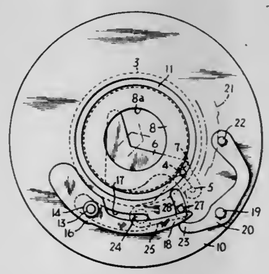
3,620,150
SINGLE KNOB CONTROL SEMIAUTOMATIC FOCUS DEVICE
Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 30, 1969, Ser. No. 889,214
Int. Cl. G03b *13/20*
U.S. Cl. 95—44 C **7 Claims**

This disclosure describes a single knob control semiautomatic focusing device for use on a camera. A cam attached to the knob impinges on a stud attached to the sliding lens sleeve of the camera. The stud is spring biased toward the cam. A free swinging pendulum having a cam surface is mounted so that the cam surface also impinges on the stud. Focus is achieved by rotating the knob in a first direction so that the cam moves the stud away from the cam surface of the pendulum (moves the attached lens sleeve through focus). The axis of the lens is then pointed toward the base of a remote object being focused on and



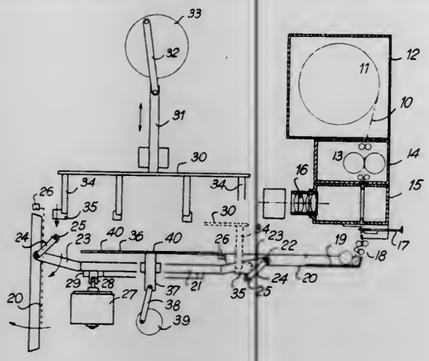
the knob is released so that the stud moves to where it impinges on the cam surface of the pendulum. The stud is maintained in this "focus" position due to friction when the axis of the lens is returned to a generally horizontal or picture taking position. Further, the knob is adjustable for manual focus by scale by rotation in a second direction to cause a second cam surface to displace the stud and focus the lens independent of the orientation of the pendulum.

3,620,151
APERTURE CONTROLLING DEVICE IN FLASH PHOTOGRAPHY
Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan
Filed Dec. 30, 1968, Ser. No. 787,726
Claims priority, application Japan, Mar. 21, 1968, 43/18,148
Int. Cl. G03b *7/16, 9/06*
U.S. Cl. 95—64 A **5 Claims**



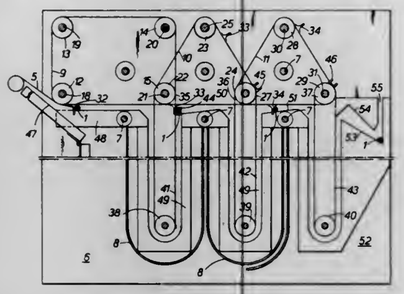
Apparatus for adjusting the exposure aperture for a camera in conjunction with the flash operation thereof, the apparatus including a manually operated device and a control lever responsive thereto, a movable lever responsive to the focusing mechanism and an exposure aperture adjusting member. The exposure aperture adjusting member is moved automatically to adjust the exposure aperture to the proper value for taking a picture utilizing associated flash equipment in response to the guide number set by the guide number setting device and the distance value set by the focusing mechanism.

3,620,152
AUTOMATIC PHOTOGRAPHIC DEVELOPMENT APPARATUS
Claude Daury, Le Pecq, Yvelines, France, assignor to Societe Anonyme dite: Solephot, Levallois-Perret, Hauts-de-Seine, France
Filed Dec. 5, 1969, Ser. No. 882,428
Claims priority, application France, Dec. 19, 1968, 179,189
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 R **15 Claims**



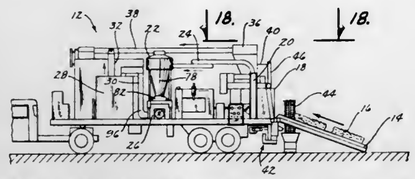
Automatic apparatus for the development of exposed cut strips of photographic film, which comprises a turntable carrying a series of dishes, the complete treatment cycle being performed in each dish for a same exposed cut strip by using small amounts of liquids which are rejected after each operation, until the fully processed strip is delivered to the user of the apparatus.

3,620,153
APPARATUS FOR AUTOMATICALLY PROCESSING PHOTOGRAPHIC FILM OR PAPER
Arnold Reginald Kennington, Ealing, London, England, assignor to Donka N.V., Breda, Netherlands
Filed May 7, 1969, Ser. No. 822,404
Claims priority, application Great Britain, May 8, 1968, 21,703/68
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **3 Claims**



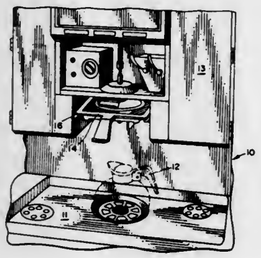
This invention provides apparatus for processing photographic film or papers in succession. A film or paper to be processed is releasably attached to a rod which is transported by an endless belt to a fork on another endless belt which fork conveys the rod with the film or paper trailing behind it through a first processing tank. After passing through the first tank, the rod together with the film or paper is transported by another endless belt to a fork on another endless belt which conveys the rod and film or paper through a second processing tank. In a similar manner, the rod and film or paper is transported for processing in a next tank. Finally, the processed film or paper is passed through a drying chamber whence it is positioned for removal from the apparatus.

3,620,154
LIVESTOCK FEED PROCESSING APPARATUS
John N. Dodgen and Paul C. Swigger, Humboldt, Iowa, assignors to Dodgen Industries, Inc., Humboldt, Iowa
Filed June 3, 1969, Ser. No. 830,014
Int. Cl. A23k *1/20*
U.S. Cl. 99—235 **14 Claims**



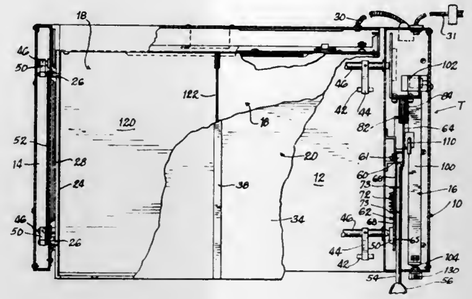
Apparatus for processing animal feed involving a chopper unit in a wagon being fed hay by a conveyor wherein the hay is under compression from a powered roller coordinated in its speed with the speed of the chopper unit. The chopper unit involves one or more rotatable units having blades around its periphery which cooperate with stationary blades in cutting the feed material. One or more pairs of chopper rollers may be provided which turn towards the chopper unit inlet and cooperate with adjacent stationary blades. The material from the wagon may be fed from the chopper unit directly into an apparatus for producing livestock feed pellets having a hammer mill or the like. The chopper unit may also be placed on the machine for producing the pellets. The ground feed prior to being pelletized may be screened by a baffle plate having magnets associated with it for extracting metallic foreign material in the feed. The pellets produced by the pelletizer unit may be sorted by eccentrically operated shaker to separate out the fines. The forward lower end of the shaker being pivotally connected to the frame while the rear raised end is connected to the powered eccentric and may move in random directions.

3,620,155
COFFEE BREWING APPARATUS
George Bixby, Jr., Scottsdale, Ariz., assignor to Automatic Marketing Industries, Inc., Phoenix, Ariz.
Continuation-in-part of application Ser. No. 771,136, Oct. 28, 1968, now Patent No. 3,511,166. This application Apr. 22, 1970, Ser. No. 30,877
Int. Cl. A47j *31/14*
U.S. Cl. 99—295 **7 Claims**



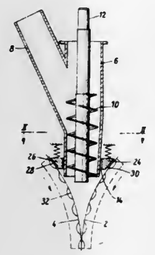
Coffee brewing apparatus using a filter bag wherein a movable pressure plate confines the bag within an open-topped tray to insure thorough distribution of hot water through the grounds in the filter bag.

3,620,156
BUN TOASTER
James C. Schindler, Naperville, Ralph E. Weimer, Lombard, and Ronald M. Herbert, Hanover Park, Ill., assignors to McDonald's System, Inc.
Filed Nov. 3, 1969, Ser. No. 873,304
Int. Cl. A47j *37/68*
U.S. Cl. 99—349 **5 Claims**



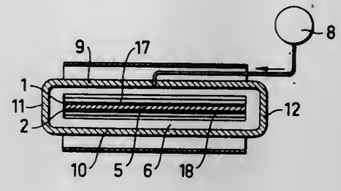
A toaster having a horizontal toasting platen and a parallel pressure face resiliently biasing an object to be toasted against the platen during a toasting cycle to compensate for normally encountered shrinkage of the object from the platen during a toasting cycle. A parallel linkage mounts the pressure face to provide movement perpendicular to the platen and some movement parallel to the platen to minimize sticking of the toasted object to the toasting platen.

3,620,157
APPARATUS FOR BRIQUETTING BULK MATERIALS ON ROLLER PRESSES
Hartmut Rieschel, Hattingen (Ruhr), Germany, assignor to Maschinenfabrik Koppern & Co. K.G., Hattingen (Ruhr), Germany
Filed May 31, 1968, Ser. No. 733,587
Claims priority, application Germany, July 2, 1967, P 16 83 904.6
Int. Cl. B30b *3/00*
U.S. Cl. 100—145 **9 Claims**



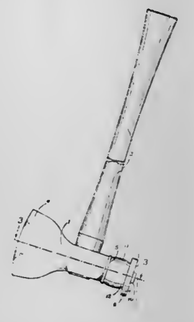
Apparatus for briquetting loose material on roller presses by the use of pre-compression in a charging hopper whereby the bulk material which has a grain size predominantly smaller than 40μ is continuously compressed at a predetermined ratio to such an extent that its bulk density reaches approximately 50% of the specific weight.

3,620,158
CONTINUOUS PRESS
Aldo Torelli and André Jacquemet, Grand-Lancy, Geneva, Switzerland, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden
Filed July 11, 1969, Ser. No. 840,928
Claims priority, application Switzerland, July 12, 1968, 10,473/68
Int. Cl. B30b *5/04*
U.S. Cl. 100—154 **2 Claims**



A continuous press comprises two conveyor belts serving to press and convey between them a product in the shape of a plate or the like and to subject said product to a hydraulic or pneumatic pressure, in which the two adjacent flights of the belts pass through a pressure chamber that surrounds said flights in the transverse direction, said chamber having one entering opening and one exit opening for the said flights.

3,620,159
MARKING HAMMER
James L. Gould, Rte. 2, Box 566, Tillamook, Oreg. 97141
Filed July 24, 1969, Ser. No. 844,511
Int. Cl. B44b *5/02*
U.S. Cl. 101—28 **6 Claims**

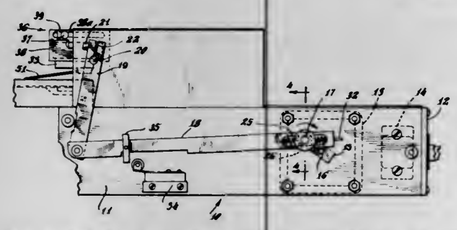


This invention relates to a marking hammer used to brand logs at their ends by making an intaglio recess to indicate ownership and where they were cut. Trees are frequently felled in difficult territory in which to swing a hammer. This hammer has sufficient mass and articulation to ensure that the stencil on the hammerhead will tilt and indent squarely on the end of a log. The point of articulation is protected by a resilient and elastic sheathing that holds the hammerhead square to the work when it is swung but permits it to cant if the blow is not made trully normal to the log end.

3,620,160
HEAT-SENSITIVE STENCIL PAPER
Keishi Kubo and Kiyoshi Sakai, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,718
Claims priority, application Japan, Oct. 6, 1967, 42/64,081
Int. Cl. B41n *1/24*
U.S. Cl. 101—128.2 **1 Claim**

A heat-sensitive stencil paper for use in mimeographic printing, comprising a resinous film consisting of a vinylidene chloride-vinyl chloride copolymer which has a biaxial heat shrinking coefficient in the range of the order of 2–8% at 100° C. for 1 minute, said resinous film being lined with a porous thin sheet of paper, said stencil paper being so adapted that an image consisting of perforations is formed in said film by applying infrared light thereto.

3,620,161
CONTROLLER FOR LABEL PRINTER AND DISPENSER
Richard S. Doran, Brooklyn, Conn. 06234, and Knut A. Barstrom, Rte. 87, Columbia, Conn. 06237
Filed July 29, 1969, Ser. No. 845,868
Int. Cl. B41f *1/06*
U.S. Cl. 101—291 **8 Claims**



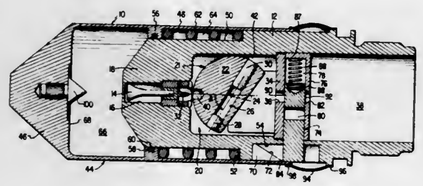
An attachment for controlling the operation of a mechanical apparatus that oscillates about an axis in performing its work function. In particular the attachment will control the operation of a formerly manually operated label printing and dispensing apparatus of the type used by supermarkets and the like for printing price labels to be attached to merchandise. The pressure adhesive labels are furnished attached to a web or continuous belt. Each label is printed and delivered by the printer-dispenser to the hand of the operator who then applies it to the merchandise. The attachment enables the operator to receive the printed label as it is removed by the web ready to be applied to the merchandise at a rate of speed controlled to the operator's reaction timing as he picks up the delivered label. The attachment controls the pressure of the printing head on the label and the inking pad. An embodiment of the attachment provides for continuous rolling up of the web after the labels have been printed instead of being dispensed individually from the web, in order to store the labels for subsequent use.

3,620,162
RIFLE LAUNCHED ROCKET
Paul C. King, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Sept. 30, 1969, Ser. No. 862,201
Int. Cl. F42b *11/42, 13/28*
U.S. Cl. 102—65.2 **3 Claims**



A rifle launched rocket which comprises a rocket motor provided with a bullet catcher and a warhead with a fuse assembly and means for attachment of the rocket to the muzzle of a field rifle. In operation when the rifle is fired the combination of the bullet momentum and the gases from the fired cartridge create sufficient impetus to launch the rocket from the barrel of the rifle. Simultaneously the bullet ignites the rocket motor which propels the rocket to the target at high speed. When the forward end of the rocket which carries the warhead and fuse assembly hits a target, the fuse initiates detonation of the warhead. This device provides a means for boosting the range and destruct capability of small rockets carrying high explosives or various types of chemicals.

3,620,163
SECOND ENVIRONMENT SAFETY FOR PROJECTILES
Christe M. Shekro, Cincinnati, Ohio, assignor to KDI Corporation, Fairfax, Ohio
Filed Aug. 12, 1968, Ser. No. 751,978
Int. Cl. F42c *1/04, 15/24*
U.S. Cl. 102—78 **17 Claims**



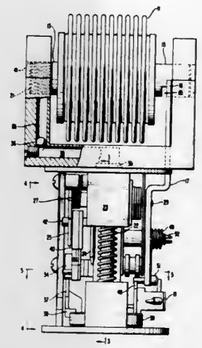
A low mass element carried by a projectile and responsive to aerodynamic drag for providing a second environment safety to a projectile fusing system which incorporates an integrating accelerometer as a primary safety in arming of the fuse subsequent to projectile firing.

3,620,164
PROJECTILE FUZE SAFE AND ARMING DEVICE
Joseph P. Carroll, 164 Columbia Heights, Brooklyn, N.Y. 11201
Filed May 26, 1969, Ser. No. 827,736
Int. Cl. F42c *15/22, 15/24*
U.S. Cl. 102—78 **3 Claims**



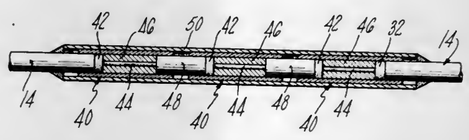
A projectile fuze safe and shell arming device including a fixed member, a weighted rotor movable relative to said fixed member from inactive to active positions, and retarding means exerting a resilient force proportional to the displacement of said rotor from inactive position. Locking means is provided to maintain said rotor in active position once said position is reached.

3,620,165
SELF-COMPENSATING BAROMETRIC FUZE
John E. Henderson, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed Sept. 10, 1969, Ser. No. 856,543
Int. Cl. F42c *5/02*
U.S. Cl. 102—70 B **7 Claims**



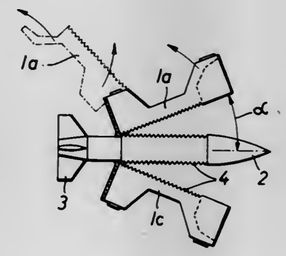
The invention relates to barometric fuzes for high altitude rockets and particularly to a mechanical self-compensating barometric sensing bellows having prior to launch, a fixed end and a free end, the free end designed to compensate for changes in atmospheric pressure. Launch acceleration releases a firing pin which fires a charge driving a plug into a movable shaft attached to the free end of the bellows sensing element. The plug freezes the movement of the shaft and establishes a reference bellows length proportional to the ambient atmospheric pressure immediately upon launch. The fixed end is then released to sense altitude change. A time delay safety subsequently coacts with the barometric sensing bellows to prevent firing as the rocket passes upwardly through the preselected firing altitudes. The safety then releases an altitude sensor at the bellows to trigger fuze ignition on the descent at the preselected altitude.

3,620,166
RADIANT ENERGY SIGNAL TRANSMISSION SYSTEM
Francis H. Bratton, Avon, and John M. Smith, Simsbury, Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.
Filed Dec. 24, 1968, Ser. No. 786,586
Int. Cl. F42b *23/20, 3/18, 3/16*
U.S. Cl. 102—70.2 A **8 Claims**



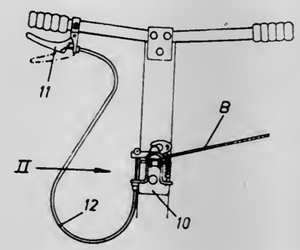
A new and highly practical signal transmission system utilizing a radiant energy signal unaffected by adverse operating conditions provides for the operation of a work function at a work station located remotely from the source of the radiant signal. The system includes the transmission of a noncoherent light signal of high intensity along a light transmitting conduit to a sensitive pyrotechnic or explosive relay device capable of absorbing attenuated light signals and emitting an amplified light signal along additional lengths of conduit to the remotely located work station. The relay device, which may be hermetically sealed, beneficially incorporates a pyrotechnic delay material for accurately controlling and synchronizing the receipt of the signal at a plurality of isolated work stations.

3,620,167
DRIVE CAGE FOR WING-STABILIZED LOW-CALIBER SHELLS
Rudolf Romer, Dusseldorf, Jurgen Winkelmann, Kleinenbrolch, and Winfried Rossmann, Neuss-Kaarster Brucke, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed May 26, 1969, Ser. No. 827,729
Claims priority, application Germany, May 31, 1968, P 17 03 507.3
Int. Cl. F42b *13/16*
U.S. Cl. 102—93 **4 Claims**
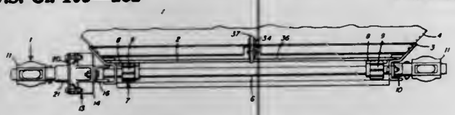


A wing-stabilized low-caliber shell, which comprises a shell body and a drive cage surrounding in the center range the shell body and comprising segments including loosely joined parts. At least one annular guide band holds together the segments. A tail unit is secured to the shell body and the drive cage has an end face opposite the tail unit. A sealing disc is disposed at the end face of the drive cage, and the guide band is disposed adjacent the sealing disc.

3,620,168
DEVICE FOR COUPLING A SKI-BOB TO A SKI LIFT
Henri Rey, Haute-Roche, Crans-Sierre, Switzerland
Filed Dec. 17, 1968, Ser. No. 784,386
Claims priority, application Switzerland, Dec. 19, 1967, 17,910/67
Int. Cl. B61b *11/00*
U.S. Cl. 104—202 **4 Claims**



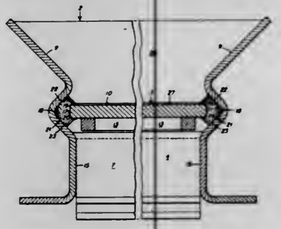
This invention relates to a device for coupling a ski-bob to a ski lift and comprises a hook including a mobile element ensuring the closure of the hook, a spring biased lock for locking the mobile element in closed position and a control member operating, when actuated, on the lock to maintain the lock in a closed position against the action of the biasing spring.

3,620,169
HOPPER GATE POWER DRIVE MECHANISM
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed July 2, 1969, Ser. No. 838,565
Int. Cl. B61d *7/20, 7/26;* **F16h** *57/02*
U.S. Cl. 105—282 **7 Claims**



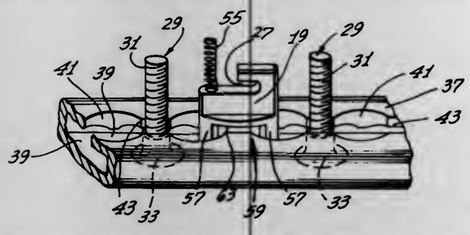
Actuating mechanism having at opposite ends of a drive shaft for a discharge gate, alternatively or simultaneously operable drives, one direct and the other through a housed, bi-directional, hypocycloidal gear train, for selectability of the power applied in operating the gate.

3,620,170
HOPPER SLIDING GATE OUTLET ASSEMBLY
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Feb. 27, 1969, Ser. No. 802,951
Int. Cl. B61d *7/20, 7/26;* **F16c** *29/00*
U.S. Cl. 105—282 P **9 Claims**



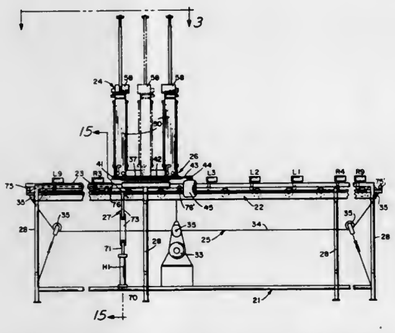
A slide gate assembly for railway hopper cars having wedges on the sides and rear end of the slide gate fitting in inwardly flaring V-grooves indented in the gate frame, and depending for sliding support and guiding of the gate at the sides and sealing at sides and rear on engagement between contacting surfaces of the wedges and the grooves.

3,620,171
RATTLEPROOF TIE-DOWN ASSEMBLY
Paul S. Brenia, Torrance, and Ernest Prete, Jr., Woodland Hills, Calif., assignors to Ancra Corporation, El Segundo, Calif.
Filed Dec. 4, 1969, Ser. No. 881,984
Int. Cl. B61d *45/00;* **B60p** *7/08*
U.S. Cl. 105—369 A **13 Claims**



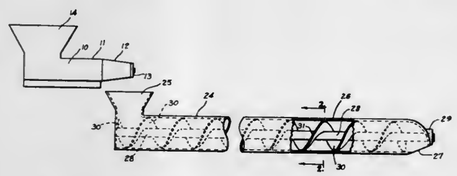
A rattleproof tie-down assembly for use in aircraft and other vehicles comprising a body having a plunger therein which is actuated by an eccentric formed on an operator-controlled handle. The plunger is forced against a fixture by the eccentric so as to tend to force the body away from the fixture and a pair of holding means, mounted on the body, are fitted within the fixture to prevent such a movement of the body. A resilient means is fixed to the plunger for compression against the fixture, or may be mounted between the body and the holding means, so as to prevent the body, holding means, and plunger from vibrating against the fixture.

3,620,172
FOOD FABRICATOR
Foster Mueller, Mercedes, Tex.
(614 Winterwood Way, Houston, Tex. 77029)
Filed June 17, 1970, Ser. No. 46,981
Int. Cl. A23g *3/00*
U.S. Cl. 107—1 A **10 Claims**



A work receiving board reciprocates below an oscillatable feed turret to receive a ribbon strip of dough and filling in either direction of movement of the board while folding one edge of the dough over the filling prior to tilting of the board during a dwell thereof for rolling the dough into a continuous roll and cutting of the latter into uniform lengths of edibles; the programming of the above operations in timed relation to one another according to variations of the edibles to be produced on the apparatus.

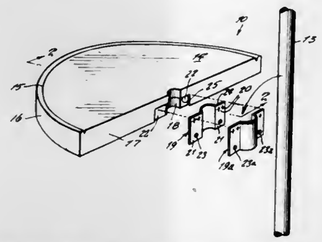
3,620,173
FERMENTABLE FLOUR WATER MIXTURE TREATMENT
George P. Sternberg, 727 W. 46th St., Kansas City, Mo. 64112
Filed Nov. 15, 1967, Ser. No. 683,253
Int. Cl. A21d *8/00*
U.S. Cl. 107—54 B **9 Claims**



The method of treating a fermentable flour water mixture such as a sponge, a straight dough, or a brew containing flour, used in the manufacture of bakery products, by fermenting the mixture at a higher than atmospheric pressure. In the case of a sponge or straight dough, the ingredients are mixed to blend them while subjected to a continuously increasing pressure, by passing the mixture through a tubular chamber from an inlet at one end to an adjustable size outlet at the other end, the chamber decreasing in cross section toward the outlet end. Positive feed is by a feed screw which mixes by interaction with longitudinal ribs on the inner face of the chamber.

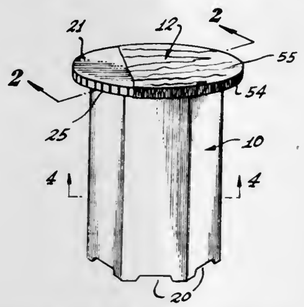
After the mixture has been blended it is fermented under higher than atmospheric pressure for from thirty minutes to two hours by feeding the mixture into one end of an elongated closed vessel, that confines the mixture under pressure while a feed screw advances it toward a discharge outlet, at the other end, the pressure being produced by expansion of the mixture during fermentation. The mixture, if a sponge, may produce two different bakery products that require different ingredient contents, by accumulating it in an open vessel, adding sufficient water thereto to produce a pumpable slurry and selectively pumping the slurry to either of a pair of dough mixers, where the additional amount of flour and other ingredients required to produce the kind of dough desired are added.

3,620,174
POLE LAMP TABLE
Emma L. Dentino, R.R. 1, Box 36, Chillicothe, Ill. 61523
Filed Feb. 9, 1970, Ser. No. 9,844
Int. Cl. A47b *13/02*
U.S. Cl. 108—151 **2 Claims**



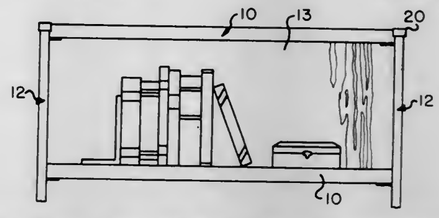
A table securable to a conventional pole lamp, the table comprising two semi-circular panels which may be clamped individually around the pole so to form semi-circular tables, or else clamped together around the pole so to form a circular table.

3,620,175
PAPERBOARD TABLE
Walton B. Crane, Sherman Oaks, and John Hawkinson, Whittier, Calif., assignors to Protective Packaging, Inc., Santa Fe Springs, Calif.
Filed Jan. 14, 1970, Ser. No. 2,808
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 **11 Claims**



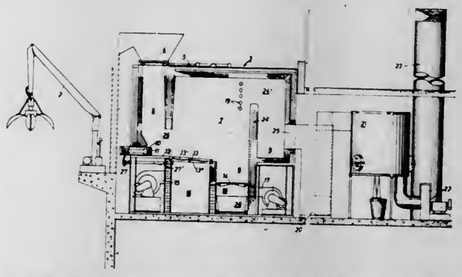
An inexpensive table of novel construction is made from paperboard or other comparable bendable material. This permits fabrication from a few basic parts of an inexpensive table which can be discarded instead of stored after relatively limited use as may be needed at parties, conventions, exhibitions, and the like.

3,620,176
TRIM FASTENINGS FOR SHELVING UNIT
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Jan. 26, 1970, Ser. No. 5,558
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 **10 Claims**



Lightweight knockdown steel shelving with box channel edge trim inserts for finishing strips having a reverse inner flange provided with yielding tabs at each end adapted to engage between a pair of upright support members to enclose the end of the support members, retain and cover any panel members therebetween and cover the juncture between the shelf end and the panel. The tabs are so positioned as to be hidden in use, and eliminate any tendency to spread the end walls of the box channel strips.

3,620,177
RUBBISH INCINERATOR
Knud Giede Bøving, 20 Mollebakken, 5594 Strib, Denmark
Filed Nov. 3, 1969, Ser. No. 873,312
Claims priority, application Denmark, Nov. 4, 1968, 5,350/68
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **4 Claims**

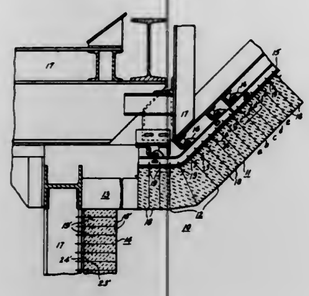


An incinerator for rubbish and the like, in which a substantially box-shaped stoker plunger or pusher extends tight-fitting through the side of a shaft opposite the stoker opening of the fire box at the bottom of the shaft so as to be capable of sliding backwards and forwards along the bottom of the shaft while similar to a plunger pushing the fuel before the end surface of the plunger towards the inlet opening and in on the grate, the height of the plunger being smaller, primarily considerably smaller than the height of the inlet opening of the fire box.

3,620,178
FURNACE REFRACTORY SUPPORTING STRUCTURE
Edwin B. Miller, Sr., Baltimore, Md., assignor to Bethlehem Steel Corporation
Filed June 23, 1970, Ser. No. 49,088
Int. Cl. F23m *5/02*
U.S. Cl. 110—99 B **14 Claims**

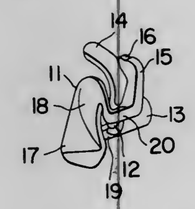
An improved metallurgical furnace construction utilizing specially designed metal plates interposed between

the furnace refractory bricks to secure them to the structural steelwork of the furnace. Each of the plates is secured at one end to the furnace steelwork and at the other end has flanges which extend transversely from opposite faces of the plate. The flanges extending from one face of the plate are spaced a greater distance from



the inner end of the plate than the flanges extending from the opposite face of the plate. Each of the bricks suspended from such plates has a slot extending across two opposite faces of the brick, near its inner end. The slot in one face is spaced a greater distance from the inner end of the brick than the slot in the opposite brick face.

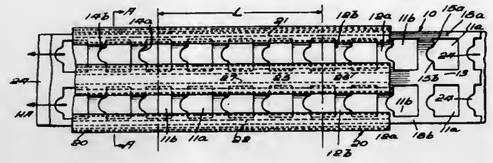
3,620,179
SINGLE THREAD CHAIN STITCH FORMING MEANS FOR USE IN A CONVENTIONAL SEWING MACHINE
Hideki Kuwajima, Tokyo, Japan, assignor to Riccar Sewing Machine Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1969, Ser. No. 867,578
Int. Cl. D05b *1/14*
U.S. Cl. 112—168 **1 Claim**



This invention relates to single thread chain stitch forming means for use with a sewing machine provided with a shuttle mechanism adapted in repetitive operation for forming normal stitches by intertwining upper and lower threads which single thread chain stitch forming means permit the formation of single thread chain stitches with the upper thread alone when the thread chain forming means is mounted on the shuttle hook in place of a conventional bobbin and bobbin case.

3,620,180
READILY ENGAGEABLE AND DISENGAGEABLE FASTENERS
George Waldes, Plandome, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,597
Int. Cl. A41f *1/00*
U.S. Cl. 112—407 **11 Claims**

An eye tape for a hook-and-eye (or a stud-and-eye) tape-form fastener comprising the assembly of an elongate strip of pliable sheet material, such as thin sheet plastic, having one or more longitudinal rows of eye-like recesses or openings stamped or otherwise formed thereon for the reception of one or more of the hooks of the companion hook tape (or studs of the companion stud tape), on a fabric tape or the like arranged so as to



provide an open-front envelope or carrier for said plastic eye strip. Said plastic eye strip is suitably secured to said fabric tape as by sewing, heat sealing, gluing, etc. A lining strip may be interposed between the plastic eye strip and the underlying portion of the fabric carrier tape.

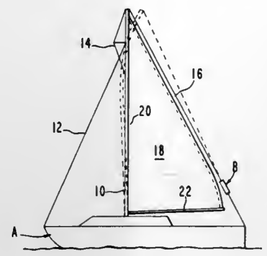
3,620,181
PERMANENT SHIP MOORING SYSTEM
Bruno R. Naczkowski, Newport Beach, Calif., assignor to North American Rockwell Corporation
Filed July 2, 1969, Ser. No. 838,435
Int. Cl. B63b *35/00, 21/24*
U.S. Cl. 114—.5 D **4 Claims**

A mooring or anchoring system for permanently locating a ship in a substantially fixed position in deep water is described. A mooring swivel extending through the hull of the ship, near the bow, is moored to the bottom by a plurality of radially extending anchor chains. Intermediate between the ends of the anchor chains and the mooring swivel, a heavy weight is provided on each chain so that the ship is held to limited excursions in normal seas but is permitted greater excursions in heavy seas. A winch and chain stops are provided for pre-tensioning the anchor chains and fixing them relative to the mooring swivel.

3,620,182
STAY ADJUSTER
David J. Russell, 81 Filbert, Sausalito, Calif. 94965
Filed Sept. 25, 1969, Ser. No. 860,932
Int. Cl. B63h *9/04*
U.S. Cl. 114—109 **3 Claims**

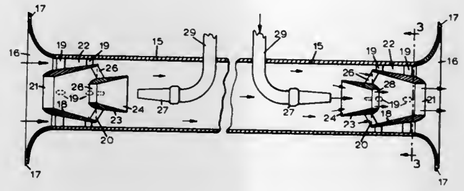
A stay adjuster is provided with a hydraulic cylinder and piston for changing the length of a tensively loaded stay on a sailboat. Once adjustment has occurred, a mechanical lock on the stay mechanism maintains the stay

adjuster in a positively locked position. A pressure gauge communicated to the interior of the hydraulic cylinder



and piston provides an indication of backstay loading during stay adjustment.

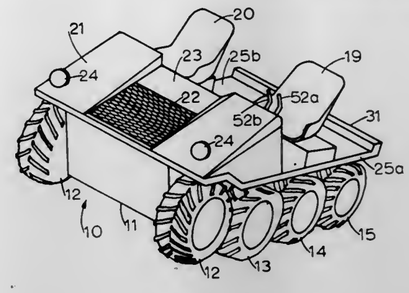
3,620,183
MARINE JET PROPULSION SYSTEM
Francis R. Hull, 140 W. 88th St., New York, N.Y. 10024
Continuation-in-part of applications Ser. No. 701,262, Dec. 6, 1957, Ser. No. 277,071, Apr. 29, 1963, Ser. No. 353,700, Mar. 23, 1964, Ser. No. 492,959 Aug. 27, 1965, Ser. No. 554,614, Apr. 27, 1966, Ser. No. 666,234, Aug. 9, 1967, and Ser. No. 732,476, Apr. 25, 1968. This application Feb. 17, 1969, Ser. No. 814,475
Int. Cl. B63h *25/46*
U.S. Cl. 114—151 **55 Claims**



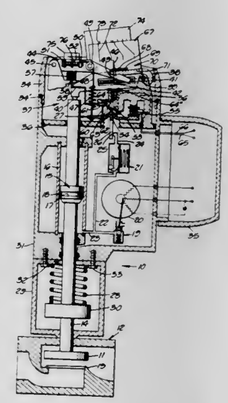
This invention relates to the propulsion of marine vessels by means of a reversible jet-reaction ejector structure composed in part of oppositely-directed secondary-nozzle ejector stagings whose members are disposed in tandem with respect to each other to act successively on fluids passing through an active ejector staging. The invention includes means for supplying pressurized motive liquids to the reversible ejector structure from fluid pumps, pressurized motive steam for condensing steam jets from saline conversion power plants, and pressurized motive liquids from the displacement-type pressure vessels of a pulse-jet propulsion system which is actuated by a saline conversion power plant. The invention also includes independent pulse-jet propulsion means.

3,620,184
CROSS-COUNTRY AMPHIBIOUS UTILITY VEHICLE
John L. Thousand, 1600 Lincoln Lane, Newport Beach, Calif. 92660
Filed June 9, 1969, Ser. No. 831,661
Int. Cl. B63f *3/00*
U.S. Cl. 115—1 **5 Claims**

A cross-country amphibious vehicle with a flotation hull equipped with a plurality of propulsion wheels at each side on rotatably mounted unsprung wheel spindles. The vehicle drive system from an engine to, ultimately, the propulsion wheels is through a differential to opposite side drives and with a brake on the drive output from each side of the differential for vehicle steering as individually actuated by the operator and for braking when both are simultaneously actuated.



3,620,185
HYDRAULIC CONTROL SYSTEM
William F. Keller, Covina, and Frank F. Domyan, North Hollywood, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,937
Int. Cl. F16k *37/00*
U.S. Cl. 116—125 **7 Claims**

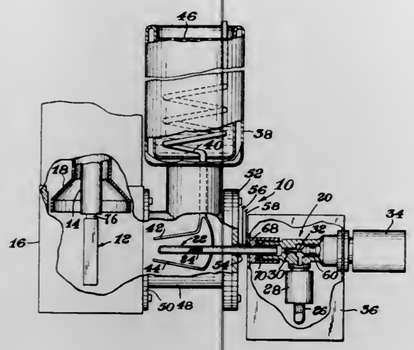


A hydraulic system having calibration, bandwidth, and dash pot controls with indicators for each, and a dash pot adjustment.

3,620,186
INFRARED SPECTROSCOPY APPARATUS
Stanley T. King, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 2, 1969, Ser. No. 881,506
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **4 Claims**

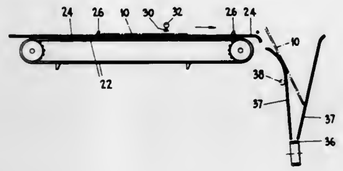
This invention relates to apparatus for use in isolating monomers of hydrogen-bonded organic compounds, liquids or solids at room temperature in a low temperature inert gas matrix. The apparatus comprises a refrigerated section having an infrared window, a second refrigerated

section for pre-cooling the inert matrix gas and for receiving vaporized material to be deposited on the infrared window, the second section having matrix gas nozzles ad-



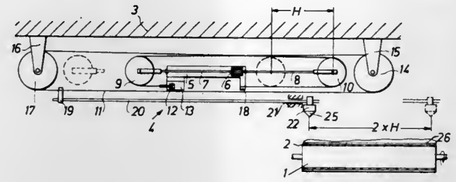
jacent to a sample inserting nozzle entering the second section from an adjacent sample heating and valving section. The sample inserting nozzle has internal heating means for maintaining the sample material and the nozzle's internal walls above the temperature at which sample material deposits on the inner wall of the nozzle.

3,620,187
APPARATUS FOR HANDLING SHEET MATERIAL AND FOR APPLYING SUCCESSIVE COATINGS THERETO
Henry Morgan Corderoy, Waterloo, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia
Filed Sept. 16, 1969, Ser. No. 858,482
Int. Cl. B05c *5/00*
U.S. Cl. 118—58 **7 Claims**



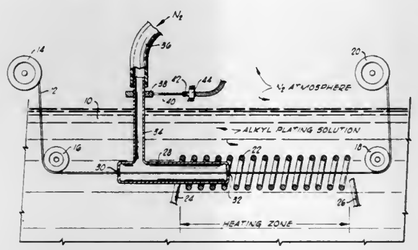
This invention relates to apparatus for handling sheet material and for applying thereto successive coatings disposed mutually at right angles.

3,620,188
APPLICATOR AND GANTRY FOR USE WITH CONVEYOR BELTS IN THE MANUFACTURE OF FOAM PLASTIC SECTION MEMBERS
Willi Schmitzer, Birlinghoven, Germany, assignor to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany
Filed May 18, 1970, Ser. No. 38,186
Claims priority, application Germany, June 7, 1969, P 19 29 036.9
Int. Cl. B05c *5/00*; **B05b** *3/18*
U.S. Cl. 118—323 **2 Claims**



The gantry of a foaming machine is applied with a plug of pulleys backwards and forwards displacement of the applicator for the foam-forming mixture in order to reach a higher speed of the applicator during its movement.

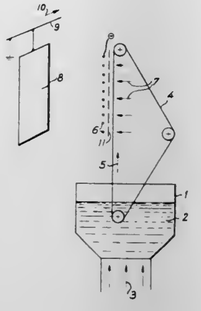
3,620,189
APPARATUS FOR PLATING ALUMINUM ON WIRE
Larry H. Hood; Le Roy Rose, and Charles M. Starks, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Apr. 6, 1970, Ser. No. 25,696
Int. Cl. B05c *5/00*
U.S. Cl. 118—620 **14 Claims**



Apparatus for plating an elongated metal member, such as a wire, with a coating of a metal capable of being incorporated in a liquid plating solution. The wire is passed lengthwise through a bath of, for example, an aluminum alkyl liquid. A heating zone is provided in the bath, as by means of an induction coil surrounding a portion of the path of movement of the wire, or by resistance heating of the wire. Means are provided for displacing the aluminum alkyl liquid from around that portion of the wire in the entry end portion of the heating zone, such that the wire will be heated to the desired plating temperature prior to the time the heated wire is exposed to the aluminum alkyl liquid to provide a thick coating of aluminum on the wire in a single pass through the bath.

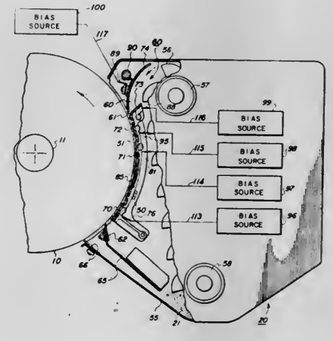
3,620,190
SPRAYING APPARATUS
Otto Renner, Neu-Isenburg, Germany, assignor to Licentia Patent-Ver waltungs-G.m.b.H, Frankfurt am Main, Germany
Filed May 22, 1969, Ser. No. 826,832
Claims priority, application Germany, Nov. 9, 1968, P 18 08 149.7 May 22, 1968, P 17 52H410.6
Int. Cl. B05b *5/02*
U.S. Cl. 118—630 **12 Claims**

An apparatus for electrostatically spraying powdery material. A conveyor extends into a vessel which contains a supply of the material to be sprayed, this conveyor moving the material from the vessel to a point near a spraying zone.



Means are provided for moving the material from this point into the spraying zone.

3,620,191
BIASED INPUT CHUTE
James M. Lyles, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 838,817
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **7 Claims**



An entrance chute for use in a xerographic development system comprising an inclined baffle arranged to direct a flow of two-component developer material into contact with a moving photoconductive surface and a shield positioned between the photoconductor and the inclined baffle, the baffle and shield cooperating to form a restricted opening through which two-component developer material supported therebetween is introduced into the development zone. The baffle and the shield are both electrically biased to establish a strong directional force field in the introductory region for forcing loose toner particles away from the photoconductive surface.

3,620,192
ANIMAL ACTUATED SILO FEEDING GATE
James R. Taylor, R.D. 1, Buffalo Mills, Pa., and Clifford M. Berry, 110 Hillcrest Ave., Manhasset, N.Y.
Filed Mar. 19, 1970, Ser. No. 21,166
Int. Cl. A01k *01/00*
U.S. Cl. 119—16 **5 Claims**

A feeding silo of the type comprising an enclosure of substantially rectangular configuration having an open end. A

feeding gate is positioned across said opening and is mounted for movement longitudinally through said enclosure at a rate



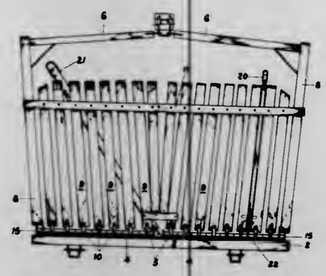
dependent upon the rate of consumption of the ensilage within the silo.

3,620,193
CAGES FOR HOUSING AND FATTENING POULTRY
Alberto German Frers, Cabildo St. 88, Buenos Aires, Argentina
Filed Nov. 14, 1969, Ser. No. 876,843
Claims priority, application Argentina, July 11, 1969, 222,748
Int. Cl. A01k *39/00, 31/18*
U.S. Cl. 119—18 **5 Claims**



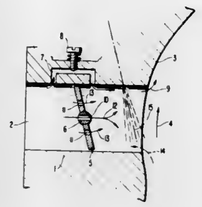
Cages for housing and fattening poultry are disclosed wherein the front wall consists at least in part of an openable and replaceable door. The door has mounted on its exterior a feed receptacle and has therein openings suitable for passage of a fowl head and neck reaching toward a feed receptacle. The door has mounted on its inner surface between adjacent pairs of holes partitions thereby dividing the space adjacent to the door into stalls each of which can receive an individual fowl. Light enters the cage only through the openings in the front wall. A door having openings and partitions suitable for a bird of one size can be replaced with another door having openings and partitions suitable for poultry of another size.

3,620,194
CATTLE CRUSHES
Paul H. A. Miles, Benghoyle, Cathcart, Cape Province, Republic of South Africa
Filed Oct. 20, 1969, Ser. No. 867,707
Claims priority, application South Africa, Oct. 21, 1968, 68/6786
Int. Cl. A61d *03/00*
U.S. Cl. 119—98 **8 Claims**



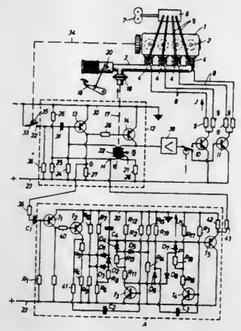
A cattle crush having one wall fixed in relation to the floor thereof and one wall adjustably positionable with respect to the fixed wall, the adjustable wall comprising a series of roughly parallel upwardly extending slats hingedly connected at their lower ends to the crush, the upper portions of the slats being interconnected by a transverse flexible strip.

3,620,195
ROTARY PISTON INJECTION-TYPE INTERNAL COMBUSTION ENGINE
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 12, 1969, Ser. No. 875,647
Claims priority, application Germany, Nov. 13, 1968, P 18 08 632.3
Int. Cl. F02b *53/06*
U.S. Cl. 123—8.13 **20 Claims**



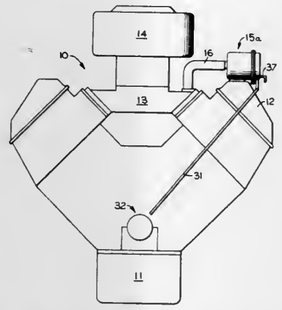
A rotary piston injection-type internal combustion engine, especially of trochoidal type of construction in which a throttle valve mounted on a throttle valve shaft is arranged in the inlet channel to control the amount of combustion air flowing through the inlet channel; the throttle valve and/or the throttle valve shaft are provided with one or several bores for the flow of combustion air through the same when the throttle valve is in the closed or partially open position.

3,620,196
ARRANGEMENT FOR APPLYING FUEL INJECTION CORRECTIONS AS A FUNCTION OF SPEED, IN INTERNAL COMBUSTION ENGINES
Wolf Wessel, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 28, 1970, Ser. No. 67,851
Claims priority, application Germany, Sept. 4, 1969, P 19 44 878.3
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 **20 Claims**



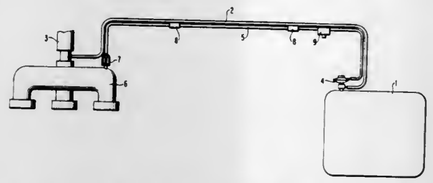
An arrangement by which corrections are applied to the pulses which open electromagnetically controlled valves for fuel injection in internal combustion engines. The opening pulses for the valves are generated by a monostable multivibrator to which a control voltage is applied. The multivibrator emits substantially rectangular-shaped pulses, the durations of which are controlled as a function of speed of the engine, through the control voltage. The control voltage has characteristics variable periodically in synchronism with the pulses provided by the monostable multivibrator. A storage capacitor integrates the control voltage, and charging sources connected to the capacitor have different internal resistances. The charging sources are switched and connected to the capacitor in predetermined sequence.

3,620,197
CRANKCASE VENTILATING MEANS FOR SUBMERGED ENGINE OPERATION
Thomas M. Albright, Chillicothe, and James S. Barton, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 20, 1970, Ser. No. 4,337
Int. Cl. F02f *9/06;* **F02m** *25/00*
U.S. Cl. 123—119 B **5 Claims**



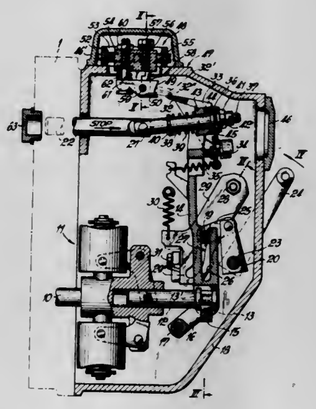
A crankcase ventilating means comprises a spring-biased valve means adapted to open to vent gases from the crankcase of an internal combustion engine to the intake manifold thereof when the pressure of such gases exceeds a predetermined level. The opening and closing of the valve means is automatically controlled by pressure level variations occurring in a control chamber normally communicating with ambient air pressure, via a pressure sensing conduit, during "on land" operations. An open end of the conduit is positioned adjacent to a crankshaft sealing area to sense the increasing pressure level occasioned thereat due to progressive submersion of the engine in water. Thus, the pressure level in the crankcase, required to open the valve means, will automatically increase in direct proportion to the increased depth of engine submersion.

3,620,198
SAFETY INSTALLATION IN A FUEL FEEDLINE
Werner Breitschwerdt, Stuttgart-Botnang, and Rudolf Andres, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed June 29, 1970, Ser. No. 50,720
Claims priority, application Germany, July 4, 1969, P 19 33 961.8
Int. Cl. F02b *77/08;* **F02m** *37/00*
U.S. Cl. 123—136 **14 Claims**



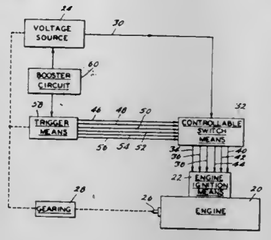
A safety installation for a fuel feedline supplying fuel from a fuel tank to an internal combustion engine driving a motor vehicle, which includes a valve that automatically closes in case of an accident and is kept open against the force of a closing spring by a pneumatic pressure medium available in the motor vehicle; the pressure medium flows to the valve through a line which is made from a material readily melting in case of a fire, and preferably several coupling members are arranged in the line which open the line in case of a slight pull.

3,620,199
CONTRIFUGAL GOVERNOR FOR THE RPM CONTROL OF INTERNAL COMBUSTION ENGINES
Karl-Ernst Kuhn, Grunbach; Heinz Kuschmierz, Gerlingen, and Heinrich Staudt, Markgroningen-Talhausen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 23, 1969, Ser. No. 887,545
Claims priority, application Germany, Jan. 8, 1969, P 19 00 675.8
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 R **5 Claims**



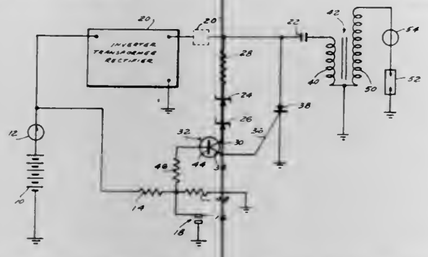
In a centrifugal governor for setting the fuel quantity control member of a fuel injection pump, there is provided an abutment for limiting the displacement of said member. Said abutment is adjustable both linearly along said member and angularly to vary the orientation of a curved abutment edge cooperating with a follower nose connected to said fuel quantity control member.

3,620,200
BOOSTER CIRCUIT FOR IGNITION SYSTEMS
Joe B. Stephens, and Joel N. Ashcraft, both of Columbus, Miss., assignors to AMBAC Industries Incorporated, Columbus, Miss.
Filed July 8, 1969, Ser. No. 839,886
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **19 Claims**



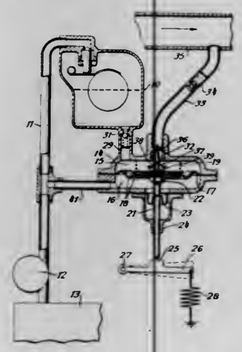
A booster circuit is employed with an ignition system for an internal combustion engine to assure that sufficient energy is supplied to engine ignition means for igniting fuel in the engine at predetermined engine speeds.

3,620,201
SOLID STATE MULTISPARK IGNITION SYSTEM
Glenn B. Warren, 1361 Myron St., Schenectady, N.Y., and John Randolph Morgan, 170 E. Coronado Road, Phoenix, Ariz.
Filed Oct. 7, 1969, Ser. No. 864,417
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **2 Claims**



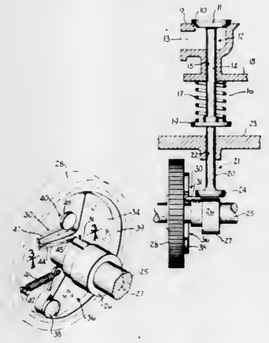
A solid state circuit provides a series of short duration short voltage rise time sparks for automotive engine ignition purposes. It is well known in the ignition art that short duration sparks concentrate the energy and promote ignition, and that "short voltage rise time" characteristics in an ignition system promote good firing even though the spark plugs are covered with deposits. A "Capacitor Ignition System" such as is described here has these characteristics and is used as the basis of a new system which will give a continuing series of sparks after the first one. The circuit includes two Zener diodes in series with the collector of a transistor switch, the collector of which is connected to the gating terminal of a silicon controlled rectifier. The SCR, when gated, connects the ignition system capacitor to the primary of the ignition coil and thus enables the capacitor to discharge across the coil. The SCR receives the gating signal when the Zener diodes and the transistor conduct, which occurs each time the charge on the capacitor reaches the avalanche level of the diodes and the points are open. In order to do this, the base of the transistor switch is connected to the ignition system breaker points so that the circuits become operative only when the breaker points open. The present circuit serves to replace the single spark per ignition of conventional automotive ignition circuits with a series of sparks generated at a predetermined frequency.

3,620,202
FUEL SUPPLY DEVICES FOR COLD STARTING OF INTERNAL COMBUSTION ENGINES
Gray E. D. Ross, Tring, England, assignor to The Zenith Carburetter Company Limited, Stanmore, Middlesex, England
Filed Dec. 8, 1969, Ser. No. 882,871
Claims priority, application Great Britain, Dec. 17, 1968, 59,964/68
Int. Cl. F02m *1/16*
U.S. Cl. 123—179 G **9 Claims**



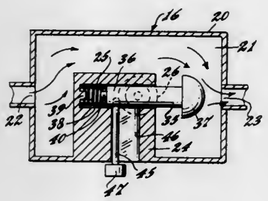
A fuel supply device for supplying fuel to provide a cold-starting mixture in an internal combustion engine in which fuel is expelled from a chamber into the engine induction system by movement of a movable wall of the chamber which movement is caused by means dependent on the initiation of an engine-starting operation, the volume of the chamber being controlled by thermostatic means dependent on engine temperature so that the quantity of fuel available is greater when the engine temperature at starting is lower. Fuel is fed automatically into the chamber as its volume increases due to fall of temperature, and the outlet from the chamber is closed by a valve when its volume is reduced to a minimum.

3,620,203
AUTOMATIC COMPRESSION RELIEF MECHANISM
Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Mar. 11, 1970, Ser. No. 18,509
Int. Cl. F01l *13/08*
U.S. Cl. 123—182 **6 Claims**



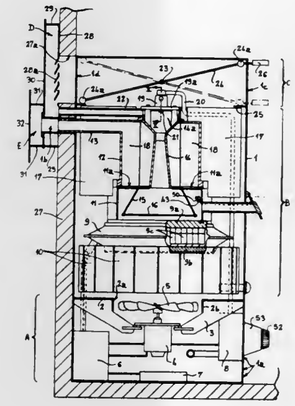
During each revolution of the engine camshaft at cranking speed, a camshaft-carried pin effects momentary unseating of a valve and opening thereby of a compression relief port in the combustion chamber of the engine, to reduce the cranking effort. The pin is guided for lengthwise sliding movement axially along the exterior of the camshaft, and it is automatically moved to an inoperative position by a centrifugally responsive control member whenever the camshaft is rotated at the higher speeds that obtain during operation of the engine under its own power.

3,620,204
SAFETY SHUTOFF FOR ENGINES
Edward M. Baltadonis, Kings Highway, Mt. Royal, N.J.
Filed Apr. 30, 1969, Ser. No. 820,492
Int. Cl. F02b *77/08;* **F01p** *1/14*
U.S. Cl. 123—198 **4 Claims**



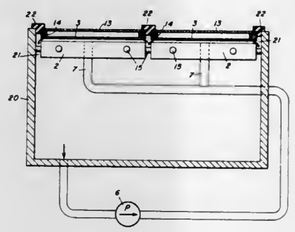
An engine shutoff including a hollow chamber connected in the engine fuel line and quick-acting valve means in the chamber for effectively closing the fuel line at a location adjacent to the engine.

3,620,205
HEATING APPARATUS FOR CARAVANS AND THE LIKE
Michel Vial, Rhone, France, assignor to Application de Gaz, Paris, France
Filed Nov. 28, 1969, Ser. No. 880,623
Claims priority, application France, Nov. 29, 1968, 50,695
Int. Cl. F24h *3/06;* **H01v** *1/32*
U.S. Cl. 126—110 E **13 Claims**



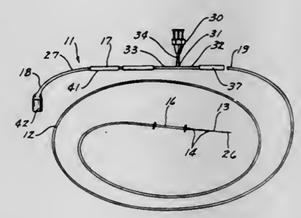
A portable heater particularly for caravans forming a thermogenerator comprises a casing containing a substantially flat plate thermoelectric element heated by an inverted gas burner tube, the air being circulated by a fan from the bottom of the casing onto the underside of the base of the heating element, around the element and over the outside of the burner tube which forms a heat exchanger and is then distributed onto the room to be heated, means being provided for regulating the heat passing to the room and for charging a battery to supply electric current for lighting room.

3,620,206
FLUID HEATING BY RADIATION
William B. Harris, Jr. III, Huntsville; William B. Harris, Bryan, and Richard R. Davison, Bryan, all of Tex., assignors to The United States of America as represented by the Secretary of the Interior
Filed Mar. 24, 1970, Ser. No. 22,315
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 **11 Claims**



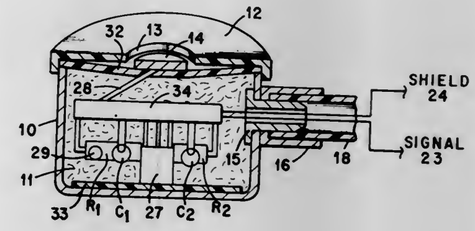
Radiant energy is used to heat a liquid by passing the liquid between two level, flat, heat exchange surfaces, the top surface resting freely on the lower surface and being exposed to the radiant energy. Liquid flows between the surfaces and is maintained in a thin, continuous and substantially uniform film by operation of Bernoulli's Theorem. In a preferred embodiment, water is heated by solar radiation and the heat exchange surfaces float on a reservoir of the water being heated.

3,620,207
BLOOD FLOWMETER
John C. Sinclair, Storm Lake, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed May 14, 1969, Ser. No. 824,518
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F **10 Claims**



This invention relates to a blood flowmeter comprising a catheter suitable for insertion into a blood vessel, thermal resistors (thermistors) connected in electrical circuits disposed in the catheter near the insertable end of the catheter; and moving means for moving the thermistors out of the insertable end of the catheter into the blood flow and, when desired, back into the catheter. Means are also provided for measuring electrical response through the thermistors. Flow characteristics in the blood vessels are determined by observing changes in measured electrical response through the thermistor circuits.

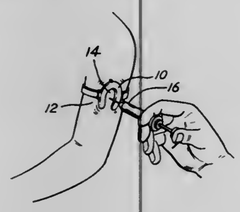
3,620,208
EKG AMPLIFYING ELECTRODE PICKUP
Wayne R. Higley; Harry L. Silcocks, and James A. Waggoner, all of Livermore, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 3, 1969, Ser. No. 873,223
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **10 Claims**



An amplifying electrode pickup for an electrocardiograph (EKG.) device consisting broadly of an impedance converter integrated amplifier circuit potted in a metal shell. The integrated circuit is biased by a nanoamp electrical current. The EKG. signal is sensed by a small sensor plate or disc positioned in a boot or cover and is electrically insulated from the shell. The circuit has a very high input impedance to minimize the effect of skin contact resistance changes, and a very low output impedance to minimize noise pickup by the

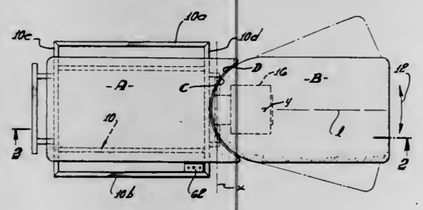
signal line between the electrode and the EKG. electronics. Electronic circuitry in the potted metal shell also includes a diode voltage clamp and decoupling RC circuits. A multiconductor cable provides shielding, conducts power to the electrode, and transmits the signal from the electrode through an integral coaxial cable. Because of the low (nanoamp) biasing current, signal traces of numerous separate electrodes can be simultaneously recorded without exceeding the maximum permissible current through the human body as established by the American Heart Association.

3,620,209
DEVICE FOR REDUCING THE PAIN OF INJECTIONS OF MEDICINES AND OTHER BIOLOGICALS
Harvey Kravitz, 9243 N. Avers St., Skokie, Ill.
Filed May 8, 1970, Ser. No. 35,765
Int. Cl. A61h *1/00*
U.S. Cl. 128—41 **6 Claims**



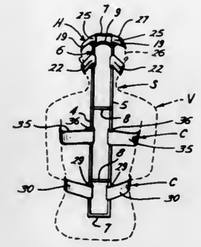
A device adapted to be placed upon the skin of a patient to be injected with medicine or other biological and capable of vibrating the skin at the injection area to stimulate the pain center of the skin such that the pain normally associated with injection of medication at said area by a needle or the like is reduced and minimized.

3,620,210
SACROILIAC ROTATOR
Robert F. Annas, Arcadia, and Vincent Hinsberger, Los Angeles, both of Calif., assignors to Paramount Health Equipment Corp., Los Angeles, Calif.
Filed Mar. 21, 1969, Ser. No. 809,274
Int. Cl. A61f *5/00*
U.S. Cl. 128—74 **3 Claims**



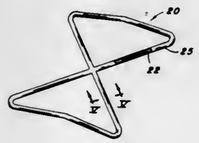
The sacroiliac rotator comprises a pair of adjoining parts A and B upon which the user, supine or prone, lies. The juncture between the parts falls approximately at the pelvic or sacroiliac region. Motion is imparted to one of the parts B in order to cause relative rotation of the upper and lower portions of the body about a center falling generally in the sacroiliac region. The part A has an arcuate recess or concavity C that fits the arcuate protuberance or convexity D of the part B. The opposite end of the part B is given a circular motion in a generally vertical plane in such manner that the arcuate parts C and D remain substantially in contiguous relationship. For this purpose, the horizontal axis *x* of up and down movement falls substantially at the crest of the companion parts, while the vertical axis *y* of sidewise movement falls substantially at the center of the arcuate parts. For this purpose, a special bracket E is provided.

3,620,211
EXTRICATION BACK SPLINT
Albert Goodell, and William L. Greene, both of P.O. Box 5406, Beaumont, Tex.
Filed May 7, 1969, Ser. No. 822,538
Int. Cl. A61f *5/04*
U.S. Cl. 128—89 **1 Claim**



A back splint of malleable material so that it can be formed at the scene of an accident and secured to the portion of the victim or person without moving the injured portion or the person or victim so as to immobilize the injured part of the person or immobilize the victim or person in the position in which the injury occurs to aid in inhibiting further damage or injury to the vertebral column or associated portions thereof upon extrication and transportation of the victim. The splint comprises longitudinally extending, spaced malleable members preferably curved at one end for fitting on the victim to immobilize the head, neck, and vertebral column of an injured person to retain the person in such immobilized position to inhibit further injury upon extrication and transportation. The construction of the splint is such that it does not significantly interfere with radiological surveys.

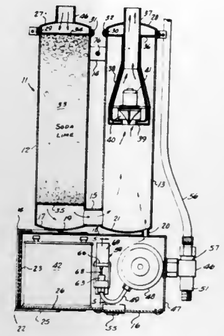
3,620,212
INTRAUTERINE CONTRACEPTIVE DEVICE
Robert D. Fannon, Jr., Columbus; Brenton R. Lower, Columbus, Ohio, and Leonard E. Laufe, 1206 Inverness Ave., Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 46,419
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **8 Claims**



An intrauterine contraceptive device formed, in part at least, of a nickel-titanium alloy which has a mechanical memory. The device is formed initially in the desired free shape it will take in the uterine cavity, heat-treated with the free shape being mechanically constrained, and then plastically deformed to a compact, elongated shape for easy insertion through a cervical canal into a uterine cavity. The device will gradually resume its free shape as it is heated to temperature near the human body temperature.

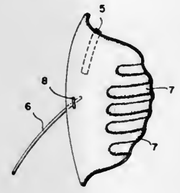
3,620,213
AIR-GAS METERING AND RECIRCULATING APPARATUS
Hilbert J. Savoie, Jr., P.O. Box 98, Boutte, La.
Filed Sept. 12, 1969, Ser. No. 857,374
Int. Cl. A62b *7/12;* **F15b** *5/00*
U.S. Cl. 128—142 **8 Claims**

A combination air purifier and air supply metering apparatus adapted to be used with a diver's helmet and including an air blower in an air recirculation circuit containing a mass of soda lime through which used air is drawn. An air replenishing connection from an external source includes a nominal-pressure regulating valve and a depth-responsive flow-regulating valve to automatically compensate for different depths at which a diver may be working, whereby to maintain adequate air replenishment regardless of depth. The



flow-regulating valve is operated by a Bourdon tube which changes its configuration in response to variations in back pressure in a replenishment chamber exposed to the air-recirculating circuit.

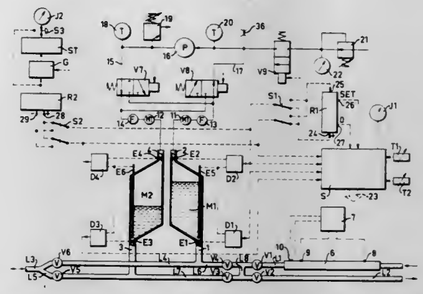
3,620,214
MOLDED SURGICAL MASK
Thomas Thackston, Florham Park, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed July 9, 1969, Ser. No. 840,405
Int. Cl. A62b *23/02*
U.S. Cl. 128—146.2 **5 Claims**



A molded surgical cup mask of three-ply construction, the first and third plies being of polyester batting acrylic emulsion bonded to form a durable film, the intermediate ply being unbonded microglass and the plies being molded into a unit by heat and pressure.

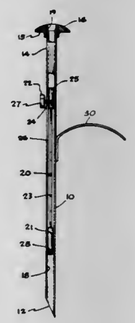
3,620,215
APPARATUS FOR PERITONEAL DIALYSIS
Jan Erik Tysk, Stockholm; Sven Olofsson, Skalby, and Nils Bertil Jacobson, Solna, all of Sweden, assignors to LKB Medical AB, Bromma, Sweden
Filed May 28, 1970, Ser. No. 41,312
Claims priority, application Sweden, June 4, 1969, 7891/69
Int. Cl. A61m *05/00*
U.S. Cl. 128—213 **14 Claims**

An apparatus for peritoneal dialysis treatment of a patient operating automatically in accordance with a predetermined program comprising a plurality of successive dialysis cycles each consisting of a fill-phase during which fresh dialysis fluid is introduced into the peritoneal cavity of the patient, a dialysis-phase during which the dialysis fluid remains in the peritoneal cavity, and a drain-phase during which the used dialysis fluid is withdrawn from the peritoneal cavity of the patient. The apparatus comprises two identical measuring vessels having lower fluid connections, which through fluid valve means can be connected alternatively to a supply conduit for fresh dialysis fluid, a discharge conduit for used dialysis fluid and a patient conduit connected to the patient being treated, and upper air connections, which can be connected alternatively to the delivery side and the suction side of an air pump. During the fill-phase, when fresh dialysis fluid is introduced into the patient, fresh dialysis fluid is sucked under vacuum into one of the measuring vessels from the supply conduit at the same time as fresh dialysis fluid is discharged under pressure from the other measuring vessel into the patient conduit and this takes place alternatingly for



the two measuring vessels. During the drain-phase, when used dialysis fluid is withdrawn from the patient, used dialysis fluid is sucked under vacuum into one of the measuring vessels from the patient conduit at the same time as used dialysis fluid is discharged under pressure from the other measuring vessel into the discharge conduit and this takes place alternatingly for the two measuring vessels.

3,620,216
IMPLANT TROCAR
Earl Thaddeus Szymanski, Chicago, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed June 25, 1969, Ser. No. 836,566
Int. Cl. A61m *5/00*
U.S. Cl. 128—217 **6 Claims**

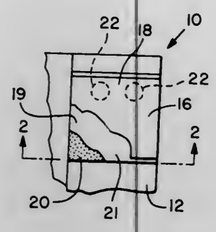


An implant trocar for treating animals comprises a reciprocatory plunger within a pellet-containing barrel. The plunger is controlled by an operating shaft extending through a guiding slot in the wall of the barrel. A curved finger grip extends from the barrel opposite the operating shaft and enables the rounded heel of the barrel to be located against the palm of the hand of the user.

3,620,217
DISPOSABLE DIAPER HAVING PRESSURE-SENSITIVE TAPE FASTENER AND BUILT-IN DISPOSAL FASTENER
Dale A. Gellert, Center Township, Dearborn County, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 18, 1970, Ser. No. 20,679
Int. Cl. A61f *3/16*
U.S. Cl. 128—284 **5 Claims**

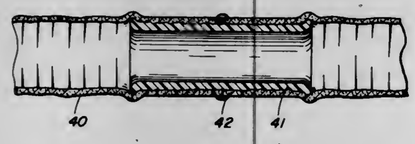
An improved fastening device for securing the corners of a disposable diaper incorporates a built-in device which is use-

ful in disposing of the diaper after it has been soiled. The fastener itself comprises a strip of pressure-sensitive tape held in superposed relationship with respect to a corner of the diaper backing sheet prior to use. One end of the tape is directly adhered to the backing sheet. A treated release liner is interposed between the backing sheet and the other end of the tape which is releasably held in contact with said release liner. The releasable end of the tape is peeled from the



release liner when the tape fastener is placed in use in the course of diapering a baby. After the diaper is soiled, it is rolled or folded up whereupon means associated with the release liner are used for securing the rolled or folded diaper. The means may be a pressure-sensitive adhesive area remaining on the backing sheet when the release liner is removed, or the liner itself can be provided with a pressure-sensitive adhesive that remains adhered to the release liner when it is peeled off.

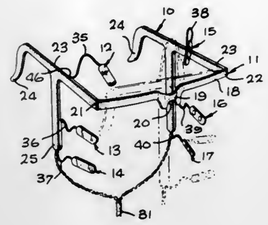
3,620,218
CYLINDRICAL PROSTHETIC DEVICES OF POLYGLYCOLIC ACID
Edward Emil Schmitt, Norwalk, Conn., and Rocco Albert Polistina, Port Chester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 608,086, Jan. 9, 1967, now Patent No. 3,463,158, dated Aug. 26, 1969, and a continuation-in-part of 320,543, Oct. 31, 1963, now Patent No. 3,297,033, dated Jan. 10, 1967. This application Aug. 25, 1969, Ser. No. 852,617
Int. Cl. A61b *17/11*
U.S. Cl. 128—334 R **6 Claims**



Polyhydroxyacetic ester, also called polyglycolic acid (PGA), has surgically useful mechanical properties as a solid prosthesis, such as reinforcing pins, screws, plates, or cylinders. On implantation, in living mammalian tissue, the polyglycolic acid is absorbed, and replaced by living tissue.

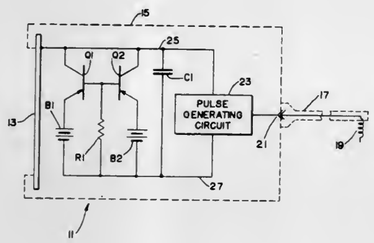
3,620,219
FACIAL NERVE STIMULATOR
Donald E. Barker, 15225 Vanowen St., Van Nuys, Calif.
Filed May 7, 1969, Ser. No. 822,594
Int. Cl. A61n *1/36*
U.S. Cl. 128—410 **15 Claims**

A facial nerve stimulator including a number of electrode structures which are to contact the face of the user and electrically stimulate certain facial nerves and the related muscles, and a frame carrying the electrode structures on the face and adapted to be supported by engagement of a forward portion of the frame with the bridge of the nose, and by



engagement of two side portions of the frame with the ears of the user.

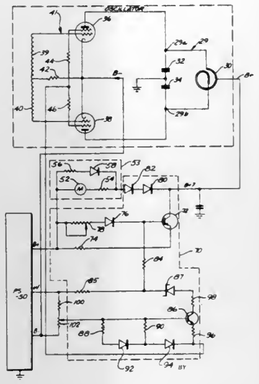
3,620,220
CARDIAC PACER WITH REDUNDANT POWER SUPPLY
William P. Murphy, Jr., Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Oct. 1, 1969, Ser. No. 862,657
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P **5 Claims**



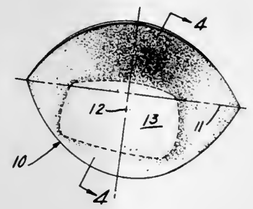
The cardiac pacer disclosed herein employs a redundant power supply in which a pair of batteries are connected to pulse-generating circuitry through the collector-emitter circuits of respective transistors. A forward-biasing current is applied to the transistor base terminals, which are connected together, so that the batteries energize the pulse-generating circuitry jointly when both are in satisfactory condition and, upon the occurrence of a failure in one of the batteries, the failing battery is effectively isolated from the pacer circuitry.

3,620,221
DIATHERMY HAVING METER CIRCUIT INDICATING TRUE POWER DRAWN BY A PATIENT
Jerome W. Davis, Pasadena, Calif., assignor to Mettler Electronics Corporation
Filed July 30, 1969, Ser. No. 846,003
Int. Cl. A61n *1/08*
U.S. Cl. 128—422 **10 Claims**

A diathermy having a vacuum tube tuned plate-tuned grid oscillator including a coil for delivering high-frequency signals to a patient undergoing treatment. A meter coupled between the plate circuit for the tube and a source of potential therefor. A bypass circuit is coupled across the meter for bypassing a preselected amount of current causing an improved direct indication of power drawn by a patient undergoing treatment.

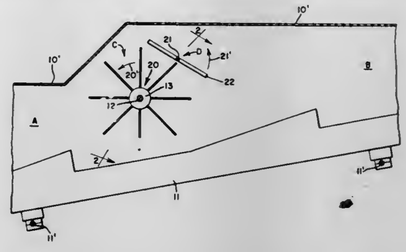


3,620,222
SHELFLESS PUSHUP BRASSIERE PAD
Lester W. Block, 8520 Warner Drive, Culver City, Calif.
Filed Sept. 9, 1969, Ser. No. 856,405
Int. Cl. A31c *3/10*
U.S. Cl. 128—481 **5 Claims**



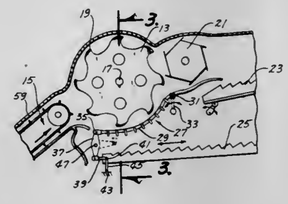
A pushup brassiere pad which elevates the breast without having any shelf, mound or other raised portion in the interior area which receives the breast. The interior of the pad has a substantially flat planar surface disposed beneath the horizontal axis of the pad and outwardly from the vertical axis of the pad. The pad is thicker in the region of the planar surface than in its other regions. The planar surface is slanted upwardly and inwardly to move the breast simultaneously upwardly and inwardly.

3,620,223
CROP AGITATOR FOR THE SEPARATING MECHANISM OF AGRICULTURAL COMBINES AND THE LIKE
Homer D. Witzel, Moline, Ill., and Pieter F. Olieman, Valkenswaard, Netherlands, assignors to Deere & Company, Moline, Ill.
Filed May 4, 1970, Ser. No. 34,190
Claims priority, application Germany, Jan. 14, 1970, P 20 01 386.9
Int. Cl. A01f *12/10*
U.S. Cl. 130—22 A **18 Claims**



The separating mechanism of a combine is improved by the provision of a combination rotary and axially oscillating agitator acting on the crop passing lengthwise of the straw walkers so as to facilitate the separation of grain from straw.

3,620,224
VIBRATING CONCAVE FOR A COMBINE
Graeme R. Quick, and Adhemar Bradini, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa
Filed Dec. 3, 1969, Ser. No. 881,681
Int. Cl. A01f *12/18*
U.S. Cl. 130—27 K **5 Claims**

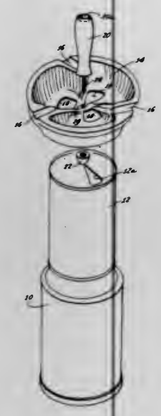


A vibrating or reciprocating concave for a combine which is positioned adjacent the threshing cylinder to enhance the threshing action. The concave may either by reciprocated fore or aft or side to side. Reciprocating power for the concave is provided by means of a linkage means connecting the pivotally mounted concave with an eccentric mounted on the cylinder drive shaft. Means is also provided for adjusting the clearance between the reciprocating concave and the cylinder. A modified form of the device is also disclosed and comprises a movable threshing belt positioned above a flat concave.

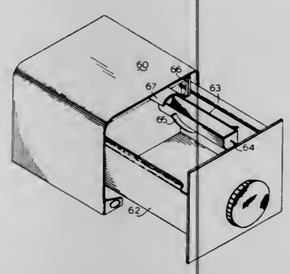
3,620,225
ASHTRAY
Doris S. Bailey, 4012 Don Felipe Drive, Los Angeles, Calif.
Filed Jan. 22, 1970, Ser. No. 5,028
Int. Cl. A24f *19/00*
U.S. Cl. 131—235 **3 Claims**

An improved ashtray assembly is provided which is intended to be used in conjunction with an empty disposable can of the type in which beer or other beverages are often merchandised. A cylindrical-shape holder is provided, in one embodiment, for receiving an empty can of the aforesaid type, the can having an opening in its top through which its contents were previously removed. A bowl-shaped top is also provided which has one or more holes in its bottom and

which may be aligned selectively with the opening in the top of the can contained in the holder, so that cigar and cigarette ashes and butts may be dropped down into the can for subsequent disposal with the can. The assembly includes a central handle and nut which serve to removably secure the top of the can.



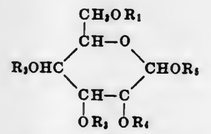
3,620,226
EXTINGUISHING ASHTRAY
Earl E. Eilertson, Albuquerque, N. Mex., assignor to Eugene Earl Eilertson, Utica, Mich. and Arnold M. Vie, Albuquerque, N. Mex., part interest to each
Filed May 22, 1970, Ser. No. 40,472
Int. Cl. A24f *19/14*
U.S. Cl. 131—235 R **11 Claims**



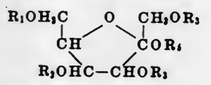
An ashtray for receiving and extinguishing lighted cigarettes, including a plurality of tubes of diameter slightly larger than the cigarettes to be extinguished. The cigarettes are placed in end to end relation into one end of the tube, the subsequently inserted cigarettes pushing the preceding cigarettes into a receiving container as they are being extinguished within the tube due to lack of sufficient air to supply the fire.
The ashtray may also be mountable in a chassis or the like to be concealable or movable out of the way, and in such embodiment may utilize a trough mounted within the receiving container. When a lighted cigarette is placed in the trough and the container moved to a second position, a means for restricting the air supply to the interior of the trough is moved over it to extinguish the cigarette, and as the container is moved from the second position, the extinguished cigarette is expelled from the trough into the receiving container by an appropriate expelling means.

3,620,227
TOBACCO SMOKE FILTER
Atsushi Saito, Toyama-shi; Fumio Nakayama, Toyama-shi; Bungi Tamai, Toyama-shi; Hiroji Takahashi, Hiroshima-ken; Kazuo Kuwahara, Yamaguchi-ken, and Takashi Kaneko, Ohtake-shi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd. and Mitsubishi Acetate Co., Ltd, Tokyo, Japan
Filed Oct. 13, 1969, Ser. No. 865,993
Claims priority, application Japan, Oct. 19, 1968, 43/75907
Int. Cl. A24b *15/02*; **A24f** *13/06*
U.S. Cl. 131—267 **14 Claims**

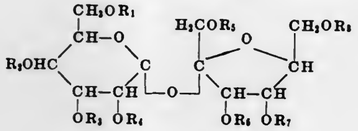
A tobacco smoke filter is disclosed which is designed to remove some of the harmful and irritating substances from tobacco smoke, the filter comprising a filter-forming material or support which contains ester ether compounds of saccharides. Included are aldohexose and ketohexoses having polyalkylene glycol residues and dissacharides containing said hexoses. The compounds effective for the desired purposes may be represented by the following formulas:



(I)

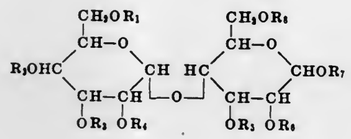


(II)



(III)

and



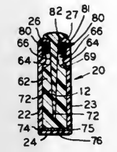
(IV)

wherein R_1 1/NR_n represent any one of a polyalkylene group, a fatty acid ester group and hydrogen, at least one of the groups being a polyalkylene group and at least one of the groups also being a fatty acid ester group. The saccharide or saccharide derivative constitutes from 0.01 to 30 percent by weight of the filter.

3,620,228
SOIL IRRIGATOR WATER AND SEDIMENT DRAIN
Howard C. Schmid, 2700 Queen St., Missoula, Mont.
Filed Nov. 24, 1969, Ser. No. 879,335
Int. Cl. F16k *15/04*
U.S. Cl. 137—107 **3 Claims**

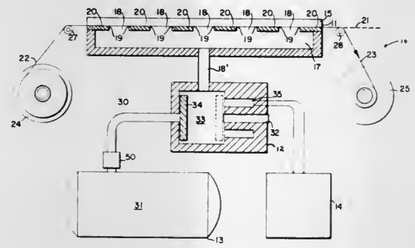
An improved device for attaching in the pipes of irrigating systems for removing silt and draining water composed of a tee for inserting in pipeline, a long drop pipe accommodating a valve seat, interior longitudinal flanges above said seat, and a buoyant captive ball between; ball being forced to seat under water pressure and rising when pressure is relieved, permitting silt and water to pass into open end sump below.

3,620,229
SHEATHED COMB
Ira J. Friedman, 8 Whittier Place, Boston, Mass.
Filed Nov. 3, 1969, Ser. No. 873,607
Int. Cl. A45d *24/42*
U.S. Cl. 132—119 **12 Claims**



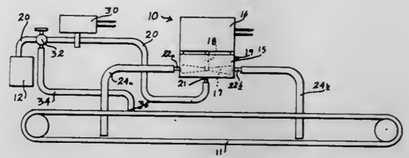
A comb is pivotally mounted on an open edged channel shaped elongated case. A spiral spring is fastened concentrically about the comb pivot with one end thereof engaging the case to bias the comb toward an open portion extending longitudinally outwardly from the case. To releasably lock the comb in a closed position, wherein the comb teeth are nested within the case, a spring biased catch and a pushbutton release are provided. There is additionally included within the case, a bibulous slab of open-cell foamed material having a plurality of parallel passageways. The number and positioning of the passageways are such that when the comb is within the case, each tooth of the comb is nestably received within one of the passageways. The bibulous slab may be impregnated with a liquid so that each time the comb is within the case, the individual teeth are wiped with the slab and liquid. A brush assembly is mounted on the inner walls of the case above the bibulous slab. The brush bristles abut the spine of the comb and insure the cleaning thereof.

3,620,230
MEANS AND METHOD OF CLEANING INFORMATION-CARRYING TAPE
Pierre G. Foret, Sudbury, Mass., assignor to P. G. Foret Inc., Sudbury, Mass.
Filed May 13, 1969, Ser. No. 824,061
Int. Cl. B08b *5/04*, *7/02*
U.S. Cl. 134—9 **16 Claims**



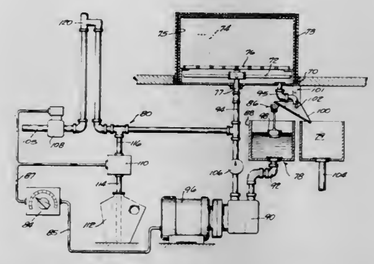
A means and method for cleaning elongated axially extending information-carrying tape is provided. The tape is passed over a plurality of slots positioned transversely to the longitudinal axis of the tape with each of the slots defining a cleaning edge and having a vacuum chamber thereunder. A pulsating vacuum is applied to the vacuum chamber to cause portions of the tape to be moved toward the vacuum chamber during passage over the slots with all portions of the tape being cleaned by vacuum action and by a scraping of the cleaning edge. The tape cleaning means has a plurality of seriatim arranged slots defined in part by seriatim arranged scraping edges. Means for passing the tape over the slots is provided and a vacuum chamber underlies the slots. A means for applying a pulsating vacuum to the chamber is provided so that portions of the tape are urged into the slots as the tape is moved thereover whereby unwanted material is removed from the tape by the vacuum and by the scraping action of the scraping edges.

3,620,231
FOAM-GENERATING APPARATUS AND METHOD OF USE
Carl A. Miller, Saint Paul, Minn., assignor to Economics Laboratory, Inc., Saint Paul, Minn.
Filed Jan. 7, 1970, Ser. No. 1,229
Int. Cl. B08b *3/08*, *1/02*
U.S. Cl. 134—15 **12 Claims**



Apparatus for generating a foamed lubricant-cleanser comprising a cylindrical chamber having an air inlet and a lubricant-cleanser solution inlet in opposite ends thereof and a plurality of equidistant foam outlets about the periphery thereof. The lubricant-cleanser solution is introduced into the chamber proximate the center of a fan positioned for rotation therein about an axis coincident with the axis of symmetry of the cylindrical chamber. The nonfoamed solution is converted into foam by the introduction of air into the nonfoamed solution centrifugally propelled by the fan. A method for lubricating and cleansing a moving surface such as a conveyor is also disclosed.

3,620,232
GLASS-WASHING DEVICE
Vito D'Angelo, West Allis, Wis., assignor to Vito-Bil, Inc., West Allis, Wis.
Continuation-in-part of application Ser. No. 610,567, Jan. 20, 1967, now abandoned. This application Mar. 28, 1969, Ser. No. 814,511
Int. Cl. A47l *15/46*
U.S. Cl. 134—56 **2 Claims**

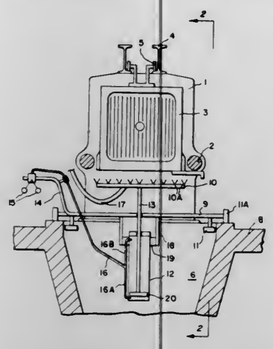


An automatic glass-washing machine including a pressure-responsive spray bar positioned to direct liquid detergent upwardly within an enclosed hood, a liquid detergent system for supplying detergent under pressure to the spray bar, a fresh-water system for supplying rinse water under pressure to the spray bar, a sanitizer system for supplying sanitizer to the fresh-water system, a timer to actuate the systems in a timed sequence and a float actuated valve to recirculate the liquid detergent and to direct the rinse water to an overflow or drain line.

3,620,233
FILTER PRESS WITH CLEANING APPARATUS
Oswald Busse, and Hugo Klesper, both of Michelbach, Germany, assignors to Passavant-Werke, Hutte, Germany
Filed July 8, 1970, Ser. No. 53,109
Claims priority, application Germany, July 11, 1969, G 69 27 408.4
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 R **14 Claims**

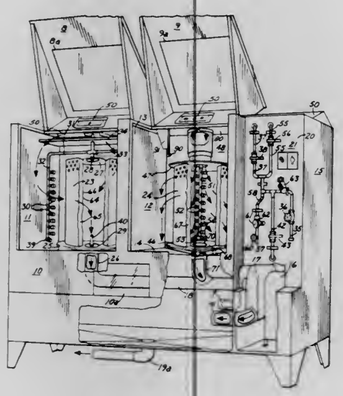
A cleaning device for a filter press. A spray tube is mounted on a carriage beneath the filter plates, the carriage

being movable lengthwise of the filter press and including a device to lift and lower the spray tube between a lowered position and a raised position, the spraying tube being



located in the raised position between filter plates to clean the same. The carriage may ride along the side bars of the filter press or it may ride along the top of a cake-catching basin located beneath the filter plates.

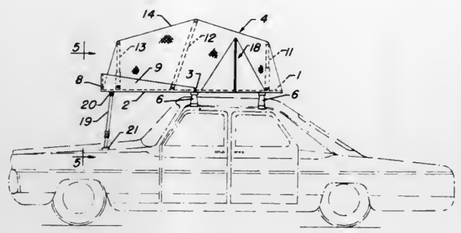
3,620,234
AIR-FILTER-CLEANING APPARATUS
Herbert L. Everrood, 688 Pontiac Way, Denver, Colo.
Filed July 7, 1969, Ser. No. 839,400
Int. Cl. B08b *3/02, 5/02*
U.S. Cl. 134—86 **6 Claims**



An apparatus for cleaning air filters of the accordion folded-paper type comprises a housing having two compartments, one for circulating cleaning fluids from the inside to the outside of a filter, and the other from the outside to the inside. Filter-mounting fixtures are provided in the compartments for effecting the required circulation of fluids. Both air and water are circulated through the filters in both compartments. Selective controls are provided to enable either or both of the compartments to be used.

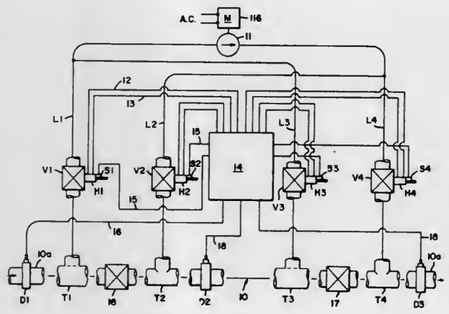
3,620,235
PORTABLE FOLDING SLEEPER UNIT
Filed Apr. 22, 1970, Ser. No. 30,767
Int. Cl. B60p *3/34*
U.S. Cl. 135—1 **7 Claims**

A folding camper unit which has a two-section base portion that utilizes a transverse hinging means between the two sections that is substantially flush with the top surfaces of the connected sections such that sleeping equipment may lay directly over the hinging area. One section of the base is provided with an end wall member and opposing triangular-form sidewall members so as to adapt such section to serve as a top cover over the other section and the camper unit folded



into a resulting wedge-shaped traveling arrangement having a low wind resistance when carried on or secured to a car, boat, or other type vehicle.

3,620,236
PUMPING STATION BYPASS SYSTEM AND METHOD
Lyle R. Van Arsdale; Francis M. Lathrop, and Vernon R. Reaves, all of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.
Filed May 4, 1970, Ser. No. 34,472
Int. Cl. B08b *9/04*
U.S. Cl. 137—13 **7 Claims**

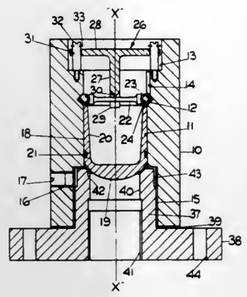


A system and method for pumping stations of pipeline wherein product-separating spheres are passed by the pumps by controlling flow of liquid through a plurality of flow-tees. A special timing arrangement is employed whereby each sphere is reinserted into the flow downstream of the station in the same relative position that it occupied when it approached the station.

3,620,237
SAFETY VALVE
John Henry Sindall, Worcester, and Frederick Charles Dixon, Chester, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England
Filed June 6, 1969, Ser. No. 831,176
Claims priority, application Great Britain, June 12, 1968, 27,904/68
Int. Cl. F16k *17/00*
U.S. Cl. 137—67 **4 Claims**

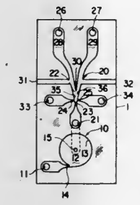
A safety valve comprising a piston slidably engaged within a bore for a housing and having releasable retaining means

holding the piston against the effect of pressurized fluid, and



further means responsive to a precalculated change of pressure to release the retaining means and release the fluid.

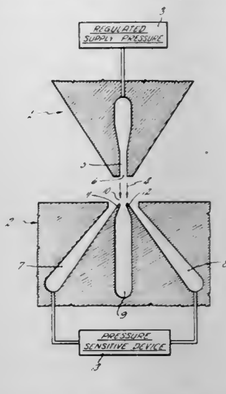
3,620,238
FLUID-CONTROL SYSTEM COMPRISING A VISCOSITY COMPENSATING DEVICE
Minoru Kawabata, Asahi-machi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi Prefecture, Japan
Filed Dec. 29, 1969, Ser. No. 888,740
Claims priority, application Japan, Jan. 28, 1969, 44/6219
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **4 Claims**



Fluid-control system comprising fluid-control means having a positive viscosity-resistance characteristic the flow resistance of which increases with an increase in viscosity, and further comprising vortex means having a negative viscosity-resistance characteristic the flow resistance of which increases with a decrease in viscosity to compensate for changes in the flow resistance of the fluid-control means due to changes in fluid viscosity. The vortex means is provided with a circular hollow chamber, a tangential nozzle connected to a source of incompressible and viscous pressure fluid, and a central output port connected to the fluid control means.

3,620,239
FLUIDIC ANGULAR POSITION TRANSDUCER
Lawrence S. Bright, East Granby, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Aug. 4, 1969, Ser. No. 847,134
Int. Cl. F15c *3/12*
U.S. Cl. 137—81.5 **1 Claim**

A power stream emanating from a rotatable supply unit is divided between two divergent output channels in a splitter-receiver section. A center dump is interposed between the output channels forming two tapering leading edges upon which the power stream impinges. The pressure differential between the two channels is indicative of the angular position of the supply unit. In a second arrangement an eccentrically mounted cam impedes the flow from two opposed nozzles. The differential pressure upstream of the nozzles is measured

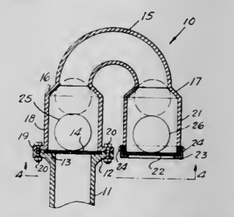


by a fluidic proportional amplifier. The upstream pressure differential is a function of the cam's angular position.

ERRATUM

For Class 137—107 see:
Patent No. 3,620,228

3,620,240
DOUBLE CHECK VALVE VENT
William Bogdanski, 7964 Burnfield Cres., Burnaby, British Columbia, Canada
Filed Mar. 13, 1970, Ser. No. 19,347
Int. Cl. B65d *51/16*; **F16r** *45/02*
U.S. Cl. 137—202 **1 Claim**

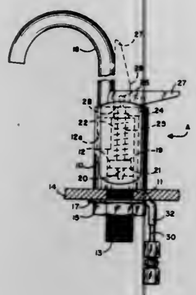


A double check valve vent in which floatable valves are positioned in a vent line to be floated up against a valve seat when fluid flows outwardly from the tank or flows inwardly toward the tank. The floatable valve in the absence of fluid are each spaced a substantial distance from its respective valve seat so that fumes venting from the tank may move freely with a complete absence of back pressure.

3,620,241
COMBINATION PLUMBING FIXTURE FOR WATER PURIFICATION SYSTEM HAVING WASTE BYPASS FLOW
Ross M. Brown, Palos Verdes Estates, Calif., assignor to Desalination Systems Inc., Escondido, Calif.
Filed Aug. 3, 1970, Ser. No. 60,409
Int. Cl. E03c *1/10*
U.S. Cl. 137—216 **10 Claims**

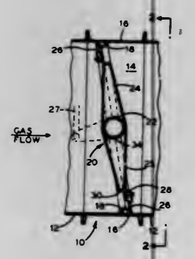
In a water purification system wherein a supply of pressurized, potable, product water is to be dispensed as required, and a small volume flow of nonpressurized byproduct waste water is to be discharged to a potentially contaminated drain, a combination plumbing fixture comprises a body with a valve-controlled passage therethrough for dispensing the potable water. A pair of axially upright ducts are provided through a faucet body, the lower end of one of the ducts being connected to receive the flow of waste byproduct water, and the lower end of the other duct being connected to the drain. A recess in the body encompasses

the upper ends of both ducts, and a gooseneck tube is fitted into the upper end of said one duct and discharges the waste



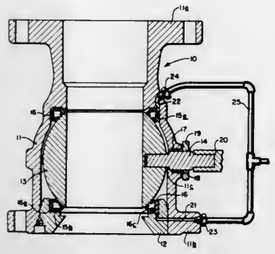
water in a free fall into the other duct. A vent opening in the other duct provides an antisiphon airgap.

3,620,242
SELF-CLEANING DAMPER ASSEMBLY
Morris G. Pease, Wadsworth, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 517
Int. Cl. F16k *1/22*
U.S. Cl. 137—240 **7 Claims**



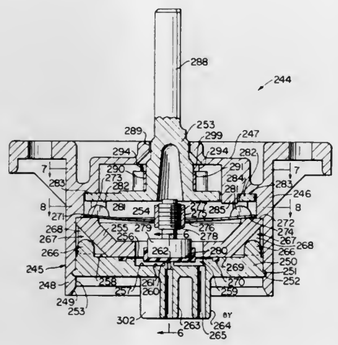
A damper assembly within a duct and a generally upright frame member having an interior damper seating surface, a shaft horizontally mounted and pivoted on the frame member with a blade member, including upper and lower body sections attached thereto. A gas jet adjacent the edge of the lower body section of the blade member affords means for removing particulate matter which tends to settle on the seating surface. A gas inlet and associated gas passageway are in flow communication with the gas jet, the gas inlet supplying a purge fluid to the gas jet. Means are also provided for rotating the blade member between first and second positions to open and close the damper.

3,620,243
SEALED BALL VALVE
Edward J. Zatopek, and James L. Bitting, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
Filed Sept. 3, 1969, Ser. No. 854,875
Int. Cl. F16k *5/06*
U.S. Cl. 137—246.22 **6 Claims**



A ball valve comprising a seal ring having a groove in the face thereof and a liquid sealant in said groove.

3,620,244
VACUUM REGULATOR AND PNEUMATICALLY OPERATED FUEL CONTROL SYSTEM UTILIZING THE SAME
Larry V. Nisley, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 6, 1970, Ser. No. 61,724
Int. Cl. F16k *31/12*
U.S. Cl. 137—315 **20 Claims**

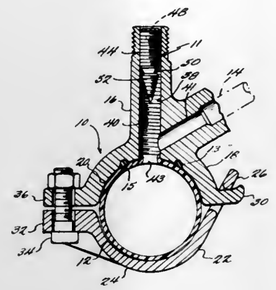


A vacuum regulator comprising a housing means having a valve seat controlled by a flexible diaphragm biased toward its open position by a leaf spring. A selector means is operatively interconnected to the leaf spring to rotate the same and thereby vary the bowed condition of the leaf spring to vary the vacuum condition being maintained by the vacuum regulator. The leaf spring has an internally threaded portion threadedly receiving an externally threaded part of the diaphragm member.

3,620,245
PERFORATOR AND APPARATUS FOR USING SAME
Robert R. Finney, Decatur; Lawrence F. Luckenbill, Decatur, and Gerry E. Kissell, Charleston, all of Ill., assignors to Mueller Co., Decatur, Ill.
Filed Oct. 21, 1969, Ser. No. 868,040
Int. Cl. B23b *41/08*
U.S. Cl. 137—318 **28 Claims**

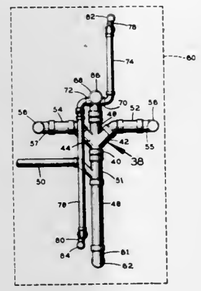
An apparatus for opening a flow-way in a main when a main is to be connected to a secondary main or service line.

In opening the flow-way in the main, a perforator or tapping tool is utilized, which will progressively form the hole or aperture in the main by upsetting the material of the main



outwardly of the same into the through bore of a fitting attached to the main, the upset material acting as a mechanical fastening means for increasing the resistance of a fitting to twist about the axis or centerline of the main.

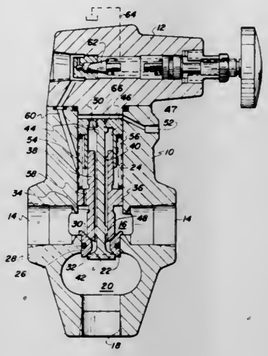
3,620,246
PLUMBING APPARATUS
William A. Shoquist, Pompano Beach, Fla., assignor to Behring Corporation, Ft. Lauderdale, Fla.
Filed Jan. 9, 1970, Ser. No. 1,777
Int. Cl. A47k *4/00*; **F16l** *5/00*
U.S. Cl. 137—357 **7 Claims**



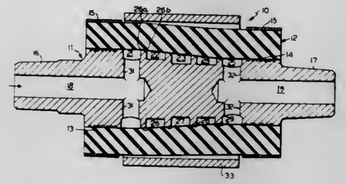
Plumbing apparatus for draining water from tubs and commodes or the like in a limited vertical space and with a single sewer connection, the apparatus including a connector having four arms, one of which has two inlets, with a sewer drain line connected to one arm, commode drain lines connected to two other arms, and tub drain lines connected to the two inlets of the fourth arm.

3,620,247
POWER TRANSMISSION
John W. Curnow, Utica, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed May 28, 1970, Ser. No. 41,343
Int. Cl. F16k *17/10*
U.S. Cl. 137—489 **8 Claims**

A pilot-operated pressure relief valve has two concentric poppets in series between the inlet and outlet and each is controlled by a piston tending to open the same. The piston for the upstream poppet is responsive to inlet pressure and the piston controlling the downstream poppet is responsive to the pressure between the poppets which is a predetermined fraction of the inlet pressure. The valve is useful for minimizing foaming with fluids susceptible thereto and may be also utilized in systems where a fixed ratio is to be maintained between the pressures in two different parts of the system.



3,620,248
BACKPRESSURE DEVICE
Francis H. Cary, Hope, R.I., assignor to General Signal Corporation
Filed July 20, 1970, Ser. No. 56,620
Int. Cl. F16k *17/18*
U.S. Cl. 137—493 **6 Claims**



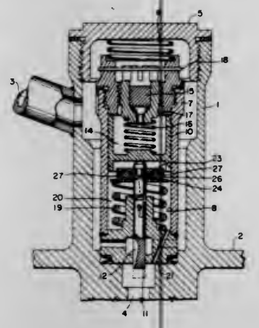
The disclosure concerns a device for imposing a back pressure on hydraulic metering pumps. The device includes a plurality of serially arranged, annular orifices defined by peripheral, axially spaced lands on a rigid mandrel, and an encircling, stretched elastomeric sleeve. The preload in the sleeve at each land determines the upstream pressure required to open the orifice and allow flow across the land, and the preloads are controlled by design so that none of the orifices creates a pressure differential which results in damaging cavitation.

3,620,249
FLOW CONTROL VALVE FOR FUEL INJECTION NOZZLES AND THE LIKE
Harold C. Simmons, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed June 8, 1970, Ser. No. 44,352
Int. Cl. F16k *17/04*
U.S. Cl. 137—503 **14 Claims**

A flow control valve characterized in the provision of a piston-actuated metering valve member in which the piston has one side thereof exposed to fluid pressure upstream of the metering orifice and the other side thereof exposed either to fluid pressure downstream of the metering orifice or to combustion chamber pressure, the piston being of such large size as to require a valve-biasing spring of such high spring rate that the friction of the metering valve member and of the piston in their guide bores in the valve body is negligible in comparison with the valve-operating forces, thus to render

the metering valve member very sensitive to small changes in fluid pressure differential acting on opposite sides of the piston. Furthermore, an adjustable lower rate spring acts on the piston in opposition to the valve-biasing spring so as to enable accurate setting of the metering valve member.

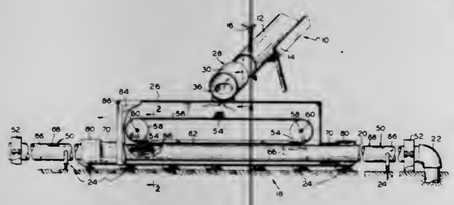
Another characterizing feature of this invention is that the metering valve member and piston have radial floating and axial abutting engagement with each other to prevent binding contact between the metering valve member and its guide



bore and between the piston and its guide bore despite eccentricity of said bores.

Yet another characterizing feature of this invention is the provision of a gimbal between the metering valve member and the adjacent end of the valve-biasing spring so as to prevent binding or cocking of the metering valve member in its guide bore in the event that the spring ends are not perfectly square relative to the axis of the metering valve member.

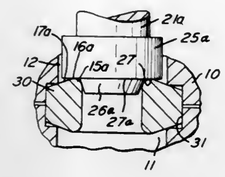
3,620,250
IRRIGATION APPARATUS
Gregory J. Wieck, Enterprise, Oreg., assignor to Battelle Development Corporation, Columbus, Ohio
Filed Sept. 4, 1969, Ser. No. 855,276
Int. Cl. A01g *25/02*
U.S. Cl. 137—561 **5 Claims**



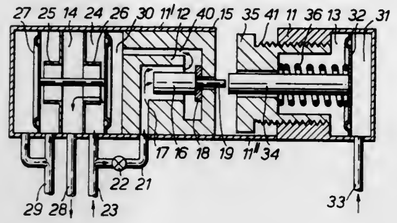
A movable irrigation line is supplied with water from an extraction tube movable with the line along a supply line having spaced outlet valves which are sequentially opened when in the extraction tube. The extraction tube has therein an endless belt carrying valve actuators which keep at least one of the valves in the tube opened.

3,620,251
VALVES
John C. Bowen, Huntingdon Valley, Pa., assignor to The Duriron Company, Inc., Dayton, Ohio
Filed Jan. 21, 1970, Ser. No. 4,515
Int. Cl. F16k *25/00*
U.S. Cl. 137—614.11 **5 Claims**

A valve for high-pressure fluids is provided in which multiple seating is effected by multiple engagement of seating portions of the valve plug one of which is transversely outwardly of the other with an expanding tapered or flared portion so that the operator can feel the seating and so that material displaced by one seating portion of the valve plug bucks or is in opposition to the material displaced by the other.



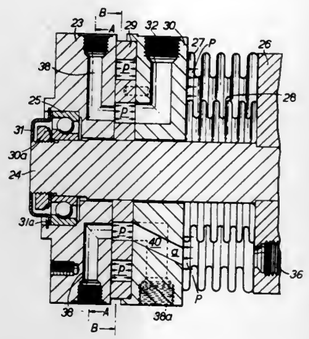
3,620,252
PNEUMATIC THRESHOLD SWITCH WITH ADJUSTABLE THRESHOLD LEVEL
Heinz Topfer, and Manfred Rockstroh, both of Dresden, Germany, assignors to VEB Reglerwerk Dresden, Dresden, Germany
Continuation-in-part of application Ser. No. 630,064, Apr. 11, 1967, now abandoned. This application Dec. 3, 1969, Ser. No. 881,688
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.6 **6 Claims**



A pneumatic threshold switch comprises a pneumatic pressure release switch for producing a pneumatic binary signal when actuated, and a pneumatic servomotor. The pneumatic servomotor comprises a housing, a chamber, a servo diaphragm in the servo chamber, a servo piston affixed at one end thereof to the servo diaphragm and actuating at the other end thereof the pressure release switch, and a threshold level adjuster for applying an adjustable threshold level force to the servo piston surface of the servo diaphragm. The threshold switch is released by increasing the pressure in the servo chamber above the preadjusted threshold level force.

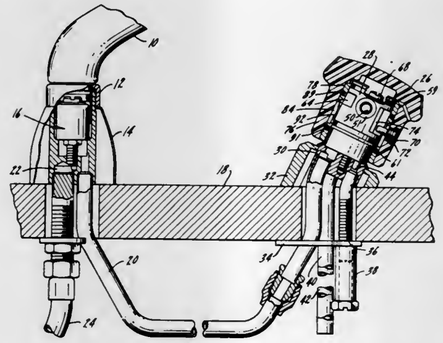
3,620,253
ROTARY DISTRIBUTOR
Gordon Richard Walker, and William Murray, both of Leamington Spa, England, assignors to Filton Limited, Leamington Spa, England
Filed Apr. 30, 1969, Ser. No. 820,550
Int. Cl. F16k *11/00;* **F16l** *27/00*
U.S. Cl. 137—625.11 **3 Claims**

A rotary distributor for sequentially distributing a fluid to different regions comprising two coaxial, ported ring members, one of the members having a coaxial ported plate attached thereto and arranged in face-sealing relation with the other member, each member having fluid ports arranged so that fluid flows through the ports in one member and through the ports of the ported plate to the ports of the other member, the direction of fluid flow being parallel to the axis of the coaxial members, the ported plate controls communication between the ports in one member and those in the other member, and means whereby fluid delivered to the distributor for passage through the ported members and the ported plate also serves to apply pressure on one side of the



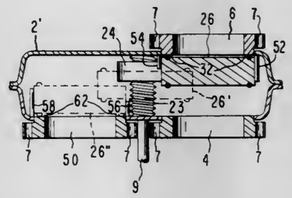
ring members to maintain the members in face-sealing relation.

3,620,254
HANDLE VALVE
Paul Mongerson, Elyria; Alfred M. Moen, Grafton, and Frank W. Bell, Avon, all of Ohio, assignors to Standard Screw Company, Hartford, Conn.
Filed Sept. 22, 1969, Ser. No. 859,835
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.17 **11 Claims**



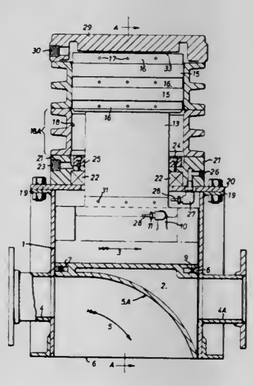
A single handle mixing faucet having a body member with inlet passages terminating at the exterior of the body member. A handle is reciprocal and rotatable on the body member and includes a confined circumferentially extending mixing chamber arranged to be placed into selective communication with the hot and cold water inlet passages terminating on the exterior of the body member. The body member is secured to an underlying support by a fastener which extends completely through the body member and has a tool-receiving opening at its upper end. In one form there are two discharge passages in the body member and cooperative means on the body member and handle to select one or the other of the discharge passages. In another form, the discharge passage extends away from the inlet passages and into a spout support which is mounted on top of the body member. The handle means which is reciprocal and rotatable on the body member includes a plurality of inlet ports arranged in two sets, one for hot water and one for cold water. The ports are generally uniformly arranged with there being more cold water ports than hot water ports so as to provide a greater degree of handle rotation within the comfort zone.

3,620,255
ROTARY GATE VALVE
Ben Stillman, Cupertino, Calif., assignor to Adcotech Corporation, Mountain View, Calif.
Filed July 31, 1970, Ser. No. 59,985
Int. Cl. F16k *3/10*
U.S. Cl. 137—625.45 **9 Claims**



A thin quick action rotary gate valve that require a short insertion length in the fluid line being controlled. In the closed position, a valve gate is held against the valve seat by a combination of fluid pressure and mechanical forces. To open the valve, the gate is moved directly away from the seat to avoid rubbing or wedging, and is then rotated out of the fluid path so as not to obstruct flow. In closing, the reverse action takes place to provide a nonrubbing closure.

3,620,256
PIPELINE VALVES
William J. C. Trythall, 18 South Parade, Whiteley Bay, Northumberland, England
Filed Jan. 22, 1970, Ser. No. 5,010
Claims priority, application Great Britain, Feb. 3, 1969, 5,789/69
Int. Cl. F16k *11/02;* **F16j** *15/00*
U.S. Cl. 137—625.48 **4 Claims**

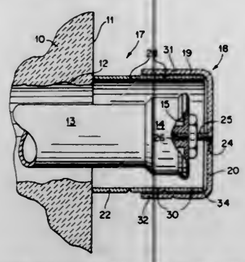


A valve for insertion in a pipeline through which material in powdered or granular form is conveyed pneumatically is so constructed that in one setting of the valve the material entering the valve is passed to a discharge outlet of the valve; and in a second setting of the valve said discharge outlet is closed and the material entering the valve flows through the valve and back into the pipeline.

3,620,257
ADJUSTABLE CLEANOUT COVER
Richard H. Wright, Jr., Rte. 1, Packinghouse Road, Kingsport, Tenn.
Filed June 10, 1970, Ser. No. 44,984
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **6 Claims**

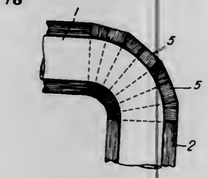
A cover assembly for a cleanout pipe and plug projecting outwardly beyond an upright wall surface, including a cap

having a cylindrical wall and a telescopingly received cylindrical sleeve longer than the cylindrical wall of the cap, and threaded fastening means securing the cap to the plug of the



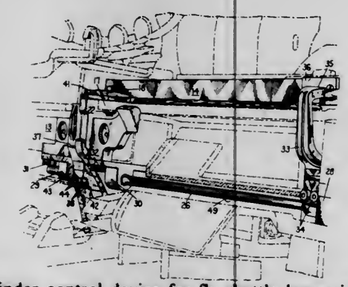
pipe concentrically for compression of the sleeve against the wall surface. The sleeve is also preferably provided with annular scores to form separable sleeve sections for varying the effective length of the sleeve.

3,620,258
INSULATION
Robert Graham, Great Lumley, England, assignor to Newalls Insulation & Chemical Company Limited, Manchester, England
Filed Apr. 15, 1970, Ser. No. 28,828
Claims priority, application Great Britain, Apr. 16, 1969, 19433/69
Int. Cl. F16l *9/22*
U.S. Cl. 138—178 **2 Claims**



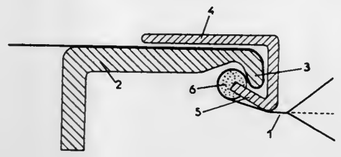
Curved pipes are thermally insulated by wedge-shaped annular elements of resin-bonded glass or other mineral fiber in which the fibers are perpendicular to the axes of the elements, so that these are axially compressible. The elements are pressed together into face-to-face contact along the pipe. They may be made by stamping cylinders out of fiberboards and cutting each cylinder along a plane inclined to the axis.

3,620,259
SHUTTLE-BINDER-ACTUATING MECHANISM
Joseph M. Budzyna, East Douglas, and Rocco H. Mucciarone, Franklin, both of Mass., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 814,049, Apr. 7, 1969. This application Jan. 16, 1970, Ser. No. 3,419
Int. Cl. D03d *49/56*
U.S. Cl. 139—187 **5 Claims**



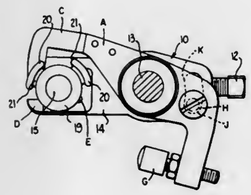
A binder control device for fly shuttle looms including a bar member with binder-engaging fingers fixed thereon and lever means for applying and releasing pressure on the binder through said bar member in timed relation with the receiving and picking of a shuttle from the shuttle box.

3,620,260
LOOM TENSION-FRAME HOLDING THE WOVEN FABRIC OVER ITS ENTIRE WIDTH
Claude Bourlet, 59 rue Pasteur, Saint Benin, and Louis Deprez, #2 rue du Chateau, Sains Richaumont, both of France
Filed May 27, 1969, Ser. No. 828,284
Claims priority, application France, July 22, 1968, 160,126
Int. Cl. D03j *1/22*; **D03d** *45/50, 49/70*
U.S. Cl. 139—292 **10 Claims**



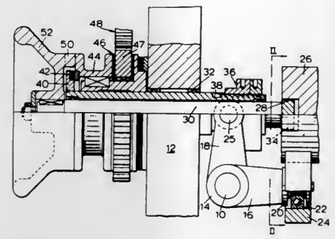
Tension plate for holding woven fabric over all its width, comprising a fixed plate the front edge of which is turned down to form a lip, the edge being surrounded, after interpositioning of the fabric by a mobile floating-oscillating section composed of a face substantially parallel to said plate for applying on aid plate and a face substantially following the contour of said lip and extending backwards of said lip.

3,620,261
LOOM TEMPLES
Colin L. L. Bulcock, Blackburn, England, assignor to Lupton Bros. Ltd.
Filed Feb. 11, 1970, Ser. No. 10,901
Claims priority, application Great Britain, Feb. 11, 1969, 7,327/69
Int. Cl. D03j *1/22*
U.S. Cl. 139—295 **6 Claims**



A cover for association with the rotary barrel of a loom temple comprises at least two part-cylindrical sections adapted for mounting either above or below the axis of said barrel, one or each such cover being capable of adjustment, circumferentially or radially of the latter, with reference to the other.
The several cover sections may be movable independently of one another about the barrel axis, and they may be arranged at different distances from such axis so as to be capable of telescoping one within another.
Alternatively two sections of a three-part cover may be individually slidable upon the third part for adjustment circumferentially of the barrel, or at least two cover sections may be independently adjustable towards or away from such barrel.

3,620,262
CLOTH ROLLER DRIVES FOR LOOMS
Cyril M. Atkinson, Carnforth, England, assignor to Northrop Weaving Machinery Limited, Daisyfield, Blackburn, Lancashire, England
Filed Sept. 30, 1969, Ser. No. 862,398
Claims priority, application Great Britain, Oct. 12, 1968, 48,465/68
Int. Cl. D03d *49/20*
U.S. Cl. 139—307 **6 Claims**



A loom cloth roller drive mechanism includes a friction drive, transmitting drive from a driving shaft to said cloth roller, and weighing means whereby an increase in the weight of said cloth roller causes the load on said friction device to increase and therefore maintains a more even tension in the cloth as it is being wound on said cloth roller.
The weight of said cloth roller supported on freely rotatable rollers causes the lever to pivot on a fixed point, said lever-transmitting movement to the driven member of the clutch. so as to apply a load on said clutch.

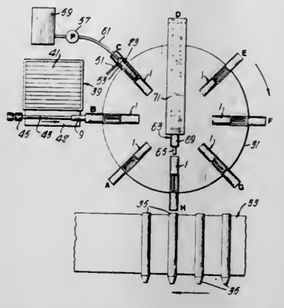
3,620,263
WIRE TENSIONER, CUTTER, AND STAPLE EXTRACTOR FOR CATTLE FENCES
Luis C. Vargas Beltran, Offcina de Correos, Puerto Armuelles, Chirqui, Panama
Filed Feb. 24, 1969, Ser. No. 801,617
Int. Cl. B21f *9/00*
U.S. Cl. 140—123.6 **2 Claims**



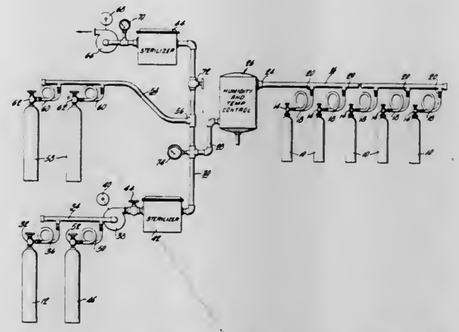
A device for drawing taut a fence wire during fence-erecting operation, the device including a pair of jaws between which the wire is grasped, one of the jaws being integral with a tubular body and the other comprising a jaw pivotable on the body, the pivotable jaw being urged into strong clamping position with the first jaw by a lever handle.

3,620,264
METHOD AND APPARATUS FOR ADDING FLUID TO FLUID-CARRYING FILLERS
Edward I. Klein, Montreal, Quebec, Canada, assignor to V-Mark Automation Ltd., Montreal, Quebec, Canada
Filed Apr. 6, 1970, Ser. No. 25,947
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 **13 Claims**

In adding fluid to fluid-absorbing fillings, a filler is positioned in a bore of a member. Fluid containing means on top of the member are connected to the bore by an opening which is centrally located with respect to a filler in the bore so that fluid in the fluid containing means passes through the opening to be absorbed by the filler. A plurality of the members can be located on an indexing table and moved past a series of work stations. At the work stations, a filler is positioned in each member, fluid is added to the fluid containing means of each member, time is provided to allow each filler to absorb the fluid and the fillers are then removed from the members.



3,620,265
METHOD FOR STERILIZING GAS CONTAINERS AND FILLING SAME WITH A STERILE GAS
Gordon N. Strople, Cherry Hill, and Justin W. Mills, Jr., Cinnaminson, both of N.J., assignors to Lif-O-Gen, Inc., Lumberton, N.J.
Continuation-in-part of application Ser. No. 765,004, Oct. 4, 1968, now abandoned. This application July 9, 1970, Ser. No. 53,394
Int. Cl. B65b *55/02*
U.S. Cl. 141—8 **2 Claims**

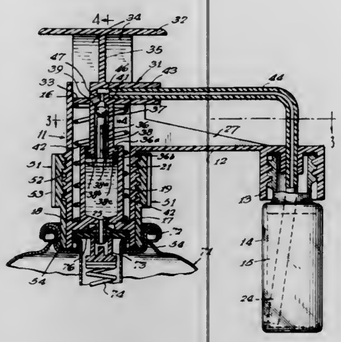


One or more gas containers connected by a conduit means to a feed source are sterilized and sterilely filled by the evacuation of the containers and conduit means to a low pressure, the introduction of a sterilizing agent into the containers and conduit means for a suitable holding period, the removal of the sterilizing agent by a further evacuation of the containers and conduit means, and the introduction of a gaseous feed stock to the containers through a sterilizing unit in the conduit means.

3,620,266
INJECTION PUMP ASSEMBLY FOR AEROSOL CONTAINERS
Francis E. Ryder, Mt. Prospect, Ill., assignor to Seymour of Sycamore Inc., Sycamore, Ill.
Filed Oct. 27, 1969, Ser. No. 869,839
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—20 **9 Claims**

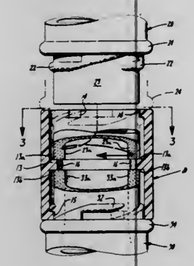
Apparatus for injecting a liquid substance into a previously filled and pressurized aerosol canister. The apparatus com-

prises a pump including means for positively locking and sealing the pump in position on the canister in surrounding relation to the valve assembly such that said pump may be



operated to withdraw liquid from a source and inject said liquid under pressure into said canister. The novel pump apparatus employs a check valve which precludes back flow during the injection procedure.

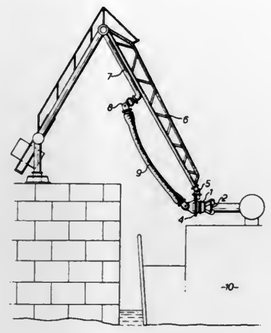
3,620,267
BOTTLE TRANSFER COUPLING DEVICE
Wendell Seablom, 3712 Texas Drive, Santa Rosa, Calif.
Filed Mar. 7, 1969, Ser. No. 805,319
Int. Cl. B65b *1/06, 3/06;* **B67c** *3/00*
U.S. Cl. 141—364 **4 Claims**



A device for transferring viscous fluids, such as catsup, from one bottle to another wherein an expansion chamber is provided between the pouring spouts of the bottles to enhance the downward flow of catsup by relieving the central portions thereof to permit air displaced from the lower bottle to bubble up through the flowing catsup into the upper bottle.

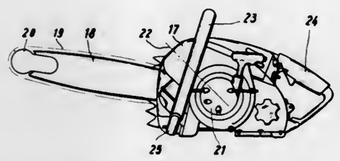
3,620,268
BOOM LOADER
Arthur Loftus Paddington, Thorpe Willoughby, near Selby, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
Filed Feb. 25, 1970, Ser. No. 14,165
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—388 **2 Claims**

A boom loader of the kind having a boom from which is suspended a pipe in which petroleum products are conveyed from ship to shore, and provided with a universal connection between a discharge manifold on the pipe and the free end of the boom by means of which bending moments, which tend



to arise where the boom is connected to the pipe, are reduced to a minimum.

3,620,269
PORTABLE CHAIN SAW WITH ANTIVIBRATION HANDLE
Alfonso Lange, Dorpfeldstrasse 8, 2000 Hamburg 52, Germany
Filed Aug. 22, 1969, Ser. No. 852,235
Claims priority, application Germany, Feb. 20, 1969, P 19 08 451.6
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 **6 Claims**



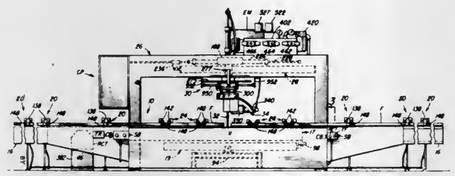
In a portable chain saw powered by a reciprocating engine, vibrations from the engine to the handle grasped by the operator(s) are absorbed by forming the handle with a core which is rigidly attached to the chain saw body and a sheath which surrounds the handle in spaced relation and held relatively to the core by a spacer of yieldable material, such as one or more pieces of rubberlike material or corrugated leaf springs or radial coiled expansion springs which engage both the core and the sheath, the latter being grasped by the operator.

3,620,270
AUTOMATED SAW
John C. Jureit, Coral Gables; Oscar Csakvary, Miami; Adolfo Castillo, Miami; Benjamin H. Kushner, Miami, and Otto J. Karch, Miami Springs, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.
Continuation of application Ser. No. 675,174, Oct. 13, 1967, now abandoned. This application Oct. 24, 1969, Ser. No. 871,629
Int. Cl. B27b *5/18, 27/06;* **B27c** *9/00*
U.S. Cl. 143—47 **57 Claims**

The fabricating machine comprises a fixed table mounting a length positioner assembly comprising a movable table having a plurality of stops spaced at predetermined intervals therealong and selectively movable for projection above the surface of the movable table. The movable table is driven lengthwise by serially disposed fluid-actuated cylinders having predetermined displacements whereby actuation of one or more of the cylinders displaces the movable table a predetermined distance from a reference point, thereby

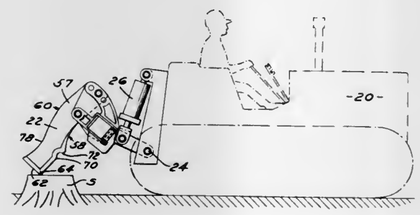
locating the projected stop a predetermined distance from a saw blade mounted for rotation on a superstructure assembly overlying the saw table. The saw assembly is rotatably driven to a predetermined angular position by an angle positioner assembly comprising serially disposed fluid-actuated cylinders, whereby actuation of one or more of the cylinders causes the saw assembly to rotate to the predetermined angular position for making a selected angle of traverse across the saw table.

Length and angle information for actuating selected cylinders



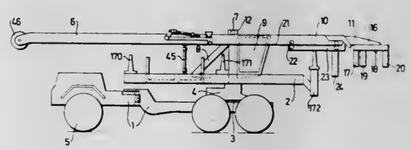
of the length and angle positioner assemblies is provided on punched tape. A tape reader senses the information and an electrical circuit is responsive thereto to provide control signals to valves controlling the fluid-actuated cylinders, whereby selected cylinders are actuated. Pullback and hold-down clamps are provided to respectively engage a board to be cut to pull the same against a rear fence and clamp the board against the table, thereby locating the board in proper sawing position and precluding movement of the board during sawing.

3,620,271
METHOD OF AND APPARATUS FOR REMOVING STUMPS
Lavern L. Loyer, 24898 Champaigne, Taylor, Mich.
Filed Feb. 9, 1970, Ser. No. 9,567
Int. Cl. A01g *23/06*
U.S. Cl. 144—2 N **10 Claims**



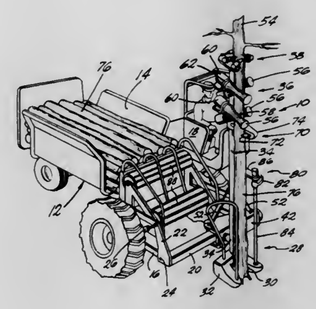
This disclosure relates to apparatus for removing tree stumps from the ground quickly and in such condition that the removed stump may thereafter be burned expeditiously as part of a land-cleaning operation. A vertically arranged blade sharpened along its bottom and forward edges and having a relatively flat face along its rear edge is mounted on a tractor in such fashion that the weight of the tractor may be utilized to force the sharpened lower edge down through the stump to split it; forward movement of the tractor will draw the sharpened forward edge of the blade through the stump to further split it; and rearward movement of the tractor combined with upward movement of the blade will pull rendered portions of the stump from the ground in a substantially dirt free condition.

3,620,272
METHOD AND MACHINE FOR FELLING, DEBRANCHING, COLLECTING AND BUNDLING TREES
Erik Helmer Eriksson, Soderhamn; Lars-Gunnar Hogberg, Ornskoldsvik; Carl Peter Seth Kempe, Ornskoldsvik, and Stig-Gunnar Lofgren, Ornskoldsvik, all of Sweden, assignors to Mo och Domsj Aktiebolag, Ornskoldsvik, Sweden
Filed Jan. 26, 1970, Ser. No. 5,885
Claims priority, application Sweden, Jan. 27, 1969, 1053/69
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D **23 Claims**



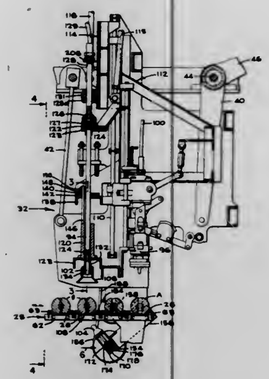
Apparatus and process are provided for felling, debranching, collecting and bundling trees, in which the tree is gripped, cut, and felled to a position substantially parallel with the ground, in one continuous working sequence, and is then immediately transported in its longitudinal direction through a debranching means in which the branches are separated from the trunk or a portion thereof. The debranched trunk or portion is severed, and is conveyed crosswise to a collection means, and bundled.

3,620,273
TREE HARVESTING APPARATUS
Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.
Filed May 25, 1970, Ser. No. 40,162
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D **10 Claims**



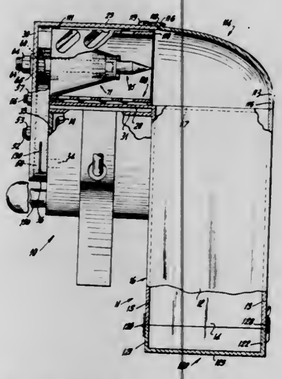
Apparatus for harvesting trees comprising a forwardly movable vehicle having a tree felling and processing assembly mounted on the front end thereof and adjustable in a direction transversely of the direction of movement of the vehicle to enable accurate alignment of the assembly with a tree selected for harvesting during movement of the vehicle. The felling and processing assembly includes a lower severing mechanism and a mast which extends upwardly therefrom and is movable between vertical and inclined positions. The assembly also includes a tree gripping and feeding assembly consisting of pairs of elongated concave surfaced rollers which grip the tree and are operable to feed the tree downwardly so that it can be cut off into lengths. The tree lengths are then bucked onto a conveyor which moves them to a storage receptacle on the vehicle.

3,620,274
FRUIT ALIGNING APPARATUS
Gerald R. Anderson, Campbell, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Jan. 22, 1970, Ser. No. 5,074
Int. Cl. A23o *3/12*
U.S. Cl. 146—52 **9 Claims**



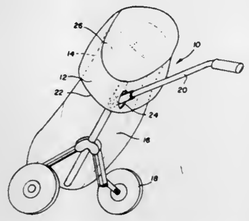
Indented fruit such as apples are oriented with their stem indents down on a cup conveyor. To improve and maintain this orientation, a rotatable stem indent centering pin moves upwardly into the indent and a rotatable blossom indent centering pin moves down into the blossom indent. The bottom centering pin lifts the fruit out of the cup, and the two centering pins are rotated in opposite directions. This rotation causes the fruit to shift into precise alignment with the centering pins, and a spring-biased centering cup coaxial with the upper centering pin preserves this alignment while the centering pins retract, and during the next following stemming operation.

3,620,275
DEVICE FOR TRIMMING THE OUTERSIDES OF CARCASSES
Paul R. Himes, R.D. 3, Box 186-A, Putnam, N.Y.
Filed Mar. 27, 1969, Ser. No. 811,017
Int. Cl. B02c *18/00*
U.S. Cl. 146—89 **9 Claims**



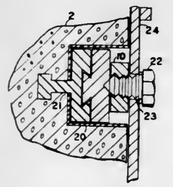
The device can be hung by means of a flexible cord. It is portable and operated by an electric motor. The motor output shaft is geared to a rotary cylindrical cutter. The device is held by a handle and moved to run the cylindrical cutter over the outside of the carcass. Fat and grime is cut by knives on the cutter and the cuttings move to the inside of the cylinder and are pushed into a container on the device. The container has a cover which can be opened to dump the cuttings. A conical member fixed within the cylindrical cutter guides cutting to the open end of the cutter.

3,620,276
GOLF BAG SLIP COVER
Clarence R. Taylor, 28 Woodside Drive, Penfield, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,700
Int. Cl. A63b *55/00*
U.S. Cl. 150—52 G **7 Claims**



A slip cover for a golf bag and clubs to protect them from moisture during a sudden shower or rain storm. The slip cover has a discontinuity along one end thereof to receive the handle of a golf cart containing the golf bag and clubs, and a cover flap at its other end to provide access to the golf clubs.

3,620,277
MEANS FOR MOUNTING CONCRETE STRUCTURAL MEMBERS
Natale J. Tummarello, 2073 Hillside Ave., Bellmore, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,802
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.76 **1 Claim**

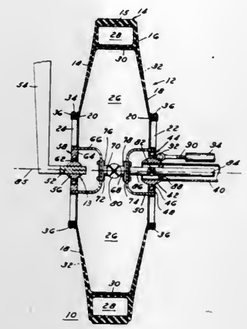


A first member having a dovetail slot is bonded to the wall panel or other member to be mounted. A second member having a dovetail projection is slidably mounted in the first member. The second member has a second dovetail slot at right angles to its dovetail projection. A third member having a dovetail projection is mounted in the slot of the second member. The third member has a threaded aperture for receiving a mounting bolt. The dovetail means provides adjustment of the mounting aperture along two axes.

3,620,278
HYBRID PNEUMATIC-MECHANICAL VARIABLE CONFIGURATION WHEEL
Edward G. Markow, Oakdale, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 16, 1969, Ser. No. 885,523
Int. Cl. B60b *9/00*
U.S. Cl. 152—9 **10 Claims**

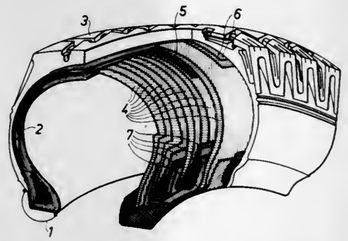
A variable-geometry-type vehicle wheel whose profile can be automatically changed as required from a circular configuration for normal operation on roads to an elliptical configuration for off-the-road travel to increase traction. The

profile of the wheel, formed with a flexible pneumatic spoke membrane and resilient rim is changed from a circular shape



to an elliptical shape by canting the wheel hub disks relative to the wheel shaft centerline.

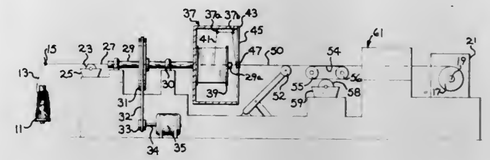
3,620,279
PNEUMATIC TIRES
Zoltan Bartha; Laszlo Vad; Imre Biro, and Otto Farkas, all of Budapest, Hungary, assignors to Orszagos Gumiipari Vallalat, Budapest, Hungary
Filed July 15, 1969, Ser. No. 841,738
Int. Cl. B60c *9/02*
U.S. Cl. 152—356 **3 Claims**



In order to improve diagonal-ply tires one or more zone plies which do not extend further than the limit of the flexible zone, are employed together with cord elements with certain limits of the cord angle which are determined by the shaping angle and by the direction of the cord elements.

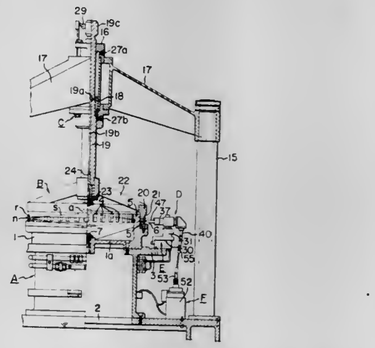
3,620,280
MULTIFILAMENT REINFORCEMENT YARNS AND ARTICLES CONTAINING SAME
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Filed Apr. 16, 1968, Ser. No. 721,688
Int. Cl. B60c *9/02*; **D02g** *3/36, 3/48*
U.S. Cl. 152—359 **15 Claims**

Organic and glass filaments, yarns and/or strands are combined, with the organic component as the core and the glass component as the overwrap, followed by a treatment which causes the organic to shrink, causing spaced portions of the glass component to move or to tend to more radially outwardly with respect to the longitudinal axis of the combined structure and whereby, when the combined structure is in an elastomeric matrix, the region of the matrix contiguous to the organic component is in a state of compression while the



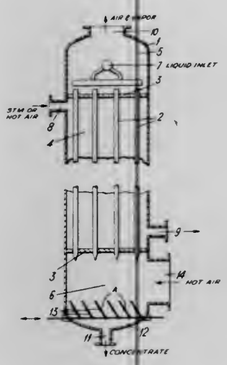
glass component exhibits greater anchoring potential with the elastomeric matrix.

3,620,281
SIMULTANEOUS FASTENING APPARATUS FOR WIRE SPOKE WHEELS
Kazuaki Hasegawa; Kanzo Kawaguchi Nozaki, and Katsuyoshi Yokoyama, all of Tokyo, Japan, assignors to Japan Bicycle Promotion Institute, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,119
Claims priority, application Japan, Apr. 21, 1969, 44/35778
Int. Cl. B60b *1/04*
U.S. Cl. 157—1.55 **4 Claims**



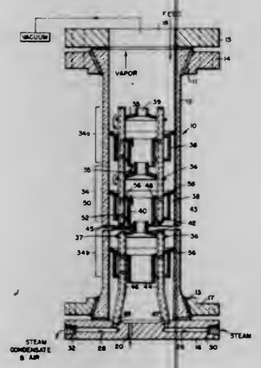
A simultaneous fastening apparatus for wire spoke wheels comprises a fixed lower assembly having a ring-shaped spoke inserting part provided with slots into which the spokes of a provisionally assembled wheel are inserted and vertical teeth between the slots, an annular rim-loading part on which the rim of said wheel is loaded, and an axle-supporting part for gripping the lower end of an axle of said wheel, said rim-loading part being disposed beneath the outer periphery of said spoke-inserting part, and said axle-supporting part being disposed beneath the center of said rim-loading part and said spoke-inserting part. An upper assembly movable in the vertical direction has an annular rim-clamping part provided with a tapered surface along the lower portion of its outer periphery for making contact with the rim of said wheel and a vertical guide surface along the lower portion of its inner periphery for making contact with the outer periphery of said teeth, and an axle-supporting part for gripping the upper end of the axle of said wheel, said supporting part being disposed at the center of said clamping part. Driver devices equal to the number of nipples threadedly mated with the tips of the respective spokes of the wheel are positioned to oppose each of the slats of said lower assembly at its outer peripheral position and are reciprocable in the directions of the spokes of the wheel. First driving means are positioned for reciprocating the upper assembly in the vertical direction; second driving means are positioned for rotating the driver devices in the fastening direction of the nipples with a constant torque; and third driving means are positioned for reciprocating the driver devices in the directions of the spokes.

3,620,282
FALLING FILM EVAPORATOR FOR CONCENTRATING LIQUIDS
Frank Newton, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Feb. 9, 1970, Ser. No. 9,712
Claims priority, application Great Britain, Feb. 19, 1969, 8,935/69
Int. Cl. B01d 1/22, 1/00
U.S. Cl. 159—13 C 5 Claims



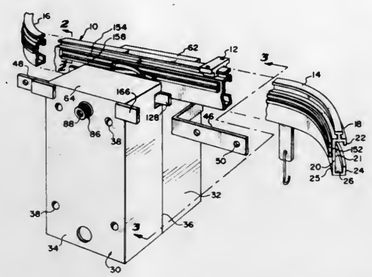
In a falling film evaporator for separating or concentrating liquids, drops from the evaporator tubes fall onto and between parallel inclined baffle plates provided below said tubes and the inlet for a hot airstream, the inclined baffle plates minimizing the disintegration of the drops into smaller droplets and, by shielding them from said hot airstream, minimizing entrainment of said smaller droplets back up said tubes by said hot airstream.

3,620,283
FALLING FILM EVAPORATOR STRIPPER
Francis Charles Brown, Framingham, Mass., assignor to Artisan Industries Inc., Waltham, Mass.
Filed Feb. 4, 1969, Ser. No. 796,416
Int. Cl. B01d 1/22, 3/08, 3/00
U.S. Cl. 159—13 A 9 Claims



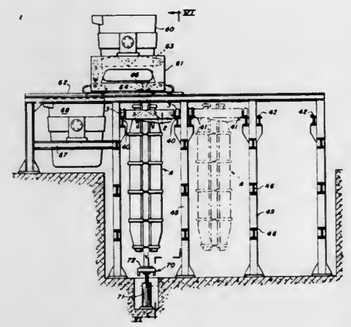
A falling film evaporator which includes an alternating series of tubular heat jackets and discs, which units are vertically and spatially separated within the column. The discs are characterized by a central flow passage therein. The inner circumference of the heated tubular jacket is less than the diameter of the disc directly below it. The upper portion of the tubular jacket has an inwardly and downwardly dished flange the outer circumference of which is greater than the peripheral edge of the disc directly above it.

3,620,284
REMOTE CONTROLLED TRAVERSE ASSEMBLY
Charles A. Shayman, 1130 So. Michigan Ave., Chicago, Ill.
Filed Aug. 19, 1970, Ser. No. 65,220
Int. Cl. A47h 5/02
U.S. Cl. 160—331 19 Claims



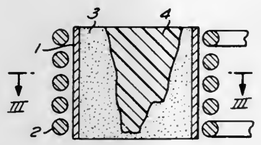
An enclosed motor-driven hanger is disclosed having opposing knurled drive and idler wheels that engage on opposite sides of a track whereby a load can be carried along the track or the leading edge of a curtain can be moved to an open or closed position along the track through rotation of the drive wheel. In one embodiment the idler wheels are spring loaded and mounted on a wobble plate while the drive wheel is fixed. In another embodiment the drive wheel is adjustably spring mounted and the idler wheels are on fixed axes. In either embodiment, the track carries spaced insulated conductors, the motor mount has sliding, electrical contacts that engage the conductors and the assembly is adapted to traverse curved, horizontal or inclined tracks with facility and underload. Provision is made for ready adjustment of the tension on the compression force upon the track by the opposing drive and idler wheels, instant fingertip release from the track as desired, and easy disassembly for repair or replacement of parts. Vertically oriented tracks having curved sections can also be traversed with facility by the unit.

3,620,285
SLAB CASTING APPARATUS
Erik Allan Olsson, Zurich, Switzerland, assignor to Olsson International, Inc., Pittsburgh, Pa.
Filed Mar. 21, 1969, Ser. No. 809,233
Int. Cl. B22d 9/00, 11/08
U.S. Cl. 164—274 14 Claims



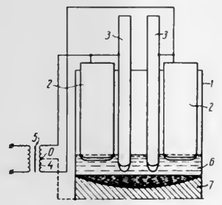
Apparatus for casting in succession a plurality of metal slabs of fixed length wherein there is a single open-ended casting mold and a number of supporting units of the type having opposed panels in which the cast slabs are cooled. The opposed panels of each supporting unit are reciprocated up and down during the casting in such manner that one moves up as the other moves down, and are similarly reciprocated to facilitate removal of the casting from the supporting unit. The supports are each suspended from a carriage in such manner that when one slab has been cast, it may be moved away and another brought beneath the mold, or the mold moved to position over another supporting unit.

3,620,286
CASTING METHOD
Richard Hofmann, 6346 Oberscheid, and Adalbert Wittmoser, 684 Lampertheim, both of Germany
Division of Ser. No. 680,698, Nov. 6, 1967, abandoned
Filed June 18, 1969, Ser. No. 834,300
Int. Cl. B22c 9/02; B22d 27/02
U.S. Cl. 164—34 26 Claims



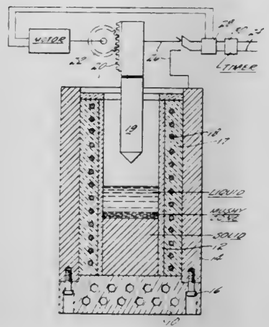
A casting method using a mold of particulate material including magnetizable particles which is made shape-retaining by subjecting the shaped mold to a magnetic field of sufficient strength to fix the position of the particulate magnetizable mold-forming material.

3,620,287
METHOD OF PRODUCING INGOTS, IN PARTICULAR, SLAB INGOTS, BY ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES
Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Vitaly Mikhailovich Baglai, ulitsa Semasha, 10, kv. 54/3; Albert Nikolaevich Sevruk, ulitsa Ezhena Potie, 9, kv. 3, and Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14, all of Kiev, U.S.S.R.
Filed June 3, 1970, Ser. No. 42,913
Int. Cl. B22d 27/02
U.S. Cl. 164—52 5 Claims



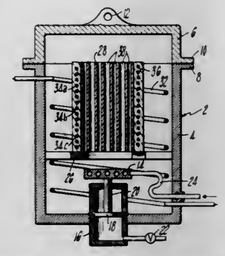
This disclosure relates to a method of producing ingots, in particular, slab ingots, by electroslag remelting of consumable electrodes.
The method according to the present invention consists in the introduction to a cooled crystallizer of two groups of consumable electrodes, each of said groups comprising one electrode, stationary with respect to the crystallizer, and at least one movable electrode, which helps ensure a high quality of slab ingots produced.
This method can be most advantageously used for producing slab ingots intended for direct sheet rolling without the use of powerful cogging means.

3,620,288
DIRECTIONALLY SOLIDIFIED CASTINGS
Robert B. Barrow, Chesire, and Jeffrey D. Hostetler, Middletown, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed June 27, 1969, Ser. No. 837,247
Int. Cl. B22d 27/02, 17/32, 27/04
U.S. Cl. 164—52 8 Claims



Production of directionally solidified castings using a consumable arc melting technique with cooling from the base of the apparatus by periodically interrupting the arc.

3,620,289
METHOD FOR CASTING DIRECTIONALLY SOLIFIED ARTICLES
Charles M. Phipps, Jr., Wapping, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Division of Ser. No. 750,335, Aug. 5, 1968, Pat. No. 3,538,981
Filed Apr. 1, 1970, Ser. No. 31,458
Int. Cl. B22d 25/06, 27/20
U.S. Cl. 164—60 9 Claims



Articles in which the crystalline structure is directionally controlled as, for example, in directionally solidified or single crystal articles are cast in individual molds with a mechanism to control the cooling rate and direction such that orientation of the crystalline structure is precisely controlled. A graphite susceptor surrounds the individual molds and in cooperation with a chill plate provides the necessary control of the cooling rate and direction.

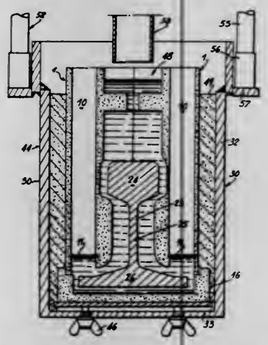
3,620,290
LUBRICANTS FOR CONTINUOUS METAL-CASTING OPERATIONS
Bernard H. Kress, Lafayette Hill, and Donald E. Alexander, Wayne, both of Pa., assignors to Quaker Chemical Corporation, Conshohocken, Pa.
Continuation-in-part of application Ser. No. 734,572, June 5, 1968, now Patent No. 3,526,596, dated Sept. 1, 1970. This application Apr. 6, 1970, Ser. No. 26,138
Int. Cl. C10m 1/26
U.S. Cl. 164—73 7 Claims

The invention relates to synthetic lubricants used at very high temperatures in the process of continuous casting of

molten metals. The lubricants are applied as a liquid film to the surfaces of the molds into which the metal is poured. In continuous casting of steel the molten steel is poured into an open-bottomed mold of the desired product shape. The steel is cooled in the mold just enough to harden the exterior surface of the casting, which forms a shell or container that holds the balance of the liquid metal. The inner walls of the mold are continuously coated with a liquid lubricant as the metal is poured therein. The partially solidified casting is then continuously withdrawn from the bottom of the mold, where it is further cooled by water sprays until all the metal is solidified. The casting is cut as it descends through the equipment into desired lengths.

The polyol esters of fatty acids having 12 to 22 carbon atoms, or mixtures thereof, are excellent lubricants for molds used in continuous casting of metals. The preferred polyols have two to 12 hydroxy groups and at least five carbon atoms, including for example, pentaerythritol or polymers thereof, trimethylol ethane, trimethylol propane, and glycols containing from two to 40 carbon atoms. Also included in these polyols are inositol, mannitol, sorbitol, glucose, sucrose, trimethylol benzene, hexamethylol benzene, methyl glucosides, polyglycerols and, in fact, any polyol capable of reacting with at least two selected fatty acid molecules to form a minimum of a diester.

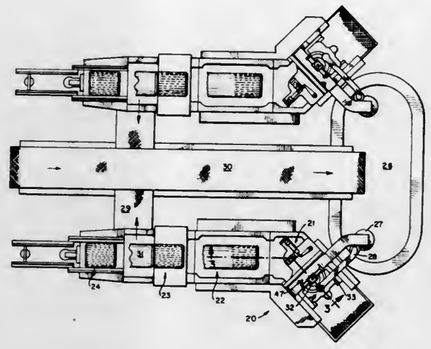
3,620,291
PROCESS FOR ALUMINOTHERMAL WELDING
Marcel Joseph Charles Delachapelle, Aillant-sur-Tholon (Yonne), France
Filed Nov. 19, 1969, Ser. No. 878,083
Claims priority, application France, Nov. 19, 1968, 174,408
Int. Cl. B22d *19/00*
U.S. Cl. 164—108 **3 Claims**



The disclosure concerns a welding process utilizing apparatus comprising cores having certain of their faces with shapes corresponding to those of the end parts of the sections to be joined, housings which are fitted on the parts of the sections to be joined which extend outside the cores, a fusible cutoff element closing the exit from the cores, a rigid support fittable on the housings and a hearth capable of being maintained in stable position on the support. The process includes the step of forming a mold in situ by the ignition of a mixture of aluminothermal material and refractory material, and then adding a first fraction of molten material to the mold, after a period of time releasing the first fraction and adding a second fraction of molten material to the mold so as to weld the abutting ends of the sections to be joined.

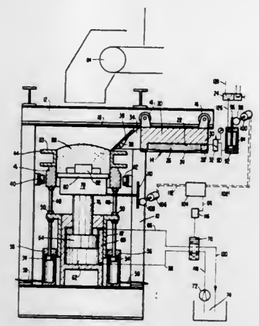
3,620,292
AUTOMATIC STEREOTYPE PLATE CASTING AND FINISHING MACHINE
Charles L. Ricards, South Plainfield, N.J., assignor to Wood Industries, Inc., Plainfield, N.J.
Filed Sept. 15, 1969, Ser. No. 857,825
Int. Cl. B41d *3/00*
U.S. Cl. 164—140 **13 Claims**

A new stereotype plate casting and finishing machine is disclosed having a dual arrangement of the various sections, each of two casting units being arranged, together with cooperating transfer units at an angle with respect to subsequent parallel inspection, finishing and cooling sections.



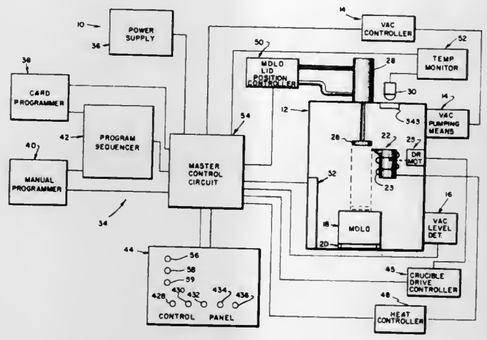
Unique transfer means are disclosed for carrying newly cast plates from each of the respective casting units and for presenting the plates at inspection stations where an operator can inspect the newly cast plate.

3,620,293
PRESS MOLDING MACHINE WITH ADJUSTABLE FEED DEVICE
Ernst Otto Kruse, Pattenser Str. 48, Reden/Hannover, Germany
Filed Apr. 7, 1969, Ser. No. 814,040
Int. Cl. B22c *19/04, 15/08*
U.S. Cl. 164—154 **5 Claims**



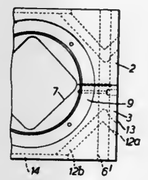
A desired degree of compaction of molding sand within a mold flask part is achieved by ramming a pressure plate to a fixed end position with respect to the mold flask part while bleeding liquid from a yielding pressure head to allow attainment of the end position without exceeding the desired degree of compaction. The amount of molding sand subjected to compaction in the next cycle is controlled by the amount of liquid so displaced.

3,620,294
SEMIAUTOMATIC METAL CASTING APPARATUS
Frank L. Hetzel, Manhattan Beach, and Stuart T. Schy, Reseda, both of Calif., assignors to TRW Inc., One Space Park, Redondo Beach, Calif.
Filed July 11, 1969, Ser. No. 841,019
Int. Cl. B22d *37/00*
U.S. Cl. 164—155 **20 Claims**



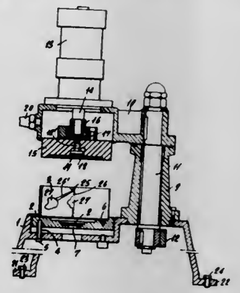
A program-controlled semiautomatic metal casting process and apparatus involving a series of successive working and checking operations, including preliminary semiautomatic startup operations and final fully automatic melting, pouring, and shutdown operations. Commencement of each operation requires proper completion of the preceding operation. Certain of the operations proceed in accordance with a preselected casting program which may be varied, either by total program substitution or by manual adjustment of the individual program parameters, to provide the optimum program for the particular metal being poured and the particular shape being cast.

3,620,295
CONTINUOUS CASTING MOLD HAVING A PLURALITY OF TRANSVERSE COOLING PASSAGES
Richard James Dain, Tonbridge, Kent, England, assignor to Davy-Ashmore Limited, London, England
Filed Mar. 11, 1969, Ser. No. 806,165
Claims priority, application Great Britain, Mar. 12, 1968, 11,885/68
Int. Cl. B22d *11/00*
U.S. Cl. 164—283 **6 Claims**



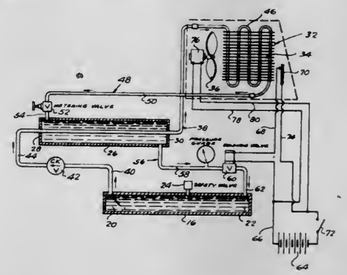
A mould for use with a continuous casting machine comprises a body of thermally conductive material having an opening therethrough and the walls of the opening constitute the mould surface. The body is made up of a plurality of parts each of which provides part of the mould surface along the length of the opening and each part of the body has separate liquid cooling ducts or passages. The quantity of fluid passed for cooling purposes through the different parts of the body can be adjusted to give the required heat transfer conditions between the molten metal passed through the mould and the mould body.

3,620,296
MACHINE FOR OBTAINING METAL CASTINGS
Ugo Barbieri, Via De Pretis 5, Pavia, and Giancarlo Dal Pra, Via Matteotti 2, Peschiera Borromeo, Milan, both of Italy
Filed Nov. 5, 1969, Ser. No. 874,278
Claims priority, application Italy, Dec. 4, 1968, 24,591/68
Int. Cl. B22d *17/06*
U.S. Cl. 164—308 **10 Claims**



A method for providing metal castings by using disposable wax dies, comprising through a predetermined and completely automatic cycle a previous degassing step of the die by sucking from the bottom and then the pouring step of the molten metal by a combination of suction from the bottom and pressure from the top on said die, the pressure being applied when degassing approaches the molten metal in the die pot.

3,620,297
COOLING SYSTEM
Orville Adkins, 313 Center St., New Richmond, Ohio
Filed Dec. 12, 1969, Ser. No. 884,628
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 **1 Claim**

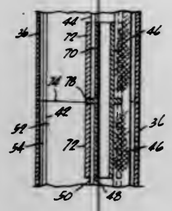


A closed system for cooling wherein a substance is vaporized by a heat source and conducted to a condenser. From the condenser, the substance enters coils in an evaporator, from which it is returned to the condenser and to the heat source.

3,620,298
CONTINUOUS HEAT PIPE AND ARTERY CONNECTOR THEREFOR
Robert H. Somerville, Richland, and Lewis P. Bakker, Kennewick, both of Wash., assignors to McDonnell Douglas Corporation
Filed July 22, 1970, Ser. No. 57,041
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **10 Claims**

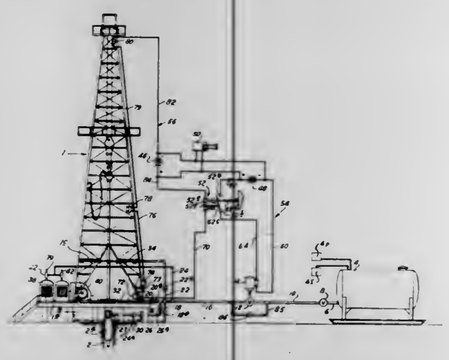
Continuous, annular, artery-type wick heat pipe is obtained by forming a predetermined length of container tube including an artery-type wick therein into a desired annular configuration and joining abutting artery ends with a connec-

tor means comprising an insert and two securing spring sleeves, the joint being completed by butt welding the ends of the outer container tube together. The insert and spring sleeves of the connector means have cooperating configura-



tions and dimensions which provide a self-aligning and firm artery connection wherein an integral (nonleaking) artery structure is maintained. Sharp bends such as a right angle corner can be provided in an artery-type wick heat pipe by use of suitably modified connector means.

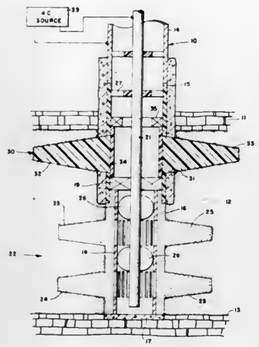
3,620,299
DEVICE FOR PUTTING OUT OIL WELL FIRES
Ben W. Wiseman, Jr., 303 Wall Tower-West, Midland, Tex.
Filed Jan. 24, 1969, Ser. No. 793,692
Int. Cl. A62c *35/40, 37/04*; **F21b** *35/00*
U.S. Cl. 166—.5 **15 Claims**



An extinguishing manifold around the opening of an oil well and a control circuit actuated by heat, air pressure or manually to open a valve to cause carbon dioxide to be dispensed from the manifold to prevent or extinguish an oil well fire. The carbon dioxide may also be injected into the well casing, and used to cool the exhaust pipes of engines at the well site. On an offshore rig, the carbon dioxide container is attached to a leg of the platform, below water.

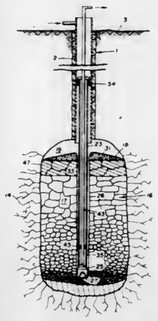
3,620,300
METHOD AND APPARATUS FOR ELECTRICALLY HEATING A SUBSURFACE FORMATION
Fred L. Crowson, Portland, Tex., assignor to The Electrothermic Co., Corpus Christi, Tex.
Filed Apr. 20, 1970, Ser. No. 29,954
Int. Cl. E21b *43/24*
U.S. Cl. 166—248 **22 Claims**

A method and apparatus include providing one or more vertically spaced electrodes in the borehole in electrical contact with the formation. Two electrodes in a common borehole may be connected to a surface source of alternating current voltage to conductive paths provided respectively by a conductive casing and a conductive tubing suitably insulated from each other; or the two electrodes connected to the voltage source may be placed in separate adjacent boreholes. The flow of current through the formation is guided or directed by means of insulating barriers which extend



laterally into the formation from the borehole in vertically spaced relation to the electrode.

3,620,301
METHOD OF IN-SITU-RETORTING OIL SHALE
Dean P. Nichols, Dallas, and Lloyd K. Strange, Grand Prairie, both of Tex., assignors to Mobil Oil Corporation
Filed Apr. 13, 1970, Ser. No. 27,887
Int. Cl. E21b *43/24, 47/06*
U.S. Cl. 166—251 **6 Claims**



This specification discloses a method of forming a single-well in-situ-recovery system within a nuclear chimney formed in an oil shale formation and a method of in-situ-retorting oil shale within the chimney. A nuclear explosive is positioned at the lower portion of a well and detonated to form the nuclear chimney which is filled with rubblized oil shale. A bit is connected to casing and advanced through the rubblized oil shale to form a cased well extending to the lower extremity of the chimney. The casing is then perforated and a single-well in-situ-retorting process is carried out.

3,620,302
SEALING PERMEABLE ZONES IN SUBTERRANEAN FORMATIONS WITH HEAT-SENSITIVE SOLUTIONS
Robert W. Parsons, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Sept. 12, 1969, Ser. No. 857,565
Int. Cl. E21b *33/138, 43/24*
U.S. Cl. 166—258 **7 Claims**

The permeability of permeable zones in a subterranean formation is reduced by injecting into the formation an aqueous solution containing plugging agents which swell or foam when heated, and then heating these agents to a temperature

sufficient to cause them to intumesce. Examples of useful plugging agents include soluble metal silicates. The reservoir can be heated by any of several means, e.g. a standard downhole heater, igniting charcoal briquettes, or with heat generated by in-situ combustion process, e.g. in-situ combustion process can be maintained in a zone adjacent to the permeable zone to be sealed.

3,620,303
TAR RECOVERY METHOD
William G. Halbert, Jr., Butte, Mont., assignor to Tenneco Oil Company, Houston, Tex.
Filed Jan. 15, 1970, Ser. No. 3,225
Int. Cl. E21b *43/22, 43/24*
U.S. Cl. 166—272 **5 Claims**

A method for recovering tar or extremely viscous hydrocarbons from an underground formation. The method includes the steps of injecting an aqueous solution of anionic orthophosphate ester surfactant into the hydrocarbon-bearing formation, retaining the surfactant in the formation at least about 24 hours, and displacing the solubilized hydrocarbon toward a recovery well. The surfactant solution forms a soluble oil microemulsion with the formation hydrocarbons.

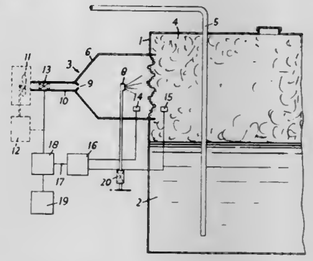
3,620,304
OPTIMUM OIL RECOVERY FOR CARBON DIOXIDE INJECTION
Charles L. Hearn, and Charles S. Holmes, both of Tulsa, Okla., assignors to Cities Service Oil Company
Filed Dec. 10, 1969, Ser. No. 883,818
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **4 Claims**

Carbon dioxide is injected into a subterranean oil reservoir to maintain a reservoir pressure between about 1 and about 250 p.s.i. above the bubble point pressure of the reservoir crude oil. Under predetermined conditions of temperature and pressure the carbon dioxide miscible gas recovery provides for an extremely efficient displacement of the reservoir crude oil. It has been found that at pressures slightly above the bubble point pressure of the reservoir fluid, the rate of solubility of the carbon dioxide in the reservoir fluid is much higher and recovery of oil is more efficient.

3,620,305
STIMULATION AND SELECTIVE PLUGGING OF PETROLEUM RESERVOIRS
Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company
Filed Jan. 19, 1970, Ser. No. 4,098
Int. Cl. E21b *43/27*
U.S. Cl. 166—282 **16 Claims**

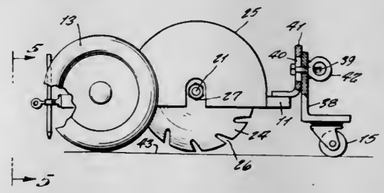
Fractures or highly permeable streaks in a reservoir containing kaolinite are selectively plugged by the introduction of a solution containing an organic carbonyl group containing compound. The solution attacks the kaolinite containing particles of the fractures or permeable streaks and decomposes the clay mineral bonds of the rock matrix. The decomposition process causes the walls of the pores to disintegrate and form individual grains of fine clay particles. Subsequent addition of treatment solution transposes the disintegrated particles and lodges them in the exposed pores of the fractures or permeable streaks. Further flow through the treated area is restricted and the reservoir is selectively plugged. Less permeable areas of the reservoir are somewhat stimulated by the kaolinite breakup with the dislodged clay particles from those areas seeking the more permeable channels in the reservoir and further plugging them. The reservoir is thereby both selectively plugged and stimulated by the solution treatment and the reservoir performance is enhanced.

3,620,306
MEANS FOR FOAM GENERATION
Denis Shepherd, South Harrow, England, assignor to Walter Kidde & Company, Inc., Belleville, N.J.
Filed Jan. 14, 1969, Ser. No. 791,006
Int. Cl. A62c *35/00*
U.S. Cl. 169—15 **11 Claims**



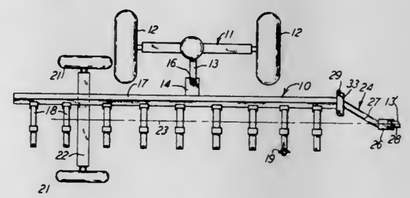
A method and means of generating high expansion foam by spraying foaming agent onto a mesh through which gas (usually air) is blown. Pressure sensors on either side of the mesh sense the pressure differential across the mesh and through control means ensure a constant pressure differential despite changes in back pressure.

3,620,307
GOLF COURSE GREEN OR YARD BORDER CUTTER
Antone Vilela, R.R. #1, Box 293A, Kapaa, Kauai, Hawaii
Filed Oct. 13, 1969, Ser. No. 865,815
Int. Cl. A01b *45/00*
U.S. Cl. 172—15 **2 Claims**



An improved lawn edger used particularly for edging a golf course green, the device comprising a wheel mounted chassis carrying an engine driving a cutting blade, and the chassis carrying a cutting-line guide which is in alignment taken by the path of the cutting blade.

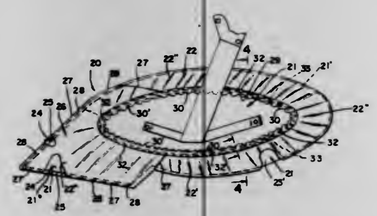
3,620,308
TOWING MEANS FOR AGRICULTURAL IMPLEMENT
John G. Christopher, Grinnell, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Sept. 10, 1969, Ser. No. 856,692
Int. Cl. A01b *23/04*
U.S. Cl. 172—248 **1 Claim**



An agricultural implement, such as a cultivator, having a frame and two draft means or tongues. One of the tongues serves to move the implement in one direction during operation, and the other of the tongues serves to move the imple-

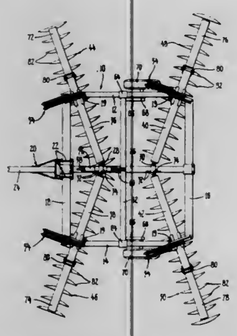
ment in another direction during transport. Transport wheels are affixed to the implement and are offset relative to the main frame of the implement. Accordingly, the second draft means is swingable on the frame and between a lowered position for transport, and aligned on the vertical plane centrally of the wheels when the draft means is in the downwardly swung position. The draft means is also swung upwardly to the inoperative position to overlie the implement.

3,620,309
PLOW BOTTOM COVER
Charles R. Erickson, and Glenn C. Seibold, both of Cleveland, N. Dak.
Filed Mar. 14, 1969, Ser. No. 807,387
Int. Cl. A01b *35/20*
U.S. Cl. 172—438 **1 Claim**



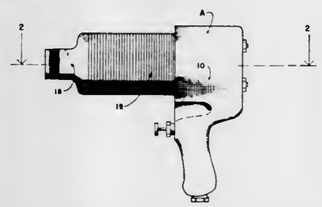
The invention comprises a plow bottom cover adapted to be fitted over a plow bottom having a pair of flexible fabric sheet members attached together, one of said sheet members covering the outside working surface of the plow bottom, the other sheet member covering the portions of the inside surface of the plow bottom, the sheet members together forming an elliptical opening along the inside surface for mounting the cover over the plow bottom, elastic band means mounted to the sheet members adjacent the elliptical opening and acting to draw the sheet members together along the elliptical opening and thereby acting to draw the cover snugly about the plow bottom.

3,620,310
IMPLEMENT SPRING CUSHION
Clarence B. Richey, Royal Oak, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed July 22, 1969, Ser. No. 843,477
Int. Cl. A01b *23/04, 21/08*
U.S. Cl. 172—600 **3 Claims**



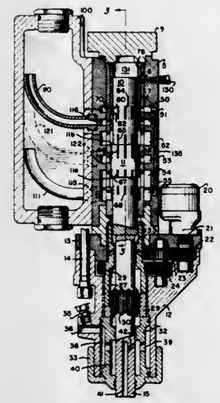
A disc harrow comprises a peripheral frame and pairs of front and rear gangs mounted on gang frames. A foldable wing is provided at the end of each gang to enable folding to a narrower dimension for transport. The inner end of each gang frame mounts a plate having a threaded aperture that receives a bolt pivotally mounted on the implement pull tube. This permits pivotal movement of the gang frame about its longitudinal axis. Each gang frame projects outwardly through a rectangular aperture in the corner of the peripheral frame. A lever centrally pivoted to the peripheral frame corner engages the gang frame at one end. A compression spring unit pivoted to the frame corner is pivoted to the other end of the lever. As the discs encounter an obstruction, the gang frame pivots to lift the discs over the obstruction. This pivots the lever which compresses and pivots the spring unit such that increasing spring compression decreases the lever arm at which the spring acts on the lever. This provides a constant spring force resisting the pivotal movement of the gang frame.

3,620,311
AIRHAMMER CONSTRUCTION
Lowell N. Brown, 11612 Bowling Green, St. Louis County, Mo.
Filed July 15, 1970, Ser. No. 54,892
Int. Cl. B23b *45/04*
U.S. Cl. 173—136 **8 Claims**



This invention relates to an airhammer, the barrel of which is constructed by assembling in axial registration a plurality of stamped discs, each held in axial registration by a pair of aligning rods, and each provided with complementary apertures which define the necessary air passages and piston chamber.

3,620,312
ROCK DRILL
Eugene L. Krasnoff, Princeton, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Continuation-in-part of application Ser. No. 728,854, May 13, 1968, now abandoned which is a continuation of Ser. No. 629,561, Apr. 10, 1967, abandoned. This application May 22, 1969, Ser. No. 826,923
Int. Cl. E21c *3/20, 3/30*
U.S. Cl. 173—138 **15 Claims**



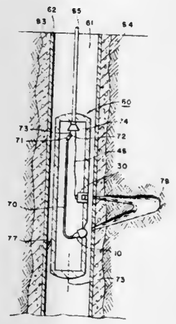
A hydraulically powered impact tool particularly useful for rock drilling. The percussive tool is valveless with the hammer controlling the inflow and exhaust of motive liquid. The drill is powered by liquid under pressure from an outside source and from energy stored in storage chambers. Tanks positioned in the inlet and exhaust lines of the tool reduce pressure surges in the inlet and exhaust lines of the tool.

3,620,313
PULSED HIGH-PRESSURE LIQUID PROPELLANT COMBUSTION-POWERED LIQUID JET DRILLS
Lester C. Elmore, Portola Valley, and Thomas M. Broxholm, Palo Alto, both of Calif., assignors to Pulsepower Systems Incorporated
Filed Oct. 27, 1969, Ser. No. 869,660
Int. Cl. E21b *7/18*
U.S. Cl. 175—14 **21 Claims**



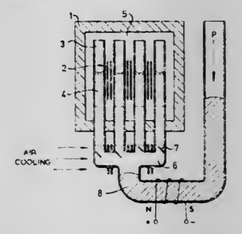
A liquid propellant is burned in the bulk mode and in pulses to produce high combustion pressures with large power outputs. The pulsed high-pressure liquid propellant combustion is used in combination with a liquid jet drill to eject high-velocity and high-pressure jets of liquid from liquid jet nozzles in the drill for erosion drilling. The high combustion pressures produced by burning the liquid propellant in the bulk mode and in pulses may be used to overcome high-back pressures such as those existing at deep drilling depths and in deep ocean depths.

3,620,314
COMBINATION BULLET-PERFORATING GUN AND SHAPED CHARGE PERFORATOR APPARATUS AND METHOD
Floyd O. Bohn, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 16, 1969, Ser. No. 866,834
Int. Cl. E21b *43/117*
U.S. Cl. 175—4.59 **5 Claims**



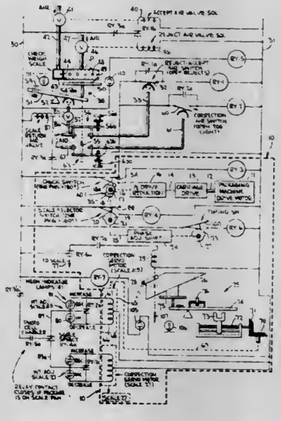
A bullet-perforating gun and a shaped charged perforator are aligned in a common plane within a tool suitable for passage through an earth borehole. One or both of the perforators have their axes, respectively, inclined such that the resulting two perforations intersect before either reaches its normal depth of penetration. The perforators are arranged to fire simultaneously. Because of the time difference in speed of action, the shaped charge perforates first. At a time later, the bullet makes a perforation which breaks into the shaped charge perforation. In escaping through the shaped charge hole, the gases flush out the pulverized material from the bullet perforation, the shaped charge perforation and any enlargement of the common portions of the two holes.

3,620,315
NUCLEAR REACTOR WITH OSCILLATING LIQUID COOLANT MODERATOR
Gilbert Northcott Walton, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed May 1, 1968, Ser. No. 725,678
Int. Cl. G21c *7/32*
U.S. Cl. 176—20 **14 Claims**



A nuclear reactor having a negative temperature coefficient of reactivity and having coolant moderator means wherein as the temperature of the core decreases below a mean value more cooling effect is applied to the core and as the temperature of the core increases above said mean value less cooling effect is applied to the core, whereby the reactivity of the core undergoes a sustained self-excited oscillation and the temperature also oscillates about said mean value.

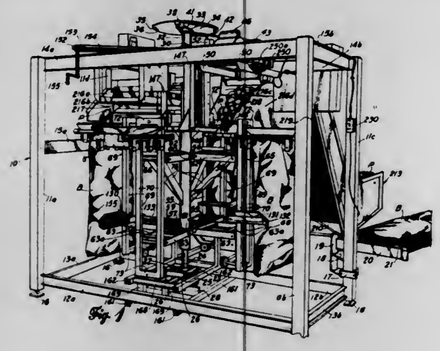
3,620,316
HIGH-SPEED CLASSIFICATION AND CHECKWEIGHING SYSTEM
Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.
Filed June 22, 1970, Ser. No. 48,339
Int. Cl. G01g *19/52*
U.S. Cl. 177—50 **21 Claims**



A system for monitoring packages and maintaining constant weight is disclosed wherein the checkweighing scale services at least two weighing scales with a scale selector switch responsive to the packaging means and independent of the package being checkweighed. The scale selector

switch operates in synchronism with the scale dump timing switch also responsive to said packaging means to maintain the operations in step and adjustment means is provided to vary the number of bags between the packaging means and the checkweighing scale. A drive circuit includes check switch means responsive to the packaging means and independent of the package to energize companion reject-accept or classification and correction circuits to maintain the actions concurrent; a scale return circuit is provided; and a photoelectric sensing circuit is provided in said correction circuit to disable the same on a dry cycle. Holding relays maintain the companion circuits energized and delay means is provided in the drive circuit for the adjusting means of the scale being standardized to prevent switching of the classification, correction and scale return action during a single packaging cycle.

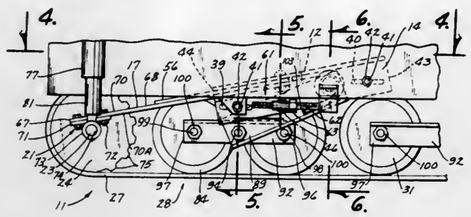
3,620,317
AUTOMATIC FILLING AND WEIGHING MECHANISM
Nelson R. Henry, 583 Willivee Drive, Decatur, Ga.
Continuation of application Ser. No. 675,125, Oct. 13, 1967. This application May 4, 1970, Ser. No. 33,150
Int. Cl. G01g *13/00*
U.S. Cl. 177—54 **21 Claims**



Automatic filling and weighing mechanism in which successive receptacles are moved in a prescribed path to a bulk-weighing station, then to a final weighing station, and then to a discharge station. When a receptacle is positioned at a bulk-weighing station, a great majority of the weight of material is fed by a conveyor to the receptacle and when the receptacle is thereafter positioned at the final weighing station, a conveyor adds sufficient material to complete the weight for the receptacle. Automatic mechanisms control the conveyors at the respective stations, the feed being altered when a prescribed amount is received by a receptacle. An interlock mechanism detects the presence of a receptacle at a station and a discharge mechanism automatically discharges the receptacle at the discharge station.

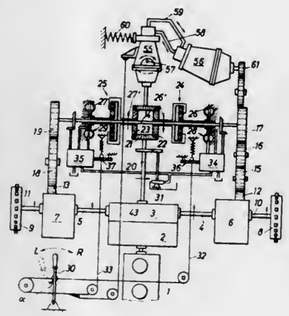
3,620,318
TRACK TIGHTENER AND REAR IDLER SUSPENSION SYSTEM
Frank T. Gostomski, Wahoo, Nebr.
Filed Apr. 2, 1970, Ser. No. 24,987
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **11 Claims**

A track tightener and rear idler suspension system for an all terrain vehicle is provided which comprises two elongate brackets secured to opposing sides of the vehicle frame forwardly of the rear end. Leaf springs are secured to the brackets and extend rearwardly to proximate the rear end of the vehicle. The rear idler assembly is secured to the rear ends of the leaf springs. The brackets are movable forwardly and rearwardly to facilitate the adjustment of the track to the proper tension. Because the rear idler assembly is supported by the leaf springs, the idler assembly can be disposed rearwardly of the rear of the vehicle which prevents the vehicle from becoming hung up when crossing ditches and gullies. In addition, as more weight is added to the vehicle, the rear



idler assembly is moved upwardly which automatically tightens the track and prevents slippage.

3,620,319
STEERING DRIVE FOR TRACK-LAYING VEHICLES
Waldemar Aramasow; Helmut Muller, and Hans Lindenthal, all of Heidenheim, Germany, assignors to Voith Getriebe KG, Heidenheim, Germany
Filed Mar. 16, 1970, Ser. No. 19,702
Claims priority, application Germany, Mar. 14, 1969, July 12, 1969, P 19 13 011.1 P 19 35 592.1
Int. Cl. B62d *11/16*
U.S. Cl. 180—6.44 **1 Claim**

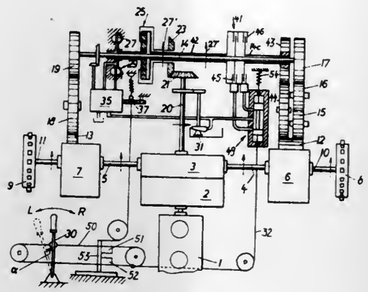


A track-laying vehicle has a track on each side with a track-driving member for each track and with an engine driving the track-driving member through respective differential drives, each of which has a control member rotatable in one direction to speed the track-driving members up and in the other direction to slow the track-driving members down. A control arrangement connects the control members for rotation thereof for steering the vehicle. The control arrangement provides for rotation of the control members in respective opposite directions at controlled speed, while the rate at which the control members are rotated is measured and a signal is produced in conformity therewith which is employed for maintaining the speed of adjustment of said control members substantially constant.

3,620,320
STEERING DRIVE FOR TRACK-LAYING VEHICLES
Waldemar Aramasow, Heidenheim, Germany, assignor to Voith Getriebe KG, Heidenheim (Brenz), Germany
Filed Aug. 4, 1969, Ser. No. 847,195
Claims priority, application Germany, Aug. 8, 1968, P 17 80 165.9
Int. Cl. B62d *11/16*
U.S. Cl. 180—6.44 **13 Claims**

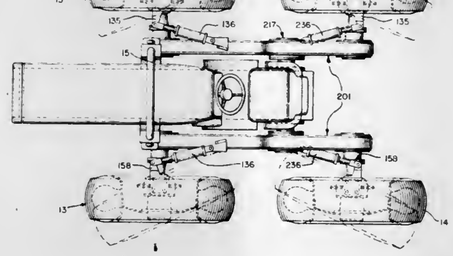
The present invention concerns a steering transmission for track-laying vehicles, according to which the driving through a left-hand as well as a right-hand curve can be effected with a single hydrodynamic brake. To this end, the brake rotor is,

by means of a double clutch, selectively connected to one or the other of two shafts interconnected by a reversing trans-



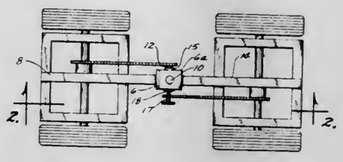
mission. One of these shafts, or both together, form the zero shaft.

3,620,321
TRACTOR DRIVE CONVERSION
John L. Thibodeau, Tampa, Fla., assignor to Standard Alliance Industries, Inc., Chicago, Ill.
Filed Apr. 1, 1969, Ser. No. 811,728
Int. Cl. B60k *17/30, 17/34*
U.S. Cl. 180—46 **3 Claims**



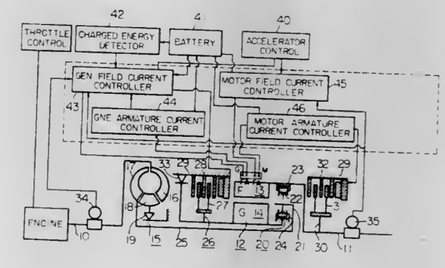
There is disclosed a means to convert a conventional two wheel drive tractor to four wheel drive utilizing the original tractor power unit, the transmission-differential and the frame comprising two walking beam frame assemblies connected to the original rear drive axle, each housing a sprocket for a front wheel, a sprocket for a rear wheel, a means to drive these wheels, and a chain to take the power from the drive means and transfer it to the wheel sprockets. The drive sprocket is connected to the tractor rear axle transmission-differential on each side of the tractor so that the power from the tractor is transmitted to the front and rear wheel sprockets by the continuous chain. A ball joint is added to each wheel which is connected to the wheel sprocket in the frame, a hydraulic cylinder is connected to each ball joint with a steering arm allowing the wheel to be steered hydraulically. A vertical hydraulic cylinder is connected to a yoke which extends over the hood of the tractor allowing the power unit to be raised or lowered hydraulically without affecting the plane of the four wheels of the tractor and acting as an oscillator on the front wheels.

3,620,322
UNIVERSAL DRIVE APPARATUS
Clifford Dean Peterson, 704 W. Olive, Marshalltown, Iowa
Filed Aug. 20, 1969, Ser. No. 851,572
Int. Cl. B60k *17/30*
U.S. Cl. 180—51 **4 Claims**



A universal drive apparatus to connect the frames and the power-transmitting shafts of two sets of driven wheels to make a four wheel drive articulating frame vehicle.

3,620,323
ELECTROMECHANICAL POWER TRAIN SYSTEM FOR AN AUTOMOTIVE VEHICLE
Riichi Maeda, and Yoichi Mori, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed May 29, 1969, Ser. No. 828,980
Claims priority, application Japan, May 31, 1968, 43/37231
Int. Cl. B60l *11/14*
U.S. Cl. 180—65 A **1 Claim**

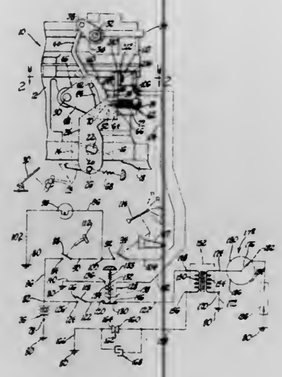


An electromechanical power train system for an automotive vehicle having a driving engine with a torque converter in which an electric-generating and motor means having operation as a generator and/or motor for generating electric energy for storage supply when driven by the engine and for driving a driven shaft when energized by the storage supply, is accommodated therewith together with an electronic controller for controlling the operation of the components with speed reduction gear. The driving engine may be small enough to operate always at full power with the throttle fully open.

3,620,324
STUCK THROTTLE SAFETY DEVICE
Marion L. Smitley, 12703 Nadine, Huntington Woods, Mich.
Filed Dec. 29, 1969, Ser. No. 888,679
Int. Cl. B60k *27/08*
U.S. Cl. 180—103 **14 Claims**

An internal combustion engine, associated with a vehicle, has a carburetor with a throttle valve which upon being opened a predetermined degree closes a related first electrical switch; a second electrical switch is closed in response to the vehicular main power transmission being placed in some mode of power transmission therethrough, a third electrical switch is closed in response to the actuation of the vehicle brake pedal; when the above switches are closed a resulting relay operated switch is energized thereby opening the circuit

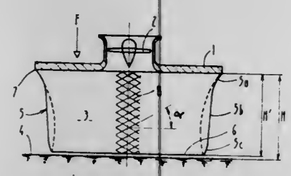
leading from a source of electrical potential to the related vehicle ignition system so as to thereby prevent the occurrence of a spark discharge at the engine igniter or spark plug assemblies thereby shutting down the engine.



3,620,325
DEFORMABLE SKIRTING SYSTEM FOR SURFACE EFFECT MACHINE

Marc Faure, Saint-Maur-Des-Fosses, and Louis Arsandaux, deceased, late of Paris, France (by Marthe Marie Louis Arsandaux, legal representative), assignors to Societe D-Etudes et De Developpement Des Aeroglisseurs Marins Terrestres Et Amphibies S.E.D.A.M., Paris, France

Filed June 10, 1968, Ser. No. 870,543
Claims priority, application France, June 8, 1967, 109,638
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **8 Claims**

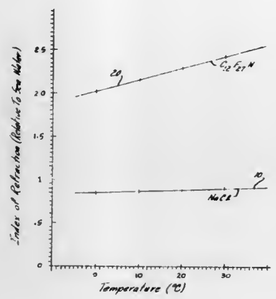


A ground effect machine having a deformable skirt of heterogeneous structure which comprises (i) a flexible reticulated reinforcement structure formed of an interwoven array of wires or cables, and (ii) a flexible fluidtight lining which embeds or is otherwise joined to said reticulated structure and which is formed of a closed continuous surface, said wires or cables being oppositely inclined with respect to meridian lines of said lining surface as well as to parallels thereof.

3,620,326
ATHERMAL ACOUSTIC LENS

Ernest A. Hogge, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 20, 1970, Ser. No. 12,982
Int. Cl. G01v *1/16*
U.S. Cl. 181—.5 **12 Claims**

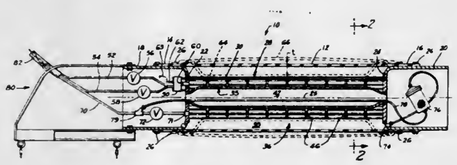


This invention is an acoustic refractor that contains a combination of individual fluid lens elements having different indices of acoustic refraction which cooperate to produce a uniform acoustic refraction over a wide range of ambient temperatures.

3,620,327
LOW-FREQUENCY GAS EXPLODER

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 16, 1969, Ser. No. 825,380
Int. Cl. G01v *1/00*
U.S. Cl. 181—.5 NC **5 Claims**



A marine seismic wave generator is provided for generating acoustic impulses into a body of water. The generator includes a housing having an expansible combustion chamber in communication with the surrounding water. A core is provided in the combustion chamber. The combustion chamber periodically receives a charge of combustible fluid. The detonation of the charge causes the chamber to expand and to transmit to the surrounding water relatively high-energy, low-frequency seismic impulses.

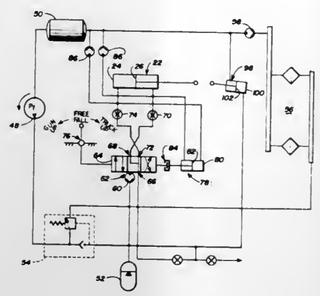
3,620,328
CONTROL SYSTEM

Herbert D. Coburn, Dallas, and Gilbert H. Kelly, Irving, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 3, 1969, Ser. No. 838,982
Int. Cl. G01v *1/04*
U.S. Cl. 181—.5 VM **8 Claims**

A control system includes a valve that alternately energizes one end of a main hydraulic cylinder to raise a gas gun, energizes the other end of the cylinder to raise a gas gun truck and drains both ends to permit gun or truck free fall. A control cylinder coupled in parallel with the main cylinder

prevents actuation of the valve to raise the gun when the truck is raised, and vice versa. Truck free fall is initiated by a

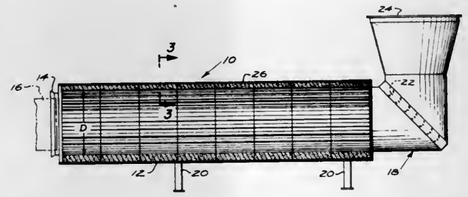


kickoff cylinder which operates on the main cylinder. The rate of both gun and truck free fall is controlled by orifices.

3,620,329
JET ENGINE NOISE SUPPRESSOR

Karl Wenzlaff, Sherman Oaks, Calif., assignor to Glasrock Products, Inc., Atlanta, Ga.

Filed Dec. 31, 1969, Ser. No. 889,593
Int. Cl. B64d *33/06;* **F01n** *1/24*
U.S. Cl. 181—33 HB **4 Claims**

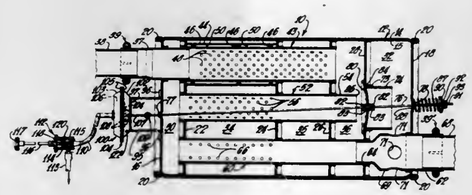


A jet engine noise suppressor for use during ground run up of a jet engine comprising a tube having thick inner walls of a highly porous open cell ceramic material such as porous fused silica. The tube is constructed of numerous blocks of the ceramic material arranged in a circle to form a substantially circular passageway, alternate blocks extending further into the passageway to form recesses in the tube that create sound-dissipating eddys.

3,620,330
MUFFLER CONSTRUCTION AND METHOD OF SELECTIVELY MODIFYING ITS SOUND-ATTENUATING CHARACTERISTICS

James R. Hall, Toledo, Ohio, assignor to Oldberg Manufacturing Company, Grand Haven, Mich.

Filed Apr. 14, 1969, Ser. No. 815,692
Int. Cl. F01n *1/16*
U.S. Cl. 181—65 **18 Claims**

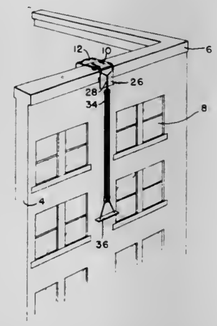


The disclosure embraces a muffler construction and a method of flowing exhaust gases from an internal combustion engine through a muffler construction whereby the gases flow in one path through the muffler through several sound-attenuating components to an outlet in a manner to secure attenuation of sound waves in a broad range of sound frequencies and selectively diverting the incoming gases from an inlet tube directly to the outlet thereby bypassing several sound-attenuating components and reducing sound attenuation providing a noise performance or noise mode.

3,620,331
MOVABLE SUSPENSION DEVICE

Harold M. Shaw, 205 Mozart Ave., Winston-Salem, N.C.

Filed Apr. 6, 1970, Ser. No. 25,840
Int. Cl. E04g *3/08, 3/10*
U.S. Cl. 182—36 **7 Claims**

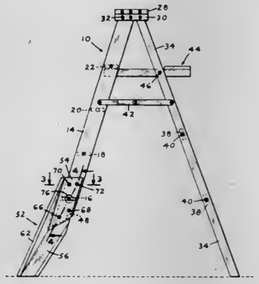


A horizontally movable suspension device for supporting a workman alongside the wall of a building or similar structure having a securing member engageable with the parapet of a building which contains means for moving the device along the parapet. A supporting device is attached to the securing member, and a workman's support structure is maintained by the supporting means.

3,620,332
SAFETY LADDER

Maurice A. Bourquin, East Granby, Conn., assignor to The M.A.B. Machine Corporation

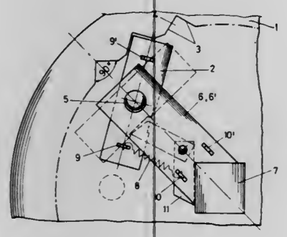
Filed Aug. 11, 1970, Ser. No. 762,818
Int. Cl. E06c *7/42*
U.S. Cl. 182—108 **8 Claims**



Attachments for the base portions of ladders which serve to laterally widen and forwardly extend the effective base of the ladder to give it stability on uneven or sloping supporting surfaces. Attachments are so designed as to transfer the major portion of the loading on the ladder to the attachments without placing shear stresses on the bolts or other devices securing the attachments to the rails of the ladder. Thus, repetitive use of the ladder will not cause the attaching devices to work loose since loading of such devices under

tension rather than shear does not tend to cause progressive enlargement of the holes in the side rails through which such devices extend. Lower ends of side rails rest upon sloping shelves formed in the attachments while the front edge and one side surface of each rail is confined against rigid walls whereby loading of ladder tends to cause only a rocking of the attachments lengthwise of the attaching devices.

3,620,333
WHEEL-BLOCKING ARRANGEMENT FOR AN EXCAVATING MACHINE
Ernst Menzi, Widnau, Switzerland, assignor to Ernst Menzi AG, Widnau, Switzerland
Filed Sept. 25, 1969, Ser. No. 860,955
Claims priority, application Austria, Oct. 8, 1968, A9836/68
Int. Cl. B60t *1/06*
U.S. Cl. 188—30 **6 Claims**



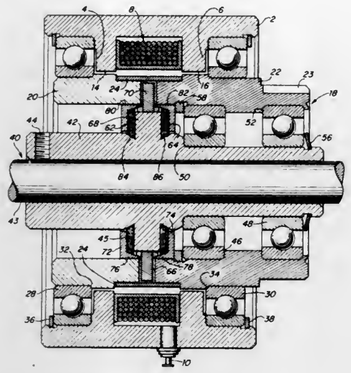
At least one supporting wheel of a vehicular excavating machine is blocked against rotation in one direction when a spring-loaded pawl pivoted on the machine frame engages a ratchet on the wheel. The pawl is of rectangular shape symmetrical relative to its pivot axis and two of its flat faces engage perpendicular flanks of conforming notches in the ratchet under the pressure of the pawl spring. The spring may be shifted on the pawl to prevent forward or backward rolling of the machine while permitting free rolling movement in the opposite direction.

3,620,334
FRICTIONAL-RETARDING MEANS
Eric Douglas Henley, Derby, and George Eden Walker, Solihull, both of England, assignors to Albright & Wilson Limited, Warwickshire, England and British Railways Board, London, England
Filed June 26, 1968, Ser. No. 740,021
Claims priority, application Great Britain, July 7, 1967, 31,357/67
Int. Cl. F16d *69/02*
U.S. Cl. 188—251 M **9 Claims**

Improved frictional-retarding means containing at least one cast iron brake surface. The improvement consists in constructing said brake surface of a cast iron consisting essentially (i) of from 2 percent up to 5 percent by weight of phosphorus, (ii) silicon, and (iii) carbon, with the total of said silicon and carbon being less than 6 percent, and (iv) the remainder being essentially iron. Minor amounts of the impurities usually found in cast iron may be tolerated.

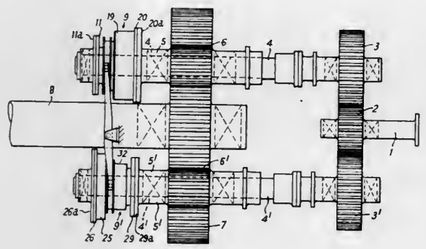
3,620,335
MAGNETIC PARTICLE COUPLING
James R. Hendershot, and Robert F. Searle, both of Amherst, N.H., assignors to Vibrac Corporation, Chelmsford, Mass.
Filed Feb. 4, 1970, Ser. No. 8,472
Int. Cl. F16d *37/02*
U.S. Cl. 192—21.5 **12 Claims**

A magnetic particle torque-transmitting device comprising means for providing face-sealing shaft seals such that the magnetic particles are substantially prevented from escaping



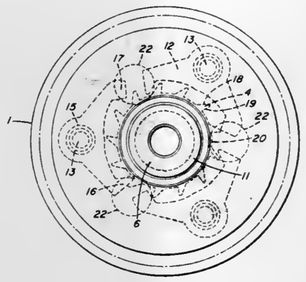
from between the seals and the shaft.

3,620,336
POWER TRANSMISSION SYSTEMS
Herbert Arthur Clements, Weybridge, and Robert H. Heybourne, East Molesey, both of England, assignors to S.S.S. Patents Limited, Acton Town, London, England
Filed Feb. 24, 1970, Ser. No. 13,479
Claims priority, application Great Britain, Mar. 3, 1969, 11,191/68
Int. Cl. F16d *21/00, 23/10*
U.S. Cl. 192—35 **9 Claims**



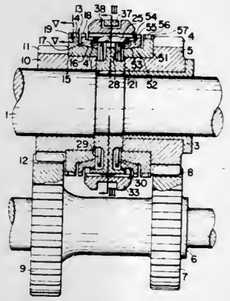
A power transmission system with a main clutch and a subsidiary clutch in parallel. Each clutch has a toothed intermediate member that moves helically relative to one clutch part to bring its teeth into and out of driving engagement with clutch teeth on the other clutch part such that following partial driving interengagement of the clutch teeth the clutch becomes self-engaging. The main clutch has pawl and ratchet mechanism for initiating clutch engagement automatically upon relative rotation of the clutch input and output parts in one direction, and a lost motion connection is provided between the intermediate members of the clutches, so that the intermediate member of the subsidiary clutch is shifted into initial engagement by the intermediate member of the main clutch and the self-engaging action of the subsidiary clutch then relieves the intermediate member of the first clutch of load.

3,620,337
UNIDIRECTIONAL ROTARY DRIVE COUPLING DEVICE FOR A WATCH MOVEMENT
Josef Fluck, Grenchen, Switzerland, assignor to A Schild S. A., Grenchen, Soleure, Switzerland
Filed Oct. 24, 1969, Ser. No. 869,232
Int. Cl. F16d *41/12*; **G04b**
U.S. Cl. 192—46 **7 Claims**



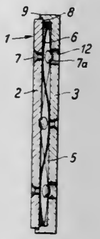
A unidirectional rotary drive coupling device for a watch movement, comprising a ratchet mechanism positioned in the axial space between two coaxially arranged wheels.

3,620,338
SYNCHRONIZING SPEED CHANGE GEARS
Yukio Tomita, 70, Asahi-cho, 2-chome; Shinichi Ito, 90-930, Ichigi-cho Yanda; Yositaka Sogo, 10-1, Aza-Soskindo, Ohaza Ohbayashi, and Hideki Morino, 8, Toyota-cho, all of Toyoda-shi, Japan
Filed Oct. 17, 1969, Ser. No. 867,214
Claims priority, application Japan, Oct. 21, 1968, Nov. 11, 1968, 43/76092; 43/82410
Int. Cl. F16d *23/10, 13/60*
U.S. Cl. 192—53 F **8 Claims**



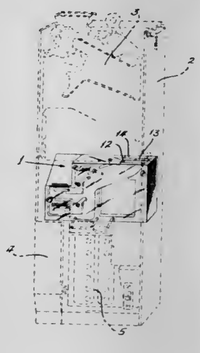
A synchronizing speed change gear comprises a shaft, a gear wheel arranged loosely on the shaft, a toothed annular body arranged on the gear wheel and a gear shift sleeve rotatable with the shafts. The gear shift sleeve has teeth which upon an axial motion comes into meshed engagement with the teeth of the annular body to drivably connect it to the shaft. To limit the extent of the axial motion of the gear shift sleeve stops are provided by projections or shoulders formed on the sides of the teeth of the annular body or of the gear shift sleeve.

3,620,339
ELECTROMAGNET CLUTCH OR BRAKE, TWISTED TORSION SPRING THEREFOR
Hermann Becking, Haferwey 26, Hamburg-Altona, Germany
Filed Aug. 18, 1969, Ser. No. 850,930
Claims priority, application Germany, Mar. 25, 1969, P 19 15 162.3
Int. Cl. F16d *27/06, 27/10*
U.S. Cl. 192—84 A **16 Claims**



This invention resides in a novel construction of an annular armature-reaction flange assembly for an annular rotary electromagnet to be used as a friction clutch or as a brake. The armature-reaction flange assembly consists of an axially nonshiftable annular reaction flange carrying on its hub an annular armature disc in axially shiftable but nonrotatable manner both members being coaxially aligned with the electromagnet. Between the armature disc and the backing flange a torsion retraction and torque-transmitting spring is provided consisting of an annular planar disc secured alternately at angularly evenly spaced points to the armature disc and to the reaction flange. This planar disc is twisted in alternately opposite directions out of its radial plane in such a manner that the zones of greatest twist are disposed at its securing points. This annular torsion spring may also be subdivided into ring-sectors.

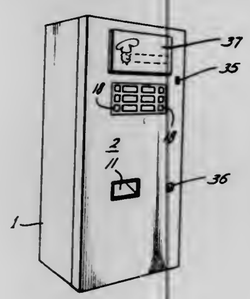
3,620,340
MONEY-HANDLING DEVICE
Merrill M. Jenkins, 11591 Josyln Ct., St. Louis, Mo.
Filed July 9, 1969, Ser. No. 840,145
Int. Cl. G07f *5/10*
U.S. Cl. 194—9 **23 Claims**



In a money-handling device, used in accepting, crediting, and preparing for escrowing and/or refunding money, coins, or the like, and for use in conjunction with, or as a component replacement, in coin accumulators and change dispensers presently used in conjunction with the standard vending machines that display and automatically merchandise foods, goods, or other items; the device is compactly constructed and arranged for cooperating with the standard money-validating mechanisms presently in use and into

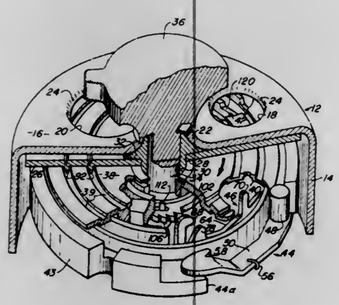
which coins are initially introduced when deposited into the vendor, with the present device furnishing the remaining interactive components that function to continue coin segregation, temporarily escrow the same, inherently provide for its crediting and/or debiting, and pay out any excess funds after a selection of one or more items has been made upon the accompanying vending machine, then discharging said temporarily escrowed funds into a cashbox, tube, or other storage location. This money-handling device provides coin chutes arranged to receive select coins, and switch or sensor means are operatively disposed for sensing the presence of the coins, while stop means proximate each chute and cooperative with the sensor means provides for temporary retarding and then releasing of the detained coins.

3,620,341
HOT FOOD DISPENSING MACHINE
John D. L. Gardner, 401 Houston First Saving Bldg., Houston, Tex.
Filed July 30, 1969, Ser. No. 845,962
Int. Cl. G07f *11/72*
U.S. Cl. 194—10 **1 Claim**



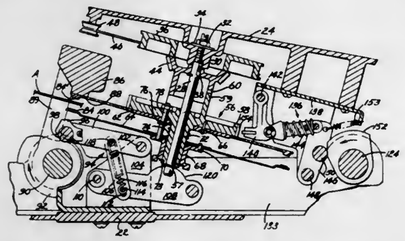
A dispensing machine for maintaining food in cold storage, and, in response to coin deposits, a selection from a variety of foods may be accomplished, and the food so selected automatically delivered into a microwave cooking unit and quickly cooked, and delivered to a delivery tray where it may be received by the buyer.

3,620,342
MECHANICAL ROTARY COIN ACCEPTOR
Bernard Clark Prescott, San Mateo, Calif., assignor to Universal Coin Meter Company, Inc., Menlo Park, Calif.
Filed Aug. 25, 1969, Ser. No. 852,704
Int. Cl. G07f *5/00*
U.S. Cl. 194—61 **17 Claims**



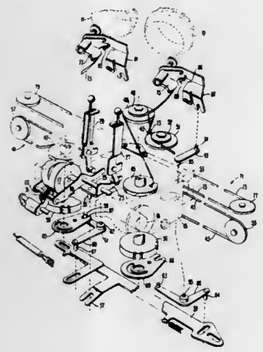
A coin-metering apparatus having mechanisms for sensing the thickness and diameter of coins and a transport structure for serially moving plural coins past such sensing mechanisms. The coin-transporting structure is arranged to move the coins in a circular path thereby rendering the device more compact. A housing for such coin-metering apparatus that includes an improved shaft bearing mounting configuration. A coin-metering apparatus that includes provisions for forcefully ejecting coins therefrom into a coin receptacle. A coin-thickness-sensing mechanism that is capable of accurately sensing the thicknesses of different coins. A coin transport system that enables the user thereof easily to remove coins that are not accepted by the apparatus.

3,620,343
EMBOSSING DEVICE WITH DIES MOUNTED ON FLEXIBLE FINGERS
Fritz A. Deutsch, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Dec. 18, 1968, Ser. No. 784,558
Int. Cl. B41j *1/30*
U.S. Cl. 197—6.7 **7 Claims**



An embossing device which utilizes a pair of spaced discs. The discs have fingers. At the ends of the fingers of one disc are punch members and at the ends of the fingers of the other disc are corresponding die members. An actuation mechanism is provided which first moves one disc toward the other to close the fingers against the article to be embossed and then after closure generates embossing force against an anvil. The anvil is mounted on a first reaction bar to contain the reaction forces of embossing therebetween; and a second reaction bar is connected to the first reaction bar to contain the drive reaction forces therebetween. Also an interposer is provided for precise positioning of the punches and dies.

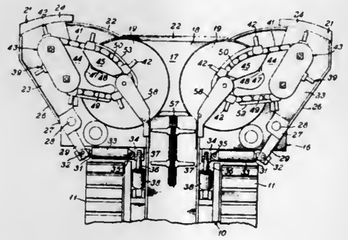
3,620,344
SELECTION SYSTEM FOR A DUAL-ELEMENT TYPEWRITER
Douglas E. Clancy, and Jerome B. O'Daniel, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,689
Int. Cl. B41j *23/04, 1/32, 1/60*
U.S. Cl. 197—18 **4 Claims**



A dual-element typewriter mounts the print elements a fixed distance apart with a carrier support system and

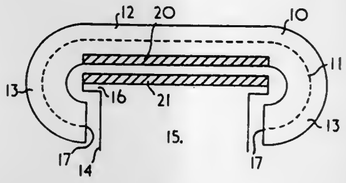
operates each element from a single keyboard and selection system. A control is positionable to select the desired element. Each element is connected to opposite ends of a flexible strand and pulley system for rotating and tilting the elements to position the selected character at the print point. The control operates to prevent the rotation and tilting of one element so that the strand and pulley system moves only the element carrying the selected character to bring that character to the print point.

3,620,345
LOADING DEVICE
Joseph Gonski, Chicago, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Jan. 29, 1970, Ser. No. 6,823
Int. Cl. B65g *65/06*
U.S. Cl. 198—8 **5 Claims**



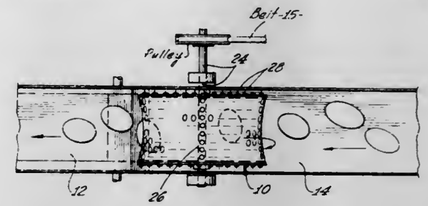
A loading head for a mining machine having an inclined apron slidable along the ground and crowded into loose material on the mine floor. A pair of counterrotating gathering discs, mounted on the apron, move loose material on the discs to a carry-away conveyor. A pair of adjustable wing extensions, with sidewalls thereon, are mounted at each side of the apron to vary the width of the apron's loading surface and to retain loose material on the loading surface. A gathering sweep, associated with each wing extension, moves loose material from areas on the loading head beyond the reach of the gathering discs, onto the discs for loading onto the carry-away conveyor.

3,620,346
CONVEYORS
Thomas A. Brooke, Prescott and William C. Neller, Frodsham, both of England, assignors to Dunlap Holdings Limited, Birmingham, England
Filed Dec. 3, 1969, Ser. No. 881,773
Claims priority, application Great Britain, Dec. 7, 1968, 58,246/68
Int. Cl. B66b *9/12;* **B65g** *15/30*
U.S. Cl. 198—16 **4 Claims**



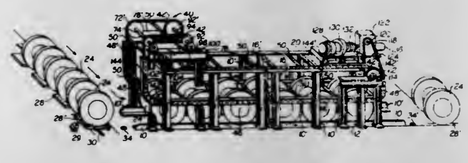
The handrail for a passenger conveyor is formed of a flexible material having a layer of magnetized material on one surface. The magnetized layer cooperates with a support having means for providing a magnetic field, such as a further layer of magnetized material, which field repels the handrail, of which the following is a specification.

3,620,347
EGG-HANDLING EQUIPMENT
Roy Bruce Wyland, Arcadia, Calif., assignor to J. W. Wyland & Sons, Inc., Rosemead, Calif.
Filed Sept. 17, 1969, Ser. No. 858,621
Int. Cl. B65g *19/22*
U.S. Cl. 198—25 **1 Claim**



Egg-handling equipment is provided which includes an improved rotatable drum assembly having an apertured soft resilient peripheral surface, which enables eggs to be controlled and moved without breakage and in spaced relationship from place to place and from one elevation to another.

3,620,348
MAGAZINE FEED STORAGE CONVEYOR
William Kursinczky, Woodbridge, N.J., assignor to General Cable Corporation, New York, N.Y.
Filed Oct. 24, 1969, Ser. No. 869,077
Int. Cl. B65g *19/02*
U.S. Cl. 198—75 **13 Claims**

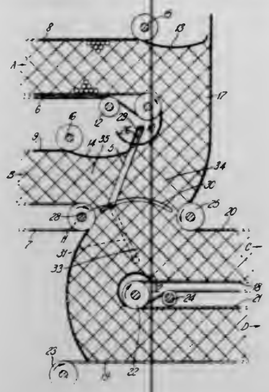


This magazine feed storage conveyor is for reels of electric cable which are too heavy for a man to lift. Reels of cable are brought by shuttle cars to either end of a long frame which is open at both ends. The cars are tilted to roll the reels off and into the storage magazine formed by the frame. A conveyor belt has elements which contact with the reels above their center axes to roll the reels selectively into and out of the magazine and to advance them in the magazine to make room for additional reels. Automatic switches at each end of the frame condition the motor circuit to operate the conveyor in one direction or the other, depending upon which end a reel approaches from. Limit switches determine how far the conveyor moves with each operation.

3,620,349
ARTICLE-HANDLING APPARATUS
Alan K. McCombie, London, England, assignor to Molins Machine Company Limited, London, England
Filed May 7, 1969, Ser. No. 822,351
Claims priority, application Great Britain, May 10, 1968, 22,413/68
Int. Cl. B65g *57/16, 57/32*
U.S. Cl. 198—78 **11 Claims**

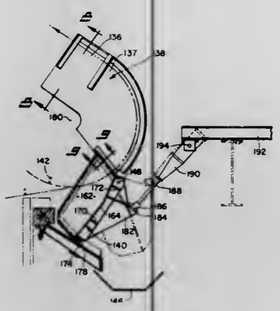
This invention is concerned with merging two stacks of cigarettes or other rodlike articles by carrying the stacks continuously into a merger zone from which a merged stack or a

divided merged stack is delivered. The preferred arrangement includes flow sensors in both input channels to control



the feed rates, and a flap to control automatically the relative rates of feed of the two stacks into the merger zone.

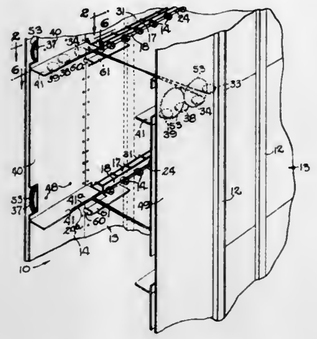
3,620,350
BULK MATERIAL FLOW CONTROL APPARATUS
Edward E. Cheek, Cleveland Heights, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio
Filed Dec. 11, 1969, Ser. No. 884,172
Int. Cl. B65g *15/60*
U.S. Cl. 198—102 **5 Claims**



There is provided a flow control apparatus for use in conjunction with bulk material stacking and reclaiming apparatus. These devices are installed on the proximal extremity of a stacker-reclaimer boom and include a shroud extending at least partly around the tail sprocket, an opening for the discharge of bulk material as on reclaiming, and a gate or door for selectively closing and opening the material discharge opening.

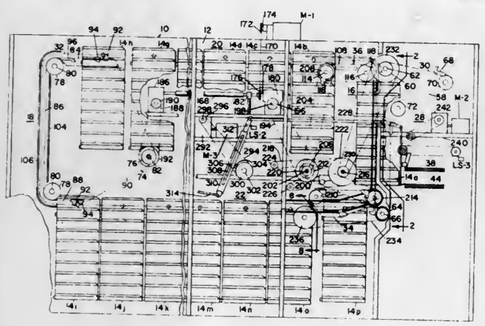
3,620,351
CONVEYING AND STORAGE APPARATUS
Wallace H. Jerome, 34 N. Seventh St., Barron, Wis., and Melvin J. Jensen, Barron, Wis., assignor to said Jerome by said Jensen
Division of Ser. No. 688,612, Dec. 6, 1967, Pat. No. 3,565,267
Filed Nov. 23, 1970, Ser. No. 91,616
Int. Cl. B65g *15/00*, **H01r** *39/52*
U.S. Cl. 198—129 **5 Claims**

An article storage apparatus having one or more elongated lanes defined between rows of vertical posts with pairs of horizontal side rails vertically spaced in each lane and fastened to the posts. On each rail is a row of load rollers having central peripheral grooves receiving the active runs of a cable conveyor comprising an endless cable trained around supporting pulleys located at both ends of each rail. The pulleys are disposed outside the rails, and guide wheels in out-of-the-way positions lead the cable outwardly onto the pulleys, back inwardly into the lane, and, at one end, cause the cable to crossover so that one endless cable forms both active runs for positive correlation of movement. The pulleys



for adjacent lanes are mounted side-by-side in the walls between the lanes, and are provided with coaxial gears exposed at the ends of each wall for driving engagement with pinions on a fork lift truck for loading and operating the conveyors. The fork lift has an auxiliary belt conveyor for assisting the cable conveyor, and a latch is provided to anchor the truck in place.

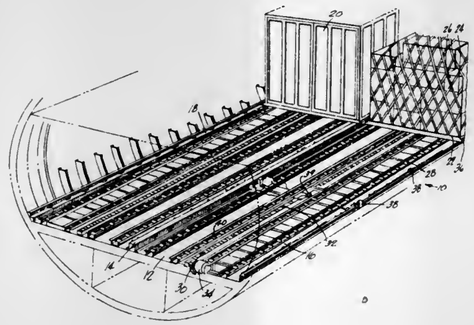
3,620,352
RACK-TYPE DOUGH PROOFER
William H. Gilgore, and Carey L. Shirey, both of York, Pa., assignors to Teledyne, Inc., York, Pa.
Filed Aug. 27, 1970, Ser. No. 067,384
Int. Cl. B65g *17/16*
U.S. Cl. 198—138 **14 Claims**



A rack-type dough proofer of the type shown in D. F. Howard U.S. Pat. No. 3,349,928 in which racks having a plurality of vertically equidistantly spaced shelves are moved in a closed circuit, including an elevator for raising successive racks passed a pan loading and unloading station, a rack-lowering conveyor, a rack-advancing conveyor delivering successive racks to the elevator and a rack-discharging conveyor for removing successive racks from the elevator. The rack elevating, lowering, advancing and discharging conveyors include chains driven continuously from a single motor in timed relation. The rack-advancing conveyor includes rack-engaging elements connected to the continuously operating rack-advancing conveyor chains for moving successive racks into position to be engaged by rack-engaging elements connected to the continuously operating elevator conveyor chains, the rack-engaging elements of the rack advance conveyor chains being arranged to hold the racks stationary in such position for a sufficient length of time to be picked up by a rack-engaging element of the elevator conveyor chain. The rack advance conveyor slopes upwardly

from a point at which a rack-engaging element of the rack advance conveyor chain engages a rack at an angle such that as a rack moves along such slope it travels through a horizontal distance to bring it in vertical alignment with a preceding rack being elevated by the elevating conveyor in the same time that it travels a vertical distance equal to a rack shelf space, or preferably a somewhat greater distance than a rack shelf, so that the rack arrives in position to be picked up by the elevating conveyor somewhat prior to the arrival of the rack-engaging element of the rack-elevating conveyor chain, to provide a certain amount of tolerance.

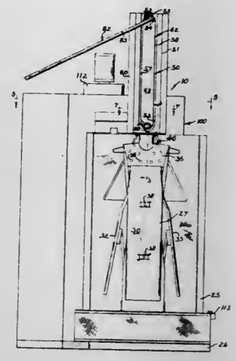
3,620,353
CHAIN-DRIVE CARGO-HANDLING SYSTEM
Milton E. Foster, Palos Verdes Estates, and Dimitri A. Gogin, Torrance, both of Calif., assignors to McDonnell Douglas Corporation
Filed Dec. 22, 1969, Ser. No. 887,160
Int. Cl. B65g *15/00*
U.S. Cl. 198—160 **2 Claims**



A chain-drive cargo-handling system within the cargo deck of an aircraft in the form of a conveyor mechanism involving an endless chain assembly continuously operated by a suitable motor. The chain comprises a plurality of interconnected rollers with support pads which are raised by inflatable tubes positioned thereunder to cause uniform frictional pressure contact to the bottom surface of cargo pallets to be moved on support rollers from station to station on the cargo deck. The frictional engagement of the support pads with a cargo container moves it to the next station on support rollers. Each station has its own inflatable tube to be inflated and deflated as desired to move or halt the movement of the pallets along the cargo deck. A latch system is interlocked to the drive system for quickly locking down the containers for pallets when they reach selected positions on the cargo deck and to deflate tubes at those stations to release the drive system from the locked pallets.

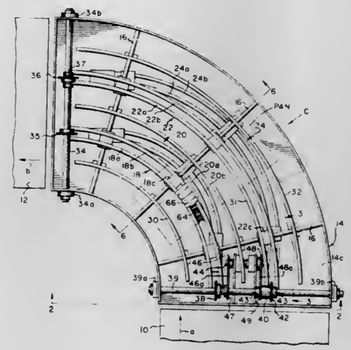
3,620,354
GARMENT REMOVAL APPARATUS
Jerry N. McMillan, P.O. Box 167, Colville, Wash.
Filed Apr. 27, 1970, Ser. No. 32,306
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 **14 Claims**

A garment removal apparatus is described for removing garments from garment forms with the garment hung on hangers and then conveying the garment from the form. The removal apparatus includes a hanger-supporting means formed in the neck and shoulder section of the garment form to receive hangers. After a hanger is mounted in the hanger support means, the garment is mounted on the form about



the hanger. A hanger-lifting means is operated to engage and lift the hanger and garment from the form.

3,620,355
CORNER CONVEYOR
Morris C. Jones, Jr., and Gary Eugene La Pan, both of Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.
Filed Oct. 28, 1969, Ser. No. 871,869
Int. Cl. B65g *15/02*
U.S. Cl. 198—182 **7 Claims**

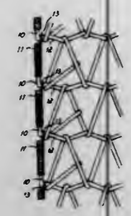


A corner conveyor for transferring articles between two endless conveyors, which generally extend at right angles to each other. The conveyor includes a pair of endless chains journaled around sprockets mounted on a pair of shafts which generally extend at right angles to each other. Upper and lower, nonparallel, curvilinear, guides are provided for guiding the upper and lower runs respectively, of each endless chain. The curvature of the lower guide is greater than that of the upper guide.

3,620,356
WIRE MESH CONVEYOR BELT
Jannes Jonge Poerink, 25 Brins Bernhardlaan, Borne, Netherlands
Filed July 24, 1969, Ser. No. 844,385
Claims priority, application Germany, July 26, 1968, P 17 56 882
Int. Cl. B65g *15/30*
U.S. Cl. 198—193 **2 Claims**

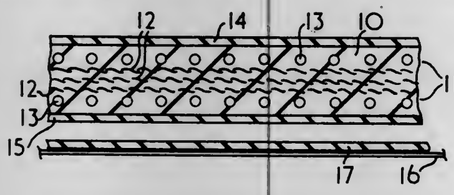
A wire mesh conveyor belt of the type described, made of crossbars, with wire spirals connecting them, characterized

by the feature that the ends (10) of said crossbars are bent over and provided with cylindrical edge members which con-



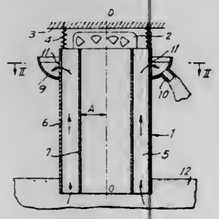
nect said bent over ends with the next-following crossbar in the region of the bend thereon.

3,620,357
CONVEYORS
Hugh L. Folkes, St. Leonard's-on-Sea, England, assignor to Dunlop Holdings Limited, London, England
Filed Nov. 24, 1969, Ser. No. 879,364
Claims priority, application Great Britain, Dec. 6, 1968, 57,936/68
Int. Cl. B65g *15/30*
U.S. Cl. 198—193 **4 Claims**



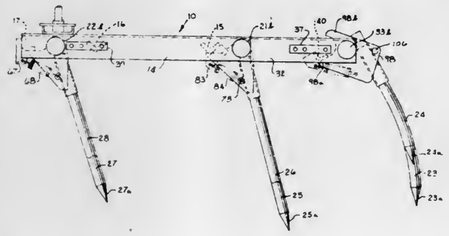
Support system for a conveyor belt, the belt formed of flexible material having a layer of magnetized material on one surface. The magnetized layer cooperates with a support provided with means for forming a magnetic field, such as a further layer of magnetized material, which field repels the belt, of which the following is a specification.

3,620,358
METHOD OF CONVEYING FREE-FLOWING AND LUMP MATERIALS UPWARDS AND A VIBRATORY ELEVATOR EMBODYING SAID METHOD
Rafail Mikhailovich Brumberg, Verkhnyaya Radischevskaya ulitsa, 13, kv. 15; Leonid Moiseevich Trostanetsky, Petrovka 26, kv. 79, and Albert Leonidovich Khlebnikov, Verkhnyaya Radischevskaya 13, kv. 4, all of Moscow, U.S.S.R.
Filed June 11, 1969, Ser. No. 832,211
Claims priority, application U.S.S.R., June 12, 1968, 1,246,608
Int. Cl. B65g *27/04*
U.S. Cl. 198—220 BA **8 Claims**



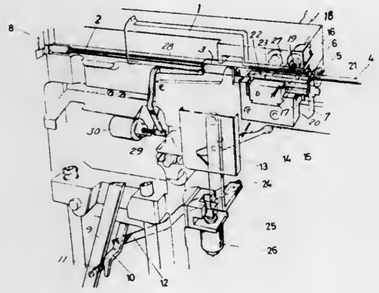
The present invention relates to methods of conveying free-flowing and lump materials and to vibratory elevators embodying the methods. The method consists in imparting a torsional oscillatory motion to a working element about its axis and a rectilinear oscillatory motion along the axis, the latter motion having a frequency twice that of the former. The working element has a number of rectilinear channels arranged parallel to and a distance away from its axis.

3,620,359
BALER FEEDER FINGER HOLDER
Charles A. Smith, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 24, 1969, Ser. No. 862,155
Int. Cl. B65g *25/08*
U.S. Cl. 198—223 **13 Claims**



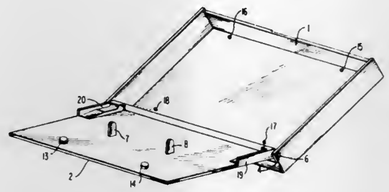
The baler feeder finger holder has a tubular shaft rotatably mounted on a transverse shaft of a feeder carriage. Two sets of feeder finger plates are fixedly attached perpendicularly to the tubular member and have split finger sleeves welded to the plates supporting fingers by the clamping action of the plates under pressure of the fastening means through the plates. The tubular shaft has spaced bushings mounted on the carriage shaft and forms an annular lubricating chamber with the carriage shaft between the bushings.

3,620,360
DEVICE FOR PRODUCTION OF A LEFT-HAND INDENTATION FOR CAST LINES
Karl Debus, Bad Homburg, Germany, assignor to Linotype G.m.b.H., Frankfurt am Main, Germany
Filed Apr. 26, 1968, Ser. No. 724,371
Claims priority, application Germany, May 24, 1967, L56573
Int. Cl. B41b *11/50*
U.S. Cl. 199—50 **6 Claims**



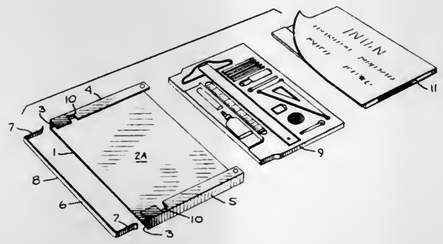
In a linecasting machine, left-hand margin indentation of a line is achieved by the provision of a stop member which is selectably interposed in the path of the left-hand vise jaw which is then moved into abutting relationship with the stop member. For different length indentations, different length stop members are used.

3,620,361
CASING FOR A TAPE CARTRIDGE
Hirotomo Fugiwara; Takuya Arai, and Noboru Miyamoto, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 8, 1969, Ser. No. 864,713
Claims priority, application Japan, Oct. 11, 1968, 43/88684
Int. Cl. B65d *43/16, 85/67*
U.S. Cl. 206—1 R **1 Claim**



A rectangular casing for holding a tape cartridge has a hinged cover which in turn has projections for engagement with the tape core in order to hold the tape core in position. The projections are provided on the back of the cover at such positions that projections hold the tape core regardless of the direction the tape cartridge may be put in the casing.

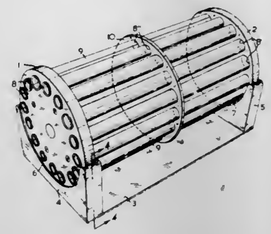
3,620,362
COMBINED DRAWING BOARD AND CONTAINER FOR ARTISTIC MATERIALS
Frederick J. Valdes, 307 East 44 St., New York, N.Y.
Filed June 29, 1970, Ser. No. 50,376
Int. Cl. B44d *3/00*
U.S. Cl. 206—1.7 **3 Claims**



A combined drawing board and container for artistic materials which may alternatively be used as a briefcaselike container for the artistic materials or as a drawing board for them.

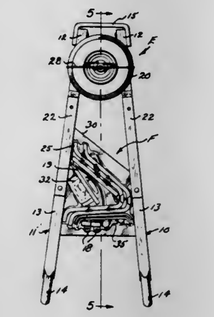
3,620,363
STORAGE AND DISPLAY DEVICE
William C. Donnithorne, Sault Sainte Marie, Ontario, Canada, assignor to The Algoma Steel Corporation, Limited, Sault Sainte Marie, Ontario, Canada
Filed Sept. 8, 1969, Ser. No. 856,085
Claims priority, application Canada, May 30, 1969, 053,072
Int. Cl. B65d *5/50;* **A47f** *5/02*
U.S. Cl. 206—45.15 **16 Claims**

A display and storage device particularly suitable for holding uniformly shaped and sized articles. The device consists of two wheels mounted on a common horizontal axis and provided with split storage tubes which can slide in holes in each of the two wheels. A third wheel or disc is placed on the same axis intermediate the two end wheels to hold the tubes



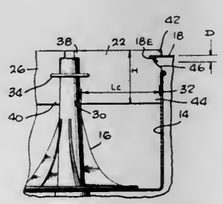
in proper location as one of the split sections of a storage tube is moved relative the other section.

3,620,364
WHEELBARROW PARTS PACKAGING
William C. Lynch, Harrisburg, Pa., assignor to Jackson Manufacturing Co., Harrisburg, Pa.
Filed Mar. 16, 1970, Ser. No. 20,078
Int. Cl. B65d *85/68, 85/64*
U.S. Cl. 207—46 H **5 Claims**



The packaging of wheelbarrow assembly components, other than the tray, with a frame in partially assembled condition, whereby the assembly components are compactly arranged and attached to the frame at a location so that they do not substantially increase the stowage area required by the partially assembled frame.

3,620,365
WASHING MACHINE PACKING BRACE
Maurice W. Elwell, 5335 Weseburn Ave., Hawthorne, Calif.
Filed June 5, 1969, Ser. No. 830,773
Int. Cl. B65d *81/06, 85/00*
U.S. Cl. 206—46 M **9 Claims**



Apparatus for use in packing a household automatic washing machine for shipment, to brace the agitator and tub against the cabinet of the machine. The apparatus includes

several thick arms of elastic foam material with inner ends joined by an elastic cord so that the arms radiate outwardly. Each arm has a ledge at the top of its inner and outer ends for resting on the agitator and housing, respectively, while the lower portions of the arm are compressed between the agitator at one end and the tub and cabinet at the other end.

3,620,366
WALLPAPER

Norman Parkinson, Coventry; Christine Mary Blakely, Easton, nr. Woodbridge, and Robert Francis Russell, Wellingborough, all of England, assignors to Scott Bader Company Limited, Wallaston, Wellingborough, England

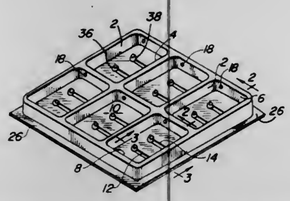
Filed Dec. 18, 1969, Ser. No. 886,350
Continuation-in-part of Ser. 823,180, May, 1969, abandoned
Claims priority, application Great Britain, May 9, 1968, 22,119/68
Int. Cl. C09j *7/04*
U.S. Cl. 206—59 C **7 Claims**

This invention provides a wallpaper having a decorative surface and coated on the back surface thereof with a coating of a permanently tacky pressure sensitive adhesive, the decorative surface being coated with a protective coating of a synthetic resin. The pressure-sensitive adhesive coating and the synthetic resin are so chosen that the protective coating of the synthetic resin on the decorative surface acts as a release coat for the adhesive.

3,620,367
CASSETTE STORAGE CONTAINER

Oren G. Stembel, 3132 N. Nathchez, Chicago, Ill.

Continuation-in-part of application Ser. No. 737,109, June 14, 1968, now abandoned. This application Dec. 30, 1969, Ser. No. 889,044
Int. Cl. B65d *1/34, 85/67*
U.S. Cl. 206—65 R **12 Claims**



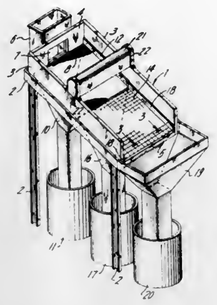
A cassette storage container having short protruding opposed detents extending interiorly in the container for cooperative engagement with opposed outwardly extending elongated protrusions or flanges on cassette end walls to lock the cassette in the container to prevent accidental displacement thereof. Also, the distance between the side and end walls of the container may be slightly smaller than the area between the side and end walls of the cassette whereby the cassette may be held frictionally therein. A fulcrum is provided in the bottom wall of the container on which the cassette seats and about which the cassette is moved when pressure is applied to the top end surface of the cassette, or such fulcra may be positioned integrally on the bottom wall of the cassette to obtain the same action.

3,620,368
CLASSIFICATION OF DRY POLYMER BEADS

William P. Comis, Ridgewood, and Lawrence E. White, Waldwick, both of N.J., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed June 2, 1969, Ser. No. 829,520
Int. Cl. B07b *1/04*
U.S. Cl. 209—2 **7 Claims**

A method for classifying dry polymer beads according to size comprises feeding the beads to a screening zone which is equipped with at least one screen having its surface composed of a material such as poly (tetrafluorethylene) which has a dielectric constant similar to that of the polymer and having openings of the desired size, passing the beads across the surface of the screen and passing a portion of the beads through the openings. As a result of this method, the beads

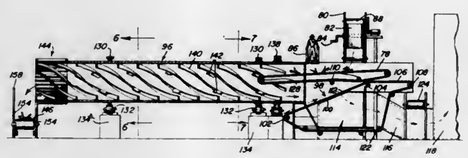


are substantially free of a charge of static electricity and the portion passes through the openings in the screen without significantly blinding the openings.

3,620,369
SUGAR CANE DRY-CLEANING PLANT

Albert C. Steen, and John W. Steen, both of Abbeville, La., assignors to J & L Engineering Company, Inc.

Filed Jan. 15, 1969, Ser. No. 791,243
Int. Cl. B07b *9/00*
U.S. Cl. 209—3 **9 Claims**



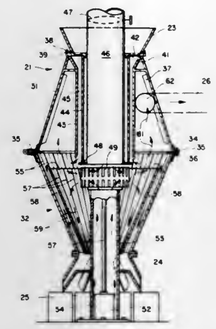
A plant for receiving cane stalks, segmentizing the stalks and cleaning the stalks by a dry process with the trash being positively extracted from the cane and disposed of. The plant includes a cane introducing area comprising multiple conveyors which move the field harvested cane through cutters and levelers for segmentizing the cane and directing the cane to a cross conveyor which moves the cane into either of a pair of adjacent cleaning units comprising vacuum exhaust systems for drawing loose trash from the cane, and a pair of tumbler drums for effecting a further shaking or removal of trash from the cane. The drums terminate in communication with a discharge conveyor for removal of the cleaned segmetized cane. The trash removed by the vacuum system is conveyed to a burner for disposal thereof.

3,620,370
ORE CONCENTRATOR

Rue E. Swayze, P.O. Box 902, Rosamond, Calif.

Filed June 2, 1969, Ser. No. 829,663
Int. Cl. B04c *3/00*
U.S. Cl. 209—144 **5 Claims**

Concentrators for metallic ores, particularly precious metal ores, using centrifuging cyclonic air action without water for primary separation of the heavy metal particles and ore from dust, dirt and lighter particulate. The relatively coarse ores and particulate are collected by gravity drop at the bottom of a centrifuge, while the fines and dust are withdrawn from adjacent the top thereof and fed through a further separating apparatus which blows out the dust and then passes the remaining particulate over dry riffle boards to collect the heavy particles. The cyclonic centrifuge is in the form of an upper, frustoconical, internally baffled or corrugated construction with a lower, inverted, frustoconical section likewise internally baffled or corrugated, the sections joining at their largest diameters. Pulverized ore particulate which is to be further concentrated is introduced through the upper frustoconical section. Air is drawn into the device from the top and bottom through a generally centrally located fan and then exited tangentially from the upper sec-

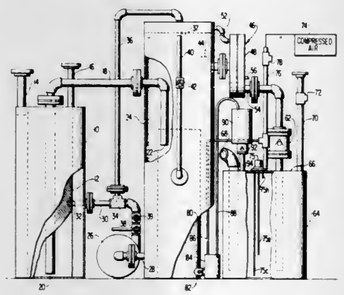


tion, or, in another embodiment, the air is entered tangentially, with or without the fines therein, and exits the cyclonic separator from the top and bottom. A particulate collector ring may be mounted at the junction between the upper and lower centrifuge sections. The further separator comprises a velocity reducer and agitator and a dispensing box through which the fines pass with removal of the dust and with the dropping of the particulate onto the dry riffle boards.

3,620,371
AEROBIC WASTE TREATMENT SYSTEM WITH AUTOMATIC BACK FLUSHING FILTER

Joe M. Valdespino, Orlando, Fla., assignor to Aquanox, Inc., Ft. Lee, N.J.

Filed Dec. 1, 1969, Ser. No. 881,045
Int. Cl. B01d *29/38*
U.S. Cl. 210—117 **9 Claims**

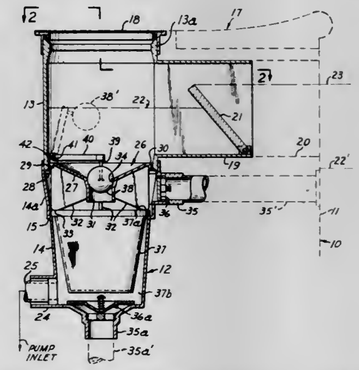


An aerobic waste material treatment system includes a hydraulic comminutor-reaction tank and a vacuum aeration tank connected by a siphon so that comminuted solids in liquid are siphoned into the vacuum tank. A recirculating pump and fluid connection are positioned between the vacuum tank and hydraulic comminutor to recirculate the mixed liquor from the vacuum tank and reaerate it by an aspirator in the recirculating line while, at the same time, discharging tangentially into the comminutor to aid in centrifugal movement for comminuting purposes. A venturi in the recirculating pump discharge line aspirates from the vacuum tank to draw the vacuum within the vacuum tank. The air for anchor in the vacuum tank is admitted from atmosphere under control of a regulating valve. An automatic back flushing filter is connected to the effluent outlet of the vacuum tank. The filter is periodically back flushed by pulsing air from the outlet side of the filter to flush accumulated material on the filter screen back into the vacuum tank. The vacuum tank may be blown down through a blow down valve in the discharge side of the recirculating pump. Automatic batch chlorination and effluent ejection units are connected to the outlet side of the automatic back flushing filter.

3,620,372
SKIM TANK

Gordon F. Ehret, Alhambra, Calif., assignor to Swimquip, Inc., El Monte, Calif.

Filed Aug. 1, 1969, Ser. No. 846,690
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **5 Claims**

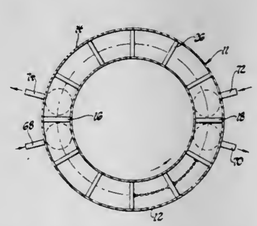


A skim tank for skimming surface water of a pool has an inlet from the surface of the pool to an upper part of the tank. A rotatable plate extending across the tank at a level below the inlet separates the upper tank portion from a chamber below the plate, and an opening through the plate permits the pool water from the inlet and upper tank portion to flow down to the chamber when the opening is not closed by a stopper, from where it is withdrawn through a conduit by a suction pump for filtering. A bypass conduit connects to the chamber from the pool such that when the stopper closes the opening, water is drawn into the chamber through the bypass line to supply the pump. The pool may be vacuum cleaned through a vacuum line connected at the opening of the plate and in order to close the bypass line during the vacuum operation, the rotatable plate is provided with a closure gate depending from it which blocks the inflow from the bypass to the chamber when the plate is rotated to the blocking position.

3,620,373
CLOSED-LOOP PROCESSING APPARATUS

Jesse D. Crell, White Plains, and Samuel Sze, Great Neck, both of N.Y., assignors to Trade Bank and Trust Company, New York, N.Y.

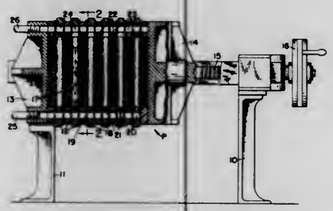
Filed Dec. 22, 1969, Ser. No. 887,171
Int. Cl. B01d *35/08*
U.S. Cl. 210—189 **9 Claims**



Apparatus for continuously processing fluids includes a hollow torus having a plurality of discs positioned therein

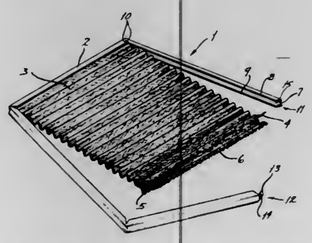
containing chemicals enclosed in filtering paper for processing the fluids. The discs are connected together and continuously driven around the enclosed circle formed by the torus. The torus is divided into two compartments by rubber dividers each having a diametrical slit through which the discs move when passing between compartments. The discs are normally disposed in a plane perpendicular to the movement of fluid through the torus but tilt into a plane parallel to the fluid movement when passing through the slits. Each compartment has a fluid inlet and outlet. In one compartment the fluid is filtered and chemically treated by passing through the discs. In the other compartment the discs are washed and the chemicals regenerated.

3,620,374
REINFORCED PLASTIC FILTER PLATE STRUCTURE
Robert J. Brinkema, Rochester, Mass., assignor to Joseph T. Kyerson & Son, Inc.
Division of Ser. No. 552,228, May 23, 1966, which is a continuation-in-part of Ser. No. 282,808, May 23, 1963, abandoned
Filed Sept. 14, 1967, Ser. No. 674,375
Int. Cl. B01d *25/12*
U.S. Cl. 210—231 **5 Claims**



An open rigid fiber glass reinforced laminated filter plate structure having reinforced members with intersections therebetween to provide supporting pillars.

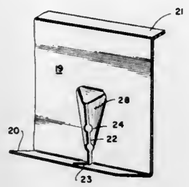
3,620,375
FILTER CONSTRUCTED OF METALLIC MATERIAL
Jack Atkins, 4408 Cherrydale Road, Memphis, Tenn.
Filed Sept. 8, 1969, Ser. No. 856,011
Int. Cl. B01d *25/06*
U.S. Cl. 210—484 **2 Claims**



In a filter for use in removing entrained matter contained in a flowing material, a series of superimposed layers of a metallic filtering composition forms an inner core that is encased intermediate a pair of outer coverings to form the filter element, said filter element being corrugated to enhance its exposed surface area during the filtering operation, and a rigid frame circumscribes the filter element providing rigidity in the construction of the filter.

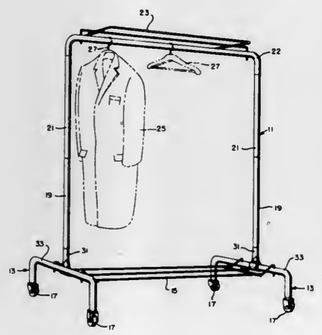
3,620,376
GARMENT HANGER BAR
Carl E. Gingher, 304-328 Depot St., Scranton, Pa.
Filed Oct. 16, 1967, Ser. No. 675,666
Int. Cl. A47f *7/24*
U.S. Cl. 211—123 **13 Claims**

A garment hanger bar wherein a horizontal member has a vertical wall and a horizontal flange with a transverse slot in the flange and vertical wall and an enlarged opening communicating with the wall portion of the slot so that the bar can support clothes hangers provided with stems having opposed parallel faces thereon with a protrusion on at least one face. The hanger bar slot is narrow and only slightly greater in



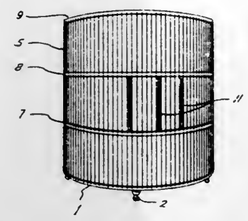
width than the thickness between the opposed faces of the hanger stem. The hanger bar may be in the form of an accessory which can be mounted on existing hanger bars to adapt an existing hanger bar to receive another type of clothes hanger stem.

3,620,377
CLOSET ACCESSORY CONSTRUCTION
Gilbert J. Holtz, 182 Tibbets Road, Yonkers, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,505
Int. Cl. A47f *5/00*
U.S. Cl. 211—177 **2 Claims**



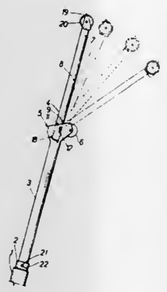
A closet accessory in the form of a hat, coat and shoe rack of the type transportable in a disassembled condition, including a number of hollow tubing structural members and with T-joints, between base members and upright members for example, of particularly simple and rugged construction formed by flattening an end portion of a hollow tube, curving it to conform to the curve of a tube to which it is to be joined, bending off the partially flattened and unflattened portions of the first tube at approximately right-angles to the round flat portion, and providing in the bend ridges with a curvature opposite to the bend. The flattened and formed tubing section described above is fastened, by spot welding for example, to the second piece of tubing which it is shaped to conform with to form a strong T-shaped tubing structure.

3,620,378
CARPET SAMPLE RACK
John C. Sweeney, Box 3406, Victoria, Tex.
Filed Oct. 3, 1969, Ser. No. 863,539
Int. Cl. A47f *5/00*
U.S. Cl. 211—177 **3 Claims**



A device for storing and displaying carpet samples, having superimposed series of separated storage compartments and being of a construction permitting easy assembly of the rack at the desired location, providing maximum capacity in a minimum of space.

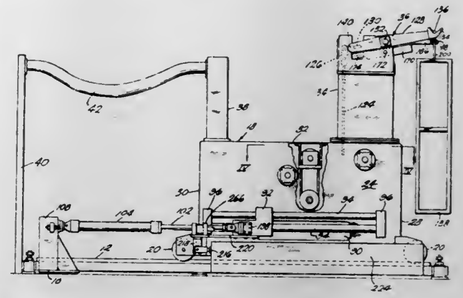
3,620,379
TELESCOPIC JIB WITH A TELESCOPIC INCLINABLE END MEMBER FOR CRANES
Jean Fauchere, 5, Rue Marcel Loyau, 92 Boulogne-sur-Sein, France
Filed Dec. 29, 1969, Ser. No. 888,726
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **3 Claims**



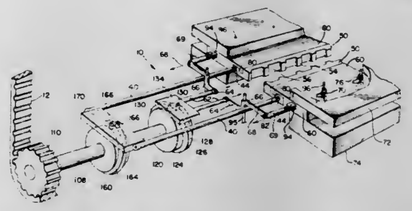
A telescopic jib for a crane, the jib being provided with an inclinable telescopic end element which is slidable in the internal element of the jib and can be fixed to this element in various positions when it is aligned therewith, by pinning or the like, and which when in a fully extended position can assume various inclinations relative to the jib, the said end element then being capable of pivoting around the fixing pin and of being fixed in the selected inclined position by means of another pin or the like.

3,620,380
TRANSFER DEVICE
Daniel J. Borodin, Detroit, Mich., assignor to U.S. Automation Company, Warren, Mich.
Filed Sept. 3, 1969, Ser. No. 854,862
Int. Cl. B66c *23/08*
U.S. Cl. 214—1 BB **27 Claims**

A device for transferring workpieces from one support to another, such as between a pair of conveyors. The device includes a track supported carriage on which a workpiece support arm is mounted for pivotal movement in a vertical plane. A pair of rotary cams are operatively connected, one between the carriage and the base on which it is supported and the other between the carriage and the support arm. One cam controls the translatory movement of the carriage on the base and the other controls the pivotal movement of the support arm so that by correlating the movement of the two cams any desired path of travel for the work-engaging portion of the support arm may be generated. The translatory movement of the carriage is also supplemented by a hydraulic cylinder operable in conjunction with the two rotary cams.



3,620,381
HORIZONTAL HIGH-SPEED TRANSFER
Stuart H. McCaughey, P.O. Box 255, Cockeysville Road, Cockeysville, Md.
Continuation-in-part of application Ser. No. 713,830, Mar. 18, 1968. This application Apr. 6, 1970, Ser. No. 25,725
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 **7 Claims**

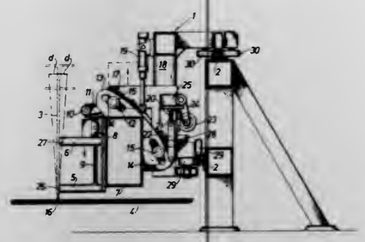


High-speed transfer apparatus for presses has spaced carrier bars with inward article receiving configurations. The carrier bars are mounted on carrier supports for longitudinal movement therewith and for relative transverse movement with respect thereto. The carrier bars are positively connected to the cam bars for lateral in and out movement therewith and for relative sliding. The carrier supports and cam bars are independently reciprocated in phase displaced relationship so the carrier bar moves forward after the cam bar has moved inward, and so the cam bar draws the carrier outward before the carrier is returned to its first position. The carrier and cam bar are reciprocated by separate rotating cams and followers. A cam flange extends radially outward from a cylindrical body and followers are mounted on opposite sides of the flange for continuous uniform direction rotation of the followers as the cam rotates, and the followers move slides which are connected to the cam bar and carrier bar.

3,620,382
DEVICE FOR CONVEYING REINFORCING ELEMENTS TO A WELDING STATION AND FOR HOLDING AND ALIGNING THESE IN RELATION TO A SHEET OF METAL AT THE WELDING STATION
Charles Gunnar Birger Bergling, Orebro, Sweden, assignor to Ingenjorsfirma Hebe AB, Orebro, Sweden
Filed June 5, 1970, Ser. No. 43,850
Claims priority, application Sweden, June 12, 1969, 8383/69
Int. Cl. B66c *1/06*
U.S. Cl. 214—1 BT **5 Claims**

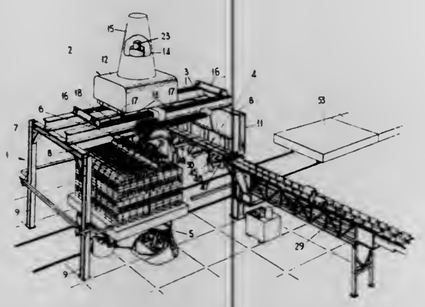
A device is provided for conveying reinforcing or skeleton elements to a welding station and for holding and aligning

said elements in relation to a metal sheet at the welding station, said device comprising a traveling carriage having a box or beam construction movably and pivotally mounted thereon, electromagnets being attached to said box or beam construction for holding said reinforcing elements. The elec-



tromagnets are arranged in a lower and an upper row, the electromagnets in the lower row being fixed and the electromagnets in the upper row being displaceable, thus enabling the device to handle reinforcing elements of varying sizes.

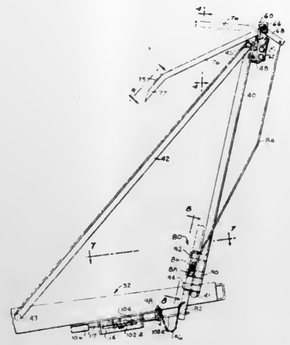
3,620,383
BRICK-HANDLING APPARATUS
David John Ingram, 40 Edendale Road, Barnhurst, Kent, and Geoffrey James Eagles, 31 Tradescant Drive, Meopham, Kent, both of England
Continuation-in-part of application Ser. No. 614,977, Feb. 9, 1967, now abandoned. This application Jan. 27, 1970, Ser. No. 6,271
Int. Cl. B65g *57/04*
U.S. Cl. 214—6 A **10 Claims**



Brick handling and stacking apparatus including a carriage mounted for movement on a gantry between a pickup station and a release station, a pickup head, mounted for vertical movement on a carriage, in the form of a plurality of platen members carried by support brackets slidably mounted on a horizontal support for movement to predetermined positions thereon, piston and cylinder units for moving the platen members along the support, and a plurality of stop members disposed at spaced positions adjacent the horizontal support.

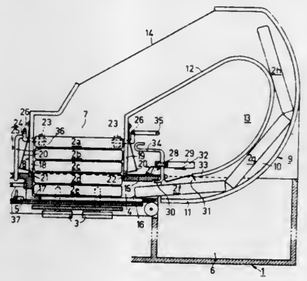
3,620,384
TINE ARCH MECHANISM FOR A BALE WAGON
Jerry W. Welker, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1969, Ser. No. 828,882
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **1 Claim**

A tine arch mechanism for a bale wagon comprising a plurality of tine members pivotally suspended above the load-carrying bed and adapted to be engageable with successive tiers of bales received on the bed to prevent the bales from falling forward during the loading or transporting thereof,



and movable out of engagement with the bale tiers to permit unloading of the bales from the bed.

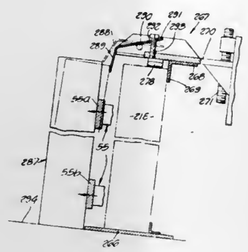
3,620,385
CONVEYING APPARATUS FOR A MAGNETIC TAPE CARTRIDGE CHANGER
Leopold Petrus Johannes Vermeijlen, Emmasingel, Eindhoven, Netherlands, and Friedrich Laa, Vienna, Austria, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,969
Claims priority, application Austria, Aug. 14, 1968, A 7973/68
Int. Cl. B65h *1/00*
U.S. Cl. 214—6 D **15 Claims**



A magnetic tape cartridge changer for playing a plurality of stacked tape cartridges in sequence. The changer is provided with a shaft for the storage of the stacked cartridges and has a lateral outlet aperture for automatic removal of the lowest stacked cartridge which is in the playing position. The removed cartridge is passed into a channel which ultimately feeds the cartridge back to a ready to play storage position in the shaft.

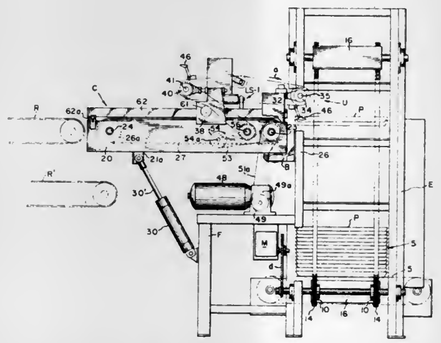
3,620,386
ACCUMULATOR FOR CARTONING MACHINE
Elbert L. Bivans; August Kund, both of Glendale, Calif., and Bivans Corporation, Los Angeles, Calif.
Filed Feb. 9, 1970, Ser. No. 9,724
Int. Cl. B65g *57/00*
U.S. Cl. 214—7 **6 Claims**

Automatic cartoning machine including twin cartoning units mounted in a common framework having a conveyor for conveying a stack of paper cups or other article for each unit. The units are similar having their loading stations adjacent each other to receive the articles. Each unit has a plurality of cams making one complete revolution for one cycle of operation. Each cycle includes removing a collapsed glue end carton from the bottom of a magazine, transferring it to a combined loading and squaring-up station where the carton is squared up and the article is loaded into the carton. The cycle is started by arrival of the article at a station and is terminated by one complete revolution of the cams. The minor flaps pass through a glue applicator on the way to the station. After the flaps are partially sealed, the carton is elevated through a compression chute and the filled and sealed carton is then ejected horizontally and guided to fall in upright posi-



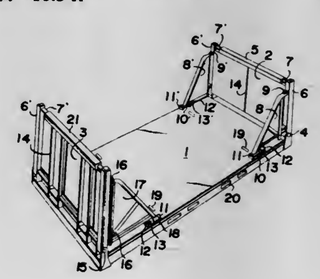
tion in front of an accumulator which operates in timed relation with the supply of filled and sealed cartons and with the transfer of the article from the conveyor to a loading tray. Cam means controls supply of the upright cartons to a row former, a given carton pushing on the cartons ahead of it until the row is filled, the leading carton controlling a trigger to complete a power drive to eject the row as a unit, the individual cartons and the rows leaning downhill to form a compact group of rows of upright elongated cartons.

3,620,387
HOOK-TYPE PALLET UNSTACKER WITH DOUBLES ELIMINATOR
Ronald D. Elson, Merrill, and Norman O. Krenke, Saginaw, both of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.
Filed Jan. 26, 1970, Ser. No. 5,576
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **15 Claims**



A hook-type pallet unstacker mounted adjacent the supply end of a pallet receiving conveyor for movement between a raised inoperative position and a lowered unstacking position for sequentially unstacking pallets from a stack and delivering them individually to the conveyor. The conveyor is pivotally mounted at its supply end and is movable from a first normally operative horizontal position in which it receives the unstacked pallets and conveys them in a first path of travel, if the pallets are unstacked singly, to and from a second downwardly tilted reject position in which it discharges the nested pallets which are delivered when more than one pallet is inadvertently simultaneously removed from the stack by the unstacker. Apparatus is provided for pivoting the conveyor to the reject position to lower the discharge end of the conveyor to discharge nested pallets along the second path of travel and to simultaneously raise the supply end of the conveyor, which raises the pallet unstacker to the inoperative position and prevents further unstacking until the nested pallets are discharged.

3,620,388
COLLAPSIBLE PALLET WITH PIVOTAL END SUPPORTS
Harry Mansson, St. Ives, New South Wales, Australia, assignor to Nippon Kokan Kabushiki and Rederiaktiebolaget Helsingborg
Filed Jan. 21, 1970, Ser. No. 4,612
Int. Cl. B65g *1/20*
U.S. Cl. 214—10.5 R **10 Claims**

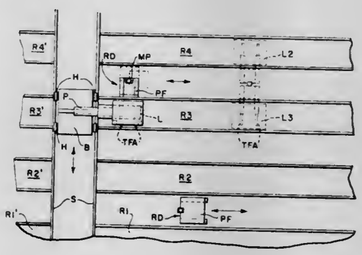


A stackable collapsible pallet, suitable for carrying automobiles, having at least one end structure being pivotable outwardly and inwardly to positions substantially in parallel with the base, and substantially triangular supports pivotably attached to the end structures to rigidly secure said end structures in an upright position. The end structures and supports are removable for use of the base as an ordinary pallet.

ERRATUM

For Class 214—15 R see:
Patent No. 3,620,427

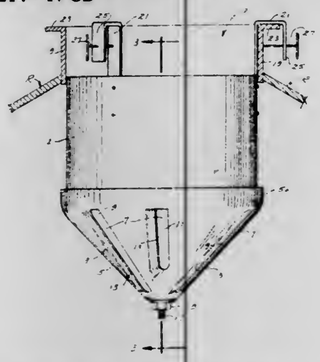
3,620,389
SYSTEM FOR TRANSPORTING GOODS TO AND FROM STORAGE SHELVES
Fredrik Munck, Bergen, Norway, assignor to Sverre Munck A/S.
Continuation-in-part of application Ser. No. 707,252, Feb. 21, 1968, now abandoned. This application Jan. 16, 1970, Ser. No. 3,290
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **5 Claims**



A system for transporting goods, e.g., pallets, containers or the like, to and from storage shelves arranged in parallel rows includes a transport carriage movable in guide rails along a path perpendicular to the shelves, the rows of shelves being

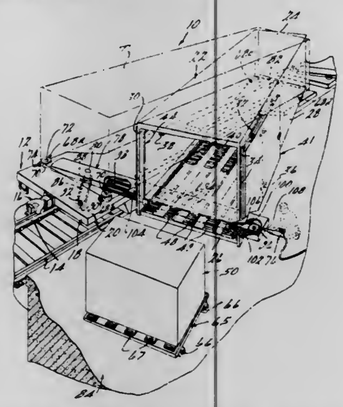
located on both sides of this path. The transport device includes a platform arrangement which may be raised and lowered and moved laterally of the carriage to effect loading and unloading. A receiving device is located between pairs of the rows and is adapted to transport the goods unloaded by the transport device to a predetermined location along the rows between which the receiving device is located.

3,620,390
APPARATUS FOR SPREADING PARTICULATE MATERIAL
Richard E. McKinnon, Taylorville, Ill., assignor to Specialized Products, Inc., Taylorville, Ill.
Filed Dec. 8, 1969, Ser. No. 882,998
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB **10 Claims**



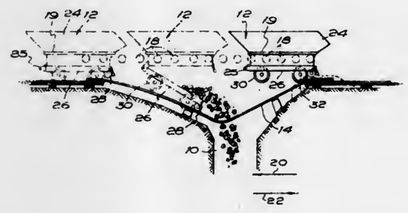
Apparatus for spreading particulate material, such as grain, in a circular bin having a roof and a center opening in the roof for the delivery of the material into the bin comprising a spinning cup having a conical annular wall of decreasing diameter from top to bottom and having openings in the wall for centrifugal discharge of the material from the cup with decreasing volume and velocity of discharge from top to bottom of the cup for evenly spreading the material around the bin.

3,620,391
RAILCAR UNLOADING SYSTEM
Richard T. Fujioka, Oxford, Mich., assignor to Fruehauf Corporation, Detroit, Mich.
Division of Ser. No. 697,427, Jan. 12, 1968, Pat. No. 3,548,756
Filed May 6, 1970, Ser. No. 35,027
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 A **22 Claims**



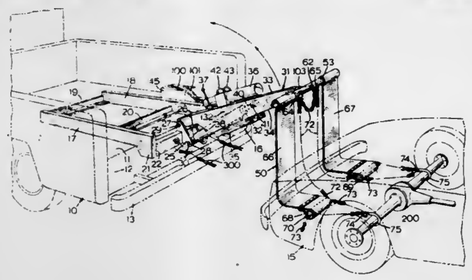
A loading and unloading system for a vehicle having a support frame and an enclosure adapted to be supported on the frame, the system comprising means for supporting the enclosure for movement relative to the frame about at least one generally vertical axis, whereby one end of the enclosure may be pivoted between a transit position overlying the frame and at least one loading or unloading position wherein the one end of the enclosure extends outwardly from the vehicle to provide for convenient end loading and unloading thereof, a cargo container adapted to be removably received interiorly of the enclosure, and means for moving said container longitudinally of the interior of the enclosure and thereby effecting loading and unloading of the container.

3,620,392
MINE CARS
Fred Greenwood, Tingley, Morley, England, assignor to Robert Hudson Limited, Leeds, York, England
Filed Oct. 20, 1969, Ser. No. 867,550
Claims priority, application Great Britain, Oct. 22, 1968, 50,054/68
Int. Cl. B61d *7/30*
U.S. Cl. 214—63 **3 Claims**



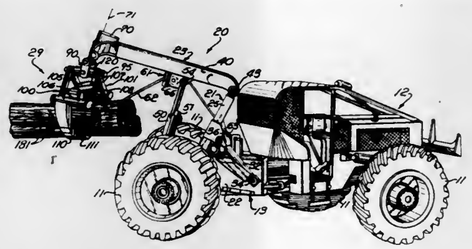
A mine car of a generally rectangular form of which the bottom can swing open to enable the car to discharge its contents. The wheels of the mine car are attached to the swingable bottom and the rear wheel assembly has an axle arrangement such that the rear wheels can straddle a guide rail which serves to maintain the open bottom in the desired position.

3,620,393
VEHICLE TOWING ASSEMBLY
Leslie Bubik, Toronto, Ontario, Canada, assignor to Vulvan Equipment Company Limited, Toronto, Ontario, Canada
Filed Mar. 3, 1969, Ser. No. 803,824
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **2 Claims**



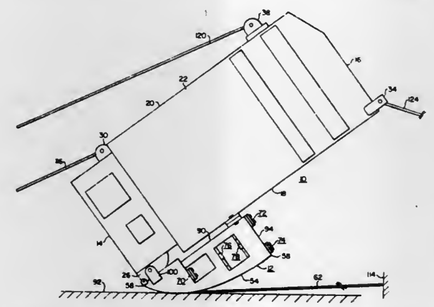
The present invention is concerned with a low-cost vehicle tow unit which employs a boom so disposed and of such a shape that the necessity of the normal additional tow anchor bars for spacing the towed and towing vehicles is obviated. The boom has a rear surface behind the towing vehicle and the towed vehicle is brought into abutting engagement so that the boom serves both to lift and space apart the towed and towing vehicle.

3,620,394
LOGGING APPARATUS
Robert C. Symons, Woodstock; Stanley H. Koch, London, and John B. Pierce, Woodstock, Ontario, all of Canada, assignors to Timberjack Machines Limited, Woodstock, Ontario, Canada
Filed May 8, 1969, Ser. No. 822,906
Int. Cl. B66c *1/32*
U.S. Cl. 214—147 G **18 Claims**



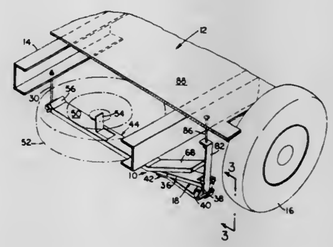
An apparatus for use in handling trees, logs, and the like comprises an articulated vehicle having front and rear vehicle sections which are interconnected for relative pivotal movement about a vertical axis. A boom structure is supported on the rear section and comprises a first boom member which is pivotally connected to the rear section and a second boom member which is pivotally connected to the first boom member. A first power means is interconnected between the rear vehicle section and the first boom section for pivoting the first boom section relative thereto. A second power means is pivotally interconnected between the rear vehicle section and the second boom section for pivoting the second boom section relative to the first boom section. The logging apparatus also includes a hoist or winch mechanism having a cable which is guided through a fair-lead assembly supported on the second boom section. The fair-lead assembly includes a horizontal roller and a pair of vertical rollers which are operative to guide the cable. A grapple mechanism is supported for universal movement on the outer end of the second boom section and includes relatively movable article engagement members or arms which are supported for relative pivotal movement. The grapple mechanism is constructed so that as the article-engaging members are pivoted in a grapple-opening direction, the pivot axes thereof are bodily moved outwardly away from each other so as to effect a relatively wide opening of the grapple mechanism.

3,620,395
METHOD FOR UPRIGHTING ELECTRICAL INDUCTIVE APPARATUS
Robert S. Farmer, Sr., Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 14, 1969, Ser. No. 866,341
Int. Cl. B65g *7/08*
U.S. Cl. 214—152 **10 Claims**



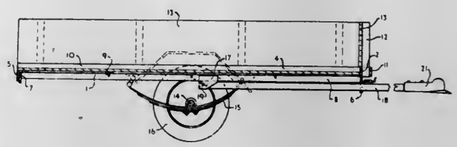
A method for uprighting electrical inductive apparatus after shipment in a horizontal position, including the steps of mounting a rocker assembly having a curved base to the underside of the inductive apparatus to be uprighted, rotating the inductive apparatus on the curved base for a predetermined portion of the uprighting cycle, restraining the inductive apparatus from suddenly completing its turning cycle, and controllably releasing the restraint on the inductive apparatus during the remaining portion of the turning or uprighting cycle.

3,620,396
SPARE TIRE CARRIER
Duane R. Abfalter, Sonoma, Calif., assignor to Travel Accessories Manufacturing Company, Inc., Orland, Calif.
Filed July 1, 1969, Ser. No. 838,068
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **14 Claims**



A carrier device for retaining a spare tire between body frame members of a truck which is movable and extendable to facilitate quick and easy removal of a tire from and return to its stowed position thereon. The device comprises an elongated extendable unit pivotally connected to one truck frame member at one end and releasably connected to the truck body at the other end. The tire is attached to an upper member of the unit so that, when released, it can be moved from its stowed position while supported by a lower member of the unit.

3,620,397
TILTABLE TRAILER
Robert Gagnon, Box 46, Val Caron, Ontario, Canada
Filed Oct. 6, 1969, Ser. No. 864,074
Int. Cl. B60p *1/28*
U.S. Cl. 214—506 **3 Claims**

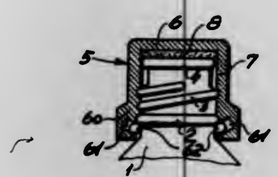


A single axle, vehicle trailer having a platform, or box, that can be easily tilted for loading or unloading without disconnection of the hitch from the towing automobile. The trailer frame is especially designed for antitorque strength and rigidity, relative to its size and weight, rendering it particularly suitable for transporting special loads such as one or two motorized snow vehicles or the like. Four angle members outline the elongated rectangular wheel-carried frame that has a uniquely applied backbone reinforcing it along the longitudinal median and to which backbone the draft tongue or tow bar is pivotally connected.

3,620,398
SAFETY CLOSURE

Charles Martinus Bech Andersen, Naerumvaege 122, 2850 Naerum, Denmark

Filed July 29, 1969, Ser. No. 845,688
Claims priority, application Denmark, July 29, 1968, 3650/68 May 6, 1969, 2468/69
Int. Cl. A61j *1/00*; B65d *55/02*
U.S. Cl. 215—9 11 Claims

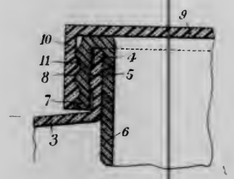


This invention relates to a safety closure for a container opening and comprises at least one movable locking or coupling device which in one of two alternative positions permits removal of the closure cap. The object of such a safety closure is to make the removal of the closure cap so difficult that children or persons ignorant of the dangerous nature of the contents are unable to open the container, which may for instance be a medicine or pill bottle, without making the opening of the bottle so difficult that it causes problems to the legitimate user. The known art comprises safety closures of this type with a built-in combination lock consisting for instance of two discs with notches that are to be placed in a definite relative position in order that the locking device can be released and permit removal of the closure. Such safety closures it is true do have the desired effect, but they inevitably get so complex that they will tend to increase the price of the whole packaging comprising container and closure.

3,620,399
DOUBLE-WALLED CONTAINER

Michel Rapeaud, 9 rue Marceau-Delorme, 92 Asnieres, France

Filed Feb. 14, 1969, Ser. No. 799,440
Claims priority, application France, Feb. 14, 1968, 139,825
Int. Cl. A47j *41/00*
U.S. Cl. 215—13 2 Claims

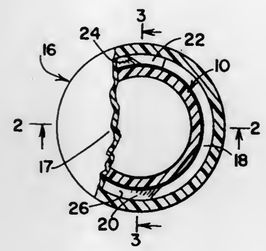


A double-walled container comprises an outer casing of relatively rigid plastic material formed with an upstanding cylindrical collar from which the upper edge of a concave-bottomed inner cup, which is folded on itself through 180°, is suspended straddlewise. The inner cup is of relatively flexible plastic material and the outer surface of the folded edge and the inner surface of a closure member being formed with companion threads for sealing the assembly. The upstanding collar is formed on its outer surface with a shallow projection for engagement by the registering inner surface of said folded edge of the inner cup.

3,620,400
CLOSURES FOR BOTTLES AND THE LIKE

Morris Braun, Chicago, Ill., assignor to W. Braun Company

Continuation of application Ser. No. 664,490, Aug. 30, 1967, now Patent No. 3,511,403. This application May 6, 1970, Ser. No. 35,063
Int. Cl. B65d *41/06*
U.S. Cl. 215—44 11 Claims

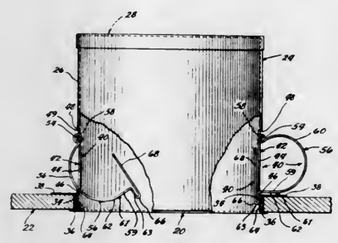


A container having a neck portion formed of a resilient or flexible material having an uninterrupted external helical thread of constant pitch and a mating screw-type closure cap having internal threads of constant pitch, the continuity of the threads on the cap being interrupted at spaced points to from gaps and abutment shoulders adjacent the gaps. When the cap is screwed tightly on the neck portion the cooperating threads of the container neck are deformed into the gaps in the threads of the cap to cooperate with the abutment shoulders to lock the cap against inadvertent displacement.

3,620,401
RECESSED LIGHTING FIXTURE INCLUDING MOUNTING CLAMP MEANS

Alvin R. Lund, Carpentersville, Ill., assignor to Markstone Manufacturing Company

Filed May 11, 1970, Ser. No. 36,060
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.6 12 Claims

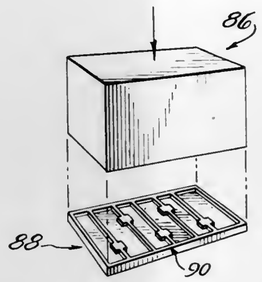


Mounting clamp means for detachably securing a recessed lighting fixture housing in a plaster frame. Spring steel clamp members are pivoted on fixed members in openings in the housing sidewall and their lower portions provide frame-engaging elements while their upper portions are arcuate to provide biasing elements which urge the engaging elements downwardly. The clamp members pivot between an idle retracted position wholly within the housing and a projected clamping position in which the frame-engaging elements and arcuate portions are outside the sidewall and the former are biased by the latter firmly against a flange on the plaster frame. A depending tab on the inner end of each engaging element abuts the sidewall to limit outward movement of the clamp means, and an elongated upright flap above the tab closes the opening the sidewall in the projected position.

3,620,402
CONSTRUCTION OF POLYOLEFIN CONTAINERS

Robert J. Wentland, Hinsdale, Ill., assignor to The Richardson Company, Melrose Park, Ill.

Filed Aug. 28, 1969, Ser. No. 853,790
Int. Cl. H01m *1/02*; B65d *11/10*
U.S. Cl. 220—4 R 5 Claims

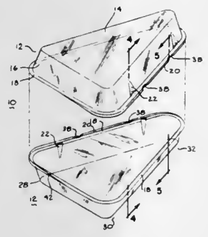


A container constructed at least partially of polyolefin and the remainder of a rubber composition or other easily bondable material, is made with at least one airtight seal with an excellent bond strength which is formed from mating surfaces of adjoining sections of the container wherein at least one of the sections is polyolefin. As illustrated by a thin-walled, electric storage-battery container constructed of polypropylene having multicompartments wherein each compartment is to be isolated from the others, the seals are formed by oxidizing the adjoining surfaces preferably by an oxidizing flame and by applying a curable adhesive on the oxidized surfaces to form the desired bond.

3,620,403
PLASTIC FOOD CONTAINER

John H. Rump, Rockville, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1969, Ser. No. 877,957
Int. Cl. B65d *11/10*, *43/10*
U.S. Cl. 220—4 E 3 Claims

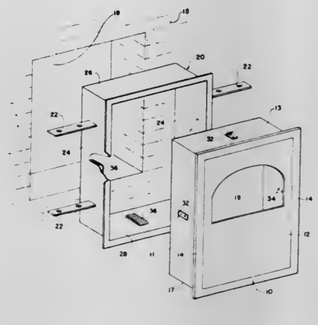


A thin-walled thermoplastic container which includes identical dish and cover portions, each having a peripherally extending flange for supporting the other when one is placed on the other to form the assembled container. A restraining collar extending from the flange in the direction of the sidewall prevents crosswise displacement in one direction of one portion with respect to the other, while stabilizing posts in the sidewalls prevent such displacement in the opposite direction. Each portion has locking means which coact with the flange of the other and self engage when one portion is forced against the other.

3,620,404
FASTENER ASSEMBLY FOR MOUNTING OF WALL-RECESSED CABINETS AND SIMILAR FIXTURES

Joseph C. Grasso, New York, N.Y., assignor to Accessory Specialties, Inc., New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,207
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 1 Claim

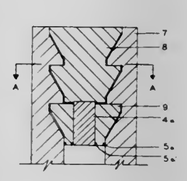


A fastener assembly, for securing a cabinet into a subframe previously installed in a masonry wall opening, in the form of a flexible spring clip hooking into one of the notches on a serrated anchorplate, with one of said fastener elements being secured by pop rivets to each outer side surface of said cabinet and the other fastener element being affixed to corresponding locations on the inner side surfaces of said subframe.

3,620,405
CLOSURE SYSTEM FOR HIGH-PRESSURE VESSELS

Henning Peters, Brugge, Westfalen, am Kamp, and Klaus-Dieter Solmecke, Gevelsberg, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed June 1, 1970, Ser. No. 41,860
Claims priority, application Germany, June 3, 1969, P 19 28 169.7
Int. Cl. B65d *41/06*
U.S. Cl. 220—40 5 Claims

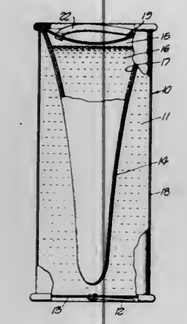


A closure for the open end of a high-pressure vessel is formed of two or more plugs, in the nature of pistons that cooperate to seal the end of the vessel, each of which is supported by engagement with a portion of the wall of the vessel different from the portion or portions supporting the other plug or plugs. The plugs may be in the form of a cylindrical piston, and encircling annular pistons or a series of plugs with varying effective areas. The plugs themselves or through intermediate members are individually supported from axially spaced portions of the vessel wall.

3,620,406
PULL TAB AND PRESSURE RELIEF VALVE

Joseph H. Evans, Palo Alto, and Fred Eugene Weir, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 29, 1969, Ser. No. 888,793
Int. Cl. B65d 51/16
U.S. Cl. 220—44 7 Claims

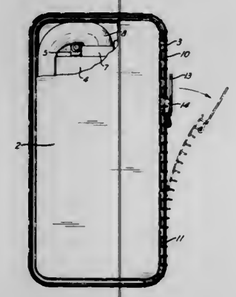


A pull tab for a pressurized container which can be manually removed to release the fluid under pressure and which also operates as a relief valve if the internal pressure in the container exceeds a desired level. The tab is formed in place by placing a piece of heat-recoverable plastic tubing or rod in one or more appropriately sized holes in the container and then expanded by heat to block the hole. The plastic tubing or rod then acts as a valve which relieves the container pressure upon its removal.

3,620,407
EASY-OPEN SEALED CONTAINER

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 29, 1970, Ser. No. 6,748
Int. Cl. B65d 7/00, 53/00
U.S. Cl. 220—46 R 2 Claims

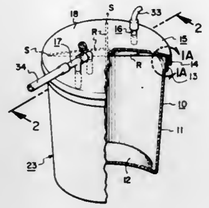


A case has a back and a cover provided with sidewalls surrounded by outwardly extending flanges at their free edges for engaging a flexible sealing gasket between the flanges. Surrounding the gasket is a clamping wire that is bent to form spaced loops extending inwardly over the case flanges and pressing them toward each other to clamp the gasket between them. Connected to one end of the wire is means for pulling it outwardly away from the case so that the cover can be removed.

3,620,408
VACUUM-FILLED FLUID BOTTLE AND SYSTEM

LeGrand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Filed Nov. 13, 1969, Ser. No. 876,438
Int. Cl. B65d 47/12
U.S. Cl. 220—60 R 6 Claims

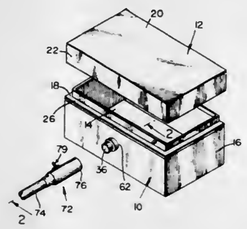


The present invention comprises a vacuum-operated, fluid-collection bottle and system. Structural advantages of the invention reside in increasing the effective seal area as between the cover and container of the bottle, as well as providing a tapered cam surface area receiving the bead of the container into the bead recess cover of the bottle. Dual vacuum bosses, one being valved, in multiple-boss covers may be used as respective automatic shutoff and tandem-fill means, with the nonapplicable boss being releasably capped off. Two of the three conduit portions of the cover may be connected together through appropriate valving system so that either or both may be effective in supplying vacuum communication to the interior of the bottle at selected height levels. Valving means predetermine maximum fluid height within the bottle, either automatically or by valve adjustment.

3,620,409
STORAGE CHEST FOR SILVERWARE OR THE LIKE

Milton Rosenbaum, 3648 Lynn Lane, Wantagh, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,301
Int. Cl. B65d 25/00
U.S. Cl. 220—85 R 4 Claims

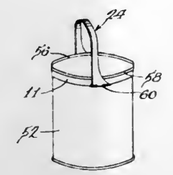


A chest, or like container, for preserving silver or like surfaces against tarnishing, including a receptacle and cover assembly adapted to interfit in airtight relation, and an air exhaust valve set into a wall of the chest, said valve adapted to connect with an air exhaust pump and sealed by the atmospheric air pressure when the interior of the chest is exhausted and responsive to a manual operation for opening, to equalize the pressure on the interior and exterior of the chest.

3,620,410
PLASTIC BAIL FOR CONTAINER AND METHOD OF ATTACHING BAIL

Elmer W. Griese, Jr., Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 30,172
Int. Cl. B65d 25/28
U.S. Cl. 220—94 R 13 Claims

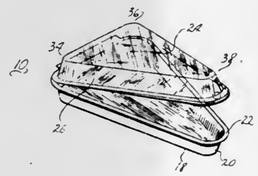


A container handle made from a single flat sheet of resilient material and having an annular member including rectilinear side portions and arcuate end portions with a bail extending from the outer edge of the angular member and having a central rectilinear section spaced from one of the side portions and integrally joined with each of the end portions. The container handle is attached to a container body by encircling the body with the annular member adjacent one end and seaming an end to the body in a manner to crimp at least a portion of the annular member between the body and the seam.

3,620,411
PLASTIC FOOD CONTAINER

John H. Rump, Rockville, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1969, Ser. No. 877,956
Int. Cl. B65d 43/16, 1/26
U.S. Cl. 220—31 S 2 Claims



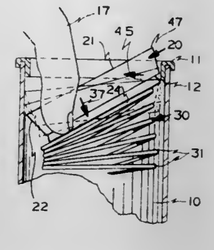
A one-piece, transparent, thin-walled food container suitable for use in vending machines and thermoformable from a single sheet of thermoplastic. The container includes a shallow dish portion out of which the contents may be eaten, a cover portion and a hinge continuous with the dish and cover portions to facilitate opening and closing thereof. One of these portions includes locking means which are self engaging when one portion is forced against the other. A stabilizing post in the cover portion substantially opposite the hinge prevents crosswise displacement of the cover portion with respect to the dish portion of the container.

3,620,412
PACKAGE FOR RESILIENT ELEMENTS OR THOSE STORED UNDER SPRING PRESSURE

Ira Leonard Eisner, 93 Woodridge Drive, Stamford, Conn.

Filed Dec. 5, 1969, Ser. No. 882,465
Int. Cl. B65h 1/12
U.S. Cl. 221—58 15 Claims

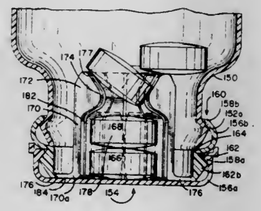
A package for storing resilient elements such as automotive springs, foam pads or hair rollers, stacked one upon the other, in which a container is provided at one end with a member which supports and prevents passage of the element to be stored, and at the other end with an interior lipped edge which permits passage of the element. The elements are held in compressed configuration by a flexible, distortable cup that is shaped such that its top edge abuts the lip of the container, thus causing closure of the container. To remove the resilient element, pressure is applied to one side of the upper edge of the cup so as to tilt and distort the cup, permitting its removal. The spring tension under which the resilient elements are stored then forces them out of the container. The principle is also applied to the storage of non-resilient elements under spring pressure.



3,620,413
DISPENSING CLOSURE DEVICE FOR TABLET CONTAINER

Adolph W. Borsum, 521 Pacific Ave., Solana Beach, Calif.

Filed Aug. 11, 1969, Ser. No. 848,980
Int. Cl. B65d 83/04
U.S. Cl. 221—289 6 Claims



A closure device for a tablet container that controls the rate and number of tablets dispensed through an opening in the container, which device includes an expandable dispensing opening that is resiliently biased to a narrow channel that restricts passage of tablets therethrough. The channel is enlarged by pressing a cap member thereagainst, which cap member has a surface that coacts therewith, expanding the channel radially outward to pass a selective number of tablets into a tablet receptacle portion. The cap member has a lip that coacts with a lip on the dispensing opening to provide a lockseal closure of the container. The resilient force that narrows the channel may also exert force against the cap member in an axial direction to further lockseal the closure device.

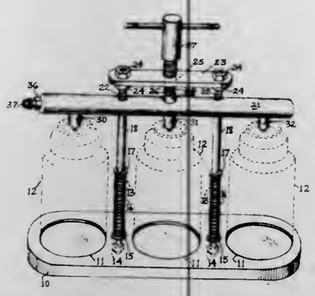
3,620,414
DISPENSING UNIT FOR SEALED PRESSURIZED CONTAINERS

Virgil Philipps, Chicago, Ill., assignor to Federal Auto Products Co., Inc., Chicago, Ill.

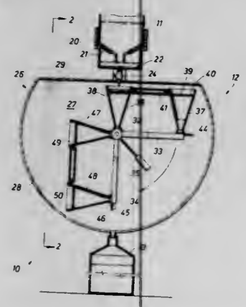
Continuation-in-part of application Ser. No. 869,592, Oct. 27, 1969. This application May 25, 1970, Ser. No. 40,103
Int. Cl. B67b 7/24
U.S. Cl. 222—5 2 Claims

A dispensing unit for simultaneously puncturing a plurality of sealed pressurized containers so that each container has open communication with a common dispensing tube that in

turn has a closed valve end which, when threadably connected to a hose, will dispense all of the pressurized contents of the containers.

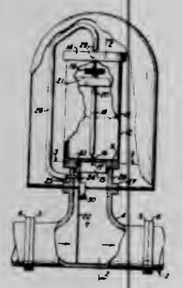


3,620,415
TIMED MATERIAL-DISPENSING MECHANISM UTILIZING ACCUMULATION OF A LIQUID
Arthur P. Ruth, 2302 Brookmere, Houston, Tex.
Filed Apr. 23, 1969, Ser. No. 818,716
Int. Cl. G01f *11/10*
U.S. Cl. 222—57 **11 Claims**



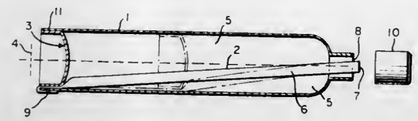
A water wheel apparatus which includes a rotatable shaft, a first storage container adapted to be filled from a source of water or other suitable liquid at a controlled rate, the filling to require a certain time interval, and an additional or second container communicated with the first and providing starting torque for rotation of said shaft. Duplicate containers are arranged on the water wheel to provide for continued rotation or oscillation of the shaft, there being a stop means to locate the first container for refilling.

3,620,416
SEWAGE CHLORINATOR
Fred W. Beutnagel, 1952 Woodland, Sequin, Tex.
Filed Apr. 2, 1970, Ser. No. 25,201
Int. Cl. B67d *5/08*
U.S. Cl. 222—59 **10 Claims**



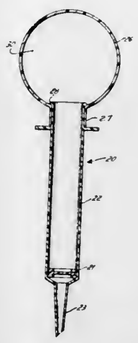
A device is provided in order to gradually add small quantities of an antiseptic solution, sodium hypochlorite for instance, to the overflow conduit from a septic tank, said conduit leading to an absorption field. The device operates to add the chlorinating fluid, for instance, only when there is a quantity of flowing sewage in the conduit leading to the said absorption field.

3,620,417
PACKAGE-DISPENSING DEVICE
John A. Simms, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 20, 1969, Ser. No. 878,324
Int. Cl. B67d *5/52*
U.S. Cl. 222—136 **4 Claims**



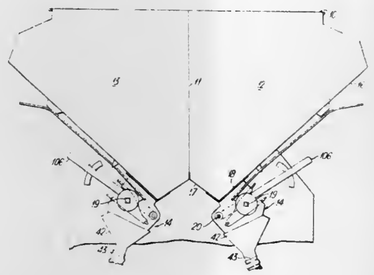
A device capable of containing and dispensing a plurality of separate extrudible materials which comprises:
a. a hollow casing having an orifice at each end;
b. at least one flexible duct being longitudinally disposed inside the casing, one end of said duct being sealed and attached to the casing at a point near one of the orifices of the casing, and the other end of said duct having an orifice which is inserted in the other orifice of the casing;
c. a plunger that is inserted in the orifice of the casing near which the duct is attached, said plunger having its outside periphery in close proximity to the inside walls of the casing so as to form a seal therewith; and
d. means capable of moving said plunger to the opposite end of the casing thereby simultaneously (1) causing the expulsion of the extrudible materials contained in the casing and (2) compressing the flexible duct and causing the expulsion of the extrudible materials contained therein.

3,620,418
RETAINER VALVE ASSEMBLY FOR SYRINGE
Frank W. Stevens, Rutherford, and Harvey Theodore Young, Rockaway, both of N.J., assignors to Becton Dickinson and Company, East Rutherford, N.J.
Filed May 29, 1969, Ser. No. 828,992
Int. Cl. B65d *37/00*
U.S. Cl. 222—209 **5 Claims**



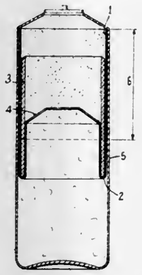
A retainer valve assembly for a syringe including a body portion with means thereon for mounting the valve assembly in the barrel of a syringe. The assembly also includes a valve portion movably mounted on the body portion and normally being seated in a central opening in the body portion to form a seal and isolate one end portion of the syringe from the other end portion. The valve member is responsive to a predetermined amount of pressure from either end portion of the syringe so that it will unseat from the body portion when the pressure is applied to permit fluid to flow from one end portion of the syringe to the other end portion. When the pressure is relieved, the valve member will return to its normal seated position to thereby re-form the seal between the end portions of the syringe and alleviate the danger of leakage from the syringe when the predetermined amount of pressure is not being applied.

3,620,419
METERING DEVICES
Alfred J. Bailey, Berkeswell, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands
Filed Sept. 30, 1969, Ser. No. 862,236
Claims priority, application Great Britain, Oct. 3, 1968, 46970/68
Int. Cl. G01f *11/06*
U.S. Cl. 222—298 **10 Claims**



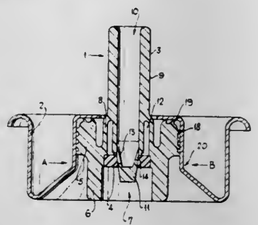
A metering device for seed comprising a body, a rotary metering member with a fluted portion for conveying seed, a cylindrical portion, a sealing disc with a central hole of complementary configuration to the fluted portion of the metering member, and a spring clip for holding the sealing disc in operating position. By releasing the spring clips, the sealing disc and the metering member can be moved toward one side of the device a sufficient distance to allow the metering member to be withdrawn from the body in a direction transverse to the axis of rotation of the metering member.

3,620,420
CONTAINERS
Norbert Normos, Courbevoie, France, assignor to La Societe Financiere Pour La Recherche Et L'Industrie, Paris, France
Filed Feb. 2, 1970, Ser. No. 7,663
Claims priority, application France, Feb. 3, 1969, 6,902,361
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **17 Claims**



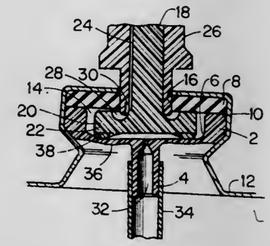
The container for a product to be dispensed by a pressurized fluid includes a diaphragm of baglike configuration preferably formed of ductile metal and having a rigid base. A hollow, ring or cup slidably mounted within the diaphragm and container has a rounded end wall over which the diaphragm slides as the product is being dispensed.

3,620,421
VALVES FOR PRESSURIZED LIQUID CONTAINERS
Richard Terence MacGuire-Cooper, Oxon, England, assignor to Oxford Aerosols Limited, London, England
Filed Oct. 16, 1969, Ser. No. 866,988
Claims priority, application Great Britain, Oct. 21, 1968, 49,844/68
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.21 **21 Claims**



A valve member which is a single moulding able to form a valve device with an annular member to be held in an annular cavity defined by and within the moulding, the moulding having an integral spring which allows relative movement between the annular member and a further portion, which is integral with the moulding and encircled by the spring, to open a fluid path which is normally closed by the abutment of said annular member and said further integral portion.

3,620,422
AEROSOL VALVE WITH FLEXIBLE HOUSING
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 5, 1969, Ser. No. 882,485
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.22 **4 Claims**

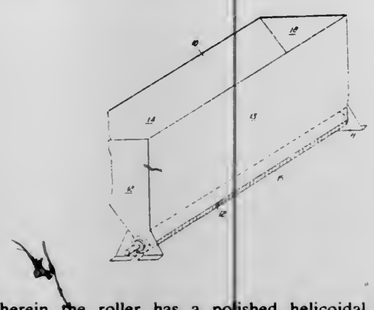


An aerosol dispenser valve comprising a housing forming a chamber in which is disposed a valve member. The valve member is movable, as by pressure exerted thereon by an operator, against a portion of the housing and operates to deform the housing portion to permit flow through the valve. Upon release by the operator, the housing portion returns to its original form, moving the valve member back into a valve-closing position.

3,620,423
APPARATUS FOR DISTRIBUTING POWDER
James Dalgleish, Edinburgh, Scotland, assignor to Golden Wonder Limited
Filed July 23, 1969, Ser. No. 844,145
Claims priority, application Great Britain, July 23, 1968, 35,054/68
Int. Cl. G01f *11/20*
U.S. Cl. 222—414 **8 Claims**

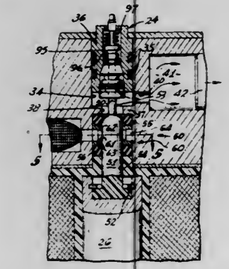
Apparatus for sprinkling a curtain of powder on to food passing beneath and comprising a hopper with a grooved me-

tering roller controlling the discharge from a bottom outlet,



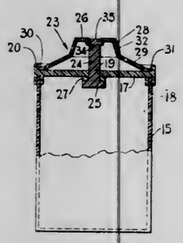
wherein the roller has a polished helicoidal groove for picking up the powder.

3,620,424
METERED FLUID DISPENSING APPARATUS
Gilbert R. Grigsby, Los Angeles, Calif., assignor to Lubrastart International, Los Angeles, Calif.
Filed Apr. 30, 1969, Ser. No. 820,396
Int. Cl. G01f *11/30*
U.S. Cl. 222—450 **8 Claims**



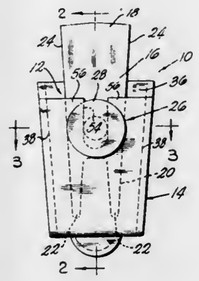
An apparatus for dispensing a metered quantity of fluid, in which the fluid is stored under pressure in a container that is normally open to a metering chamber, but which, when the apparatus is actuated, has valve means closing the connection between the storage container and the measuring chamber, and the measurin chamber is then connected to a discharge outlet for the positive ejection of the fluid.

3,620,425
AEROSOL VALVE ACTUATOR
Joseph M. Rait, Buffalo, N.Y., assignor to Pelorex Corporation, Buffalo, N.Y.
Filed Oct. 27, 1969, Ser. No. 871,466
Int. Cl. B67d *5/06*
U.S. Cl. 222—518 **6 Claims**



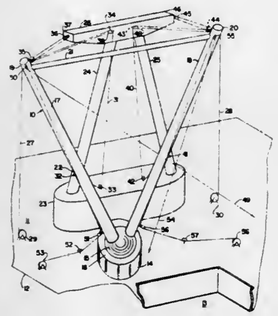
A dispenser for aerosol containers comprising a container end wall member having a bore therethrough and an upstanding rim provided with spaced slots. A shank extends through the bore and is provided with a valve at its inner end and a flexible operating member at its outer end. The operating member has a downwardly flaring flexible skirt with the marginal edges thereof bearing against the outer surface of the end wall member to flexibly urge the shank outwardly and seat the valve. The marginal edges of the skirt have diametrically opposed projections which normally engage the interior of the rim to prevent actuation of the valve. The operating member must be rotated to align the projections with the slots in the rim before the operating member may be depressed to unseat the valve and effect dispensing of the aerosol contents.

3,620,426
GOLF TOOL AND CARRIER THEREFOR
Raymond R. Hatch, 8155 Huron St., Dexter, Mich.
Filed May 13, 1970, Ser. No. 36,933
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 C **4 Claims**



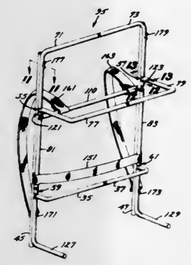
A golf green repair tool and golf ball marker assembly and a carrier therefor wherein the tool and marker assembly consists of a flat body member having a first handle portion and a second prong portion and said ball marker is mounted on said body member between said portions so as to form an annular space between the head of the marker and the body member. The carrier consists of a pocket shaped to receive the body member and provided with a slot which extends into the annular space so that the head of the marker is disposed outside the pocket and the slot acts to retain the body member in the pocket. A spring clip connected to the pocket adapts the carrier for mounting on the golfer's belt and/or an equivalent support.

3,620,427
HOISTING APPARATUS FOR HANDLING CARGO
William S. Dodge, 408 Fair Haven Road, Alameda, Calif.
Filed July 2, 1970, Ser. No. 51,917
Int. Cl. B63b *27/02*
U.S. Cl. 214—15 R **11 Claims**



Hoisting apparatus for handling cargo including a ball-and-socket joint secured to a support surface and having an upwardly and outwardly extending V-shaped truss consisting of a pair of booms joined at their upper ends by a rigid span. A mast house is disposed rearwardly of the booms and stabilizing lines are connected to both a prime mover and the free ends of the booms. First and second topping lines extend between the mast house, a prime mover, the crosstree on the mast house, and the free ends of each of the booms for respectively raising, pivoting and positioning the booms while first and second hoisting lines extend between the cargo to be hoisted, each of the booms, and a prime mover for respectively raising, transferring and lowering the cargo.

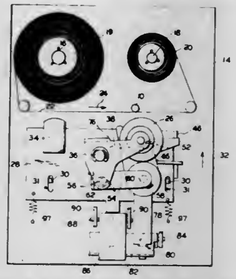
3,620,428
CONVERTIBLE BACKPACK AND COT APPARATUS
John D. Silverthorne, 3330 Mana, Long Beach, Calif.
Filed June 8, 1970, Ser. No. 44,307
Int. Cl. A45f *3/00*
U.S. Cl. 224—25 A **5 Claims**



Convertible backpack and cot apparatus including a breakdown, rectangularly shaped, tubular cot frame including first and second pairs of frame elbow members forming the corners thereof and first and second pairs of tee devices connectable with the ends of the side runs of such elbow members. Side members connect on their opposite ends with the tee devices and crossmembers connect on their opposite ends with the confronting end runs of the elbow members. First and second U-shaped leg means are provided for connection on their opposite ends with the respective first and second pairs of tee devices and include respective pairs of leg elbow members which have their horizontal runs connected together by horizontal members. Thus, the cot frame may be assembled with a cot canvas stretched thereon and when camp is broken the cot frame may be knocked down and one pair of elbow members connected together on their respective one ends to form one end of a pack frame and the first pair of the devices connected to the opposite end of such one pair of elbow members, the horizontal members connected on their respective one ends with such first tee devices and the second pair of tee devices connected with the opposite ends of the horizontal members. A second pair of elbows may then be connected together on their respective one ends and connected on their respective opposite ends with the second pair of tee devices to form a backpack frame that is narrower in width than the cot frame.

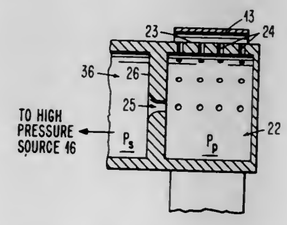
3,620,429
DEVICE FOR DETECTING A TAPE END IN A TAPE RECORDER
Isao Kozu, and Yikitada Ayukawa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Apr. 3, 1970, Ser. No. 25,529
Claims priority, application Japan, Apr. 8, 1969, 44/28515
Apr. 9, 1969, 44/28430 Apr. 7, 1969, 44/28467
Int. Cl. B65h *25/32*
U.S. Cl. 226—11 **5 Claims**

A device to detect the arrival of a tape end when movement of the tape is terminated includes a capstan driven by a motor. A pressure roller is rotatably mounted on an arm to move a tape by means of cooperation with the capstan. A rotating member is rotatably mounted on the arm coaxially with the pressure roller and is driven by the capstan. An actuating element is mounted fixedly on the rotating member,



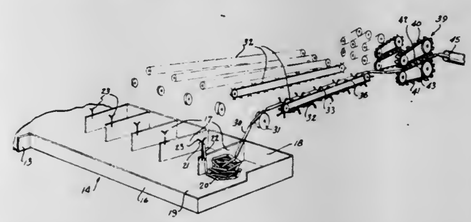
and a driven means is engageable with the actuating element upon the termination of the movement of the tape.

3,620,430
CONSTANT MASS FLOW PRESSURIZED AIR BEARING
Gerald W. Baumann, Boulder; Richard E. Norwood, Boulder, and William J. Rueger, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 5, 1970, Ser. No. 16,870
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **8 Claims**



An air bearing supports the magnetic recording tape of a magnetic tape unit as the tape moves in a curved path, the air bearing having a plenum chamber connected through an orifice to a high-pressure source of air, the pressure magnitude of the source being such that over the operating range of the bearing, the mass rate of air flow into the plenum chamber, and thus out of the bearing to support the tape, is substantially constant.

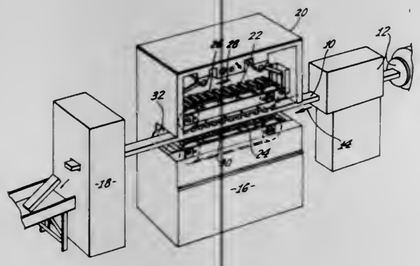
3,620,431
PROCESSING OF SAUSAGELIKE PRODUCTS
William R. J. Wallace, Montreal, Quebec, Canada, assignor to Hygrade Foods, Inc., Montreal, Quebec, Canada
Division of Ser. No. 547,572, May 4, 1966, Pat. No. 3,505,081
Filed Aug. 14, 1969, Ser. No. 850,123
Int. Cl. B65h *17/00*
U.S. Cl. 226—109 **8 Claims**



Apparatus and method for improving the transportation of a chain of cased sausage products interconnected by untied,

twisted links of casing material. To reduce the tendency to untwist during subsequent handling (e.g. cooking) the sausages are squeezed transversely to strain the casing material beyond its elastic limit in the vicinity of the links. In addition the chain is subjected to tension to ensure registration between the products and an indexing conveyor, regardless of any irregularities in the length of the links.

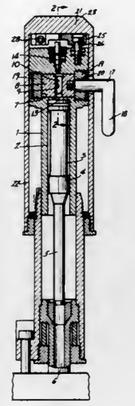
3,620,432
MACHINE FOR DRAWING EXTRUDED PLASTIC TUBING OR ROD FROM AN EXTRUDER
Vernon V. Emery, 11411 Bradley Ave., Pacoima, Calif.
Filed Sept. 26, 1969, Ser. No. 861,407
Int. Cl. B65h *29/12*
U.S. Cl. 226—172 **10 Claims**



In the type of machine which employs a pair of opposed driven endless belts or tracks moving in opposite directions to draw plastic pipe from an extruder, the present invention in its most complete embodiment utilizes two such pairs, both of which are disposed about a common axis, with each pair being normal to the other pair. Both of these pairs of tracks are displaceable radially with respect to such axis, preferably with one pair of tracks operable to come together completely and the other only to a distance at least as great as the width of the other pair of tracks. This displacement is accomplished by means of double acting fluid actuated piston-cylinder units, one end of which is secured to a frame supporting and/or housing the tracks, and the other end linked to displace the end or ends of one or more transverse element supporting the tracks. In the embodiment in which two pairs of tracks are employed, the displacement of the support elements for each pair of tracks may be accomplished simultaneously by crank actuated rotating sprocket elements which are connected for rotation by an endless chain to a crank driven sprocket which is operated by a double acting piston-cylinder unit connected to the crank. Continuous driving of all the tracks during displacement may be accomplished by the use of pairs of universal joints in conjunction with rotating drive rods.

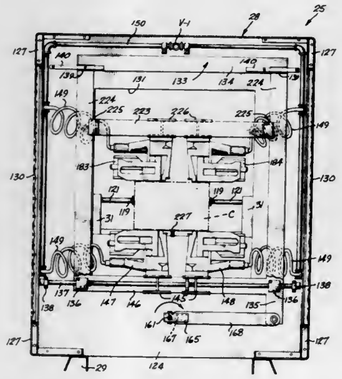
3,620,433
FASTENER DRIVING TOOL
Peter A. Lawton, 83 Park Street, South Yarra, Victoria 3141, Australia
Filed Nov. 19, 1969, Ser. No. 878,085
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **17 Claims**

A powder-actuated fastening tool having a powder charge receiving member mounted in a housing for movement between a loading position wherein a bore in the powder charge receiving member is in communication with a loading port in the housing and a firing position wherein the bore is in communication with a barrel member having a piston therein, and a firing pin mounted in the housing on the opposite side of said powder charge receiving member from



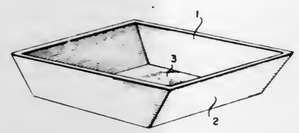
said barrel and being in alignment with the bore when the powder charge receiving member is in the firing position.

3,620,434
AUTOMATIC CARTON STAPLING MACHINE
Theodore M. Marquis, P.O. Box 1432 512 S. 1st Ave., and John A. Crabb, both of Yakima, Wash.
Filed Apr. 30, 1968, Ser. No. 726,644
Int. Cl. B27f *7/06;* **B65b** *51/05*
U.S. Cl. 227—101 **20 Claims**



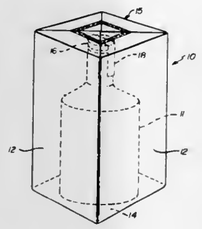
A power driven carton feed unit, a carton discharge unit and a thin stapling unit sandwiched therebetween; the carton being power delivered into the stapling unit which delivery triggers the firing of staples into the carton from two upper and two lower stapling heads, said heads being carried on a frame which is then automatically shifted laterally to a secondary position in which staples are again automatically fired from said heads into said carton. The frame remains in said secondary position for the first firing of staples in the next succeeding carton entering the staple unit and automatically returns to its primary position for the automatic second firing of staples into said succeeding carton.

3,620,435
FOOD PACKAGING CONTAINER COMPRISING MOLDED LAMINATED POLYETHYLENE AND ETHYLENE-VINYLALCOHOL
Hidenobu Sogi, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Sakazu, Kurashiki, Japan
Filed Dec. 22, 1969, Ser. No. 887,436
Claims priority, application Japan, Dec. 24, 1968, 43/95199
Int. Cl. B29c *23/00;* **B32b** *27/08;* **B65d** *3/00*
U.S. Cl. 229—3.5 R **2 Claims**



A packaging container for food comprising a molded laminated sheet of (1) ethylene-vinylalcohol copolymer layer, containing 30 to 60 mol percent of ethylene units and the balance of vinylalcohol units, and (2) a polyethylene layer having a melt index of from 0.1 to 10. The container is characterized by substantial gas, especially oxygen in air, and water impermeabilities; and has an opening mouth, sidewalls and bottom with the total area of the sidewalls and the bottom being not more than three times that of the opening mouth.

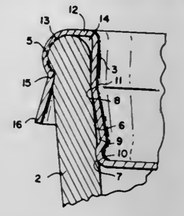
3,620,436
FOLDING CARTON TOP WITH SEQUENTIAL LOCKING FLAPS
Leonard Adams, Jr., Louisville, Ky., assignor to The Finn Industries Division, Potlatch Forests, Inc., Chicago, Ill.
Filed June 24, 1969, Ser. No. 836,060
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **10 Claims**



A carton is disclosed with a simulated prewrap or gift wrapping in which the top is closed by means of four flaps which, when completely assembled, are self-locking and self-leveling. The preferred embodiment of the construction is employed with a simulated prewrap or gift wrap which extends in weblike fashion between three of the flaps and is secured to the flaps at a portion between the end of the flap and the junction between the flap and the carton.

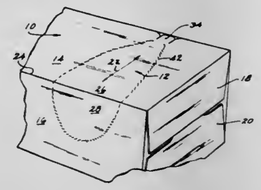
3,620,437
CUP AND LID
Robert C. Kulp, Spring City Township, Pa., assignor to The Alan IW Frank Corporation, O'Hara Township, Allegheny County, Pa.
Filed Mar. 6, 1967, Ser. No. 620,762
Int. Cl. B65d *5/64, 43/00*
U.S. Cl. 229—43 **11 Claims**

A cup and lid combination comprising a generally frustoconical open-topped cup and a lid having a plug portion to be forced down into the open top of the cup, the plug portion of the lid being shaped to sealingly engage the inside surface of the cup at two zones of the plug portion, one zone adjacent the bottom of the plug portion and another zone intermediate the bottom and top of the plug portion. The surface of the plug portion of the lid at the first zone is rounded to facilitate entry of the plug portion of the lid into the cup and the surface of the plug portion of the lid at the second zone is relatively pointed to enhance its sealing effect. The



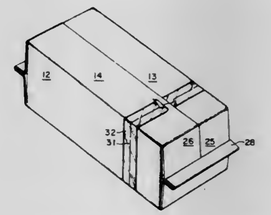
lid has a hood portion receiving the cup rim and the open top of the cup has a slightly outwardly projecting lip which is embraced and sealingly engaged by the hood portion of the lid. The lid is shaped for three-point frictional engagement with other identical lids when nested to form and maintain a stack of lids for shipping and storage.

3,620,438
MEANS TO REDUCE DELAMINATION OF CARTONS HAVING REMOVABLE ACCESS PANELS
Robert E. Wood, and Paul B. Rouse, both of Ashland, Ohio, assignors to A. L. Garber Company, Ashland, Ohio
Filed Apr. 1, 1970, Ser. No. 24,477
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TS **7 Claims**



A means to provide a carton with a "tear-out" access panel defined by peripherally spaced perforations so disposed that they permit the panel to be removed without causing delamination of the plies of the material. The perforations are progressively positioned about the periphery of the panel in such a manner that the individual "tears" between adjacent perforations will be directed parallel to the grain of the carton material.

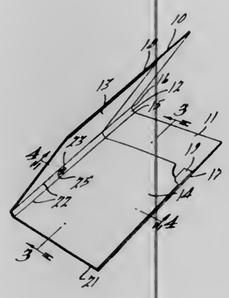
3,620,439
SEVERABLE CARTON WITH STERILE EDGE
Hugh B. Morse, San Jose, and Thomas W. Foster, Palo Alto, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Filed June 13, 1969, Ser. No. 833,008
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 AS **6 Claims**



A carton comprises separable sections connected together at a continuous cut line, covered by a removable tape. Means

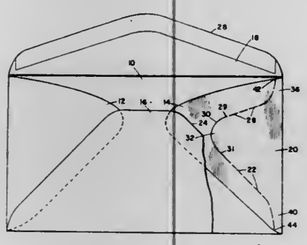
formed on the carton adjacent to the cut line provide a sterile edge around the carton upon removal of the tape and separation of the carton's sections.

3,620,440
FOLDER WITH ELASTIC BAND
Norman J. Humphrey, 17123 Sprenger, East Detroit, Mich.
Filed June 15, 1970, Ser. No. 46,146
Int. Cl. B65d *27/08*
U.S. Cl. 229—72 5 Claims



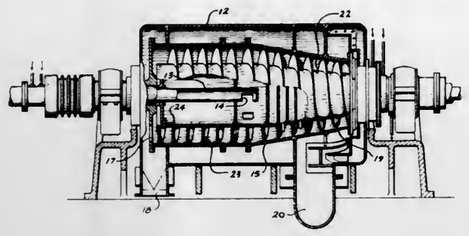
The folder has two flaps extending outwardly from a back section disposed at right angles thereto. The back section permits assembly of papers within the folder without undue bulging and provides a support for an elastic band. The band is made from a strip of elastomeric material having its ends secured to a metal clip in T-relation thereto. The clip engages the inside of the back section when the band is drawn through an aperture therethrough to have the clip engage the inner face thereof. The extending band can be drawn over one end of the folder to secure the two flaps and the contents thereof in compact relation.

3,620,441
ENVELOPE
Daniel T. Robbins, 1415 W. Clark Ave., Burbank, Calif.
Filed Sept. 26, 1969, Ser. No. 861,259
Int. Cl. B65d *27/34, 27/38*
U.S. Cl. 229—85 2 Claims



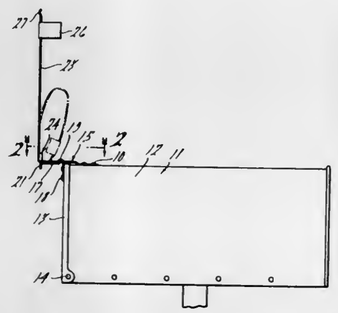
An envelope having a flap portion which is easily stripped to completely open one end, the flap having staggered perforations which tear alternately to reduce the force required to initiate as well as to continue the tear and so being particularly adaptable to high-speed opening by machine. A strippable flap is defined by specially staggered perforations for ease in opening, and a special positioning of the strippable flap makes it possible to open envelopes of different sizes on the same envelope-opening machine frequently without adjustment or only one-half of the adjustment otherwise required.

3,620,442
CENTRIFUGE SLURRY SUPPLY
John J. Halloran, Jr., Lombard, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 17, 1969, Ser. No. 807,750
Int. Cl. B04b *1/10*
U.S. Cl. 233—7 11 Claims



A centrifuge of the type which has a central slurry feed pipe, a rotating bowl, and a concentric conveyor which includes a tubular shaft with a helix on the outside. The shaft has rectangular openings in the area of the slurry feed with rectangular orifice plates of hardened material fastened inside the shaft. The orifice plate is sealed to the shaft so that it forms a lip, retaining a pool of slurry within the shaft. The orifice plate is also smaller than the opening and overlaps the trailing edge of the opening.

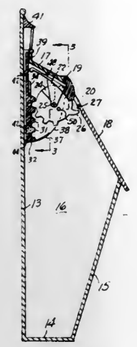
3,620,443
MAILBOX SIGNAL FLAG
David Sturtz, 816 Huron St., Port Huron, Mich., and John R. Moulton, 4187 Fourlake Drive, Linden, Mich.
Filed Jan. 26, 1970, Ser. No. 5,532
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 4 Claims



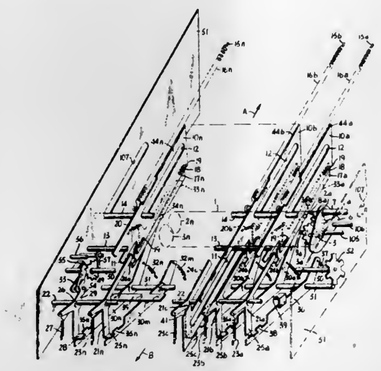
A signal flag is supported on the mailbox in position to have the flag-supporting spring standard bent into a loop when the extending free end is secured in position to be released when the closure door of the container box is opened to indicate that mail has been delivered. When the door is closed, after the delivered mail is removed, the end of the standard is again secured in releasable position.

3,620,444
AUTOMATIC MAILBOX INDICATOR
Harold E. Crozier, 2522 Wrightsboro Road, Augusta, Ga.
Filed Sept. 4, 1970, Ser. No. 69,778
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 10 Claims

A mailbox having a hinged lid with a letter slot. A weighted toothed wheel has a lug engageable by a letter inserted in the slot. The weighted wheel is rotated past dead center and its teeth elevate a rack bar with an indicator at its top, which is thus moved upwardly into view. An arm carried by the lid returns the wheel to normal position and lowers the indicator when the lid is opened.



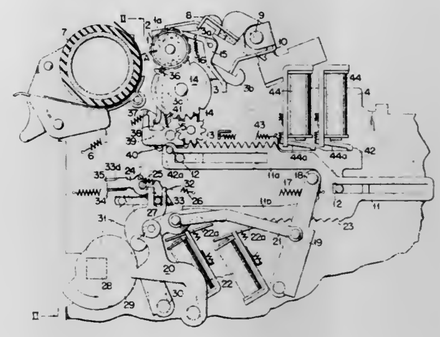
3,620,445
CALCULATING MECHANISM FOR CALCULATING MACHINE
Toshiki Kawamura, Narashino-shi; Tohru Ohneda, Funabashi-shi; Yasuaki Nomura, Tokyo, and Kikuo Taguchi, Funabashi-shi, all of Japan, assignors to Kabushiki kaisha Hattori Tokeiten, Chuo-ku, Tokyo, Japan
Filed May 13, 1969, Ser. No. 824,231
Claims priority, application Japan, May 18, 1968, 43/33244
May 27, 1968, 43/35627, 43/35628
Int. Cl. G06c *21/04*
U.S. Cl. 235—60.2 8 Claims



A calculating mechanism comprising a credit balance transfer means in which the negative or positive symbols of the value memorized in the calculator are inspected, and an add and subtract control linkage for bringing the accumulator gears alternately in mesh with the actuator racks.

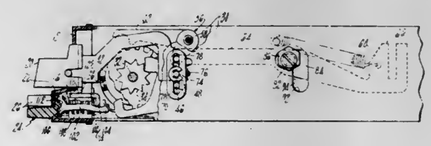
3,620,446
PRINTING DEVICE FOR A CALCULATING MACHINE
Morimasa Mano, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha Mizuho-Ku, Nagoya-shi, Japan
Filed Mar. 17, 1970, Ser. No. 20,216
Claims priority, application Japan, Mar. 18, 1969, 44/20696
Int. Cl. G06c *19/04*; B41j *5/30*
U.S. Cl. 235—60.15 8 Claims

A printing device for a calculating machine which comprises mounting a decimal mark carrier for carrying digit types and effecting a printing operation toward a platen, juxtaposing a decimal mark type actuator for setting said decimal mark type at a prescribed printing position with another digit type actuator for positioning required digit types, controlling the movement of both digit type actuators separately by number setting means, providing a sensing means for sensing the position of both actuators for each order, controlling the printing operation of said supporting



member by the sensing action of said sensing means with mechanism for eliminating zeros, thereby enabling a number including a decimal fraction to be printed by depressing in turn the keys corresponding to the digits and decimal mark involved in said number in the sequence in which said digits and decimal mark are arranged, starting with those representing the higher orders.

3,620,447
COUNTER
Ludwick Szeluga, South Windsor; Ernest G. Hoffman, Middlefield, and Roland S. Sabo, Ellington, all of Conn., assignors to Veeder Industries Inc., Hartford, Conn.
Filed Sept. 8, 1970, Ser. No. 70,217
Int. Cl. G06f *15/18*; G06c *15/42*
U.S. Cl. 235—132 R 9 Claims

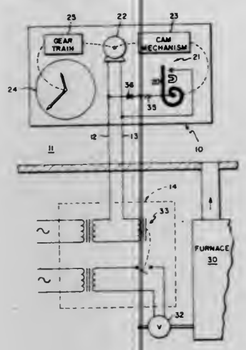


A resettable predetermining counter having a preset mechanism adapted for being moved into a preset-conditioning position in engagement with the counter wheels and a withdrawn preset-prohibiting position out of engagement with the counter wheels is provided with a dual-motion reset actuator having a primary actuating motion for resetting the counter and a secondary actuating motion for conditioning the counter for presetting. The reset actuator is provided with an interlock for locking the preset mechanism against presetting during the primary actuating motion of the reset actuator and for locking the reset mechanism in its reset condition while simultaneously releasing the preset mechanism and conditioning it for presetting the counter wheels during the secondary actuating motion of the reset actuator.

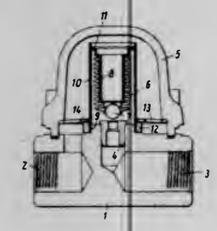
3,620,448
CLOCK-THERMOSTAT SYSTEM
Clifford L. Nelson, and David J. Sutton, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 25, 1969, Ser. No. 861,023
Int. Cl. F23n *5/20*
U.S. Cl. 236—46 4 Claims

A clock-thermostat system in which the thermostat located in the controlled space is connected to the furnace and a

power supply by two wires which energize the synchronous clock motor as well as transmit information as to whether the thermostat is calling for heat. The thermostatic switch is connected to a rectifier that superimposes a direct current component on the alternating current supply to the clock motor, which component is sensed by control apparatus at the furnace.



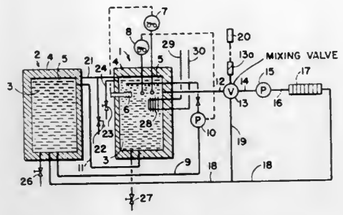
3,620,449
THERMALLY CONTROLLED CONDENSATE TRAP
Gerhard Hohn, 28 Bremen, Probststrasse 1, and Josef Lingnau, 28 Bremen-Borgfeld, Brandenweg 2, both of Germany
Filed Feb. 26, 1970, Ser. No. 14,817
Int. Cl. F16t *1/10*
U.S. Cl. 236—56 **6 Claims**



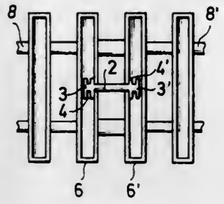
A thermally controlled condensate trap is shown. The trap includes a housing having cover means secured thereto and inlet and outlet openings therewithin. A sludge strainer is disposed within the housing and bears cutoff valve means which are controlled by temperature sensing means.

3,620,450
ELECTRICALLY HEATED CENTRAL HOT WATER HEATING SYSTEM
Paul Leuenberger, Bern, Switzerland
Filed Oct. 15, 1969, Ser. No. 866,553
Claims priority, application Switzerland, Oct. 21, 1968, 15682/68
Int. Cl. F24d *3/02, 3/10*
U.S. Cl. 237—8 **12 Claims**

An electrically heated central hot water system includes at least two separate interconnected vessels providing a series arranged heated storage water column. The heating means for the water is located within only one vessel with the interconnection of the vessels being arranged for withdrawing water from the lower zone of the unheated vessel and charging it into the upper zone of the other vessel where the heating means are located. In this manner, the water in both vessels is heated to a desired level. The heated water is used to heat room convectors directly or to heat another source of water which circulates through the room convectors. In providing heat for the convectors the heated water from the unheated vessel is returned to the heated vessel so that its stored heat may be utilized.

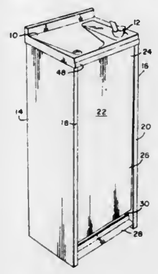


3,620,451
MODEL RAILWAY TRACK
Wolfgang Richter, Nurnberg, Germany, assignor to Ernst Paul Lehmann, Nurnberg, Germany
Filed Apr. 24, 1969, Ser. No. 818,886
Claims priority, application Germany, May 30, 1968, L 47 544.77
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **4 Claims**



A connector for coupling together adjacent lengths of toy and model railway tracks comprising an elongated member having at its opposite ends at least two spaced projections one of which will engage the relatively remote sides of track end members at different distances apart according to whether the track is straight or curved, the elongated member conveniently lying in slots in said track end members and the projections preferably extending from both sides of the elongated member.

3,620,452
WATER COOLER CABINET CONSTRUCTION WITH TILTED FRONT PANEL
Eugene W. Scott, and Roger F. Chapin, Jr., both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1969, Ser. No. 875,347
Int. Cl. E03b *9/20*
U.S. Cl. 239—29.5 **4 Claims**

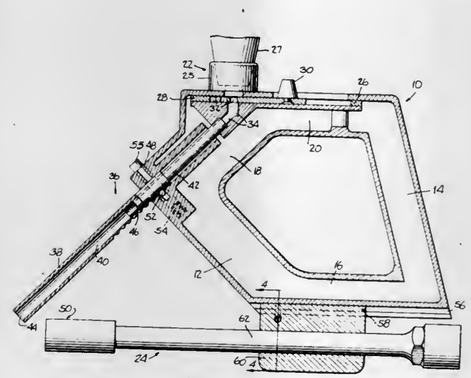


A floor-supported water cooler cabinet of the type having a toe pedal is constructed with the front edge of the toe pedal being substantially flush with the front edge of the cabinet sidewalls, and the front panel for the cabinet is tilted inwardly through at least a substantial part of its lower portion so that the exposed portion of the foot pedal is easily viewable and contacted by the user without projecting beyond the basic confines of the cabinet.

3,620,453
SHAPED ARTICLE WITH INSECTICIDAL PROPERTIES
Abraam Gancberg, 31, rue Andre Baillon, Forest; Raymond Carpentier, 19, avenue Blucher, Waterloo, and Rene Paquet, 251, rue d'Horrues, Braine-le-Comte, all of Belgium
Filed Sept. 24, 1969, Ser. No. 860,829
Claims priority, application Belgium, Sept. 26, 1968, 45818/68
Int. Cl. A24f *25/00;* **A61l** *9/04;* **A01m** *1/20*
U.S. Cl. 239—60 **12 Claims**

A shaped article with insecticidal properties, which comprises a solid porous mineral support, agglomerated naturally or artificially, which is impregnated with at least one insecticidal substance, the mineral support being inert with regard to the insecticidal substance under the conditions under which the article is used for combatting insects.

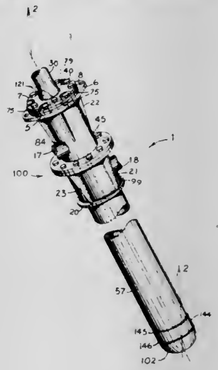
3,620,454
FLAME SPRAY TORCH
John P. Broderick, Bellerose; Frederick T. Wishnie, Seaford, and Don L. Keys, Huntington, all of N.Y., assignors to Eutectic Corporation, New York, N.Y.
Filed Jan. 31, 1968, Ser. No. 702,035
Int. Cl. B44d *5/00*
U.S. Cl. 239—79 **6 Claims**



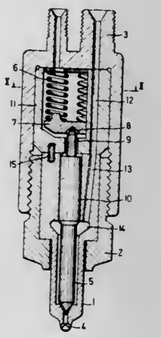
Briefly, the disclosure relates to a powder metal-spraying torch which utilizes a gravity powder feed arrangement that maintains reasonably uniform powder spray rates for powders with varying characteristics. Additionally, the metal-spraying torch is arranged to control the spray pattern shape and density as well as the relationship of the fed powder to the flame.

3,620,455
EASILY REPAIRABLE GAS INJECTION LANCE
William W. Berry, Pittsburgh, Pa., assignor to Berry Metal Company, Harmony, Pa.
Continuation-in-part of application Ser. No. 770,968, Oct. 28, 1968, now abandoned. This application June 10, 1970, Ser. No. 44,931
Int. Cl. B05b *15/00*
U.S. Cl. 239—132.3 **21 Claims**

A gas lance for oxygen or for a mixture of oxygen and fuel, including a lance top adapter assembly, a nozzle head and three or four concentrically positioned pipes wherein mixing of the oxygen and any other fluids are prevented, except that where fuel fluid is used, the oxygen and fuel fluids are mixed in the nozzle ejection chambers, and wherein there is included, in the lance top adapter assembly, safety means for venting to the atmosphere any leaking oxygen and oxygen-containing mixtures. The lance top adapter assembly includes the combination of a bushing member, a piston sleeve and a bushing sleeve and also includes means for sealing the piston sleeve and the bushing member, means for sealing the bushing sleeve and the piston sleeve, and means for sealing the bushing sleeve and quick disconnect means for quickly and easily removing the lance top adapter assembly from the oxygen lance, all against the flow of fluid or any combination of fluids therebetween. Said sealing means include O-ring structures. The bushing sleeve is easily removed and interchangeable and can be easily removed and replaced or repaired when any scoring occurs in any slip joint or sealing means. The structure is such that oxygen and any other fluid cannot be mixed within the lance proper for the reason that any other fluid, should there be leakage thereof, will first pass to the atmosphere at negative pressure before it will flow into the oxygen channels under positive pressure and also for the reason that the oxygen, should there be leakage thereof, will first pass to the atmosphere at negative pressure before it will pass into any other fluid within the lance proper under positive pressure.



3,620,456
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES
Josef Berg, Cologne, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany
Filed July 15, 1970, Ser. No. 55,173
Claims priority, application Germany, July 23, 1969, P 19 37 419.7
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **4 Claims**



An injection nozzle for fuel injection engines with a nozzle needle acted upon by a plurality of springs, in which the

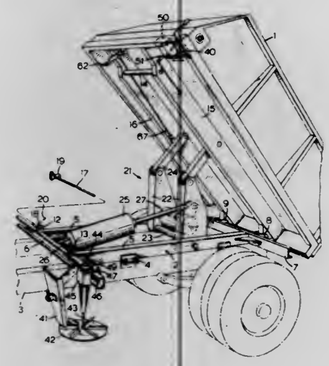
resultant of the spring forces is conveyed through a universally journaled spring dish upon the nozzle needle the axis of which is in substantially axial alignment with said resultant.

3,620,457
CUTTING NOZZLE
Clive Leonard Pearson, Uxbridge, England, assignor to The British Petroleum Company Limited, London, England
Filed Nov. 14, 1969, Ser. No. 876,946
Claims priority, application Great Britain, Dec. 3, 1968, 57,250/68
Int. Cl. A01q *25/04*
U.S. Cl. 239—589 **9 Claims**



A venturi cutting nozzle whose angles of convergence and divergence are between 7° and 11°, preferably 8° 30′ and 9° 30′.

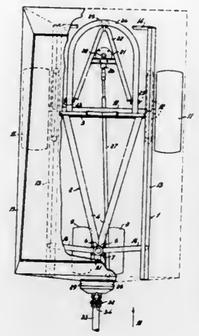
3,620,458
DUAL-PURPOSE VEHICLE
Albert Rath, Kitchener, Ontario, Canada, assignor to Eastern Steel Products Ltd., Preston, Ontario, Canada
Filed Apr. 21, 1970, Ser. No. 30,410
Int. Cl. A01c *17/00*
U.S. Cl. 239—657 **7 Claims**



A dual-purpose vehicle for use as a spreader and as a dump truck, the vehicle having a dump body mounted on a base frame, means are provided for hinging the dump body to the base frame at alternative positions adjacent to the forward and rear ends of the base frame, and the dump body is raised about the respective hinge axis by means of a hydraulic ram operating through a toggle linkage. When the vehicle is to be used as a spreader or sander, the forward hinge is secured and the ram is operated to tilt the dump body forwards. When only the rear hinge is secured, the vehicle can be used as a conventional dump truck.

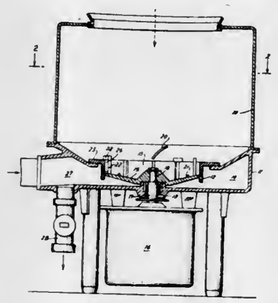
3,620,459
SPREADING IMPLEMENT WITH STABILIZED SUPPORT FRAME
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland
Filed May 19, 1969, Ser. No. 825,502
Claims priority, application Netherlands, May 20, 1968, 6807096
Int. Cl. A01c *19/00*
U.S. Cl. 239—670 **8 Claims**

A spreader implement with an elongated container mounted on a frame is supported on three support points in the form of two rear, spaced-apart ground wheels and a pair of closely adjacent front ground wheels. As seen in plan, all



of the wheels are located beneath the container to insure stability when the container is fully loaded.

3,620,460
WASTE-PULPING MACHINE WITH SHEAR AND INTERRUPTER MEMBERS
Robert W. Hankes, Downingtown, Pa., assignor to Somat Corporation, Pomeroy, Pa.
Filed July 20, 1970, Ser. No. 56,469
Int. Cl. B02c *13/14*
U.S. Cl. 241—46.11 **8 Claims**

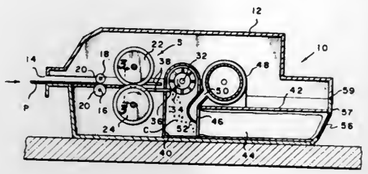


A waste-pulping machine of the type utilizing a rotating impeller in which the impeller is provided with one or more blades which can cooperate with one or more stationary blades to provide a shearing action. Interrupter members having cutting edges which will also engage with the blades on the impeller are mounted in stationary position on said machine to facilitate the loosening, cutting and removal of fibrous material in the machine.

3,620,461
PORTABLE SHREDDER FOR CLASSIFIED DOCUMENTS
Joe Pelleschi, and Charles A. Pelleschi, both of Box 54, Spangler, Pa.
Filed Feb. 11, 1970, Ser. No. 10,415
Int. Cl. B02c *9/04*
U.S. Cl. 241—100 **17 Claims**

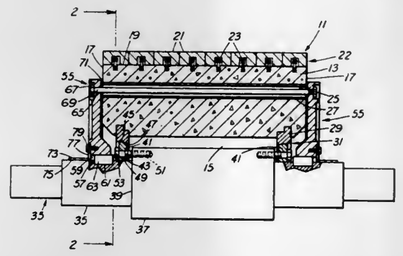
A portable shredder for classified documents including a housing, a pair of cooperating shearing rolls each having a plurality of substantially parallel cutting edges, means for feeding sheet material to said shearing rolls, a rotary blade cutter spaced from and substantially parallel to said shearing

rolls, means for receiving shredded material, airflow means for forcing said shredded material into said receiving means,



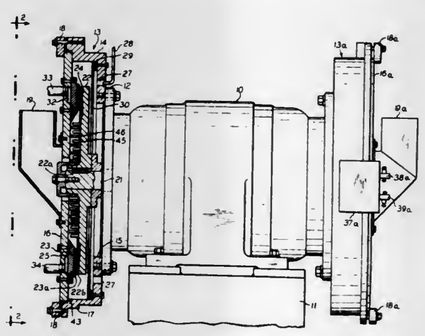
and means for driving said shearing rolls, said feeding means, said rotary blade cutter, and said airflow means.

3,620,462
PULPSTONE MOUNTING
Peter C. Dooley, Jr., Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed June 12, 1970, Ser. No. 45,682
Int. Cl. B02c *4/30*
U.S. Cl. 241—294 **10 Claims**



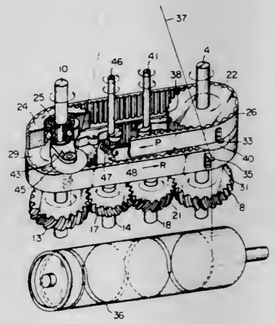
A pulpstone mounting structure is adapted to center the pulpstone on a drive shaft and effect the transmittal or the driving force from a drive shaft to the pulpstone so as to maintain a relatively low preset axial compressive force on the pulpstone ends.

3,620,463
DISC MILL
Friedhelm R. Feder, North Plainfield, N.J., assignor to Wedco, Inc., Garwood, N.J.
Division of Ser. No. 656,384, July 27, 1967
Filed Jan. 28, 1970, Ser. No. 6,608
Int. Cl. B02c *7/06*
U.S. Cl. 241—255 **10 Claims**



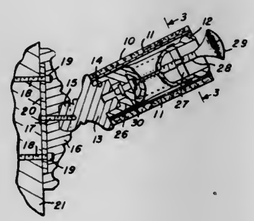
A disc mill having axially spaced cooperating discs, one of which is rotatably mounted on a drive shaft. Each disc has a contoured working surface adjacent the periphery thereof. One of the working surfaces is inclined toward the other disc in a radially outward direction, while the other working surface is perpendicular to the shaft and has an outer periphery disposed outwardly of the periphery of the inclined working surface.

3,620,464
TRAVERSING MECHANISM IN USE FOR FAST YARN WINDING
Shizuma Ueda, and Shigenobu Fujimoto, both of Iwakuni-shi, Japan, assignors to Teijin Seiki Co., Ltd., Higashi-ku, Osaka, Japan
Filed May 29, 1969, Ser. No. 829,032
Claims priority, application Japan, June 13, 1968, 43/40818
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 **4 Claims**



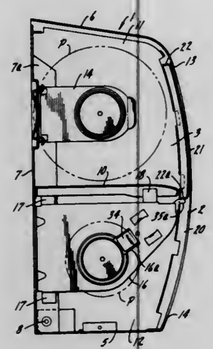
This invention relates to a traversing mechanism for fast yarn winding in packages or the like. In a mechanism for imparting traversing motions to yarn with a plurality of adjacent endless belts passing around two or more pulleys and running opposite to each other in the same plane, this invention is in carrying out the delivery of fibers by thread guides mounted on said belts and with guide disks disposed between the belt adjacent to each other thereby to reverse the yarn-advancing direction.

3,620,465
TOILET PAPER HOLDER
Jethro T. Wyatt, 25813 Seaver St., Hayward, Calif., and Gerald E. Litzinger, 111 Sharon Court, Los Gatos, Calif.
Filed Dec. 1, 1969, Ser. No. 881,196
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.2 **5 Claims**



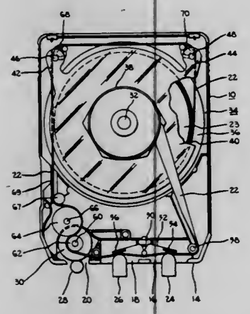
A device for supporting and holding a roll of paper such as toilet paper in an angular position which permits slip off and on roll changes and provides for the paper to be uncoiled therefrom with one hand in pad form. This device is provided with an adjustable or fixed expansion-type mandrel which may be expanded inside of the cardboard tube on which the roll of paper is wound so that the proper amount of friction is applied to the roll of paper to control rotation and paper removal.

3,620,466
ROLL PAPER DISPENSER
Edward L. Bump, Oak Park, Ill., assignor to Vaughan Mfg. Co., Chicago, Ill.
Filed Sept. 10, 1969, Ser. No. 856,589
Int. Cl. A47k *10/22, 10/38;* **B65h** *19/04*
U.S. Cl. 242—55.3 **3 Claims**



A dispenser for rolls of paper having a door covering one roll and a control arm responsive to depletion of the paper on another roll to release said door for movement into a position exposing said one roll.

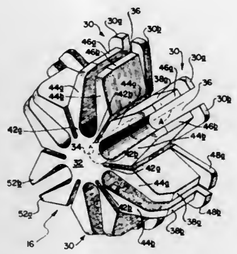
3,620,467
ENDLESS LOOP TAPE CARTRIDGE
Warren Rex Isom, Indianapolis, Ind., assignor to RCA Corporation
Filed Sept. 3, 1969, Ser. No. 855,003
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **2 Claims**



An endless loop tape cartridge for use with a cartridge tape player includes an intermediate pressure roller adapted to be driven by the tape player capstan. A cartridge capstan, having a smaller diameter than the intermediate pressure roller, is secured for rotation therewith. The withdrawn cartridge tape is driven by the cartridge capstan and passes between the cartridge capstan and a secondary pressure roller prior to being wound around the outermost convolution of the cartridge tape roll.

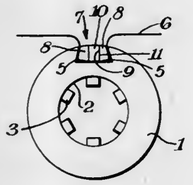
3,620,468
TAPE TRANSPORT HUB
Joseph St. Amour, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Nov. 20, 1969, Ser. No. 878,349
Int. Cl. B65h *75/02, 75/24*
U.S. Cl. 242—68.3 **7 Claims**

A hub for mounting a reel of magnetic tape on a tape transport is composed of a plurality of generally radially extending fingers distributed around the hub axis. Each finger is composed of a pair of flexible, resilient segments which are turned toward one another. The tape reel is in the form of an annulus which is placed on the hub so that the fingers engage the inner wall of the reel.
When the hub is rotated in one direction, the drag exerted by



the reel on the fingers causes one segment in each finger to straighten out so that the tip of that segment tends to move further away from the hub axis into nonslip engagement with the reel. When the hub is rotated in the other direction, the other segment in each finger grips the reel in like manner. However, when the hub is stopped, the reel is easily slid onto and off the hub.

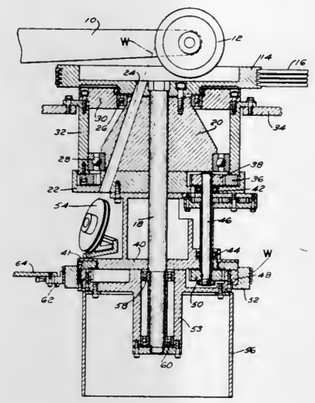
3,620,469
DEVICE FOR ATTACHING A FLEXIBLE STRIP TO A REEL FOR WINDING THEREON
Anton Riedel, and Max Nissl, both of Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed July 22, 1970, Ser. No. 57,199
Claims priority, application Germany, Aug. 1, 1969, P 19 39 189.0
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 **12 Claims**



A device for attaching a flexible strip to a reel includes a wedge assembly and a dovetailed slot in the hub of the reel. The preliminary wedge assembly includes a central plug attached cornerwise to a pair of spaced wedges by frangible and flexible webs. Downward pressure of the assembly in the strip urges it into the slot and further downward pressure on the plug breaks the webs and forces the plug between the tapered wedges to urge them apart and lock them under the undercut corners of the slot. The flexible strip is thereby secured under the frictionally locked wedge assembly within the dovetailed slot. The preliminary wedge assembly is conveniently molded of a synthetic plastic material such as polyethylene.

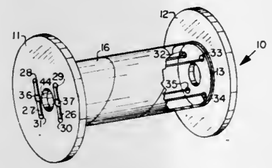
3,620,470
WIRE COILING APPARATUS
Harold H. Duff, Jewett City, Conn., assignor to The Entwistle Company
Filed Nov. 25, 1969, Ser. No. 879,855
Int. Cl. B65h *54/76*
U.S. Cl. 242—82 **4 Claims**

A wire coiler which brings the wire into the apparatus over a sheave mounted vertically atop the apparatus and immediately directs the wire downwardly at an acute angle to the vertical toward the outside perimeter of the stationary capstan where it travels around a second sheave. Exiting from this sheave the wire travels through a series of casting and camber control rolls and onto a third sheave from which the wire is directed tangentially onto the stationary capstan. An epicyclic gear train holds the capstan in controlled position while the upper structure of the apparatus supporting



the second sheave, the casting and camber control rollers, and the third sheave rotate to place the wire on the stationary capstan. As the uppermost winds of wire force the lowermost winds of wire off the bottom of the capstan, the dropping coils of wire fall in convolutions which are successively shifting transversely with respect to each other in a circular path around the center of a container which is mounted upon a rocking support structure.

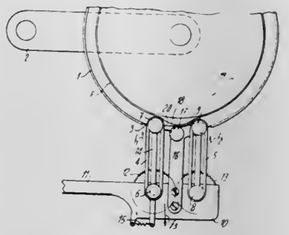
3,620,471
CABLE REEL
Ronald R. Hubbard, and Klaus H. Blumenfeld, both of Orange, Calif., assignors to Anaconda Wire and Cable Company
Filed Nov. 21, 1969, Ser. No. 878,734
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.6 **6 Claims**



A disposable heavy-duty, high-strength cable reel is made with wooden flanges held together by steel straps within a waterproofed paperboard drum cemented into routings in the flanges.

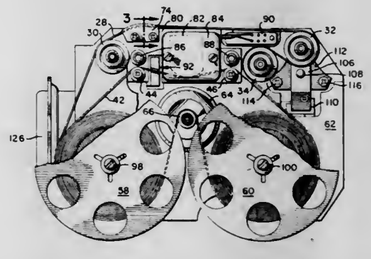
3,620,472
SYSTEM ADAPTED TO GRASP THE END OF A WOUND STRIP
Jean Thevenaz, Grandson, Switzerland, assignor to Paillard S.A., Sainte-Crois, Vaud, Switzerland
Filed Feb. 25, 1969, Ser. No. 801,943
Claims priority, application Switzerland, Mar. 20, 1968, 4142/68
Int. Cl. G11b *15/66, 15/32*
U.S. Cl. 242—192 **4 Claims**

The system is adapted to grasp the end of the outer convolution of a wound film, tape or the like strip. To this end it resorts to one or preferably two movable, spaced-apart members such as belts or pulleys engaging the periphery of the wound strip so that the relative difference in speed between the two members at their portions engaging said periphery



urges the strip passing across the gap between the two members into said gap to form a slight bulge. When the end of the outer convolution reaches a position facing said gap, it passes over the bulge and is urged outwardly through the gap and away from the grasping system.

3,620,473
TAPE TRANSPORTS
Robert L. Stone, Portland, Conn., assignor to Raymond Engineering, Inc., Middletown, Conn.
Filed Apr. 11, 1969, Ser. No. 815,359
Int. Cl. G11b *15/32*
U.S. Cl. 242—192 **11 Claims**



A peripheral belt tape transport employs a single capstan driving the peripheral belt. The peripheral belt is maintained in contact with the outer layers of magnetic tape on a pair of tape packs. A brake acts on the peripheral belt on the opposite side of the tape packs from the driving capstan. In the preferred embodiment, the brake takes the form of a solid graphite shoe in contact with the peripheral belt at a position where the belt is separated from the magnetic tape. In alternative embodiments, a rotating peripheral belt guide drives a mechanical, viscous, magnetic, or eddy current brake, or a loaded generator, which subtracts energy from the peripheral belt. The operating temperature range of the peripheral belt drive is greatly enhanced by not rigidly adhering the inner ends of the tape to the tape pack hubs and by the use of lubricated tape. The lubricated tape is wound with its oxide side facing outwardly on the tape packs. The tape is separated from the belt at the recording head. Head to tape contact is maintained solely by means of tape tension. Conventional flanged reels support the tape packs.

3,620,474
SELF-LOADING TAKEUP REEL
Robert C. Ray, North Hollywood, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 814,973
Int. Cl. G11b *15/66;* **B65h** *75/28*
U.S. Cl. 242—195 **14 Claims**

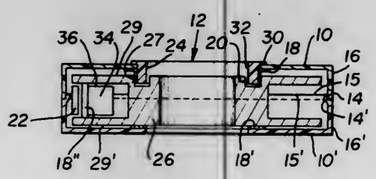
A self-loading takeup reel for use in a tape transport which is provided with a supply tape having a relatively stiff leader

wider than the tape attached to one end. The reel has a flexible flange attached to one side of the hub which resiliently



biases the leader against a preferably rigid flange when the leader is received between the flanges.

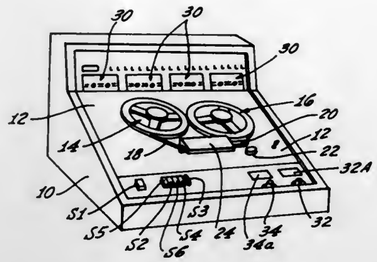
3,620,475
DATA PROCESSING MAGNETIC TAPE CARTRIDGE
Edward Michael Penn, 7 Rego Court, Huntington Station, N.Y.
Filed Dec. 30, 1968, Ser. No. 787,807
Int. Cl. G11b *23/04*
U.S. Cl. 242—197 **2 Claims**



A disk-type case for a reel of magnetic tape is formed with two mating disk sections which may be snap fitted together. The sections have an unobstructed central aperture area in which the hub of a tape reel is exposed so that the reel may be rotated while in said casing. A peripheral slot having an adjustable closure is provided in the case for tape entry and exit. Frictionless gaskets in the sections of the case permit rotation of the reel while maintaining air seals at the central apertured area.

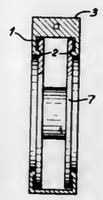
3,620,476
CASSETTE DUPLICATOR
Felipe Cervantes, La Crescenta, Calif., assignor to Infonics, Inc., Santa Monica, Calif.
Filed Apr. 14, 1969, Ser. No. 815,584
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—197 **12 Claims**

A high-speed inexpensive magnetic tape duplicator is provided which is capable, for example, of duplicating a program recorded on a master magnetic tape simultaneously on a plurality of cassette-type magnetic tape cartridges preloaded with magnetic tape, and the like. The apparatus of the invention is controlled so that all tapes quickly come up to speed in order that maximum use may be made of all the tapes in the various cassettes. This minimizes the beginning



portion of poor recording quality on the tape, and short leaders may be used.

3,620,477
DATA PROCESSING TAPE RING CARTRIDGE
Edward Michael Penn, 7 Rego Court, Huntington Station, N.Y.
Filed May 14, 1969, Ser. No. 824,456
Int. Cl. G11b *23/10*
U.S. Cl. 242—197 **2 Claims**

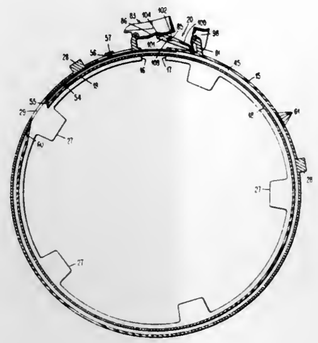


This invention relates to a protective ring cartridge for magnetic tape reels which does not interfere with the normal use of said reel in a machine. The cartridge is comprised of a flexible ring with protruding frictionless lips which permit its attachment to a tape reel. The frictionless protruding lips fit into a groove cut into the outer circumference of the tape reel. The frictionless protruding lips permit free rotation of the reel while maintaining air seals between the cartridge and the tape reel.

3,620,478
TAPE REEL COVER ASSEMBLY WITH THREE-POSITION INTEGRAL HINGE MECHANISM
Richard J. Fitzgerald, Hygiene; Ronald R. Jacobsen, Golden, and William J. Rueger, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,085
Int. Cl. G11b *23/02, 15/66*
U.S. Cl. 242—197 **15 Claims**

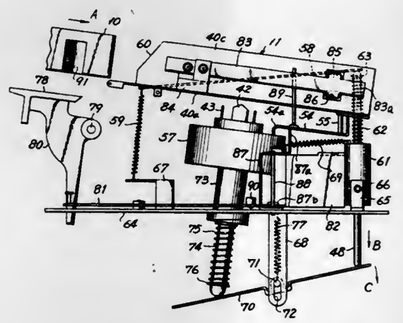
A protective reel cover assembly has a three-position, toggle action, unitary hinge interconnecting the split end portions of a closure ring for a magnetic tape reel cartridge of the type adapted to be mounted for rotation on a tape deck. The hinge body is comprised of three parts hingedly interconnected and being movable to positively lock the cover in a closed position for storage of the cartridge and either one of two open positions in which the cover is expanded to a sufficient extent either to permit independent rotation of the tape reel cartridge or to permit removal or replacement of the tape reel. The cover comprises inner and outer closure

ring portions with the inner ring portion snap-fit within the outer ring portion to define an air chamber for the controlled



delivery of air to release the leading end of the tape from the tape reel for removal through the cover.

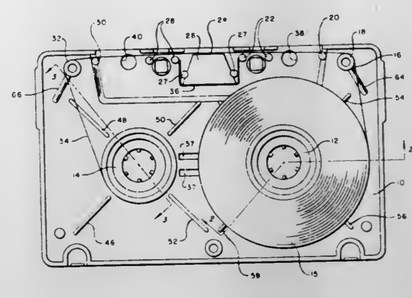
3,620,479
TAPE CARTRIDGE LOADING DEVICE
Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan
Filed June 9, 1970, Ser. No. 44,708
Claims priority, application Japan, June 10, 1969, 44/45018
July 10, 1969, 44/54070
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **9 Claims**



A tape cartridge loading device for loading and removing a tape cartridge in and from a chassis of a cartridge type recording and reproducing apparatus. Upon complete insertion of the cartridge into the chassis, a reel shaft is moved upwardly and fits into the cartridge. Upon withdrawal of the reel shaft from the cartridge, the cartridge is released from a locked position where it is ready for removal from the chassis.

3,620,480
LOW-FRICTION MAGNETIC TAPE CARTRIDGE
Austin A. Knox, White Plains, N.Y., assignor to Dict-O-Tape Inc., Brooklyn, N.Y.
Filed May 1, 1968, Ser. No. 725,696
Int. Cl. G11b *23/10*
U.S. Cl. 242—199 **7 Claims**

A magnetic recording tape cartridge (FIG. 2) having a tape hub 12 which supports a roll of magnetic tape 15 in



spaced relation to the inside surfaces of the cartridge casing 10.

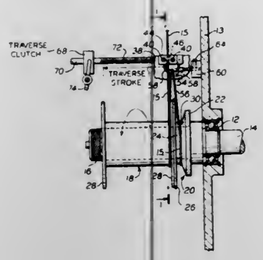
3,620,481
WEB TRANSPORT SYSTEMS
David John Stewart, 52 Oakland Drive, Wokingham/Berkshire, England
Filed May 21, 1968, Ser. No. 730,805
Claims priority, application Great Britain, May 23, 1967, 23,956/67
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—203 **2 Claims**

A web of photographic film or the like is stretched between two spools. A constant torque is applied to the spools in senses such that the web between the spools is placed in tension. Between the spools the web is wrapped about and engages part of the periphery of a drum. The drum is driven by a step-by-step motor through a worm gear transmission.

3,620,482
SEPARATOR FOR UNPROCESSED WIRE IN REELING AND WINDING APPARATUS
Ben Bravin, New York, N.Y., assignor to General Cable Corporation, New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,988
Int. Cl. B65h *54/02*
U.S. Cl. 242—25 A **10 Claims**

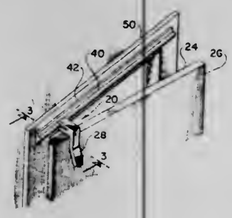
When starting the winding of wire on a reel, the unprocessed, damaged, or unuseable end portion of a long wire is wrapped around an auxiliary reel or dummy reel adjacent to the main reel and as the reel and dummy rotate, the wrapping wire is wrapped first on the dummy and then shifted to continue its winding on the main reel. A pushoff device operated from a wire guide of the traverse of the winding machine releases a loop of wire as the transfer is

made from the dummy to the reel. The pushoff, being at the traverse speed, is slow and the loop makes the apparatus



suitable for use with any existing reeling machines and does not require a slack accumulator.

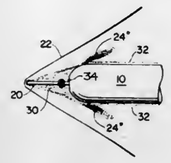
3,620,483
DOORCHECK
Morris Weinberger, 387 Amsterdam Ave., New York, N.Y.
Filed June 1, 1970, Ser. No. 41,927
Int. Cl. E05c *17/04, 19/18*
U.S. Cl. 292—262 **8 Claims**



The disclosure relates to a doorcheck for holding a door ajar. A resilient yoke member is placed over the top edge of the door. The yoke member has a tail extension defining a channel adapted to be snap-fit over a bead on a rail member which is affixed to a supporting surface to thus rigidly secure the door in an open position. In an alternate embodiment, the yoke member is provided with a tail extension and cooperating apertured clamp plate which clamps to a portion of the doorframe. Another embodiment includes a resilient latching arrangement wherein a tail extension of the yoke member includes an upstanding hook member adapted to be accommodated by a receiving latch member affixed to a supporting surface. A further embodiment encompasses a yoke member pivotally mounted to a supporting surface and adapted to be lowered onto the top edge of the door to hold the door in an open position.

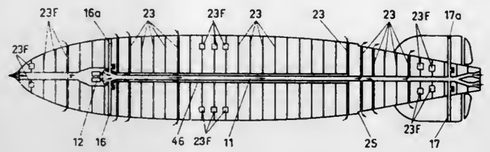
3,620,484
METHOD AND STRUCTURE FOR REDUCTION OF SHOCK WAVES
Fritz Schoppe, Max-Ruttgers-Str. 24, 8026 Ebenhausen/Isartal, Munich, Germany
Filed Jan. 17, 1969, Ser. No. 792,006
Claims priority, application Austria, Feb. 14, 1968, A 1405/68
Int. Cl. B64c *23/04*
U.S. Cl. 244—1 N **8 Claims**

A method of and apparatus for reducing shock waves created by solid bodies having supersonic speed relative to a gas, and reducing and even eliminating the sonic boom which accompanies the shock waves. The nose or leading portion of the moving body, be it a body of revolution, or an airfoil lifting body, or be it another moving body, is provided with blunt configuration at its leading portion to create a detached "normal" shock wave. A three-step thermodynamic cycle is applied to the gas (i.e., air) flow surrounding the moving body. The three steps are (1) compression of the gas, caused by the moving body, (2) heating of the compressed gas by addition of heat, and (3) expansion of the compressed gas to hear its original pressure. In air, for example, a blunt nose flying body at supersonic speeds creates a high compression zone (stagnation zone) between the shock wave and the nose of the body. Heat is applied, e.g., by burning fuel, electricity, or nuclear radiation, to the stagnation zone of high pressure,



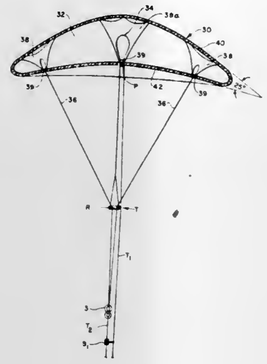
resulting in a substantial decrease of static pressure immediately in front of the blunt nose. The heat can be applied to the compressed air zone from forwardly projecting structures suitably shaped to create only low intensity shock waves. The applied heat decreases the static pressure at the nose zone, in turn decreasing the high air drag, and also decreasing the intensity of the shock wave ahead of the flying body, thereby decreasing the intensity of the part of the shock wave which reaches the ground, resulting in a reduction in sonic boom.

3,620,485
DIRIGIBLE
Egon Gelhard, Mehlemer Strasse 28, 5 Cologne-Marienburg, Germany
Filed Oct. 31, 1968, Ser. No. 772,272
Claims priority, application Germany, Oct. 31, 1967, P 15 31 351.6
Int. Cl. B64b *1/06*
U.S. Cl. 244—29 **15 Claims**



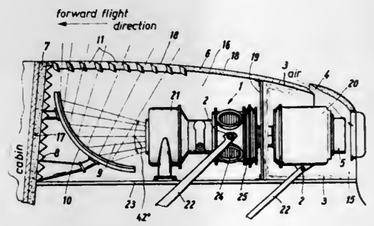
A lighter-than-air aircraft having a central passageway longitudinal of the aircraft and a plurality of passageways radiating laterally therefrom. Suitable air moving means are located in said passageways near the forward end of the aircraft for drawing air into said passageways through the forward end thereof and supplying same under pressure to the rearward portion of said central passageway and to said radiating passageways. Suitable independently operated valving means on all of said passageways permit opening and closing of said selected ones thereof whereby said aircraft may be caused to move forwardly or stand still and may be further caused to move upwardly, downwardly or sidewardly. Reversing of said air moving means moves said aircraft rearwardly. Lifting gas is provided in a plurality of independent compartments, same being divided by a flexible diaphragm with lifting gas in one portion thereof and air in the other portion. By varying the proportion of air and lifting gas in selected ones or all of said compartments, the lift of the aircraft may be suitably adjusted or same may be trimmed.

3,620,486
AUTOSTABLE CIRCULAR TETHERED WING BALLOON
Jean F. Charpentier, Akron, and Robert S. Ross, Northfield Center, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio
Continuation-in-part of application Ser. No. 702,866, Feb. 5, 1968, now abandoned. This application July 9, 1969, Ser. No. 843,282
Int. Cl. B64b *1/50*
U.S. Cl. 244—33 **4 Claims**



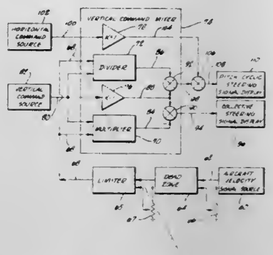
This invention relates to an axisymmetrical-shaped, tethered wing balloon which is substantially autostable in the wind field and, particularly, to a wing balloon which, without performing any rotational motion, is able to keep relatively to the wind direction, a permanent consistent attitude irrespective of changes in wind velocity.

3,620,487
DEVICE FOR REDUCING THE SOUND OF THE TURBINE PLANT IN AIRPLANES
Christoph Fischer, Bremen-Huchting, Germany, assignor to Vereinigte Flugtechnische Werke Gesellschaft mit beschrankter Haftung fruher "Weser" Flugzeubau/Focke-Wulf/Heinkel-Flugzeubau, Bremen, Germany
Filed Sept. 26, 1969, Ser. No. 861,305
Claims priority, application Germany, Oct. 3, 1968, P 18 00 933.1
Int. Cl. B64d *1/27*
U.S. Cl. 244—55 **14 Claims**



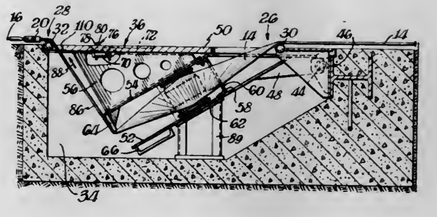
An arrangement for reducing the transmission of sound from the drive plant of an air vehicle to the cabin thereof, according to which the drive plant compartment is subdivided into a first section with the compressors and a second section with the turbine means and the exhaust gas outlet, and in which the primarily low-frequency sound created in said second section is directed in a direction away from the air vehicle cabin, whereas the primarily high-frequency sound created in said first section is directed in forward flight direction of the air vehicle and is deviated by a sound deflector and discharged outwardly away from the cabin.

3,620,488
AIRCRAFT COMMAND MIXING DEVICE
Justin G. Miller, deceased, late of Los Angeles, Calif. (by Rita A. Miller, administratrix), assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed May 29, 1969, Ser. No. 845,113
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 E **24 Claims**



A system is disclosed for producing aircraft steering command signals for application to the controls of a vertical takeoff and landing (VTOL) or a vertical/short takeoff and landing (V/STOL) aircraft during the transition from cruise flight to hover. A command signal mixing device is provided for processing aircraft command signals as a function of speed to produce steering command signals adapted to simulate the manner in which a pilot normally flies the aircraft. In a preferred form of the invention, vertical-plane path control is effected by routing vertical command information through the command mixer to provide velocity-dependent steering command signals for application to the collective pitch and pitch cyclic controls of the aircraft. Lateral-plane path control is effected by routing lateral command information through the command mixer to produce velocity-dependent bank and turn steering command signals.

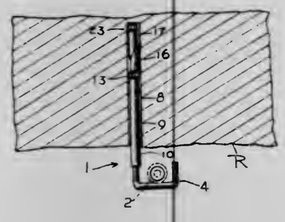
3,620,489
RUNWAY SHEAVE ASSEMBLY FOR AIRCRAFT-ARRESTING GEAR
Harry C. Riblett, Jr., Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.
Filed Mar. 16, 1970, Ser. No. 20,004
Int. Cl. B64f *1/00*
U.S. Cl. 244—110 C **24 Claims**



The runway sheaves of an aircraft-arresting gear are mounted at the bottom of a hinged cover assembly and received within a pit prior to activation. The linear payout element is deflected into a deep bend under the closed cover assembly by a knee element. The cover assembly is locked down by shear pins. The strong tensioning of the linear payout element during the initial phase of arrestment breaks the shear pins and raises the cover assembly. The cover assembly is then latched in a raised position to maintain the sheave and payout element elevated above ground level and facilitate their action during arrestment of the aircraft. Fairleads and slots smoothly guide the linear payout element under and through the cover assembly, which is efficiently fabricated from a cover plate and a lower plate disposed at an acute angle beneath it. The sheaves are mounted between an inner plate spaced above and parallel to the lower plate

and the knee element extends downwardly from the edge of the inner plate remote from the hinge. The cover assembly is of truncated V-shape in plan with its narrow end adjacent the runway and a hinge at its wider opposite end. The cover and inner plates are spaced apart by angular channels disposed parallel to the sides of the assembly and a slotted cross channel is secured between the inner and lower plates. A striker bar for the latch is conveniently made from the extended web of a lateral channel mounted beneath the narrower end of the assemblies. The latches and shear pin retainers are mounted on catch plates secured to the pit adjacent the narrow end of the cover assembly.

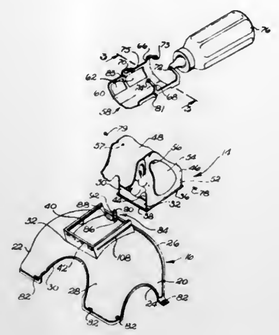
3,620,490
CABLE HANGER
Francis Eugene Roberts, R.R. #4, Hwy. 41, N., Madisonville, Ky.
Filed Oct. 9, 1970, Ser. No. 79,470
Int. Cl. F16l *3/02*; F16b *13/10*
U.S. Cl. 248—58 **3 Claims**



Discloses a cable hanger adapted to fit into a blind hole of a mine roof so as to suspend cable or other power conduit from the roof of a mine. The cable hanger comprises a shaft, bent at one end, to form a hook and threaded at the other end for provision of an expansion shell. The expansion shell consists of an upper relatively immovable member having a smooth axial bore for fitting over the threaded portion of the shaft and a movable lower member containing a smooth axial bore for slidable fit over the threaded portion of said shaft. Each member has an angularly beveled engaging end surface designed to slide diagonally upwardly or downwardly and laterally or medially over the complementary angularly beveled end surface of the other. A threaded nut engageable with the threaded portion of said shaft is welded to an elongated sleeve which has a smooth axial bore fitted over the shaft portion of said hanger and extends outside the blind hole at its lower end to provide a wrench engaging surface for revolving the sleeve and the nut welded thereto. This brings the nut into abutting relationship with the lower movable expansible member of said expansion shell thereby forcing the complementary angularly beveled end surface upwardly and outwardly to expand in said dead hole.
Rotating the sleeve in the opposite direction, thereby revolves the nut allowing the expandable member to move downwardly so that the complementary angularly beveled end surfaces come into axial alignment, allowing the entire mechanism to be removed from the blind hole.

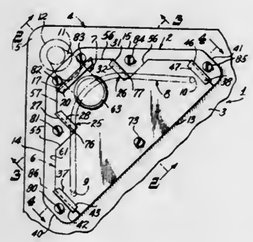
3,620,491
NURSING BOTTLE HOLDER
Paul S. Baclit, 2167 College View Drive, Monterey Park, Los Angeles, Calif.
Filed Apr. 9, 1970, Ser. No. 27,084
Int. Cl. A47d *15/00*
U.S. Cl. 248—106 **6 Claims**

A nursing bottle holder in which a bottle is carried in a pivot mount which is releasably secured on a support member, the support member being formed to straddle a baby whereby to enable the baby to feed from the bottle and



allowing ready removal of the pivot mount from the support member.

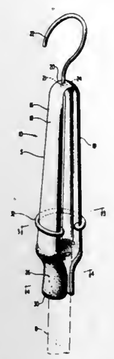
3,620,492
LEG CONNECTOR ASSEMBLY
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed Apr. 30, 1969, Ser. No. 820,543
Int. Cl. F16m *11/16*
U.S. Cl. 248—188 **16 Claims**



A leg connector assembly to provide for rapid connection of legs to articles of furniture. A connector plate secured to the article has a front tab and pairs of side tabs to securely grip a mounting plate driven horizontally between the tabs. Stop means limit the distance the mounting plate can be driven into the connector plate. The locations of the connections of the leg and leg braces with the mounting plate provide superior strength.

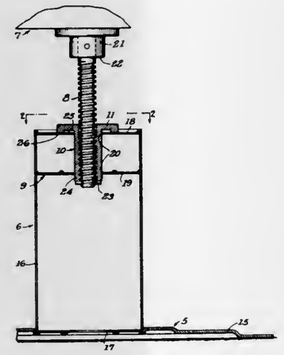
3,620,493
GUN HANGER
Ben Huver, Laurel, Mont., assignor to Daniel J. Korn, Sr.; Merritt N. Warden and Wm. C. Walterskirchen, Kallispell, Mont., part interest to each
Continuation-in-part of application Ser. No. 785,623, Dec. 20, 1968, now Patent No. 3,556,454, which is a continuation-in-part of application Ser. No. 647,437, June 20, 1967, now Patent No. 3,468,508, dated Sept. 23, 1969. This application Dec. 15, 1969, Ser. No. 885,137
Int. Cl. A47b *81/00*; A47f *5/00*
U.S. Cl. 248—360 **8 Claims**

The gun hanger includes an elongated strip of metal bent for form an inverted generally U-shaped body with spaced legs. The legs are arcuate in cross section and their terminal portions are inset toward one another from the body to form a pair of laterally opposed gripping members. The inset gripping members are coated with plastic rubber to grip about the end of a gun barrel. A clasp is slideably along the legs to displace the gripping members toward and away from one another thereby to frictionally retain the gun end



between the gripping members. A hook is connected to the body at its upper end whereby the gun may be suspended.

3,620,494
SWIVEL CHAIR
Raoul Hugh De Gaston, Lynwood, Calif., assignor to Henri L. Valette, Long Beach, Calif.
Filed June 29, 1970, Ser. No. 50,570
Int. Cl. F16m *11/00*
U.S. Cl. 248—405 **4 Claims**

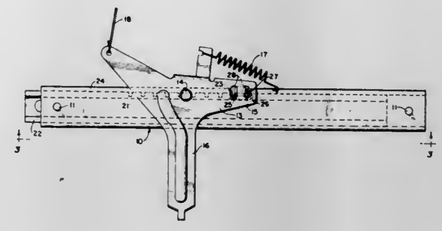


A swivel chair having a pedestal, a vertial nut revolubly mounted on the axis of the pedestal and having an enlarged flange frictionally engaged with the upper end of the pedestal, and a screwpost fixedly connected to the bottom of the seat of the chair, and threadedly engaged with said nut, lubricant being provided between the threads of the nut and post, the post at each end thereof having a stop to limit the fully raised and fully lowered positions of adjustment of the seat relative to the pedestal, and the mentioned friction retaining the nut nonrotational relative to the pedestal during height-adjusting movement of the seat and said nut rotating against the resistance of the mentioned friction when the seat is either in its fully extended or fully lowered positions, and, thereby, being swivelly movable while in such positions.

3,620,495
SEAT SLIDE CONSTRUCTION
George Korab, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Aug. 18, 1969, Ser. No. 851,025
Int. Cl. B60n *1/08*
U.S. Cl. 248—430 **7 Claims**

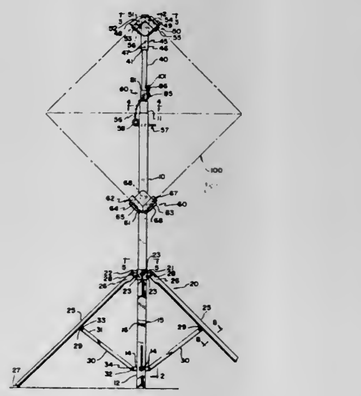
The latch members are of two-piece stamped sheet metal construction, in order that greater strength and holding

power is obtainable, partly by reason of the closed rectangular form of the two-toothed notch engaging portion of the latch members, as contrasted with only an open U form where the two teeth are in the form of separate projecting tabs integral with and struck from the latch member and therefore susceptible of spreading under load. With the two-piece construction, in which a separate U-shaped tooth part



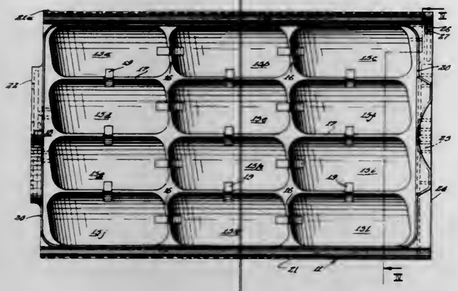
is fastened to the latch member by hot staking or upsetting, this separate part can be and is preferably made from heavier gauge sheet metal for much greater strength and holding power, which is so important now that seatbelts are in general use attached usually to the seat, thereby placing far greater strains on the seat slide latch mechanism in the event of collision.

3,620,496
SUPPORT STRUCTURES FOR SIGNS AND THE LIKE
Henry Bolt, Elmhurst, and Richard Nelson, La Grange Park, both of Ill., assignors to Bonel Co., Elmhurst, Ill.
Filed Oct. 15, 1969, Ser. No. 866,682
Int. Cl. F16m *11/38*
U.S. Cl. 248—171 **7 Claims**



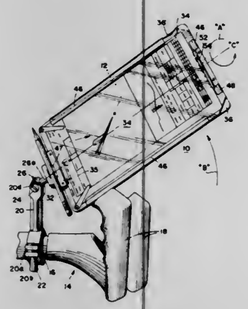
There is disclosed a support structure for road warning signs and the like including a first tubular bar, a second tubular bar telescopically disposed within the first bar, first sign engagement means mounted on the upper end of the second tubular bar, second sign engagement means movably disposed on the first tubular bar, sign stabilizing means movably disposed intermediate the first and second sign engagement means and a plurality of legs provided adjacent the lower end of the first tubular bar, the legs being adapted for movement into a retracted position and a supporting position.

3,620,497
PARALLELOGRAM ICE TRAY CAVITY
Paul W. Schaff, Arlington Heights, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Sept. 15, 1969, Ser. No. 857,822
Int. Cl. B28b *7/06*
U.S. Cl. 249—127 **8 Claims**



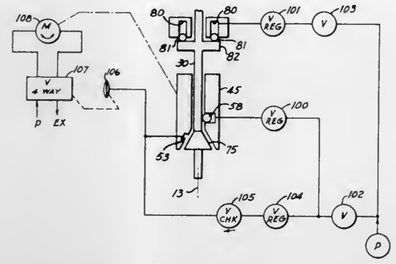
A flexible, deformable ice tray for twist harvest of ice cubes is formed with a plurality of ice cavities having smooth-contoured sidewalls which define in each case a cavity opening in the shape of a parallelogram having a pair of acute angles and a pair of obtuse angles. The depth of each cavity is less adjacent the acute angles than it is adjacent the obtuse angles to provide improved release of the ice cubes upon the application of a torque about the longitudinal axis of the ice tray, the torque being effective to modify the shape of each parallelogram from that of an acute parallelogram to that of a rectangle.

3,620,498
INFORMATION SHEET HOLDER
Julius Tunkl, Lincolnwood, Ill., assignor to Tunkl Industries, Inc., Lincolnwood, Ill.
Filed Oct. 24, 1969, Ser. No. 869,099
Int. Cl. B43l *5/02*
U.S. Cl. 248—278 **5 Claims**



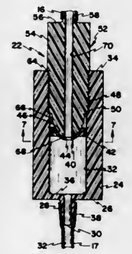
An information sheet holder for mounting on the control column of a vehicle, such as an aircraft, comprising a bracket having one end secured to the column and an opposite end spaced outwardly thereof, connector means is mounted adjacent the outer end of the bracket for pivotal movement about a first axis generally transverse of the column, and holder means including a planar portion is provided for supporting information sheets and the like and including a mounting means at one end for removably connecting the holder to the connector means and supporting the same for pivotal movement about an axis normal to the first transverse axis, whereby the planar portion may be pivoted to expose opposite sides thereof for viewing.

3,620,499
AUTOMATIC TRACER VALVE
Henry E. Rombeck, Valinda, Calif., assignor to Textron Inc., Covina, Calif.
Filed Jan. 6, 1970, Ser. No. 854
Int. Cl. B23q *35/16*
U.S. Cl. 251—3 **10 Claims**



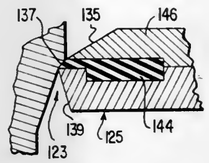
An automatic tracer valve having three mutually perpendicular control axes with a four-way spool valve on each of them. The spool of the first of the spool valves mounts a stylus for axial movement with the spool and for lateral tilting movement in all directions relative to the respective axis. An operator sleeve surrounds the stylus and has a bias bore in which there is a ball that makes a sliding and rolling fluid-sealing fit therein and bears against the side of the stylus to exert a bias force against it causing the stylus to tilt. This force is adjustable by varying the pneumatic pressure on the ball. A second bias bore is aligned with the axis of the first valve and also includes a ball which makes a sliding fit therein. This ball tends to bias the first spool in one direction, and again the force is regulable as a function of pneumatic pressure. Means is provided for sensing deflection of the stylus so as to maintain it tilted in a desired direction, this means comprising a reaction surface whose lateral position is responsive to tilting of the stylus and a sensing port discharging air under pressure against the same so as to form a variable orifice whose position indicates the amount and direction of deflection of the stylus. The other two spools are yoked to the stylus so as to be moved along their respective axes in response to its tilting.

3,620,500
VARIABLE APERTURE FLUID FLOW CONTROL APPARATUS
Louis S. Santomieri, Benicia, Calif., assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah
Filed Feb. 4, 1970, Ser. No. 8,578
Int. Cl. F16l *29/00*; **F16k** *7/00*
U.S. Cl. 251—149.1 **2 Claims**



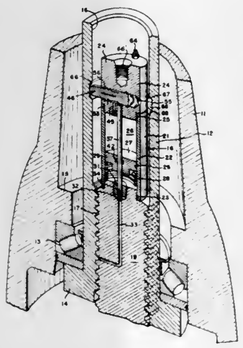
A device and method for controlling the rate of fluid flow through an intravenous infusion tube or the like by varying the dialation of an opening in a diaphragm, and maintaining the dialation without constant attention, the dialation being controlled by the relative position of a male fitting within a female fitting.

3,620,501
NONCHATTERING PRESSURE RELIEF VALVE
Morley V. Friedell, Wheetridge, Colo., assignor to Martin Marietta Corporation, New York, N.Y.
Division of Ser. No. 483,039, Aug. 27, 1965, Pat. No. 3,478,775
Filed Sept. 25, 1969, Ser. No. 860,885
Int. Cl. F16k *1/34*
U.S. Cl. 251—333 **7 Claims**



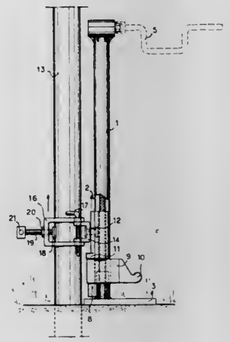
A reciprocating disclike poppet valve is provided with a frustoconical periphery for contact with a cylindrical valve seat which is inclined radially outwards in the direction of flow, the limited angle of inclination insuring that the area of pressure change between the valve and the seat does not increase sufficiently and the effective upstream pressure on the valve does not reduce appreciably from valve closed to valve fully open position to prevent valve chattering.

3,620,502
AUTOMATIC LUBRICATION FOR VALVE STEM THREADS
Richard L. Lawson, Raleigh, N.C., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed July 18, 1969, Ser. No. 843,022
Int. Cl. F16k *41/02*
U.S. Cl. 251—355 **13 Claims**



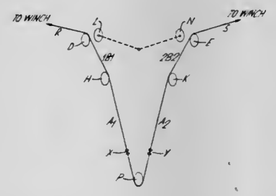
A valve assembly of the type wherein a valve stem operatively connected to a valve closure element is longitudinally moved between open and closed valve positions comprises a longitudinally movable nonrotatable valve stem in threaded engagement with an axially fixed bushing rotatably mounted on said body so that rotation of the bushing in opposite directions effects opposite longitudinal movements of said valve stem. A reservoir of lubricant under pressure is disposed within the stem with passage means extending between said reservoir and an engagement surface zone of the threads. A transverse cylinder on the stem responsive to longitudinal movement of said valve stem in either direction is actuated for automatically feeding lubricant along the passage means from said reservoir toward said zone.

3,620,503
FENCE STRETCHER
Jacques Bro, Paris, France, assignor to Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France
Filed Aug. 4, 1969, Ser. No. 847,321
Claims priority, application France, Aug. 6, 1968, 162,089
Int. Cl. E21b *19/00*; **B66f** *3/00*
U.S. Cl. 254—30 **6 Claims**



A fence stretcher comprising an elongated tube, abutment means slidable on said tube, clamping means pivotally attached to the abutment means, a hook also slidable on the tube, and means employing a mechanical advantage for moving said hook or said abutment along the tube.

3,620,504
CRANES, DERRICKS, OR THE LIKE LIFTING GEAR
Robert Morrison, Greenock, Scotland, assignor to Speedcranes Limited, Gourock, Scotland
Filed Apr. 2, 1969, Ser. No. 812,749
Claims priority, application Great Britain, Apr. 2, 1968, 15,753/68
Int. Cl. B66d *3/04*
U.S. Cl. 254—188 **1 Claim**

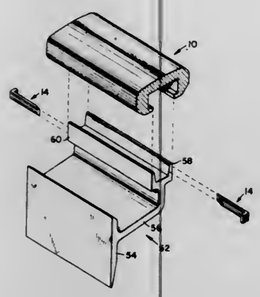


A crane or swinging derrick which can be quickly and easily converted for lifting either light or heavy loads by means of pulley block members which are secured to the jib when operating with light loads and are released from the jib to engage the lifting line of the rigging when operating with heavy loads and one or more pulley blocks, in particular an adjustable friction block, disposed in the rigging to assist in controlling the movement of the load during lifting and or transfer of the load.

3,620,505
RAILING CONSTRUCTION
Robert H. Murdock, Kensington, Calif., assignor to Railtec Corporation, Emeryville, Calif.
Filed Apr. 27, 1970, Ser. No. 32,086
Int. Cl. E04h *17/14*
U.S. Cl. 256—70 **10 Claims**

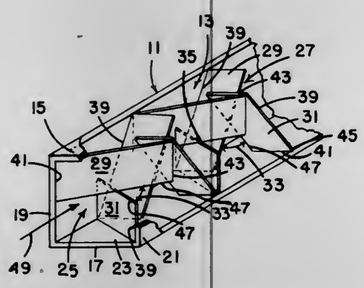
A railing construction in which a continuous aluminum or other metal rail member is provided with a downwardly

directed slot or opening extending along the length thereof. Rail supporting posts, balusters, wall brackets or the like are receivable in said slot at any desired longitudinal spacing. Each of such supporting elements are provided with opposed



sidewalls disposed in spaced relation to the sidewalls of the slot when the element is inserted therein. Wedge members are then inserted in opposite longitudinal directions in such spaces to tightly lock the rail member to the supporting element.

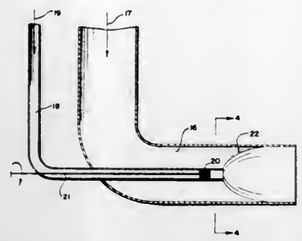
3,620,506
FLUID-MIXING DEVICE
Stephen W. So, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.
Filed July 7, 1970, Ser. No. 52,823
Int. Cl. B01f *5/00*
U.S. Cl. 259—4 **10 Claims**



Fluid-mixing apparatus which includes a plurality of stationary mixing units, formed of planar members, disposed in series longitudinally of a passage for sequentially and repeatedly dividing and recombining fluid flows during the travel thereof through the passage, with the fluid flows being directed along different serpentine paths after each division thereof.

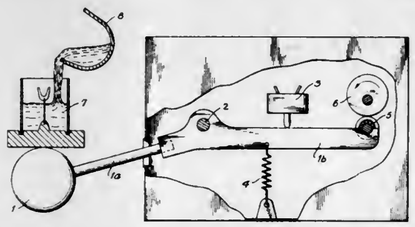
3,620,507
METHOD FOR RAPIDLY MIXING FLUIDS
Vitold R. Kruka, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 7, 1970, Ser. No. 1,160
Int. Cl. B01f *7/02*
U.S. Cl. 259—25 **3 Claims**

A method for rapidly mixing at least one fluid into another by disposing a first fluid within a first conduit and flowing a second fluid within a second conduit substantially concentric with and disposed within the first conduit, the second conduit opening into contact with the fluid within the first conduit. An angular momentum is imparted to the second fluid within the second conduit to thereby form a swirling jet of the



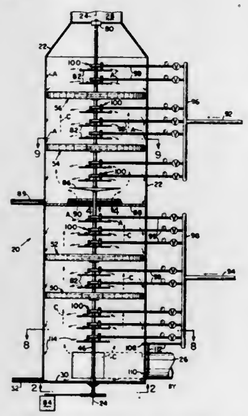
second fluid as it exits from the second conduit into contact with the fluid disposed in the first conduit.

3,620,508
APPARATUS FOR FILLING DENTAL MOLD FLASKS
Hans Lea, Frankfurt am Main, Germany, assignor to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany
Filed Sept. 26, 1969, Ser. No. 861,342
Int. Cl. B01f *11/00*
U.S. Cl. 259—72 **3 Claims**



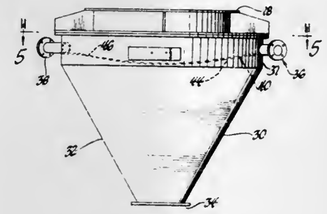
A device to vibrate dental mold flask as the investment material is being placed in the flask to form the mold in which the operator may have both hands free to manipulate the flask and the container in which the investment material was mixed. The vibrating device being activated by placing the mold on the device which includes a lever to be vibrated by a cam.

3,620,509
GAS WASHER
Vernon A. Roman, 14310 Clayton Road, San Jose, Calif.
Filed Jan. 24, 1969, Ser. No. 799,546
Int. Cl. B01f *3/04*
U.S. Cl. 261—18 B **1 Claim**



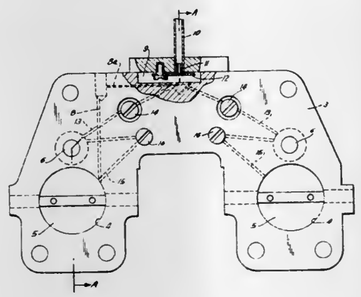
A gas-washer includes means for providing a series of continuous sheets of liquid, through which gas is directed. The gas is exposed to each liquid sheet for a time sufficient so that gas, after passing through the liquid sheets, is effectively washed.

3,620,510
GAS SCRUBBER WITH TANGENTIAL WATER INTRODUCTION
Lawrence A. Longcore, Troy, Mich., assignor to Arco Industries Corporation, Detroit, Mich.
Continuation-in-part of application Ser. No. 769,182, Oct. 21, 1968, now abandoned. This application Nov. 13, 1968, Ser. No. 775,344
Int. Cl. B05b *7/10*
U.S. Cl. 261—79 A **9 Claims**



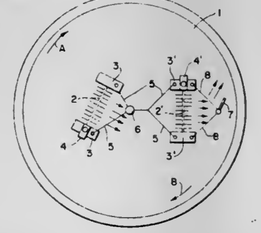
A venturi-type gas scrubber that is improved by the addition of wetting fluid distributing means for evenly distributing a wetting fluid from a fluid inlet onto inner surfaces of a portion of the venturi which taper toward its throat thereby exposing a completely wetted surface to gas entering the venturi from a gas inlet. The fluid-distributing means is embodied in a plurality of ledges spiraling downwardly from an elevated area of the inlet of the venturi with at least one portion of a given ledge overlying a portion of another ledge so that fluid that is introduced tangentially to the periphery of the venturi near its inlet is evenly distributed across the inner surfaces thereof.

3,620,511
CARBURETOR SYSTEM FOR COMBUSTION ENGINES
Gerd Reinhardt, Adelsheim; Horst Heide, Odheim, and Sebastian Flinspach, Binswangen, all of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Germany
Filed Oct. 21, 1969, Ser. No. 868,154
Claims priority, application Germany, Oct. 22, 1968, P 18 04 339.5
Int. Cl. F02m *3/08*
U.S. Cl. 261—41 D **8 Claims**



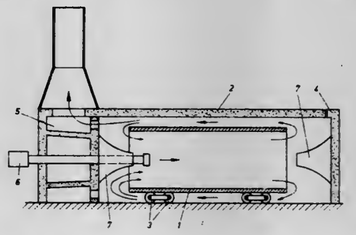
A carburetor system for combustion engines having a relatively long intake duct is provided with a rating system which is arranged separate from the main nozzle system. This idling system is located near the intake of the combustion engine. Under these circumstances, the formation of the idling mixture takes place before its introduction into the engine intake so that there is no possibility of mixture separation. In one proposed embodiment, a check valve is provided for preventing backflow of fuel or fuel-air mixture to affect the idler. In another embodiment, the idling system together with the throttling flap is arranged in a flange interposed between the engine and intake duct. The air nozzle of this idling system is connected to the intake duct by a passage located upstream from the throttling flap. In a further embodiment, the idling system is arranged in the engine housing or the cylinder head itself. In this regard, the idling system is connected to the inlet passage by a line thereby providing for a short route for the idling mixture to the intake chamber of the combustion engine.

3,620,512
AERATING APPARATUS
Josef Muskat; Dieter Klump, and Jurgen Sieckmann, all of Michelbach, Germany, assignors to Passavant-Werke, Hutte, Germany
Filed Mar. 25, 1970, Ser. No. 22,426
Claims priority, application Germany, Apr. 3, 1969, P 19 17 462.0
Int. Cl. B01f *7/10, 7/18*
U.S. Cl. 261—92 **16 Claims**



Aerating apparatus for aerating liquids such as sewage sludges, is improved by providing a rotor which moves in a path on the surface of the liquid and which moves the liquid in a direction at an angle of between 90° and 180° with respect to the path of motion of the frame. Alternatively, a device of this type is improved by providing a rotor which moves in a path on the surface of the liquid the rotor axis of which is inclined at an angle of up to 90° with respect to the horizontal.

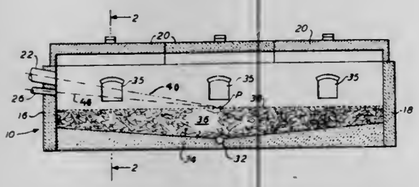
3,620,513
METHOD AND MACHINE FOR THE RAPID HEATING OF TUBES
Hans-Joachim Wernicke, Neuenhain/Taunus, Germany, assignor to Messer Griesheim GmbH, Frankfurt Main, Germany
Filed Dec. 23, 1969, Ser. No. 887,520
Claims priority, application Germany, Dec. 27, 1968, P 18 17 032.6
Int. Cl. F27b *3/02*
U.S. Cl. 263—4 **4 Claims**



A method and machine for rapidly heating an open-ended tube in a furnace provides for placing the tube on a support

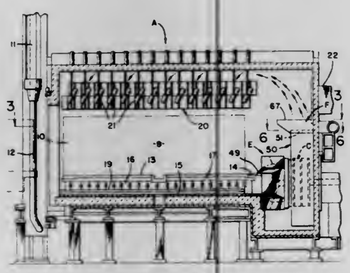
inside a tunnel furnace and projecting the flame of a burner through one of the tube ends into the interior of the tube. The burner thus will act as an injector drawing the exhaust gases, that exit at the other tube end, around to return outside the tube and to reenter the tube at the one end.

3,620,514
FUEL-AIR FIRED FURNACE WITH SUPPLEMENTAL OXYGEN-FUEL BURNER
Lewis J. Geiger, Jr., Edison, N.J., assignor to Air Reduction Company Incorporated, New York, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,840
Int. Cl. F27b *3/02*
U.S. Cl. 263—40 R **15 Claims**



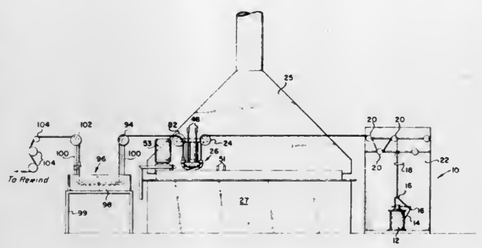
A furnace for melting a load of metal scrap containing pig iron, etc., having at one end two laterally spaced main coal-air burners for directing flames to the load, the projected axes of the respective burners converging and intersecting approximately at the midportion of the furnace near the load level, and a supplemental oxygen-fuel burner of heat generating capacity materially less than the combined capacities of the main coal-air burners, located between and beneath the main burners for directing an oxygen-fuel flame approximately at the point of intersection of the coal-air flames.

3,620,515
APPARATUS FOR CONTROLLING FLOW TO AND FROM A BLOWER
Edwin P. Usiak, Fairview Park, and Albert C. Tucker, Rocky River, both of Ohio, assignors to Lee Wilson Engineering Company, Inc., Cleveland, Ohio
Filed Nov. 20, 1969, Ser. No. 878,438
Int. Cl. F27b *5/16*
U.S. Cl. 263—40 R **4 Claims**



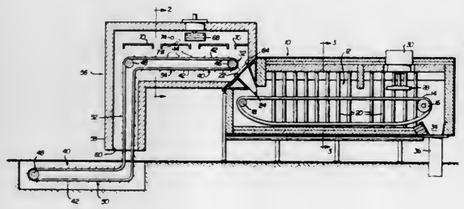
Apparatus for controlling the flow of atmosphere to and from a centrifugal blower such as in a circulating-atmosphere heat-treating furnace. The apparatus includes an inlet flow regulator with a long narrow inlet for receiving atmosphere from a shallow plenum, and a circular outlet to the blower, the blower having a much larger diameter than the height of the inlet and plenum. The regulator equalizes the inlet flow rate across the width of the plenum so that the flow of atmosphere is more uniform throughout the interior of the furnace.

3,620,516
STRESS RELIEVING APPARATUS AND METHOD
Ogle R. Singleton, Jr., Richmond; Sidney B. Kesler, Jr., Chesterfield County, and William E. Warren, Highland Springs, all of Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Sept. 16, 1969, Ser. No. 858,284
Int. Cl. F27b *9/28*
U.S. Cl. 263—3 **18 Claims**



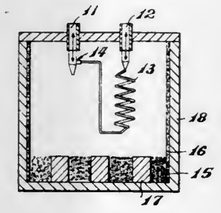
An apparatus for stress relieving an aluminum-containing material by immersion in a molten metal bath. The bath is selected from the group consisting of lead, lead and tin, and lead and bismuth. The aluminum-containing material is fed through the bath at such rapid linear velocities that stripping means must be provided to prevent a pumping action between the material and the bath. In a preferred form when feeding aluminum wire through the bath, this stripping is effected by passing the wire through one or more orifices whose diameter is only slightly larger than the diameter of the wire. A method of producing lead particles is disclosed by slightly increasing the orifice diameter of the stripping means when employing a lead bath.

3,620,517
HEAT-TREATING APPARATUS AND METHOD
William R. Keough, Bloomfield Hills, Mich., assignor to Multifastener Company, Detroit, Mich.
Filed Oct. 27, 1969, Ser. No. 869,755
Int. Cl. F27b *9/14, 13/06*
U.S. Cl. 263—6 R **7 Claims**



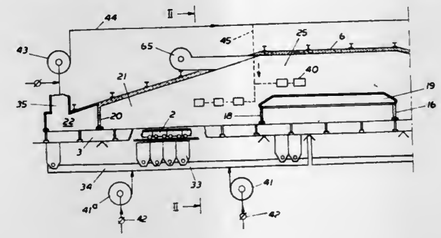
Heat-treating apparatus which includes a controlled atmosphere heat-treating furnace whose exit is closed to the external atmosphere, a conveyor for delivering objects to be treated to the furnace entrance, and a hood covering the conveyor and surrounding the furnace entrance, the entrance of the hood being located at a level equal to or below the floor of the heating chamber of the furnace. Controlled atmosphere gas leaving the furnace entrance is channeled into the hood and is burned therein, thus preheating objects on the conveyor and creating a positive pressure inside the furnace.

3,620,518
PROCESS AND DEVICE FOR THE TREATMENT OF SURFACES OF WORKPIECES IN AN ANNEALING FURNACE
Karl-Heinz Winter, Dornigheim, and Ottwin Krach, Wolfgang Bei Hanau/Main, both of Germany, assignors to Deutsche Gold und Silber-Scheideanstalt Vormals Roessler, Frankfurt(Main), Germany
Continuation-in-part of application Ser. No. 715,669, Mar., 1968, now Patent No. 3,519,257. This application Feb. 25, 1970, Ser. No. 13,939
Claims priority, application Germany, Mar. 28, 1969, P 19 15 866.8, Mar. 23, 1967, D 52, 614
Int. Cl. F27d *17/00;* **C21d** *1/76*
U.S. Cl. 263—15 **9 Claims**



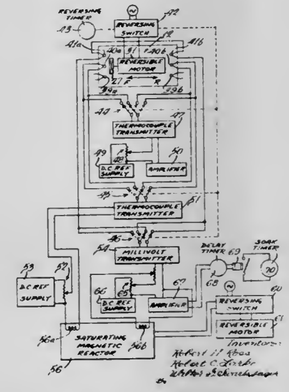
Protective and carrier gases which are to be used in various processes in annealing furnaces are produced in situ with the aid of catalysts applied to the inner surfaces of the furnaces. Preferably the oxygen containing gas is preheated before being mixed with fuel to form the protective or carrier gas.

3,620,519
TRAVELING GRATE APPARATUS AND METHOD
Frank Forbes, Bethel Borough, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.
Filed Nov. 24, 1969, Ser. No. 879,491
Int. Cl. F27b *9/00*
U.S. Cl. 263—28 **16 Claims**



There is disclosed a method and apparatus wherein a traveling grate carries a charge of pellets or like-formed ore bodies through a furnace providing a downdraft heat-indurating zone and subsequently through an updraft cooling zone. A cover or secondary tunnel is provided inside the furnace over the grate between the indurating and cooling zones, and there is a passage inside the furnace above the secondary tunnel and the furnace roof. Ambient air, forced upward through the grate in the cooling zone, becomes highly heated by contact with the hot ore bodies, and burners over the cooling zone or in said passage generate flames with the heated air supporting combustion. The air and products of combustion flow out the passage into the indurating zone where they travel down through the grate to indurate the bed of ore bodies on the grate. Oil burners may be used because the the ore bodies on top of the bed in the indurating zone are substantially shadowed from the direct radiant heat of the flames and therefore prevented from fusing, while the secondary tunnel and the updraft of air in the cooling zone protect said top layer from being heated to fusing temperature. The operation also provides more uniform heating of the ore bodies than the usual practice where there are a succession of individual burners in the heat-indurating zone.

3,620,520
FURNACE HEATING CONTROL SYSTEM
Robert H. Ross; Robert C. Larko, and Walter G. Swartzfager, all of Meadville, Pa., assignors to Sunbeam Equipment Corporation, Meadville, Pa.
Filed July 29, 1970, Ser. No. 59,286
Int. Cl. F27b *3/10*
U.S. Cl. 263—40 R **10 Claims**

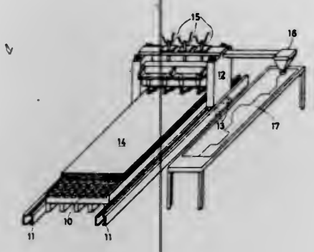


A furnace heating control system for a furnace using a gaseous heating media that passes through the workload for rapidly bringing the workload up to the desired processing temperature without any "overshoot" of the workload temperature. This control is accomplished solely as a function of the incoming and outgoing temperatures of the gaseous heating media through the workload. In combination with a reversible axial flow fan synchronously switched thermocouples continuously measure the incoming and outgoing temperatures, electrical signals proportional to the incoming and outgoing temperatures are compared to respective reference signals and any resulting excess signals are used to effect reversal of a motor normally driving a heat input valve in a direction so as to increase the heat input. In one embodiment a heating media temperature signal is compared against a variable reference signal which is proportional to the difference between the incoming and outgoing temperatures of the gaseous heating media.

3,620,521
MACHINE FOR FLAME CUTTING OF IDENTICAL COMPONENTS FROM A STACK OF PLATES
Thorsten Ingvar Egon Lundberg, Askim, Sweden, assignor to Aktiebolaget Gotaverken, Goteborg, Sweden
Filed Jan. 5, 1970, Ser. No. 596
Claims priority, application Sweden, Jan. 14, 1969, 384/69
Int. Cl. B23k *7/02, 7/10*
U.S. Cl. 266—23 E **2 Claims**

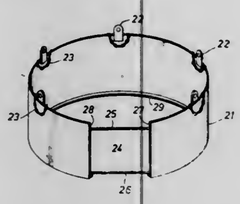
When manufacturing identical components from a stack of plates by means of a flame cutting torch, which is movable by means of a mechanism reading information concerning the desired shape of the components from a templet, it has hitherto been impossible to cut components from two plates placed on top of each other, because the flame will spread out between the plates in such a manner that the component cut from the lower plate will not be identical with the one cut from the topmost plate. To make possible a simultaneously cutting of several plates stacked on top of each other a machine is used, which comprises a crab structure straddling the stack of plates and being movable along the same by a

mechanism which keeps the vertical distance between the crab structure and the table constant during operation. The crab structure comprises two parallel beams between which the torch or torches are movable transversely in relation to the stack of plates. Each beam furthermore carries a set of



rollers which by pressure fluid operated means are forced towards the topmost plate. In this manner a portion of the stack of plates on both sides of the spot where the torches work on the plates is compressed and this compressed portion will move along the stack as the crab structure is displaced.

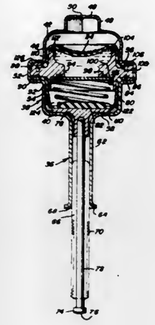
3,620,522
DISPOSABLE LINER
John B. Bridges, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Apr. 10, 1970, Ser. No. 27,393
Int. Cl. C21c *5/02*
U.S. Cl. 266—43 **10 Claims**



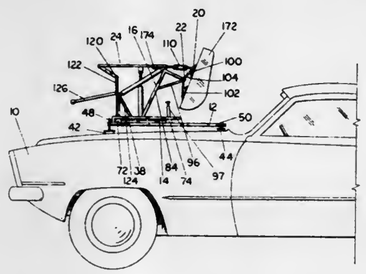
A disposable liner for accumulating deposits of alloy splashing up from the molten alloy in an induction heating furnace comprises a sleeve which fits closely within the upper portion of the furnace crucible and is supported therein by asbestos-covered chains which loop over studs about the upper end of the crucible.

3,620,523
LIQUID CONTROLLED DASHPOT
Benjamin C. Benjamin, Flint, Mich., assignor to Schmeizer Corporation
Filed June 17, 1969, Ser. No. 834,051
Int. Cl. B60g *11/56*
U.S. Cl. 267—34 **8 Claims**

A housing including opposite ends and a central partition. A pair of opposing resilient cups are disposed within the housing ends and have their open ends sealed relative to the marginal portions of the partition, the latter having a fluid passage therethrough controlled by a one-way valve defining a bleed passage there past when closed. One end of the housing includes a tubular neck having a piston rod slidingly disposed therein provided with a head on its inner end opposing the outer surface of the adjacent cup end wall and the cups and passage are filled with liquid.



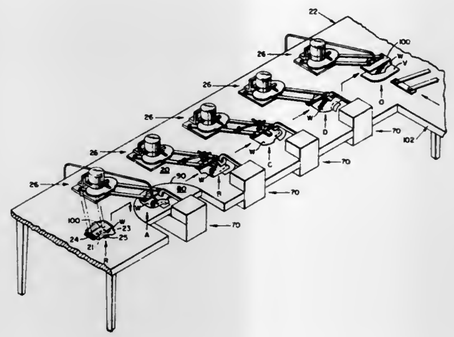
3,620,524
AUTOMOBILE WINDSHIELD INSTALLER
Joseph Czompi, 1850 Williams Road, Columbus, Ohio
Filed June 26, 1970, Ser. No. 50,076
Int. Cl. B25b *11/02*; **B23p** *19/04*; **B25j** *5/02*
U.S. Cl. 269—21 **11 Claims**



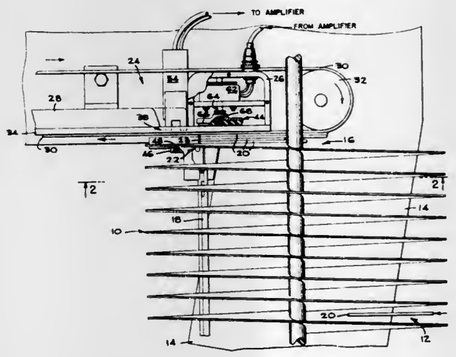
A workpiece holder is described for gripping an automobile windshield which has been shimmed with temporary spacer blocks in the windshield frame and for moving the windshield away from the frame so that windshield adhesive may be applied around the frame (or adhesive covering paper removed) and for subsequently returning the windshield to its exact original position in the windshield frame. The workpiece holder has a base for setting on the hood of an automobile and a carriage slidably mounted to the base. A pivot frame is pivotally mounted to the carriage and has windshield gripping means, including suction cups, pivotally mounted to the pivot frame. A lever mechanism and handle are linked to the pivot frame for pivoting the pivot frame in order to remove the windshield and replace it.

3,620,525
PRODUCTION SYSTEM FOR TREATING FABRIC WORKPIECES IN SEQUENCE AT A PLURALITY OF WORK STATIONS
George F. Hawley, Bogota, N.J., assignor to Ivanhoe Research Corporation, New York, N.Y.
Continuation of application Ser. No. 601,768, Dec. 14, 1966, now abandoned. This application Nov. 24, 1969, Ser. No. 873,748
Int. Cl. B65h *45/02*
U.S. Cl. 270—61 R **12 Claims**

A production system for automatically performing a sequence of work operations upon a plurality of fabric workpieces. Each successive workpiece is registered in an initial known position and then is transferred while controlling its position to a first work station to have a predetermined work operation performed at the first work station. The workpiece is successively transferred from the first work station to a second work station while being simultaneously rotated into a different angular orientation relative to the initial registered position and being controlled so as to position the workpiece in a predetermined relationship relative to the second work station, A further operation is performed on each workpiece at the second station and the treated workpieces are delivered in succession from the second work station. An incremental work performing system is described for fabric work pieces which performs increments of an operation; such as creasing at a sequence of work stations for completing the operation automatically while accommodating size changes in the workpiece without corresponding changes in the tooling size. The workpieces may be automatically registered at each workstation and they are moved and controlled in position during movement by a suction lifting clamp and by the differential in friction between the low friction supporting surface engaging the lower face of the workpiece and a high friction movable clamp engaging its upper face, the clamps being controlled in position and angular orientation.

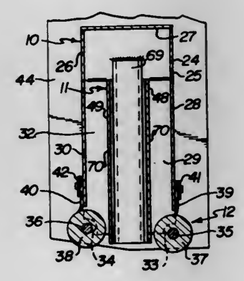


3,620,526
CONSTANT-SPACE ARTICLE SINGULATOR
Kenneth E. Iles, Sunnyvale; Harry J. Jung, San Carlos, and Elmo R. Arell, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Dec. 15, 1969, Ser. No. 884,931
Int. Cl. B65h *3/12*
U.S. Cl. 271—26 E **1 Claim**



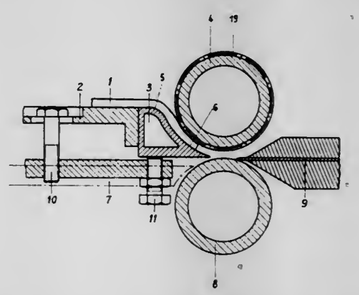
A letter-handling apparatus wherein letters are singulated from a stack of letters and transferred with a uniform spacing along an endless belt utilizes a fluidic edge-sensing device to electrically activate and deactivate a solenoid-operable vacuum pickup box for drawing letters one at a time at equally spaced intervals from the stack of letters. The fluidic edge-sensing device is disposed slightly downstream of the vacuum pickup box so as to sense the leading edge of the first letter withdrawn and simultaneously activate the solenoid to prevent the withdrawal of a subsequent letter until the trailing edge of the first letter passes the sensing device. When the trailing edge passes the sensing device, the sensing device deactivates the solenoid and renders the vacuum pickup box operable to withdraw a second letter.

3,620,527
SHEET HANDLING APPARATUS
Reginald E. W. Tyler, New Westminster, British Columbia, and Paul M. Carter, Vancouver, British Columbia, both of Canada, assignors to Durand Machine Works Ltd., New Westminster, Canada
Filed Jan. 29, 1969, Ser. No. 795,114
Claims priority, application Canada, Dec. 16, 1968, 037,863
Int. Cl. B65h *3/06*
U.S. Cl. 271—27 **10 Claims**



Apparatus for feeding sheets or panels, singly, from a stack of such sheets or panels comprising of suction head, a pair of parallel drive rolls spaced apart in the direction of feed, the suction head having a pickup extension movable between the rolls to pick up a sheet or panel and bring it into contact with the drive rolls to be fed laterally of the stack to a machine or to some other site.

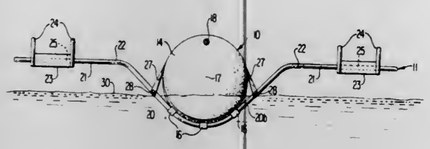
3,620,528
APPARATUS FOR FEEDING FLEXIBLE SHEET MATERIAL TO A PAIR OF TRANSPORT ROLLERS
Rudolf Skocir, Koppern/Taunus, Germany, assignor to Maschinenfabrik Turner A. G. Oberursel, Taunus, Germany
Filed Sept. 22, 1969, Ser. No. 859,948
Claims priority, application Germany, June 10, 1969, P 19 29 207.0
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 **10 Claims**



The present invention relates to an apparatus for feeding flexible sheet material such as animal hides to a pair of trans-

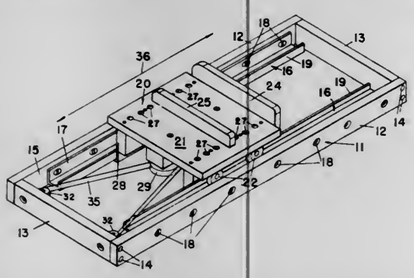
port rollers especially in connection with a leather-splitting machine. The invention provides a guide surface which is located adjacent to one of the transport rollers thus creating a guide channel leading into a feed gap between two transport rollers. The guide surface presses the sheet material first against the transport roller which acts as a drive roller with such a looping angle that the sheet material is positively fed into the feed gap.

3,620,529
AQUATIC RECREATIONAL DEVICE
Joseph W. Newman, P.O. Box 5175, Mobile, Ala.
Filed June 3, 1970, Ser. No. 43,004
Int. Cl. A63g *11/00*; **A63c** *15/02*
U.S. Cl. 272—56 **15 Claims**



A device for recreational use in the manner of a seesaw in a body of water, including a buoyant chamber and a frame attached to the chamber. The chamber and frame are rotatable about an axis extending through the chamber and substantially perpendicular to the longitudinal axis of the frame to provide a seesaw action. The frame includes a pair of seats on opposite sides of the chamber for accommodating a pair of users thereon. To control the maximum amount of seesaw action that can be achieved with the device, the buoyancy of the chamber can be varied, as can the distance between each of the users and the axis of rotation.

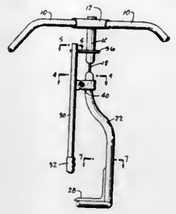
3,620,530
ELASTIC BAND-RESISTANCE EXERCISING DEVICE
Ira R. Cosby, Spokane, Wash., assignor to Verlin R. Kinert, Spokane, Wash., a part interest
Filed Apr. 18, 1969, Ser. No. 817,358
Int. Cl. A63b *21/00*
U.S. Cl. 272—82 **5 Claims**



A contrivance for exercising one's limbs during times of immobility, wherein a carriage is movable on a frame along a reciprocal path against the resistance of a resilient member and the carriage also has structure to vary the position of the resilient member's attachment to the carriage so as to vary the force required to move the carriage along said path in accordance with manual selection.

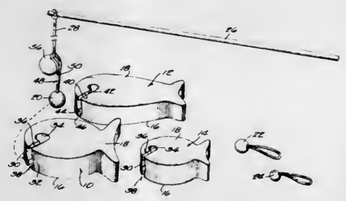
3,620,531
CHILD'S SWING
Robert F. Larkin, 209 Comly Road, Lincoln Park, N.J.
Filed Oct. 20, 1969, Ser. No. 867,717
Int. Cl. A63g *9/16*
U.S. Cl. 272—89 **5 Claims**

My invention comprises a frame with a downwardly extending center support. A swing is provided with an upwardly extending section joined by a cable to the support. Handle means manually operable by a user of the swing and pivotally



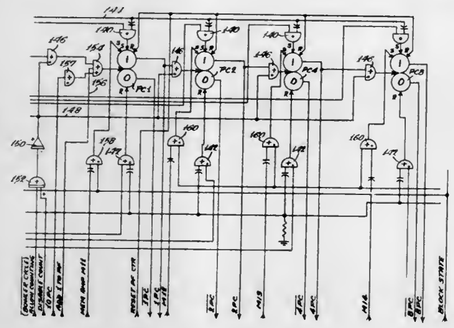
secured to the section engage the support in such manner that the user can swing in any direction.

3,620,532
FISHING GAME
Russell H. Graf, 7315 West Duluth Ave., Milwaukee, Wis.
Filed Oct. 24, 1969, Ser. No. 869,214
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **10 Claims**



A game for children includes a plurality of imitation fish with simulated fishmouths which in one embodiment are formed by a first bore extending inwardly from the nose of the fish to a cross bore which simulates the eyes of the fish. Channels along the sides of the first bore permit a simulated fish lure in the form of a sphere fixed to a fishline to move into a coupled position in the cross bore. Fish lures of various configurations and bores of different sizes and configurations provide selectivity in coupling the lures for the various fish.

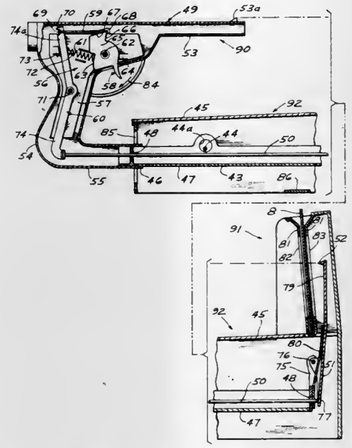
3,620,533
INCREMENTAL PINFALL SYSTEM
Herbert D. Grosvenor, Muskegon, Mich., and Jerome F. Walker, Kirtland, Ohio, assignors to Brunswick Corporation
Filed June 12, 1969, Ser. No. 832,608
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 C **8 Claims**



A bowling scorer including pinfall-counting system for receiving information relative to the number of pins knocked down after the first ball in a frame and relative to the number of pins knocked down by both balls in a frame and for

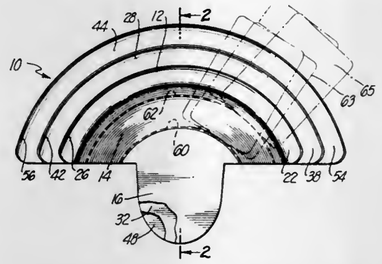
providing an indication of first ball pin count only and second ball pin count only. The system includes a binary counter and a memory for receiving the complement of first ball pin count from the count. The provision of second ball only pin count is accomplished by loading the counter complement of first ball pin count into the counter from the memory, a count of one is added thereto and thereafter, the pinfall information relative to pins knocked down by both balls is provided to the counter resulting in the same containing second ball only pin count.

3,620,534
SIMULATED GUN AND TARGET WHICH IS STRUCK FROM BEHIND TO INDICATE CORRECTNESS OF AIM
Alfred Einfalt, Nurnberg, Germany, assignor to Gebruder Einfalt, Blechspielwarenfabrik, Nurnberg, Germany
Continuation-in-part of application Ser. No. 647,972, June 22, 1967, now abandoned. This application Jan. 28, 1970, Ser. No. 6,364
Int. Cl. A63b *9/02*
U.S. Cl. 273—101.2 **5 Claims**



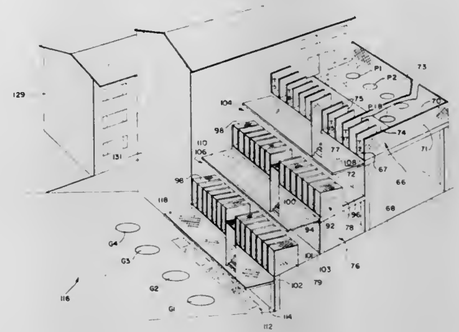
A toy shooting range includes a gun which is movable so that it can be aimed at a target and a striker pin located behind the target. The gun and the striker pin are mechanically coupled so that aiming movements of the gun are translated in corresponding movements of the striker pin. Firing of the gun actuates the striker so as to mark the target at a point corresponding to the aiming of the gun.

3,620,535
PLAYING CARD HOLDER
Florian B. Cerney, and Tina M. Cerney, both of 1405-1/4 North Havenhurst Drive, Los Angeles, Calif.
Filed Dec. 18, 1969, Ser. No. 886,280
Int. Cl. A63f *1/10*
U.S. Cl. 273—150 **2 Claims**



A card holder which removably supports a plurality of rows of playing cards with the cards in each row spaced side-by-side and with the rows vertically spaced so that all of the cards are within the view of the user. Each row of cards is removably supported in a vertical position between resiliently mounted fan-shaped plates or leaves so that individual cards can be inserted and removed without dislodging adjacent cards.

3,620,536
GOLF COURSE
Edward L. Lau, 6000 Kalanianaole Highway, Honolulu, Hawaii
Filed Mar. 6, 1970, Ser. No. 17,229
Int. Cl. A63b *67/02*, *69/36*
U.S. Cl. 273—176 A **14 Claims**

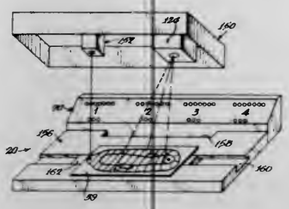


A golf course having two parallel fairways and a supplementary green area separating the fairways. A hitting area for hitting golf balls onto the fairways includes a tee level for hitting drive shots onto the fairways and first and second approach levels positioned in front of and vertically below the tee level for hitting approach shots onto the fairways. Protective screens separate the levels from each other so that golf balls hit on one level cannot injure players on another level. The fairways have a first group of target greens at their far end and a second group of target greens are spaced along the fairways at different distances from the front of the tee level. The fairways slope downward toward the tee area and may be formed as part of the existing terrain. Alternatively, the fairways may be made of a green colored wire mesh material including upwardly projecting bumpers. Gutters are provided at the sides of the fairways for retrieving driven golf balls. Deflectors, adopted to be moved, separate the gutters from the fairways. The target greens are in the form of panels having the front ends supported by jacks to permit tilting same. Balls are removed from the supplementary green area by a system of rollers which sweep across same and move golf balls into a centrally located gutter. Golf putting greens are located behind the tee areas.

3,620,537
GOLF GAME
Robert M. Conklin, and Ralph E. Witucki, both of Muskegon, Mich., assignors to Brunswich Corporation
Division of Ser. No. 588,856, Oct. 10, 1966, Pat. No. 3,501,152
Filed June 23, 1969, Ser. No. 870,748
Int. Cl. A63b *69/36*
U.S. Cl. 273—185 A **10 Claims**

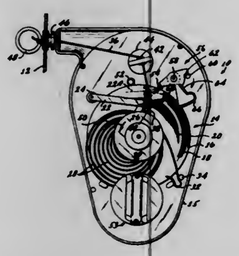
A plotting device for use in an indoor golf game having a computer that provides output signals representative of the distance the ball struck from the tee would have traveled in a first direction coinciding with an intended line of flight and in a second direction transverse to the first direction. The plotting device includes a planar map of a hole on a golf course with the map including indicia defining a cup for the hole. The map is supported on a member slidable on a plotting table and is connected to the slidable member by

means of a pivotal and releaseable connection. The connection provides for pivotal movement of the map on the supporting member about an axis coincident with the cup and transverse to the plane of the map. Also provided is a reference spot projector which projects a stationary spot of light on the map and a projector for projecting a movable



spot of light on the map in response to the output signals from the computer. In use, the map is pivoted on the support member and the support member moved in such a way that the reference spot is located at the point of initiation of a shot on the map. Following computation, the movable spot will then indicate the point of termination of the shot on the map.

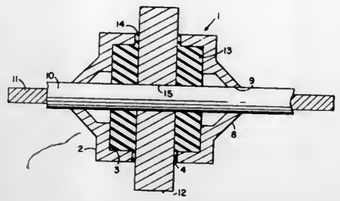
3,620,538
POSITION-RESPONSIVE VOICE UNIT
Francis T. Mercer, Manhattan Beach, and Frederick A. Petersen, Jr., North Redondo Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed May 15, 1969, Ser. No. 824,854
Int. Cl. G11b *3/08, 25/04*
U.S. Cl. 274—1 A **11 Claims**



A toy phonograph which selects one of a plurality of sound tracks in accordance with the orientation of the toy, comprising a tone arm mounted for lateral movement to engage any of the tracks and a selecting member movable by gravity to direct the tone arm into a particular track. In one position of the toy, the selecting member is moved to a position where it abuts the tone arm to force it to engage a first track, and in a second position of the toy, the member moves to a position clear of the tone arm to allow it to engage another track. The toy has a plurality of sides with different designs, and the recording which is selected at any orientation of the toy is appropriate to the design to be viewed at that orientation, such as the design on the upwardly facing side.

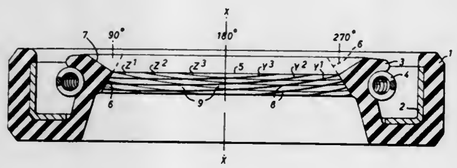
3,620,539
MOISTURE-PROOF WIRE HOLDER
Maceo M. Lanier, and Nathan P. Williams, both of Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Aug. 23, 1968, Ser. No. 754,882
Int. Cl. F16j *15/10*
U.S. Cl. 277—63 **2 Claims**

A moistureproof wire holder for attachment to a panel and for holding wires in a fixed position when the wires are passed through a hole of substantially equal diameter in the panel. The holder is a two part device, one part placed on each side of the panel. Each part is made of a silicone rubber member fitted into a recess portion of a plastic or metal clamp. The clamps exert a spring action on the wires to resist



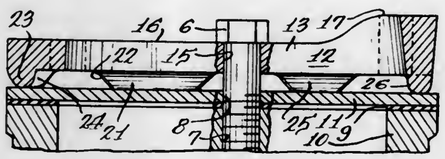
movement away from the panel, thereby compressing the rubber into a moistureproof seal between the clamp and the panel. The silicone rubber also maintains a positive moisture seal around the wire.

3,620,540
SHAFT SEALS
Ernest T. Jagger, Newcastle Upon Tyne; Geoffrey W. Halliday, Northumberland, and Frank Harrison, Sunderland, all of England, assignors to George Angus & Company Limited, Newcastle upon Tyne, England
Filed Mar. 31, 1970, Ser. No. 24,208
Claims priority, application Great Britain, May 9, 1969, 23,697/69
Int. Cl. F16j *15/32*
U.S. Cl. 277—134 **5 Claims**



A lip-type shaft seal with a sealing band between opposite frustoconical surfaces has two or more arcuate ridges, or sets of ridges, molded on the outer frustoconical surface so that they mutually intersect and their ends intercept the sealing band to provide two or more pairs of feedback vanes surfaces effective for either direction of relative shaft rotation.

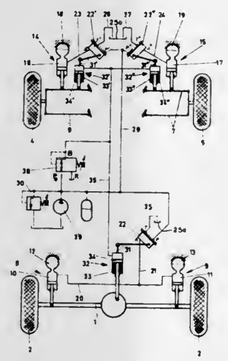
3,620,541
SEALPLATE STIFFENER RING FOR AIRBRAKE SERVICE PORTION COVER
William R. Page, Winnetka, Ill., assignor to P.E.P. Inventions Inc., Chicago, Ill.
Continuation-in-part of application Ser. No. 857,453, Sept. 12, 1969, now abandoned. This application Mar. 3, 1970, Ser. No. 16,084
Int. Cl. B65d *55/00*
U.S. Cl. 277—237 **7 Claims**



The invention relates to a stiffening member for the cover of a pressurized container for fluids such as air, particularly

to a stiffening member for the cover of such body. It is particularly designed as a seal plate stiffener ring for an airbrake service portion cover. The stiffening member preferably comprises a ring of rigid material having bolt holes therethrough corresponding to boltholes in the cover and in the body of the container with projections on the bottom of the stiffening member between the boltholes following the general contour of the cover in order to apply pressure between the cover and the body of the container between the boltholes. Preferably, the stiffening member is in the form of an elongated ring. In addition, projections may be provided on the bottom of the plate to provide pressure points on the cover.

3,620,542
LEVEL CONTROL ASSEMBLAGE FOR VEHICLES
Reiner Hovorka, Wuppertal-Barmen, Germany, assignor to Langen & Company, Dusseldorf, Germany
Filed Apr. 17, 1969, Ser. No. 817,045
Claims priority, application Germany, May 15, 1968, P 17 55 480.2
Int. Cl. B60g *17/04*
U.S. Cl. 280—6.1 **5 Claims**



A level control assemblage for vehicles for stabilizing the distance between the vehicle body and one or more wheel-supporting means independently of load variations at the vehicle and maintaining the distance constant at a preselectable value in which setting or regulating cylinders are connected in series with spring components between the vehicle body and the wheel-supporting means. The pressure spaces of the setting cylinders are connected, dependent upon the distance between the vehicle body and the wheel-supporting means, via one or more level control valves to which the distances are, via linkages communicated, either with a pressure source or with a tank conduit, with the length of the linkages being continuously variable by means of piston-cylinder units installed in the linkages.

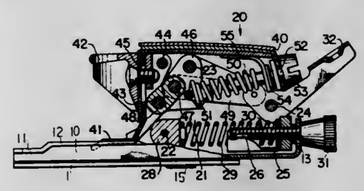
3,620,543
DEVICE FOR HOLDING SKIS
Gunter Alexander Peis, Richard-Wagner-Strasse 9, Innsbruck, Austria
Filed Sept. 9, 1969, Ser. No. 856,431
Int. Cl. A63c *11/02*
U.S. Cl. 280—11.13 T **21 Claims**

Skis are constructed with at least one permanent magnet fixed inside one ski in the middle zone related to the ends of the ski and at least one ferromagnetic element fixed in the same zone of the other ski of the pair such that when the pair are placed together with their running surfaces face to face,



the skis will hold together without the use of straps or other external holding devices.

3,620,544
BASE ASSEMBLY FOR SKI BOOT HEEL BINDING
Kesao Shinohara, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed June 2, 1970, Ser. No. 42,732
Claims priority, application Japan, July 25, 1969, 44/70154
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**

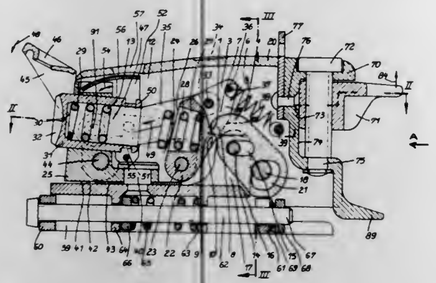


A base assembly for fixing a ski heel binding body to a ski comprises a fixing metal member provided with a sheath portion at its rear portion. It is fixed to the upper surface of the ski by screws threaded through fixing holes in the member. A guide plate includes a tongue portion to engage with the sheath portion of the fixing metal member and holes at its fore-end corresponding with the fixing holes at the fore-end of the fixing metal member when the tongue portion is engaged with the sheath portion. The guide plate is easily fixed to the fixing metal member by the tongue portion and by the screws threaded through the holes at the fore-end of the guide plate and the fixing metal member.

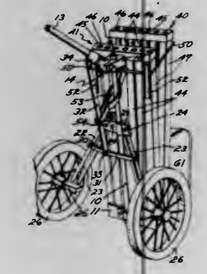
3,620,545
SAFETY CLAMP FOR SKI BINDINGS EMPLOYING A COMBINED VERTICAL AND HORIZONTAL SWING CATCH
Heinz Korger, and Heinrich Eckel, both of Munich, Germany, assignors to Firma Heinrich Eckel, Munich, Germany
Filed Oct. 21, 1969, Ser. No. 868,186
Claims priority, application Germany, Nov. 2, 1968, P 17 03 719.3
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **24 Claims**

A safety clamp for a ski binding includes a support assembly for attachment to a ski and a hood member pivotally mounted relative to the support assembly for engaging a ski boot in a releasable manner. Positioned within the hood member is a spring-loaded catch assembly composed of a common control member releasably engageable with a com-

mon support member so that the catch member can swing in the vertical and horizontal directions. The catch member is secured to the hood member and the catch support is secured to the support assembly. A domelike sensing surface on the catch member is movable in the vertical and horizontal directions while in contact with a control surface on the catch support. When an overload is transmitted to the catch assembly, the catch member rides off the control surface on the catch support and the hood member, in turn, releases the ski boot.



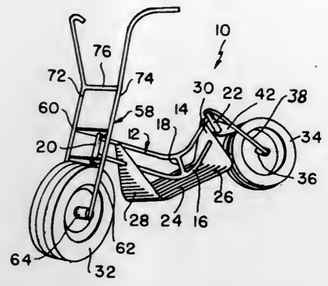
3,620,546
GOLF CART WITH CLUB RACK FOLDABLE BY CART HANDLE
John H. Andersen, 654 Broadway, Bethpage, N.Y.
Filed Sept. 16, 1969, Ser. No. 858,466
Int. Cl. B62d *3/00*
U.S. Cl. 280—40 **9 Claims**



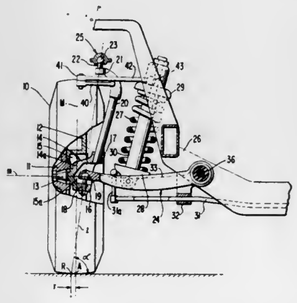
In a conventional wheeled cart for closed by transporting golf clubs there is substituted for the usual club-carrying bag a dual rack of the folding type wherein at least one of two slablike rack sections is inclinable relatively to the other section between open and closed conditions of the rack. The opening and closing of the rack is performed by swinging movement of a handle by which the cart is hauled. In a cart wherein the ground wheels of the cart are shifted between spread and retracted positions such shifting of the wheels positions is caused by swinging of the same handle that hauls the cart wherefor opening and/or closing of the rack takes place simultaneously with the spreading and retracting of the ground wheels of the cart.

3,620,547
SCOOTER
Milton J. Vaverek, 4420 Joslyn Road, Pontiac, Mich.
Filed Aug. 25, 1969, Ser. No. 852,735
Int. Cl. B62b *3/00*
U.S. Cl. 280—84.04 A **8 Claims**

The scooter is designed basically to be operated downhill using gravity as the motive power. The front wheel is turned conventionally by means of a steering mechanism including handlebars. The rear wheel turns automatically upon tilting of the scooter frame. The pivotal axis of the rear wheel is inclined upwardly and forwardly and theoretically intersects the ground at a point forwardly of the point where the rear wheel touches the ground. This geometry results in the rear wheel turning in the same direction as the frame is tilted.



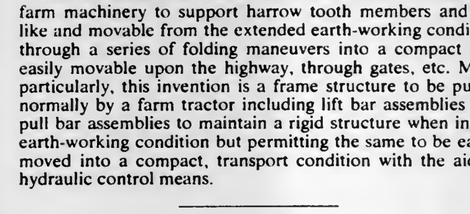
3,620,548
SUSPENSION OF STEERABLE FRONT WHEELS OF MOTOR VEHICLES
Friedrich H. Van Winsen, Kirchheim Teck; Kurt Trachte, Echterdingen, and Gunther Haverbeck, Plochingen, all of Germany
Filed Mar. 28, 1969, Ser. No. 811,455
Claims priority, application Germany, Mar. 30, 1968, P 17 55 113.2
Int. Cl. B62d *7/16*
U.S. Cl. 280—96.2 **15 Claims**



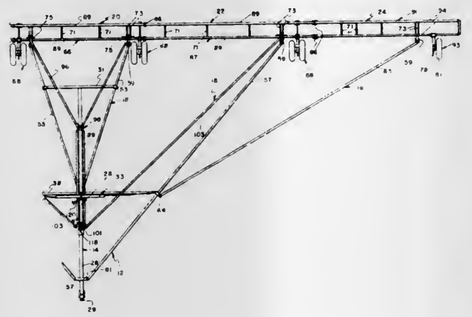
A suspension for the steerable front wheels of motor vehicles by means of superposed guide members in which the joint connecting the lower guide member with the wheel carrier is arranged either partially or completely on the inside of an approximately trough-shaped recess of the brake disk or the like approximately at the height of the wheel center.

3,620,549
INDUSTRIAL TRAILER WITH SELECTIVE ONE- OR TWO-END STEERING
Robert G. Miller, and Ernest H. Radaker, both of Pittsburgh, Pa., assignors to Phillips Mine & Mill Supply Co., Bridgeville, Pa.
Filed Oct. 2, 1969, Ser. No. 863,082
Int. Cl. B62d *13/06*
U.S. Cl. 280—99 **5 Claims**

There is disclosed a four-wheeled vehicle having two swiveled front wheels and two swiveled rear wheels. There is a tong or drawbar at the front that rotates in an arc about a pivot and which is connected with the front wheels to steer the vehicle in the direction to which the drawbar is turned. There is a block rotatable about the same point with cross links attached thereto and connected with the rear wheels. A latch selectively connects this block with the vehicle body to hold the block and rear wheels from swiveling or for connecting the block for arcuate movement with the drawbar to simultaneously swivel the front and back wheels.

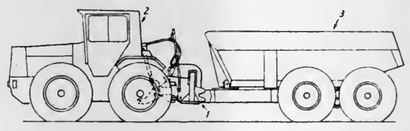


3,620,550
DOUBLE-FOLD FRAME STRUCTURE
Richard J. Hornung, Spearville, Kans.
Filed Nov. 3, 1969, Ser. No. 873,525
Int. Cl. B60d *1/14*
U.S. Cl. 280—476 A **5 Claims**



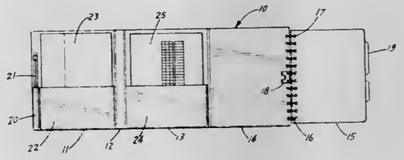
This invention is a double-fold frame structure usable in farm machinery to support harrow tooth members and the like and movable from the extended earth-working condition through a series of folding maneuvers into a compact unit easily movable upon the highway, through gates, etc. More particularly, this invention is a frame structure to be pulled normally by a farm tractor including lift bar assemblies and pull bar assemblies to maintain a rigid structure when in the earth-working condition but permitting the same to be easily moved into a compact, transport condition with the aid of hydraulic control means.

3,620,551
TRAILER COUPLINGS
David J. B. Brown, Stroud, England, assignor to Winget Limited, Rochester, Kent, England
Filed June 20, 1969, Ser. No. 835,031
Int. Cl. B60d *1/00*
U.S. Cl. 280—479 **2 Claims**



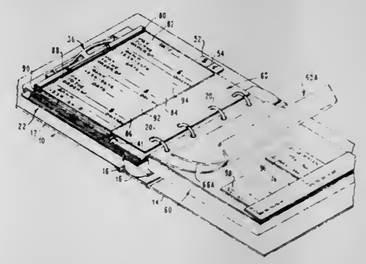
A coupling for interconnecting wheeled vehicles, such as a tractor and a trailer. The coupling is of two parts, one part being movable between coupled and uncoupled positions with the other part. Preferably one part is pivotally mounted on a tractor and provides for movement about both vertical and horizontal axes.

3,620,552
DISPLAY DEVICE
Richard W. Woodcock, Nashville, Tenn., and John P. Yackel, Circle Pines, Minn., assignors to American Guidance Service, Inc., Circle Pines, Minn.
Filed Sept. 15, 1969, Ser. No. 857,726
Int. Cl. B42d *3/16*
U.S. Cl. 281—33 **2 Claims**



A presentation folder for the display of test or other educational material or sales or promotion material, or the like. The device is a compact unit for storing and displaying pictorial and/or typographical material printed or otherwise reproduced on pages within the device. When closed, it is in the form of a book. When opened, it assumes the form of an easel presenting stimulus material. The unit includes relatively stiff front and back covers hinged to a spine and includes a plurality of pages of pictorial and/or typographical stimulus material loosely bound, as by spiral or other wire binding, or the like, for flipping from one side to the other of the easel formed when the device is opened.

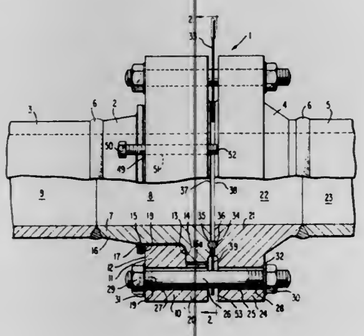
3,620,553
COMBINED CHECK AND RECORD-KEEPING BOOK
Marion Donovan, 418 Harbor Road, Southport, Conn.
Filed Dec. 9, 1968, Ser. No. 782,202
Int. Cl. B41l *1/20, 3/00*; **B42d** *15/00*
U.S. Cl. 282—8 C **8 Claims**



A refillable checkbook and record-keeping combination for use with conventional bank checks and special preprinted record forms on which the data written on the checks is duplicated when the checks are written. A holder of particular form is secured in a loosleaf notebook and is so constructed as to hold the checks in a definite position so that they and record forms also secured in the book may be moved into registry and held in registry while the checks are being written. The record forms each include a permanent record sheet, preferably with detachable sheets for forming nonnegotiable duplicate copies of individual checks, and the permanent record sheets also provide spaces for entry of deposits and other information relating to the bank account all arranged to facilitate accurate balancing and reconciling of the account. Certain of the modifications disclosed provide a storage pocket on the permanent record sheet for related papers such as deposit slips. Further modifications in-

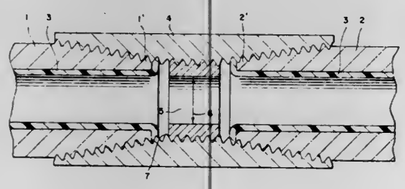
clude simplified versions of the checkbooks for pocket use in which preprinted record forms are so attached to the book that they are readily movable into registry with the checks for making duplicates as the checks are written.

3,620,554
SUBMERGIBLE FLANGE COUPLING AND GASKET
Delbert R. Ward, and William R. Rochelle, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.
Filed May 15, 1969, Ser. No. 824,959
Int. Cl. F16l *23/00*
U.S. Cl. 285—18 **3 Claims**



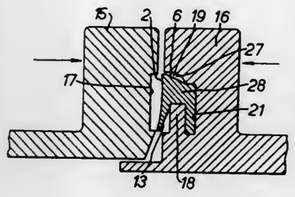
Coupling apparatus for interconnecting submerged conduit sections, which apparatus includes coupling connecting members and coupling jack units which are generally circumferentially dispersed about the submerged coupling apparatus. The coupling jack units are operationally independent of the coupling connecting units.
A bifurcated guide and a handle facilitate the installation of a seal between coupling members of the apparatus.
A coupling including a circumferentially translatable, flange-jacking assembly.

3,620,555
CORROSION RESISTANT PIPE JOINT SYSTEM
Fred C. Hinds, Richardson, and Donald R. Anthony, Dallas, both of Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,064
Int. Cl. F16l *15/00*
U.S. Cl. 285—55 **6 Claims**



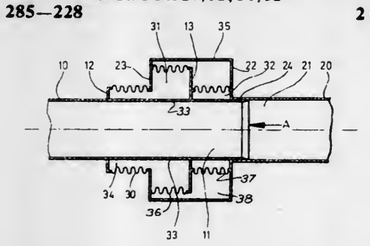
A pipe joint system which resists corrosion comprising a coupling means joining at least two sections of metal pipe, an electrically insulating coating over the interior surface of the pipe, and at least one arcuate member carried in electrical contact with the coupling means, the arcuate member being more electronegative than the pipe and of a configuration such that the member does not extend substantially into the flow path of fluid through the pipe and coupling means.

3,620,556
SEALING RING FOR PIPE COUPLING
Arthur L. Paddington, Thorpe Willoughby, near Selby, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
Filed Feb. 6, 1969, Ser. No. 797,151
Claims priority, application Great Britain, Feb. 16, 1968, 7,853/68
Int. Cl. F16l *17/06*
U.S. Cl. 285—110 **4 Claims**



A sealing ring for making a fluidtight joint between the opposing faces of two pipe flanges, the sealing ring being made on an elastomeric material and having an annular portion shaped to be retained in sealing relationship with a seating formed in one of the pipe flanges and an annular flange adapted to engage and be deflected by the other pipe flange so as to establish a sealing relationship with the said other pipe flange.

3,620,557
APPARATUS FOR CONDUCTING GAS
Rolf Gustav Sturm, Munich, Germany, assignor to Entwicklungsring Sud GmbH, Munich, Germany
Filed July 1, 1969, Ser. No. 838,159
Claims priority, application Germany, July 3, 1968, P 17 56 722.5
Int. Cl. F16l *27/12, 51/02*
U.S. Cl. 285—228 **2 Claims**

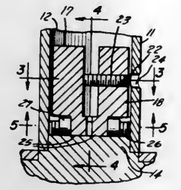


An apparatus for compensating for the thermal expansion of a gas duct. Two ducts are coaxially positioned for sliding engagement. The inner duct is provided with a pair of parallel, outwardly projecting flanges. The end of the outer duct is provided with an outwardly disposed flange, the ends of which are formed to define a cylindrical segment coaxial with the inner duct. The free end of the cylindrical segment is inwardly formed to define an inwardly disposed flange which is positioned between the pair of flanges projecting from the surface of the inner duct. Cylindrically shaped accordion bellows are secured to the adjacent surfaces of the flanges so as to define three pressure chambers.

3,620,558
JOINT LOCKING APPARATUS
Daniel G. MacMillan, Route No. 1 Box 856, Winter Haven, Fla.
Filed June 23, 1969, Ser. No. 835,439
Int. Cl. F16b *7/00*
U.S. Cl. 287—54 **13 Claims**

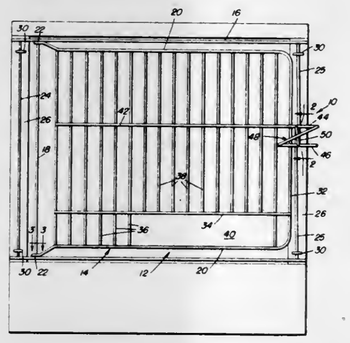
A joint locking device for use in the construction of knockdown furniture, display cases, and the like, where a

structure is to be readily assembled to a predetermined configuration and then readily collapsed for transportation or reassembly. One member of a structural frame has a locking insert for insertion into a second member of the frame whereby the two members may be locked together in a rigid manner. The locking insert has a base member with a guide



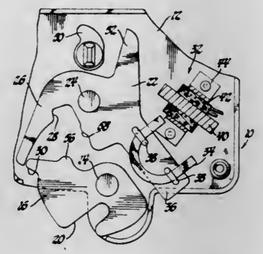
groove therein and a pair of sliding locking members having slide bars for sliding in the guides in the base. The locking members may be forced apart for gripping the internal walls of the second frame member, thereby locking the two frame members together. The sliding lock members are forced apart by a setscrew with access to the setscrew provided by a small aperture in the side of the frame member.

3,620,559
CAGE DOOR HANDLE AND LATCH ASSEMBLY
Morton W. Jones, 925 Third St., Ramona, Calif.
Filed June 9, 1970, Ser. No. 44,774
Int. Cl. E05c *19/02*
U.S. Cl. 292—76 **5 Claims**



This device is a door handle and latch assembly for use on animal enclosures, such as cages or the like, particularly for small animals such as chinchilla, rabbits, mice, rats, mink, poultry, etc.
It consists of a small tight loop or wire keeper projecting from the door jamb or cage wall adjacent the doorway of the cage, and a large open latch loop of resilient wire or metal rod having a succeeding convolution spaced apart a distance slightly less than the maximum diameter of the keeper loop, the latch loop extending at right angles to the keeper loop and so mounted that when the door is closed, the adjacent convolutions of the latch loop spread apart and snap over the keeper loop to hold the door latched in closed position sufficient to hold it closed against the weight or push of the animals confined in the enclosure. This same large latch loop also acts as a handle for opening the door by inserting a finger or two into the large loop and pulling it to snap it out of engagement with the keeper loop, or by twist flexing the handle loop to somewhat enlarge the convolution spacing enabling the handle to easily withdraw from it the keeper loop and open the door.

3,620,560
VEHICLE CLOSURE LATCH
Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 2, 1969, Ser. No. 863,087
Int. Cl. E05c *3/26*
U.S. Cl. 292—201 **3 Claims**

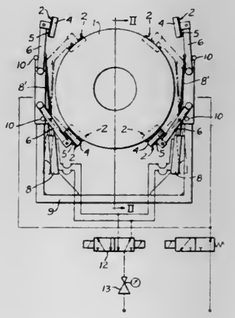


A minimum-release-type of vehicle deck lid or other closure latch which includes fork latchbolt and detent lever elements provided with cam out detent shoulders and which further includes a magnetic holding arrangement for the detent lever normally opposing the cam out latch-releasing tendency of the latter until an electromagnet is selectively briefly energized to neutralize the permanent magnet and permit release of the latch.

ERRATUM

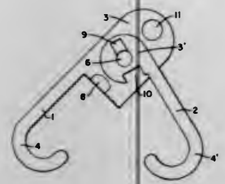
For Class 292—262 see:
Patent No. 3,620,483

3,620,561
TRANSPORTING DEVICE FOR USE IN CONNECTION WITH THE MANUFACTURE OF UNVULCANIZED BELTED TIRES
Klaus Grotkasten, Hamburg, and Ingo Hirschkorn, Neu-Wulmstorf, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Oct. 17, 1969, Ser. No. 867,270
Claims priority, application Germany, Oct. 19, 1968, P 18 04 097.6
Int. Cl. B66c *1/62*
U.S. Cl. 294—67 BC **3 Claims**



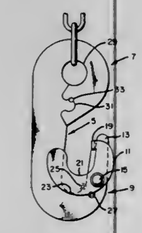
A transporting device for a raw tire, especially belted raw tire, which includes a frame having two diametrically opposite areas thereof pivotally connected to two pairs of arms carrying angle-shaped tire engaging gripper members for engaging shoulder areas and circumferential areas of said tire while control means are provided for controlling said arms.

3,620,562
CONNECTOR-HOOK ASSEMBLY
Masataro Sato, No. 28-26, Fukuakamachi 2-Chome, Takamatsu, Japan
Filed Apr. 20, 1970, Ser. No. 30,191
Claims priority, application Japan, Oct. 13, 1969, 44/97764
Int. Cl. B66c *1/34*
U.S. Cl. 294—82 **4 Claims**



Connector-hook assemblies for suspending or lifting cargoes, fastening lines together, attaching a bracelet and the like, in which pairs of complimental hook elements are pivotally connected and include a displaceable lock comprising cooperating lock-notch portions and an abutment on respective hook elements or on the pivotal element therebetween, and in which at least one of the hook elements includes a portion for connection to a line, chain link or the like.

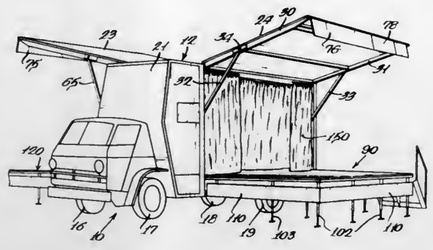
3,620,563
LOCKING LINK
George W. Pierce, 340 W. 29th Ave., Eugene, Oreg.
Filed Oct. 20, 1969, Ser. No. 867,497
Int. Cl. B64d *17/38*
U.S. Cl. 294—82 **1 Claim**



A locking link structure is provided having a hooklike member at one end with an arcuate keeper located on the tang portion of the hook. The arcuate keeper is pivoted to the hook in such a manner so that as a link is placed within the hook, the arcuate member will be automatically turned into locking engagement so that the link will not slip out of the hook. A detent is provided having two positions one of which tends to hold the arcuate member open and the other which tends to hold the arcuate member closed. In a preferred embodiment, the opposite end of the link is provided with a distortable open ring structure whereby it can be permanently hooked to a chain or the like.

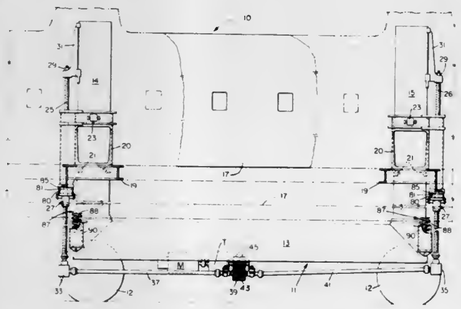
3,620,564
MOBILE CENTER
Jerry A. Wenger, Owatonna; Daryl D. Douglas, Owatonna; Harvey M. Urch, West Concord; Leonard Nordman, Owatonna, and John N. Polivka, Minneapolis, all of Minn., assignors to Wenger Corporation
Filed Oct. 13, 1969, Ser. No. 865,616
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **15 Claims**

A mobile center having a body and chassis with ground-engaging wheels and with an over-the-road capability wherein the body has a roof, sides and ends with the sides being defined by a pair of raisable canopies and with a pair of floor structures disposed within the body and interiorly of the canopies for over-the-road travel. The floor structures can be lowered from each side of the body to provide floors beneath the canopies with powered actuating means for operating one



or both of the canopies and floor structures between operative and inoperative positions. Also, enclosures are hingedly connected to the canopies and to the floor structures to enclose the space between the floor structures and canopies to provide additional uses for the mobile center.

3,620,565
AIRCRAFT PASSENGER TRANSFER VEHICLE
Walter S. Eggert, Jr., Huntingdon Valley, and James M. Herring, Jr., Merion Station, both of Pa., assignors to Boothe Airside Services, Inc.
Filed Oct. 16, 1969, Ser. No. 867,048
Int. Cl. B62d *31/02*
U.S. Cl. 296—28 A **5 Claims**

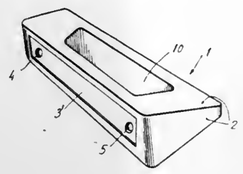


A vehicle to transfer passengers between a terminal building and parked aircraft. The vehicle includes a chassis having a main central beam and two upright guide posts at each end. A pod for containing the passengers is mounted for movement on the masts. Lift drive apparatus in the form of screw means suspended from the guide posts and connected to a power source may be driven to raise and lower the pod. Spring means housed in pockets on the chassis at the base of the masts provide suspension for the pod when the same is lowered and the vehicle is driven across the ground surface.

3,620,566
DOOR ARMRESTS OF AUTOMOTIVE VEHICLES
Jacky Leconte, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France
Filed Nov. 12, 1969, Ser. No. 875,837
Claims priority, application France, Nov. 13, 1968, 173,512
Int. Cl. B60n *1/06*
U.S. Cl. 296—153 **2 Claims**

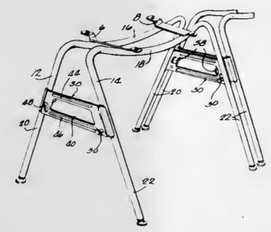
Armrest for the passengers' compartment of automotive vehicles, of the type comprising a resilient external body enclosing a metal element adapted to coact with an element of the vehicle body, characterized in that said metal element

consists of a sheet metal pressing formed with at least two identical lateral bent portions disposed on either side of a



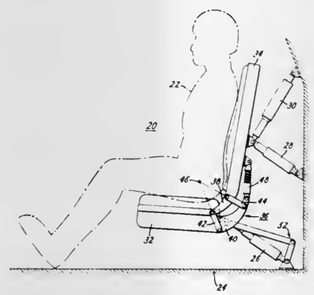
plane extending transversely to the armrest and adapted to be distorted about vertical axes.

3,620,567
CHAIR BASE GANGING FIXTURE
Philip J. Hendrickson, and Richard J. Resch, both of Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.
Filed July 1, 1969, Ser. No. 838,153
Int. Cl. A47c *1/124*
U.S. Cl. 297—248 **1 Claim**



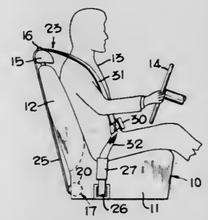
A chair base comprising front and rear legs is provided with braces connecting the rear with the front legs at each side of the chair base, the two braces being applied in mutually reversed positions. Each brace has a keyhole slot near one end and a headed peg near the other, the peg being detachably receivable into the complementary slot of a corresponding brace of the next adjacent chair base.

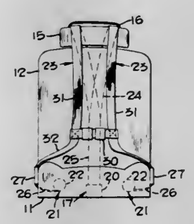
3,620,568
AIRCRAFT CREWSEAT
Elmore F. Morrow, Palm Beach Garden, Fla., assignor to The Boeing Company, Seattle, Wash.
Filed June 26, 1969, Ser. No. 836,724
Int. Cl. A47c *3/00, 1/02, 1/06*
U.S. Cl. 297—307 **3 Claims**



A seat structure which results in minimal movement between an occupant and the back of the seat when the seat is reclined. Members respectively extending from the seat back and a seat base are pivotally connected together by a pair of nonparallel links. Centerlines of the links intersect at a point essentially coincident with the pelvic point line of the occupant. An extensible link is connected to the seat base and the seat back for adjustably positioning the seat base and the seat back at a plurality of relative positions.

3,620,569
SEAT SAFETY HARNESS
Earl Mathis, c/o Aime Agency Co., 8301 Maryland Ave., St. Louis, Mo.
Filed Oct. 2, 1969, Ser. No. 863,088
Int. Cl. B60r *21/10;* **A47d** *15/00*
U.S. Cl. 297—388 **6 Claims**



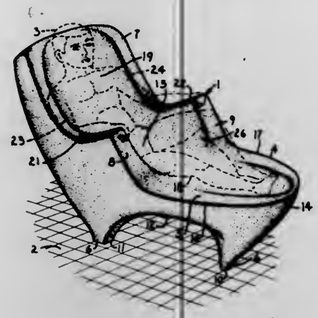


A seat safety harness having a pair of shoulder-lap straps arranged to pass over the shoulders of the seat occupant, each strap having a first end adapted to be reeled onto the spring-loaded spool of a first retraction reel assembly of the inertia type mounted substantially behind the seat occupant, and having a second end attached to one of the attachment means located substantially below the lap of the seat occupant, at least one of the second ends of the straps being reeled onto a spring-loaded spool of a second retraction reel assembly of the inertia type that constitutes at least one of the attachment means. Quick-release buckles are fixed to the straps and are selectively connectable to provide two shoulder strap portions and a lap strap portion. The spring loading of the spool of the second retraction reel assembly is greater than the spring loading of the spool of the first retraction reel assembly so that the harness is self-adjusting when worn by the occupant and is self-storing when not in use. Strap guides slidably receive the straps between the second retraction reel assembly and the buckles so that the buckles engage the guides to limit reel takeup on the associated spool before the straps have unreeled from the spool of the first retraction reel assembly. In one embodiment, a pair of spring-loaded spools of the second retraction reel assembly are mounted, one on each side of the seat, the second strap ends extending down over opposite seat sides for connection to such spools. In another embodiment, the spools of the second retraction reel assembly are mounted at the rear of the seat, the second strap ends extending down between the seat portion and back portion of a seat for connection to the spools.

3,620,570
CHAIR-BOAT STRUCTURE
Jean B. Wilson, L-8 Lake Latawana, Lees Summit, Mo., and Dell Y. Angerer, 639 Romany Road, Kansas City, Mo.
Filed Oct. 8, 1969, Ser. No. 864,775
Int. Cl. A47c *7/00, 7/20;* **B63c** *9/30*
U.S. Cl. 297—448 **4 Claims**

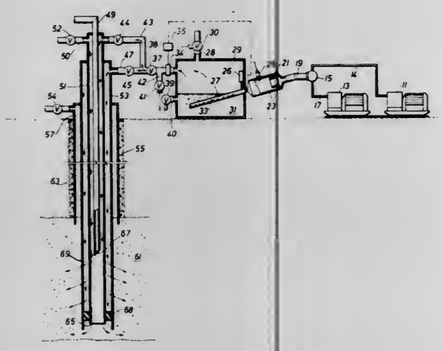
A buoyant structure adapted to be supported on a solid supporting surface and to float on water with an occupant

therein has an elongate buoyant upper portion with a generally horizontal concave upper surface adapted to support an occupant thereon with the buoyant structure being proportioned for stability while supporting the occupant. Support portions in the form of legs depend from the upper



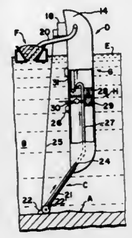
portion for engaging the solid surface for supporting the upper portion and the occupant thereon in a position above the solid surface. A back portion extends upwardly and rearwardly from a rearward end of the upper portion and arm portions extend upwardly from opposite sides of the upper portion adjacent the rearward end thereof.

3,620,571
SINGLE-WELL HEATED GAS MINING METHOD AND APPARATUS
Calvin H. Billings, 1901 Palermo Drive, Sulphur, La.
Filed June 16, 1969, Ser. No. 833,443
Int. Cl. E21b *43/24*; **E21c** *41/14*
U.S. Cl. 299—6 **13 Claims**



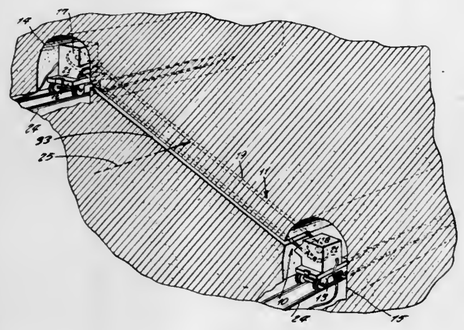
A mineral recovery method useful for mining liquefiable minerals, e.g., sulfur, involves the injection of hot gas, preferably with steam, through a series of concentric injection tubes which penetrate to the bottom of the mineral formation, and purging connate water from the vicinity of the tubes penetrating the formation by injection of such hot gas into the formation. The hot gas flow from the lowermost injection port is then stopped and hot gas flow is continued into the formation from upper injection ports, about 3 to 5 feet above the lower ports. The melted mineral collects as a pool in the vicinity of the lower injection ports and is pumped or air-lifted to the surface by conventional means and is maintained in a fused state by the heat of inflowing gas.

3,620,572
SEA MINING VESSEL
Manfred G. Krutein, General Dynamics Boat Div., Marine Technology Center, P.O. Box 911, San Diego, Calif.
Division of Ser. No. 461,785, June 7, 1965, Pat. No. 3,438,142
Filed Apr. 22, 1968, Ser. No. 723,191
Int. Cl. E02f *7/06*
U.S. Cl. 299—8 **6 Claims**



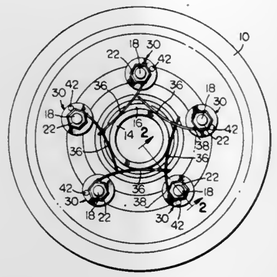
A sea mining vessel is disclosed wherein desired minerals lying at the sea bottom are first conveyed from the sea bottom to the submersed portion of an elongate vessel floating substantially vertically in the sea and then conveyed vertically from the submersed portion of the vessel to the surface of the sea. The vessel is constructed for floating horizontally on the ocean surface and ballast means shiftable for positioning the vessel substantially vertically in mining position. Hydraulic conveying equipment is used to convey the minerals from the sea bottom into a chamber in the vessel below the surface but maintained at atmospheric pressure and wherein minerals are dewatered and conveyed to the surface.

3,620,573
MINING METHOD AND APPARATUS THEREFOR
Desmond De Villiers Oxford, 33 New Forest Road, Forest Town, Johannesburg, South Africa
Filed Apr. 10, 1969, Ser. No. 815,098
Int. Cl. E21c *47/08*
U.S. Cl. 299—35 **3 Claims**



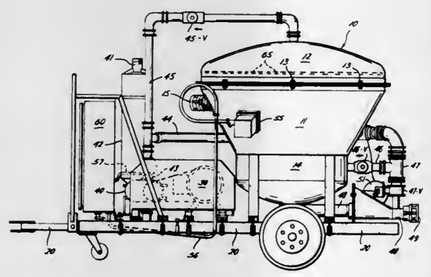
An apparatus for mining ore of a type which is located in relatively narrow strata within the earth whereby it is profitably disadvantageous to move large quantities of earth so to gain physical access thereto, the apparatus comprising means for sawing away of the narrow strata by a flat elongated endless chain saw mechanism mounted on a pair of carriages riding on rails in parallel tunnels, the mechanism having a thickness of approximately the thickness of the ore-bearing strata and the chain saw extending transversely between the tunnels wherein the ground material is sluiced into the tunnels and a pumping station provided to transport the material to the surface.

3,620,574
LUG LOCK
Paul D. Cox, Ridgeville, Ind., and Joseph J. Matchett, Dunkirk, Ind., assignor to said Matchett to said Cox
Filed Apr. 23, 1969, Ser. No. 818,753
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **2 Claims**



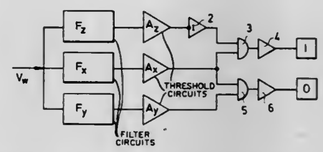
For use with a lug utilized to secure a wheel rim to a wheel hub, means for locking the lug against rotation in a direction tending to loosen it, the locking means comprising an element proportioned and designed to engage such a lug in such a manner as to be held against rotation relative thereto, and spring means connected to the element and arranged, when the element is so engaging such a lug, to engage an abutment, such as the sleever portion of the wheel hub. The preferred element is a collar proportioned and designed to slip axially over such a lug and snugly to engage at least one flat side thereof. The preferred spring means is an elongated, stiff, wirelike member securely attached, at its proximal end, to the element, the distal end portion of the member being arranged to engage the abutment.

3,620,575
PARTICULATE-CONVEYING APPARATUS
Donald J. McIver, and Russell D. McClaid, Jr., both of Houston, Tex., assignors to Keystone Valve Corporation, Houston, Tex.
Filed Sept. 5, 1969, Ser. No. 855,655
Int. Cl. B65g *53/40*
U.S. Cl. 302—53 **4 Claims**



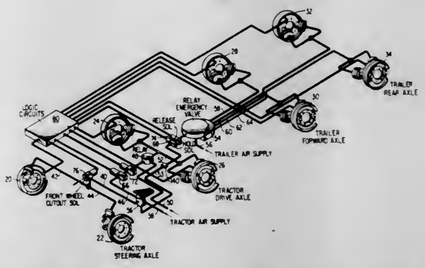
A system for (1) removal of particulate material from a supply area or container and filling a storage vessel, and (2) for discharging such material from the storage vessel into a supply line. Changing from cycle No. 1 to cycle No. 2 is effected by virtue of a reversible motor.

3,620,576
ELECTRONIC CONTROL OF VEHICLE BRAKE SYSTEM
Heinz Wehde, Heidelberg; Kurt Schindler, Nussloch; Joachim Rogge, Monchzell, and Armin Czinczel, Heidelberg, all of Germany, assignors to Teldix GmbH, Heidelberg, Germany
Filed July 28, 1969, Ser. No. 845,418
Claims priority, application Germany, July 27, 1968, P 17 80 062.3
Int. Cl. B60t *8/08*, *8/12*
U.S. Cl. 303—21 BE **12 Claims**



A plurality of filters are fed by a voltage which is proportional to the rotational speed of a wheel being braked. At least one filter produces an output which follows this voltage substantially without phase displacement whereas at least one other filter substantially differentiates this voltage and produces an output which is shifted 90° in phase and is proportional to rotational deceleration and acceleration of the wheel. Threshold circuits are fed by the filter outputs and control a normally open brake fluid inlet valve and a normally closed outlet valve.

3,620,577
BRAKE CONTROL SYSTEM
James C. Neisch, Orchard Lake, and Alton B. Holmes, Troy, both of Mich., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Dec. 9, 1969, Ser. No. 883,407
Int. Cl. B60t *8/08*, *8/10*
U.S. Cl. 303—21 EB **5 Claims**

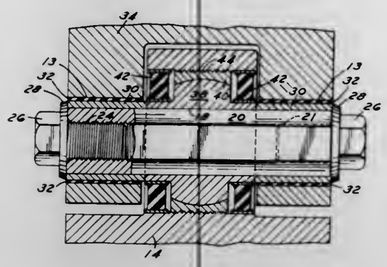


An electronic antiskid vehicle brake control system in which a pulse signal indicating the speed of one or more rear vehicle wheels is constantly compared to a reference pulse signal indicating the speed of the front vehicle wheels and a control signal is generated upon detection of a predetermined velocity differential. The control signal modulates the braking effort at the rear wheels. The front wheel brakes are released if they lock during brake application to permit the front wheels to regain speed to reestablish the reference signal and preserve steerability of the vehicle. When applied to a tractor-trailer combination the control system is automatically made compatible with a variety of trailer brake configurations.

3,620,578
METHOD OF RETAINING INNER RACE OF BEARING FOR LUBRICATED PIN TRACK
Joseph O. Fix, Utica, Mich., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 26, 1969, Ser. No. 880,264
Int. Cl. B62d *55/28*
U.S. Cl. 305—11 **8 Claims**

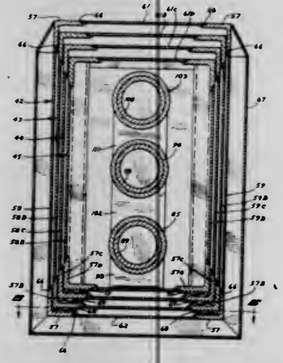
Means for retaining an inner race for the bearing of a lubricated pin track. The inner race of the bearing is retained

on a polygonal or splined pin by a sleeve, which in turn is stacked in place by bolts in the ends of the pin. The bearing



member is sealed therein against foreign matter and provides a tight connection for its inner race, whereby the track can be separated without breaking into the sealed bearing area.

3,620,579
EXTENSIBLE BOOM ASSEMBLY
Archer W. Brown, Minneapolis; James L. Montgomery, St. Paul, and Lorraine V. Erkenbrack, St. Paul, all of Minn., assignors to American Hoist & Derrick Company, Saint Paul, Minn.
Filed June 13, 1969, Ser. No. 833,079
Int. Cl. F16c *23/00*; **B66c** *23/04*
U.S. Cl. 308—3 **25 Claims**



A truck-mounted boom assembly having a plurality of telescopic boom sections. Each boom section has right angle corner members secured to top, bottom and sideplates. Rockable friction pads slidably associated with adjacent corner sections mount the boom sections for movement relative to each other. A plurality of fluid pressure cylinder units located within the boom assembly are operable to selectively extend and contract the boom assembly by moving the boom sections relative to each other.

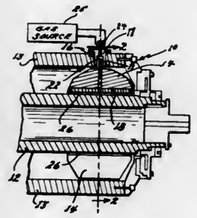
3,620,580
ROCK DRILL WITH INCREASED BEARING LIFE
Robert A. Cunningham, Bellaire, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Aug. 3, 1970, Ser. No. 60,372
Int. Cl. F16c *19/14*, *21/00*
U.S. Cl. 308—8.2 **15 Claims**

The invention is applicable to all types of rock drills in which a rolling cutter is rotatably mounted on a fixed shaft member with an interposed ball bearing, and is especially useful in the newer rock bits provided with a lubricant system and a highly effective seal. Heretofore the ball bearing has served as a means for transmitting loads from cutter to shaft, including both radial loads and axial loads. The inventor has modified the bearing structure in such a way that at least outward thrust loads and preferably radial loads as well no longer pass through the balls, i.e., from the raceway of the cone through the balls to the corresponding raceway on the bearing pin. This is accomplished by relieving or deepening either or both raceways, preferably in a nonuniform fashion so that the deepest relief is in the outboard portion of the bearing pin raceway or the inboard portion of the cone



raceway, or both. One or more pairs of transversely extending friction bearing surfaces are disposed on the pair of members to absorb such thrust.
The important effect of this improvement is the reduction or elimination of spalling of the ball raceways, thus eliminating metal particles that otherwise could find their way between the confronting surfaces of other bearing members, where they are likely to wreck havoc. The overall effect is to increase the life of the bearing, making it last as long as the cutting structure of the bit.

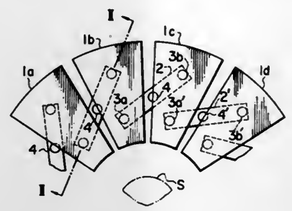
3,620,581
POROUS HYDROSTATIC BEARING
Stanley Heller, Philadelphia, and Wilbur Shapiro, Huntington Valley, both of Pa., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Oct. 12, 1970, Ser. No. 79,785
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **10 Claims**



A porous hydrostatic bearing having self-lubricating bearing pads mounted in a plurality of adjustably mounted bearing shoes. The use of such a bearing in conjunction with the gas source taking the form of the system working medium allows for the use of this bearing in a cryogenic atmosphere.

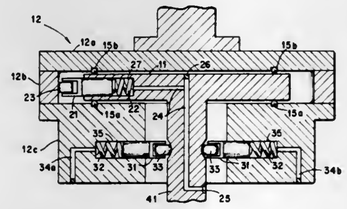
3,620,582
THRUST BEARING ASSEMBLY
Hiroshi Sato, and Hisashi Toshima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 14, 1970, Ser. No. 54,810
Claims priority, application Japan, July 14, 1969, 44/55111
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 **12 Claims**

A thrust-bearing assembly having a plurality of adjacent bearing shoe segments supported such that when a load is added concentrically on one bearing shoe segment, the load is automatically divided among and received on adjacent bearing shoe segments positioned on both sides of said one bearing shoe segment through seesaw action of spring plates



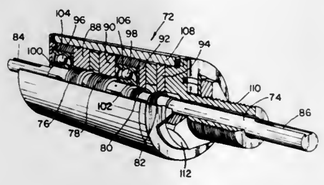
supporting the bearing shoe segments, whereby oil cut and overheat due to the concentric load can effectively be prevented.

3,620,583
CONTROLLED-MOTION COMPENSATOR
Thomas J. Koprowski, Northridge, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 22, 1970, Ser. No. 74,339
Int. Cl. F16c *27/00*
U.S. Cl. 308—184 **5 Claims**



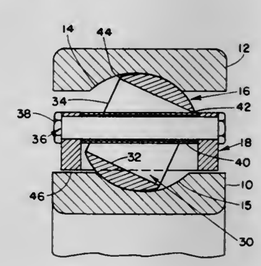
A system for coupling a pair of independent bodies and controllably compensating relative motion therebetween comprising a first coupling element defining a cylindrical socket and a second coupling element defining a disk with a tongue extending therefrom, said second coupling element disposed within said first coupling element, and hydraulic means acting between the coupling elements for controlling the stiffness of coupling therebetween.

3,620,584
MAGNETIC FLUID SEALS
Ronald E. Rosensweig, Lexington, Mass., assignor to Ferrofluidics Corporation, Burlington, Mass.
Continuation-in-part of application Ser. No. 865,281, Oct. 10, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,246
Int. Cl. F16c *33/82*; **F16k** *41/00*
U.S. Cl. 308—187.1 **21 Claims**



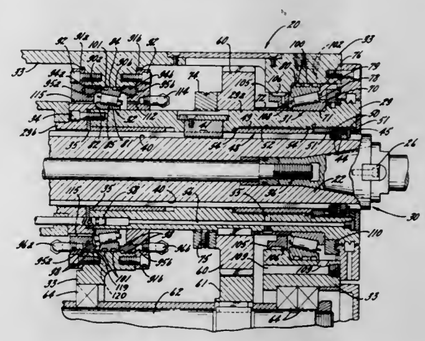
A modular magnetic fluid seal which comprises an outer ring and an inner ring within the outer ring and concentrically aligned therewith. The inner ring is spaced apart from the outer ring and secured thereto in a movable manner. Disposed between the rings and secured to the outer ring is a magnet. Adjacent to the magnet are pole pieces which define gaps with the inner ring. A magnetic fluid is captured in the gaps. The modular seal is inserted as a unit between surfaces such as a rotating shaft and a sleeve or collar. The inner ring is secured about the shaft in a fluidtight manner while the outer ring is secured in a fluidtight manner to the sleeve to provide a leakproof seal which may transmit rotary motion.

3,620,585
HIGH-SPEED ROLLING ELEMENT BEARING
William J. Anderson, and Harold H. Coe, both of North Olmsted, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Jan. 16, 1970, Ser. No. 3,417
Int. Cl. F16c *33/32*, *33/38*
U.S. Cl. 308—195 **3 Claims**



Holes through rolling elements in a bearing reduce the mass. A cage-mounted pin and rotatable tube thereon through each hole maintains the rolling element in the optimum position.

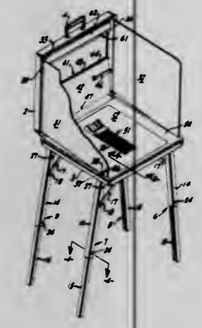
3,620,586
PRELOAD SPINDLE BEARING FOR MACHINE TOOL
Charles R. Maastricht, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Feb. 12, 1970, Ser. No. 10,740
Int. Cl. F16c *35/06*
U.S. Cl. 308—207 A **8 Claims**



A spindle mounting for a machine tool adapted to apply a predetermined light preload to the spindle bearings during high-speed operation and a predetermined higher preload during low-speed operation. The preload mechanism includes a pair of axially aligned hydraulically actuated pistons disposed on opposite sides of one of the outer bearing races. The pistons have a relatively narrow annular shape and do not extend radially outward substantially beyond the bearing, thereby minimizing the headstock space required. The outer periphery of each spindle bearing is formed with annular grooves through which a cooling fluid may be circulated for

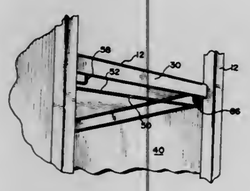
more efficient cooling of the bearings. Such cooling grooves also permit the bearings to be directly mounted in the headstock housing without containment in an intermediate cooling sleeve, thereby providing more accurate spindle support.

3,620,587
PORTABLE SELF-CONTAINED VOTING BOOTH
John E. Ahmann, Morgan Hill, Calif., assignor to Computer Electron Systems, Inc., San Francisco, Calif.
Filed Dec. 18, 1969, Ser. No. 886,061
Int. Cl. A47b *77/08, 43/00*; E04b *1/346*
U.S. Cl. 312—223 **10 Claims**



A self-contained voting booth which may be collapsed and enclosed entirely within and upon a compact carrying case for ease of transportation and storage. Integral extensible and retractable leg structures permit positioning of the booth at any desired location when extended yet do not interfere when retracted with support of the booth on another supporting surface when use of the leg structures is not desirable. The case structure includes retractable sidewall privacy panels and a light source integral therewith, supporting means for permitting use of automatic voting devices therein when punchcard-type ballots are to be employed, and an integral shelf structure providing a writing surface when write-in type ballots are to be employed.

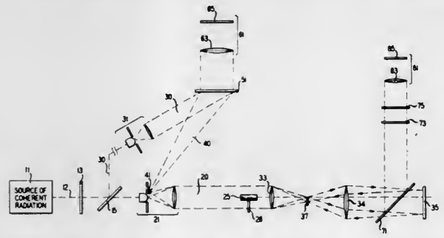
3,620,588
DOOR CLOSURE FOR SHELVING
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Apr. 6, 1970, Ser. No. 25,975
Int. Cl. A47b *88/06*
U.S. Cl. 312—323 **5 Claims**



A lightweight pull slide door construction for shelving which is either transparent or opaque and is notched at its upper corners to slide on a horizontally inwardly offset rod hanger that extends front to back within the opening defined by the front posts of the shelving. A front opening hook at each corner slidably engages the offset portions of the hanger in guided relationship and the hook portion pivotally engages the offsetting portion of the hanger at the front of the shelving, whereby a top portion of the door pivots forwardly behind the depending portion of the depending flange of the upper shelf, the notch accommodates the shelf corner securement, and the hooks determine the "hang" and levelness of the door when closed. The doors can be released and removed when in the open position through the space above the hanger and within the depending flanges of the upper shelf.

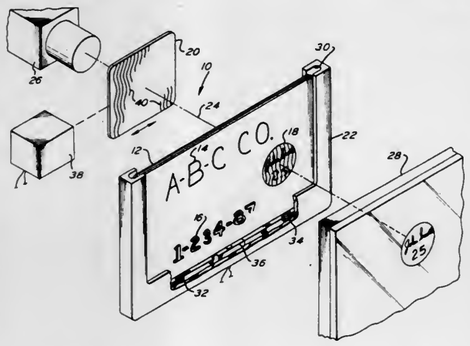
In one embodiment a second hook member is provided extending inside of and under the hanger ahead of the tip end of the front opening hook and spaced therefrom on its inner side sufficiently to clear the offsetting portion of the hanger so that the sliding door, which rests at its side edges upon the hanger will be prevented from pivoting upon the offsetting portion of the hanger against the bottom of an adjacent upper shelf and will provide a thrust point to stabilize the door in its intermediate positions to serve as a temporary horizontal shelf extension.

3,620,589
INTERFEROMETRY OF TRANSPARENT OBJECTS
Thomas Dixon Dudderar, Madison, and Richard O'Regan, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 8, 1970, Ser. No. 70,409
Int. Cl. G02b *27/22*; G01b *11/18*
U.S. Cl. 350—3.5 **18 Claims**



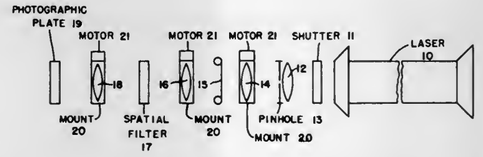
A method and apparatus have been devised for separating information related to the sums of the principal stresses in an object from information related to the differences between the principal stresses. Illustrative apparatus comprises means for rotating by approximately 90° the electric vector of a beam of radiation from the object, means for imaging this radiation to point-for-point coincidence with the object and means for interfering this beam from the object with a second beam that is a reference. Preferably, this second beam is formed by holographic techniques.

3,620,590
HOLOGRAPHIC METHOD AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL
Ronald C. Barker, Weston, Mass., assignor to Applied Laser Technology, Incorporated, Wilmington, Del.
Filed May 27, 1969, Ser. No. 828,184
Int. Cl. G02b *27/22*; G09f *3/03*
U.S. Cl. 350—3.5 **11 Claims**



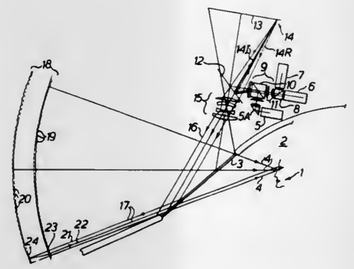
A holographic method and apparatus for storing and retrieving information only by authorized persons, particularly used for identifying the bearer of a record of such information, comprises storing the information on a record medium as a hologram, scrambling the image of the information on the hologram so that it cannot be recreated except by authorized persons using a master code, and then recreating the scrambled holographic image using apparatus that eliminates the effect of the master code. The information is recreated and displayed using apparatus for displaying holograms which further includes a master code hologram that is reciprocated across the optical axis of the display apparatus so as to eliminate the scrambling effect of the master code on the hologram. The master code may consist of a series of parallel randomly undulating lines.

3,620,591
OPTICAL PROCESSING OF DATA
Emmet D. Riggs, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,538
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **3 Claims**



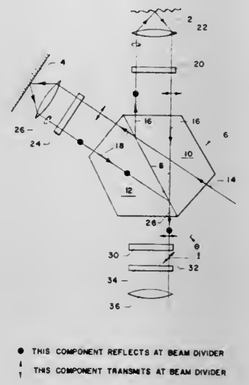
A method and apparatus for optically processing seismic or other data by spatial filtering in order to discriminate against optical noise and enhance recoverable information. Optical elements acting on the seismic signals are mounted in special assemblies and rotated at different angular velocities with respect to one another. A series of partial exposures are made of the output information at selected time intervals and added to give a composite exposure. Also disclosed is a preferred process for preparing spatial filters by photographic reduction.

3,620,592
OPTICAL DISPLAY SYSTEMS
Michael Harold Freeman, Denbigh, Wales, assignor to Pilkington Perkin-Elmer Limited, Liverpool, England
Filed June 29, 1970, Ser. No. 50,836
Claims priority, application Great Britain, July 3, 1969, 33,601/69
Int. Cl. G02b *23/00, 27/10*
U.S. Cl. 350—9 **14 Claims**



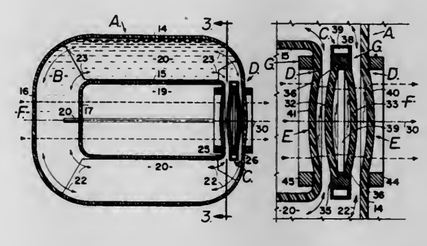
Collimated light carrying visual information is projected via a partial reflector on to a reflex-reflector which returns the light to the partial reflector for viewing by an observer who sees an image of the visual information at infinity. A flight simulator and a head-up display apparatus employing this system are described.

3,620,593
METHOD OF SURFACE INTERFERENCE MICROSCOPY
Robert B. Tackaberry, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 2, 1970, Ser. No. 7,918
Int. Cl. G02b *27/28*
U.S. Cl. 350—12 **3 Claims**



An incident beam of natural light is divided into two beams of linear polarized light, their polarizations being mutually perpendicular. One beam is directed to a specimen surface and the other to a reference surface. Upon reflection from their respective surfaces, the beams are recombined and analyzed. The resultant of this recombined beam is a linear polarized beam having a certain orientation which is a function of the difference in optical path of the two beams. This optical path difference relates to the magnitude of imperfections of the specimen surface under observation.

3,620,594
OPTICAL STABILIZER HAVING HYDRAULICALLY MOVED LIGHT-DEFLECTING LENSES
William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.
Filed June 23, 1969, Ser. No. 835,680
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **22 Claims**

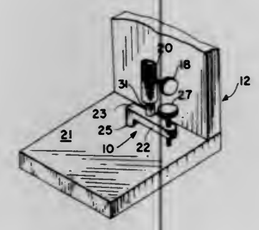


An optical stabilizer consisting of at least one neutrally buoyant lens supported in a transparent fluid bath along the optical path of a lens system. The fluid bath is enclosed within a casing, the casing being transparent at the points where it intercepts the optic path. The bath is provided with a circuitous path and its inertia moves the lens across the optical path to deflect the light passing through the lens equal and opposite to the accidental angular motion of a lens system.

3,620,595
ABSOLUTE FOCUS LOCK FOR MICROSCOPES

Russell W. Loop, Bartlett, Ill.; Max Tongier, Jr., Williamsburg, and Clarence D. Cone, Jr., Yorktown, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 5, 1970, Ser. No. 16,808
Int. Cl. G02b 21/26
U.S. Cl. 350—86 3 Claims

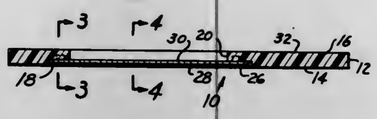


An apparatus for securing absolute arrest and immobilization of the specimen stage of a microscope in a preset state of focus to thereby preserve the focus over an extended period of time.

3,620,596
MICROSCOPE SLIDES

Gerald F. Binnings, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation of application Ser. No. 732,341, May 27, 1968, now abandoned. This application Sept. 18, 1970, Ser. No. 73,654
Int. Cl. G02b 21/34
U.S. Cl. 350—95 5 Claims



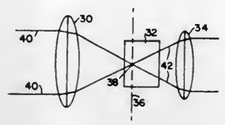
This disclosure relates to microscope slides for use in microscopes such as dark-field microscopes.
A microscope slide according to the present disclosure comprises a generally flat elongated body having a lower surface. A recess is provided in the lower surface and a cover glass is located in the recess. The lower surface of the cover glass is adapted to support a specimen to be examined. The lower surface is also adapted to be positioned in the reference plane of the microscope so that the focal plane defined by the microscope is coincident with the reference plane.

3,620,597
METHOD AND APPARATUS FOR NONLINEAR OPTICAL LIMITING

Jacob Schwartz, Arlington, and Charles S. Naiman, Brookline, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed July 15, 1968, Ser. No. 744,920
Int. Cl. G02f 1/36; G02b 9/00; G02c 7/10
U.S. Cl. 350—160 15 Claims

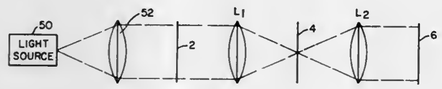
Described herein is a method and apparatus for the nonlinear limiting of coherent radiant energy based upon the discovery of materials exhibiting nonlinear absorption. This discovery provides a method upon which the operation of apparatus for limiting, detecting and modulating coherent radiant energy is based.



3,620,598
SPATIAL FREQUENCY DIVERSITY FOR COHERENT OPTICAL PROCESSING

Gerald B. Brandt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,195
Int. Cl. G02b 27/38
U.S. Cl. 350—162 R 6 Claims

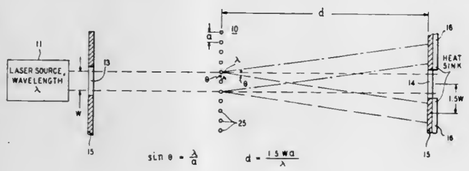


Apparatus for improving the quality of an input transparency used in an optical processor. The input transparency is illuminated with coherent light which has been passed through a fine grating or grid. The grid causes the transparency to be broken up into a plurality of diffraction patterns. When the image is reconstructed in the output plane, there is a marked decrease in the localization of reflection noise which would otherwise have been caused by the system.

3,620,599
NONPOLARIZING WIRE-GRID DIFFRACTION-TYPE OPTICAL ATTENUATOR

Arthur Ashkin, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 30, 1969, Ser. No. 837,716
Int. Cl. G02b 5/18, 27/38
U.S. Cl. 350—162 6 Claims

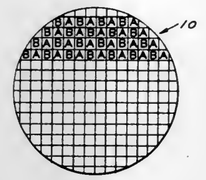


A continuously variable optical attenuator of the wire-grid type is disclosed in which the wire diameter and the spacings therebetween are from one to three orders of magnitude greater than the wavelength of the optical radiation to be attenuated and which operates upon principles of diffraction. Even at high attenuation factors, the attenuation does not depend significantly upon the polarization of the input optical radiation.

3,620,600
LENS WITH FACETS FOR PROJECTING LIGHT ALONG DIFFERENT AXES

Victor L. Lindberg, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1970, Ser. No. 33,446
Int. Cl. G02b 27/00
U.S. Cl. 350—167 2 Claims

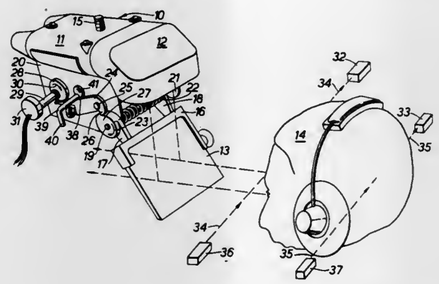


An improved lens for a signal device which projects a signal along a roadway is constructed as follows. A light-transmitting member is provided which has inner and outer faces. The inner face of the member has a plurality of facets formed thereon. A first portion of the facets project a signal from the lens along a first axis directed down the roadway and a second portion of the facets project a signal beyond the outer face of the lens along a second axis directed down the roadway. The first and second axes along which the signals from the lens are projected are spaced vertically from one another whereby the operator of a vehicle approaching the signal device at a first distance above the highway will be warned by the signal projected along the first axis and the operator of a motor vehicle positioned a second distance above the highway will be warned by the signal projected along the second axis.

3,620,601
HEAD-UP DISPLAY APPARATUS

Leonard Cyril Waghorn, Stoneleigh, and Peter Raymond Turner, Woldingham, both of England, assignors to Smiths Industries Limited, London, England, by said Waghorn

Filed Oct. 23, 1970, Ser. No. 83,374
Claims priority, application Great Britain, Oct. 24, 1969, 52,164/69
Int. Cl. G02b 27/14
U.S. Cl. 350—174 8 Claims

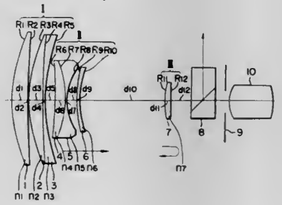


A head-up display apparatus for a craft comprises means for projecting a display of information and a partially transparent reflector associated with the display projection means. The reflector has either an operative position in which the projected display is reflected by the reflector to appear in an observer's line of sight through the reflector or a retracted position out of the observer's line of sight. The apparatus also includes means for displacing the reflector from the operative position to the retracted position, and means sensitive to radiant energy, the reflector displacement means being controlled in accordance with the radiant energy sensed by the radiation-sensitive means to effect the displacement of the reflector in response to change in radiation sensed by the radiation-sensitive means.

3,620,602
VARIABLE-MAGNIFICATION AFOCAL OPTICAL LENS SYSTEM

Motoaki Kawazu, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1970, Ser. No. 60,698
Claims priority, application Japan, Aug. 2, 1969, 44/61216
Int. Cl. G02b 15/14
U.S. Cl. 350—184 2 Claims

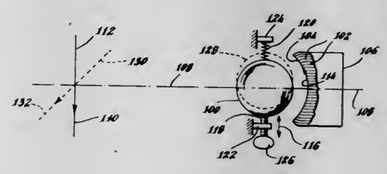


A variable-magnification afocal optical lens system for use in combination with a focusing lens system such as used in small motion-picture cameras and projectors, having, for example, a focal length of 15.5 mm., back focal length of 11.0 mm., f-number of 1.8 and maximum image height of 3.5 mm., to permit varying the focal length from 10 to 30 mm. with a back focal length of 11.0 mm. and f-number of 1.8. The afocal system comprises an array of seven elements in three groups with the second group consisting of cemented positive and negative meniscus lenses and an individual negative meniscus lens, having strong diverging power with a compound focal length of −18.88 mm., so that the image errors of the first group are well compensated and the image errors of the whole system are minimized upon shifting, thus permitting the system to be made as compact as a conventional afocal lens system.

3,620,603
OFFCENTER FOCUSING SYSTEM

George R. White, Rochester, N.Y., and Gordon R. Griffin, Claremont, Calif., assignors to Xerox Corporation, Stamford, Conn.

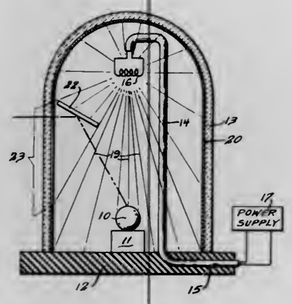
Filed July 6, 1970, Ser. No. 52,494
Int. Cl. G02b 7/02, 5/14, 5/10
U.S. Cl. 350—247 15 Claims



This invention is directed to an offcenter focusing system including a lens which forms a spherical image from an objective plane and with a spherical surface positioned adjacent to the lens so as to receive the spherical image. Focusing in the system of the present invention is accomplished by providing a relative movement between the lens and the spherical surface in a direction away from the common axis of the lens and the spherical surface so as to produce a tilting of the objective plane. The lens may be either refractive or reflective and one example of the invention using a refractive lens is a ball lens in conjunction with a bundle of optically conducting fibers, which bundle forms a spherical surface and with the lens and the bundle of fibers initially on a com-

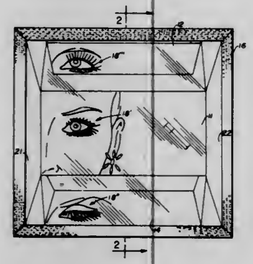
mon axis and with the relative movement off of this common axis to produce a tilting of the objective plane.

3,620,604
METALLIZING CHAMBER VIEWING SYSTEM
Thomas H. Benham, Joliet IL, assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 6, 1970, Ser. No. 1,004
Int. Cl. G02b *5/08*
U.S. Cl. 350—301 **3 Claims**



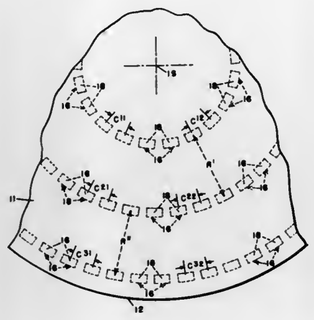
A mirror is placed within a metallizing chamber having a transparent viewing port in a position so as to shield the viewing port from the metal source. The mirror is also positioned to reflect a view of the object being metallized through the viewing port. If required, a second mirror may be used to reflect a view of the object to the first mirror.

3,620,605
EYE MIRROR
James D. Clark, Berkeley, Calif., assignor to Paul of Hawaii, Inc.
Continuation of application Ser. No. 771,013, Oct. 28, 1968, now abandoned. This application Mar. 5, 1971, Ser. No. 121,595
Int. Cl. G02b *5/08*
U.S. Cl. 350—305 **5 Claims**



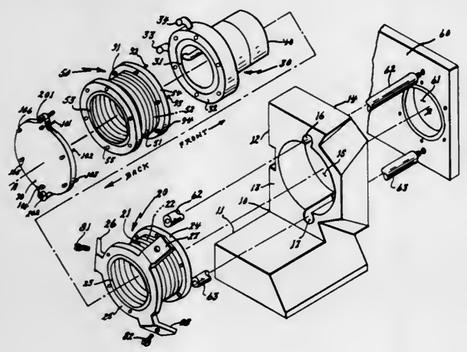
An optical device for viewing the eye of an observer simultaneously from three different vertical angles for the purpose of applying cosmetics in which an upper and lower mirror are arranged at an angle of from 98° to 122° with a vertical mirror, which mirror arrangement is mounted in an open end container incorporating a means for illuminating the eye area.

3,620,606
OPTICAL SYSTEM SUPPORT APPARATUS
Hubert F. A. Tschunko, Milton, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Continuation-in-part of application Ser. No. 712,100, Mar. 11, 1968, now abandoned. This application May 13, 1970, Ser. No. 36,819
Int. Cl. G02b *5/08*
U.S. Cl. 350—310 **10 Claims**



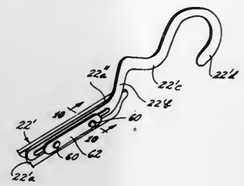
An optical mirror support system is disclosed having a mirror supported by a plurality of supporting elements arranged along discrete contact regions so as to deform the mirror reflective surface in a manner producing a deformation pattern which qualitatively causes a diffraction pattern by the optical aperture having an idealized or optimized image quality. A preferred or optimized ratio of the distances between adjacent families of support elements and the distance between adjacent support elements of the same family, has been found.

3,620,607
VACUUM COMPENSATED MIRROR MOUNT ASSEMBLY
Raymond H. Griest, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 5, 1970, Ser. No. 87,219
Int. Cl. G02b *5/08*
U.S. Cl. 350—310 **1 Claim**



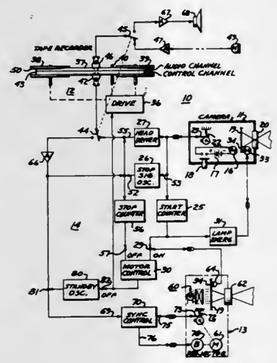
A mirror mount assembly for a laser mirror. The assembly includes bellows, internal of which the mirror is supported. The bellows, and associated components, are mounted on a stable base. The assembly provides for compensation for vacuum forces; accomplishes isolation of the mirror from mechanical vibrations; and permits cooling of the mirror. In addition, the assembly allows ready accessibility to the mirror.

3,620,608
EYEGLASS ASSEMBLY
Jeannette Davis, 1320 Midvale Ave., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 762,799, Sept. 26, 1968, now abandoned. This application Apr. 6, 1970, Ser. No. 25,922
Int. Cl. G02c *5/14*
U.S. Cl. 351—111 **5 Claims**



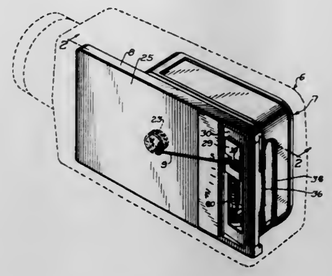
An improved eyeglass assembly is provided in the form, for example, of a pair of spectacles having a resilient frame which may be composed of a light resilient plastic, and which includes side bows which are shaped and configured so that the assembly may be securely and firmly supported against the side of the head of the wearer and out of engagement with the bridge of the wearer's nose. In one embodiment, the side bows are adjustable so as to fit different head sizes.

3,620,609
AUTOMATIC PROJECTOR-RECORDER SYNCHRONIZER
Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed June 10, 1968, Ser. No. 735,731
Int. Cl. G03b *31/04, 31/06*
U.S. Cl. 352—17 **15 Claims**



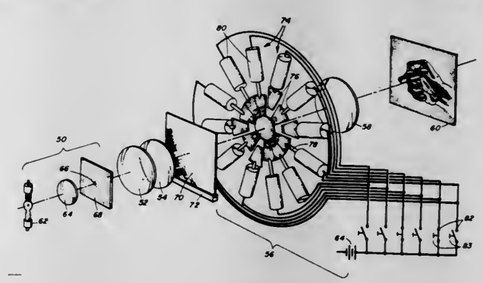
An apparatus which provides sound synchronized accompaniment for motion-picture projection. Upon the expiration of a predetermined time interval after the camera is actuated, a tape cassette recorder starts. Starting of the tape recorder causes a lamp to be energized thereby exposing a portion of the film to create a recorder start indication. Upon stopping of the camera, a stop burst is generated which is recorded upon the control track of the recorder the operation of which also terminates. Synchronization pulses generated by the camera are also recorded upon the control track. During projection, the exposed start indication areas upon the film are utilized to start the recorder the sync pulses maintain synchronization and the burst serves to stop the recorder.

3,620,610
FILM FOOTAGE INDICATOR
Richard K. Carlson, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 30, 1969, Ser. No. 889,276
Int. Cl. G03b *1/60*
U.S. Cl. 352—172 **9 Claims**



The invention embraced in the following disclosure has reference to film footage indicators and consists of a bracket adapted to be rocked from operative to inoperative positions by the insertion of a film cartridge into a camera. Associated with the bracket is a sliding plate which is provided with a tooth in engagement with a driving threaded member. An opening in the sliding plate confines an indicator or pointer and motivates the same along the threaded member. A graduated scale marked S (start) and F (finish) shows the proportional or fractional amount of film exposed, from which by deduction the unexposed portion of film can be calculated. The threaded member has secured thereto a pinion which is driven one tooth at a time by a claw member moving in an elliptical orbit engaging and disengaging itself from the pinion. The claw member is cam actuated and is slidably connected to a pin element which results in the orbit referred to before.

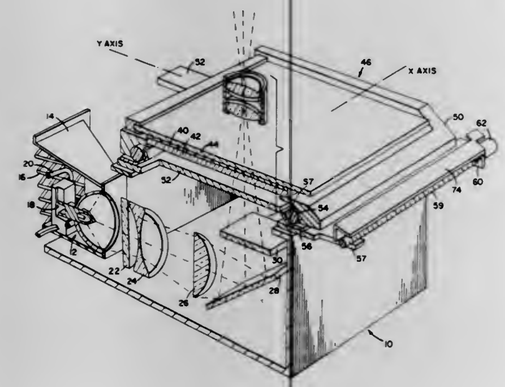
3,620,611
APPARATUS AND METHODS FOR DISPLAYING OR VIEWING EDUCATIONAL MATERIALS OR THE LIKE
George B. Parrent, Jr., Carlisle, and Peter F. Mueller, Concord, both of Mass., assignors to Technical Operations, Incorporated, Burlington, Mass.
Filed Feb. 15, 1968, Ser. No. 705,771
Int. Cl. G03b *21/14, 21/26*
U.S. Cl. 353—20 **1 Claim**



This disclosure depicts apparatus and techniques for selectively retrieving one or a selected combination of images stored in additive superposition on a photostorage record. As an example of a useful implementation of the invention, there is disclosed an educational display device for use in instructing nurses, doctors, medical technicians, and so forth, on the human physiology. On a single record, images of a number of anatomical systems are recorded in additive superposition, the images being selectively retrievable at the option of the operator to enable the component systems to

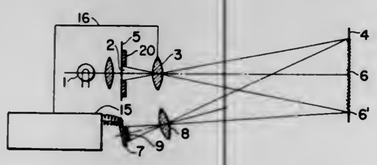
be viewed individually, or to be overlaid in selected combinations to show physiological or other relationships between the various systems.

3,620,612
MICROFICHE HANDLER
Mitchell C. Hopper, 2003 Suzanne Terrace N.W., Huntsville, Ala.
Filed May 1, 1969, Ser. No. 820,936
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **9 Claims**



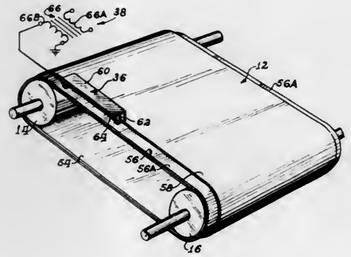
Mechanism for holding and positioning a microfiche film relative to a projection system including a lens and light source disposed for projecting the microfiche image on a screen. The holding and positioning mechanism includes a first support member disposed for support of a pair of transparent plates having the microfiche sheet positioned therebetween, and a second support member carried by the projection mechanism for support of said first support member. The first support member is slidably carried on the second support member for movement in a first direction and the second support member is slidably mounted in the frame of the projection mechanism for movement in a second direction which is normal to the direction of movement of the first support member. A control device includes an override mechanism which will provide a free-floating relation of the support members to the projection mechanism frame to provide for rough positioning of the microfiche sheet relative to the lens and a vernier control to provide for fine adjustment of the microfiche sheet relative to the lens for projecting predetermined frames of the microfiche sheet to the screen.

3,620,613
AUTOMATIC FOCUSING DEVICE FOR PROJECTORS
Hiromitsu Watanabe, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan
Filed Mar. 21, 1969, Ser. No. 809,342
Claims priority, application Japan, May 10, 1968, 43/31329
Int. Cl. G03b *3/00*
U.S. Cl. 353—101 **5 Claims**



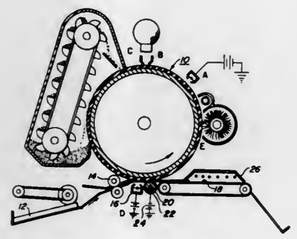
An image projected onto the projection screen by a projector is automatically focused by utilizing a photoconductive element which receives the light reflected from the projected screen. The photoconductive element is provided with a boundary to be in alignment with the boundary of the image of the screen to be projected with the projection image. The displacement of the boundary of the image of the screen out of the light received by the element, which automatically controls the focusing system of the projector by means of a servomotor or the like.

3,620,614
PHOTOELECTROSTATIC COPYING MACHINE WITH CORONA MEANS ESTABLISHING A REFERENCE POTENTIAL
Robert L. Gunto, Moundsville, W. Va., and Henry A. Mathisen, Northbrook, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Apr. 6, 1970, Ser. No. 25,967
Int. Cl. G03g *15/02*
U.S. Cl. 355—3 **7 Claims**



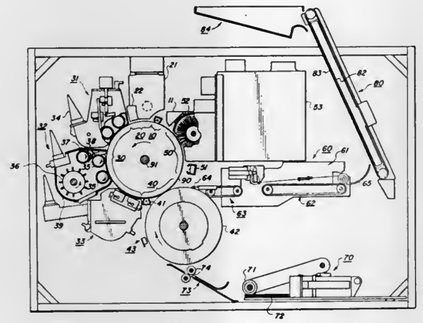
A moving, flexible belt type of copying machine in which the belt or loop is formed of an insulating base with an electrically conductive or metallized surface covered, except at the edges, by a photoconductive layer. The machine has charging, exposing, developing, and transferring stations some of which bias or apply a charge to the photoconductive layer. A corona discharge unit disposed adjacent the exposed edge of the metallized surface on the moving loop couples the surface to a point of reference potential and obviates the need for any mechanical contact therewith.

3,620,615
SHEET STRIPPING APPARATUS
Stewart W. Volkers, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 31, 1968, Ser. No. 789,030
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 **6 Claims**



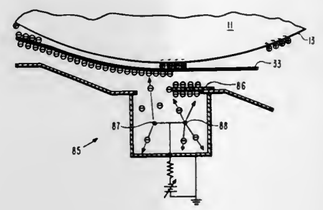
Apparatus for stripping a copy sheet electrostatically supporting a toner image from an oppositely charged xerographic surface. The apparatus includes an electrically biased roller slightly spaced from the copy sheet in the stripping zone to effect the stripping. Contact between the roller and copy sheet neutralizes the sheet. Alternately, the neutralization may be effected by a corona discharge device.

3,620,616
TRANSFER DRUM WITHDRAWAL APPARATUS
James R. Davidson, Rochester, and Paul R. Lagonegro, Henrietta, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,235
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **5 Claims**



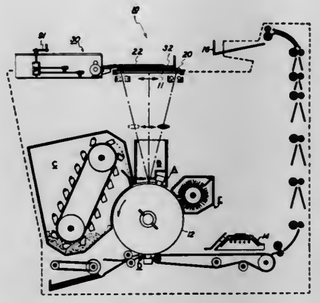
An apparatus for withdrawing a transfer drum from an electrostatic drum in a reproduction system when a copy sheet is misfed onto the surface of the transfer drum having a misfeed detector adjacent the transfer drum prior to the transfer station and an arm to pivot the main shaft of the transfer drum away from the electrostatic drum in response to a signal from the misfeed detector. When a misfeed occurs, the transfer drum is separated from the electrostatic drum to prevent the toner image on the electrostatic drum from transferring to the surface of the transfer drum.

3,620,617
ELECTROPHOTOGRAPHIC APPARATUS WITH IMPROVED TONER TRANSFER
Michael J. Kelly, and Myron F. Shlatz, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,073
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **8 Claims**



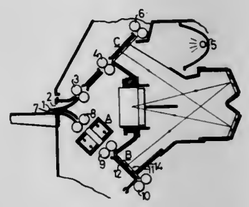
The invention concerns electrophotographic apparatus provided with an optical photoconductive (OPC) conveying means charged with an image pattern of toner and improved transfer means including an insulating transfer member for effecting a more positive transfer of toner from the OPC to a copy sheet. In one form, the additional transfer member is a Mylar* (*Trademark of Du Pont & Co.) flap partially covering the transfer corona station and, in another case, a nylon or Dacron* mesh covering the entire transfer station. A negative potential is established on the transfer corona wires to charge the paper for effecting transfer of toner and, at the same time, to charge the additional transfer member to repel the paper and insure a closer contact with the OPC material.

3,620,618
MULTIPLE INPUT COPYING APPARATUS
William T. White, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,711
Int. Cl. G03g *15/00*
U.S. Cl. 355—6 **5 Claims**



Apparatus for producing copy from simultaneously imaged multiple inputs including opaque card stock adapted to be removably positioned on the platen of a copying machine to present variable information as a composite image with a transparent document bearing fixed information. The apparatus comprises a platen on which the transparency bearing fixed information is supported, card handling means for advancing the opaque cards bearing other information in registration with a selected portion of the transparency along a first dimension and control means associated with said card handling means for moving said cards from a first to additional positions along the platen for projection with a selected portion along a second dimension of the transparency.

3,620,619
EXPOSURE WINDOW SYSTEM FOR ELECTROSTATIC COPIER
Sadashige Hayashi, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed June 24, 1970, Ser. No. 49,416
Claims priority, application Japan, July 8, 1969, 44/64698
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **4 Claims**



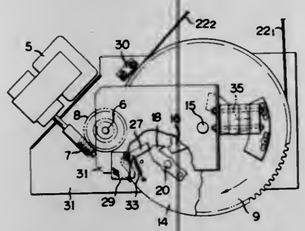
An exposure window system providing a path for continuously exposing copy paper which has been charged in a charging section to an image of the original through a slit while the copy paper is being guided through the path. Instead of disposing filaments for guiding the copy paper along a plane in the opening for receiving the image of the original, the exposure window comprises a first transparent glass plate supported parallel to a guide plate at a position proximate to an inlet of the original and a second transparent glass plate extending from the rear end of the first glass plate to an outlet. The end of the second glass plate near the inlet is slightly projected outward with respect to the guide plate. The inclination of the second glass plate reduces the area of the

copy paper in contact with the glass plate and therefore prevents the copy paper from jamming the exposure path attributable to the electrostatic charge and moisture of the copy paper.

3,620,620
ORIGINAL HOLDER RECIPROCATING-TYPE DRIVING DEVICE FOR PHOTOCOPYING MACHINE

Shigehiro Komori, Kanagawa-ken, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1969, Ser. No. 794,153
Claims priority, application Japan, Jan. 1, 1968, 43/6133
Int. Cl. G03b *27/62*
U.S. Cl. 355—8 **5 Claims**

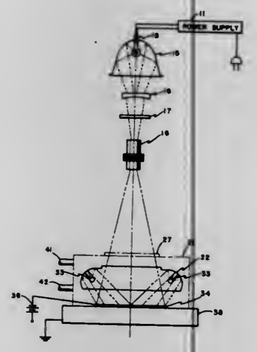


An original holder for photocopying machine on which the original is disposed for photocopying is driven to reciprocate in a predetermined stroke. In the forward stroke in one direction, the original disposed on the holder is copied to a photosensitive paper. At the end of the forward stroke, the movement of the original holder is switched to the return stroke in the opposite direction by means of interlocking clutch mechanisms to bring it back to the initial position. At the initial position, the original holder is stopped for replacement of the original and is ready to undertake the next succeeding photocopying step in the forward stroke.

3,620,621
EMULSION CONTROL

Ervin J. Rachwal, Framingham; Robert W. Marculewicz, Manchester, and Douglas B. Campbell, Natick, all of Mass., assignors to Matrographics, Inc., New York, N.Y.

Filed Feb. 12, 1969, Ser. No. 798,596
Int. Cl. G03b *27/76*
U.S. Cl. 355—30 **5 Claims**

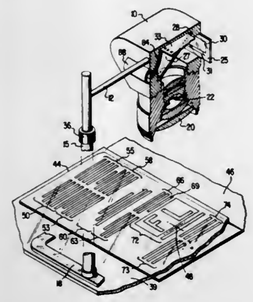


An emulsion control for use in making plates for printing. An emulsion is used for receiving a photographic image which has a given sensitivity, which can be increased by controlling the humidity and temperature of the environment surrounding the plate, the voltage on the plate, and the light surrounding the plate to the extent that a certain threshold is not exceeded. This permits low intensity photographic images to trigger a necessary chemical action to produce an image on the plate.

3,620,622
MICROPHOTOGRAPHIC RECORD AND METHOD

Norton Goodwin, 824 Connecticut Ave. N.W., Washington, D.C.

Filed June 18, 1968, Ser. No. 738,028
Int. Cl. G03b *27/32*
U.S. Cl. 355—43 **21 Claims**

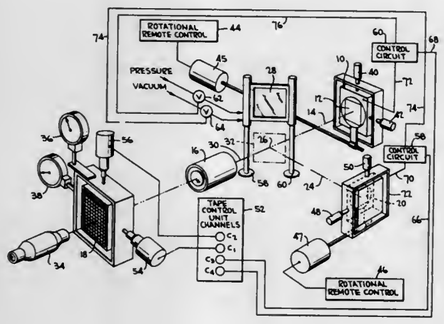


A regular microphotographic record is produced from documents consisting in a multiplicity of regular and irregular graphic records by making an intermediate volume of photographic records and photographically collating the images therefrom. The intermediate volume has uniform graphic field storage areas in which graphic fields of uniform width are fixed and may be produced from document records having graphic fields of varying width by photographing such fields individually at the appropriate reduction ratio. This volume may contain marks which can be sensed to aid in the collating process.

3,620,623
OPTICAL SYSTEM FOR INTERMIXING DISSIMILAR STEP-AND-REPEAT PATTERNS

Robert B. Reams, Jr., Silver Spring, Md., and Charles H. Klute, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army

Filed Apr. 24, 1970, Ser. No. 31,633
Int. Cl. G03b *27/46*
U.S. Cl. 355—53 **20 Claims**



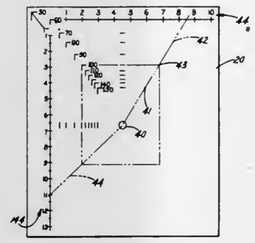
A step-and-repeat camera system for automatically intermixing dissimilar unit patterns on a photomask for use in the fabrication of solid-state electronic microcircuits. The system provides for the use of a number of different secondary unit patterns mounted in light boxes whose optic axes are directed towards reflecting means located along a principal optic axis. The reflecting means, which can take the form of

a number of different embodiments, are precisely aligned to reflect the desired secondary image towards a photosensitive plate that is successively stepped to each of its matrix positions before exposure. The entire system is automated by means of a numerical tape control unit that positions the photosensitive plate, positions the reflecting means and actuates the desired light box according to a preprogrammed tape. After the usual preliminary alignments, the different patterns can be mixed automatically in any desired manner on a single photosensitive plate. Several embodiments are disclosed, ranging from a two-pattern mix to a five-pattern system, and the system of the present invention can easily be extended to include larger mixes.

3,620,624
WORK ARRANGING SYSTEM

John J. Van Acker, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Sept. 16, 1969, Ser. No. 858,343
Int. Cl. G03b *27/58*
U.S. Cl. 355—61 **8 Claims**

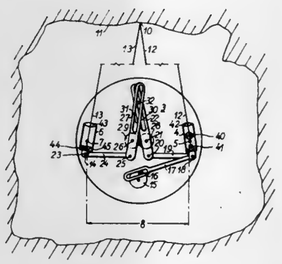


An autofocus camera with mechanical advancement and processing of photosensitive copy whereby the operator is unable to view the location of the image on the copy. A copyboard is marked with indicia and calibration scales for accurate placement of the image on the copy sheet.

3,620,625
DEVICE FOR MEASURING A TUNNEL SECTION

Ruben Valdemar Tegholm, Johanneshov, Sweden, assignor to Atlas Copco AB, Nacka, Sweden

Filed Nov. 4, 1968, Ser. No. 773,242
Claims priority, application Sweden, Nov. 3, 1967, 15105/67
Int. Cl. G01c *3/00*
U.S. Cl. 356—1 **8 Claims**

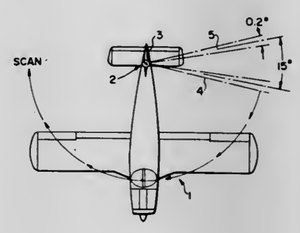


A device is disclosed for measuring a tunnel section and, in particular, to obtain a graphical representation of the section. The device comprises a distance-measuring apparatus of the kind comprising a transmitter of directed radiation and a direction-sensitive receiver of the radiation, the transmitter and the receiver being arranged at a predetermined spacing from each other to define a measuring base. The transmitter and the receiver are arranged on a common support which is rotatable about an axis, the transmitter and the receiver being located substantially in a common plane which extends at right angles to the axis. The device further comprises drive means for varying in this plane the angular position of a radiation axis of at least one of either the transmitter or the receiver, control means for controlling the drive means and dependent upon the direction of radiation arriving to the receiver from the transmitter after having been reflected by a surrounding medium, and indication means for representing a magnitude as dependent upon an angle between the radiation axes of the transmitter and the receiver and of the measuring base. This magnitude is representative of the distance between the rotational axes of the support and a surface reflecting the radiation beam transmitted by the transmitter to the receiver.

3,620,626
PROXIMITY WARNING SYSTEM FOR AIRCRAFT

Richard T. Daly, Huntington, and Edmundas Vambutas, Douglaston, both of N.Y., assignors to Quantronix Corporation, Farmingdale, N.Y.

Filed May 29, 1969, Ser. No. 828,945
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **8 Claims**

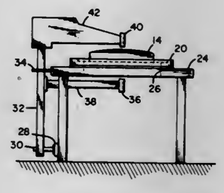


A simple, lightweight, inexpensive laser proximity warning system for aircraft operating under visual flight rules (VFR) conditions. Mounted on each fully equipped aircraft is a laser transmitter, a detector sensitive to laser radiation and a retroreflector. The laser transmitter and detector periodically scan a predetermined region of the space surrounding the aircraft. If another aircraft equipped with a retroreflector is within the predetermined region, the transmitted laser radiation will be returned to the detector which will activate an indicator in the cockpit to warn the pilot of the presence and approximate bearing of the other aircraft.

3,620,627
OPTICAL DENSITOMETER FOR MEASURING HOLE SIZES IN TELEVISION MASKS

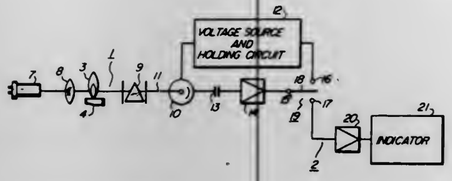
John G. Davies, St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Jan. 15, 1970, Ser. No. 3,117
Int. Cl. G01n *21/00, 21/16, 2/32*
U.S. Cl. 356—72 **10 Claims**



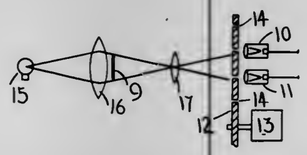
Apparatus for optically measuring the hole size over the curved surface of a shadow mask wherein a light source and a detector are both mounted on a pivot arm which allows the source to pass light perpendicularly through all portions of the curved surface of the mask to the detector.

3,620,628
PHOTOELECTRIC SAMPLE MEASURING APPARATUS
Kazuo Yasuda; Koichi Uchino; Koji Nishiwaki, and Hiroshi Inomata, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 30, 1969, Ser. No. 820,434
Claims priority, application Japan, May 4, 1968, 43/29545
Int. Cl. G01j *3/30*
U.S. Cl. 356—87 **5 Claims**



A system for analyzing the photometric properties of a sample of material, which comprises a means for projecting a light beam from a light source to a flame into which the sample to be analyzed and a reference material are alternately introduced, a detector for detecting the intensities of the sample beam and the reference beam which have been transmitted through the flame, and a means for comparing an electric signal indicative of the intensity of said sample beam obtained from said detector with the other electric signal indicative of the intensity of said reference beam.

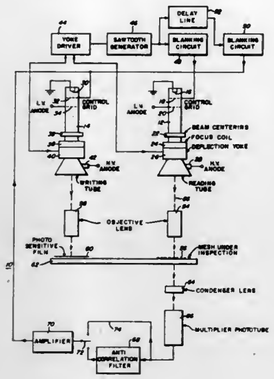
3,620,629
OPTICAL GAUGES
Keith R. Whittington, Shelford, Cambridge, England, assignor to T. I. (Group Services) Limited, Birmingham, England
Filed May 26, 1969, Ser. No. 828,454
Claims priority, application Great Britain, June 12, 1968, 27,885/68
Int. Cl. G01b *11/04*
U.S. Cl. 356—160 **2 Claims**



An optical gauge for determining the width of an object and including a rotary disc having apertures equiangularly spaced about the rotary axis of the disc and spaced a nominal distance apart, a pair of light-sensitive devices disposed on one side of the disc and spaced said nominal distance apart, and means for projecting an image of the object upon the side of the disc remote from the light-sensitive devices, the arrangement being that the signals from the light-sensitive devices can provide an indication of when the image of the object is larger or smaller than said nominal distance.

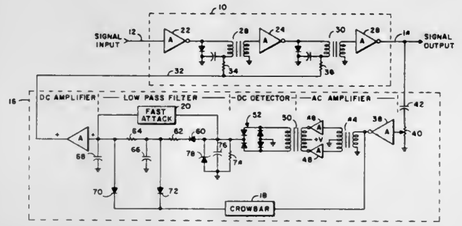
3,620,630
RADIATION-SENSITIVE MESH DEFECT INSPECTION SYSTEM
Rudolf C. Hergenrother, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed May 28, 1969, Ser. No. 828,612
Int. Cl. G01n *21/32*
U.S. Cl. 356—237 **16 Claims**

A mesh defect image inspection system incorporating a flying spot scanner tube together with an anticorrelator circuit utilizing two fixed delay lines of different lengths and matching the difference in delay time to a multiple of the time required to move the flying spot between two adjacent holes in the mesh member. The inputs of the delay lines in the anticorrelation circuit are in parallel and outputs in series



opposition. A display means is provided, for example a video monitor tube. If a defect results in a mismatch of signals, a bright spot will be displayed and the detect may then be pinpointed.

3,620,631
GAIN-CONTROLLED AMPLIFIER
Benjamin F. Stopka, Fairport, N.Y.; Dennis J. Day, Cedar Rapids; James V. Harmon, Cedar Rapids, and Robert G. Holt, Cedar Rapids, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed Aug. 26, 1969, Ser. No. 853,022
Int. Cl. H04b *1/16*
U.S. Cl. 325—404 **6 Claims**

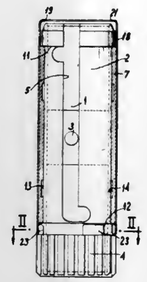


Disclosed is a gain-controlled amplifier having a gain control loop including amplifying and filtering means for providing a control signal to the gain-controlled amplifier. The gain control loop further includes crowbar means for providing a maximum gain signal in response to a drop in input signal to the gain-controlled amplifier and fast attack means for providing minimum gain signal in response to a sudden increase in input signal to the gain-controlled amplifier.

3,620,632
LIPSTICK AND SIMILAR HOLDER
Ralph Gruska, Saint-Maur, France, assignor to Ejectoret S. A., Geneva, Switzerland
Filed Oct. 1, 1969, Ser. No. 862,827
Claims priority, application France, Oct. 10, 1968, 169,355
Int. Cl. A45d *40/06*
U.S. Cl. 401—78 **3 Claims**

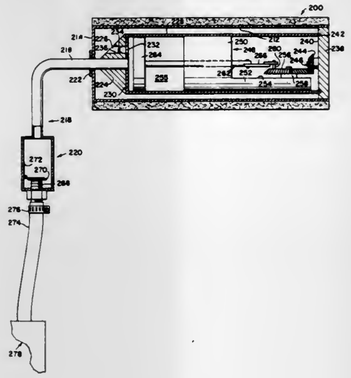
A lipstick or like holder is largely of the conventional kind having two relatively rotatable coaxial sleeves. The inner sleeve has an external operating knob and the outer sleeve is fitted by force into a metallic reinforcing and/or decorative

tube. A godet for supporting the stick is slidable axially in the inner sleeve and has a lug extending through a slot in the inner sleeve and engaging a slot in the outer sleeve, one slot being longitudinal and the other helicoidal. In order to prevent unwanted relative rotation of the sleeves and the



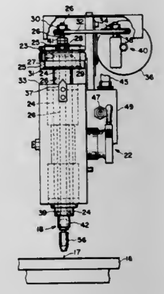
consequent risk of the stick engaging the cover the invention provides an extension on the metallic tube beyond that end of the outer sleeve adjacent to the operating knob. There are then two opposed faces, one on the extension and the other on the inner tube. A boss or bosses on one of these faces exerts or exert a braking force on the other face.

3,620,633
SELF-FEEDING PAINT ROLLER
Fred A. Charvoz, 446 East 5th St., Brooklyn, N.Y.
Filed Nov. 7, 1969, Ser. No. 874,762
Int. Cl. B43m *11/02*
U.S. Cl. 401—147 **6 Claims**



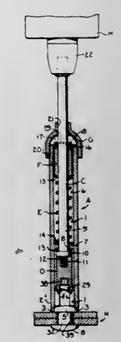
Self-feeding paint rollers in which the paint is automatically supplied to the roller as the roller is being rolled over a surface to be painted, has a drive gear connected to the roller and rotatable therewith. A cylinder and piston arrangement is mounted within the roller and is operably connected to the drive gear whereby rotation of the roller causes the piston to move in a first direction to supply paint from a paint can to the cylinder and to move the piston in a second direction to eject the paint from the cylinder into the roller for application to a surface to be painted.

3,620,634
SKIVING MACHINE
Herbert L. Sullivan, Orlando, Fla., assignor to Martin Marietta Corporation, New York, N.Y.
Filed June 25, 1969, Ser. No. 836,348
Int. Cl. B23b *41/00, 49/00*
U.S. Cl. 408—82 **10 Claims**



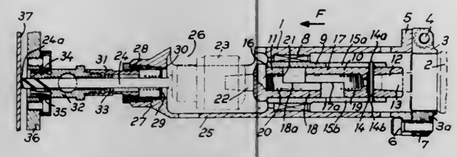
A machine for successively forming a plurality of access holes in a flexible electrical harness or similar type electrical device. The access holes are formed through an outer insulative covering which is laminated to one side of a copper or like conductive material circuit pattern. The access holes are formed by a rotating multipronged cutting blade mounted on the lower extremity of a simultaneously rotatable and vertically movable spindle which has a micrometer dial attached to its upper end in such a manner as to enable the adjustment of the depth of penetration of the blade into the insulation coating. The cutting head assembly of the machine comprises a spring biased pressure foot mounted in floating relation to the blade and used to engage and maintain the harness in proper position while the access hole is being formed.

3,620,635
RIVET REMOVING TOOL
Bert L. DalBianco, 19632 Adair Drive, Castro Valley, Calif.
Filed Sept. 25, 1969, Ser. No. 866,421
Int. Cl. B23b *51/04*
U.S. Cl. 408—84 **6 Claims**



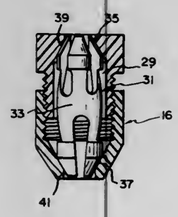
A rivet-removing tool in which a hollow cylindrical casing has one end provided with teeth that can contact the head of a rivet when the axis of the casing is aligned with the rivet axis. A chuck is rotated within the casing and has an inner set of teeth that will cut a circular groove in the rivet head when the chuck is moved against the head. The chuck also has an outer set of teeth that are brought into contact with the rivet head for cutting it until the head is severed from the rivet shank whereupon the rivet may be removed.

3,620,636
DRILLING DEVICE HAVING YIELDABLE MEANS FOR LIMITING THE THRUST PRESSURE TO A PREDETERMINED AMOUNT
Pierre Louis Simon Godard, Verneuil, France, assignor to Chrysler France, Paris, France
Filed Jan. 29, 1970, Ser. No. 6,763
Claims priority, application France, Jan. 30, 1969, 6901973
Int. Cl. B23b *47/02*
U.S. Cl. 408—141 **7 Claims**



The invention has for its object a device for drilling sheet metal.
According to the invention, the pressure with which the drill is applied on the sheet is determined by a resilient member which is located between two drive members solid in rotation but not in translation and which are mounted in a sleeve which, during operation, rotates and slides in a fixed body of the device.

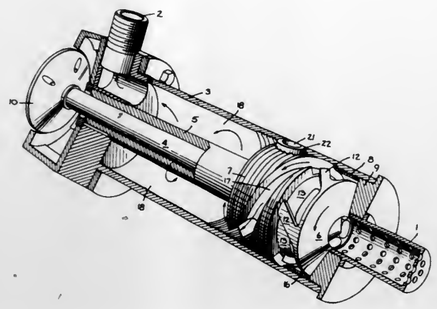
3,620,637
DRILL BIT STOP
George M. Brown, Parma, Ohio, assignor to Century Drill and Tool Company, Chicago, Ill.
Filed July 15, 1969, Ser. No. 841,774
Int. Cl. B23b *47/00, 49/00*
U.S. Cl. 408—202 **7 Claims**



First and second pieces each having a tapered bore therethrough are joined to form a housing by threading one piece into the other. A collet having resilient fingers at each end is positioned within the housing. The housing is placed on the bit and the pieces are threaded together with the tapered bores closing the fingers of the collet about the bit to lock the housing in the desired position thereon to limit the passage of the bit through the workpiece.

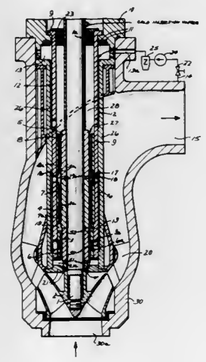
3,620,638
LIQUID PROPULSION DEVICE
J. Arthur Kaye, Fort Lee, and Morgan E. Lentz, Rutherford, both of N.J., assignors to J. Arthur Kaye, Fort Lee, N.J.
Filed Aug. 24, 1970, Ser. No. 66,166
Int. Cl. F01d *3/00*
U.S. Cl. 415—106 **16 Claims**

A propulsion mechanism, such as a pump, for propelling liquids first radially and then axially through the mechanism at high pressure, the mechanism having within a cylindrical



housing a rotor balanced to minimize radial and axial forces on the rotor whereby bearings are not required for the rotor.

3,620,639
PUMP WITH HYDROSTATIC BEARING
Karl Gaffal, Bobenheim-Roxheim, and Hans-Dieter Sturm, Frankenthal, both of Germany
Filed Aug. 21, 1970, Ser. No. 65,890
Claims priority, application Germany, Aug. 22, 1969, P 19 42 762.4
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 **10 Claims**

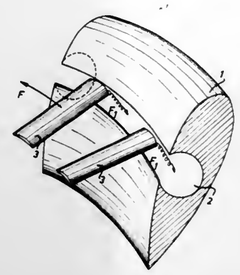


The hydrostatic bearing of an impeller pump is lubricated by a part of the pumped liquid. An auxiliary internal screw pump, pumps an amount of liquid from the main pump outlet to the center of the gap between inner and outer bearing parts. Half the amount lubricates one half of the gap and is discharged into the casing, and the other half is recirculated by the auxiliary pump in the other half of the gap.

3,620,640
PROPELLER OR FAN SHROUDS
Jean Soulez-Lariviere, La Celle-Saint-Cloud, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Mar. 26, 1970, Ser. No. 22,748
Claims priority, application France, Mar. 27, 1969, Mar. 10, 1970; 6909125, 7007625
Int. Cl. F01d *25/24*
U.S. Cl. 415—126 **8 Claims**

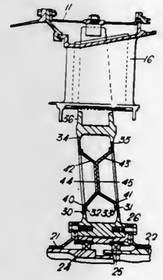
An improved propeller shroud comprising a toroidal cavity formed on its inside surface along its entire periphery level with the blades of said propeller and along the meridian of the shroud and movable flaps mounted on downstream of

same cooperating with a cavity bottom comprising a retractable wall with or without streamlined partition walls adapted



within said toroidal cavity and along substantially meridian planes of said shroud.

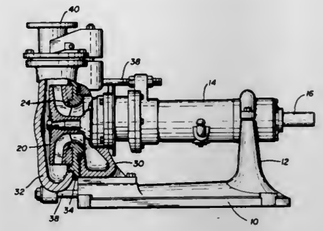
3,620,641
BEARING ASSEMBLY
John Michael Storer Keen; Maurice John Byett, and Francis Anthony Weston, all of Derby, England, assignors to Rolls-Royce Limited, Derby, England
Continuation-in-part of application Ser. No. 668,387, Sept. 18, 1967, now abandoned. This application Oct. 13, 1969, Ser. No. 865,942
Claims priority, application Great Britain, Oct. 6, 1966, 44764/66
Int. Cl. F01d *11/08, 1/02*
U.S. Cl. 415—170 **23 Claims**



A gas turbine engine comprises in flow sequence compressor means, combustion means and turbine means, the compressor means and the turbine means comprising bladed rotors, a shaft supporting at least one of said bladed rotors, a bearing in which said shaft is mounted, a fixed substantially cylindrical engine casing, two axially spaced apart substantially radially extending annular panel members, said bearing being supported from the fixed casing by way of said panel members, at least one of said panel members having a plurality of angularly spaced-apart dished portions, said portions being secured to the other of said panel members to brace together and interconnect the panel members.

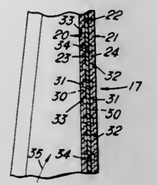
3,620,642
CENTRIFUGAL PUMP
James B. Studebaker, Littleton; George A. Minick, Golden, and John D. Whittier, Lakewood, all of Colo., assignors to A. R. Wilfley and Sons, Inc., Denver, Colo.
Filed Dec. 9, 1969, Ser. No. 883,397
Int. Cl. F04d *29/00, 29/44*
U.S. Cl. 415—204 **8 Claims**

A centrifugal pump includes an intake chamber means and a casing means having a follower plate means disposed therebetween. A runner or impeller means is mounted in the casing means and has the usual impeller vanes thereon. The follower plate means includes an annular lip extending toward the runner means and being disposed adjacent a labyrinth means on the runner means. In addition, the follower plate means includes an annular cap disposed radially outwardly of the runner means, this annular cap having a pair



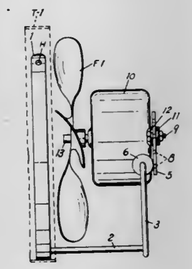
of sloping surfaces having different angular relationships to the axis of rotation of the runner means.

3,620,643
COOLING OF AEROFOIL SHAPED BLADES
John Windsor Jones, Skipton, England, assignor to Rolls-Royce Limited, Derby, England
Filed June 20, 1969, Ser. No. 835,083
Claims priority, application Great Britain, June 24, 1968, 30,103/68
Int. Cl. F01d *5/18*
U.S. Cl. 416—90 **4 Claims**



A hollow aerofoil-shaped blade for a fluid flow machine wherein the boundary wall of the blade is made up of a plurality of sheets bonded together. The sheets define therebetween cooling fluid ducting, each sheet having defined on the concave and/or convex faces of the blade, apertures which extend through the sheet and communicate with the ducting. The apertures on adjacent sheets are out of alignment such that cooling fluid supplied to the interior of the blade may pass to the exterior thereof by way of the ducting.

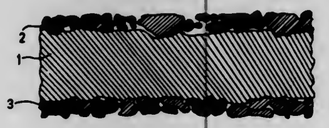
3,620,644
UNIVERSAL FAN MOUNT AND FAN
Gordon McLarty, Box 55, Augusta, Mich.
Filed July 6, 1970, Ser. No. 52,452
Int. Cl. F04d *29/64*
U.S. Cl. 416—247 **14 Claims**



A segmental arcuate ring springable to varying diameters has two parallel rods secured near its center and extending axially of the arc of the ring. An arcuate yoke is secured to

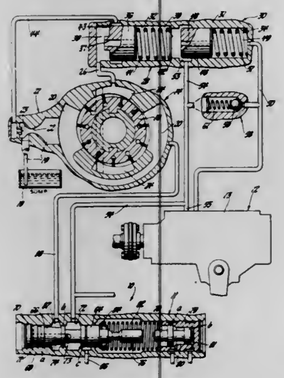
the opposite ends of the rods and extends generally parallel to ring to two spaced motor mounts. One form of the mounts is two inwardly turned and aligned pintles. Each pintle carries an angularly adjustable mounting block, and the mounting blocks each carry a mounting plate swingable about the axes of the pintles. The mounting plates have plural holes for mounting a fan motor with the axis of the motor and a fan driven thereby at different distances from the axes of the pintles, including coincident intersecting relation of the fan axis to the axes of the pintles. A modified form shows nonpivotable motor mounts directly on ends of a yoke formed from a single rod with a center section folded upon itself and extending axially to abutted connection to a similarly bent rod forming the segmental arcuate ring.

3,620,645
GETTER DEVICE
Paolo della Porta, Milan; Tiziano A. Giorgi, Milan; Bruno Kindl, Milan, and Mario Zucchinelli, Bergamo, all of Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Continuation of application Ser. No. 527,906, Feb. 16, 1966, now abandoned. This application May 1, 1970, Ser. No. 33,850
Int. Cl. F04b *37/02*; **B23p** *3/00*; **H01j** *7/18*
U.S. Cl. 417—48 **10 Claims**



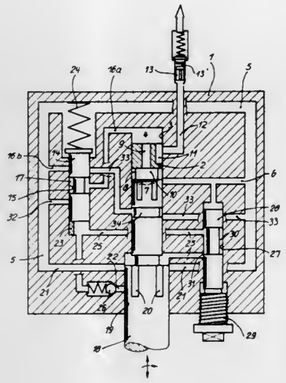
A getter device comprising a carrier having on at least one of its faces particles of a nonvaporative getter metal characterized in that the particles of the getter metal are partially embedded in the carrier to give a highly efficient getter device.

3,620,646
CENTRAL HYDRAULIC SYSTEM FOR A VEHICLE
Paul D. Stevenson, Ann Arbor, and Leon A. Tucholski, Belleville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 1, 1970, Ser. No. 51,572
Int. Cl. G05d *11/00*; **F04b** *23/04, 49/00*
U.S. Cl. 417—79 **3 Claims**



In a vehicle having an automatic transmission and power steering, there is provided a central hydraulic system wherein flow from a pump is directed to a first flow-control valve which delivers flow up to a predetermined rate to a second flow-control valve while delivering any excess fluid flow to an aspirator which acts to supercharge the pump. The second flow-control valve delivers flow up to a predetermined lower rate to the power steering system while delivering any excess fluid flow to the transmission control system which is also receiving all of the flow from the power steering system.

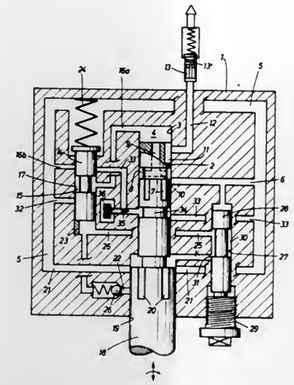
3,620,647
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES
Gerald Hofer, and Heinz Nothdurft, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 12, 1970, Ser. No. 63,071
Claims priority, application Germany, Sept. 19, 1969, P 19 47 529.7
Int. Cl. F02m *59/34*; **F02d** *1/06*; **F04b** *19/22*
U.S. Cl. 417—293 **4 Claims**



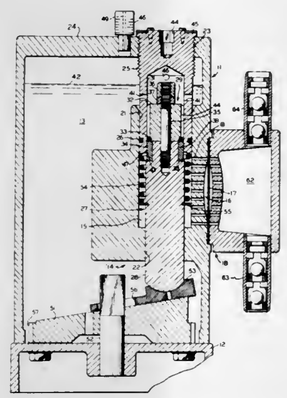
A fuel injection system having a reciprocating control member driven in synchronism with the injection pump for opening a fuel and interrupting the injection process. The control member, during its return stroke, drives the fluid through a controllable throttle channel to create a fluid abutment," i.e., it does not return to the initial position. A second bypass is provided subject to control by the control member as well as by a slide valve; also synchronous with the main pump, the characteristic feature being the coordination of the control member with the slide valve in dependence on the variable position of the fluid abutment.

3,620,648
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES
Gerald Hofer, and Heinz Nothdurft, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 12, 1970, Ser. No. 63,215
Claims priority, application Germany, Sept. 19, 1969, P 19 47 528.6
Int. Cl. F02m *59/34*; **F02d** *1/06*; **F04b** *19/22*
U.S. Cl. 417—293 **5 Claims**

A fuel injection system having a reciprocating control member driven in synchronism with the injection pump for opening a fuel bypass and interrupting the injection process. The control member, during its return stroke, drives the fluid through a controllable throttle channel to create a "fluid abutment," i.e., it does not return to the initial position. A second bypass is provided subject to control by the control member as well as by a slide valve; also synchronous with the main pump, the characteristic feature being the coordination of the control member with the slide valve in dependence on the variable position of the fluid abutment and a throttling restriction provided in the second bypass.



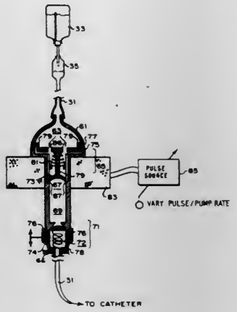
3,620,649
METERING PUMP
Francis H. Cary, North Scituate, R.I., assignor to General Signal Corporation
Filed Sept. 18, 1970, Ser. No. 73,360
Int. Cl. F04b *9/08, 35/02, 43/06, 45/00*
U.S. Cl. 417—383 **6 Claims**



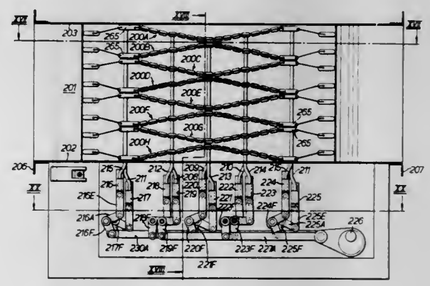
The disclosure concerns a metering pump of the type in which a primary hydraulic pump pulses a diaphragm which serves as a pumping unit for a secondary circuit. The primary unit is so constructed that its maximum rate of delivery can be changed in the field by substitution of a few parts and without using special tools or emptying the reservoir for the primary circuit.

3,620,650
GAS-DISABLED LIQUID-PUMPING APPARATUS
Robert F. Shaw, 350 Parnassus Heights, San Francisco, Calif.
Filed Dec. 5, 1969, Ser. No. 882,489
Int. Cl. F04b *35/04, 49/08, 7/04*
U.S. Cl. 417—417 **13 Claims**

Improved liquid-pumping apparatus uses a pumping chamber having a residual volume many times larger than the displacement volume and includes an outlet valve which is disposed within the lowermost region of the residual volume and which is biased against outflow of fluid therethrough for fluid pressures below a selected value.



3,620,651
FLUID FLOW APPARATUS
Peter Frederick Hufton, Derby, England, assignor to International Combustion (Holdings) Limited, London, England
Filed Feb. 3, 1970, Ser. No. 8,340
Claims priority, application Great Britain, Feb. 7, 1969, 6737/69
Int. Cl. F04b *19/00*; **B63h** *1/30*; **F03d** *5/06*
U.S. Cl. 417—436 **17 Claims**

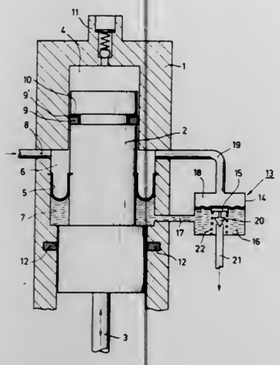


Fluid flow apparatus operable either as a pump or as a motor in which a flexible sheet is constrained by means of connections at spaced points along its length to follow a traveling wave motion. The flexible sheet forms one bounding surface for a fluid flow path which is also bounded by an opposed sideplate which may be another flexible sheet. The traveling wave motion maintains the flexible sheet in traveling contact with the sidewall.

3,620,652
COMPRESSOR WITH ROLLING DIAPHRAGM SEAL
Hendrik Alphons Jaspers, and Jacobus Hubertus Abrahams, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,691
Claims priority, application Netherlands, Dec. 13, 1968, Oct. 22, 1969; 6,817,894, 6,915,905
Int. Cl. F04b *21/00*; **F16j** *15/50*; **F01b** *19/00*
U.S. Cl. 417—439 **10 Claims**

A hermetically sealed compressor having a rolling diaphragm seal between the piston and the cylinder with liquid support for the diaphragm. An inlet valve is formed by

a piston ring incorporated in a groove in the portion of the piston wall or located between the rolling diaphragm and the

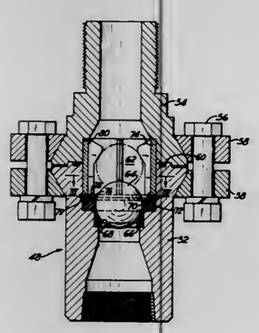


working space. A control device maintains a substantially constant pressure differential across the diaphragm.

3,620,653
APPARATUS FOR CONTROLLING SOLIDS-LADEN LIQUIDS

Eber W. Gaylord, Pittsburgh, and Ernest A. Mori, Hampton Township, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 723,996, Apr. 25, 1968, now Patent No. 3,561,822. This application Dec. 23, 1969, Ser. No. 887,612
Int. Cl. F04b *21/02*; **F16k** *17/00, 1/00*
U.S. Cl. 417—568 **14 Claims**

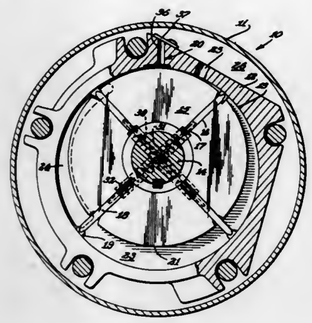


A reciprocating pump for handling abrasive-laden liquids has ball-type inlet and outlet valves. An inlet valve is disclosed mounted directly on the pump cylinder in a position such that the valve plug moves substantially into the opening in the cylinder wall when the valve is in an open position to minimize the length of the passage from the valve seat into the pump. The valve has a spherical valve plug that moves in response to the pressure differential of the liquid handled to and from a closed position on a valve seat. An elastomeric seal ring precompressed to a pressure of at least 1,000 p.s.i. is positioned at the outlet end of the valve seat to engage the valve plug. In one embodiment of the invention, a lip extends around the outlet edge of the seal and in another the elastomeric seal is a composite of a ring of hard elastomeric material and a ring of a relatively soft elastomeric material.

3,620,654
TANGENCY SEALS FOR COMPRESSORS

Clifford H. Allen, Chesterland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed June 22, 1970, Ser. No. 48,290
Int. Cl. F03c *3/00, 19/02, 27/00*
U.S. Cl. 418—129 **14 Claims**

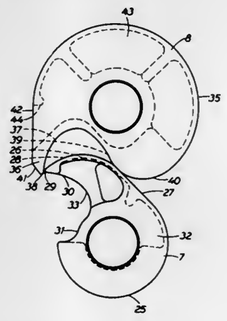


A compressor incorporating a rotor equipped with radially movable vanes eccentrically received in a cylindrical compressor chamber with the outer diameter of the rotor contacting the inner diameter of the compressor chamber along a line of tangency, the compressor chamber being equipped with a tangency seal to assure continued contact between the rotor and the compressor chamber carried seal. In one embodiment, the seal is a cantilever suspended strip backed by a pressure groove open to the interior of the compressor chamber on the high-pressure side of the tangency line, and the groove is ported to the exterior of the pressure chamber. In another embodiment, the seal member is a normally flat deformable sheet received in a variable depth groove in the chamber wall, the sheet having openings therethrough on high-pressure side of the tangency line and the groove being ported to the exterior. In a third embodiment, the seal is a length of material received in a longitudinal groove at the line of tangency, the material having a different rate of expansion than the material of the chamber member to maintain rotor contact at both low and operating temperatures.

3,620,655
BALANCED ROTOR MACHINE

Bo Olof Roland Arnegard, Skarholmen, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 9, 1970, Ser. No. 44,737
Claims priority, application Sweden, June 18, 1969, 8635/69
Int. Cl. F01c *21/00, 1/20*
U.S. Cl. 418—151 **6 Claims**

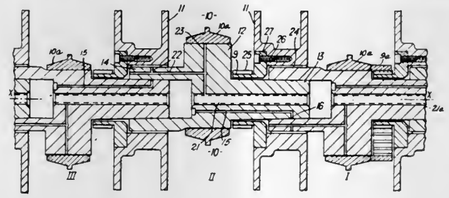


Rotary piston machines have a casing with two intersecting cylindrical bores in which a main rotor and a gate rotor are mounted for rotation. Each rotor has a hub and one tooth extending from the hub. The main rotor tooth has a concave flank and a convex flank and the gate rotor tooth has a concave and a second flank. The main rotor has an opening in the concave flank and a cavity extending from said opening into the rotor, and the gate rotor has an opening in the second flank and a cavity extending from said opening into the rotor. The cavities are formed so that each rotor is statically and dynamically balanced.

3,620,656
ROTARY PISTON ENGINES

John Sharples, Cheshire, England, assignor to Rolls-Royce Limited, Derby, England

Filed Sept. 29, 1969, Ser. No. 861,812
Claims priority, application Great Britain, Oct. 2, 1968, 46,739/68
Int. Cl. F01c *11/00*; **F04c** *11/00*
U.S. Cl. 418—210 **7 Claims**

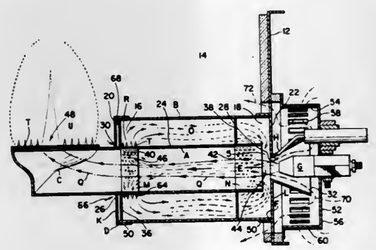


A multiunit arrangement of rotary piston engines has a three-section eccentric shaft. Each section of the shaft is driven by a rotary piston engine and one end of each section is an interference fit within the adjacent end of the neighboring section.

3,620,657
BURNERS

Edgar C. Robinson, North Vancouver, British Columbia, Canada, assignor to International Industries Ltd.

Filed May 13, 1970, Ser. No. 36,987
Claims priority, application Great Britain, Oct. 8, 1969, 49,496/69
Int. Cl. F23l *7/00*
U.S. Cl. 431—9 **24 Claims**

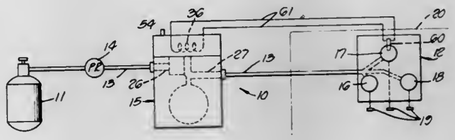


An oil burner consists of an outer jacket surrounded and spaced from an inner burner tube to provide a surrounding counterflow chamber. Jacket and tube project horizontally inwards from the surrounding combustion chamber wall. Counterflow chamber is substantially closed at both ends. Tube projects inwardly beyond counterflow chamber and terminates in an upfacing burner head. Communication exists at opposite ends of the part of tube surrounded by counterflow chamber. At startup a tongue of flame travels through tube from an injector nozzle. Part of flame counterflows back through surrounding chamber and recirculates through tube. Another part of flame proceeds on to burner head. When parts sufficiently heated, flame in tube is caused to be extinguished and is replaced by hot clear blue flame jets from burner and a multiapertured band in tube within limits of counterflow chamber at end thereof remote from nozzle where counterflow originates. Combustion-supporting air to both chambers adjustably admitted at nozzle end.

3,620,658
FAIL-SAFE FUEL CUTOFF DEVICE

Charles L. Tappin, 14504 S.E. 15th St., Bellevue, Wash.

Filed Apr. 9, 1970, Ser. No. 27,083
Int. Cl. F23d *5/12*
U.S. Cl. 431—13 **19 Claims**

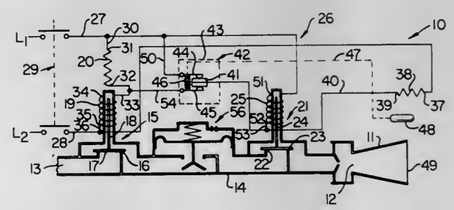


A fail-safe safety fuel cutoff system for heating equipment fueled with pressurized gas, such as LPG, hazardous to life if accidentally escaping into an enclosure. The system utilizes a main cutoff valve of the pilot-controlled type and equipped with an operating solenoid normally energized by a thermocouple having its hot junction exposed to the burner. In one preferred embodiment, a reserve quantity of fuel is automatically stored adequate to operate the burner to energize the thermocouple and open the cutoff valve whereas, in a second embodiment, a secondary power source is utilized initially to hold the main valve open until the thermocouple reaches its operating temperature and assumes control of the cutoff valve. Each embodiment is effective to positively cut off all fuel flow at a point exteriorly of the enclosure following cooling of the thermocouple.

3,620,659
FUEL CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE

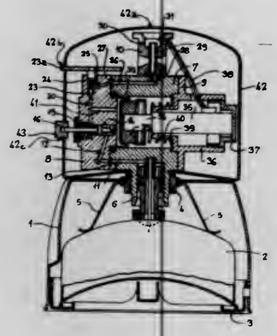
Raymond J. Fox, Glendale, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 9, 1968, Ser. No. 743,554
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **27 Claims**



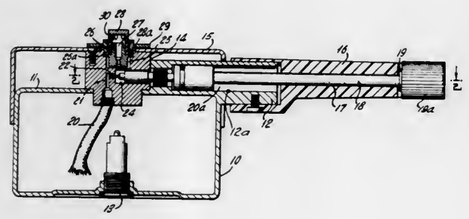
This disclosure relates to a fuel control system for a fuel-burning apparatus wherein an electrical switch is adapted to sense the nonignition condition and ignition condition of an electrically operated ignition means for the burner means in such a manner that when the system is initially energized, the switch means opens a first valve means while energizing the ignition means and when the ignition means reaches an ignition condition, the switch means places the first valve means in a holding circuit to maintain the same in an open position and operates another valve means downstream from the first valve means to permit fuel to issue from the main burner means and be ignited by the ignition means.

3,620,660
LIGHTING DEVICES FOR GAS BURNERS
Jacques Laurent, Sainte-Foy-les-Lyon, France, assignor to Application Des Gaz, Paris, France
Filed Nov. 20, 1969, Ser. No. 878,402
Claims priority, application France, Nov. 29, 1968, 50694
Int. Cl. F23q *3/00*
U.S. Cl. 431—255 5 Claims



A lighting device associated to a burner operating with a gas under pressure is actuated by the pressure of the gas supplied to the burner in order that the latter may be lighted automatically. In an embodiment the gas under pressure is supplied to the burner through a main gas valve, a throttling device being inserted between the valve and the throttling device. The movable actuating member of a piezoelectric lighting device receives the action of a deformable diaphragm which closes an open-ended pneumatic chamber the latter being connected with the gas conduit at a point thereof situated between the gas valve and the throttling device. The gas burner is thus automatically lighted when the valve is turned on.

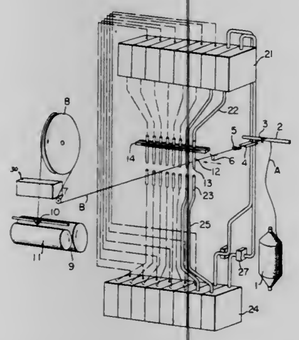
3,620,661
PORTABLE HEATING DEVICE
Herman Schlamp, Cologne, Rhine, Germany, assignor to Ronson Corporation, Woodbridge, N.J.
Continuation of application Ser. No. 684,136, Nov. 20, 1967, now abandoned. This application Feb. 11, 1970, Ser. No. 9,123
Int. Cl. A61k *15/04*
U.S. Cl. 431—344 2 Claims



This invention relates to a portable heating device having a self-contained fuel supply therein in which the amount of fuel supplied to a burner on the heating device can be varied by manipulating a control on the handle of the heating device.

CHEMICAL

3,620,662
METHOD AND APPARATUS FOR INTERMITTENTLY DYEING YARNS
Ryou Miyamoto, Amagasaki-shi; Kunio Hashizume, Ishikawa-gun, Ishikawa-ken, and Hiroshi Kitamura, Ishikawa-gun, Ishikawa-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan and Maruichi Seni Kabushiki Kaisha, Ishikawa-ken, Japan, part interest to each
Continuation-in-part of application Ser. No. 549,857, May 13, 1966, now abandoned. This application Oct. 21, 1969, Ser. No. 871,416
Int. Cl. D06p *5/00*
U.S. Cl. 8—14 2 Claims



A method and apparatus for dyeing yarn for creating a very detailed, complicated pattern of variegation. Streams of dye liquors are discharged in a specified first direction from a nozzle assembly comprising one or more dye liquor nozzles. At the same time the entire nozzle assembly is traversed by a traversing means in a second direction transverse to said first direction. The yarn is run between a supply and a takeup means in the direction of its length in a third direction across the streams of dye liquors and is traversed by a yarn traversing means transversely to the third direction and the first direction.

3,620,663
PROCESS FOR THE DYEING OF SYNTHETIC FIBER MATERIALS AND BLENDS WITH QUATERNARY NITROGEN GROUP CONTAINING DYESTUFFS
Winfried Kruckenberg, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 1, 1967, Ser. No. 642,684
Claims priority, application Germany, June 10, 1966, F 49435
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 8 Claims

Process for dyeing synthetic fiber materials e.g. aromatic polyester, and fiber blends, e.g. blends of polyester with wool, in an aqueous solution at a pH of 4–6.5 at temperatures of about 98° to 140° C. with a quaternary nitrogen group containing dyestuff, said dyestuff being free of sulfonic and carboxylic acid groups.

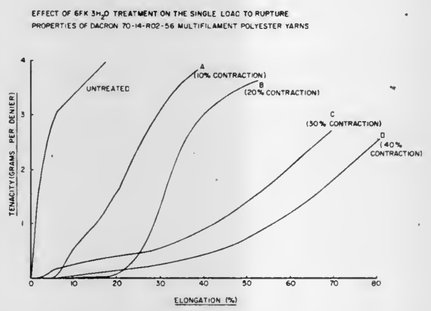
3,620,664
PHENYL-N-ARYLCARBAMATES AND A PROCESS OF PRODUCING CELLULOSE N-ARYLCARBAMATES THEREFROM
Stanley R. Hobart, New Orleans, La.; Howard H. McGregor, Jr., Cambridge, Mass., and Charles H. Mack, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
Division of Ser. No. 668,974, Sept. 19, 1967, Pat. No. 3,584,000
Filed Feb. 27, 1970, Ser. No. 18,394
Int. Cl. D06m *13/42*
U.S. Cl. 8—120 13 Claims

Novel phenyl N-arylcarbamates and diphenyl N,N'-arylenedicarbamates are produced. Such componds when applied to cellulosic materials and heated produce isocyanates in situ which in turn react with the cellulose to produce cellulosic materials having improved rot resistance and acid dye affinity.

3,620,665
TEXTILE LUBRICANT USEFUL IN AMINOPLAST MODIFICATION PROCESSES
Arthur W. Lanner, Terrace Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 559,890, May 18, 1966, Patent No. 3,519,562
Filed Jan. 9, 1970, Ser. No. 7,291
Int. Cl. D06m *13/34*
U.S. Cl. 8—115.6 4 Claims

Lubricant compositions comprising certain oxidized Fischer-Tropsch waxes, and selected quaternary ammonium compounds alone or in combination with ethoxylated alcohols or phenols, are used as lubricants in the application of durable-press treating agents to cotton or cotton-synthetic fabrics.

3,620,666
PROCESS FOR CHEMICALLY TEXTURING POLYESTER FIBERS
Robert W. Lenz, Amherst; Leo Barish, Sharon, and Virginia L. Lyons, Arlington, all of Mass., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 1, 1968, Ser. No. 718,020
Int. Cl. D06m *13/08*
U.S. Cl. 8—130.1 15 Claims



Process for chemically texturing fibers, particularly polyester fibers, by treatment of the fibers with treating agents in aqueous solution of perfluorinated or perfluorochlorinated ketone hydrates which cause differential swelling to occur between the skin and core of the fibers.

3,620,667
METHOD OF REMOVING TUBERCLES FROM A FERROUS SURFACE AND INHIBITING FURTHER TUBERCLE FORMATION THEREON
William E. Zimmie, 5192 Park Lane, North Olmsted, Ohio
Continuation-in-part of application Ser. No. 808,374, Mar. 13, 1969, now abandoned , which is a continuation of application Ser. No. 464,868, June 17, 1965, now abandoned. This application Nov. 18, 1969, Ser. No. 877,865
Int. Cl. C23f *11/12*, *11/14*; B08b *9/08*
U.S. Cl. 21—2.7 5 Claims

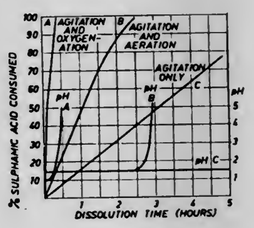
Treating a ferrous surface to remove tubercles of corrosion and inhibit further corrosion includes the steps of providing an aqueous solution of polyelectrolytic organic polymer and applying it to the corroded ferrous surface. The polymer (1) is prepared from compounds characterized by the formula:

wherein R is selected from the group consisting of nitrile, amide and carboxyl radicals, (2) has an average molecular weight ranging from about 25,000 to 25 million and (3) has a weight concentration of 0.1 to 1,000 parts per million parts of water.

3,620,668
AMMONIATED WET PROCESS PHOSPHORIC ACID SUSPENSION BASE
Paul R. Cutter, Golden, Colo., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed May 17, 1968, Ser. No. 729,909
Int. Cl. C01b *25/28*
U.S. Cl. 23—107 7 Claims

An ammoniated wet process phosphoric acid suspension base is prepared by mixing wet process orthophosphoric acid and superphosphoric acid to provide a mixture containing about 10–20 percent polyphosphoric acid, and ammoniating the mixture to provide an N/P_2O_5 ratio of about 0.32–0.35 and thereafter cooling the material and seeding with finely divided diammonium phosphate crystals. Attapulgite clay may be added just before the seeding step.

3,620,669
PRODUCTION OF NICKEL SULFAMATE
Nicolas Zubryckyj, Fort Saskatchewan, and David John Ivor Evans, Edmonton, both of Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada
Continuation of application Ser. No. 416,818, Dec. 8, 1964, now abandoned. This application June 2, 1969, Ser. No. 834,583
Int. Cl. C01b *17/98*
U.S. Cl. 23—114 1 Claim

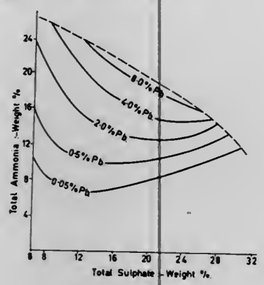


A process for preparing nickel sulfamate by dissolution of nickel powder in aqueous sulfamic acid solution. Very rapid nickel dissolution rate is obtained by oxygenating a suspension of nickel powder in sulfamic acid solution with substantially pure oxygen gas while controlling the pH of the system below about 5.0.

3,620,670
RECOVERY OF LEAD VALUES FROM SOLUTION

Geoffrey Charles Bratt, Tasmania, Australia, and Dereck Wilson Brown, Singapore, assignors to Electrolytic Zinc Company of Australia Limited, Melbourne, Victoria, Australia

Filed July 22, 1969, Ser. No. 843,295
Claims priority, application Australia, July 25, 1968, 41175/68
Int. Cl. C01g *21/20*
U.S. Cl. 23—127 2 Claims



Simplified representation of equilibrium solubilities of lead sulphate in ammoniacal ammonium sulphate solutions at 25°c.

Recovery of lead values from lead-bearing material, by leaching the said material at ambient temperature for a period not exceeding 1 hour with a mixture of ammonium sulfate and aqueous ammonia to produce a supersaturated solution, separating undissolved substances, treating the resultant solution at a temperature higher than that at which the leaching operation was effected without substantial loss of ammonia, to cause precipitation of a major portion of the lead content from the said solution, and separating the precipitated solids.

3,620,671
PROCESS FOR THE ACID TREATMENT OF ALUMINOUS ORES FOR THE RECOVERY OF ALUMINA

Pierre Maurel, and Pierre Duhart, both of Aix En Provence, France, assignors to Compagnie Pechiney, Paris, France

Filed Oct. 17, 1968, Ser. No. 768,240
Claims priority, application France, Oct. 25, 1967, 125,817
Int. Cl. C01b *7/30*
U.S. Cl. 23—143 12 Claims

The recovery of alumina from acid treatment of aluminous ores wherein iron, magnesium and potassium present in the ores are also recovered, including treating the ore with aqueous suplhuric acid solution to extract the solubles, washing the residue with water to extract the complex sulfates of iron, potassium and magnesium and recovering same by crystallization upon concentration, diluting the sulfate liquor with water to reduce the H_2SO_4 content to about 500 g. per liter and then cooling to a temperature below 50° C. while saturating with HCl to precipitate hydrated aluminum chloride which is seaprated by filtration, cooling the filtrate while saturating with hydrochloric acid to precipitate sodium chloride which is separated by filtration and heating the remaining filtrate to liberate the hydrochloric acid, concentrating the filtrate to increase the H_2SO_4 content to 750–850 g. per liter for recycling in treatment of a new batch of ore and purifying the hydrated aluminum chloride by recrystallization and calcining at a temperature of at least 550° C. to dissociate the aluminum chloride into alumina and hydrochloric acid which can be recovered.

3,620,672
METHOD OF PREPARING ANHYDROUS PHOSPHORUS ACID

Algirdas C. Poshkus, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 19, 1968, Ser. No. 753,747
Int. Cl. C01b *25/16*; C07c *1/20*
U.S. Cl. 23—165 4 Claims

Anhydrous phosphorous acid may be readily prepared by thermolizing dialkyl hydrogen phosphites at temperatures less than 220° C. in accordance with the equation:

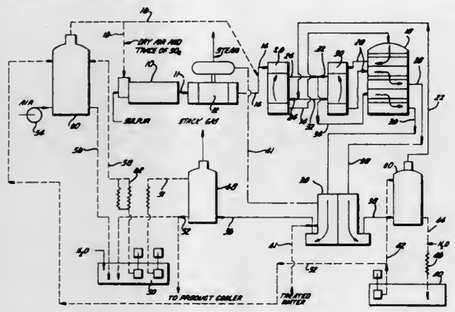
$(RO)_2PHO \quad 2R_{-H}+H_3PO_3$

In the formulas set forth, R is an alkyl group of from two to eight carbon atoms.

3,620,673
METHOD OF PRODUCING SULFURIC ACID

Timothy J. Browder, Jr., Los Angeles, Calif., assignor to The Ralph M. Parsons Company, Los Angeles, Calif.

Filed Mar. 21, 1968, Ser. No. 715,084
Int. Cl. C01b *17/76*
U.S. Cl. 23—168 7 Claims



Hot combustion gases bearing sulfur dioxide produced by burning sulfur in air are cooled in a waste heat boiler and a heat exchanger before introduction into a multipass catalytic converter. The majority of the sulfur dioxide is converted to sulfur trioxide in the converter in the presence of a catalyst. Intermediate and final absorption stages remove the sulfur trioxide. The stream leaving the waste heat boiler is cooled in the heat exchanger to the required initial conversion temperature by indirect heat transfer with a return gas stream from the intermediate absorption stage. In addition, the return gas stream from the intermediate absorption stage cools the primary catalysis reaction gas stream between conversion passes. After the last conversion pass of the primary catalysis and before intermediate absorption, the primary catalysis reaction stream is cooled in an economizer, boiler or the like. The return gas stream from the intermediate absorption stage after being heated in heat exchangers undergoes further catalytic conversion in the converter and then additional absorption takes place.

3,620,674
PROCESS FOR REGENERATING VOLATILE BASES AND VOLATILE ACIDS FROM THE SALTS FORMED THEREWITH

Philippe Renault, Neuilly Sur Seine; Serge Falcon, Rueil Malmaison; Jean-Claude Chavin, Franconville, and Andre Deschamps, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Hauts de Seine, France

Filed Feb. 7, 1968, Ser. No. 703,581
Claims priority, application France, Feb. 13, 1967, Mar. 30, 1967; 94,761, 100,911
Int. Cl. C01b *17/56*, *31/20*
U.S. Cl. 23—178 19 Claims

A two-stage process for regenerating volative bases B′ and weak volatile acids A′ from their salts which comprises contacting, in a first stage, the salt with an organic base B of low volatility to liberate the volatile base B′ in a gaseous form and liberating the weak volatile acid A′ in gaseous form in a second stage while generating the base B of low volatility in the liquid phase.

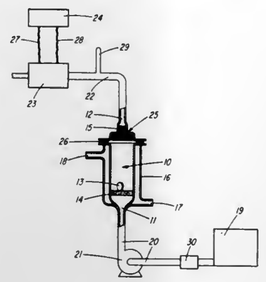
3,620,675
APPARATUS FOR THE MEASUREMENT OF DISSOLUTION RATES

Carter L. Olson, Columbus, Ohio, assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 10, 1969, Ser. No. 797,965
Int. Cl. B01f *1/00*; G01m *21/28*, *27/46*
U.S. Cl. 23—230 R 6 Claims

An apparatus for the measurement of dissolution rates of solid materials such as tablets, capsules, modules, or the like,

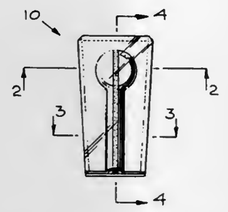
includes a dissolution fluid reservoir, pumping means for the fluid, a dissolution chamber adapted to receive a solid material to be dissolved and the dissolution fluid, and means for measuring the concentration of the dissolved solid in the effluent from the dissolution chamber.



3,620,676
DISPOSABLE COLORIMETRIC INDICATOR AND SAMPLING DEVICE FOR LIQUIDS

Ward Benjamin Davis, Glendale, Calif., assignor to Sterilizer Control Royalties (a Trust), Los Angeles, Calif.

Filed Feb. 20, 1969, Ser. No. 800,887
Int. Cl. B65d *83/00*; G01n *31/22*, *33/18*
U.S. Cl. 23—253 TP 6 Claims



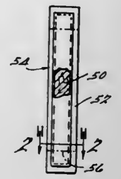
A disposable colorimetric indicator and sampling device for liquids is formed by embossing a synthetic plastic sheet with a syringelike cavity and closing the cavity by adhering a plane synthetic plastic sheet over the cavity, the two sheets being either heat sealed or adhesively joined together on the margins around the cavity, the cavity having a tubular portion one end of which opens at the edge of the adhered sheets, and the other end of the cavity being enlarged to form a finger compressible enlargement. A coating of a colorimetric indicator composition, soluble in or reactive with the liquid to be tested, is provided, the liquid being drawn into the tubular cavity by first compressing the enlargement, and releasing the pressure to draw in a liquid sample to react with the colorimetric indicator coating.

3,620,677
INDICATING DEVICE

Ayers Morison, Gross Pointe, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 18, 1961, Ser. No. 160,127
Int. Cl. G01n *29/02*
U.S. Cl. 23—253 21 Claims

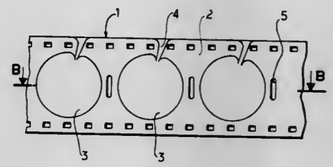
1. An indicating device comprising in combination a porous capillary material characterized by connected voids of sufficiently small size to induce the progressive absorption of a fluid, and an impervious covering material enclosing at least the major portion of the exterior surfaces of said capillary material and disposed in intimate contact therewith defining an absorptive cavity of a preselected volume, said device constructed to provide directional guidance through said absorptive cavity of a fluid contacting an exposed surface of said capillary material, indicating means on said indicating device, said capillary material within said absorptive cavity operable in conjunction with a fluid absorbed to evidence in combination with said indicating means a characteristic of the fluid absorbed therein.



3,620,678
INSTALLATION FOR MULTIPLE AND AUTOMATIC ANALYSES

Jean Guigan, 9, rue Jean Mermoz, 75-Paris 8 eme, and Robert Laucournet, 15 ter rue des Tournelles, 94 L'Hayles-Roses, both of France

Filed Sept. 8, 1967, Ser. No. 666,302
Claims priority, application France, Sept. 8, 1966, Oct. 5, 1966, Mar. 24, 1967, July 4, 1967; 75,754, 78,946, 100,324, 113,080
Int. Cl. G01n *33/16*, *21/00*
U.S. Cl. 23—253 R 8 Claims

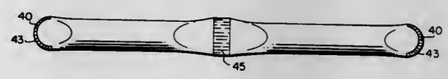


Device for multiple and automatic analysis including means for picking up a given substance to be analyzed at least one means for transferring a given quantity of liquid from one container to another, at least one means for mechanical treatments and at least one measuring means, said substance being conveyed from one of said means to another one in vessels carried by conveyors constituted by two pliant strips.

3,620,679
STERILE TEST TUBES

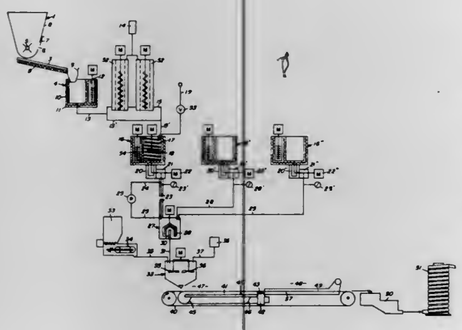
Donald H. De Vaughn, 106 Ridgewood Drive, San Rafael, Calif.

Division of Ser. No. 678,766, Sept. 25, 1967, Pat. No. 3,542,618
Filed Mar. 16, 1970, Ser. No. 19,990
Int. Cl. B01l *3/14*
U.S. Cl. 23—259 3 Claims



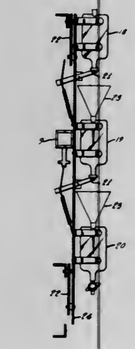
A test tube of plastic material having flattened-out, fused opposite ends and a chemically clean, completely sterile interior. In the preferred embodiment the end edges of the tube are rounded, both internally and externally. This minimizes retention of residual matter of the contents of the tube in the corners of the tube during practical use.

3,620,680
APPARATUS FOR CONTINUOUSLY MAKING THERMOPLASTIC POLYURETHANES
Gunter Friedrich Bartel; Martin Klawitter, and Ernst Denker, all c/o Die Kunststoffburo Osnabruck Dr. Reuter GmbH, 4531 Lotte, Hannover, Germany
Filed July 24, 1969, Ser. No. 844,268
Claims priority, application Germany, Mar. 10, 1969, P 17 70 990.9
Int. Cl. B01j *1/00*; **C08g** *22/04*
U.S. Cl. 23—260 **4 Claims**



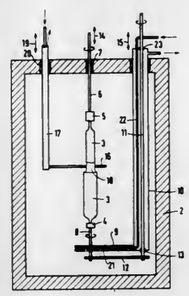
A process and an apparatus for making thermoplastic polyurethanes continuously, the apparatus combining a storage tank and dehydrating equipment for a polyol and storage tanks for other components of a polyurethane reaction mixture all connected through conduits to a mixing device which discharges the reaction mixture continuously over the surface of a conveyor belt. The conveyor belt is provided with means for controlling the temperature thereof. The solidified thermoplastic product discharged from the belt is continuously granulated and conveyed to containers.

3,620,681
APPARATUS FOR EXTRACTION OF DRUGS AND TOXIC SUBSTANCES FROM BLOOD, SERUM AND OTHER LIQUID
Eric S. Wright, 14947 Clymar St., Compton, Calif.
Filed Oct. 6, 1969, Ser. No. 863,892
Int. Cl. B01d *11/02, 11/04*
U.S. Cl. 23—267 C **2 Claims**



Said apparatus is housed on and in a convenient metal frame. It has three extraction chambers arranged vertically. It extracts the desired drug or toxic substance from the sample with a suitable solvent. This extraction is carried out in the upper extraction chamber, after which the solvent is filtered into the midextraction chamber, and the sample or aqueous phase is retained. The middle extraction chamber contains carbon black, some other adsorbing agent or aqueous solution which effects the purification of the solvent. The solvent is filtered a second time into the lower extraction chamber where the desired drug or toxic substance is reextracted from the solvent into an acidic or basic solution, depending on its chemical nature. The actual extractions and purification are effected by a shaking motion of the extraction chambers, and all operations (extractions, purification and filtrations) are done automatically according to a predetermined program.

3,620,682
APPARATUS FOR PRODUCING ROD-SHAPED MEMBERS OF CRYSTALLINE MATERIAL
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft
Continuation of application Ser. No. 578,088, Sept. 8, 1966, now abandoned. This application Oct. 31, 1969, Ser. No. 871,783
Int. Cl. B01j *17/00*
U.S. Cl. 23—273 SP **5 Claims**

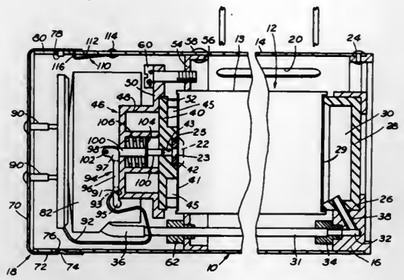


Combination in apparatus for producing rod-shaped members of crystalline material includes a sealed receptacle having a top wall, bottom wall and lateral wall portions, a pair of rod holders located in the receptacle substantially along the vertical central axis of the receptacle for supporting a rod-shaped member of crystalline material therebetween, heating means mounted in the receptacle for producing a melting zone in the rod-shaped crystalline member, the heating means and the holders being displaceable relative to one another for passing the melting zone along the rod-shaped crystalline member, and drive means extending into the receptacle through a wall portion other than the bottom wall portion from a location outside the receptacle for moving the holders and the heating means relative to one another.

3,620,683
GAS GENERATOR
Vladimir Hwoschinsky, Buffalo; James E. Nelson, Williamsville, and Paul W. Westcott, North Tonawanda, all of N.Y., assignors to A-T-O Inc., Cleveland, Ohio
Filed Nov. 14, 1968, Ser. No. 775,769
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **11 Claims**

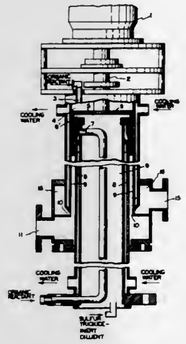
A housing for encasing a gas generator comprising a shell formed of a filament-wound epoxy comprising glass filaments bonded with epoxy and having vent passages therethrough. The shell is closed at the bottom end and is provided with a removable cover at the upper end. Breathing equipment is compactly stored within the upper end of the housing and is connected to the cover for removal therewith. A firing mechanism is operatively connected to the cover and is adapted to be actuated upon removal of the cover. A detent is mounted in the housing for indicating that the cover has

been axially shifted. Mounting members are pivotally mounted on the shell of the housing for attachment to a fixed



support structure. When detached, the mounting members serve as handles in manually carrying the assembly.

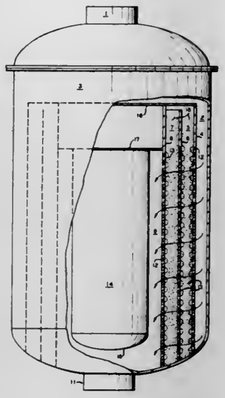
3,620,684
APPARATUS FOR CONTINUOUS SULFONATION
Richard J. Brooks, and Burton Brooks, both of Seattle, Wash., assignors to Chemithon Corporation, Seattle, Wash.
Division of Ser. No. 405,215, Oct. 20, 1964, abandoned, which is a Continuation-in-part of Ser. No. 320,301, Oct. 31, 1963, Pat. No. 3,350,428, which is a Continuation-in-part of Ser. No. 244,096, Dec. 12, 1962, Pat. No. 3,259,645
Filed Nov. 18, 1966, Ser. No. 611,784
Int. Cl. B01j *1/00*
U.S. Cl. 23—285 **6 Claims**



An apparatus for reaction of fluids comprising two externally cooled substantially concentric, circular reaction surfaces, forming a reaction space therebetween of one-eighth to one-half inch and a rotor located concentrically between the reaction surfaces.

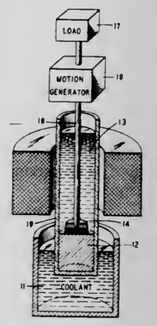
3,620,685
RADIAL FLOW CATALYST REACTOR
Ronald S. Rogers, and Oliver P. Proctor, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed July 30, 1969, Ser. No. 846,005
Int. Cl. B01j *9/04*; **C07b** *3/00*
U.S. Cl. 23—288 R **4 Claims**

A radial flow catalyst reactor designed to provide maximum area of exposure of catalyst to a fluid feed while yet providing for rapid removal of effluent of the reaction from the reactor. For larger reactors, an internal space-occupying thumb reduces fluid-flow space and increases the rapidity of escape of the effluent. The reactor and catalyst cases are



designed to allow for overfill to permit settling of catalyst particles in the cases without bypassing of the catalyst.

3,620,686
METHOD FOR SOLIDIFYING WHILE RUBBING THE SOLID-LIQUID INTERFACE
William G. Pfann, Far Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 20, 1969, Ser. No. 851,656
Int. Cl. B01d *9/00*
U.S. Cl. 23—295 **6 Claims**



The microstructure and the impurity distribution in a solid which has been directionally solidified from a melt or solution can be strongly influenced by rubbing the solid-liquid interface during solidification. If the solid has two or more phases, a major effect will be the production of a fine-grain microstructure. The grains in addition to being small will be roughly equiaxial and not possess the usual columnar, dendritic and substructures. If the solid is single phase, the rubbing should break up the diffusion layer in the liquid, which is, typically, enriched in one or more of the constituents, and the equilibrium segregation coefficient between the solid and the liquid should be realized in normal freezing. Fine-grained microstructures have recently become of interest in the field of superplasticity and an important application of normal freezing of a single-phase material is in the desalination of water.

3,620,687

ORGANIC PHASE REDUCTION OF PLUTONIUM IN A PUREX-TYPE PROCESS

Archie S. Wilson, Richland, Wash., assignor to the United States of America, as represented by the United States Atomic Energy Commission

Filed Apr. 23, 1969, Ser. No. 818,822
Int. Cl. B01d *11/04*; B01j *11/10*
U.S. Cl. 23—341 2 Claims

An improved method for the reduction of uranium (VI) to uranium (IV) in a solvent presence process for reprocessing irradiated nuclear reactor fuels using tributyl phosphate (Purex Process) by subjecting uranyl nitrate in a tributyl phosphite—hydrocarbon solvent—acid media to ultraviolet light in the presence of a small amount of phosphoric acid.

3,620,688

FLUOROAMMONIUM SALTS, THEIR PREPARATION, AND USES

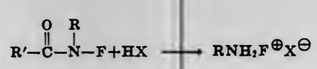
Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 1, 1969, Ser. No. 812,432
Int. Cl. C01c *1/00*; C07c *87/06*
U.S. Cl. 23—356 8 Claims

This patent describes novel N-fluoroammonium salts having the general formula

$$RNH_2F^{\oplus}X^{\ominus}$$

wherein R is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cyclic or heterocyclic radicals; and X is selected from the group consisting of ClO_4^{-} and HSO_4^{-}. This patent further describes the preparation of the above-identified compounds in accordance with the following general reaction equation

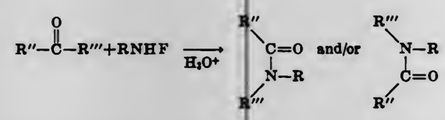


$$R'-\underset{\underset{O}{\|}}{C}-\underset{\underset{F}{|}}{N}-R + HX \longrightarrow RNH_2F^{\oplus}X^{\ominus}$$

wherein R and X are as defined above, and R′ is alkyl, alkoxy or amino. Still further, this invention comprises the hydrolysis of the above-identified N-fluoroammonium salts or the following salts of the formula

$$RNH_2F^{\oplus}SO_3Y^{\ominus}$$

wherein R is a previously defined and Y is a lower alkyl, typically having up to six carbon atoms, e.g. methyl or ethyl, to form N-fluoroamines in situ, and the reaction of the N-fluoroamines with ketones in accordance with the following general equation



$$R''-\underset{\underset{O}{\|}}{C}-R'''+RNHF \xrightarrow[H_3O^+]{} \begin{matrix} R'' \\ | \\ C{=}O \\ | \\ N-R \\ | \\ R''' \end{matrix} \text{ and/or } \begin{matrix} R''' \\ | \\ N-R \\ | \\ C{=}O \\ | \\ R'' \end{matrix}$$

wherein R″ and R‴ is selected from the group consisting of alkyl, aryl, cyclic and heterocyclic, and R is as defined above. Preferably, the N-fluoroammonium salts of this invention are prepared in the presence of an inert solvent.

3,620,689

PREPARATION OF ALKALI METAL HEXAFLUOROCHLORATES

John P. Faust, Hamden; Albert W. Jache, North Haven, and Andrew J. Klanica, Cheshire, all of Conn., assignors to Olin Mathieson Chemical Corporation

Filed Aug. 20, 1965, Ser. No. 482,329
Int. Cl. C01c *7/24*; C01d *11/00*
U.S. Cl. 23—367 3 Claims

Process for preparing alkali metal hexafluorochlorates having the formula $MClF_6$ where M is potassium, rubidium or cesium which comprises reacting MF with chlorine pentafluoride at about 0° to 150° C. and at autogenous pressure in a reaction zone defined by surfaces of nickel fluoride.

3,620,690

SINTERED AUSTENITIC-FERRITIC CHROMIUM-NICKEL STEEL ALLOY

Theodore R. Bergstrom, Little Canada, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 10, 1968, Ser. No. 743,588
Int. Cl. B22f *3/100*
U.S. Cl. 29—182 9 Claims

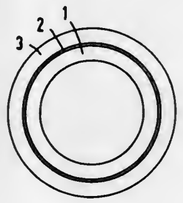
Powdered austenitic chromium-nickel stainless steel is blended with a powdered metal ferrite stabilizer, such as molybdenum, and the resulting blend is sintered to produce a new steel, namely, an unwrought austenitic-ferritic chromium-nickel alloy having, as sintered, desirably high tensile and yield strengths and other desirable properties.

3,620,691

ZIRCONIUM STRUCTURE

Hartmut Rubel, Erlangen, Germany, assignor to Siemens-Aktiengesellschaft

Filed Mar. 26, 1965, Ser. No. 442,960
Claims priority, application Germany, Apr. 11, 1964, Nov. 13, 1964; 590,499, 594,187
Int. Cl. B32b *15/00*
U.S. Cl. 29—191 5 Claims



Structure having an inner core comprising a high-strength zirconium alloy, a layer of a gas diffusion-impeding material on the surface of the core and a highly corrosion-resistant zirconium alloy layer engirdling the core and in intimate contact with the gas diffusion-impeding layer.

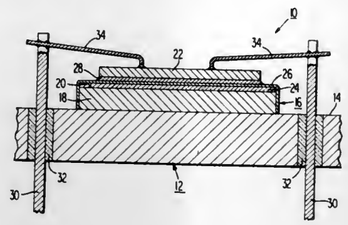
3,620,692

MOUNTING STRUCTURE FOR HIGH-POWER SEMICONDUCTOR DEVICES

David Louis Franklin, Somerville, and Leon Martin Balents, South Bound Brook, both of N.J., assignors to RCA Corporation

Filed Apr. 1, 1970, Ser. No. 24,588
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 4 Claims

The structure includes a thick member having a thermal expansion coefficient closely matching that of the device, and a thin metal layer having high thermal diffusivity disposed on the thick member. The metal layer is between 2.0 and 20.0 mils thick, to provide sufficient thermal diffusivity between the device and the thick member, and still allow the thermal expansion coefficient of the structure to be determined by the thick member. The device is mounted on the exposed surface of the metal layer.



3,620,693

DUCTILE, HIGH-TEMPERATURE OXIDATION-RESISTANT COMPOSITES AND PROCESSES FOR PRODUCING SAME

Lawrence Sama, Seaford, and George T. Pepino, Jr., Huntington Station, both of N.Y., assignors to GTE Electric Incorporated

Filed Apr. 22, 1969, Ser. No. 818,462
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 3 Claims

A ductile, high-temperature, oxidation-resistant metal composite is disclosed that comprises a superalloy substrate and a coating composition having the following percentages by weight of ingredients:

chromium	5% to 50%
aluminum	5% to 10%
silicon	0.5% to 3%
cobalt	0% to 5%
nickel	balance

A process for producing the composites is also disclosed wherein the coating composition containing the foregoing ingredients as powdered metals, a fugitive organic binder and a volatile solvent for the binder is applied to a clean substrate and thereafter the coated material is dried and heated under nonoxidizing conditions for a time sufficient to create a diffusion zone between said coating and said substrate.

3,620,694

METHOD FOR REMOVING DISSOLVED OXYGEN FROM HYDROCARBON GELS

Ken Posey, Jr., Allen, Tex., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 16, 1969, Ser. No. 833,789
Int. Cl. C10G *7/02*
U.S. Cl. 44—7 A 3 Claims

A method of removing dissolved atmospheric oxygen from hydrocarbon liquids and gels which comprises incorporating pyrogallol in the alkaline portion of a three-component flame fuel system consisting of an alkaline portion, a nonalkaline portion, and a hydrocarbon liquid portion. This method effectively reduces swelling of the product formed.

3,620,695

THICKENED COMPOSITIONS AND PROCESS OF PREPARING THEM

Frederic C. McCoy, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,231
Int. Cl. C10l *7/02*
U.S. Cl. 44—7 D 25 Claims

This invention concerns a process for thickening certain organic liquids comprising admixing the liquid to be thickened with critical rates of reactants comprising:
a. at least one relatively high molecular weight primary monoamine soluble in said liquid,
b. at least one relatively low molecular weight primary monoamine or ammonia, and
c. at least one organic polyisocyanate, until a substantial increase in the viscosity of the liquid is obtained.

3,620,696

FUEL OIL WITH IMPROVED FLOW PROPERTIES

William C. Hollyday, Jr., Watchung, and Nicholas Feldman, Woodbridge, both of N.J., assignors to Esso Research and Engineering Company

Filed Sept. 17, 1968, Ser. No. 760,346
Int. Cl. C10l *1/16*, *1/18*
U.S. Cl. 44—62 7 Claims

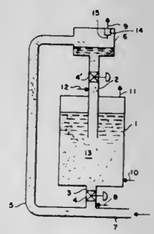
The response of a middle distillate petroleum fuel oil to the addition of a flow improver, such as a copolymer of ethylene, whereby flow and pumpability at low temperatures are improved, is increased by incorporating said fuel oil a small proportion of a paraffinic wax in sufficient quantity to furnish from about 0.03 to about 2 weight percent of normal paraffin hydrocarbons whose average molecular weight is within the range of from 300 to 650. The paraffinic wax that is added has a molar heat of fusion that is greater than the molar heat of fusion of the first wax that separates from the fuel upon cooling to or below its cloud point. Preferably, the added wax contains normal paraffin hydrocarbons ranging from n-C_{24} to at least n-C_{28} inclusive.

3,620,697

APPARATUS AND METHOD FOR PRODUCING HYDROGEN

Donald K. Wunderlich, Richardson; Finis E. Carleton, Richardson, and Eugene R. Brownscombe, Dallas, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,370
Int. Cl. C10j *3/14*, *3/00*
U.S. Cl. 48—89 12 Claims



Apparatus and method for producing hydrogen utilizing an inert particulate material as a heat transfer medium, fluidizing the particulate material to convey same to the reaction zone wherein, inter alia, hydrogen is formed, and heating the particulate material while so conveyed.

3,620,698

HYDROGEN AND CARBON MONOXIDE FROM SLURRIES OF SOLID CARBONIFEROUS FUELS

Warren G. Schlinger, Pasadena; William L. Slater, La Habra; Roger M. Dille, La Habra, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1968, Ser. No. 787,190
Int. Cl. C01b *2/14*; C10j *3/16*; C10l *1/32*
U.S. Cl. 48—206 6 Claims

Production of synthesis gas from a slurry of particulate solid carboniferous fuels, e.g., petroleum coke, coke from bituminous coal, coal, oil shale, tar sands, pitch, or mixtures of these materials in water or in a hydrocarbon liquid fuel. The amount of particulate solid carboniferous fuel in a pumpable slurry may be increased to 75 wt. percent and the particle size of the solid fuel may be increased to pass through a 12 mesh screen by the addition of 2 to 10 wt. percent of soot as produced, for example, by the partial oxida-

tion of crude oil. The slurry at a relatively low velocity in the range of 5 to 50 feet per second is mixed with a stream of oxidizing gas at a relatively high velocity in the range of 200 feet per second to sonic velocity at the burner tip to form an atomized dispersion of water, hydrocarbon liquid fuel, oxidizing gas, and solid carboniferous fuel. Under synthesis gas-generating conditions, the atomized dispersion is reacted to produce a gaseous mixture of hydrogen and carbon monoxide. By this process, pumpable slurry feeds of low-cost solid carboniferous fuels may be gasified in a synthesis gas generator without being preheated.

3,620,699
REDUCING GAS GENERATION

Blake Reynolds, Riverside, and Clifford G. Ludeman, Darien, both of Conn., assignors to Texaco Development Corporation, New York, N.Y.

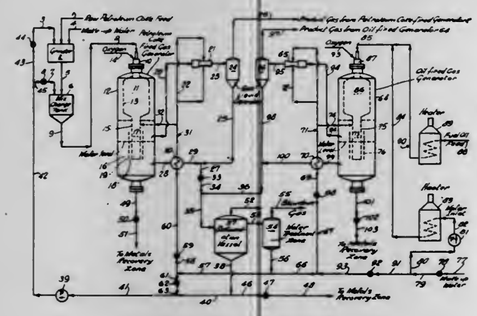
Division of Ser. No. 668,962, Sept. 19, 1967
Filed Dec. 3, 1969, Ser. No. 879,960
Int. Cl. C01b *2/14*
U.S. Cl. 48—212 **6 Claims**

Process for the production of an improved reducing gas comprising essentially H_2+CO and having a minimum "reducing ratio" $(H_2+CO)/(H_2O+CO_2)$ of 15. The reducing gas is generated in a separate unpacked noncatalytic reaction zone by the partial oxidation of a liquid hydrocarbonaceous fuel, substantially in the absence of supplemental H_2O. The temperature in the reaction zone is moderated by a gas mixture having a "reducing ratio" greater than about 1, for example: a portion of cooled reducing gas from the reaction zone; or a portion of the off-gas from an integrated process zone such as an ore reduction zone; or a mixture of both of these gases. In addition to the metallurgical applications, the gas mixtures, as produced by the process of this invention, may be used directly as a fuel gas or as feedstock in processes for the synthesis of methanol, hydrocarbons, or oxygenated organic chemicals.

3,620,700
RECOVERY OF ENTRAINED CARBON IN SYNTHESIS GAS

Warren G. Schlinger, Pasadena; William L. Slater, La Habra; Roger M. Dille, La Habra, and Joseph P. Tassoney, Whittier, all of Calif.

Continuation-in-part of application Ser. No. 787,190, Dec. 26, 1968, Continuation-in-part of application Ser. No. 787,191, Dec. 26, 1968. This application Aug. 15, 1969, Ser. No. 850,404
Int. Cl. B01d *15/00*; **C01b** *2/14*; **C02b** *1/14*
U.S. Cl. 48—215 **9 Claims**

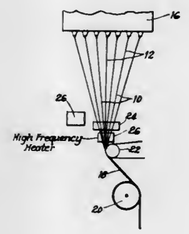


Free carbon soot entrained in the product gas of a free-flow synthesis gas generator is recovered in a sedimentation vessel as part of a thickened dispersion of solids in water from which clear supernatant water is easily separated by supplying particulate petroleum coke to the sedimentation vessel or to the reaction zone of said gas generator as a portion of the fuel, or by mixing the carbon soot-water dispersion in the sedimentation vessel with a thickened water slurry of unconverted petroleum coke such as produced by quenching in water the product gas of a second free-flow synthesis gas generator in which the fuel comprises raw particulate petroleum coke and the thickened underflow from said sedimentation vessel.

3,620,701
METHOD FOR TREATING AND IMPREGNATING GLASS FIBER BUNDLES FOR REINFORCEMENT OF ELASTOMERIC MATERIALS AND PRODUCT

Nicholas S. Janetos, East Providence; Alfred Marzocchi, Cumberland, and David E. Leary, Cumberland, all of R.I., assignors to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 655,944, July 25, 1967, now abandoned. This application Aug. 13, 1969, Ser. No. 850,348
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **18 Claims**

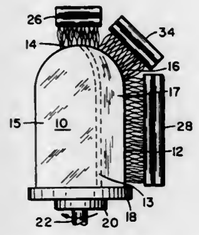


The concepts of this invention reside in the coating of individual glass fibers, in connection with the glass fiber-forming operation, with an elastomeric compatible composition having a curable elastomeric material, followed by at least partial cure of the elastomeric material before the bundle formed of a multiplicity of such coated glass fibers are flexed during processing of the glass fibers in strand, yarn, cord, or fabric formation, whereby the elastomeric-based composition is capable, even when present in an amount as low as 1–4 percent by weight solids, of protecting the coated glass fibers from breaking through the coating during flexure and whereby the bundle formed of the coated glass fibers can be processed to the form desired for use as a reinforcement without seizure or otherwise interfering with the processing steps, after which the bundle is impregnated with an elastomeric-based material for the desirable full loading of the glass fiber bundle to enhance the integration of the reinforcing bundle of glass fibers with the elastomeric matrix in the manufacture of glass fiber-reinforced elastomeric products.

3,620,702
PROCESS IMPROVEMENT FOR MANUFACTURING HIGH-PURITY QUARTZ FORMS

Arthur DeKalb, Danville, Va., and Alan G. Whitney, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,839
Int. Cl. C03b *23/20*, *25/00*
U.S. Cl. 65—18 **3 Claims**



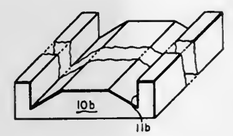
Improvement during the step of firing a high-purity quartz form whereby the end-supported green quartz form is heated

along at least one narrow-band section by a heat source capable of at least attaining the melting point of quartz and the supported form and heat source are moved relative to one another for a time sufficient to completely fire the form. The moving speed may be varied as the firing progresses in order to maintain optimum dimensional stability.

3,620,703
METHOD OF FABRICATING GLASS ORIFICE PLATES

James W. Evans, Corning, and Robert G. Foster, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 25, 1966, Ser. No. 596,942
Int. Cl. C03b *23/20*; **C03c** *27/06*
U.S. Cl. 65—42 **10 Claims**

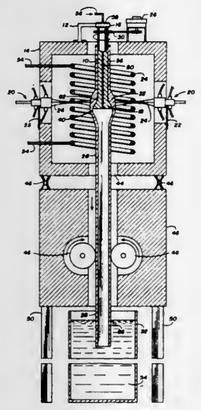


A method of forming blanks or workpieces into members each having a minute hole or orifice and especially an orifice having an unusual or uncommon shape extending therethrough. The orifice in each formed member of a group of such members is geometrically congruent to that of each of the other members of such group and the members of the group may, for example, be used in the fabrication of one or more orifice plates which may be employed as spinneret or filter plates.

3,620,704
METHOD AND APPARATUS FOR FORMING AND DRAWING FUSED METAL-OXIDE TUBES

Foster Lee Gray, Dallas, Tex., assignor to Texas Instrument Incorporated, Dallas, Tex.

Filed Dec. 18, 1969, Ser. No. 886,060
Int. Cl. C03b *17/04*
U.S. Cl. 65—86 **18 Claims**

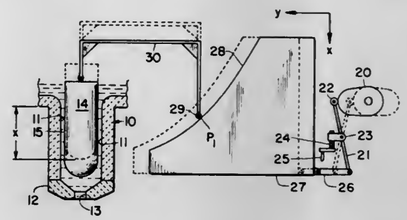


A technique and apparatus for forming a fused metal-oxide structure, for example a fused silica tubing, by depositing a metal oxide on a deposition mandrel by vapor phase hydrolysis, heating the thus-deposited metal to a temperature sufficiently high to form a viscous glass melt, and drawing the structure from this glass melt.

3,620,705
METHOD AND APPARATUS FOR FEEDING MOLTEN GLASS

Stuart M. Dockerty, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 15, 1968, Ser. No. 752,883
Int. Cl. C03b *5/26*
U.S. Cl. 65—129 **7 Claims**

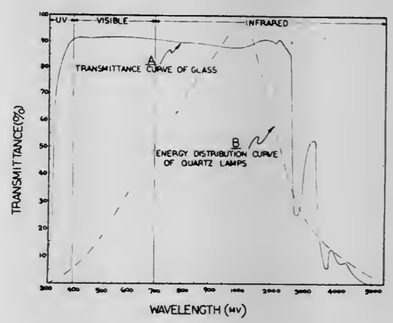


A system for accurately controlling the periodic charging of low-viscosity glass downwardly through an orifice while maintaining zero flow at the orifice intermediate the charging cycles. A needle member is positioned with a tubular well extending below the glass level of a feeder. A parabolic cam surface imparts vertical movement to the needle through a cam follower to alternately feed a desired charge volume from an orifice in the lower end of the well and maintain zero flow between charges. A defined portion of the parabolic cam surface is presented to the cam follower to vary the volume of the charge while maintaining constant cycle time. This is accomplished by a pivotal arm which is provided with a roller follower at its end which follows a constant velocity rotating cam. A rack is connected to the other end of the arm and the rack engages a pinion. The parabolic cam surface rotates in response to the pinion.

3,620,706
METHOD OF THERMAL TEMPERING TRANSPARENT GLASS BODIES

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Nov. 20, 1967, Ser. No. 690,043
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **1 Claim**



This invention relates to an improved method for effecting the thermal tempering of a transparent glass body, particularly a body having walls of varying thickness, by subjecting such body to shortwave infrared energy to which the body is substantially transparent, so that absorption of such radiation occurs throughout the entire mass of the glass body. When the glass body is thus uniformly heated to a desired temperature, it is quenched by subjecting the body to the action of a cooling fluid.

3,620,707
GLASS-TUBE REFORMING APPARATUS
Frans M. Van Damme, Blacksburg, Va., assignor to Research Corporation, New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 857,888
Int. Cl. C03b 23/08
U.S. Cl. 65—271 1 Claim

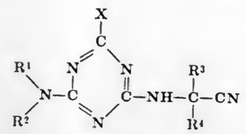


Apparatus is provided for converting glass tubes of circular cross section into tubes of larger cross-sectional dimensions and of any desired cross-sectional configuration such as square, rectangular, ovoidal, or triangular.

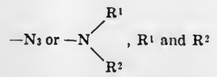
3,620,708
LIQUID FERTILIZERS INCLUDING SOLUBLE ZINC FROM ZINC OXIDE
Louis E. Ott, St. John, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed May 6, 1970, Ser. No. 35,240
Int. Cl. C05b 7/00, 21/00
U.S. Cl. 71—33 13 Claims
Ammonia-basic aqueous zinc-ammonium-phosphate solutions, containing up to about 20 weight percent zinc from zinc oxide, provide soluble zinc in liquid fertilizers. The solution is at least 15 percent by weight water and includes 0.3–0.52 mols P_2O_5 per mol of zinc and at least 2.4 mols of ammonia per mol of zinc.

3,620,709
GRANULATION OF POTASSIUM SULPHATE
John M. Petkovsek, Snyder, Tex., and Carlos O. Rodriguez, Sunnyvale, Calif., assignors to International Minerals & Chemical Corporation
Filed Apr. 29, 1969, Ser. No. 820,295
Int. Cl. B01j 2/12
U.S. Cl. 71—63 6 Claims
Potassium sulfate particles are wetted with an aqueous solution containing magnesium sulphate, potassium sulfate and starch and are granulated to form stable granules.

3,620,710
PLANT GROWTH REGULATING COMPOSITIONS INCLUDING CYANOALKYLAMINO SUBSTITUTED TRIAZINES
Werner Schwarze, Frankfurt am Main, Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany
Division of Ser. No. 684,514, Nov. 20, 1967, Pat. No. 3,505,325, Continuation-in-part of application Ser. No. 652,036, July 10, 1967, now abandoned.
Filed Dec. 12, 1969, Ser. No. 884,733
Claims priority, application Germany, July 16, 1966, Nov. 22, 1966; D 50 605, D 51 608
Int. Cl. A01m 9/22
U.S. Cl. 71—93 17 Claims
Herbicidal composition comprising, in an agriculturally acceptable carrier, compounds of the formula



wherein X is a halogen atom, lower alkoxy, lower alkyl mercapto,



being hydrogen, lower alkyl, lower alkenyl, or lower alkyl or alkenyl substituted with —OH, —OR, —SR or —CN, R being lower alkyl, and wherein one of R^3 and R^4 is alkyl or alkenyl having from one to eight carbon atoms and wherein R^3 and R^4 together with the adjoining carbon atom form a five to seven membered cycloalkyl ring; and a method of regulating growth of plants therewith.

3,620,711
HERBICIDAL PROCESS AND COMPOSITIONS FOR USE THEREIN
Brian Graham White, Bracknell, England, assignor to Imperial Chemical Industries Limited, London, England
Filed July 11, 1968, Ser. No. 743,943
Claims priority, application Great Britain, July 18, 1967, 32,934/67
Int. Cl. A01n 9/12, 9/22
U.S. Cl. 71—94 9 Claims
Herbicidally effective complexes of 4,4'- and 2,2'-bipyridylium quaternary salts with salts of transition metals.

3,620,712
SINGLE PHASE COMPOSITION
Edward J. Conklin, Forest Park, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio
Filed Dec. 24, 1968, Ser. No. 786,761
Int. Cl. A01n 9/24
U.S. Cl. 71—106 10 Claims
Single phase compositions consisting essentially of methyl esters of C_6–C_{12} fatty acids and specific nonionic emulsifiers in a ratio of esters to emulsifiers of from about 1:1.2 to about 3:1, said composition being coupled by a critical amount of water.

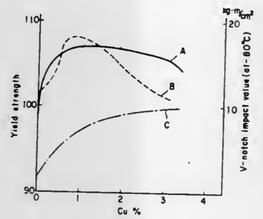
3,620,713
PROCESS OF PREPARING NOBLE METAL POWDERS
Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 756,358, Aug. 30, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 649,858, June 29, 1967, now abandoned. This application Feb. 26, 1970, Ser. No. 14,631
Int. Cl. B22f 9/00; C22b 11/04
U.S. Cl. 75—0.5 A 6 Claims
Acid chloride solutions of noble metals are prepared; the metal is precipitated as a metal-ammonia complex and then reduced to yield a relatively coarse noble metal precipitate powder. Metallization compositions containing the noble metal powders are printed and fired to form various electrical circuit components.

3,620,714
PROCESS OF PREPARING NOBLE METAL ALLOY POWDERS
Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 873,055, Oct. 31, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 705,305, Feb. 14, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 626,394, Mar. 28, 1967, now abandoned. This application Feb. 26, 1970, Ser. No. 14,630
Int. Cl. B22f 9/00; C22b 11/04
U.S. Cl. 75—0.5 A 6 Claims
A method of preparing alloy powders which exhibit low, if any, catalytic activity. Acid chloride solutions of noble metals are prepared; the metal alloy is precipitated as an alloy-ammonia complex and then reduced to yield a relatively coarse noble metal alloy precipitate powder. The important process parameters include the particular chemical reagents utilized, pH control and the rates of precipitation and reduction.

3,620,715
STEEL SCRAP OXIDATION ACCELERATION BY SURFACE IMPREGNATION TECHNIQUES
Sanaa E. Khalafalla, and Sequoya L. Payne, both of Minneapolis, Minn., assignors to The United States of America as represented by the Secretary of the Interior
Filed July 24, 1969, Ser. No. 844,648
Int. Cl. C21b 1/00; C23f 7/04
U.S. Cl. 75—1 7 Claims
The surface of scrap steel from discarded auto bodies, etc. is impregnated with minute amounts of an oxide of an oxidation acceleration agent containing said agent in its highest valence state by immersion in a solution of the agent or by spraying. After such treatment the steel will be rapidly oxidized during a reduction-roasting operation.

3,620,716
MAGNESIUM REMOVAL FROM ALUMINUM ALLOY SCRAP
Paul D. Hess, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed May 27, 1969, Ser. No. 828,338
Int. Cl. C22b 21/06
U.S. Cl. 75—68 3 Claims
Magnesium can be removed from secondary aluminum by contacting the melted metal with an effective amount of a flux containing potassium aluminum fluoride. This flux offers cost advantages over the known aluminum fluoride flux.

3,620,717
WELDABLE, ULTRAHIGH TENSILE STEEL HAVING AN EXCELLENT TOUGHNESS
Shozo Sekino; Toshiyuki Fujishima, and Hiroshi Yada, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan
Filed Sept. 23, 1968, Ser. No. 761,474
Claims priority, application Japan, Sept. 27, 1967, 42/62125
Int. Cl. C22c 39/50, 39/54
U.S. Cl. 75—125 10 Claims



A weldable, ultrahigh tensile steel prepared by adding V and Cu to a low-carbon steel containing Ni and Mo, to which there may be further added W, Nb and Ta, characterized by being able to stand a low temperature and possessing a good weldability and an excellent toughness at a very high level of the strength, particularly the toughness in the welding heat-affected zone, said properties being particularly imparted by the addition of V and Cu.

3,620,718
NICKEL BASE ALLOY
John C. Freche, Fairview Park, and William J. Waters, Cleveland, both of Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 28, 1970, Ser. No. 68,024
Int. Cl. C22c 19/00
U.S. Cl. 75—170 5 Claims
Nickel base alloys containing tungsten, aluminum, zirconium, and carbon in preferred weight percentage ranges have superior strength in the 2,000°–2,200° F. temperature range. This alloy has a nominal composition of 20% tungsten, 6.5% aluminum, 1% zirconium, 0.2% carbon and the balance nickel.

3,620,719
METHOD OF VACUUM REFINING HIGH-TEMPERATURE ALLOYS
Harold L. Wheaton, Kinsington, and Edward G. Pekarek, Willoughby, both of Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed Nov. 12, 1969, Ser. No. 876,107
Int. Cl. C22c 1/02
U.S. Cl. 75—170 12 Claims
Covers a method of making nickel-base alloys characterized by markedly improved rupture ductility particularly in the intermediate temperature range. This includes the steps of charging to a furnace crucible a base charge of carbon and a mixture of nonreactive metals comprising at least nickel, vacuum refining said charge by heating it to a melt at a temperature ranging from about 2,550° F. to about 2,750° F. at a pressure less than 50 microns and completing said refining by further heating the charge to a melt temperature ranging from about 2,800° F. to about 3,000° F. for a period of time until carbon deoxidation is complete. The melt is cooled, at least one reactive metal added thereto, and the nickel alloy is then teemed.

3,620,720
PROCESS FOR PRODUCING METALLIC MATERIALS CONTAINING THORIA
Philippe Galmiche, Clamart; Andre R. Hivert, Pontoise, and Michel E. Marty, Paris, all of France, assignors to Office National D'Etudes Et De Recherches Aerospatiales (par abreviation: O.N.E.R.A.), Chatillon-sous-Bagneux, France
Filed Mar. 1, 1968, Ser. No. 709,794
Int. Cl. C22c 39/50
U.S. Cl. 75—206 8 Claims
The thoria used for the dispersion is obtained by pyrolysis of a chelated compound of thorium whose anion comes from a diketone β, this compound being preferably thorium acetylacetoneate.

3,620,721
LEAD OXIDE-CONTAINING PHOTOCONDUCTIVE RECORDING PROCESS UTILIZING X-RAYS OR VISIBLE LIGHT
Bernard Hippoliet Tavernier, Edegem; Nikolaas Cyriel De Jaeger, Wommelgem, and Johannes Josephus Vanheertum, Halle-Zandhoven, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Aug. 22, 1969, Ser. No. 852,503
Claims priority, application Great Britain, Aug. 22, 1968, 40,247/68
Int. Cl. G03g 5/08
U.S. Cl. 96—1 5 Claims
Photosensitive recording materials highly sensitive to X-ray and visible light are produced by mechanically fragmenting

crystalline orthorhombic lead (II) oxide or a crystalline mixture thereof with tetragonal lead (II) oxide in a ratio of up to about 20:80 to a grain size of about 0.1–0.5 microns with a content of about 20–95 percent tetragonal lead (II) oxide and the balance orthorhombic lead (II) oxide, and dispersing such grains in an electrostatic charge-retaining insulating binder medium.

3,620,722
SENSITIZED DEVELOPERS FOR ELECTROPHOTOGRAPHY AND ELECTRORADIOGRAPHY

Peter J. Hastwell, Elizabeth Grove, and Kenneth A. Metcalfe, Lockleys, both of Australia, assignors to The Commonwealth of Australia care of the Secretary, Department of Supply, Parkes, Canberra, Australia

Filed Sept. 18, 1968, Ser. No. 760,733
Claims priority, application Australia, Sept. 18, 1967, 27289
Int. Cl. G03g *13/00*; B05c *1/16*
U.S. Cl. 96—1.2 **2 Claims**

The invention relates to a method of correcting the surface of a photoconductor during multicolor development processes wherein the sensitivity to color acceptance during exposure is varied by the developer of the previous steps, the invention residing in the color correction between development and exposure steps of either the whole surface or the image surface only by either including with a developer, or applying independently, a sensitizing dye in the next color exposure.

3,620,723
ELECTROPHOTOGRAPHIC COPYING MATERIAL CONTAINING ASSISTANT SENSITIZERS AND ITS MANUFACTURING METHOD

Nario Yamaguchi, and Kazuo Tubuko, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 15, 1968, Ser. No. 729,228
Claims priority, application Japan, May 29, 1967, 42/33663
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **7 Claims**

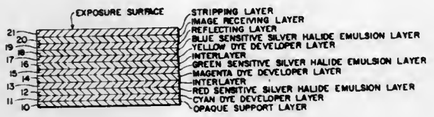
An electrophotographic copying material, comprising a support sheet having a front and a reverse side, said reverse side having been given an electroconducting treatment and said front side being impregnated with or directly coated with as assistant sensitizer, said front side further having, on the face of the assistant sensitizer applied on said side, a light-sensitive layer (photoconductive layer) containing an organic photoconductive substance. A method for manufacturing the aforesaid copying material, comprising first applying a solution of an assistant sensitizer onto the front side of a support sheet with its reverse side already having been given an electroconducting treatment, drying the applied assistant sensitizer at a temperature ranging from 60° C. to 100° C, and then forming a light-sensitive layer on the face of the applied assistant sensitizer.

3,620,724
PHOTOGRAPHIC COLOR DIFFUSION TRANSFER PROCESSES AND ELEMENTS FOR USE THEREIN

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 519,995, Jan. 11, 1966, which is a continuation-in-part of application Ser. No. 368,662, May 19, 1964, now Patent No. 3,332,369. This application Jan. 19, 1970, Ser. No. 003,645
Int. Cl. G03c *7/00*, *5/54*
U.S. Cl. 96—3 **44 Claims**

The present invention is directed, in general, to a photographic film unit, specifically adapted for employment in photographic diffusion transfer color processes, which comprises a photosensitive laminate containing a dimensionally stable support carrying on one surface a dyeable polymeric layer and a photosensitive silver halide emulsion layer having associated therewith a dye image-providing material which is processing composition diffusible as a function of the emulsion's exposure to incident actinic radiation, and, positioned intermediate the dyeable polymeric layer and the photosensitive silver halide emulsion layer and associated dye image-providing material, a layer permeable to processing composition solubilized dye image-providing material comprising visible light-reflecting agent in a concentration effective to mask

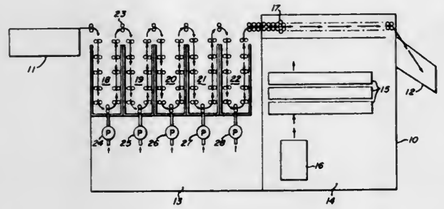


the dye image-forming material associated with the photosensitive silver halide emulsion layer, subsequent to processing, and insufficient to prevent exposure of the emulsion layer by incident actinic radiation, and to photographic diffusion transfer color processes employing the film unit.

3,620,725
RAPID PHOTOGRAPHIC DEVELOPMENT SYSTEM

John A. Kosta, Dayton, Ohio, assignor to Technology Incorporated, Dayton, Ohio

Filed Jan. 23, 1969, Ser. No. 793,509
Int. Cl. G03c *5/50*, *5/24*
U.S. Cl. 96—22 **10 Claims**

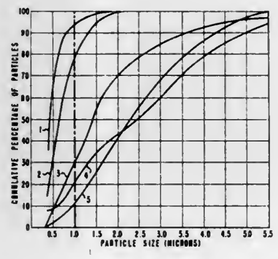


A rapid photographic developing process for color photography which comprises passing a latent-image-bearing film or print sequentially through a developer bath, a stop bath, a bleach-fix bath, a water bath, and a stabilizer bath. The components of the baths are balanced so that the process may be carried out at temperatures of 85° to 95° F. or higher to obtain rapid and consistently good results.

3,620,726
PROCESS USING COLORED PARTICLES TO DEVELOP PHOTOHARDENABLE IMAGING LAYERS

Victor Fu-Hua Chu, East Brunswick, and Charles Walter Manger, Irvington, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1968, Ser. No. 701,487
Int. Cl. G03c *5/04*, *1/68*, *11/12*
U.S. Cl. 96—27 R **7 Claims**



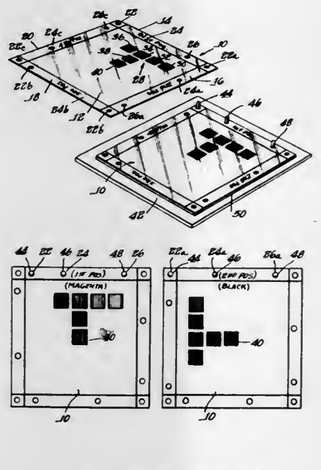
An improved image reproduction process in which an element having a support and a photohardenable layer, after

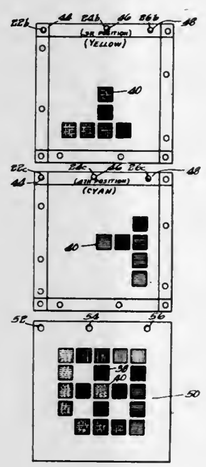
imagewise exposure to actinic radiation to harden the layer in exposed areas without hardening in the underexposed areas, is colored only in the underexposed areas by dusting it or bringing it into contact with a surface bearing loosely bound colorant, the improvement being in the use of colorant having a particle size distribution within the range 0.2–30 microns with not more than 50 percent of particles being of less than 1 micron equivalent spherical diameter.

3,620,727
METHOD FOR DETERMINING PROPER COLOR BALANCE IN COLOR PRINTING BASE

Joseph J. Smajo, Chicago, Ill., assignor to Opto/Graphics, Inc., Kenilworth, Ill.

Filed July 28, 1969, Ser. No. 845,288
Int. Cl. G03c *5/04*; G01j *3/46*
U.S. Cl. 96—27 E **4 Claims**





A step-wedge is reprinted four times, one for each of three colors plus black and white as a mask. The reprinting is in a different position each time, giving a total of four different positions with one selected value overprinted by each color to show the effect of the overprint, namely to demonstrate a neutral. If a neutral gray is obtained, then it is known that the printing is correct. If no neutral is obtained, a ready reference, not requiring the use of a densitometer or separation filters is immediately at hand.

3,620,728
RECEIVING SHEET FOR DIFFUSION TRANSFER PROCESSES

David Alan Cottingham, Northwood, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,358
Claims priority, application Great Britain, Apr. 3, 1969, 17,609/69
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **10 Claims**

A receiving sheet for diffusion transfer processes wherein the image-receiving layer contains as the binding agent a mixture of an alkali metal salt of carboxymethyl cellulose and a propylene glycol ether-substituted methyl ether of cellulose and a process for using the receiving sheet. The novel mixture of binders provides an improved positive which effects more rapid image-transfer, better tone and combines ease of sandwich separation with immediate dry feel.

3,620,729
ELECTROPHOTOGRAPHIC COATING COMPOSITIONS EMPLOYING STYRENE TERPOLYMERS AS BINDERS

Dilip K. Ray-Chaudhuri, Somerset; Paul C. Georgoudis, Dunellen, and Stanley Field, Piscataway, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,959
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **10 Claims**

Photoconductive coating compositions for application to solid substrates which are to be utilized in electrophotographic operations are described; the resultant photoconductive coatings comprise a layer of photoconductive pigment particles bonded to themselves and to the solid substrate with a styrene terpolymer.

3,620,730
NOVEL PRODUCTS AND PROCESSES FOR FORMING IMAGES IN SILVER AND IN DYE

Russell P. Cook, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

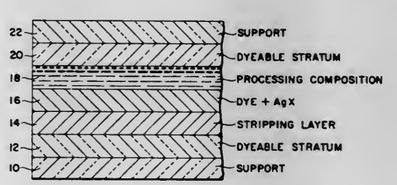
Filed Sept. 29, 1969, Ser. No. 861,767
Int. Cl. G03c *5/54*
U.S. Cl. 96—3 **16 Claims**

Novel procedures for forming an image both in dye and in silver wherein an exposed silver halide layer containing a developable image is developed and as a function of development an imagewise distribution of dye is transferred to a dyeable stratum contiguous with said silver halide layer, whereby to form an image both in developed silver and in transferred dye.

3,620,731
NOVEL PROCESSES FOR FORMING TWO NEGATIVE COLOR TRANSFER IMAGES

Joel M. Peisach, Hudson, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 29, 1969, Ser. No. 861,766
Int. Cl. G03c *5/54*
U.S. Cl. 96—3 **10 Claims**



Novel systems for preparing a pair of negative images, utilizing film units including a layer of a light-sensitive silver halide, a color-providing material disposed in this layer or in an adjacent layer, which color-providing material is nondif-

fusible, but, upon oxidation, can release a diffusible color-providing moiety for transfer, said film unit further including a dyeable stratum separable from the aforementioned layer or layers.

3,620,732
PROCESS FOR THE PREPARATION OF WATER-INSOLUBLE REPRODUCTION LAYERS AND FOR THEIR SUBSEQUENT IMAGE-WISE DIFFERENTIATION
Hartmut Steppan, Wiesbaden-Dotzheim; Karl Josef Rauterkus, Kelkheim, and Detlev Seip, Hofheim/Tanus, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Jan. 15, 1968, Ser. No. 697,621
Claims priority, application Germany, Jan. 18, 1967, F 51275
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—33 **13 Claims**
This invention relates to a process for the preparation of water-insoluble reproduction layers and also a process for the use of such layers. In the process of preparation, a suitable support is coated with an aqueous dispersion of a water-insoluble, inherently light-sensitive polymer, and the coated dispersion is solidified into a film, with simultaneous removal of the water. In the process for using the film, the latter is imagewise exposed to light and then imagewise differentiated by means of a developing process.

3,620,733
LIGHT-SENSITIVE REPRODUCTION LAYER AND PROCESS
Hartmut Steppan, Wiesbaden-Dotzheim; Gunter Messwarb, Kelkheim, and Walter Luders, Neu-Isenburg, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Jan. 15, 1968, Ser. No. 697,636
Claims priority, application Germany, Jan. 18, 1967, F 51271
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—33 **34 Claims**
The present invention relates to a light-sensitive reproduction layer and a process for utilizing the layer, the layer comprising or consisting of a light-sensitive copolymer of at least one vinyl monomer, which by itself yields water-soluble polymers, with at least one light-sensitive monomer containing a ketone group.

3,620,734
POSITIVE-WORKING PHOTOPOLYMERIZATION PROCESS
Edward J. Cerwonka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Sept. 9, 1968, Ser. No. 758,606
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **9 Claims**
A process of photopolymerizing monomers comprising contacting said monomers with a light-sensitive diazonium salt exposing the composition to actinic radiation and subsequently immersing the composition in a processing bath which comprises a compound selected from the group consisting of ferrous ammonium sulfate or hydroquinone.

3,620,735
RELIEF IMAGE PROCESS UTILIZING A SIMPLE AND A COMPLEX FERRIC SALT
Bernard Ulano, Woodsburgh, N.Y., assignor to Diagravure Film Mfg. Corp., Brooklyn, N.Y.
Filed June 12, 1967, Ser. No. 645,488
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **2 Claims**
A photosensitive composition for making relief images and a process for utilizing said composition is provided. The composition comprises an insolublizable water-soluble binder, a water-soluble photosensitive simple ferric salt, for example, ferric chloride or ferric oxalate, and an inhibitor for the ferric salt, for example, ammonium, sodium, potassium or lithium oxalates, ammonium ferric oxalate or tartrate.

3,620,736
PHOTOFABRICATION SYSTEM USING DEVELOPED NEGATIVE AND POSITIVE IMAGES IN COMBINATION WITH NEGATIVE-WORKING AND POSITIVE-WORKING PHOTORESIST COMPOSITIONS TO PRODUCE RESISTS ON OPPOSITE SIDES OF A WORKPIECE
Raife G. Tarkington, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,719
Int. Cl. G03c *5/00, 5/54*
U.S. Cl. 96—36 **12 Claims**
Image layers bearing developed negative and positive images, are employed in combination with negative-working and positive-working photoresist compositions to produce resists on opposite sides of a workpiece.

3,620,737
ETCHING OF DIFFERENTIALLY HARDENED PLATES BY ENZYMES
Doyle Owen Etter, and Merrill Wilfred Killick, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 9, 1968, Ser. No. 751,353
Int. Cl. G03c *5/00*; G03f *7/00*; G03c *1/02*
U.S. Cl. 96—36.3 **15 Claims**
Enzymes are used to remove protein from differentially hardened proteinaceous layers particularly from layers on lithographic printing plates. The enzymes can be in a processing solution or incorporated in a photographic emulsion.

3,620,738
DYE TRANSFER COLOR PHOTOGRAPHY
Hans K. Wong, Arlington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Mar. 14, 1968, Ser. No. 712,931
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **9 Claims**
Method of making a dye transfer print by directly applying dye to an imaging medium in which a photographic image is defined by selectively softened portions of a supported photosensitive layer comprising a finely divided photoconductor and a binder therefor, and then transferring applied dye therefrom to a receptor surface, without prior removal of said selectively softened portions of said supported layer to create a photographic relief image.

3,620,739
PHOTOGRAPHIC PROCESS AND ELEMENT FOR THE PRODUCTION OF ADD-ON IMAGES
William C. Gray, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,865
Int. Cl. G03c *5/18, 7/34*
U.S. Cl. 96—49 **19 Claims**
Photographic add-on images are prepared by overcoating a hydrophilic colloid layer having an image therein with a hydrophobic light-sensitive layer to prepare a photographic element, imagewise exposing the light-sensitive layer and developing an image therein without impairing the underlying hydrophilic image-containing layer. The add-on images so produced are susceptible of convenient removal by treatment of the hydrophobic layer with a solvent which is not a solvent for the hydrophilic colloid layer. Alternatively, when a hydrophobic strippable layer is interposed between the hydrophobic layer and light-sensitive hydrophobic layer, the hydrophobic layers including the add-on photographic image can be removed by physically stripping them from the hydrophilic layer. Image removal is accomplished without substantially impairing the image in the hydrophilic colloid layer.

3,620,740
THERMODIAZO-TYPE COPYING
Albert Lucien Poot, Kontich, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Jan. 9, 1969, Ser. No. 790,148
Claims priority, application Great Britain, Jan. 9, 1968, 1,322/68
Int. Cl. G03c *5/18*; B41m *5/18, 5/22*
U.S. Cl. 96—49 **15 Claims**
Diazo-type reproduction using as a latent diazonium coupling compound activable by heat an 3H-indolium compound.

3,620,741
DIAZO-TYPE COPYING
Albert Lucien Poot, Kontich, and Rene' Alois van Brandt, Kessel, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Jan. 9, 1969, Ser. No. 790,150
Claims priority, application Great Britain, Jan. 9, 1968, 1,320/68
Int. Cl. G03c *5/18*; B41m *5/18, 5/22*
U.S. Cl. 96—49 **9 Claims**
Diazo-type reproduction wherein a 3-H-indoline color-coupling compound is transferred from a transfer sheet material carrying the same by means of heat to a receiving material carrying a diazonium compound for imagewise reaction therewith to produce a azo dye image. The heat can be applied to the transfer material directly in the form of an image or the diazonium carrying receiving material can be preliminarily exposed to light imagewise to decompose the diazonium compound in the exposed areas with heat being uniformly applied to the transfer material to transfer the coupling compound for reaction with residual undecomposed diazonium compound. Heat in the temperature range of 80–140° C. can be used with these specific coupling compounds and the coupling can take place under acid as well as alkaline conditions.

3,620,742
PHOTOCONDUCTIVE ELEMENT CONTAINING A DIHYDROQUINOLINE POLYMER
Jozef Frans Willems, Wilrijk; Robert Joseph Noe, Mortsel; Johannes Josephus Vanheertum, Zandhoven, and August Jean Van Paesschen, Antwerp, all of Belgium, assignor to Gevaert-Agfa N.V. Mortsel, Belgium
Filed Jan. 24, 1969, Ser. No. 793,881
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.6 **23 Claims**
Electrophotographic materials wherein the photoconductive layer comprises a dihydroquinoline polymer.

3,620,743
VEHICLES FOR VESICULAR PHOTOGRAPHIC MATERIALS
Norman T. Notley, Box 462, Sierre Madre, Calif.
Filed Dec. 15, 1969, Ser. No. 885,371
Int. Cl. G03c *5/18, 1/52, 5/00*
U.S. Cl. 96—49 **9 Claims**
This invention is directed to a light-sensitive vesicular-imaging composition comprising an essentially chloroacrylonitrile polymer, including copolymers of chloroacrylonitrile with a different vinyl monomer and intimate mixtures with other organic materials, coated as a thin film and having intimately dispersed therein a sensitizer which liberates gas on irradiation. Upon irradiation of this novel composition with a pattern of actinic radiation, gas released in the selected areas may be developed to a superior image by overall heating.

3,620,744
DYESTUFF-BLEACHING PREPARATION FOR THE PHOTOGRAPHIC SILVER DYESTUFF-BLEACHING PROCESS
Matthias Schellenberg, Fribourg, and Max Marthaler, Marly-le-Petit, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed June 18, 1969, Ser. No. 834,445
Claims priority, application Switzerland, June 25, 1968, 9404/68
Int. Cl. G03c *7/00*
U.S. Cl. 96—53 **5 Claims**
In a photographic silver dyestuff-bleaching process a dyestuff-bleaching preparation is used which contains an acid, a water-soluble iodide, optionally a dyestuff-bleaching catalyst and in addition a reductone such as ascorbic acid. These preparations, preferably in the form of baths, are distinguished by their stability and effectiveness even after prolonged storage in open containers.

3,620,745
COLOR PHOTOGRAPHIC SILVER HALIDE EMULSIONS OF DIFFERENT DEVELOPING SPEED ONE LAYER HAVING A DIR COUPLER
Merrill W. Seymour, East Orleans, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1968, Ser. No. 717,924
Int. Cl. G03c *1/76*
U.S. Cl. 96—68 **19 Claims**
A photographic material comprising a support coated with (1) a first light-sensitive layer containing a silver halide emulsion preferably a coarse grain emulsion either alone or with a colorless nondiffusing color-forming coupler that forms a nondiffusible dye upon color development and (2) a second light-sensitive layer containing a finer grain rapidly developing silver halide emulsion and a colorless nondiffusing development inhibitor releasing coupler that forms a dye and a diffusible development inhibitor upon color development by a primary aromatic amine color developing agent, is used advantageously to record a first light image in the first layer and a second light image in the second layer and produce upon color development an image reproduction of the second light image in the second layer and only produce a visible image reproduction of the first light image in the first layer that is not directly under (or over) the image reproduction in the first layer, such that the two image reproductions are vividly different.

3,620,746
COLOR PHOTOGRAPHIC MATERIAL COMPRISING NONDIFFUSING COUPLER AND DIR HYDROQUINONE
Charles R. Barr, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1968, Ser. No. 717,923
Int. Cl. G03c *1/76*
U.S. Cl. 96—3 **20 Claims**
A photographic material comprising a support coated with (1) a first light-sensitive layer containing a silver halide emulsion preferably a coarse grain emulsion either alone or with a nondiffusing color-forming coupler that forms a dye upon color development and (2) a second light-sensitive layer containing a silver halide emulsion preferably a finer grain rapidly developing silver halide and a nondiffusing coupler that forms a dye, and a nondiffusible development inhibitor-releasing hydroquinone compound that releases a diffusible development inhibitor upon color development by a primary aromatic amine color developing agent, is used advantageously to record a first light image in the first layer and a second light image in the second layer and produce upon color development an image reproduction of the second light image in the second layer and produce a visible image reproduction of the first light image in the first layer, said visible image reproduction having reduced contrast in areas that correspond to the image reproduction formed in the said second layer.

3,620,747
PHOTOGRAPHIC ELEMENT INCLUDING SUPERIMPOSED SILVER HALIDE LAYERS OF DIFFERENT SPEEDS

John C. Marchant, Hamlin, and Robert F. Motter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1968, Ser. No. 730,593
Int. Cl. G03c *1/76, 1/40*
U.S. Cl. 96—74 10 Claims

Photographic elements are provided which feature a support having coated thereon a first photographic silver halide emulsion layer containing image-forming coupler and development inhibitor-releasing coupler; and, a second silver halide emulsion layer containing photographic image-forming coupler, the second layer having a faster effective speed sensitivity than the first layer. Such elements have high contrast for faint images and an extended latitude of low contrast for bright images.

3,620,748
N-VINYL AMINE/HALOGEN LIBERATING COMPOSITION SENSITIZED WITH 9-VINYL CARBAZOLES OR POLYACENES, OR TRANSANNULAR PEROXIDES OF POLYACENES

Harry L. Fichter, Jr., Lakewood, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed Jan. 7, 1966, Ser. No. 519,182
Int. Cl. G03c *5/24, 1/72*
U.S. Cl. 96—48 7 Claims

The photographic response of compositions comprising mixtures of (1) N-vinyl carbazole (or other N-vinyl amine) and (2) CBr_4 (or other organic halogen compound) to radiant energy having wavelengths longer than 4,500 A. is enhanced so as to include a response to radiant energy having wavelengths of up to about 7,000 A. by adding a slightly colored visible light sensitizer to the mixture.

3,620,749
PHOTOSENSITIVE COMPOSITIONS COMPRISING SILVER COMPLEXES OF 3-SUBSTITUTED-4-THIAZOLINE-2-THIONES AND PHOTOSENSITIVE ELEMENTS COMPRISING SUCH COMPOSITIONS

Grant M. Haist; Wilbert J. Humphlett, and James R. King, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,298
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 R 23 Claims

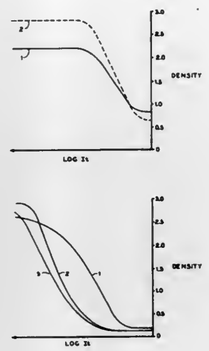
Complex silver salts, formed by silver ion with a 3-substituted-4-thiazoline-2-thione which has an active hydrogen in the group substituted at the 3-position, are found to be photosensitive, i.e., capable of forming photographic images by photoexposure and development, useful for making photographic films, plates and the like.

3,620,750
DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING THALLIUM SALT AND MERCURY SALT

Oskar Riester, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 9, 1969, Ser. No. 790,043
Int. Cl. G03c *1/28*
U.S. Cl. 96—108 6 Claims

Direct positive photographic silver halide emulsions containing a monovalent thallium salt and/or a monovalent or divalent mercury salt.



3,620,751
PHOTOGRAPHIC LIGHT-SENSITIVE LAYERS CONTAINING POLYMER OF POLYOL ESTER OF UNSATURATED ACID

Miroslav Stol; Richard Chromecek; Vladimir Stoy; Karel Kliment, and Jaroslava Otoupalova, all of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed June 12, 1968, Ser. No. 736,280
Claims priority, application Czechoslovakia, June 21, 1967, 4540/67
Int. Cl. G03c *1/72*
U.S. Cl. 96—114 6 Claims

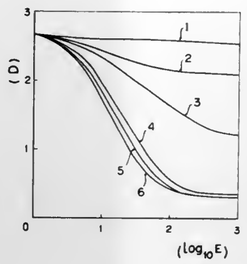
Usual gelatine is replaced in light-sensitive photographic layers on films, paper, glass and other substrates by noncrosslinked polymers and copolymers of polyol, particularly glycol methacrylates or acrylates or their mixtures, soluble in aqueous cosolvent mixtures but insoluble in water, in which they but swell. According to a special embodiment, said polymers or copolymers are grafted onto gelatine. According to a further embodiment of the invention, silver halides are precipitated directly in said polymers or copolymers grafted on gelatine in cosolvent aqueous mixtures, the suspension thus obtained is precipitated and washed in excess of water, whereafter the purified polymer-silver halide suspension is dissolved and dispersed again in an aqueous cosolvnet mixture, the liquid dispersion is cast onto a solid substrate and the solvent evaporated. According to a still further embodiment the silver halide is first precipitated in an aqueous gelatine solution, separated and dispersed in a solution of a noncrosslinked polymer or copolymer of glycol acrylate or methacrylate, whereafter the dispersion is used for casting light-sensitive layers.

3,620,752
PRECIPITATING SILVER HALIDE IN 0.5 TO 3 PERCENT WEIGHT AQUEOUS GELATIN SOLUTION

Tatsuro Matsuo, 2-772, Shimotakaido, Suginami-ku, Tokyo, Japan

Filed Mar. 12, 1969, Ser. No. 806,377
Int. Cl. G03c *1/72*
U.S. Cl. 96—114.7 1 Claim

A method for producing a sensitive material with silver halide giving directly a positive image by exposing the sensitive material to the light to throw a desired image on it and then developing it by conventional method.



3,620,753
PROCESS FOR THE MANUFACTURE OF MINERAL CATTLE FOOD

Joseph Cremer, Hermulheim near Cologne; Heinz Harnisch, Lovenich; Friedrich Schulte, Hurth near Cologne, and Arnulf Hinz, Knapsack near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, Germany

Filed Dec. 29, 1969, Ser. No. 888,911
Claims priority, application Germany, Dec. 27, 1968, P 18 17 127.2
Int. Cl. A23k *1/00;* C05b *11/00;* C01b *25/32*
U.S. Cl. 99—2 I 15 Claims

Production of mineral cattle food consisting of sodium, magnesium and calcium phosphates, wherein phosphoric acid, dolomite and sodium hydroxide solution are introduced into a long extended reaction zone, conveyed therethrough with constant agitation and reacted therein, and the resulting reaction product is dried.

3,620,754
PROCESS FOR PREPARING A WATER-CONTAINING FEED FOR CULTIVATING MACRURA AND PRODUCT

Tsunetoshi Kanemitsu, and Yukio Asakura, both of Tokyo, Japan, assignors to Taiyo Fishery Co. Ltd., Tokyo, Japan

Filed Feb. 28, 1969, Ser. No. 803,444
Claims priority, application Japan, Feb. 29, 1968, 43/1257
Int. Cl. A01k *85/02*
U.S. Cl. 99—3 4 Claims

This invention discloses a novel composition and the process by which a feed having excellent properties particularly for use in feeding macrura cultivated in nursery is prepared by kneading a mixture of from 40 to 75 percent of a compound fish feed, 15 to 30 percent of starch and 10 to 30 percent of a heat-coagulating protein, adding, before or during kneading, water in the quantity adequate to obtain a final product having a water content of from 50 to 70 percent, and heating the water-containing mixture until it coagulates.

3,620,755
HIGH-PROTEIN FOOD

Harold A. Hoffman, 105 Bayeau Road, New Rochelle, N.Y.

Continuation-in-part of application Ser. No. 525,359, Feb. 7, 1966, now Patent No. 3,485,636, dated Dec. 23, 1969. This application Nov. 26, 1969, Ser. No. 880,354
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 10 Claims

A foodstuff of improved taste and consistency is prepared by impregnating soybean meal with an edible oleaginous material and cooking the resulting material in boiling water.

3,620,756
NONFOAMING AND NONSCUMMING INSTANT COFFEE

Rudolf G. K. Strobel, Colerain Township, and Neil R. Artman, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 17, 1969, Ser. No. 801,246
Int. Cl. A23f *1/04, 1/08*
U.S. Cl. 99—71 10 Claims

Disclosed is a method of eliminating the problem of foam and scum on cups of instant coffee beverage by removal of polyvalent metal cations from the natural components of instant coffee as well as from the water used during extraction by contacting liquid coffee extract with a cationic exchange resin.

3,620,757
REPLACEMENT OF SODIUM CASEINATE

Rudolph H. Ellinger, New Canaan, Conn., and Mark G. Schwartz, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed July 15, 1968, Ser. No. 744,678
Int. Cl. A23c *23/00, 13/12, 19/12*
U.S. Cl. 99—54 23 Claims

Compositions of dry whey solids and alkali polyphosphates are provided which exhibit functional properties in food compositions as well as nutrient value. The polyphosphate is present in an amount of at least one percent based on protein and the polyphosphate desirably has a P_2O_5 content of 66 percent or greater. These compositions are preferably used as replacement, total or partial for sodium caseinate in non-butterfat dairy products.

3,620,758
PROCESS FOR OBTAINING AN AROMATIZED COFFEE EXTRACT

Herman H. Friedman, Bayside; Esra Pitchon, Flushing; Alexander S. Cascione, Yonkers, and Burton L. Banks, Dobbs Ferry, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

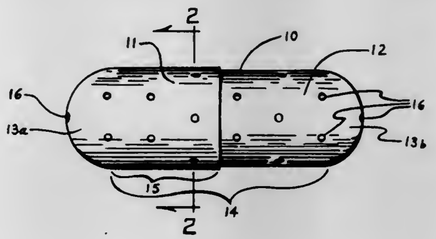
Filed Jan. 20, 1970, Ser. No. 4,406
Int. Cl. A23f *1/04, 1/08*
U.S. Cl. 99—71 10 Claims

A method of obtaining an aromatized coffee extract wherein the extracting medium is introduced into a column of coffee which has been subjected to steaming under isolated conditions before the column is vented to the atmosphere. In this manner, the extracting medium condenses the aromatic volatiles and when the coffee extract is drawn off from the column it contains, uniformly dispersed therein, the desired aromatic volatiles.

3,620,759
FOOD CAPSULE

V Harold Maddox, Huntington Woods, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Apr. 1, 1969, Ser. No. 811,772
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 9 Claims



A packaged food article for constitution with water (or other aqueous potable liquid) is provided in the form of a perforated hard shell gelatin capsule containing a predetermined quantity of a soluble food extract. The capsule wall is perforated at a number of points spaced over the middle and

both ends of the capsule so that, when a serving of hot water is agitated with the capsule, contact of the article with water is extensive whereby both the container and the contents promptly dissolve to provide refreshment for immediate consumption.

3,620,760
COOK-IN-THE-BOWL CEREAL
Melvin A. Ver Steeg, Jr., and Ferdinand E. Spring, Jr., both of St. Louis, Mo., assignors to Ralston Purina Company, Saint Louis, Mo.
Filed Nov. 25, 1968, Ser. No. 778,478
Int. Cl. A23l 1/10
U.S. Cl. 99—80 6 Claims

A process of producing a cook-in-the-bowl type of hot breakfast cereal is disclosed. The process involves selecting a specific milled fraction of grain and flaking the grain to a thickness of 0.010 to 0.012 inch. The thin flakes are capable of rehydrating rapidly in boiling water to produce a hot breakfast cereal of the instant or cook-in-the-bowl type.

3,620,761
COOK-IN-THE-BOWL CEREAL
Ferdinand E. Spring, Jr., St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Nov. 25, 1968, Ser. No. 778,477
Int. Cl. A23l 1/10
U.S. Cl. 99—80 8 Claims

A process of producing a cook-in-the-bowl type of hot breakfast cereal is disclosed. The process involves selecting a specific milled fraction of grain and flaking the grain to a thickness of 0.007 to 0.008 inch. The thin flakes are capable of rehydrating rapidly in boiling water to produce a hot breakfast cereal of the instant or cook-in-the-bowl type.

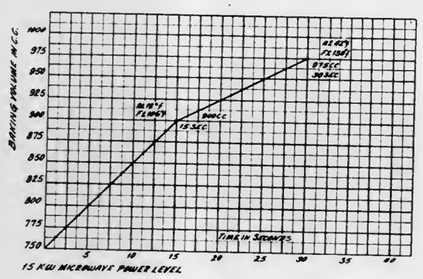
3,620,762
A PROCESS FOR PRODUCING ENRICHED ARTIFICIAL RICE
Teruo Yoshida, Kanagawa-ken; Takaaki Sagara, Kanagawa-ken; Takashi Ojima, Kanagawa-ken; Reiji Takahashi, Kanagawa-ken, and Masahiro Takahashi, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed June 24, 1969, Ser. No. 836,145
Claims priority, application Japan, July 11, 1968, 43/48687
Int. Cl. A23l 1/30, 1/10
U.S. Cl. 99—83 5 Claims

Enriched artificial rice is prepared by kneading together rice powder, nutrients (i.e. amino acids, vitamins, and/or minerals), water, and if desired, a binder (such as carboxymethyl-cellulose); steaming the mixture to semigelatinize the starch contained therein; granulating the resulting viscous product; and, if desired, coating the grains obtained.

3,620,763
REFRIGERATED BATTER PRODUCTS AND METHOD FOR PREPARING SAME
Richard G. Hans, Louisville, Ky., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Feb. 24, 1969, Ser. No. 801,777
Int. Cl. A21d 13/08, 4/00
U.S. Cl. 99—92 39 Claims

Batters suitable for distribution in a pressurized container under refrigerated conditions are provided by employing, as batter ingredients in specified amounts, flour, water, and edible humectant, a hydrophilic film former, and a chemical leavening composition which generates a sufficient amount of pressure to maintain an internal can pressure ranging from about 10 to about 20 p.s.i. Even after storage for several weeks, the batters are stable against microbial degradation while maintaining the batter product in a convenient ready-to-bake form. Stability of the batter against volume, grain and texture degradation is excellent.

3,620,764
METHOD OF CONTROLLING THE FUNCTIONAL CHARACTERISTICS OF FLOUR BY MICROWAVE TREATMENT OF GRAIN
Harley E. Watkins, Golden, Colo., assignor to Pet Incorporated, St. Louis, Mo.
Filed Aug. 26, 1968, Ser. No. 755,053The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed.
Int. Cl. A23l 1/10
U.S. Cl. 99—93 6 Claims



A method of controlling the functional characteristics of flour produced from cereal grains by treating the grain prior to milling with microwave energy under controlled conditions of time, moisture, power, temperature and frequency.

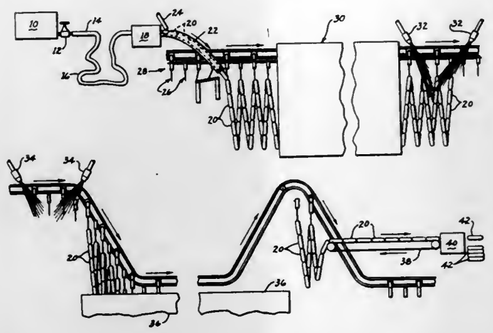
3,620,765
METHOD AND APPARATUS FOR RIPENING FRUIT AND THE LIKE
Gerald F. McDonnell, Birmingham, Ala., and Hugh T. Freebairn, Houston, Tex., assignors to Banana Control, Inc., New Orleans, La.
Continuation-in-part of application Ser. No. 523,327, Jan. 27, 1966. This application Oct. 14, 1968, Ser. No. 767,426
Int. Cl. A23b 7/04; A23l 1/00
U.S. Cl. 99—103 9 Claims

A process for accelerating the ripening of unripe fruits in boxes, such as bananas, tomatoes, melons, pears, avocadoes, and the like, wherein the fruit is subjected to a timed ripening initiation step at temperatures of 68° to 95° F. in the presence of ethylene gas, and may then be subjected to subsequent stages of ripening and storage at selected temperatures. Improved uniformity of ripening may be made by subjecting unripe fruit to an initial high temperature whereby fruit previously uninitiated to ripening may be effected while simultaneously retarding ripening of fruit previously initiated to ripening.

3,620,766
METHOD FOR PRODUCING SKINLESS WIENERS
Charles H. Wallace, Toledo, Ohio, assignor to Schmidt-Wallace, Inc., Toledo, Ohio
Continuation of application Ser. No. 657,423, July 31, 1967, now abandoned, Continuation of application Ser. No. 517,144, Dec. 3, 1965, now abandoned, Continuation-in-part of application Ser. No. 272,452, , now abandoned, Continuation-in-part of application Ser. No. 212,306, , now Patent No. 3,204,844. This application June 16, 1969, Ser. No. 837,995
Int. Cl. A22c 11/00
U.S. Cl. 99—109 5 Claims

Skinless wieners are produced by treating them with an acid at a pH not more than 4 prior to cooking and subsequent processing. The acid can be sprayed over the wiener sections as they pass through a spray hood prior to entering

an oven, and is preferably edible. The acid treatment causes a skin to be formed on the wiener product under the artificial



casing which enhances the chewiness of the wiener and improves the peelability thereof.

3,620,767
BONITO PROCESSING
William E. Swartz, McKeesport, Pa., assignor to Calgon Corporation
Continuation-in-part of application Ser. No. 795,056, Jan. 29, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 617,474, Feb. 21, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 883,232
Int. Cl. A23l 1/325
U.S. Cl. 99—111 9 Claims

Previously frozen bonito is treated prior to cooking with a molecularly dehydrated phosphate such as sodium tripolyphosphate or an orthophosphate so as to increase the yield of cooked bonito meat.

3,620,768
CHEESE MANUFACTURE
Edgar A. Corbin, Jr., Somerset, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Apr. 8, 1969, Ser. No. 814,454
Int. Cl. A23c 19/02
U.S. Cl. 99—116 8 Claims

Cheese curd is manufactured by acidifying cold milk with free acid, heating to 80° F., adding acidogen and proteolytic enzyme, allowing cheese curd to form, cutting and cooking curd for about 1 hour. Cottage cheese can be produced in standard dairy equipment without using bacterial fermentation or other time consuming steps.

3,620,769
MARSHMALLOW COMPOSITION
Marvin A. Peterson, Park Ridge, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Continuation-in-part of application Ser. No. 716,317, Mar. 27, 1968. This application May 13, 1969, Ser. No. 824,263
Int. Cl. A23g 3/00
U.S. Cl. 99—134 9 Claims

A humectant is added to a marshmallow composition containing a fat and polyglycerol higher fatty acid partial ester stabilizer in order to prevent migration of moisture from the marshmallow composition.

3,620,770
COATED STRAW FOR MODIFYING SOUR TASTE
Robert J. Harvey, Sudbury, Mass., assignor to Meditron, Inc., Wayland, Mass.
Filed Apr. 15, 1970, Ser. No. 28,963
Int. Cl. A23g 3/20
U.S. Cl. 99—138 R 8 Claims

A coated straw useful for improving the taste of acidic liquids including carbonated beverages or fruit juices. The inside surface of the straw end inserted in the liquid is coated with a mixture of nontoxic alkaline material and sugar and a separate section of the inside surface is coated with taste-modifying stable miraculin. The amount of alkaline material is sufficient to render nonacid the liquid in the first mouthful.

3,620,771
1,4,5,6-TETRAHYDRO-2-ACETOPYRIDINE AND SALTS THEREOF AS FLAVORING AGENTS
Irving R. Hunter, Berkeley, and Mayo K. Walden, Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture
Division of Ser. No. 717,399, Mar. 29, 1968
Filed Jan. 21, 1970, Ser. No. 8,113
Int. Cl. A23l 1/26
U.S. Cl. 99—140 R 8 Claims

Proline and dihydroxyacetone are reacted in the presence of an alkali metal bisulphite to produce the new compound 1,4,5,6-tetrahydro-2-acetopyridine. This compound, as such, or in the form of its bisulphite complex or its salts, is useful for flavoring bread and other bakery products.

3,620,772
METHOD OF PRODUCING A MAILLARD REACTION PRODUCT HAVING MEATLIKE FLAVOR
Nagayoshi Kitada, Kanagawa-ken; Hideo Shimazaki, Kanagawa-ken, and Yasushi Komata, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Mar. 25, 1969, Ser. No. 810,341
Claims priority, application Japan, Mar. 29, 1968, 43/20545
Int. Cl. A23l 1/22
U.S. Cl. 99—140 R 5 Claims

When an aqueous solution of cystine or cysteine and of a reducing sugar is heated to 50°–120° C. at 70–200 kg./cm.², a Maillard reaction occurs at a rapid rate, and the reaction product obtained in 1 to 10 hours has a strong and pleasant meatlike flavor making it suitable as a seasoning for food.

3,620,773
METHOD FOR TREATING HARVESTED NONCHLOROPHYLLEOUS PRODUCE
Robert P. Gabriel, 20 Meadowview Road, Melrose, Mass.
Filed Apr. 3, 1969, Ser. No. 813,332
Int. Cl. A23b 7/00; A61k 27/00
U.S. Cl. 99—154 13 Claims

A method for controlling rot and decay in harvested nonchlorophylleous produce whereby the produce is sprayed or dipped into an aqueous solution containing an iodine releasing polymeric surfactant-iodine complex, a compatible surface active agent and sufficient acid to render the solution at least slightly acidic. This method is particularly adapted for treating vegetables and fruits including corn, cucurbits, bananas and potatoes.

3,620,774
PLASTICS CONTAINERS AND PACKAGES
Andrew George Ford, Hitchin, and Ronald Augustus Hudson, Welwyn Garden, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Aug. 1, 1968, Ser. No. 749,497
Claims priority, application Great Britain, Aug. 1, 1967, 35,333/67 Aug. 1, 1967, 28354/68 Aug. 1, 1967, 28356/68 Aug. 31, 1967, 39820/67 Feb. 29, 1968, 9848/68 June 12, 1968, 27902/68 Aug. 1, 1968, 35337/67
Int. Cl. B65d 35/08
U.S. Cl. 99—171 C 20 Claims

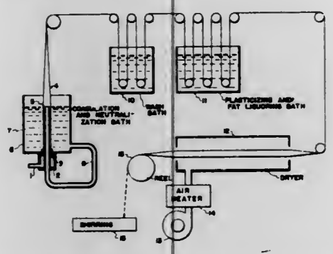


A plastics film container containing a gas under superatmospheric pressure, e.g. beer or a soft drink, closed by a ligature applied to the sealed, bunched neck below a thickened region thereof.

3,620,775
EDIBLE COLLAGEN CASING

Mauj A. Cohly, Catlin, Ill., and James W. Sanner, Midland, Mich., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Aug. 12, 1968, Ser. No. 752,077
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **8 Claims**

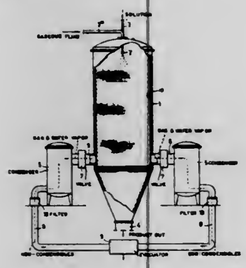


An edible sausage casing having improved stuffing, linking, and cooking characteristics is prepared from hide collagen. Animal hides, either fresh, frozen or salt-cured, limed or unlimed, are swollen and mechanically un-haired and split to produce a collagen-containing corium layer. The coreium is ground into fine particles, formed into a slurry and swollen with weak acid to produce an extrudable collagen paste or slurry, preferably having a solids content of about 2–6 percent. The slurry is extruded through an annular die into a coagulation bath containing ammonium sulfate or sodium sulfate or equivalent coagulant and a small amount of strong alkali, such as sodium hydroxide, sufficient to neutralize completely the acid present in the slurry. The neutralization of the slurry may be partially in the coagulation bath and completed in a subsequent neutralization bath. The neutralization of the slurry hardens the coagulated collagen and avoids the necessity of tanning the extruded collagen casing. The neutralized casing is washed and finally plasticized using an aqueous solution of glycerin, or equivalent plasticizer, preferably containing a small amount of a fatty monoglyceride or an acetylated fatty monoglyceride. The casing is then dried and reeled and eventually shirred on a commercial shirring machine for delivery to the meat packer in shirred form.

3,620,776
SPRAY DRYING PROCESS

Abraham Rudolph Mishkin, and William Stephen Symbolik, both of Marysville, Ohio, assignors to Societe d'Assistance Technique Pour Produits Nestle S. A., Lausanne, Switzerland

Continuation-in-part of application Ser. No. 663,288, Aug. 25, 1965, now abandoned. This application June 28, 1968, Ser. No. 741,039
Int. Cl. A23 ; B01d *1/16;* **F26b** *3/12;* **B01d** *1/00*
U.S. Cl. 99—199 **10 Claims**



A drying method for liquids is provided in which the liquid is sprayed, together with a gaseous fluid such as steam, into a low-pressure zone to cause freezing of the liquid in small particle form, and the frozen particles are then freeze-dried. The liquid may be a bioliggical solution, fruit juice or tea or coffee extract. An apparatus is also provided, comprising a freezing chamber, a two fluid nozzle simultaneously spraying liquid and gas into the chamber, a vacuum system with condensers for maintaining a low pressure within the chamber and a freeze-drying chamber.

3,620,777
CHROMATE CHEMICAL COATING SOLUTION FOR ZINC ALLOY

Masanaga Okabe; Toshio Yoshihara, and Kenji Hamaoka, all of Tokyo, Japan, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 22, 1969, Ser. No. 843,828
Claims priority, application Japan, July 24, 1968, 43/51822
Int. Cl. C23f *11/00;* **C09d** *5/08*
U.S. Cl. 106—14 **4 Claims**

Chromate chemical coating solution for zinc or zinc alloy surfaces which comprising an aqueous acid solution having a pH within the range of 0.8 to 3.5, and containing 2.0 to 20 gram per litre of hexavalent chromium ion, at least 0.4 gram per litre of hydrazine hydrate or hydrazine salt and substantially no alkali metal ion, to obtain a superior coating with good corrosion resistance and good paint bonding quality.

3,620,778
METHOD OF MAKING DENTAL IMPRESSION AND DENTAL STONES HAVING SMOOTH SURFACES

Jacque C. Morrell, 8 Oxford St., Chevy Chase, Md.

Continuation of application Ser. No. 678,208, Oct. 26, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 494,971, Oct. 11, 1965, now abandoned. This application Sept. 17, 1969, Ser. No. 860,164
Int. Cl. C09k *3/00*
U.S. Cl. 106—35 **12 Claims**

Aqueous suspensions of polymeric organic substances of the class having elastomeric and plastic properties are added to conventional dental casting compositions containing calcium sulfate, an alginate dispersed in water and an inorganic filler for the purpose of producing nonchalky surfaces on dental impressions, casts, and models.

3,620,779
PHOSPHATE GLASS COATING FOR ELECTRICAL STEEL SHEETS

Karl Foster, and Joseph Seidel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 576,693, Sept. 2, 1966, Pat. No. 3,528,863. Which is a Continuation-in-part of Ser. No. 556,337 June 9, 1966, abandoned
Filed June 15, 1970, Ser. No. 46,153
Int. Cl. C03c *3/02, 5/02, 7/02*
U.S. Cl. 106—47 R **3 Claims**

A glass having a thermal coefficient of expansion of less than $8.5\times10^{-7E-6}/°$ C. for coating steel sheets to place the steel sheets in tension, comprising, by weight, from 60 to 70 percent of P_2O_5 from 10 to 14 percent of MnO, from 9 to 12 percent of Al_2O_3 and at least 5 percent of other compatible oxides.

3,620,780
BORON NITRIDE FIBER MANUFACTURE

James Economy, Eggertsville, and Raymond V. Anderson, Ransomville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 471,208, July 12, 1965, now Patent No. 3,429,722. This application Nov. 18, 1968, Ser. No. 776,562
Int. Cl. C04b *35/58, 35/14*
U.S. Cl. 106—55 **4 Claims**

Fibers incorporating a boron and nitrogen containing composition are produced by reacting, with a nitrogen and hydrogen containing composition, fibers having a maximum diameter of about 20–30 microns and incorporating substantially throughout their thickness a boron and oxygen containing composition. Preferably, boric oxide fibers having a maximum diameter of about 10 microns are heated in an ammonia atmosphere according to a suitable temperature program to produce fibers consisting essentially of a boron nitride composition. Fibers may also be produced consisting of boron nitride and other constituents such as silica. Fibers produced according to the invention are useful for a wide variety of purposes including thermal and electrical insulation, fabrication of textiles and reinforcement of plastics, ceramics and metals.

3,620,781
PARTIALLY STABILIZED ZIRCONIA REFRACTORY

Ronald C. Garvie, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 6, 1969, Ser. No. 848,087
Int. Cl. C04b *35/48*
U.S. Cl. 106—57 **10 Claims**

Body consisting essentially of ZrO_2 and CaO with CaO being 2–5 wt. percent of the body. Microstructure consists essentially of cubic grains collectively constituting volumetrically the major phase, smaller primary monoclinic zirconia grains randomly dispersed substantially at grain boundaries between adjacent cubic grains, and, as a principal new feature effecting increased strength and elasticity properties, extremely finely divided precipitate of monoclinic zirconia dispersed intragrangularly throughout the cubic grains and being substantially smaller than the primary monoclinic zirconia grains. Cubic grains composed essentially of a solid solution of ZrO_2 in a compound $CaZr_4O_9$.
Manufacturing process comprises preparing batch material of prescribed composition, heating the material at firing temperature of at least 1,800° C. that causes sintering or melting of the material, cooling fired material to an annealing temperature of 900°–1,700° C. and maintaining it at the annealing temperature for at least about one day and thereafter continuing cooling of the material. Product is either sintered or fusion-cast body. Batch material can be either unfused or fused finely divided particles. Unfused batch can be either unreacted or prereacted raw materials. For optimum density from unreacted raw material batch, it is heated, prior to molding, to prefiring temperature of 900°–1,300° C. for at least about one day. CaO can be provided in batch by heat decomposable compound whose solid decomposition product is substantially all CaO, e.g. calcium acetate monohydrate.

3,620,782
MANUFACTURE OF FUSED CAST BASIC REFRACTORY

Robert N. McNally, Corning, N.Y., and Robert F. Patrick, Louisville, Ky., assignors to Corhart Refractories Company, Louisville, Ky.

Continuation-in-part of 655,273, July 24, 1967, now abandoned. This application Mar. 3, 1970, Ser. No. 16,252
Int. Cl. C04b *35/42*
U.S. Cl. 106—59 **8 Claims**

Method for preventing or ikhibiting hydration cracking or disintegration of fused cast basic refractory made from a mixture consisting essentially of magnesia and chrome ore, which has an oxide analysis, by weight, or at least 40% MgO, at least 12% Cr_2O_3, at least 5% Al_2O_3, at least 3% FeO, up to 3% CaO, up to 5% SiO_2, up to 10% TiO_2, up 3% fluorine, and in which the total of $MgO + Cr_2O_3 + Al_2O_3 + FeO$ is at least 82%, wherein 0.5 to 5 wt. percent (based on the total weight of the basic refractory ingredients) of at least one oxygen-containing compound of sodium and/or potassium is added to and mixed with the basic refractory batch materials. The compound can be a carbonate, phosphate, silicate and/or sulfate. Batch materials are then melted and cast into preformed molds in the usual manner to form solidified monolithic fused cast articles or bodies.

3,620,783
SILICA REFRACTORY MATERIAL

Ernst Mahler, Wiesbaden-Bierstadt; Erich Becker, Oberdollendorf; Hansulrich Czapla, Romlinghoven; Fritz Klasse, Winkel, Rhine, and Ulrich Ehrcke, Wiesbaden, all of Germany, assignors to Didier-Werke A.G., Wiesbaden, Germany

Filed Apr. 18, 1968, Ser. No. 722,177
Claims priority, application Great Britain, June 3, 1967, 25,733/67
Int. Cl. C04b *35/14*
U.S. Cl. 106—69 **7 Claims**

A silica refractory material, void of heavy metal oxides, contains over 95% of SiO_2 and not more than 3% CaO both by weight. Its bulk density is over 1.90 gr. per cc., and its total porosity is under 20 percent (preferably 18.5 to 19 percent). Its thermal conductivity is over 2.0 cal. per m.hr. ° C. at a test temperature of 1,200° C. It is produced by mixing the SiO_2 (preferably quartzite) with CaO in any suitable form (and preferably lime) in the required proportions, subjecting the mass to a compressure pressure which increases, throughout an increase period of more than 10 seconds, to at least 700 kg. per sq. cm., whereby air is excluded, and firing the compressed mixture at a temperature which increases slowly from 1,300° to 1,500° C. and holding that maximum temperature for not less than 35 hours.
The material is characterized by high-thermal conductivity, high-bulk density, low porosity, and marked dimensional stability at high temperatures. It is suitable for refractory bricks, particularly for use in lining the chambers of coke ovens.

3,620,784
POTASSIUM SILICATE-ZINC COATINGS

John B. Schutt, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 24, 1968, Ser. No. 700,040
Int. Cl. C09d *1/02, 1/04*
U.S. Cl. 106—84 **2 Claims**

A zinc dust formulation for steel and the like utilizing as a vehicle a potassium silicate solution having a SiO_2/K_2O ratio of about 4.8 to 5.3, said composition being resistant to abrasion and not subject to cracking and crazing during drying and preferably containing methyltrimethoxysilane to enhance these properties.

3,620,785
ALUM CONTAINING ALUMINOUS CEMENTS

Roland L. Root, Tulsa, and Louis H. Eilers, Inola, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 20, 1970, Ser. No. 42,758
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 **5 Claims**

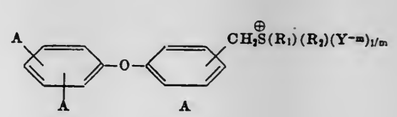
An hydraulic cement composition comprising an aluminous cement and an alum and method of cementing comprising admixing said composition with water and emplacing it in a geologic formation via a well penetrating the formation.

3,620,786
STARCH AND CELLULOSIC PRODUCTS TREATED WITH WATER-SOLUBLE SULFONIUM DERIVATIVES OF DIPHENYL ETHER

Melvin J. Hatch, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 553,046, May 26, 1966, Pat. No. 3,502,710 which is a Continuation-in-part of Ser. No. 322,057, Nov. 7, 1963, abandoned
Filed Aug. 27, 1969, Ser. No. 870,844
Int. Cl. C09j *3/06*
U.S. Cl. 106—213 **5 Claims**

Starch films and cellulosic coatings of improved water-resistance are prepared by incorporating a water-soluble sulfonium derivative of diphenyl ether of Formula I:



where each A is $-H$ or $-CH_2\overset{\oplus}{S}R_1R_2(Y^{-m})_{1/m}$ and Y is an anion having a valence m of 1, 2 or 3, in the aqueous film or coating solution and thereafter heating the solution to form a dry film or coating.

3,620,787
GLASS COMPOSITION
Robert M. McMarlin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Oct. 2, 1968, Ser. No. 764,617
Int. Cl. C03c *3/04, 13/00;* B32b *17/06*
U.S. Cl. 106—287 S 21 Claims
A glass composition comprising silica, alumina, beryllia, and magnesia and fibers formed therefrom on conventional production equipment, exhibit improved modulus, tensile strength, high-temperature resistance and lower density over formerly available textile filaments, and show particular utility in reinforcement of plastic laminates where high strength-to-weight ratios are desired and imperative.

3,620,788
SPARINGLY SOLUBLE ORGANIC DYESTUFFS
Willy Mueller, Riehen, and Felix Steinlin, Reinach Basel-Land, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Oct. 28, 1968, Ser. No. 771,355
Claims priority, application Switzerland, Nov. 10, 1967, 1547/67; Sept. 20, 1968, 14079/68
Int. Cl. C09c
U.S. Cl. 106—288 O 11 Claims
Spin-dyeing of viscose with solutions of organic pigments containing sulfonamido or phenyl sulfonamido groups.

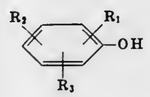
3,620,789
SURFACE MODIFIED CLAYS AND METHODS OF MAKING THE SAME
David H. Solomon, Summit, N.J., assignor to Georgia Kaolin Company
Filed Apr. 10, 1969, Ser. No. 814,925
Int. Cl. C09c *1/28*
U.S. Cl. 106—288 B 8 Claims
A surface modified kaolin and method for producing the same is provided in which a kaolin is dried and then mixed with an amine in a relatively anhydrous organic diluent to provide an amine modified clay independent of exchange capacity of the clay.

3,620,790
A SUBBING SOLUTION COMPRISING POLYVALENT METAL CHLORIDE SALTS AND A SWELLING AGENT
Walter R. White, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 696,088, Jan. 4, 1968, Pat. No. 3,535,147
Filed Sept. 30, 1969, Ser. No. 862,182
Int. Cl. C09k *1/06*
U.S. Cl. 106—287 5 Claims
A direct aqeuous sub assures adhesion of polymeric layers to a variety of polymer film supports for exceptionally long periods under extreme variations of environmental conditions. The invention relates to a two-component subbing system which comprises a first aqueous subbing solution containing a swelling agent for the polymer film being subbed and certain polyvalent metal salts and a second aqueous subbing colution containing a gelatin, a swelling agent for polymer film being subbed akd certain polyvalent metal salts. According to the present processes, subbing of the polymer film support is achieved by applying a dilute aqueous solution of certain polyvalent metal salts plus a polymer film support swelling agent to the polymer film support; drying and curing the layer so formed; applying an aqueous-gelatin solution containing certain polyvalent metal salts plus a film support swelling agent over the initial layer; and drying and curing this second layer. The above process yields a composite film element comprising a polymer film support and a two-layer subbing system comprising a first thin layer of certain polyvalent metal salts adhering tightly to the polymer film support and a second thin layer of a gelatin and certain polyvalent metal salts lying over said first layer and adhering thereto. This application is directed to the aqueous first subbing compositions that are applied initially to the film support.

3,620,791
INORGANIC THERMAL CONTROL COATINGS
Albert C. Krupnick, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Apr. 3, 1969, Ser. No. 813,338
Int. Cl. C08h *17/02*
U.S. Cl. 106—288 B 7 Claims
Inorganic coating compositions are based on a binder obtained by gelling a suspension of synthetic mica or sodium magnesium fluorolithosilicate mineral with a solution of a soluble metal silicate or sulfate. Pigments and other additives are included to provide the desired optical properties. For solar reflector coatings zinc oxide pigment and hollow glass microspheres are employed.

3,620,792
PROCESS FOR TREATING CARBON BLACK
Erivan Hagopian, Lexington, Mass., assignor to Cabat Corporation, Boston, Mass.
Filed Mar. 26, 1969, Ser. No. 810,811
Int. Cl. C09c *1/44*
U.S. Cl. 106—307 10 Claims
This disclosure relates to the use of an oxide of nitrogen in combination with ozone as an additive in an aftertreatment process for preparing modified carbon blacks and to the novel carbon black products produced thereby.

3,620,793
PIGMENT PREPARATIONS TO BE USED IN NONAQUEOUS SYSTEMS
Hartmut Gossel, Kriftel, Taunus; Kurt Merkle, Kelkheim, Taunus; Ferdinand Memmel, Frankfurt, Main, and Erwin Janousch, Camberg, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Aug. 30, 1968, Ser. No. 756,388
Claims priority, application Germany, Sept. 4, 1967, P 16 69 157.9
Int. Cl. C09c *3/02*
U.S. Cl. 106—308 Q 4 Claims
Pigment dispersions consisting of a finely distributed pigment dyestuff in a dispersing medium suitable for being used in nonaqueous systems, wherein the dispersing medium consists of compounds of the general formula



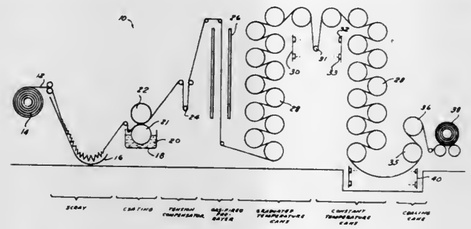
wherein R_1 represents an alkyl radical with four to 18 carbon atoms, and R_2 and R_3 are hydrogen atoms or alkyl groups containing from one to 18 carbon atoms, the alkyl groups being straight-chained or branched, or a mixture thereof, and a process for their manufacture.

3,620,794
METHOD OF FORMING A PATTERNED RADIATION SOURCE
Carlos G. Figueroa, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Filed June 30, 1967, Ser. No. 650,226
Int. Cl. G21h *1/00*
U.S. Cl. 117—5.5 10 Claims
Precisely patterned radiation sources are formed by exposing a base member to an inert gas radioisotope (krypton–85) at an elevated temperature and pressure to cause interstitial penetration of the atoms of the radioisotope into the lattice of the base material as controlled by a pattern formed on the surface of the base. Another procedure involved uniformly diffusing the atoms of the inert gas radioisotope into the lattice of a base material and subsequently etching portions of the surface to provide a precisely patterned radiation source.

3,620,795
TRANSPARENT MASK AND METHOD FOR MAKING THE SAME
William M. Kiba, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Apr. 29, 1968, Ser. No. 724,903
Int. Cl. B44d *1/52*
U.S. Cl. 117—5.5 8 Claims
Transparent glass mask having a copper stain formed therein, the outer perimeters of which have a depth greater than the inner portion of the stain and a method for making the same in which a pattern of aluminum is formed on the glass and serves as a mask for driving the copper into the glass.

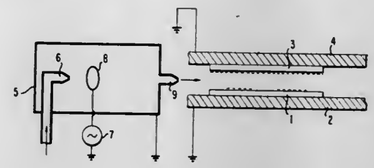
3,620,796
SUBSTRATES HAVING STRIPPABLE PROTECTIVE COATINGS
Travis L. Gordy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Jan. 13, 1969, Ser. No. 791,541
Int. Cl. B65b *33/00;* B44d *1/34*
U.S. Cl. 117—6 15 Claims
This disclosure concerns an article of manufacture comprising a substrate e.g. automobile molding) having a readily strippable protective coating of a composition comprising petroleum wax and an ethylene-vinyl acetate copolymer containing from 16 to 22 percent vinyl acetate. In some instances an ethylene-isobutyl acrylate copolymer may be substituted for a portion of the ethylene-vinyl acetate copolymer.

3,620,797
IMPREGNATION OF A NONWOVEN FABRIC
Robert D. Feitlowitz, Ridgewood, N.J., assignor to DHJ Industries Inc., New York, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,071
Int. Cl. B44d *1/46;* C09r *3/28;* B32b *27/12*
U.S. Cl. 117—7 2 Claims



A coating composition which imparts certain desired properties, such as opacity, water repellency, and fire resistance, to a nonwoven fabric comprising randomly arranged continuous filament polymeric fibers. The ingredients of the coating not only impart the desired properties but also are compatible with one another. The coating is applied on an apparatus wherein the tension and the temperature of the fabric are controlled to prevent elongation thereof.

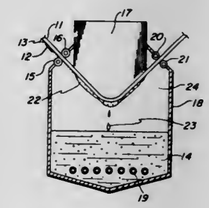
3,620,798
DEVELOPMENT OF LATENT ELECTROSTATIC IMAGE EMPLOYING NOVEL DEVELOPMENT ELECTRODE
Satoru Honjo; Yasuo Tamai; Masamichi Sato, and Seiji Matsumoto, all of Saitama, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Ashigara-Kamigum, Kanagawa, Japan
Filed Jan. 16, 1968, Ser. No. 698,229
Claims priority, application Japan, Jan. 18, 1967, 42/3496
Int. Cl. G03g *13/00;* B05c *5/02*
U.S. Cl. 117—17.5 4 Claims
A process of developing a latent electrostatic image, which comprises facing across a small clearance an insulator having a latent electrostatic image and another insulator for electric field regulating, having the same polaity as said insulator, uniform charges and characteristics substantially similar to the dark attenuation characteristics of said insulator under



the developing condition, and feeding developing particles having the same polairity as that of said latent electrostatic image to the clearance, whereby to develop said latent electrostatic image.

3,620,799
METHOD FOR METALLIZING A CERAMIC BODY
Max W. Hoelscher, Lancaster, and Paul D. Strubhar, Pequea, both of Pa., assignors to RCA Corporation
Filed Dec. 26, 1968, Ser. No. 787,200
Int. Cl. C04b *41/14;* C23c *17/00*
U.S. Cl. 117—22 10 Claims
A method for metallizing a ceramic body comprising coating a surface of the ceramic body with a metallizing composition consisting essentially of 10 to 90 weight parts uncoated molybdenum or tungsten metal particles, 4 to 80 weight parts molybdenum or tungsten metal particles which have an adherent coating of nickel, iron, and/or cobalt metal, and 2 to 27 weight parts ceramic sinter powder. The coated ceramic body is then heated in the range of about 1,100° to 1,500° C. in a reducing atmosphere to produce a sintered metal coating on the ceramic body. Then, the metal coating on the ceramic body may be brazed or soldered to a metal body or to another metallized body.

3,620,800
CLEANING LIQUID DEVELOPED ELECTROSTATIC IMAGES BY CONTACT WITH VAPORIZED CLEANING FLUID
Yasuo Tamai, and Satoru Honjo, both of Asaka-shi, Saitama, Japan, assignors to Xerox Corporation, Rochester, N.Y.
Filed Mar. 14, 1969, Ser. No. 807,193
Int. Cl. G03g *13/10;* B08b *3/04*
U.S. Cl. 117—37 LE 8 Claims



Images are improved by evaporating a cleaning liquid in a cleaning liquid reservoir, condensing the resulting cleaning liquid vapor, following the condensed cleaning liquid over the surface of a developed electrostatographic recording member to remove toner particles from the background areas as well as other contaminants and returning the spent liquid to the cleaning liquid reservoir.

3,620,801
SIZED TRANSFER SHEET
Michael Hugh O'Grady, Wick, Wales, assignor to Wiggins Teape Research & Development Limited, London, England
Filed June 6, 1969, Ser. No. 831,236
Claims priority, application Great Britain, June 7, 1968, 27,296/68
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **7 Claims**

The invention is concerned with coated paper. By precoating paper with starch and insolubilized alginate, the amount of transferable coating e.g. in record materials, needed per unit area can be reduced. This advantage can be achieved with small amounts of alginate, e.g. less than 0.05 gram per square meter per side, and high starch to alginate weight ratios e.g. 85:1.

3,620,802
DUPLICATING RIBBONS AND PROCESS
Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon & Carbon Mfg. Co., Inc., Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 654,857, July 20, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 882,817
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **10 Claims**



Process for producing novel fabric duplicating ribbons having improved ink-receptivity formed from synthetic thermoplastic filaments, in which the ribbons are rendered more ink-receptive by contact at elevated temperatures with vapor of a compound of titanium, silicon or germanium in the presence of moisture, and are thereafter impregnated with ink.

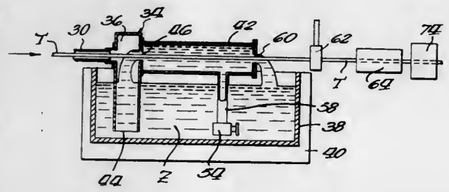
3,620,803
SELVAGE FINISH COMPOSITIONS AND THE TREATMENT OF RESIN TREATED CELLULOSIC FABRICS THEREWITH
Robert O. Lineberger, Stanley; James S. Wiberley, Gastonia, and Joseph R. Griffin, Hamilton, all of N.C., assignors to Beaunit Corporation, New York, N.Y.
Filed June 24, 1969, Ser. No. 836,141
Int. Cl. D06c *25/00*; **D03d** *47/50*
U.S. Cl. 117—44 **9 Claims**

Resin treated cellulosic fabrics having a firm and even selvage finish are prepared by treating the selvage of the resin treated cellulosic fabric with an aqueous emulsion comprising effective amounts of polyvinyl acetate and a low molecular weight alcohol followed by drying of the aqueous emulsion on the resin treated cellulosic fabric. The application of the aqueous emulsion comprising polyvinyl acetate and a low molecular weight alcohol as described above to the selvage of resin treated cellulosic fabrics followed by drying of the emulsion on the fabric has been found to provide uniform and even penetration of the resin treated fabric to give a firm and even selvage finish.

3,620,804
METAL PLATING OF THERMOPLASTICS
Randy L. Bauer, Marietta, Ohio; David C. Johnson, Washington, W. Va., and Ronald M. Noss, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 22, 1969, Ser. No. 793,193
Int. Cl. B44d *1/092*; **C23c** *3/02*
U.S. Cl. 117—47 A **7 Claims**

A method of electrolessly plating a thermoplastic substrate with a metal, such as copper, nickel or cobalt, prior to application of an electrolytically deposited metal. A novel surface treatment step which includes an improved neutralizer for the conventional chrome-containing chemical etch, is effective in promoting electroless metal coverage and the adhesion between the electroless metal layer and the substrate.

3,620,805
METHOD FOR THE CONTINUOUS HOT GALVANIZING OF CONTINUOUSLY FORMED ELEMENTS
Carl Martin, Lisle, Ill., assignor to Mrs. Kay M. Ray, Chicago, Ill., a part interest
Filed Mar. 17, 1969, Ser. No. 807,673
Int. Cl. C23c *1/02*
U.S. Cl. 117—51 **5 Claims**



Method and apparatus for the continuous hot galvanizing of tubing wherein the molten zinc in the zinc furnace and zinc vat are continuously exposed to the atmosphere, and one end of a zinc tube is maintained under a nonoxidizing atmosphere in sealed communication with tubing heating means. The tubing is heated to at least about 1,100° F. prior to entry into the zinc tube.

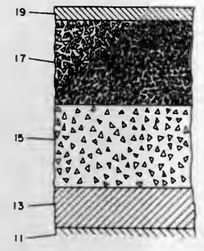
3,620,806
BLUSHED POLYSTYRENE COATING ON PAPER
Harry F. Kohne, Jr., Glenwood, and Frederick L. Kurrle, Laurel, both of Md., assignors to Westvaco Corporation, New York, N.Y.
Filed May 17, 1968, Ser. No. 729,920
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **2 Claims**

Method of coating a substrate with polystyrene, and after drying the coated substrate, blushing part of the coating to produce either a very glossy or a mat finish on the coated surface, leaving unblushed polystyrene separating the blushed portion of the polystyrene and the substrate. Coated products, suitable for printing, are produced and comprise a substrate bearing on at least one surface a coating of polystyrene, the surface of the coating being microporous and opaque, the substrate and blushed portion of the coating being bridged by unblushed polystyrene.

3,620,807
TEXTILE SOFTENER COMPOSITION
Leo Thomas Murray, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 29, 1967, Ser. No. 686,756
Int. Cl. D06m *13/46*
U.S. Cl. 117—66 **5 Claims**

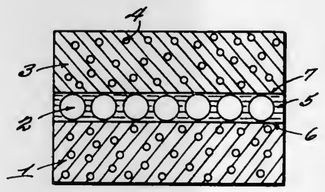
This disclosure relates to a method and composition for imparting softness to textiles without yellowing by utilizing a borohydride-containing composition either in the form of a fabric-softening quaternary ammonium salt and an alkali metal borohydride or the corresponding qutarnary borohydride.

3,620,808
METHOD OF FORMING A THERMAL EMISSIVITY COATING ON A METALLIC SUBSTRATE
James E. Monroe, Jr., Timonium, Md.
Filed Jan. 5, 1968, Ser. No. 697,281
Int. Cl. C23c *7/00*
U.S. Cl. 117—69 **2 Claims**



A method for coating metallic substrates with high thermal emissivity coatings to prevent failure of the thermal emissivity coatings due to handling and thermal shock by applying an intermediate or base coat of nickel aluminide.

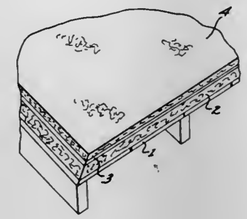
3,620,809
DIFFUSION COATING
Howard D. Flicker, North Miami, Fla., assignor to API Corporation, Miami, Fla.
Continuation-in-part of application Ser. No. 635,476, May 2, 1967, now Patent No. 3,535,146. This application June 5, 1970, Ser. No. 43,914
Int. Cl. B44d *1/16*
U.S. Cl. 117—71 M **6 Claims**



There is provided a surfaced alloyed metal product and a method for production thereof. The metal part to be surface alloyed is coated with a decomposable compound, coated with an alloying material, and heated to an elevated temperature above the decomposition temperature of the decomposable compound in a dry gaseous atmosphere, especially in a hydrogen atmosphere. The decomposable compound must contain at least one element which has an atomic volume greater than the atomic volumes of the elements of the metal part to be surface alloyed and the alloying materials. Preferably the decomposable compound contains an element which has an atomic volume at least 1.1 times the atomic volumes of the metal part and alloying material.

3,620,810
COATED ROOF SURFACE
Raymond L. Carter, Jr., 1346 No. Eastbury Ave., Covina, Calif.
Filed Oct. 23, 1968, Ser. No. 769,847
Int. Cl. B44d *1/14*; **E04d** *11/02*
U.S. Cl. 117—72 **1 Claim**

A method of resurfacing a roof and the coated roof are disclosed in which a roof surface is coated in sequence with a subbase coating comprising mineral wool insulation, perlite, clay, gypsum and aluminum sulfate, a waterproof coating additionally containing asphalt, and a top coating additionally containing polyvinyl acetate and titanium dioxide.



3,620,811
SUPPLE POROMERIC LAMINATE
Richard T. Morrissey, Cuyahoga Falls, and Nelson C. Hess, Akron, both of Ohio, assignors to The B.F. Goodrich Company, New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,601
Int. Cl. B44d *1/14*; **D06n** *3/08*
U.S. Cl. 117—76 T **3 Claims**

Previous poromeric laminates comprise a nonwoven substrate impregnated with from 50 percent to 200 percent by weight of fiber of a synthetic polymer, a textile sheeting interlayer, and a top film of an essentially linear polyurethane adhered thereto. Marked improvement in the softness, suppleness and drapeability of the material are found when the impregnant polymer is not placed entirely as an impregnant or saturant in the substrate mass, but is instead mainly spread and cured as a coating layer thereon and the essentially linear polyurethane film is then formed on the cured polymer film with no textile sheeting layer being employed.

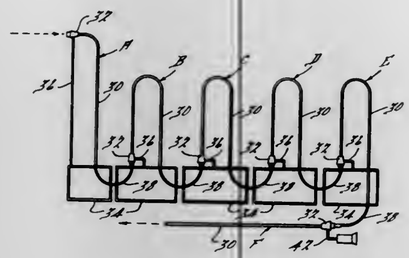
3,620,812
FILM MATERIAL FOR LITHOGRAPHIC PLATES
David Leonard Boutle; Margaret Loudon Clachan, and David Rankine Kennedy, all of Manningtree, England, assignors to Bexford Limited, Manningtree, Essex, England
Filed Aug. 9, 1968, Ser. No. 751,372
Claims priority, application Great Britain, Aug. 24, 1967, 39,112/67
Int. Cl. B41m *1/18*; **G03c** *1/78*
U.S. Cl. 117—76 **11 Claims**

A film material for use in production of a lithographic printing plate comprises a polyester film material which has been pretreated with a halogen-containing phenolic substance or chloro-substituted aliphatic acid and treated at 30° C. or above, coated with a polymer interlayer and overcoated with an insoluble hydrophilic layer containing a filler. The outer layer of the product may carry a positive or negative-working light-sensitive layer.

3,620,813
METHOD OF TREATING WORKPIECES IN A TREATING FLUID
Louis J. Minbiole, Jr., Detroit; Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, all of Mich., assignors to The Udylite Corporation
Filed Nov. 12, 1968, Ser. No. 774,761
Int. Cl. B05b *3/04*, *3/02*
U.S. Cl. 117—94 **22 Claims**

An apparatus and method for simultaneously treating and conveying containerlike workpieces in which the workpieces are introduced and entrained in aligned orientation in a confined stream of a selected treating fluid and are subsequently

extracted therefrom and whereafter, if desired, the workpieces are successively introduced into separate succeeding confined streams of alternative selected treating fluids to effect a multiple stage treatment thereof.

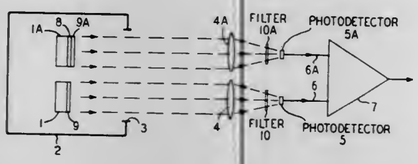


3,620,814

CONTINUOUS MEASUREMENT OF THE THICKNESS OF HOT THIN FILMS

Conrad A. Clark, Bethlehem; Austin C. Dumbri, Easton, and James F. Roberts, Bethlehem, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 9, 1968, Ser. No. 751,597
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 R **4 Claims**



Described herein is a method for monitoring the thickness of a thin transparent film while it is growing on a hot substrate by vapor deposition.

In a specific example, two silicon substrates, of which one has a predeposited coating of silicon dioxide, are located close together to be subjected to a similar vapor deposition of alumina films. The difference in electromagnetic radiation emitted by each substrate and transmitted through each film is monitored, and the deposition process is terminated just after this difference reaches a prescribed value.

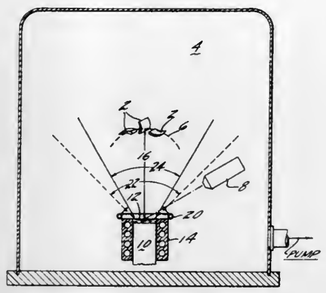
3,620,815

VAPOR COLLIMATION IN VACUUM DEPOSITION OF COATINGS

Sol S. Blecherman, Newington; Mitchell J. Bala, Hazardville; Dennis J. Evans, Rocky Hill, and Nicholas E. Ulion, Vernon, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,955
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—106 R **6 Claims**

In the processes for forming protective coatings on metals, particularly the nickel-base and cobalt-base superalloys, by deposition in vacuum, an inert gas cascade surrounding the melt is utilized to collimate the coating vapor cloud and reduce low angle deposition.



3,620,816

METHOD OF DIFFUSION COATING METAL SUBSTRATES USING MOLTEN LEAD AS TRANSPORT MEDIUM

John J. Rausch, Route 2 Box 177, Antioch, Ill., and Ray J. Van Thyne, 10148 S. Coah Ave., Oak Lawn, Ill.

Filed Oct. 16, 1968, Ser. No. 768,187
Int. Cl. C23c *1/00, 1/06*
U.S. Cl. 117—114 **8 Claims**

A method of diffusing a metallic coating into a metallic substrate using molten lead, in some embodiments, as the transport medium for the metal being deposited. Has particular utility for depositing chromium on a ferrous base substrate to form a relatively high chromium content surface layer thereon. Also quite useful in providing aluminum containing surface zones. Further directed to diffusion alloying with the stabilization of ferritic phase or other means of reducing undesirable surface layer carbide formation.

3,620,817

SURFACE PREPARATION ON BORON FILAMENTS FOR ADHESIVE APPLICATIONS

Vincent D. Celentano, Malvern, Pa., assignor to General Electric Company

Filed Jan. 3, 1969, Ser. No. 788,942
Int. Cl. B44d *1/02, 1/092*
U.S. Cl. 117—118 **8 Claims**

The surface of boron filaments is chemically treated with a polyfunctional organic coupling agent, such as p-xylylene chloride or diglycidyl ether of bis-phenol A, at an appropriate temperature, to enhance its wettability and adhesion to a resinous matrix material.

3,620,818

METHOD OF IMPARTING FLAME RESISTANT PROPERTIES TO NYLON AND THE TREATED PRODUCT

Roland J. Bryan, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 9, 1968, Ser. No. 766,285
Int. Cl. B32b *27/34*
U.S. Cl. 117—118 **6 Claims**

Nylons are rendered resistant to a self-sustaining flame by treating the surface thereof with certain methylol compounds.

3,620,819

METHOD OF PRODUCING A DIRT-RESISTANT TILE

Michele Croce, 740 Northeast 26th Ave., Pompano Beach, Fla.

Division of Ser. No. 706,697, Feb. 19, 1968, abandoned
Filed Feb. 26, 1970, Ser. No. 14,640
Int. Cl. C04b *21/00*
U.S. Cl. 117—123 A **5 Claims**

A method of producing a dirt-resistant cement tile and the like, preferably a cement roofing tile, in which a solution of one or more deliquescent salts, such as, for example, zinc chloride, is absorbed and adsorbed into the surface thereof to create a reservoir of the solution within the tile ad the like, thereby providing a water wetness ambient of permanence on the surface of the tile, so that any dirt deposited on the water wet surface will make a weak bond and thereby permit the normal rains to wash off the dirt accumulated on the tile surface, and the roof to become self washing.

3,620,820

ANTIWETTING METHODS AND COMPOSITIONS

Patrick Henry Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 1, 1966, Ser. No. 569,036
Int. Cl. C03c *17/30*
U.S. Cl. 117—124 **6 Claims**

Hydroxylic surfaces are rendered resistant to wetting and fogging for long periods of time by the application to such surfaces of a minor amount of a lower trialkoxy compound of silicone.

3,620,821

TREATMENT OF FIBERS WITH SILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS CONTAINING METHOXYSILOXY GROUPS

Gordon C. Johnson, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 18, 1968, Ser. No. 760,735
Int. Cl. C03c *25/02*; **C08g** *47/10*
U.S. Cl. 117—126 GS **13 Claims**

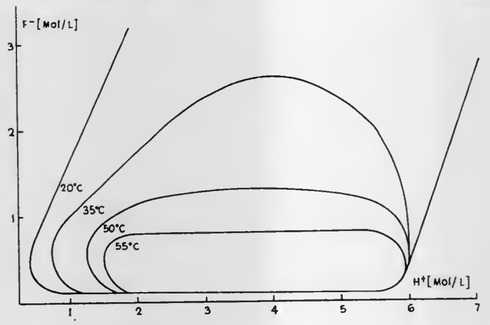
This invention relates to a process for treating fibrous materials (e.g., synthetic or natural organic textile fibers or fibrous glass) with siloxane-polyoxyalkylene block copolymers containing methoxysiloxy groups in order to improve the properties (e.g., soil release) of the fibrous materials.

3,620,822

PROCESS OF COPPER PLATING SUPER-REFINED STEEL

Han Yong Oei, and Siegfried Moller, both of Frankport, Main, Germany, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,117
Int. Cl. C23c *3/00*
U.S. Cl. 117—130 R **5 Claims**



A process for the currentless copper plating of super refined steel wherein the steel is contacted with a solution containing copper, hydrogen and fluoride ions, but no inhibitors, to produce, through cementation, a copper coating on the steel. The concentration of the fluoride ions and hydrogen ions in the plating solution are maintained within specified, varying ranges, depending upon the temperature at which the coating bath is operated. In this manner, a currentless copper coating is produced on super-refined steel, which steel has not heretofore been coatable in this manner.

3,620,823

PROCESS OF IMPROVING THE RESISTANCE OF SOILING OF MELT SPUN FIBERS

Andrew L. Smith, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed May 19, 1969, Ser. No. 826,018
Int. Cl. D06m *15/66*
U.S. Cl. 117—138.8 R **3 Claims**

Polyamide and polyester fibers are rendered highly resistant to soiling by applying to the fibers during the manufacture thereof a finish comprised of a water-soluble lubricating agent, a silicone, and a tin or zirconium compound, and subsequently scouring the fibers to remove substantially all of the lubricating agent while a major portion of the silicone and metal compounds remains adhered to the fiber.

3,620,824

WHITE THERMALLY STABLE POLYETHER MODIFIED POLYESTER FIBERS AND METHOD OF PRODUCTION

Philip E. Slade, Pensacola, Fla.; Robert T. Estes, Cary, and James C. Randall, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed June 3, 1968, Ser. No. 733,831
Int. Cl. B44d *1/46*; **B32b** *27/36*
U.S. Cl. 117—138.8 F **6 Claims**

The thermal stability in the presence of oxygen of polyether-modified polyethylene terephthalate fibers in increased by applying thereto at least about 150 parts per million based on the weight of the fiber of a mixture consisting essentially of

1. from about 65 to 85 percent based on the weight of the mixture of a hindered bis-phenol selected from the group consisting of 4, 4′-butylidenebis (6-t-butyl-m-cresol) and 2, 2′-butylidenebis (6-t-butyl-m-cresol), and
2. from about 35 to 15 percent based on the weight of the mixture of a polymer of 2,2, 4-trimethyldihydroquinoline having a number average molecular weight of from about 450 to 700.

3,620,825

EXTRUSION-COATED, BIAXIALLY ORIENTED POLYPROPYLENE FILM HAVING IMPROVED ADHESION CHARACTERISTICS

Harald Lohmann, Wiesbaden-Biebrich, and Horst Diener, Frankfurt-Hochst, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Mar. 21, 1969, Ser. No. 809,112
Claims priority, application Germany, Mar. 22, 1968, P 17 69 028.7
Int. Cl. B32b *27/32*; **B32h** *27/08*
U.S. Cl. 117—138.8 E **2 Claims**

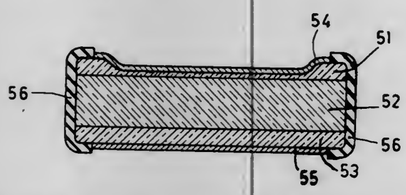


This invention relates to a biaxially oriented film of isotactic polypropylene which has improved adhesion characteristics, the film being provided on at least one surface with a coating of an isotactic polypropylene or a mixture of isotactic polypropylene and up to 15 percent by weight, based on the total weight of the polymer, of nonisotactic polypropylene, or a mixed polymer or copolymer of propylene and up to 15 percent by weight, based on the total weight of the polymer, of ethylene, the coating being substantially unoriented in the first stretching direction and less oriented than the base film in the second stretching direction.

3,620,826
PROCESS FOR IMPROVING SOILING CHARACTERISTICS OF HYDROPHOBIC TEXTILE MATERIAL
Greville Machell, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed July 20, 1967, Ser. No. 754,707
Int. Cl. B44d *1/50;* **D06m** *15/08*
U.S. Cl. 117—139.5CO **5 Claims**

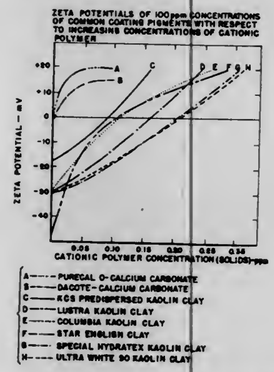
A process for improving the soiling characteristics of hydrophobic textile material which comprises applying thereto an aqueous solution comprising a hydrophilic water dispersible polymer and irradiating the textile material. Products are also included.

3,620,827
METHOD OF APPLYING A LAYER OF SILICON NITRIDE
Marnix Guillaume Collet, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.
Filed May 20, 1968, Ser. No. 730,436
Claims priority, application Netherlands, May 31, 1967, 6707515
Int. Cl. H01b *1/04*
U.S. Cl. 117—200 **7 Claims**



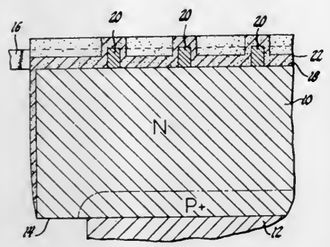
A method of applying a layer of silicon nitride to the surface of a semiconductor substrate wherein the silicon nitride is formed in a gaseous phase containing compounds of silicon and nitrogen which decompose and react in the presence of high-energy radiation e.g. ultraviolet radiation present in the gaseous phase to produce silicon nitride.

3,620,828
PROCESS FOR PRODUCING PIGMENTED ELECTROCONDUCTIVE COATING COMPOSITIONS
Fritz M. K. Werdouschegg, New Brighton, Minn., and Robert H. Windhager, Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 635,523, May 2, 1967, now abandoned. This application Apr. 15, 1970, Ser. No. 28,904
Int. Cl. H01b *1/06;* **C09c** *5/24;* **G03g** *5/00*
U.S. Cl. 117—201 **19 Claims**



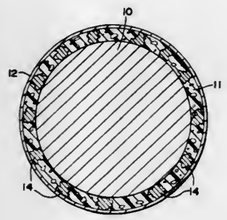
A method of rendering polycationic materials compatible with anionic pigments in coating compositions is disclosed. Pigmented polycationic electroconductive polymer coatings on paper stock are used in direct electrophotographic reproduction machines. Polycationic components and anionic pigments are rendered compatible if the Zeta potential of the pigment is neutralized by the addition of a dilute cationic compound, and the electroconductive polycationic polymer is thereafter added to the pigment dispersion with a high degree of agitation. By following this procedure, the pigment dispersion remains stable, and neither the coated paper nor the dispersion stratifies or develops agglomerates.

3,620,829
COATINGS FOR GERMANIUM SEMICONDUCTOR DEVICES
Roger W. Beck, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 6, 1968, Ser. No. 726,780
Int. Cl. H01m *15/00;* **C23c** *13/04*
U.S. Cl. 117—201 **3 Claims**



A means for stabilizing the recombination velocity at a germanium surface at a minimal value. The active surface of a germanium device is coated with a material that is nonvolatile under device-operating conditions and at least as ionic in character as water. Antimony trioxide provides a particular benefit as a surface recombination velocity stabilization coating in photovoltaic devices.

3,620,830
AUTOMATIC ARC WELDING ELECTRODE WITH AN ELECTRICALLY CONDUCTIVE FLUX COATING
Arthur Kramer, South Euclid, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio
Filed Jan. 17, 1968, Ser. No. 698,526
Int. Cl. B23k *35/40*
U.S. Cl. 117—204 **13 Claims**

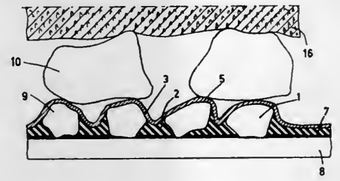


The invention consists of a continuous electric arc welding electrode of indefinite length consisting of a metal core and an outer coating which is electrically conductive so that the electrode can be energized by sliding it across conventional electrical contacts. The coating is comprised of: a mixture of an organic resin, which chars when heated to elevated temperatures; carbon or metal powders which conduct current through the resin; and, possibly other known fluxing ingredients. A thin outer metallic coating is often also used which conducts current from the contacts circumferentially and longitudinally to the electrically conductive coating.

3,620,831
ELECTROGRAPHIC RECORDING MEDIUM
Floyd T. Gould, Sudbury, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 30, 1968, Ser. No. 788,063
Int. Cl. B44d *1/18*
U.S. Cl. 117—201 **12 Claims**

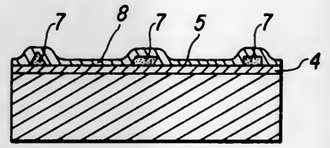
Zinc stearate, other hydrophobic metal salts of organic fatty acids, and, in some instances, the acids themselves, are coated on a substrate such as paper to provide electrographic media of unusually low cost and resistance to high humidity. The coating materials can be selected for application in powder or extruded form, from a water-compatible solvent, or from an organic solvent.

3,620,832
ELECTRODE SYSTEM PARTICULARLY SEMICONDUCTOR ELECTRODE SYSTEM AND METHOD OF PRODUCING THE SAME
Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 11, 1967, Ser. No. 630,000
Claims priority, application Netherlands, Apr. 14, 1966, 6,604,959
Int. Cl. B44d *1/18;* **H01j** *1/00*
U.S. Cl. 117—210 **8 Claims**



An electrode system comprising a semiconductive granular layer substantially one grain in thickness is manufactured by embedding a layer of this semiconductive material in an insulating material, e.g., polyurethane so that the peaks of the grains extend substantially above the insulating material i.e., the spaces between the grains are filled to a level well below the peaks of the grains. An electrode is formed on this layer by depositing an electrically conducting layer. The so-coated layer is thereafter subjected to an abrasive on a carrier comprising grains whose average diameter is smaller than the average diameter of the electrically active grains and whose diameter exceeds the average spacing between the active grains to remove only the electrode layer covering the exposed grain peaks without abrading the grains themselves. The grain size of the abrasive is critical to avoid grains of the abrasive being lodged in the depressions between the grains of the semiconductive material and to avoid removing portions of the semiconductive grains.

3,620,833
INTEGRATED CIRCUIT FABRICATION
Paul S. Gleim, Dallas, and Kenneth E. Bean, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 23, 1966, Ser. No. 604,300
Int. Cl. C23c *13/04;* **H01l** *1/00*
U.S. Cl. 117—212 **5 Claims**

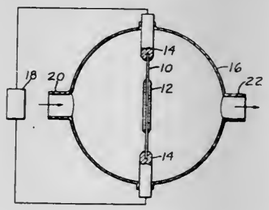


An integrated circuit structure having a plurality of monocrystalline semiconductor islands separated by a layer of dielectric insulation is fabricated by a method which begins with the formation of a plurality of nucleation sites upon a supported layer of insulating material. A single crystallite of semiconductor material is then vapor deposited at each of the nucleation sites. The crystallites are then covered by the vapor deposition of a second layer of dielectric material. The second layer of dielectric material is then supported by the deposition of a substrate material, followed by removal of the original supporting body to expose the first layer of insulating material, thereby providing a plurality of electrically isolated regions of single crystallite semiconductor material embedded in a suitable substrate. The structure is then completed by forming and interconnecting desired circuit components within the single crystallites.

3,620,834
METAL PLATING OF SUBSTRATES
James J. Duffy, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed July 18, 1968, Ser. No. 745,663
Int. Cl. C23b *5/62;* **C23f** *17/00*
U.S. Cl. 117—213 **17 Claims**

Various substrates, such as cellulosic, ceramic and plastic materials, are plated with metals by a process which comprises subjecting a substrate to a compound selected from the group consisting of $AsCl_3$, $SbCl_3$ and PCl_3, and thereafter subjecting the thus-treated substrate to a source of sulfide such as aqueous H_2S. The resulting treated substrate can be electroplated by conventional techniques.

3,620,835
METHOD OF MAKING NUCLEAR FUEL ELEMENTS
Karl Drittler, Geesthacht, and Hartmut Luhleich, Elbe, both of Germany, assignors to Gesellschaft fuer Kernenergieverwertung in Schiffbau und Schiffahrt m.b.H., Hamburg, Germany
Continuation-in-part of application Ser. No. 604,653, Dec. 27, 1966, now abandoned. This application June 14, 1968, Ser. No. 737,195
Int. Cl. B22f *7/02*
U.S. Cl. 117—215 **4 Claims**



The present invention concerns a nuclear fuel element in the shape of a wire or rod which includes: a rodlike or wirelike inner carrier element of high melting temperature metal selected from the group consisting of molybdenum, tungsten, tantalum and chromium, a layer of material selected from nuclear fuel and nuclear breeder material arranged around and supported on said carrier element and being heat resistant up to a temperature above 2,000° C., and an outer envelope surrounding said layer and selected from pyrolytic graphite and ceramics for preventing the fission products from penetrating to the outside of the fuel element.

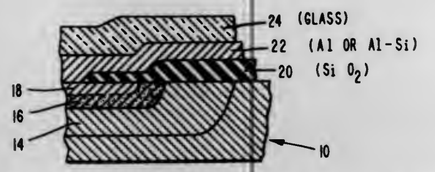
3,620,836
BOROCARBON-COATED FILAMENTS
Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company
Filed Apr. 4, 1969, Ser. No. 813,691
Int. Cl. C23c *11/08*
U.S. Cl. 117—216 **2 Claims**

The production of borocarbon-coated filaments by the pyrolysis of a mixture of boron trichloride and a hydrocarbon gas or vapor is disclosed. The filament is electrically conductive or has an electrically conductive coating and is resistively heated to about 1,000° to 1,200° C. in the presence of the mixture. The hydrocarbon is one which will not react with the boron trichloride except at the heated substrate. A boron coating is applied to the borocarbon-coated filament by pyrolysis of a mixture of boron trichloride and hydrogen.

3,620,837
RELIABILITY OF ALUMINUM AND ALUMINUM ALLOY LANDS

Jerry Leff, Poughkeepsie, N.Y., and Arthur A. Roberts, Danbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 16, 1968, Ser. No. 759,898
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 4 Claims

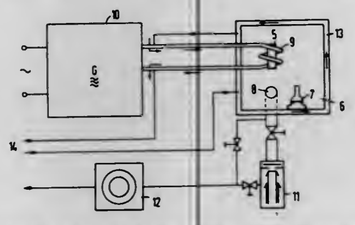


Improved reliability of aluminum and aluminum alloy lands on semiconductor integrated circuits is obtained by vapor depositing aluminum or an aluminum alloy onto a semiconductor substrate which is at a temperature between 320° and 570° C. The total thickness of the deposited aluminum or aluminum alloy is between 5,000 and 25,000 A.

3,620,838
METHOD OF DENSIFICATION OF POROUS LAYERS

Martin Peehs, and Friedrich Wendler, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Continuation of application Ser. No. 584,882, Oct. 6, 1966, now abandoned. This application Dec. 16, 1969, Ser. No. 882,398
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 1 Claim

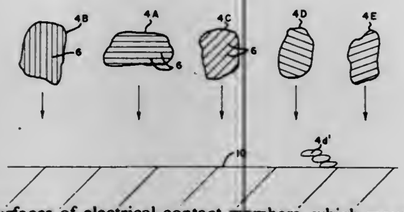


Described is a method of producing thermionic converters by densifying porous tungsten layers on the surface of a uranium dioxide/molybdenum substrate. The pores of the tungsten layer are filled by pyrolytically precipitating tungsten from the vapor phase from tungsten hexacarbonyl, $W(CO)_6$, at a substrate temperature of about 1,200° C., into the pores and onto the surface of the substrate. The CO gas developing during the densification process is withdrawn.

3,620,839
LUBRICATION OF CONTACT SURFACES

Rayond James Geckle, and Larry John Wilt, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburgh, Pa.

Filed July 28, 1969, Ser. No. 845,478
Int. Cl. B44d *1/08*; H01h *1/02*
U.S. Cl. 117—226 8 Claims

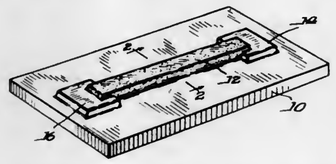


Surfaces of electrical contact members, which move relatively over each other, are lubricated with discrete particles of graphite firmly bonded to at least one of the surfaces, the particles having their basal planes extending substantially parallel to the plane of the surface, and the particles further having undergone shear so that the platelets, which comprise each particle, form an imbrecated structure on the surface. Only a minor portion of the surface is covered with the particles so that the ability of the surface to pass an electric current is not degraded. Particles may be applied by spraying the surface with a gaseous stream having entrained particles therein.

3,620,840
RESISTANCE MATERIAL AND RESISTANCE ELEMENTS MADE THEREFROM

Duane Arthur Schroeder, E. Dundee; Alvin Dennis Weiss, Chicago, and Benedict Clare Giltner, Bensenville, all of Ill., assignors to Methode Development Company, Chicago, Ill.

Filed Dec. 13, 1968, Ser. No. 783,681
Int. Cl. H01b *1/02, 5/14*
U.S. Cl. 117—227 22 Claims



Improved material for forming resistance elements using minute amounts of noble metals in finely divided form together principally with finely divided vitreous binder material; and resistance elements made from such material.

3,620,841
PROCESS FOR MAKING CONTINUOUS MAGNETITE FILMS

Richard Lawrence Comstock, San Jose, and Eugene B. Moore, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

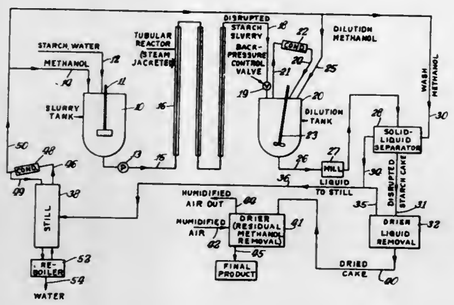
Filed Feb. 16, 1970, Ser. No. 11,910
Int. Cl. H01f *10/02*
U.S. Cl. 117—237 10 Claims

A continuous magnetite film, suitable for magnetic recording, is prepared by forming a film of amorphous Fe_2O_3, heating the Fe_2O_3 until it is completely converted to the alpha crystalline phase, and then reducing it to magnetite.

3,620,842
TEXTURIZING STARCH

Felix J. Germino, Palos Park; Francis E. Kite, Riverside, and Edwin H. Christensen, La Grange, Park, all of Ill., assignors to CPC International Inc., New York, N.Y.

Filed Sept. 18, 1967, Ser. No. 668,397
Int. Cl. C13l *1/08*
U.S. Cl. 127—32 13 Claims

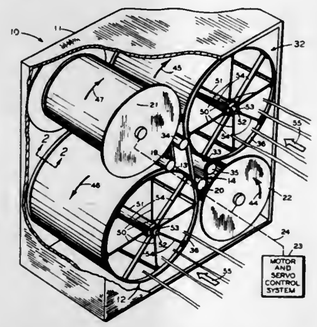


Method for preparing a starch having texturizing properties from ungelatinized starch which involves mixing ungelatinized starch with a liquid medium, the liquid medium containing 30 to 65 percent of a starch solvent and 70 to 35 percent of an organic liquid. The mixture is then reacted at a temperature between 240° and 380° F. for a period of time sufficient to substantially completely disrupt the starch granules. The starch is then removed from the liquid phase. The resulting product is cold-water-swellable, nonbirefringent, substantially completely fragmented starch. When slurried in water at a solids content of as little as 5 percent, the product exhibits texturizing characteristics by yielding a pulpy mixture. The product is particularly suitable for use in food products such as applesauce, spaghetti sauce and the like.

3,620,843
RECHARGEABLE CELL HAVING MOVING TAPE AND ROTATING ELECTRODES

John E. Clifford, Columbus, Ohio, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 5, 1969, Ser. No. 855,649
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 57 Claims

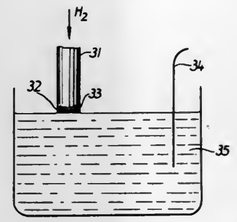


An electrically rechargeable cell comprising, in a charged state, an anode comprising a long steel tape coated on both sides with zinc forming the active surfaces, an aqueous electrolyte of potassium hydroxide saturated with zinc oxide and contained in and immobilized by a thin porous separator attached to each zinc surface, and two cylindrical rotatable air-permeable cathodes. The tape is driven from a storage reel to regions in contact with a substantial portion of each cylindrical cathode and onto a takeup reel, to utilize the zinc on both sides of the tape, at speeds dependent on the load current or voltage, or both. During charging, the tape is driven in the opposite direction.

3,620,844
SYSTEM FOR THE ACTIVATION OF HYDROGEN

Ewald Wicke, and Albrecht Kuessner, both of Muenster, Westphalia, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 80,665, Jan. 4, 1961, now abandoned , Continuation-in-part of application Ser. No. 182,247, Mar. 26, 1962, now abandoned. This application Mar. 4, 1963, Ser. No. 263,379
Int. Cl. H01m *27/06*
U.S. Cl. 136—86 10 Claims

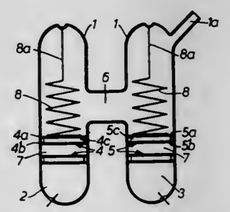


A fuel cell comprising an electrode designed for the electrochemical utilization of gaseous hydrogen, said electrode comprising a metallic body of a heavy metal lattice capable of absorbing and diffusing the hydrogen, and at least a large portion of one side of said body being in intimate contact with a dissimilar metal hydrogenation catalyst layer, consisting of a metal hydride, the catalyst of said layer being selected from the group consisting of uranium hydride, titanium hydride, thorium hydride, cerium hydride, and zirconium hydride and the metal of said lattice being selected from the group consisting of tantalum, tantalum alloys, palladium and palladium-silver alloys, and a conduit delivering the gaseous hydrogen to said one side of the metallic body.

3,620,845
WESTON STANDARD CELLS HAVING RESILIENTLY BIASSING PLUG MEANS

Ruth Friedrichs, Hannover, Germany, assignor to Pyro-Werke GmbH, Hannover, Germany

Filed June 4, 1969, Ser. No. 830,391
Claims priority, application Germany, Sept. 19, 1968, P 17 96 205.9
Int. Cl. H01m *17/04*
U.S. Cl. 136—88 9 Claims

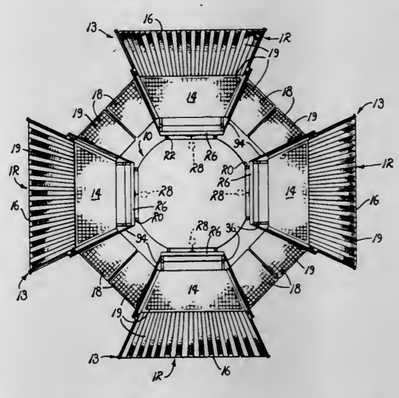


In a Weston standard cell the liquid and semiliquid electrodes are maintained in position by a plug above, and biassed towards, each electrode. Cementing resins are not needed to hold the plugs in position, and contamination of the cell is thereby avoided. The plugs may be biassed by coil springs made from glass.

3,620,846
DEPLOYABLE SOLAR CELL ARRAY

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Herman P. Valentijn, Glendora, Calif.

Filed Apr. 8, 1970, Ser. No. 26,573
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 23 Claims



A deployable support particularly suited for use in operatively supporting arrays of solar cells aboard spacecraft, characterized by a plurality of independent modules, each including a panel formed of a plurality of trapezoidal panel segments and articulated track segments adapted to be stowed in a folded configuration and simultaneously deployed into a laterally extended and a substantially continuous surface cir-

cumscribing an associated spacecraft for positioning arrays of solar cells in an operative disposition. A particular feature of the support is an inclusion of cantilever structure which accommodates deployment of panels of solar cells in a continuous harmonic sequence for thereby substantially eliminating the normally attendant transient loading of spacecraft during panel deployment.

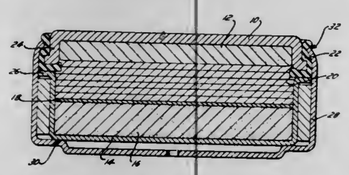
3,620,847
SILICON SOLAR CELL ARRAY HARDENED TO SPACE NUCLEAR BLAST RADIATION

Joseph F. Wise, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Continuation-in-part of application Ser. No. 579,801, Sept. 13, 1966, now abandoned. This application May 5, 1969, Ser. No. 821,594
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **2 Claims**

A silicon solar cell array, having the substrate, the cell-supporting grid structure, the electrical connecting leads, the cell contacts, and the terminal connections all fabricated from low atomic material such as aluminum, beryllium, or magnesium, having glass, silicon oxide and anodized aluminum insulation; silicone adhesives; and having ultrasonic welded electrical connections provides a hardened silicon solar cell array that is relatively impervious to damage from space nuclear blast radiation.

3,620,848
ALKALINE DRY CELL AND PERMANGANATE CATHODE THEREFOR

James Epstein, Sharon, and Charles C. Liang, Andover, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed May 7, 1969, Ser. No. 822,660
Int. Cl. H01m *15/06*
U.S. Cl. 136—138 **6 Claims**



A cathode depolarizer for alkaline dry cells comprised of active permanganate material having a high degree of insolubility in alkaline electrolytes. A process for producing the permanganate is set forth and the disclosure further describes an alkaline dry cell employing the permanganate cathode depolarizer.

3,620,849
THERMOCOUPLE APPARATUS

Edwin A. Thompson, Irvine, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 1, 1968, Ser. No. 717,588
Int. Cl. G01k *7/02*
U.S. Cl. 136—217 **1 Claim**



A thermocouple for attachment to a burner. The thermocouple has a mounting portion and an adapter thereon engageable with the burner. The adapter and the mounting portion are yieldably restrained against relative sliding movement to facilitate adjustment of the thermocouple relative to the burner flame.

3,620,850
OXYGEN ANNEALING

Bruce E. Deal, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, L.I., N.Y.
Continuation of application Ser. No. 531,069, Mar. 2, 1966, now abandoned. This application Mar. 25, 1970, Ser. No. 20,470
Int. Cl. H01l *7/34*
U.S. Cl. 148—1.5 **8 Claims**

A method for varying the surface charge density of a semiconductor device including the steps of heating the device prior to metallization at a temperature between 500° C. and 1,250° C. in dry oxygen and then cooling the device to a temperature below about 500° C. prior to the direct application of a metal layer to the device without an additional heating step.

3,620,851
METHOD FOR MAKING A BURIED LAYER SEMICONDUCTOR DEVICE

William J. King, 9 Putnam Road, Reading, Mass., and Frederick W. Martin, Hoffmansvej 30, Brabrand, Denmark
Division of Ser. No. 675,688, Oct. 16, 1967
Filed Dec. 4, 1969, Ser. No. 880,447
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **3 Claims**

This device contains a region imbedded completely within its body which is of opposite conductivity type than the body and which is separated from the body by two distinct PN-junctions. The imbedded region is produced by ion implantation and differs from such regions produced by other means in that the percentage compensation of dopant impurities between the region and all points on the surface of the body may be small, that is, one percent or less.

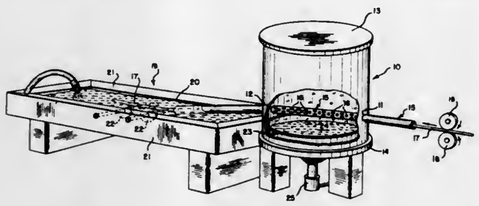
3,620,852
PROCESS FOR PRODUCING COBALT ALLOYS

Robert B. Herchenroeder, Kokomo, Ind.; Joe G. Y. Chow, Northport, and Albert H. Fleitman, Smithtown, N.Y.
Filed Feb. 27, 1970, Ser. No. 15,237
Int. Cl. C22f *1/10*; C22c *19/00*
U.S. Cl. 148—2 **2 Claims**

A process for producing oxygen-free cobalt based alloys having improved stability in high temperature irradiated sodium environments wherein cobalt is alloyed with chromium, tungsten, iron, carbon, nickel, molybdenum and titanium and thereafter the alloy is cold reduced 50 percent and heat annealed until it has a grain size of less than 10 microns.

3,620,853
DESCALING COPPER RODS

Clermont J. Snyder, and Jack P. Moore, both of Hastings-on-Hudson, N.Y., assignors to Anaconda Wire and Cable Company
Filed Nov. 25, 1969, Ser. No. 879,767
Int. Cl. C21d *1/74*
U.S. Cl. 148—13.2 **14 Claims**

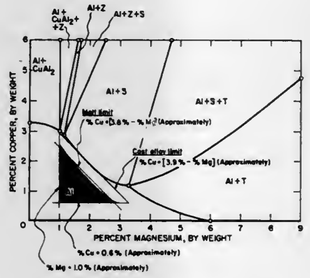


Copper rods which are coated with an oxide scale are descaled and brightened by introducing the rod at a tempera-

ture of from 800° to 1,600° F. into a descaling zone which is substantially free of oxygen. While in the descaling zone, the rod is exposed to an atmosphere which contains at least 50 percent by volume of vapors of an organic compound. The organic compound is a lower alkyl monohydroxy alcohol, a lower alkyl polyhydroxy alcohol, a lower alkyl ketone or a mixture of any of these materials. After the reaction in the descaling zone is completed, the rod is quenched in an aqueous coolant without exposure to an oxidizing environment.

3,620,854
ALUMINUM CASTING ALLOY

Herbert Greenewald, Jr., Columbus, Ohio, assignor to North American Rockwell Corporation
Continuation-in-part of application Ser. No. 614,838, Feb. 9, 1967, now abandoned. This application Feb. 23, 1968, Ser. No. 711,825
Int. Cl. C22c *21/00*
U.S. Cl. 148—32 **7 Claims**



An aluminum alloy that is controlled in composition with respect to aluminum, major alloying element, grain refiner, trace element, and impurity contents to develop increased tensile strength properties in an as-cast, heat-treated, and aged condition, particularly when directionally solidified into casting configurations having a Shape Factor substantially in excess of 100.

3,620,855
SUPERALLOYS INCORPORATING PRECIPITATED TOPOLOGICALLY CLOSE-PACKED PHASES

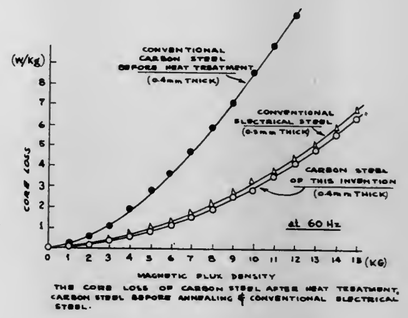
David H. Wagner, Portland; David N. Duhl, Newington; Edward H. Van Der Molen, East Haddam, and Cornelius P. Sullivan, Branford, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 26, 1969, Ser. No. 861,496
Int. Cl. C22c *19/00*
U.S. Cl. 148—32.5 **8 Claims**

The nickel-base and cobalt-base superalloys are formed to provide, in addition to the usual strengthening mechanisms, additional strengthening and other property improvements through the precipitation of copious quantities of the topologically close-packed phases, such as the sigma phase.

3,620,856
PROCESS TO IMPROVE MAGNETIC CHARACTERISTICS OF CARBON STEEL

Hideto Hiraoka, Kamitsuchii, Gifu, Japan, assignor to Sanyo Electric Works Ltd., Kamitsuchii, Gifu, Japan
Filed Dec. 17, 1968, Ser. No. 784,405
Int. Cl. H01f *1/14*; C21d *1/00*
U.S. Cl. 148—121 **4 Claims**

The process to improve magnetic characteristics of conventional low-carbon, rimmed steel having the chemical composition, carbon: <0.25 weight percent, silicon: <0.5 weight percent, manganese: <1.65 weight percent, phosphorus: <0.05 weight percent, sulfur: <0.05 weight percent, copper: <0.5 weight percent, and other elements: <0.1 weight percent, comprising:
A first stage of raising the temperature of carbon steel above the A_3 transformation temperature of approximately 850–910° C. wherein the α-phase γ-phase transformation takes place in a controlled atmosphere with a dew point of approximately 5° to 50° C., or a water vapor pressure of 6.9–92.5 Torr.
A second stage of lowering rapidly the temperature of the carbon steel below 723° C., but not lower than 600° C., maintaining the carbon steel at this temperature for 3 to 10 hours in a weakly oxidizing atmosphere.
A third stage of lowering and maintaining said carbon steel at a temperature of 300 to 400° C. for 1 to 2 hours for the purpose of obtaining large ferrite grains in which less than 0.01 weight percent of carbon is present dissolved in the matrix



THE CORE LOSS OF CARBON STEEL AFTER HEAT TREATMENT, CARBON STEEL BEFORE ANNEALING & CONVENTIONAL ELECTRICAL STEEL.

and the residual carbon is present at ferrite grain boundaries, and not in the matrix.
A low-carbon, rimmed steel having a ferrite matrix and chemical composition: less than each of the following: 0.25 weight percent carbon, 0.5 weight percent silicon, 1.65 weight percent manganese, 0.05 weight percent phosphorus, 0.05 weight percent sulfur, 0.5 weight percent copper, and 0.1 weight percent other elements, and wherein the ferrite matrix is in the form of grains sufficiently large in particle size to be less than 10 particles per mm.^{2}, said grains having less than 0.01 weight percent of carbon dissolved in the ferrite matrix, and the residual carbon being present at ferrite grain boundaries and not in the ferrite matrix.

3,620,857
METHOD OF PRODUCING FINE-CRYSTALLINE CAST CHARGES WITH UNORIENTED CRYSTALLINE STRUCTURE OF 2,4,6-TRINITROTOLUENE OR EXPLOSIVE COMPOSITIONS CONTAINING 2,4,6-TRINITROTOLUENE

John Lennart Soderberg; Jarl Sigurd Back, and Christer Lennart Hakansson, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Apr. 17, 1969, Ser. No. 817,166
Claims priority, application Sweden, Apr. 26, 1968, 5627/1968
Int. Cl. C06b *9/04*
U.S. Cl. 149—18 **5 Claims**

Fine-crystalline cast charges with an unoriented crystal structure of TNT or explosive charges containing TNT are obtained by adding 2,2′,4,4′, 6, 6′-hexanitrostilbene to the melt from which the cast charge is made.

3,620,858
AMMONIUM NITRATE EXPLOSIVE COMPOSITION

Joseph R. Hradel, Mt. Pleasant, Mich., and Harold E. Staadt, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 784,881, Jan. 5, 1959
Filed Apr. 21, 1969, Ser. No. 818,088
Int. Cl. C06b *1/04*
U.S. Cl. 149—21 **16 Claims**

An explosive composition is provided which contains particulate ammonium nitrate, particulate metal and an aqueous phase saturated with ammonium nitrate.

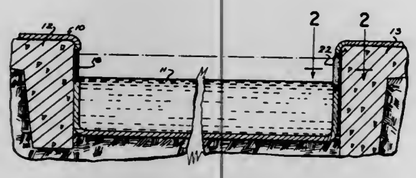
3,620,859
CHEMICAL POLISHING OF METALLIC SODIUM
Hugh Solomun Isaacs, Shoreham, and Robert M. Singer, East Islip, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed June 23, 1970, Ser. No. 49,188
Int. Cl. C23g 5/02
U.S. Cl. 156—20 3 Claims

A method of preparing metallic sodium specimens for optical metallographic studies to ascertain the purity thereof whereby the sodium is polished in a bath of containing an aliphatic ketone and an aliphatic alcohol.

3,620,860
BONDING METALS WITH CHLORINATED ETHYLENE POLYMERS
Carl R. Eckardt, Morris Plains; Oliver Alfred Barton, Florham Park, and Ralph Milton Hetterly, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 29, 1968, Ser. No. 771,634
Int. Cl. C09j 3/14; B32b 31/18
U.S. Cl. 156—247 12 Claims

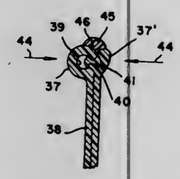
This invention relates to a method for bonding substrates together by use of certain chlorinated polymers of ethylene. The substrates thus bonded are readily separated from each other.

3,620,861
CABLE PROTECTION AND METHOD
George C. Wiswell, Jr., 1014 Pequot Road, Southport, Conn.
Filed Oct. 27, 1969, Ser. No. 869,550
Int. Cl. H01b 13/06
U.S. Cl. 156—53 2 Claims



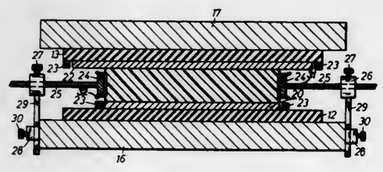
A method of placing a protective coating on cables adjacent the splash zone where a first epoxy coating is placed thereon, a porous material wrapped therearound, and a second coating placed thereon after the first has cured on sufficient amount.

3,620,862
METHOD OF MAKING CONTAINER CLOSURE
Erich-Arthur Nier, Am Erlenhang 1, 6205 Bleidenstadt, Taunus, Germany
Filed July 29, 1968, Ser. No. 748,454
Claims priority, application Germany, July 29, 1967, P 15 86 209.6
Int. Cl. B29d 31/00
U.S. Cl. 156—69 3 Claims



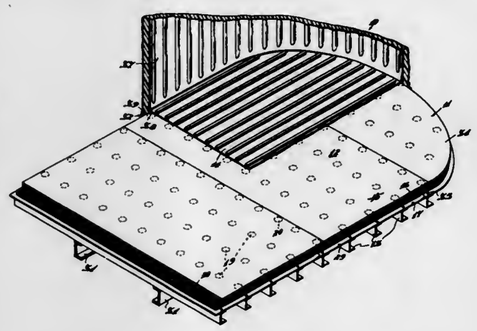
To close a container having an open mouth, a mass of synthetic resin is adhesively bonded to this mouth and/or positively interlocked therewith to form a seal with or without the aid of a separate cap also engaged by this mass. A flexible element may be projectingly imbedded in the mass to aid in the removal of the seal.

3,620,863
METHOD OF PRODUCING IN A CONTINUOUS PROCESS PLATES OF POLYURETHANE HARD FOAM WITH COVERING PLATES
Heinz Sullhofer, Niederrheinstrasse 158, 4 Dusseldorf, Germany
Filed Oct. 15, 1968, Ser. No. 767,645
Claims priority, application Germany, Oct. 16, 1967, S 112413
Int. Cl. B32b 5/18
U.S. Cl. 156—79 4 Claims



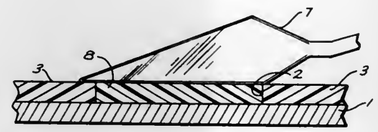
Production in a continuous process of laminated plates with a core of polyurethane hard foam, according to which the reaction components to produce the polyurethane hard foam core are fed between two vertically spaced cover plates while the cover plates are advanced at a speed in conformity with the reaction speed of the components and while simultaneously with the advancement of said cover plates lateral strips are fed along the lateral longitudinal planes which define approximately the width of the laminated plates to be produced. At least one of the upper and lower marginal ends of said strips are folded outwardly away from the core being formed so as to leave at least one longitudinal gap between the lateral strips and the respective adjacent cover plate for permitting excessive foam material to escape therethrough.

3,620,864
METHOD OF FORMING A FOAMED SANDWICH PANEL
George R. Heffner, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Division of Ser. No. 371,426, June 1, 1964, Patent No. 3,470,058
Filed May 28, 1969, Ser. No. 828,794
Int. Cl. B32b 5/20
U.S. Cl. 156—79 4 Claims



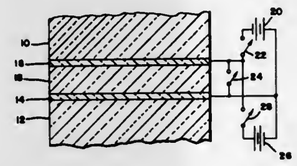
A panel adapted to receive transverse compressive stress comprising, two spaced parallel sheets, a plurality of spacers between said sheets each constituted by a tubular skin surrounding expanded plastic foam having cells elongated in a direction parallel to said skin and perpendicular to said sheets, and plastic foam expanded in the remaining volume between said sheets.

3,620,865
METHOD FOR REPAIRING FLEXIBLE MATERIALS
Harvey J. Golumbic, 1517 Sunrise Ln., Fullerton, Calif., assignor to Harvey J. Golumbic; Robert M. Bregoff and Alfred A. Calabro, part interest to each
Filed Mar. 20, 1969, Ser. No. 808,762
Int. Cl. B32b 35/00
U.S. Cl. 156—98 7 Claims



Damaged, flexible vinyl materials, such as automobile seats and tops, are repaired by a welding compound which is grained and colored to match the base material. The damaged section of the base material is prepared by removing frayed edges and the like to obtain a clean, sharp periphery. The base material is cleaned by a solvent to ensure adhesion or fusion of the welding compound with it. The welding compound is a vinyl compound which has a relatively high tensile strength and relatively low fusion point. This compound is applied in layers to the cutout area of the base material, with each layer being cured after it is applied. The final layer is smoothened to present a continuous, uninterrupted surface from the base material across the weld compound material. A graining tool, which is both hard and flexible, is obtained from an impression of the base material or material having the same grain structure. The graining tool is applied to the upper surface of the cured welding compound after it and the surrounding base material have been heated sufficiently to receive the grain impression.

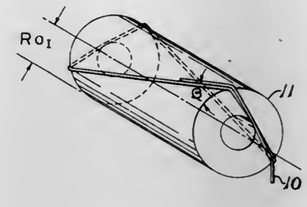
3,620,866
METHOD OF MAKING AN ELECTROCHEMICAL STORAGE CELL
Eugene C. Letter, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Division of Ser. No. 525,620, Feb. 7, 1966.
Filed Sept. 29, 1969, Ser. No. 861,969
Int. Cl. B32b 17/00
U.S. Cl. 156—102 1 Claim



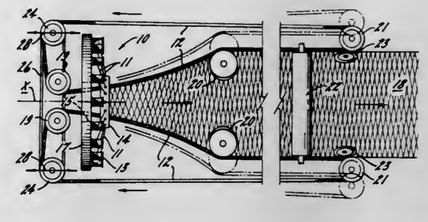
Disclosed is a method for making an optical device or electrochemical storage cell wherein a pair of electron-conducting electrodes are separated by a solid-state electrolytic layer containing ions available for reversible oxidation and reduction reactions in response to an electrical potential applied across the electrodes.

3,620,867
METHOD OF MAKING A PNEUMATIC TIRE
Donald R. Bartley, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,229
Int. Cl. B29h 17/20
U.S. Cl. 156—117 7 Claims

A method of making large, multiple ply, off-the-road, pneumatic tires by tape winding the carcass in a generally geodesic pattern over a cylindrical building drum. The angle of wrap with respect to the drum axis is maintained in any one ply of winding, but is increased incrementally from one ply to the next successive ply, thereby providing sufficient material in each ply to enable the carcass to be shaped to a toroidal tire with substantially balanced tension in the cords of adjacent plies.

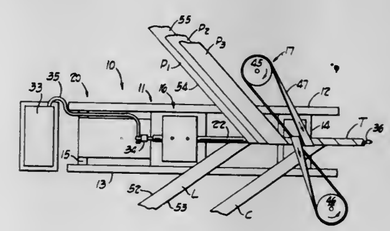


3,620,868
METHOD AND APPARATUS FOR BIAS CROSSLAYING THREADS
William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 21, 1969, Ser. No. 826,576
Int. Cl. D04h 3/05; B65n 54/22
U.S. Cl. 156—181 12 Claims



A method and apparatus for forming a nonwoven web including bias crosslaid threads is disclosed in which a divergent carrier reach is formed by a pair of endless helical coil springs. The threads are wound around a narrow portion of the diverging carrier, which widens as it advances to form a broad nonwoven web. After being stabilized relative to one another the threads are then cut from the carrier.

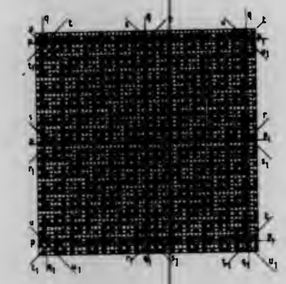
3,620,869
METHOD OF MAKING TUBES
Paul W. Stump, North Olmsted; James A. Huber, Strongsville, and John M. Lipinski, Cleveland, all of Ohio, assignors to Clevepak Corporation, Cleveland, Ohio
Filed July 16, 1969, Ser. No. 842,298
Int. Cl. B65h 81/04
U.S. Cl. 156—190 4 Claims



A helically wound tube comprised of sheetlike plies including a liner and a plurality of body plies. The liner and a first surrounding body ply are interwoven along a helical butt joint defined by adjacent edges of the surrounding body ply,

and the liner forms a helical lap joint. The tube is continuously formed and an interior protective coating is concurrently applied to the tube as an airless spray of coating material comprising 100 percent solids in a liquid state, which hardens substantially on contact with the tube.

3,620,870
LIGHTWEIGHT CELLULAR STRUCTURE
Michel Antoine Jules Maistre, 41, rue Gutenberg, Paris, France
Filed Aug. 24, 1967, Ser. No. 663,059
Claims priority, application France, Aug. 26, 1966, 74,350
Int. Cl. B31d *3/00*
U.S. Cl. 156—197 **11 Claims**



A lightweight structure made from a plurality of sheets crimped to form recesses, the sides and surface of which recesses lie in at least three intersecting sets of parallel planes, said sheets being connected together along the rims of the recesses to form a cellular structure.

3,620,871
METHOD OF MAKING A PLASTIC PACKAGE WITH A LABEL
Boye Benzon-Petersen, and Rolf Magnus Dilot, both of Lund, Sweden, assignors to AB Akerlund & Rausing, Lund, Sweden
Filed Oct. 6, 1969, Ser. No. 864,100
Claims priority, application Sweden, Dec. 25, 1968, 15995/68
Int. Cl. B29c *17/04*
U.S. Cl. 156—212 **5 Claims**

A package is formed by deep-drawing a plastic foil into a mould in which has been placed a label having at least two sidewalls and a web connecting same. The label element is provided with a heat-sensitive adhesive on its inner surface so as to be secured to the plastic package by the heat of the deep-drawing step.

3,620,872
METHOD OF MAKING LAMINATED WEB MATERIAL USING A REUSABLE CARRIER
Terence Frank Backwell, Whitchurch, Bristol, England, assignor to The Robinson Waxed Paper Company Limited, Bristol, England
Filed Sept. 10, 1968, Ser. No. 758,905
Claims priority, application Great Britain, Sept. 15, 1967, Feb. 2, 1968; 42,128/67, 5385/68
Int. Cl. B29b *3/00*
U.S. Cl. 156—231 **10 Claims**

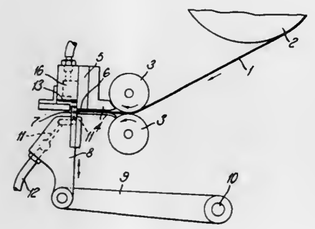
A method of processing web material supported on a carrier and subsequently separating the processed web and carrier.

3,620,873
MAKING METAL-PLASTIC GASKET MATERIALS
John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Ercon, Inc., Cambridge, Mass.
Filed Mar. 26, 1969, Ser. No. 813,400
Int. Cl. B32b *15/08*
U.S. Cl. 156—250 **18 Claims**

Compressible, resilient electrically conductive sheets or sheets or strips are made by forming a block containing compressive, conductive plastic members. These members have a parallel orientation so as to provide a plurality of parallel conducting paths. The block is then sliced into sheets or strips with the conducting paths providing electrical conductivity between opposite surfaces of each sheet or strip. By using highly thermally conductive members, one can provide enhanced thermal conductivity between opposite surfaces of a resilient, compressible plastic sheet or strip.



3,620,874
METHOD FOR PRODUCING TEAR-STRIPS
Derek Henry Youngman, and Robert William Davies, both of Deptford, London, England, assignors to The Molins Organization Limited, London, England
Division of Ser. No. 506,789, Nov. 8, 1965, Patent No. 3,502,536.
Filed June 17, 1969, Ser. No. 833,951
Int. Cl. B32b *31/18*
U.S. Cl. 156—270 **5 Claims**



A method for producing tear-strips from a continuous web having a width equal to the desired length of tear-strip comprises intermittently advancing the longitudinal web, transversely cutting the web progressively from one edge to the opposite edge between each advancement of the web to sever portions of the web equal in length to the desired width of the tear-strip and continuously urging each strip as it is being severed from the web in a direction transverse to the direction of advance of the web and conveying each cut strip in a direction opposite to the direction the web is progressively cut.

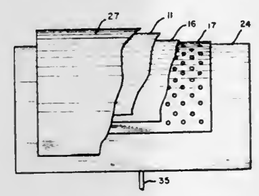
3,620,875
ELECTROMAGNETIC ADHESIVE AND METHOD OF JOINING MATERIAL THEREBY
Richard J. Guglielmo, Sr., Cresskill, N.J., and Nishan G. Chookazian, Saddle Brook, N.Y., assignors to EMA Corporation, Northvale, N.J.
Continuation-in-part of application Ser. No. 417,804, Dec. 11, 1964, now abandoned , Continuation of application Ser. No. 500,168, Oct. 21, 1965, now abandoned. This application July 28, 1969, Ser. No. 849,244
Int. Cl. B29c *27/04;* **C08f** *45/04;* **C08k** *1/02*
U.S. Cl. 156—272 **13 Claims**

Electromagnetic adhesive comprised of a mixture of a thermoplastic material and ferromagnetic particles having mesh sizes of from 20–200 mesh. The adhesives are employed to bond thermoplastics by the use of inductive heating, the bonding being effected in period of less than two minutes.

3,620,876
LIQUID ELECTROMAGNETIC ADHESIVE AND METHOD OF JOINING MATERIALS THEREBY
Richard J. Guglielmo, Sr., Lambs Lane, Cresskill, N.J., and Nishan G. Chookazian, 580 Oak Ave., Saddle Brook, N.Y.
Continuation of application Ser. No. 500,294, Oct. 21, 1965. This application July 28, 1969, Ser. No. 849,245
Int. Cl. B29c *27/04;* **C08f** *45/04;* **C08k** *1/03*
U.S. Cl. 156—272 **17 Claims**

Liquid electromagnetic adhesive comprised of a liquid dispersion of a thermoplastic material and noncorrosive ferromagnetic particles having mesh sizes of from 20–200 mesh. The adhesives are employed to bond thermoplastics by the use of inductive heating, the bonding being effected in periods of less than 2 minutes.

3,620,877
METHOD OF MAKING ELECTROTYPE PRINTING PLATES
Robert E. Anderson, Kalamazoo, Mich., assignor to Mueller Color Plate Company, Battle Creek, Mich.
Filed July 25, 1968, Ser. No. 754,132
Int. Cl. B32b *31/04*
U.S. Cl. 156—285 **5 Claims**

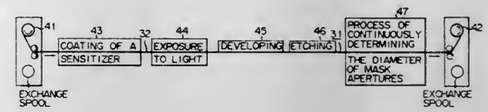


The method of manufacturing an electrotype printing plate comprising the steps of electroforming a shell having raised characters on its front face and corresponding recesses on its backface, fusing a nylon coating to the back of the plate to fill the recesses, providing a metallic backing plate having a predetermined curvature, applying thermosetting adhesive to one of the backing plate or the coating. The plate is applied to vacuum apparatus comprising an apertured saddle member which includes heating means and diaphragm means constructed and arranged to cover the plate. The plate is heated and a vacuum is simultaneously drawn through the apertures wherein the diaphragm firmly presses the plate to the backing member and the adhesive is cured.

3,620,878
BONDING WITH ETHYLENE COPOLYMER ADHESIVE AND ADHESION PROMOTING AGENT
James L. Guthrie, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed July 26, 1968, Ser. No. 747,826
Int. Cl. C09j *3/14*
U.S. Cl. 156—309 **1 Claim**

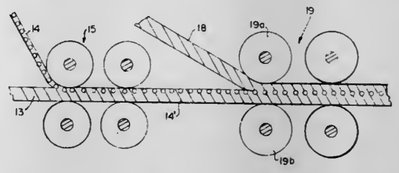
Polar copolymers of alpha-olefins containing pendant ester, amide, anhydride or carboxylic acid groups may be bonded to wood, metal or other substrates by blending di- or polycarboxylic acids in the approximate proportions of 1–15 percent into the polar copolymers. The di- or polycarboxylic acids when compounded in the copolymer develop peel strengths of approximately from 30–70 lbs./inch when interposed between metallic or wood sheets and held under pressure from 1–15 minutes at temperatures above the melting point of the copolymer.

3,620,879
APPARATUS FOR CONTINUOUSLY DETERMINING THE DIAMETER OF MASK APERTURES
Hitoshi Imamura, Hiratsuka-shi, and Hiroshi Ishino, Yokohama-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 13, 1969, Ser. No. 849,695
Claims priority, application Japan, Aug. 15, 1968, Aug. 19, 1968, Oct. 3, 1968; 43/57814, 43/58692, 43/71605
Int. Cl. C23f *1/02;* **G01n** *21/00*
U.S. Cl. 156—345 **13 Claims**



Apparatus for continuously and successively determining the diameter of mask apertures in a plurality of masks formed in an elongated tape material which is moving at a substantially constant speed, the tape having a series of equally spaced perforated masks thereon and start- and stop-detecting apertures near the front and rear edges of each mask. The start aperture is detected and a slider device is operated to engage with the traveling tape to thereby travel with the tape. Upon detection of the stop-detecting aperture, the slider device is released from the tape and is quickly returned to its original position. While the slider is engaged with the tape, similar light beams are projected on corresponding areas of a mother or "master" mask and of a mask on the traveling tape. The light passing through the two masks is converted to electrical signals and the electrical signals are compared. The respective masks of the tape are either approved or rejected as a function of the magnitude of the difference between the output electrical signals.

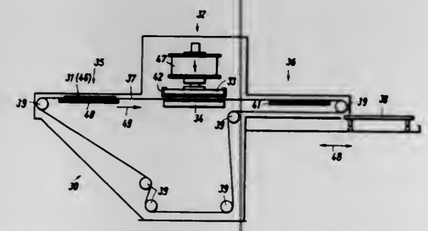
3,620,880
APPARATUS AND METHOD FOR PRODUCING COMPOSITE MATERIALS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Continuation-in-part of application Ser. No. 500,731, Oct. 22, 1965, now Patent No. 3,436,816, which is a continuation-in-part of application Ser. No. 241,904, Dec. 3, 1962, now Patent No. 3,276,513 and Ser. No. 393,292, Aug. 31, 1964
This application Ar. 7, 1969, Ser. No. 813,928
Int. Cl. B32b *3/10;* **B41m** *1/26*
U.S. Cl. 156—384 **9 Claims**



An apparatus and method for producing composite materials and the materials made thereof are provided. In one form, one or more sheet metal materials are continuously extruded to shape and are combined with a core material in a rolling mill to provide a composite structure having improved characteristics imparted thereto by both core and encapsulating materials. The core material may comprise a plurality of reinforcing elements such as filaments, wires, whiskers or a grid fed to the bite of two extruded sheets or otherwise formed shapes which are made to flow over and around the reinforcing elements and to encapsulate same therebetween as the two sheets are roll bonded or welded together and reduced in thickness to form a third composite sheet formation thereof.
In another form, individual articles are disposed on top of a first freshly extruded sheet and are encapsulated in a composite sheet formed of said first sheet and a second sheet

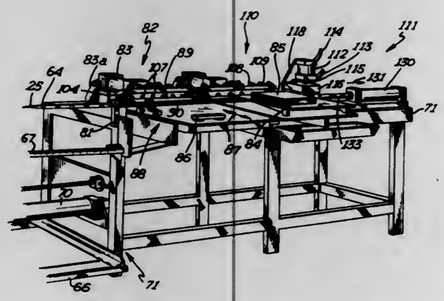
disposed thereagainst and roll bonded thereto in a rolling mill. The oxide free, high-temperature condition of the two sheets, as extruded, is utilized to fabricate improved composite sheet materials without the difficulties normally experienced in fabricating sheet materials from cold stock.

3,620,881
APPARATUS FOR PRINTING BOTH SIDES OF SINGLE OR MULTIPLE LAYER TEXTILE ARTICLES
Herbert Kannegiesser, Vlotho, Weser; Jean Pierre Niederst, Schotmar, and Richard Juraschek, Vlotho, Weser, all of Germany, assignors to Kannegiesser Maschinenfabrik Gesellschaft mit beschrankter Haftung, Vlotho/Weser, Germany
Filed Feb. 17, 1969, Ser. No. 799,836
Claims priority, application Germany, Dec. 5, 1968, P 18 12 839.7
Int. Cl. B41m 5/02
U.S. Cl. 156—388 1 Claim



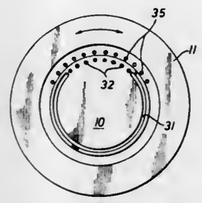
The invention provides a method of and an apparatus for printing both sides of single or multiple layer textile articles, which method comprises the steps of covering both sides of a single or multiple layer textile article with a transfer printing sheet, conveying said article and said sheets between two relatively spaced heated pressing platens, and closing the platens and thereby simultaneously transferring impressions from said transfer printing sheets to each side of said article.

3,620,882
APPARATUS FOR MANUFACTURING AN ALBUM PAGE
Tien S. Chou, Minneapolis; Wilfred T. Tonnell, St. Cloud, and Roger A. Wenstrom, St. Cloud, all of Minn., assignors to The Holes-Webway Co., St. Cloud, Minn.
Filed June 11, 1970, Ser. No. 45,514
Int. Cl. B31f 1/00; B32b 3/04
U.S. Cl. 156—461 10 Claims



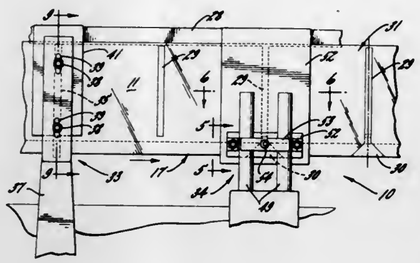
Apparatus for manufacturing an album page wherein a tape is folded longitudinally and is applied to the album page and has secured thereto staplelike hinge elements. A tape supply mechanism is provided for advancing a continuous strip of tape in a predetermined direction, the tape being engaged and scored by a scoring mechanism to facilitate folding thereof. A stitching mechanism for applying the staplelike hinge elements to the tape and means for applying the longitudinally folded tape to one longitudinal edge of the album page.

3,620,883
APPARATUS FOR EXTRUDING PLASTIC NETTING
George S. Nalle, Jr., 108 West Second St., Austin, Tex.
Filed Sept. 25, 1968, Ser. No. 762,519
Int. Cl. B29c 17/00
U.S. Cl. 156—500 8 Claims



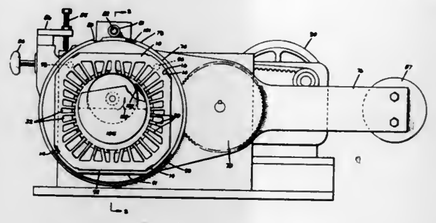
This application discloses extrusion die head assemblies and mthods for extruding plastic to produce solid or filamentary ribbonlike products with net or openwork overlay. A center die has an extrusion opening or openings defining a straight line or other open figure, while a circular rotating die surrounds the center die to produce a netlike pattern which is partially fused with the portion extruded from the center.

3,620,884
SEALING UNIT FOR SEALING GUSSET BOTTOM BAGS
Donald T. Peterson, Rockford, Ill., assignor to Riegel Paper Corporation, New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,980
Int. Cl. B32b 31/20, 31/08
U.S. Cl. 156—553 4 Claims



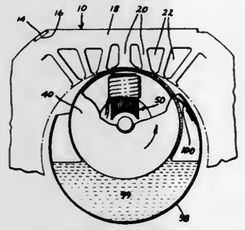
A sealing unit for sealing together face-to-face strips of flexible material joined along their bottoms by a fold which is tucked upwardly to form a gusset of W-shaped cross section along the fold, the strips being advanced lengthwise and in upright planes along a predetermined path. The sealing unit comprises a primary rectangular seal bar and, spaced downstream therefrom, a gusset seal bar and a secondary rectangular seal bar, the seal bars being operable to seal the strips in such a manner as to form a series of gusset bottom bags. To enable the sealing of strips of various heights with only minor changes in the sealing unit, the primary rectangular seal bar seals the strips through a protective curtain which covers the strips except for the gusset and which allows the primary rectangular seal bar to extend downwardly alongside the gusset without pressably engaging the latter while sealing crosswise of the remainder of the strips. In order to enable the sealing of strips of various thicknesses, the gusset seal bar is mounted for adjustment laterally of the strips and relative to the secondary rectangular seal bar.

3,620,885
APPARATUS FOR APPLYING UNHARDENED ADHESIVE MATERIAL TO A LAMINATED STRUCTURE
Leo M. Schlaudroff, Fort Wayne, Ind., assignor to General Electric Company
Filed Feb. 16, 1970, Ser. No. 11,738
Int. Cl. H02k 15/12; B32b 31/12
U.S. Cl. 156—563 8 Claims



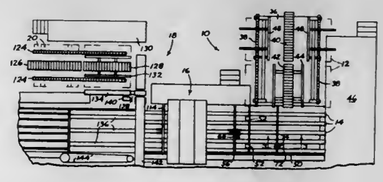
An apparatus for applying an adhesive bonding material to a stack of laminations forming a laminated core for use in an inductive device, the core having a plurality of spaced-apart tooth sections with at least some of the laminations having spaces therebetween at the termination portions of the tooth sections. The apparatus includes an applicator, carrying on its periphery unhardened adhesive material, and means for mounting the core for engaging the termination portions of the at least some of the laminations with the unhardened adhesive material. The applicator and the core are moved relative to one another so that the applicator moves sequentially across the termination portions of the tooth sections for applying the unhardened adhesive material to the core. After the applicator moves across the termination portions of the tooth sections, the core is moved away from engagement with the unhardened adhesive material on the applicator.

3,620,886
METHOD FOR BONDING A LAMINATED STRUCTURE AND APPARATUS FOR APPLYING UNHARDENED ADHESIVE MATERIAL TO THE LAMINATED STRUCTURE
Marion W. Sims, and Francisco C. Avila, both of Fort Wayne, Ind., assignors to General Electric Company
Filed Feb. 16, 1970, Ser. No. 11,739
Int. Cl. B32b 31/20; H02k 15/02
U.S. Cl. 156—563 13 Claims



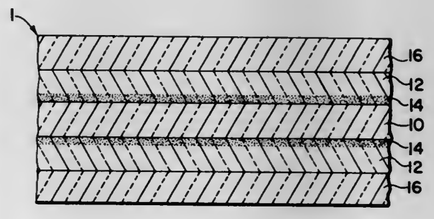
Method and apparatus for applying unhardened adhesive material to a stack of laminations forming a laminated core for use in an inductive device, the core having spaced-apart tooth sections with at least some of the laminations having spaces therebetween at the termination portions of the tooth sections. The core is mounted to engage unhardened adhesive material carried on the peripheral surface of an applicator and relative motion is provided between the applicator and core for transferring unhardened material from the applicator to at least some of the laminations. An electromagnet is positioned adjacent at least some of the laminations and energized to apply a magnetic field to the core for ensuring separation of at least some of the laminations as the unhardened adhesive material is being applied to the termination portions thereof. The laminations may then be clamped together until the adhesive material hardens to firmly bond the laminations together, and this hardening step may be accomplished by placing the core in an oven which generates heat to cure or harden the adhesive material. The process may further include the step of applying an insulating material to selective surfaces of the core to form an integral insulating coating thereon.

3,620,887
METHOD AND APPARATUS FOR ASSEMBLING VENEER PLIES INTO LAID-UP PLYWOOD PANELS
Victor R. Nelson, 2700 S.W. Summit Drive, Lake Oswego, Oreg.
Filed June 4, 1968, Ser. No. 734,466
Int. Cl. B32b 31/10, 31/20
U.S. Cl. 156—563 15 Claims



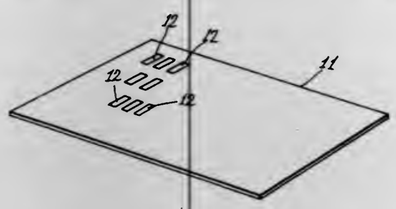
Bottom veneer plies are arranged end to end and conveyed continuously under a core assembly unit where core strips are crowded together in edge-abutting relationship, trimmed to desired panel width and laid upon the bottom plies, after which overlay veneer plies are laid end to end over the core ply and the assembly conveyed to a cutoff unit where it is cut to plywood panel lengths for subsequent stacking and delivery to a press.

3,620,888
TRANSPARENT LAMINATE HAVING AT LEAST ONE LAYER OF A CELLULOSE DERIVATIVE MATRIX CONTAINING INFRARED ABSORBER
Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 2, 1966, Ser. No. 577,578
Int. Cl. B32b 23/14; G02b 5/22; G02c 7/10
U.S. Cl. 161—1 9 Claims



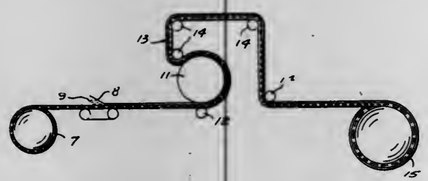
Novel improved dye layers especially suitable for use in plastic laminations, such as those involved in plastic optical products. The layer comprises a dye substantially uniformly dispersed in a cellulose derivative matrix wherein one surface of the matrix has been converted to cellulose.

3,620,889
LIQUID CRYSTAL SYSTEMS
Donald H. Baltzer, Cincinnati, Ohio, assignor to Vari-Light Corporation, Cincinnati, Ohio
Filed June 11, 1968, Ser. No. 736,119
Int. Cl. B44f 1/00; C09k 3/00
U.S. Cl. 161—5 17 Claims



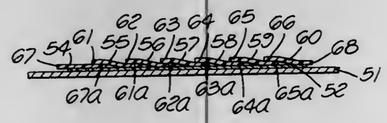
Systems incorporating liquid crystals which are thermally sensitive and optically responsive to temperature changes.

3,620,890
FLOOR AND WALL COVERING AND METHOD OF MAKING SAME
James W. Kemmler, Needham, Mass., assignor to New London Mills, Inc., New London, Conn.
Filed Mar. 4, 1968, Ser. No. 710,146
Int. Cl. B32b 27/00; C09j 5/00; B44l 1/00
U.S. Cl. 161—6 7 Claims



A method for forming a decoratable, multilayer floor and wall covering comprising coating a fibrous reinforcing layer with a resilient backing, coating the opposite side of the fibrous layer with a gellable polymeric material, and gelling the polymeric material, against a smooth surface. The product formed by this process comprising layers of resilient backing, fibrous reinforcing, and gelled polymeric material, suitable for decoration.

3,620,891
RECEIPT BINDERS
John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif., and John Leslie Jones, Jr., 1447 Sutherland St., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 567,595, July 25, 1966, now abandoned. This application Feb. 17, 1969, Ser. No. 799,887
Int. Cl. B32b 3/16, 3/10; B42d 1/10
U.S. Cl. 161—38 3 Claims



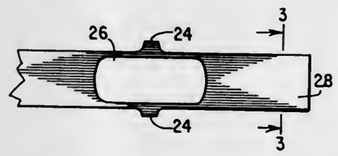
This invention teaches binders, a manufacturing process and manufacturing apparatus for binders, sales receipts, checks, and like sheets of paper the binders having thin film base sheets with at least two opposed edges, and having at least one pressure sensitive adhesive coating strip area extending over one strip section area of the base sheets, the adhesive coating strip area being coterminous with two opposed film base sheet edges. A multiplicity of release coated face, flexible, narrow strip backing sheets are arranged in parallel alignment with adhesive coating strip area, with the release coated faces of the strip backing sheets adjacent to and completely covering the adhesive coating strip area. The multiplicity of strip backing sheets are coterminous at their strip ends with the coterminous adhesive coating strip area and the opposed base sheet edges. A single-receipt sheet or the like is secured to a single-narrow adhesive coating area, made available on the removal of a single-strip backing sheet.

3,620,892
DIMENSIONALLY STABLE ARTICLES AND METHOD OF MAKING SAME
Robert C. Winckhofer, Richmond; Gene C. Weedon, Richmond, and George H. Collingwood, Hopewell, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 7, 1968, Ser. No. 727,325
Int. Cl. D04h 1/04; D03d 15/02; D02g 3/36
U.S. Cl. 161—89 15 Claims

Dimensionally stable articles are produced from heat-treating fabric comprised of multiconstituent filaments prepared from blended fiber-forming polymeric materials having different properties, at least one of the fiber-forming polymeric materials being dispersed as discontinuous fibrils in a lower melting matrix formed by another polymeric material, and natural or synthetic filaments which may or may not have heattreating capabilities. The article is produced by preforming the fabric, during production of the fabric itself or by subsequent operation, and heating the latter to a temperature equal to or above the melting temperature of the multiconstituent matrix material but below that of the dispersed polymeric material, for a time sufficient to impart a shape stabilized property to the multiconstituent filaments and consequently to the fabric article.

The multiconstituent filaments are present in the fabric as individual yarn or filament elements in combination with other materials, or are present in a mechanically blended fiber or yarn with other materials.

3,620,893
FILM END CONSTRUCTION FOR SELF THREADING DEVICE
Irvin S. Tarrson, Evanston, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Nov. 4, 1969, Ser. No. 873,871
Int. Cl. B32b 3/10
U.S. Cl. 161—109 3 Claims

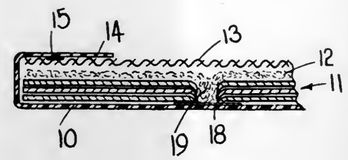


A novel film end construction for facilitating the self-threading of a film handling device.

3,620,894
INCONTINENCE PADS
Frank Oates, Birmingham, England, assignor to Southalls (Birmingham) Limited, Birmingham, England
Filed Aug. 25, 1969, Ser. No. 852,551
Claims priority, application Great Britain, Sept. 9, 1968, 42,770/68
Int. Cl. B32b 3/06, 3/10
U.S. Cl. 161—114 2 Claims

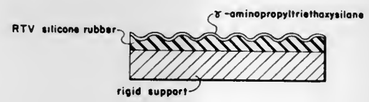
An incontinence pad comprising a moisture impervious backing sheet and a moisture pervious surfacing sheet, the

two sheets having layers of absorbent material therebetween, the layers of absorbent material being spiked before assembly



between the sheets to produce interlocking elements which serve to retain the layers together and the backing sheet being secured to the adjacent absorbent layer by adhesive.

3,620,895
CORRUGATED MICROPERMEABLE MEMBRANE
James L. Bailey, Dover, and Franklin A. Rodgers, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 3, 1969, Ser. No. 788,707
Int. Cl. B32b 3/00
U.S. Cl. 161—123 7 Claims



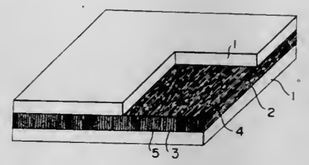
Corrugated porous membranes made of polyvinylidene fluoride may be satisfactorily molded using a silane modified room temperature vulcanizable silicone rubber mold.

3,620,896
CLAMPING TAPE
Paul J. Glasgow, Woodmere, N.Y., assignor to Glasgow Products, Inc., Woodmere, N.Y.
Filed July 31, 1968, Ser. No. 749,215
Int. Cl. B32b 3/28, 3/30
U.S. Cl. 161—123 12 Claims



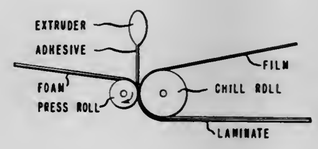
A multilamina tape in which a first lamina has the property of substantial contraction and a second lamina attached thereto has the property of negligible contraction resulting in a coiling of the tape during contraction of the first lamina. The first lamina may be heat-, chemical- or radiation shrinkable. A preferred embodiment employs a linearly prestretched thermoplastic with a memory for its normal configuration to which it shrinks upon being activated to reach its plastic state with heat. The second lamina is formable thereby assuming a coiled configuration and may be serrated to provide a controlled direction of coil, ease of coiling due to increased flexibility in the direction of coiling and transverse rigidity perpendicular to the direction of coiling. Adhesive—heat, solvent or pressure activated—on the innermost surface of the coiled configuration serves to bond the coil to itself and to items contained thereby to form a permanent wrap or tie.

3,620,897
CONVEYOR BELTS AND PROCESS FOR THEIR MANUFACTURE
Katsukiyo Tanimoto; Tamio Urakami, and Sotaro Itadani, all of Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan
Filed July 2, 1969, Ser. No. 838,502
Claims priority, application Japan, July 2, 1968, July 2, 1968; 43/46052, 43/56189
Int. Cl. B32b 25/10; B65g 15/34
U.S. Cl. 161—154 17 Claims



A conveyor belt consisting of a core body and rubber covers interposing said core, the core body being formed of a nonwoven sheet of staple fiber webs, the fibers constituting the nonwoven sheet being mutually entangled by needling and at least approximately 80 percent thereof being oriented in longitudinal direction of the belt by drawing of the nonwoven sheet in longitudinal direction, and the nonwoven sheet being sufficiently impregnated with an adhesive. Such conveyor belt is prepared by a process which comprises needling a web of 200–1,000 g./m.^{2} formed of crimped and 40–120 mm. long staple fibers at a needling density of 50–250 times/cm.^{2}; drawing the needled web in its longitudinal direction by at least 50 percent; impregnating the nonwoven sheet with an adhesive to produce a core body; and pressing rubber covers onto the top and bottom surfaces of such core body. The impregnation of the needled web with the adhesive may be conducted prior to drawing.

3,620,898
HEAT SHRINKABLE CUSHIONING MATERIAL
Roland G. Harris, Chadds Ford, Pa., and Joseph Henry Ryan, Jr., Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 31, 1968, Ser. No. 788,157
Int. Cl. B32b 3/12
U.S. Cl. 161—160 7 Claims



A heat shrinkable foam laminate comprising a low density foam sheet bonded to at least one heat shrinkable film.

3,620,899
DECORATIVE LAMINATE BACK COATED WITH A POLYVINYL ACETATE COMPOSITION
Peter Bernard Kelly, and Gene Edward Grosheim, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio
Filed Apr. 16, 1968, Ser. No. 721,589
Int. Cl. B32b 27/10, 27/30, 27/42
U.S. Cl. 161—162 6 Claims

An adherable surface coating composition consisting essentially of an aqueous latex dispersion of (A) a water dispersible polyvinyl acetate composition having a molecular weight between about 20,000 and 250,000, having a cold flow test value of from about 20 to 2,000, and having a particle size range from about 0.1 to 25 microns, containing from

about 0 percent to about 15 percent by weight, based on the weight of the polyvinyl acetate composition solids of a plasticizer, (B) from about 1 percent to about 10 percent, by weight, based on the weight of the polyvinyl acetate composition solids, of a protective colloid for (A), and (C) from about 0.1 percent to about 3 percent, by weight, based on the total weight of the dispersion of a water soluble starch and decorative laminates coated on their back sides with said coating composition.

3,620,900

PLASTIC LAMINATE STRUCTURE HAVING ELASTOMER PARTICLES IN ALTERNATE LAYERS

Ervin J. Williger, Tallmadge, Ohio, assignor to The General Tire & Rubber Company

Filed Oct. 11, 1968, Ser. No. 766,947
Int. Cl. B32b *5/16, 5/28*
U.S. Cl. 161—162 **6 Claims**

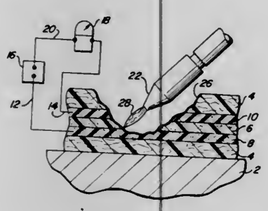
This invention concerns a laminate, possessing high reverse impact strength, comprising layers of thermosetting resin wherein alternate layers and the outermost layers, have incorporated therein a dispersion of elastomeric particles.

3,620,901

ELASTOMERIC LAMINATE COMPOSITION

Walter A. Hartz, Cuyahoga Falls; Daniel A. Meyer, Akron, and John G. Sommer, Jr., Cuyahoga Falls, all of Ohio, assignors to The General Tire & Rubber Company

Continuation-in-part of application Ser. No. 381,486, July 9, 1964, now abandoned. This application June 23, 1969, Ser. No. 835,675
Int. Cl. B32b *25/02, 25/12*
U.S. Cl. 161—162 **5 Claims**



A laminate is composed of alternate layers of electrically conductive and electrically nonconductive carbonizable, millable elastomeric compositions, wherein the difference in resistivity between adjacent alternate layers is at least 10^8 ohm-cm. The conductive layer contains a substantial amount of electrically conductive furnace carbon black while the elastomer in the nonconductive layer is compounded with a low moisture content silica. The laminate, when connected to an electric current and appropriate measuring means, can be embedded in and used for testing and evaluating insulations, particularly those used under ablative conditions.

3,620,902

LAMINATES PREPARED FROM C —C SUBSTITUTED PHENOL-FORMALDEHYDE RESINS

George J. Anderson, Wilbraham, and Ronald H. Dahms, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 588,310, Oct. 21, 1966, now abandoned , and a continuation-in-part of 605,531, Dec. 29, 1966, now abandoned , and a continuation-in-part of 676,062, Oct. 18, 1967, now abandoned , and a continuation-in-part of 676,039, Oct. 18, 1967, now abandoned , and a continuation-in-part of 676,043, Oct. 18, 1967, now abandoned. This application June 21, 1968, Ser. No. 738,798
Int. Cl. B32b *27/42*; **C08g** *5/08*
U.S. Cl. 161—165 **5 Claims**

Laminates made from phenolic resin impregnated cellulosic substrates. The phenolic resin used is made from a substituted phenol and formaldehyde. The substituted phenol is made by reacting a specific C_n through C_{13} mixture of carbocyclic compounds. The product laminates have an improved combination of water absorption, solvent-resistance, heat-resistance, electrical properties, and physical properties.

3,620,903

LIGHTWEIGHT NONPATTERNED NONWOVEN FABRIC

William Wallar Bunting, Jr.; Franklin James Evans, and David Ellis Hook, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 834,788, June 19, 1969, Pat. No. 3,508,308, and continuation-in-part of Ser. No. 712,070, Mar. 11, 1968, Pat. No. 3,493,462, continuation-in-part of application Ser. No. 584,627, Sept. 22, 1966, now abandoned, division of Ser. No. 208,136, July 6, 1962, abandoned. Filed Jan. 29, 1970, Ser. No. 6,963. The portion of the term of the patent subsequent to Feb. 3, 1987 has been disclaimed
Int. Cl. D04h *3/08*; **D06c** *1/06*
U.S. Cl. 161—169 **5 Claims**

Lightweight, nonpatterned, nonwoven fabrics suitable for use as wearing apparel are produced by treating fibrous sheet materials with fine, essentially columnar streams of liquid jetted from orifices under high pressure. A layer of fibrous material is supported on a nonpatterning surface and traversed with the streams to entangle the fibers in a manner which imparts strength and stability without the need for binder. A smooth fabric surface is provided by use of broken streams or by rapid oscillation of the streams.

3,620,904

HIGHLY CRIMPABLE POLYAMIDE COMPOSITE FILAMENTS

Yoshio Tamura, and Satoshi Ando, both of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa, Milan, Italy

Continuation-in-part of application Ser. No. 671,217, Sept. 28, 1967, now Patent No. 3,551,277. This application July 23, 1970, Ser. No. 57,771
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **13 Claims**

Production of polyamide composite filament having high crimpability, one component of which is polycapramide and the other component of which is a copolyamide consisting of 0.01 to 5 percent by weight of nylon salt composed of a dicarboxylic acid and a polyfunctional diamine having the general formula

$H_2N-(CH_2)_n-R(CH_2)_nNH_2$

wherein R is $>C \quad O$ and n is 3 to 11, 3 to 20 percent by weight of another nylon salt and 75 to 95 percent by weight of polycapramide forming components.

3,620,905

OPTICALLY CLEAR THERMOPLASTIC POLYURETHANES

Leo Ahramjian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 21, 1969, Ser. No. 868,235
Int. Cl. B32b *17/10*
U.S. Cl. 161—190 **11 Claims**

Colorless, optically clear, thermoplastic polyurethanes prepared from diisocyanato-dicyclohexylmethane containing 10–100 percent trans-trans 4,4′-methylenebis(cyclohexyl isocyanate) (PICM), a polyether or polyester glycol having a molecular weight of 500–3,000 and a diol having a molecular weight below 250. The low molecular weight diol is reinforcing when the isocyanate contains 30 percent or less trans-trans PICM and nonreinforcing when the isocyanate contains greater than 30 percent trans-trans PICM. The polyurethanes are particularly suitable for use in laminates for safety and bullet-proof glass.

3,620,906

GLASS FIBER LAMINATES AND METHOD

George John Hannes, Maumee, Ohio, assignor to Johns-Manville, FiberGlass Inc., c/o Prentice Hall Corporation System, Inc., Cleveland, Ohio

Continuation of application Ser. No. 338,484, Jan. 17, 1964, now abandoned , which is a continuation of application Ser. No. 778,381, Dec. 5, 1958, now abandoned. This application Feb. 25, 1970, Ser. No. 14,221
Int. Cl. B32b *17/10, 31/08*
U.S. Cl. 161—203 **13 Claims**

A panel for use as an acoustical panel or automobile headliner comprising a combination of resilient body of resin-bonded fiber and a covering decorative surfacing cloth united together with an intermediate thermoplastic sheet, and a method of forming such panel comprising superimposing the said components upon each other with a thermoplastic sheet intermediate thereof and compressing the assembly while heating to fuse the intermediate thermoplastic sheet to each of said body of resin binder with fiber and covering decorative surfacing cloth.

3,620,907

LAMINATE WITH LAYERS OF POLYIMIDE AND POLYAMIDE

Edward L. Yuan, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1969, Ser. No. 873,123
Int. Cl. B32b *27/06*
U.S. Cl. 161—227 **8 Claims**

A laminate useful for electrical insulation comprising layers of:

A. a fibrous aromatic polyamide thermally stable at 180° C.; and

B. a polyimide; and

C. situated between layers A. and B., a precursor of a polyimide, said precursor having been sufficiently converted into a polyimide to cause layers A. and B. to be adhesively secured to each other.

3,620,908

COLD PUNCHABLE CRESYLIC LAMINATES

Ronald H. Dahms, Springfield, and George J. Anderson, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed June 21, 1968, Ser. No. 738,794
Int. Cl. B32b *27/10, 27/30, 27/42*
U.S. Cl. 161—248 **7 Claims**

Impregnated cellulosic sheets and laminates which are cold punchable and have good electrical properties. The sheets are formed of cellulosic fibers impregnated with a mixture of a carboxylated alkadiene interpolymer and a low molecular weight phenol-formaldehyde resin and then over treated with a cresol-formaldehyde resin. The laminates are made from suitably advanced such impregnated sheets by first stacking and thermosetting under appropriate heat and pressure.

3,620,909

METHOD FOR RECLAIMING PULP FROM WASTE PAPERS

C. Roy Gleason, Chicago, Ill., assignor to Waste Paper Reclamation Corporation, Chicago, Ill.

Filed May 1, 1970, Ser. No. 33,988
Int. Cl. D21b *1/08, 1/32*; **D21c** *5/02*
U.S. Cl. 162—8 **19 Claims**

The reclamation of purified and reusable pulps from various types of waste papers by first shredding the paper into fine pieces, boiling the shredded paper in a chemical solution containing sodium hydroxide, sodium carbonate, sodium or ammonium phosphate and sodium borate, water washing the chemicals from the cooked paper and then bleaching the pulp with a chemical bleach at elevated temperature.

3,620,910

PROCESS FOR THE PREPARATION OF GROUNDWOOD PULP FROM A DICOTYLEDONOUS PLANT

Walter P. Lawrence, Hamilton, Ohio, assignor to U. S. Plywood-Champion Papers, Inc., New York, N.Y.

Filed June 23, 1969, Ser. No. 835,787
Int. Cl. D21c *3/02*
U.S. Cl. 162—83 **7 Claims**

There is disclosed a process for the preparation of groundwood or mechanical pulp from a dicot material such as kenaf. The process as applied to kenaf comprises treating chopped kenaf at about atmospheric pressure and ambient temperature with an aqueous solution of alkaline sulfite and sodium carbonate at a pH of from about 10 to 11 for about 1–30 minutes, and thereafter mechanically refining said material to form a pulp.

3,620,911

WET DEPITHING OF A NONWOODY LIGNOCELLULOSIC PLANT MATERIAL

Henrik J. Eklund, Pittsfield, Mass., and Alfred J. Seaquist, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed July 3, 1969, Ser. No. 839,067
Int. Cl. D21c *5/00*
U.S. Cl. 162—96 **14 Claims**

A method of preparing a paper pulp from a fibrous nonwoody lignocellulose plant material by first wetting said material, wet depithing said plant material by subjecting a slurry of the plant material to a shredding operation, further diluting the slurry of released pith and fiber, separating the pith from the fiber, dewatering the resultant fiber slurry, impregnating said fibers by addition of a base such as an alkali metal hydroxide solution, and chemically digesting the resultant liquor containing said fibers by cooking at a relatively high temperature and under pressure.

3,620,912

MERCERIZATION OF CELLULOSIC MATERIALS USING A SOLUTION CONTAINING A MERCERIZING CONCENTRATION OF ALKALI AND A BARIUM COMPOUND

Andrew Beelik, Shelton, and Jim D. Wilson, Olympia, both of Wash., assignors to International Telephone and Telegraph Corp., New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,340
Int. Cl. D21c *3/02*
U.S. Cl. 162—90 **9 Claims**

A minor amount of barium compound is incorporated in a mercerizing concentration of alkali to form a solution. A cellulosic material is treated with this solution to produce a high yield of mercerized product. This product contains a substantial amount of alkali-soluble, short-chain polysaccharides.

3,620,913

A PROCESS OF MAKING PAPER AND PAPER MADE THEREFROM USING STARCH ANTHRANILATE

Stanley Marshall Parmerter, Wheaton, Ill., assignor to CPC International Inc., Englewood, Calif.

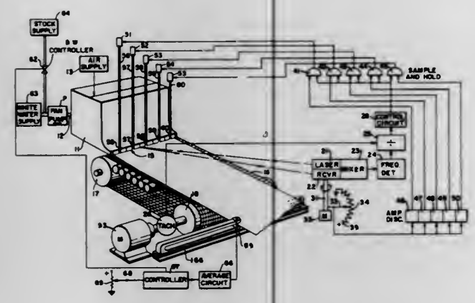
Continuation-in-part of application Ser. No. 676,614, Oct. 19, 1967, now abandoned. This application Mar. 3, 1970, Ser. No. 16,245
Int. Cl. D21b *3/28*
U.S. Cl. 162—175 **8 Claims**

A method of improving the properties of treated paper by addition of starch anthranilate to paper pulp and paper made therefrom. More particularly, the invention covers the use of starch anthranilate in improving the retention of inorganic filler and fiber fines in the processing of paper. Various other properties of the formed paper article are also improved such as dry strength and tensile strength.

3,620,914
HEADBOX JET VELOCITY MEASURING SYSTEM AND METHOD

Antoni A. Rocheleau, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Apr. 28, 1967, Ser. No. 634,566
Int. Cl. D21f *1/02*
U.S. Cl. 162—198 17 Claims

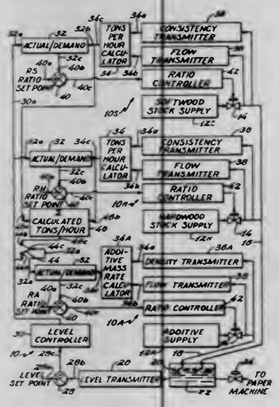


Disclosed is a system for measuring the velocity of a jet emerging from a headbox in a paper manufacturing system. Jet velocity is determined by measuring the Doppler shift frequency caused by the jet on a laser beam of coherent electromagnetic energy. The velocity of the jet is compared with the velocity of a Fourdrinier wire which receives the jet, whereby there is derived a signal for enabling a predetermined relative velocity between the jet and the wire to be automatically or manually maintained. The laser beam is scanned across the width of the jet to determine differences in the jet velocity as a function of width. Consistency of paper sheet basis weight is maintained by controlling the fiber liquid ratio of the mixture fed to the headbox in response to nuclear gauge measurements of the sheet.

3,620,915
FIBROUS STOCK BLENDING CONTROL SYSTEM

Marion A. Keyes, IV, South Beloit, Ill.; John A. Gudaz, Beloit, Wis., and Yuan-Hao Tsing, Austin, Tex., assignors to Beloit Corporation, Beloit, Wis.

Filed Dec. 19, 1968, Ser. No. 785,307
Int. Cl. D21f *1/08*; G05d *11/00*
U.S. Cl. 162—253 15 Claims

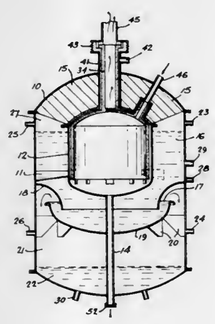


A system for controlling the composition of furnish in a papermaking mixing tank wherein a plurality of stocks are blended. A level transmitter generates a signal indicating the level of furnish in the mixing tank. This signal is compared in a comparator with a set point for the furnish level, any difference therebetween being indicative of a demand signal. The consistency and flow of each stock are measured at a stock valve connecting the respective stock supply with the mixing tank. A tons-per-hour calculator utilizes the consistency and stock flow measurements to derive a signal which is then ratioed with the demand signal. This ratio is then compared with a ratio set point, the difference therebetween controlling the stock valve. Additives may be controlled as above. Alternatively, density and flow of additive supply are utilized in an additive mass rate calculator to derive a mass rate signal which is ratioed with the total amount of fiber stock, this ratio then being compared with an additive ratio set point to provide an additive control signal.

3,620,916
BED NUCLEAR REACTOR

John W. Hilborn, Chalk River, Ontario; Colin G. Lennox, Pinawa, Manitoba, and Wilson G. Mathers, Pinawa, Manitoba, all of Canada assignors to United States Atomic Energy Commission under the provision of 42 U.S.C. 2182

Filed Apr. 21, 1969, Ser. No. 817,955
Int. Cl. G21c *1/16*, *19/02*
U.S. Cl. 176—32 4 Claims



A cavity-type reactor moderated by a heavy water reflector-moderator in an outer shell. The reactor is contained in a core shell which is fitted with a hollow inverted liner spaced from the core shell to form an annular passageway down which incoming feed water is passed. Fuel inside the liner generates steam that passes out through the top of the shells.

3,620,917
METHOD OF OPERATING A RADIOISOTOPE RADIATION SOURCE

Robert Flaherty, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 7, 1969, Ser. No. 874,749
Int. Cl. G21c *19/00*
U.S. Cl. 176—39 4 Claims

A method for conserving radioisotopic fuel such as cobalt-60 comprising initially loading a radiation source with a plurality of fuel elements wherein the outputs of the elements are of a decreasing succession with each element decaying to the original power output of a succeeding element in a uniform time interval. After each uniform time interval the least powerful element is replaced with an element having the same output as the original most powerful element. The replaced element is reprocessed by separating the decay products such as nickel-60 from the radioisotopic fuel.

3,620,918
METHOD FOR THE BIOCHEMICAL ISOLATION OF I-MENTHOL

Tatsuo Moroe, Tokyo; Satohiko Hattori, Kanagawa; Akira Komatsu, Tokyo, and Yuzo Yamaguchi, Kanagawa, all of Japan, assignors to Takasago Perfumery Co. Ltd., Tokyo, Japan

Filed Nov. 21, 1969, Ser. No. 878,913
Claims priority, application Japan, Nov. 22, 1968, 43/85227
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 7 Claims

Method for the biochemical isolation of l-menthol. Specifically, an improved method for the optical resolution of racemic menthol utilizing an enzyme, carboxylic ester hydrolase, which is produced by micro-organism belonging to the class of Candida, Saccharomyces, Hansenula, Rhodotorula, Torulopsis, Schizosaccharomyces, Pichia, Sporobolomyces, Debaryomyces, Nadsonia, Trichosporon, Brettanomyces, and Cryptococcus.
The l-menthol may be utilized in perfumes, medicines, etc.

3,620,919
EXTRACTION OF STEROIDAL MATERIALS FROM VEGETABLE MATERIALS

Roland Hardman, Bradford-on-Avon, England, assignor to National Research Development Corporation, London, England

Filed Aug. 12, 1968, Ser. No. 751,760
Claims priority, application Great Britain, Aug. 30, 1967, 39,765/67
Int. Cl. C12b *1/00*
U.S. Cl. 195—7 23 Claims

The yield of recoverable steroidal saponins and sapogenins from steroidal sapogenin affording vegetable materials is increased by treating the vegetable material with a regulator prior to recovery of the steroidal material. The regulator is a substance capable of modifying normal plant metabolism or normal plant growth characteristics and the chemically diverse regulators are selected from naturally occurring and synthetic plant growth regulators including auxins, hormones and herbicides, sulphydryl inhibitors, regulators of steroid metabolism or lipid metabolism, naturally occurring and racemic α-amino acids, vitamins of the B group, rutin and water-soluble derivatives of vitamin A and tocopherol, growth factor analogues including vitamin and amino acid antimetabolites and penicillin, griseofulvin and chloramphenicol antibiotics. Diosgenin is recovered from species of *Dioscorea*, *Trigonella* and *Balanites* by incubating the vegetable material with regulator in an aqueous medium for up to 72 hours, hydrolyzing the incubated product with hydrochloric acid and solvent extracting sapogenins from the hydrolysate. Yields are further increased by also adding steroid precursors or C_{10} to C_{36} saturated hydrocarbons during incubation.

3,620,920
PROCESS FOR THE MANUFACTURE OF PHYSIOLOGICALLY ACTIVE COMPOUNDS

Giancarlo Lancini, Pavia, and Piero Sensi, Milan, both of Italy, assignors to Lepetit S.p.A., Milan, Italy

Filed May 15, 1967, Ser. No. 638,584
Claims priority, application Great Britain, May 18, 1966, 22,168/66
Int. Cl. C12d *9/00*
U.S. Cl. 195—28 6 Claims

Producing 2-nitroimidazoles, such as azomycin, by oxidizing the corresponding 2-aminomidazole with Streptomyces eurocidicus var. nitroxydans.

3,620,921
PROCESS FOR PRODUCING 5'-INOSINIC ACID AND 5'-GUANYLIC ACID NUCLEOTIDES

Shigeo Abe, Tokyo; Akira Furuya, Machida-shi, and Ryo Okachi, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1968, Ser. No. 713,320
Claims priority, application Japan, Mar. 18, 1967, 42/16628
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 15 Claims

A process for simultaneously producing 5'-inosinic acid and 5'-guanylic acid nucleotides such as 5'-guanosine-monophosphate, 5'-guanosine-diphosphate and 5'-guanosine-triphosphate by fermentation which comprises culturing mutant strains of micro-organisms having suitable properties under aerobic conditions in an aqueous nutrient medium containing 5'-xanthylic acid. The products are useful, for example, as flavoring agents.

3,620,922
PROCESS FOR PRODUCING INOSINE

Shigeo Abe, Tokyo, and Akira Furuya, Machida-shi, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1968, Ser. No. 777,892
Claims priority, application Japan, Dec. 28, 1967, 42/83658
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N 4 Claims

A process for producing inosine by fermentation which comprises culturing a biotin-requiring strain of Brevibacterium ammoniagenes or Corynebacterium glutamicum under aerobic conditions in an aqueous nutrient medium. Strains advantageously employed are Brevibacterium ammoniagenes ATCC 21295 and Corynebacterium glutamicum ATCC 21296.

3,620,923
URATE OXIDASE AND PROCESS FOR THE PRODUCTION THEREOF

Pierre Laboureur, Neuilly Seine; Marcel D. P. Brunaud, Paris, and Claude Langlois, Montrouge, all of France, assignors to Societe D'Etudes Et D'Applications Boichimiques Jouj-en-Josas, Yvelines and Etablissements Clin-Byla Paris: Ugine-Kuhlmann, Paris, France

Filed Mar. 25, 1968, Ser. No. 715,623
Claims priority, application France, Mar. 29, 1967, Mar. 29, 1967, 100,672, 100673
Int. Cl. C07g 7/02
U.S. Cl. 195—66 R 13 Claims

The invention relates to a new enzyme or urate oxidase which is very active in promoting oxidation of uric acid to allantoin. The urate oxidase is produced by fermentation under aerobic conditions of nutrient media containing sources of assimilable carbon, assimilable nitrogen and uric acid which have been seeded with suitable cultures of bacteria, fungi or yeasts. Isolation and purification of the urate oxidase is described.

3,620,924
PRODUCTION OF ACID-ACTIVE LACTASE

Muerner S. Harvey, Kowloon, Hong Kong, and Frederick W. Viebrock, Staten Island, N.Y., assignors to Baxter Laboratories Inc., Morton Grove, Ill.

Filed Apr. 1, 1969, Ser. No. 812,347
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R 16 Claims

The production of an acid-active, acid-stable lactase enzyme preparation by cultivating *Aspergillus Niger* under aerobic fermentation conditions, extracting the growth product with water, adsorbing the extract with a hydrated aluminum silicate adsorbent at a pH of 3 to 6 and releasing an active lactase component therefrom by adjusting the pH to 7 to 8.

3,620,925
PROCESS FOR PURIFYING L-ASPARAGINASE

Kazuo Mochizuki, Sunto-gun, Shizuoka-ken; Hiroyasu Otsuka, Sunto-gun, Shizuoka-ken; Hideo Katumata, Gotenbeshi; Tetuo Oka, Machida-shi, and Masao Tanaka, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed June 20, 1969, Ser. No. 835,261
Claims priority, application Japan, June 24, 1968, 43/43396
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 A 15 Claims

The antitumor activity of L-asparaginase produced from the cultured cells of micro-organisms belonging to the genus

Serratia is retained by a purification process wherein, as one of the steps in the purification procedure, the enzymatic liquid is heated to a temperature of at least 60° C., preferably 60°–70° C., thereby denaturing and rendering ineffective the L-asparaginase-inactivating factors contained in the liquid. A more selective destruction of the inactivating factors can be obtained by adding L-asparagine to the enzymatic liquid.

3,620,926
PROCESS FOR THE ENRICHMENT OF L-ASPARAGINASE

Otto Wagner; Klaus Bauer; Wilfried Kaufmann; Erich Rauenbusch; Alfred Arens, and Eckart Irion, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 23, 1969, Ser. No. 887,755
Claims priority, application Germany, Dec. 24, 1968, P 18 16 900.1
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 A **4 Claims**

L-asparaginase is obtained in concentrated purified form by fractional precipitation of an aqueous solution thereof with low molecular weight solvents, specifically diols of 4 to 8 carbon atoms, such as 2-methyl-pentane-diol-(2,4) and including such diols wherein one hydroxyl group is alkylated, for example 3-methoxybutanol.

3,620,927
CULTIVATION OF MICRO-ORGANISMS ON HYDROCARBONS

William W. Leathen, Wexford, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 645,470, June 12, 1967, now abandoned. This application June 26, 1969, Ser. No. 836,945
Int. Cl. C12c *1/00*
U.S. Cl. 195—82 **13 Claims**

Protein concentrates are obtained in a process which includes:

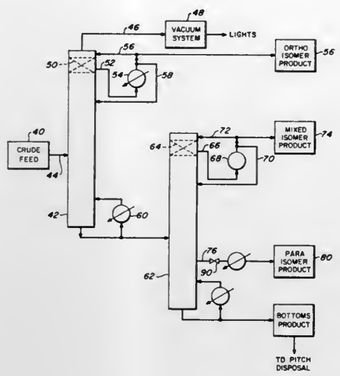
1. Cultivating a hydrocarbon-consuming micro-organism in the presence of an aqueous nutrient medium, a hydrocarbon and a gas containing free oxygen;
2. recovering from "1." a micro-organism containing a small amount of hydrocarbon as a contaminant;
3. contacting the hydrocarbon-contaminated micro-organism from "2." at a temperature below that which supports active fermentation of the micro-organism with an aqueous nutrient medium and a gas containing free oxygen in the absence of added hydrocarbon; and
4. recovering from "3." a micro-organism substantially free from contaminating hydrocarbon, the micro-organism thus recovered having a higher protein content that that of the hydrocarbon-contaminated micro-organims.

3,620,928
METHOD OF SEPARATING ISOMERS OF MONONITROTOLUENE

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed July 13, 1970, Ser. No. 54,207
Int. Cl. B01d *3/34, 3/00;* **C07c** *79/10*
U.S. Cl. 203—6 **11 Claims**

A method of separating isomers of mononitrotoluene by fractional distillation without need for crystallization equipment. Two embodiments are described, one using a single distillating column that is operated in a two-pass blocked out



fashion, and the other using two series-connected distillation columns.

3,620,929
PROCESS FOR SEPARATING ORTHO-ISOMERS FROM TOLYENE DIISOCYANATE MIXTURES

Ehrenfried H. Kober, Hamden, and Wilhelm J. Schnabel, Branford, both of Conn., assignors to Olin Corporation

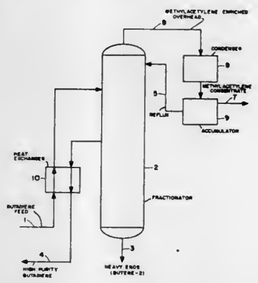
Filed Oct. 31, 1968, Ser. No. 772,417
Int. Cl. B01d *3/34;* **C07c** *119/04*
U.S. Cl. 203—38 **5 Claims**

Removal of ortho-isomers from tolylene diisocyanate mixtures is effected by reacting said mixtures with a primary aromatic amine and subsequently distilling to recover nonvicinal tolylene diisocyanate.

3,620,930
REMOVAL OF METHYL ACETYLENE FROM BUTADIENE

Lloyd D. Tschopp, Humble, and Rudolph C. Woerner, Houston, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Oct. 10, 1969, Ser. No. 865,272
Int. Cl. B01d *3/16*
U.S. Cl. 203—87 **5 Claims**



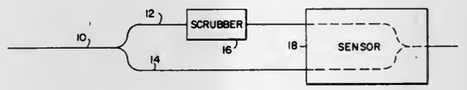
Methyl acetylene can be almost eliminated from a butadiene stream by fractionation and essentially all of the butadiene less the methyl acetylene recovered by carrying out the fractionation so that butadiene product stream is taken off the fractionator below the feed but above the bottom of the fractionator. The methyl acetylene is stripped out of the feed and concentrated in the upper portion of the fractionator and taken overhead in a butadiene stream from which it is separated, the butadiene stream being returned to fractionator in the methyl acetylene enriching portion of the

fractionator. A feed stream containing 90.11 mole percent butadiene, 0.0191 mole percent butene-1, 9.85 mole percent butene-2, 113 p.p.m. vinyl acetylene and 135 methyl acetylene can be fractionated to recover 99.5 percent of the feed as product with essentially the same component distribution except for methyl acetylene which is reduced to 1.23 p.p.m. This reduction in acetylene content improves the ultimate butadiene product for use in solution polymerizations to produce copolymer rubbers.

3,620,931
GAS ANALYSIS METHOD

Philip Reichner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1968, Ser. No. 774,906
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **7 Claims**

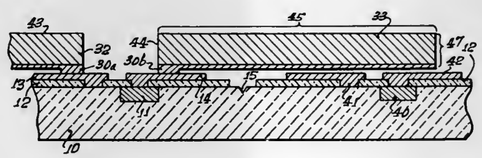


A method and apparatus for continuously measuring the proportion of one gas in a mixture of gases by selectively removing the one gas and thereafter measuring the partial pressure change in one or more of the remaining constituent gases brought about by removal of the one gas and thereby determining the proportion of the one gas in the original mixture.

3,620,932
BEAM LEADS AND METHOD OF FABRICATION

Joan M. Crishal, Torrance, and Edward J. Rice, Los Angeles, both of Calif., assignors to TRW Semiconductors Inc., Lawndale, Calif.

Filed May 5, 1969, Ser. No. 821,867
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **19 Claims**



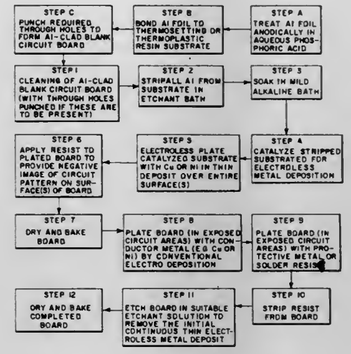
A beam lead for a semiconductor device and a method of fabricating the beam lead thereon. A semiconductor wafer is provided, a plurality of semiconductor devices being disposed thereon, with a line being scribed between the semiconductor devices. Element images are formed upon the devices by photolithographic techniques and a metal layer deposited on the wafer making contact with the metal contacts of the devices. Thick metal leads are deposited upon the metal layer and an etchant is used to isolate the beam leads after which all photosensitive material is stripped away.

3,620,933
FORMING PLASTIC PARTS HAVING SURFACES RECEPTIVE TO ADHERENT COATINGS

John J. Grunwald, New Haven; Eugene D. D'Ottavio, Thomaston; Harold L. Rhodenizer, Bethlehem, and Michael S. Lombardo, Waterbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Dec. 31, 1969, Ser. No. 889,472
Int. Cl. C23b *5/48;* **B44d** *1/18*
U.S. Cl. 204—15 **11 Claims**

Plastic parts are formed against an anodically treated aluminum surface by molding, laminating, etc., whereby the surface of the formed part after removal of or separation from the aluminum has a high-energy level and is receptive to adherent coatings of paint or metal plate. In particular, in addition to preparing plastic surfaces for acceptance and adhesion of paints, inks or the like, printed circuit boards and other metal-plated plastic substrates are prepared by first bonding anodically treated aluminum foil to a plastic substrate to provide a sacrificial cladding on the substrate, then stripping the aluminum chemically from the substrate, catalyzing the stripped surface and depositing a conductor metal plate thereon by electroless and/or electrolytic deposition, after application of a resist pattern of the desired circuit in the case of printed circuit boards.



3,620,934
METHOD OF ELECTROLYTIC TINNING SHEET STEEL

Joseph Endle, Thionville, France, assignor to Societe A Responsabilite Limitee Centre de Recherches du Fer Blanc, Thionville, France

Filed July 19, 1967, Ser. No. 654,433
Claims priority, application France, Aug. 8, 1966, 72,432
Int. Cl. C23b *1/00*
U.S. Cl. 204—34 **12 Claims**

A method of electrolytic tinning sheet steel in which a sheet of steel is subjected to degreasing in an alkaline bath, pickling in an acid bath in which the sheet steel is polarized as the cathode, preliminary coating with metal, tinning in an acid bath and treating to obtain the fusion and cooling of the tin deposited on the sheet. The method makes it possible to produce tinplate that has a layer of $FeSn_2$ which is continuous by virtue of very dense seeding and which thus has improved corrosion resistance.

3,620,935
PROCESS OF BLACK CHROMIUM PLATING

Karl S. Willson, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Continuation-in-part of application Ser. No. 610,035, Jan. 18, 1967, now abandoned. This application Nov. 24, 1969, Ser. No. 879,518
Int. Cl. C23f *17/00;* **C23b** *5/50, 5/06*
U.S. Cl. 204—38 B **20 Claims**

The process and the improved black chromium plating produced thereby comprising electroplating chromium from an aqueous bath containing hexavalent chromium, trivalent chromium and a lower aliphatic carboxylic acid such as acetic acid. The hexavalent chromium compound is present in a range equivalent to 150–425 grams per liter of chromic acid anhydride; the trivalent chromium is present in an amount 8–30 grams per liter; and the total carboxylic acid, in both acid and carboxylate form, is in the range of 170–350 grams per liter of acid. The electroplating is conducted at 60–85° F. and with a cathode current density of 75–1000 amperes per sq. ft. The trivalent chromium concentration given above not only permits reproducable lustrous black chromium plating but also greatly decreases the break-in period for the bath. A further addition of ferric ions of up to 25 grams

per liter further decreases or completely eliminates the break-in period and also increases the maximum operating temperature of the plating bath to 105° F. When iron is utilized, the combined concentration of trivalent chromium and iron should not exceed 35 grams per liter.

3,620,936
ELECTROPLATING A DECORATIVE CHROMIUM-PLATING RESISTANT TO CORROSION
Gaetan De Coye De Castelet, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France
Filed Mar. 30, 1967, Ser. No. 626,938
Claims priority, application France, Apr. 13, 1966, 57477
Int. Cl. C23b *5/50, 5/08*
U.S. Cl. 204—41 **5 Claims**

A method for coating by electrolysis the surface of objects with a coating of chromium having a microfissured structure, in which the objects are subjected before chromium-plating to an electrolytic treatment for the purpose of depositing an intermediate layer of nickel effected in such manner that it becomes fissured and causes fissuration of the deposit of chromium during the chromium-plating operation, the crackle-finish nickel-plating being carried out by means of an electrolyte comprising a constituent selected from the group of strong acid nickel salts constituted by the chloride, sulfamate and fluoborate of nickel, characterized by the fact that the said electrolyte contains a second constituent formed by at least one alkaline salt of a strong acid.

3,620,937
METHOD AND ELECTROLYTE FOR ELECTROPLATING BRASS
John A. Lisowski, and Frank B. Lisowski, both of Newport, Mich., assignors to Natural Products Company, Newport, Mich.
Filed Aug. 11, 1969, Ser. No. 849,157
Int. Cl. C23b *5/36, 5/46*
U.S. Cl. 204—44 **6 Claims**

An electrolyte and process for electrodeposition of brass from an aqueous alkaline cyanide bath containing zinc cyanide, copper cyanide and an additive of cyclohexanone resulting in a uniform color of deposit and elimination of streaks and nonuniformity in color.

3,620,938
METHOD FOR OBTAINING A BRIGHT ZINC COATING BY ELECTRODEPOSITION AND THE BATH USED THEREFOR
James A. Von Pless, North Syracuse, and Richard P. Cope, Jr., New City, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.
Filed Dec. 11, 1968, Ser. No. 783,100
Int. Cl. C23b *5/10, 5/46*
U.S. Cl. 204—55 **16 Claims**

A brightening composition and a process for electrodepositing of zinc is described herein. The brightening composition is the reaction product of an aromatic aldehyde and an amine of the formula H_2NR wherein R is a saturated aliphatic hydroxyl radical having from one to four carbon atoms. In particular, bright deposits are achieved when an amide or substituted amide is intermixed with the reaction product of the aromatic aldehyde and the amine.

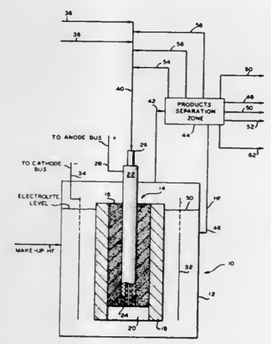
3,620,939
COATING FOR MAGNESIUM AND ITS ALLOYS AND METHOD OF APPLYING
Ocke C. Fruchtnicht, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Mar. 17, 1969, Ser. No. 807,923
Int. Cl. C23b *9/06*
U.S. Cl. 204—56 M **12 Claims**

The surface of magnesium and its alloys is provided with a protective coating, both decorative and resistant to corrosion, when subjected to an ammonium bifluoride and an ammonium metavanadate aqueous solution which preferably contains in addition water-soluble organic compounds, water-soluble permanganate ions, or water-soluble nitrate ions. The coating is conveniently and efficiently applied to the metal which is the anode in the coating solution.

3,620,940
METHOD OF INDUCING POLARIZATION OF ACTIVE MAGNESIUM SURFACES
Reyburn Wick, Southampton, Pa., assignor to The United States of America as represented by the Secretary of the Army
Filed May 12, 1970, Ser. No. 36,665
Int. Cl. C23b *9/00, 5/48*
U.S. Cl. 204—56 M **8 Claims**

Methods for surface polarizing magnesium and its alloys; thus permitting large pieces to be readily anodized using only nominal electric power. Low adhesion, easily strippable film strips are adhered to the pieces, the strips providing areas of exposed metal which allow a high current density to be built up thereat which produces vigorous electrolytic action for progressively peeling off the films for subsequent anodization of the pieces.

3,620,941
ELECTROCHEMICAL FLUORINATION OF 1,2-DICHLOROETHANE AND 1,1,2-TRICHLOROETHANE
Forrest N. Ruehlen, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 24, 1970, Ser. No. 13,680
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 **8 Claims**

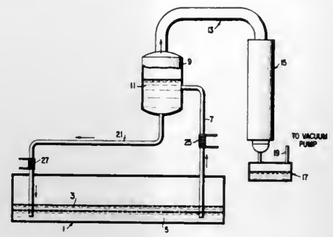


In the electrochemical fluorination of 1,2-dichloroethane and 1,1,2-trichloroethane feedstocks, the selectivity to the products 1,2-dichlorotetrafluoroethane and 1,1,2-trichloro-1,2,2-trifluoroethane is increased by charging a mixture of said feedstocks to the electrochemical fluorination cell instead of charging said feedstocks to the cell separately.

3,620,942
NATURAL CIRCULATION OF CATHODE METAL OF ELECTROLYTIC CELL
George G. Day, Maderia Beach, Fla., and Charles F. Bonilla, Tenafly, N.J., assignors to F. Barry Haskett, New York, N.Y.
Filed Mar. 19, 1969, Ser. No. 808,404
Int. Cl. C22d *3/06, 3/02*
U.S. Cl. 204—68 **7 Claims**

A natural circulation process for the removal of the product of electrolysis from a flowing molten metal cathode wherein such removal of the product of electrolysis is achieved through the flash vaporization of the metal of the electrolyte salt in a vacuum still with recirculation of the cathode metal to the electrolytic cell by gravity due to increased density associated with the vaporization of the metal of the electrolyte salt and the cooling of the cathode metal

from the flash vaporization. The process is particularly applicable to the separation of sodium from a lead-sodium



system, the sodium being separated containing approximately 0.1–1 percent lead impurity.

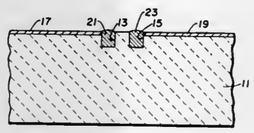
3,620,943
BLACK ANTIFOULING COATING COMPOSITIONS
John D. White, Little Falls, N.J., assignor to Celanese Coatings Company, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,887
Int. Cl. C23f *13/00;* **B63b** *59/00*
U.S. Cl. 204—148 **8 Claims**

A method for preventing the growth of white calcareous deposits on black antifouling coated surfaces of marine vessels which are protected from corrosion by sacrificial metal anodes by applying to the surface a coating containing black iron oxide and copper compounds.

3,620,944
PROCESS OF PURIFYING WATER BY IRRADIATING IT
Keiko Tanito, Sakai-shi; Norio Kato, Sakai-shi; Shosaku Kinoshita, Sakai-shi; Masahiro Kinoshita, Asahi-ku, Osaka, and Tsuyoshi Sunada, Amagasaki-shi, all of Japan, assignors to Osaka Prefecture, Osaka, Japan
Filed Mar. 12, 1968, Ser. No. 712,386
Claims priority, application Japan, Sept. 9, 1967, 42/58071
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 **7 Claims**

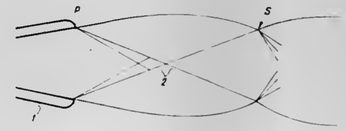
A process for purifying polluted water by irradiating it with ionizing radiation. Water polluted with parathion, phenyl mercuric acetate or methyl mercuric chloride can be purified by irradiating it with ionizing radiation. The amount of irradiations required depends upon the concentration of polluted water to be purified. It is required about 1,000,000 rads to reduce such a high concentration of polluted water as industrial waste water; about 100,000 to 500,000 rads to reduce a medium concentration of polluted water such as sewerage; about 5,000 to 50,000 rads to reduce a low concentration of polluted water such as drinking water.

3,620,945
METHODS OF MAKING A COMPOSITE DIELECTRIC BODY
David R. Sivertsen, Dallas; Olin B. Cecil, Richardson, and Rolf R. Haberecht, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 588,663, Sept. 29, 1966, abandoned.
Filed Jan. 19, 1970, Ser. No. 4,445
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 H **9 Claims**



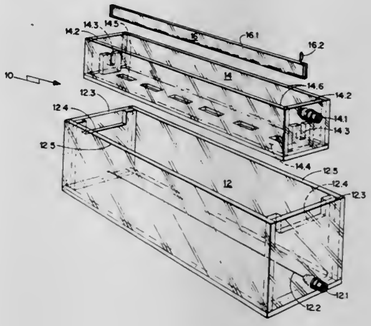
A method for altering the dielectric constant of a dielectric body by a bombarding of a region of the body with an electron beam for a sufficient length of time to alter the dielectric constant of the body. Exposure of the body to the electron beam is terminated before the region becomes conductive, and the dielectric body exposed to the beam is preferably monocrystalline in nature.

3,620,946
METHOD AND APPARATUS FOR CHEMICALLY TRANSFORMING GASES
Michel Denis, Marly le Roi, and Maurice Barillot, Verneuil en Halatte, both of France, assignors to Institut De Recherches De La Siderurgie Francaise, St. Germain en Laye and Societe Chimique Des Charbonnages, Paris, France
Filed June 4, 1969, Ser. No. 830,320
Claims priority, application France, June 6, 1968, 153,935
Int. Cl. C07b *29/06;* **C07c** *5/18;* **B01k** *1/00*
U.S. Cl. 204—171 **4 Claims**



In a system in which a gas in a supersonic stream is chemically transformed by a principal electric discharge, an auxiliary discharge first ionizes the gas in the stream.

3,620,947
ELECTROPHORETIC SYSTEM
Robert Carter Allen, and Dorothy J. Moore, both of Oak Ridge, Tenn., assignors to Ortec Incorporated, Oak Ridge, Tenn.
Filed Apr. 10, 1969, Ser. No. 815,145
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **6 Claims**

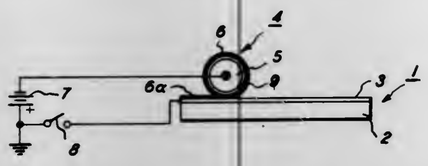


An electrophoretic system for concentrating and separating charged particles and for improving the resolution of the separated particle laminae that utilizes a buffer composition which will provide a ratio of leading-trailing ion boundary to the fastest particle mobility that approaches unity, during the period of free electrophoresis.

3,620,948
PHOTOELECTROPHORETIC IMAGING SYSTEM EMPLOYING PRELIMINARY ELECTROPHORETIC DISPOSITION OF THE IMAGING SUSPENSION
Arthur Walsh, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 3, 1968, Ser. No. 764,718
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 **14 Claims**

An electrophoretic imaging process is disclosed whereby

an useable positive image may be directly produced from negative input. The light-sensitive imaging suspension is electrophoretically introduced into the electrode configuration prior to light exposure in the presence of an electric field.



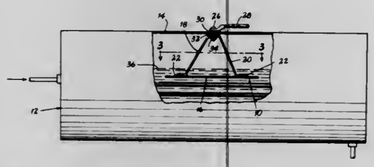
3,620,949
METAL PRETREATMENT AND COATING PROCESS
Alexander Robley Morrison, Caulfield, and Heinz Dieter Herrmann, Boronia, both of Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia
Filed Mar. 16, 1970, Ser. No. 20,016
Claims priority, application Australia, Apr. 11, 1969, 53380
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **5 Claims**

A process of coating the surface of zinc-based metals with a paint film, to give a coating of high adhesion to the metal. The surface is successively drenched in an aqueous alkaline conditioning liquid, water rinsed, zinc phosphate 'conversion' coated and finally coated with a paint film by electrophoretic deposition. The conditioning liquid comprises a source of iron ions, an iron sequestering agent and sodium or potassium hydroxide, the pH of the liquid being at least 13.

3,620,950
ELECTROPHORETIC IMAGING EMPLOYING PERIODIC ELECTROMAGNETIC RADIATION
Carol K. Keller, Rochester, and Edward Forest, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Oct. 3, 1968, Ser. No. 764,832
Int. Cl. C23b *13/00*; **G03g** */00*
U.S. Cl. 204—181 **10 Claims**

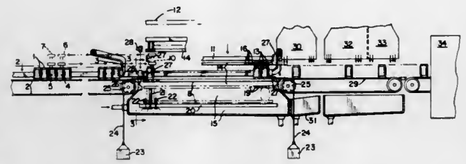
Method and apparatus for improving image density, contrast and quality and photographic speed in a photoelectrophoretic imaging system utilizing a particulate suspension for forming the image. In the preferred embodiment the method and apparatus stress a thin layer of the electrophoretic suspension of particles in a carrier on an electrode during imaging by applying a discontinuous illumination in conjunction with a constant or discontinuous field.

3,620,951
ADJUSTABLE SUSPENSION APPARATUS FOR ELECTROLYTIC WATER TREATMENT
Eugene S. Bremerman, 82 Whitehall Court, St. Louis, Mo.
Filed Sept. 19, 1968, Ser. No. 760,748
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **2 Claims**



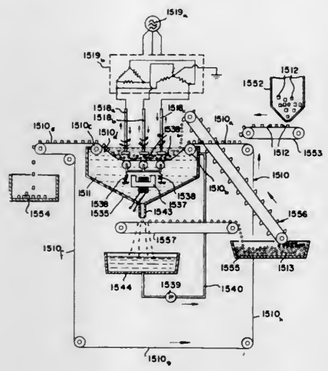
An easily installable and adjustable device for preventing electrolytic corrosion in boilers and other types of deleterious water action, including formation of scale and foaming. The device comprises a metallic iron grid, connected to two upstanding metallic arms provided with spaced regularly appearing perforations or holes. The ends of the arms are adapted to be bent over and broken off at the desired lengths and simply bolted through a brass bolt to the boiler shell, with provisions for connecting a ground cable to the bolt for grounding.

3,620,952
MECHANICAL APPARATUS FOR ELECTRODEPOSITION OF CANS
Wayne T. Chiappe, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 2, 1969, Ser. No. 829,411
Int. Cl. B65g *49/04*
U.S. Cl. 204—198 **10 Claims**



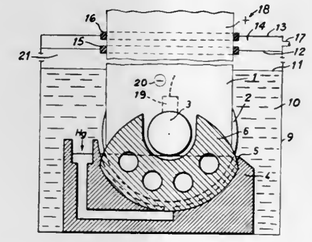
An automatic electrodeposition machine which electrodeposits a coating onto a metal can body. A number of batches of cans are moved in a series to a position above a coating solution bath and are lowered into the coating solution bath where coating is electrodeposited onto the cans. After electrodeposition has taken place, the coated cans are removed from the coating solution and are passed through an airblast which removes such of the coating solution as has adhered to the sides of the cans. The car bodies are then passed through a water rinse, then an airblast. The water rinse is made with deionized water because ordinary water leaves spots of material on the cans. Can bodies are now passed through any series of water rinses, airblasts, and the like, which may be deemed desirable in the circumstances, and finally, go into an oven. At the conclusion of these processes, a clean, coated can is obtained.

3,620,953
METHOD OF AND APPARATUS FOR THE DEBURRING OF WORKPIECES
Kiyoshi Inoue, 160 Sakato, Kawasaki, Kanagawa, Japan
Continuation-in-part of application Ser. No. 859,532, Apr. 21, 1969, now Patent No. 3,533,928, which is a continuation of application Ser. No. 598,391, Dec. 1, 1966, now abandoned. This application Mar. 19, 1968, Ser. No. 714,252
Claims, priority, application Japan, Oct. 17, 1967, Oct. 18, 1967, Oct. 20, 1967, Oct. 23, 1967, Oct. 24, 1967, Dec. 2, 1967, Dec. 20, 1967; 42/66788, 42/67045, 42/67630, 42/68166, 42/68123, 42/77243, 42/81711
Int. Cl. B01k *3/00*; **C23b** *3/00, 3/06*
U.S. Cl. 204—202 **13 Claims**



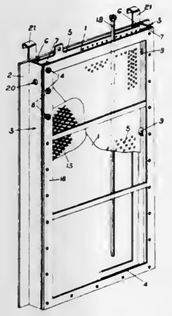
Apparatus for the electrochemical deburring of metallic workpieces in which a drum of endless band forms a continuously displaceable surface for the workpieces which, together with carbon particles and/or other abrasive particles, are agitated in an electrolyte. The drum is rotated about its horizontal axis while a pair of disks form electrodes closing the drum. When the endless belt is used, it then passes into a vessel retaining the electrolyte and thereafter carrying the workpieces to a collecting trough while carbon particles are continuously added or removed from the system whose electrodes are connected in pair to respective phases of the power supply. A drum system may also have a perforated-wall drum or other means for enabling gases to be withdrawn from the system while a stationary vessel system may effect the agitation of the electrolyte by pulsed jets. A gas is injected into the electrolyte to distribute the electric current path more uniformly and dilute nascent gases produced by electrolysis.

3,620,954
ELECTROLYTIC CELLS
Karl Ziegler, and Wilhelm Eisenbach, both of Mulheim-Ruhr, Germany
Filed Oct. 11, 1968, Ser. No. 766,849
Claims priority, application Germany, Oct. 14, 1967, P 16 71 484.4
Int. Cl. B01k *3/00*; **C22d** *1/04*
U.S. Cl. 204—206 **24 Claims**



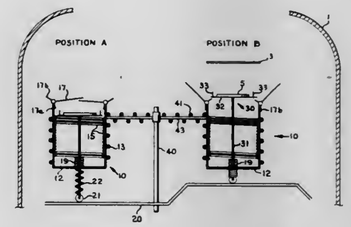
An electrolysis cell having rotating, disc-form cathodes immersed in an electrolyte. Sheet form anodes are disposed between the cathodes. Means are provided for advancing the anodes to compensate for dissolving of the anodes during electrolysis.

3,620,955
CATHODE CELL
Ivor Wynford Jones, Ilford, England, assignor to Carrier Engineering Company Limited, London, England
Filed May 16, 1969, Ser. No. 825,135
Int. Cl. C23g *5/74*; **B01k** *3/04, 3/10*
U.S. Cl. 204—283 **6 Claims**



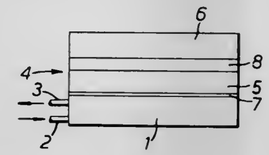
A cathodic cell for use in a paint electrode position process has a front wall constituted in part by a removable semipermeable membrane, backwall and sidewalls and a bottom, a cathode element, and locating means by which the cathode element can be selectively located in the cell in any one of a plurality of positions relative to the front wall.

3,620,956
MECHANISM FOR THIN FILM DEPOSITION
Roy C. Gauger, Rochester, N.Y., assignor to The Bendix Corporation
Filed July 15, 1969, Ser. No. 841,822
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 204—298 **14 Claims**



A method and apparatus for selectively depositing a thin film on less than all of a plurality of substrates within a vacuum chamber. The invention includes a plurality of substrate enclosures having heating and cooling means and doors which open and close to permit the deposition of a thin film upon the substrate. The enclosures are operated so that when one enclosure is open to allow material to be deposited upon a substrate, the other enclosure is closed to protect the substrate therein from unwanted deposits.

3,620,957
TARGETS FOR RADIO FREQUENCY SPUTTERING APPARATUS
John Arthur Alfred Emery, Crawley; Geoffrey Norman Jackson, Great Bookham, and Colin Richard Douglas Priestland, Horsham, all of England, assignors to Edwards High Vacuum International Limited, Crawley, England
Filed June 5, 1969, Ser. No. 830,813
Claims priority, application Great Britain, June 12, 1968, 27,932/68
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **3 Claims**

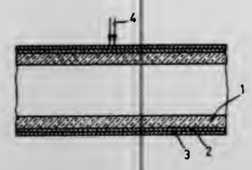


A target arrangement for use in radio frequency sputtering techniques in which a metal electrode has clamped to it a dielectric cover which carries target material to be sputtered.

3,620,958
DEVICE FOR ELECTROPHORETIC ANALYSIS USING A CAPILLARY TUBE WITH DETECTION MEANS
Popko Reinder Dijksterhuis, and Robert Rust, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,974
Claims priority, application Netherlands, Sept. 30, 1968, 6813995
Int. Cl. B01k *5/00*; **B01d** *13/02*
U.S. Cl. 204—299 **15 Claims**

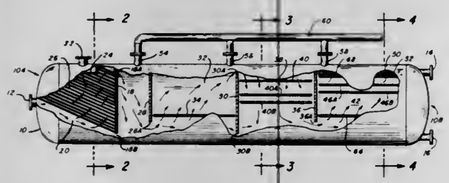
Cathode and anode containers are connected by a capilla-

ry measuring tube which has a detection electrode formed by



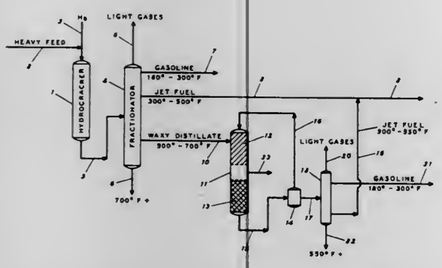
a photoconducting material on or in the capillary measuring tube.

3,620,959
APPARATUS FOR DESALTING CRUDE
Forrest L. Murdock, Sr., 2420 East 24th St., Tulsa, Okla.
Filed Apr. 23, 1970, Ser. No. 31,326
Int. Cl. B03c *5/02*
U.S. Cl. 204—302 **8 Claims**



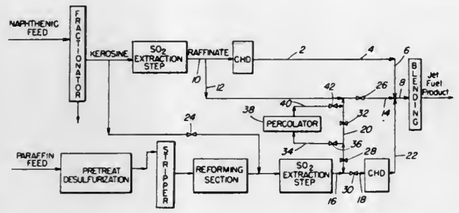
This invention relates to an apparatus for desalting crude. The invention is in the form of an elongated horizontal vessel having semiwall partitions therein dividing the vessel into a mixing chamber, a settling chamber, and includes means of introducing fresh water for mixing with and washing the crude in the mixing chamber, means of subjecting the crude to electric fields in the downflow and final treating chambers to augment the separation water from the crude, and means for separately passing the desalted crude out one outlet opening and water having salt extracted from the crude out another outlet opening.

3,620,960
CATALYTIC DEWAXING
Robert H. Kozlowski, Berkeley, and Lloyd J. Olson, Oakland, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed May 7, 1969, Ser. No. 822,607
Int. Cl. C10g *37/10*
U.S. Cl. 208—60 **7 Claims**



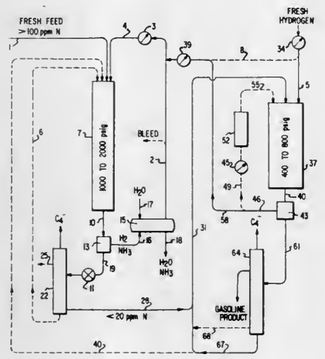
A waxy hydrocarbon oil feed is catalytically dewaxed in the presence of hydrogen at dewaxing conditions using a catalyst comprising molybdenum and combined fluorine, calculated as fluorine, in association with a porous solid carrier.

3,620,961
METHOD OF PRODUCING A JET FUEL
Henry R. Ireland, West Deptford Township, Gloucester County, N.J., assignor to Mobil Oil Corporation
Filed Feb. 5, 1969, Ser. No. 796,687
Int. Cl. C10l *1/04*
U.S. Cl. 208—79 **6 Claims**



Jet fuel having a low freeze point, e.g. -50° F., and high heat of combustion per gallon, e.g. at least about 124,000 B.t.u./gal., is produced by blending (1) a highly naphthenic jet fuel component having an advantageously very low freeze point but low heat of combustion on a pound basis with (2) a highly paraffinic jet fuel component having a high heat of combustion on a pound basis in excess of that desired in the blended product.

3,620,962
PROCESS
William C. Pfefferle, Middletown, N.J., assignor to Atlantic Richfield Company
Filed Oct. 9, 1967, Ser. No. 673,744
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 **17 Claims**



A relatively high-boiling mineral oil having a nitrogen content of at least about 100 p.p.m. is catalytically hydrogenerated at a pressure of at least about 950 p.s.i.g. to give a product of lower nitrogen content. Hydrogen-containing effluent gas can be recycled to the hydrogenation zone. Liquid hydrocarbon from the hydrogenation zone and containing less than about 20 p.p.m. nitrogen is hydrocracked at a relatively low pressure of up to about 800 p.s.i.g. in the presence of a platinum group metal-acidic support catalyst to produce lower boiling range hydrocarbons. The nitrogen content of the effluent from the hydrocracking zone is maintained at less than about 20 p.p.m., preferably less than about 10 p.p.m. At least a major portion, preferably all, of the makeup hydrogen is added to the hydrocracking zone, and preferably a portion of the hydrogen-containing gas from the effluent of the hydrocracking zone is recycled to such zone. Nitrogen buildup in the hydrocracking zone is prevented by removing ammonia from gas recycled to the hydrocracking zone and/or by the use of hydrogen makeup gas in the hydrocracking zone. Any residual hydrocarbon from the hydrocracking zone recycled to the hydrogenation zone can also be controlled to prevent nitrogen buildup in the hydrocracking zone.

3,620,963
CATALYTIC DEWAXING
Bernard F. Mulaskey, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 568,536, July 28, 1966, now abandoned, Continuation-in-part of application Ser. No. 645,855, June 8, 1967, now Patent No. 3,399,132, Continuation-in-part of application Ser. No. 742,321, July 3, 1968, now Patent No. 3,487,007, Continuation-in-part of application Ser. No. 774,207, Nov. 7, 1968, now Patent No. 3,520,829. This application Apr. 17, 1970, Ser. No. 29,700
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **11 Claims**

A process for catalytically dewaxing an oil which comprises contacting the oil at a temperature between 500° and 900° F., a pressure between 300 and 5,000 p.s.i.g., and in the presence of hydrogen, with a catalyst comprising a mixture of mordenite and an amorphous porous inorganic oxide associated with nickel and tin. Preferably the mixture of mordenite and the nickel-tin component is a physical mixture, i.e., preferably the nickel and tin are not supported on the mordenite, as by impregnation or ion-exchange into the mordenite. Preferably, the amorphous porous inorganic oxide associated with the nickel and tin is silica.

3,620,964
HYDROCRACKING CATALYST COMPOSITION, METHOD FOR MAKING THE SAME AND HYDROCRACKING IN THE PRESENCE THEREOF
William A. Stover, Woodbury, and Stephen M. Oleck, Moorestown, both of N.J., assignors to Mobil Oil Corporation
Filed July 9, 1968, Ser. No. 743,334
Int. Cl. C10g *13/02;* **B01j** *11/40*
U.S. Cl. 208—111 **20 Claims**

A hydrocracking catalyst composition comprising a mixture of (1) a hydrogenation component deposited on a crystalline aluminosilicate, and (2) a matrix material impregnated with a hydrogenation component, a method for making the same comprising impregnating the matrix component with a diphase medium consisting of hydrogenation metals present as finely divided precipitate in a salt solution, or a medium consisting of a solution of hydrogenation metals, and admixing the resultant wet mix with a component as defined in (1), and hydrocracking in the presence thereof.

3,620,965
EXPLOSIVE FRAGMENTATION OF POROUS SOLIDS
Edward J. Rosinski, Deptford, N.J., assignor to Mobil Oil Corporation
Filed May 28, 1969, Ser. No. 828,733
Int. Cl. C10g *11/02*
U.S. Cl. 208—120 **5 Claims**

Porous solids having surface area of at least 5 square meters per gram are reduced to smaller particle size by explosive fragmentation. Exemplary disclosure concerns aluminosilicate zeolites in extremely finely divided form prepared by detonation of crystalline zeolites having adsorbed therein explosive compounds and compositions. In one particular embodiment, finely divided zeolite catalyst is supplied to the reactants and energy is furnished to the system by detonation of explosive-loaded crystalline zeolites within the reaction mixture. In addition, the products of detonation may afford reactants.

3,620,966
METHOD HIGH SPACE VELOCITY HYDROGENATION OF OLEFINS
Stanley C. Haney, and Robert N., both of Cimbalo, Homewood, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,829
Int. Cl. C10g *23/04*
U.S. Cl. 208—143 **10 Claims**

A method for the manufacture of odorless paraffinic solvents having a high degree of saturation is disclosed. The method of the present invention involves contacting an olefinic hydrocarbon feedstock of solvent boiling range with hydrogen at high space velocities in the presence of a catalyst containing platinum or a platinum-type metal and alumina to produce a product having no more than 5 percent by volume olefinic unsaturation. The alumina component of the catalyst can be derived from a precursor hydrous alumina in which crystalline trihydrate predominates.

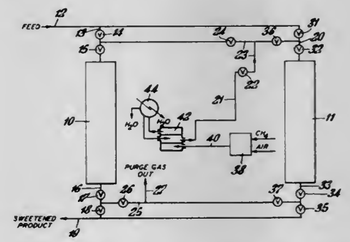
3,620,967
REREFINING OF WASTE CRANKCASE AND LIKE OILS
Graham L. Gulick, Chicago, Ill., assignor to Quvoe Chemical Industries, Schiller Park, Cook County, Ill.
Filed May 1, 1968, Ser. No. 725,940
Int. Cl. C10m *11/00*
U.S. Cl. 208—179 **11 Claims**

A method of treating waste crankcase and like oils to remove impurities therein which are suspended by high detergent and like additives. A method is disclosed for adding chemical compounds which disrupt the gas and liquid films adsorbed on the colloidal sized contaminant particles, particularly iron and iron-containing compounds, which are held in suspension by the detergent additives. It is preferred to use compounds which generate free hydroxyl radicals, such as hydrogen peroxide and other peroxide compounds, as well as metal halides such as aluminum chloride, ferric chloride, methyl magnesium bromide, and the like, preferably in a basic medium, with agitation or heating, or both, of the oil. The treatment removes colloidal iron as well as organometallic iron contained in the oil. Precipitation of components of the bottom sediment and water fraction of waste crankcase oil is followed by drawing off of the top layer of oil which may then be further treated, or which may be fed to a still for distillation and fractionation thereof.

3,620,968
DESULFURIZATION PROCESS EMPLOYING UPFLOW OIL AND HYDROGEN
Alan G. Bridge, El Cerrito; Joseph Jaffe, Berkeley, and David S. Mitchell, Fairfax, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Oct. 31, 1968, Ser. No. 772,365The portion of the term of the patent subsequent to Dec. 12, 1987, has been disclaimed.
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **1 Claim**

Hydrodesulfurization of a hydrocarbon oil feedstock is performed by passing the oil and hydrogen upwardly in cocurrent flow through at least one fixed bed of catalyst contained in a desulfurization reactor. The catalyst comprises pellets or other particles of alumina cogelled with a Group VI hydrogenating component, a Group VIII hydrogenating component, Group IV metal phosphate particles dispersed in said catalyst, and fluorine. The upflow oil and hydrogen operation with a cogel catalyst provides for higher activities and low initial fouling rates.

3,620,969
DESULFURIZATION BY SELECTIVE ADSORPTION WITH A CRYSTALLINE ZEOLITIC MOLECULAR SIEVE
Philip Hain Turnock, Katonah; Max Nai Yuen Lee, Yorktown Heights, and Krishan Dayal Manchanda, Scarsdale, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Oct. 15, 1969, Ser. No. 866,484
Int. Cl. C10g *25/04*
U.S. Cl. 208—245 **3 Claims**



Sulfur compounds are removed from liquid hydrocarbon streams by selective adsorption on zeolitic molecular sieves

and periodic desorption therefrom using a hot purge gas having a high water content. Regeneration of the adsorbent is carried out only to the degree that less than about 5 and more than about 2 weight percent water remains adsorbed on the zeolite.

3,620,970
REVERSE OSMOSIS MEMBRANES FROM HYDROXYALKYL DERIVATIVES OF CELLULOSE
Eugene D. Klug, Wilmington; Harold M. Spurlin, Cooper Farms, Wilmington, and William L. Young, III, Heritage Park, Wilmington, all of Del., assignors to Hercules Incorporated, Wilmington, Del.
Filed Sept. 5, 1969, Ser. No. 855,727
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **18 Claims**
The invention provides reverse osmosis membranes characterized by a salt-rejecting layer of a hydroxyalkyl derivative of cellulose. The membranes are useful for desalination and other processes involving reverse osmosis.

3,620,971
BREAKING REFINERY SEWER OIL AND WATER EMULSIONS WITH SODIUM BICARBONATE
Oliver Plumbar, Port Arthur, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Aug. 21, 1970, Ser. No. 66,148
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 **6 Claims**
Refinery sewer system emulsions containing oil, water and sediment are broken by the use of sodium bicarbonate.

3,620,972
METHOD OF AGGLOMERATING FINELY DIVIDED INORGANIC PHOSPHATES USING AN ORTHOPHOSPHATE AGGLOMERATING AID
Ellis Glenn Fite, Bronxville, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Mar. 12, 1968, Ser. No. 712,379
Int. Cl. B01j *2/28*; **C05b** *19/00*
U.S. Cl. 252—1 **17 Claims**
A method is provided for agglomerating finely divided substantially insoluble inorganic phosphate compositions in the presence of an alkali metal orthophosphate having a $M_2O:P_2O$ ratio of from about 2:1 to about 3.21:1. M is an alkali metal having a molecular weight of from 20 to 41 inclusive. The material to be agglomerated is agitated and from about 5 to about 25 parts by weight water is added per 100 parts of material to be agglomerated. Agitation is continued until agglomeration is substantially complete and thereafter the agglomerated material is recovered. Additional embodiments include adding the water as steam, or as orthophosphate solutions.

3,620,973
DRILLING FLUID
Charles M. Harbordt, Bryan, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,719
Int. Cl. C10m *3/16, 3/14*
U.S. Cl. 252—8.5 C **8 Claims**
An aqueous drilling fluid dispersant and a method of drilling wells using said drilling fluid which contains as the dispersant a dihydroxyalkanone.

3,620,974
SCALE INHIBITION
James R. Stanford, and Paul G. Vogelsang, Jr., both of Houston, Tex., assignors to Nalco Chemical Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 600,354, Dec. 9, 1966, now Patent No. 3,477,956. This application Sept. 11, 1969, Ser. No. 857,239
Int. Cl. C02b *5/06*; **C09k** *3/00*
U.S. Cl. 252—8.55 B **17 Claims**
Phosphated hydroxy amines obtained by reacting polyphosphoric acid or phosphorus pentoxide with hydroxyamines, e.g., diethanolamine or triethanolamine, with or without neutralization, are used as scale inhibitors in brines, especially in oil wells, where calcium and barium salts are present.

3,620,975
MIXED COMPLEX ALUMINUM SOAP-CLAY GREASE COMPOSITION
Arthur T. Polishuk, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed July 3, 1968, Ser. No. 742,155
Int. Cl. C10m *5/14*
U.S. Cl. 252—21 **3 Claims**
Grease having previously unachieved outstanding properties of high temperature and mechanical characteristics are prepared by the use of a mixed-base thickener of aluminum complex soap and cation-modified clay.

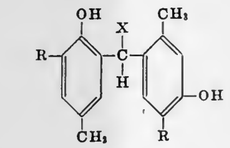
3,620,976
METHYL SILICONE GREASE COMPOSITION AND METHOD OF MAKING SAME
John H. Wright, Elnora, and Abraham L. Hajjar, Schenectady, both of N.Y., assignors to General Electric Company
Filed Sept. 16, 1968, Ser. No. 762,346
Int. Cl. C10m *7/50, 7/20*
U.S. Cl. 252—42.1 **4 Claims**
A grease composition contains a polysiloxane, the organic substituents of which are methyl radicals, a higher fatty acid soap of lithium, an amount of a polyether which is sufficient to cause the lithium soap of the fatty acid to disperse into the polysiloxane, but insufficient to deleteriously affect the high-temperature properties of the grease, and a sufficient amount of a base to render the grease alkaline. The grease is made by heating together the polysiloxane, the polyether, the lithium soap of the higher fatty acid and the base to a temperature of about 400° to 500° F., after which the grease composition is cooled to room temperature, then milled. The grease composition is used in the journal bearings of starter motors having high-current capacity and which run hot but are subjected to extremely low temperatures when not running.

3,620,977
REACTION PRODUCT OF ALKYLENE POLYAMINES AND CHLORINATED ALKENYL SUCCINIC ACID DERIVATIVES
Lewis R. Honnen, Petaluma, and Nicolaas Bakker, Pinole, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Dec. 17, 1968, Ser. No. 784,462
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 A **13 Claims**
Compositions are obtained by halogenating an alkenyl succinic acid or acid derivative in a hydroxylic solvent and treating the resulting product under dehydrating conditions with an amine. The products with relatively long hydrocarbon chains find use as detergents in lubricating oils and as emulsifiers.

3,620,978
PROCESS FOR PREPARING STABLE POSITIVELY CHARGED ALUMINA-COATED SILICA SOLS
Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 18, 1968, Ser. No. 745,715
Int. Cl. B01j *13/00*; **B44d** *1/18*
U.S. Cl. 252—313 **2 Claims**
Improved positively charged coated silica particles have been prepared by reacting boric acid stabilized basic aluminum acetate with a silica sol.

3,620,979
PROCESS OF FORMING FREE-FLOWING, PARTICULATE MIXTURES OF PHOSPHATES AND SILICATES
Duncan Simmons Corliss, Roselle, N.J.; Russell Raymond Keast, Yardley, and Saxman, Richard Lewis, Levittown, Pa., assignors to FMC Corporation, New York, N.Y.
Filed Apr. 24, 1968, Ser. No. 723,907
Int. Cl. C11d *17/06, 9/14*
U.S. Cl. 252—385 **8 Claims**
Free-flowing, fast-dissolving, completely soluble, strong, granular particles containing a mixture of a hydratable alkali metal phosphate and an alkali metal silicate wherein the SiO_2 to said phosphate mole ratio is at least 1:1, were produced by maintaining the alkali metal phosphate at a temperature of 60° to 100° C., gradually adding an aqueous solution of alkali metal silicate to the alkali metal phosphate, continually evaporating water from the resulting mixture, controlling the rate of addition of the alkali metal silicate solution so that the resulting mixture is maintained in the form of discrete particles, continuing said alkali metal silicate addition until the discrete, granular particles have an SiO_2 to said phosphate mole ratio of at least 1:1, and recovering dry-appearing, granular particles which yield a pH of at least 10.5 in an aqueous 1 percent solution.

3,620,980
ASYMMETRICAL PHENOLIC NONDISCOLORING ANTIDEGRADANTS FOR POLYMERS
Evan Johnson Young, St. Albans, and Charles Gene Summers, Scott Depot, both of W. Va., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 609,335, Jan. 16, 1967, Pat. No. 3,505,287. Filed Aug. 1, 1969, Ser. No. 871,106
Int. Cl. C08f *45/58*
U.S. Cl. 252—404 **2 Claims**
Compounds of the formula



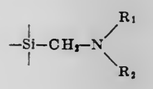
where R is secondary or tertiary alkyl and X is straight or branched chain primary, secondary, or tertiary alkyl, are excellent nondiscoloring antidegradants for rubber polymers. Mixtures containing isomers of these compounds are excellent nondiscoloring antidegradants.

3,620,981
HETEROGENEOUS CATALYST COMPOSITIONS
Eugene F. Magoon, Berkeley; Lawrence G. Cannell, Berkeley, and John H. Raley, Walnut Creek, all of Calif., assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 11, 1967, Ser. No. 689,260
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 R **5 Claims**
Catalyst compositions comprising certain hydrocarbon-transition metal halide complexes supported on an acidic, inorganic oxide support are useful in the oligomerization or polymerization of olefins.

3,620,982
PERFUME COMPOSITION CONTAINING DIHYDROISOCARYOPHYLLENE OXIDE
James D. Grossman, Old Bridge, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.
Filed Sept. 18, 1968, Ser. No. 760,703
Int. Cl. A61p *7/00*; **C11b** *9/00*
U.S. Cl. 252—522 **1 Claim**
Dihydroisocaryophyllene epoxide and its use in perfume and fragrance compositions, and articles containing same.

3,620,983
-METHYLGLYCIDYL-ISOCYANURATES
Daniel Porret, Rinningen; Hans Batzer, Arlesheim; Rolf Schmid, Reinach, and Peter Ruf, Binningen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Nov. 12, 1969, Ser. No. 876,137
Claims priority, application Switzerland, Nov. 21, 1968, 17352/68
Int. Cl. C08q *30/02, 30/10*
U.S. Cl. 260—2 EP **3 Claims**
The new compound tri-(β-methylglycidyl)-isocyanurate is manufactured by a reaction, which is in itself known, of cyanuric acid with β-methylepichlorhydrin in the presence of tertiary amines or quaternary ammonium salts, and subsequent dehydrohalogenation with alkali. In comparison with the known tri-(glycidyl)-isocyanurate, tri-(β-methyglycidyl)-isocyanurate can be more easily processed, on the one hand because of the lower melting point and on the other hand because of the lesser reactivity. Apart from compression moulding compositions, the material is therefore also excellently suited to being used as a casting resin. Suitable curing agents are above all polysebacic anhydride, and also aliphatic polyamines. Using the latter, it is surprisingly possible to manufacture a stable B-stage which is for example suitable for the manufacture of compression moulding compositions.

3,620,984
POLYURETHANE CATALYSTS
Manfred Dahm, Leverkusen; Hans Niederprum, Monheim, and Walter Simmler, Cologne-Muelheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of application Ser. No. 543,524, Apr. 19, 1966, now abandoned. This application June 25, 1968, Ser. No. 739,654
Int. Cl. C08g *22/44, 53/08*
U.S. Cl. 260—2.5 AC **19 Claims**
Polyurethane foams are prepared in the presence of a compound containing the grouping



wherein R_1 and R_2 are the same or different alkyl, cycloalkyl, alkoxyalkyl, alkenyl or aralkyl radicals or are members of a common cycloaliphatic or heterocyclic structure when the silicon atom is part of a silane or lower polysiloxane grouping; or R_1 has the above meaning and R_2 denotes an hydroxylalkyl or aminoalkyl group attached to the silicon atom through the oxygen or nitrogen atoms respectively. The invention contemplates complexes or mixtures of these compounds with organic metallic compounds also as catalysts. In addition new activator mixtures containing these catalysts are contemplated.

3,620,985
URETHANE FOAM CATALYST AND PROCESS FOR PREPARING URETHANE FOAM
William A. Larkin, Morristown, and Kenneth Treadwell, Rahway, both of N.J., assignors to M & T Chemicals Inc., New York, N.Y.
Filed Sept. 16, 1968, Ser. No. 762,318
Int. Cl. C08f *47/10*
U.S. Cl. 260—2.5 AC **11 Claims**
This invention is a process for making a cellular polyurethane comprising reacting a polyalkylene polyol having reactive hydrogen atoms as determined by the Zerewitinoff method exhibiting a molecular weight of at least 500, an organic polyisocyanate, and water in the presence of a gel catalyst and a foaming catalyst comprising an antimony compound, a base, and a nitrogen-containing organic compound.

3,620,986
SYNTHETIC RESINS COMPRISING REACTION PRODUCTS OF ISOCYANATES AND PROCESS FOR THEIR PRODUCTION

Hans Joachim Diehr; Rudolf Merten; Helmut Piechota, and Konrad Uhlig, all of Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 27, 1968, Ser. No. 787,565
Claims priority, application Germany, Jan. 2, 1968, P 17 20 768.0
Int. Cl. C08g 22/44, 53/10
U.S. Cl. 260—2.5 AW 7 Claims

Synthetic resins which contain isocyanurate groups, especially foam materials are prepared by polymerization of compounds which contain more than one isocyanate group in the molecule in the presence of mononuclear Mannich bases of secondary amines, formaldehyde and phenols which Mannich bases are capable of incorporation in the polymer molecule and which contain, in addition to a substituted aminomethyl group and a phenolic OH group, at least one other group which contains hydrogen atoms which react with isocyanates.

3,620,987
PREPARATION OF POLYMER FOAM

Alexander M. McLaughlin, and James S. Rose, both of Guilford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 21, 1969, Ser. No. 878,875
Int. Cl. C08g 47/08; C08j 1/14
U.S. Cl. 260—2.5 N 14 Claims

High temperature resistant cellular polymers are prepared in a one-shot procedure by reacting a polycarboxylic acid or polycarboxylic anhydride with an organic polyisocyanate in the presence of a catalyst combination comprising a tertiary amine, an aliphatic alcohol (C_{1-C8}), and optionally, a monomeric homocyclic polyepoxide. The use of the latter catalyst system not only increases the rate of foam formation but permits foam formation to be initiated at ambient temperature without the need to supply external heat to the reaction mixture before or after the reactants are brought together. This permits pouring-in-place of the foam forming system, for example, in the insulation of cavity walls for construction purposes, in trailer walls, and in cold storage frameworks and the like.

3,620,988
METHOD OF PREPARING BEAD-TYPE POLYMERS

Louis Cohen, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 31, 1968, Ser. No. 772,406
Int. Cl. C09j 3/02, 3/12; C08d 9/06
U.S. Cl. 260—17.4 12 Claims

There is disclosed a method wherein discrete droplets of liquid monomer containing a monomer-soluble free radical-type catalyst are suspended in an aqueous mucilage having plastic flow properties and at least a minimum critical yield value induced by a water-insoluble polymeric thickening dispersing agent such as a carboxyl-form or dual-salt forms of a cross-linked polyacrylic acid. The polymerization is carried out at the usual temperatures under substantially quiescent conditions whereby the droplets are not subjected to sufficient shear to deform or subdivide them. Salts of nitrobenzene sulfonic acids added to the aqueous phase further suppress new particle initiation therein, narrows the particle sized distribution, and produces clearer product suspensions. The products are obtained as permanent suspension of discrete beads usually of spherical shape and having great clarity, low water sensitivity and good electrical properties. The method is ideally adapted to the continuous mode of operation. The suspensions are permanent yet the aqueous phase is easily removed by screening or centrifuging thereby permitting both easy isolation of dry beads and, if desired, easy concentration of the suspension to very high polymer solids levels.

3,620,989
ALKYDS OF UNSATURATED DIBASIC ACIDS, POLYOLS, AND UNSATURATED FATTY ACID ESTERS AND METHOD FOR MAKING SAME: EMULSION COPOLYMERIZATION OF SAID ALKYDS WITH POLYMERIZABLE MONOMERS AND THE RESULTING POLYMERS

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

Filed Sept. 15, 1969, Ser. No. 858,125
Int. Cl. C09d 3/64
U.S. Cl. 260—22 CB 26 Claims

A distinctive alkyd is made by reacting at a temperature below 350° F., an unsaturated dibasic acid or anhydride (e.g., maleic anhydride or fumaric acid) with an unsaturated fatty acid ester (e.g. safflower oil) that has been alcoholized with a polyol (e.g., ethylene glycol). This alkyd can then be emulsion copolymerized with various polymerizable monomers (e.g. vinyl acetate, styrene) to produce a high molecular weight polymer that is thermosetting and forms tough homogeneous films.

3,620,990
PROCESS FOR THE PRODUCTION OF FOAMED POLYANHYDRIDE COPOLYMERS AND PRODUCTS THEREOF

Stanley M. Hazen, Cheswick, and William J. Heilman, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 12, 1968, Ser. No. 751,746
Int. Cl. C08c 7/08; C08d 13/08; C08f 47/10
U.S. Cl. 260—2.5 R 13 Claims

A flowable composition is provided which is foamable, comprising a solution of
A. a polyanhydride copolymer of
1. a straight chain alpha-olefin having between three and about 20 carbon atoms, and
2. maleic anhydride
B. a liquid monoepoxide, and
C. maleic anhydride.
A curing agent such as a tertiary amine is used to initiate the exothermic reaction between the polyanhydride, the generated heat then serving to cause interaction of the maleic anhydride and the amine, with the evolution of gas and consequent foaming. The composition may be molded during foaming and curing.

3,620,991
PREPARATION OF AQUEOUS SOLUTION OF ACRYLAMIDE CONTAINING NO FREE OXYGEN AND POLYMERIZATION OF ACRYLAMIDE THEREIN

Richard Barkman Wasser, Rowayton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 25, 1968, Ser. No. 762,620
Int. Cl. C08f 1/00
U.S. Cl. 260—29.6 Z 8 Claims

Dissolved molecular oxygen in aqueous solutions of acrylamide is inactivated without significant detriment to the acrylamide and to the solution as a polymerization medium, by adding a water-soluble metal sulfite and allowing the solution to stand at pH 4–8. If desired, excess sulfite can be decomposed without harm to the acrylamide by raising the pH of the solution above 8, and the acrylamide therein can be polymerized or copolymerized by conventional means.

3,620,992
MONOBROMO SUBSTITUTED FLUORO-SILICONE POLYMERS

Yung Ki Kim, and Ogden R. Pierce, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 1, 1969, Ser. No. 846,959
Int. Cl. C08g 51/04, 31/02
U.S. Cl. 260—37 SB 10 Claims

Organosiloxanes, containing

$$R_fCH_2CH_2\overset{|}{\underset{|}{Si}}O-$$

units, in which R_f is a monobromoperfluoroalkyl radical, are disclosed as nonflammable fluid lubricants and as nonflammable elastomers which have high-temperature stability.

3,620,993
COCONDENSATION RESIN OF FORMALDEHYDE, CYCLIC AMINOTRIAZINE AND ISOCYANURIC ACID

Ryoshiro Takano, Kamakura-shi; Kunihiko Ishii, Kamakura-shi, and Suezi Higo, Yokosuka-shi, all of Japan, assignors to Sinloihi Co., Konohana-ku, Osaka-shi, Japan

Filed Aug. 19, 1969, Ser. No. 851,448
Claims priority, application Japan, Aug. 30, 1968, 43/62161
Int. Cl. C08g 9/30, 51/04
U.S. Cl. 260—37 N 15 Claims

A colored finely powdered resin composition prepared by cocondensation of cyanuric acid, isocyanuric acid or derivatives thereof with a cyclic aminotriazine and formaldehyde is well tolerable to solvents and particularly suitable for printing ink, textile printing or dip dyeing by pigment and coloring plastics.

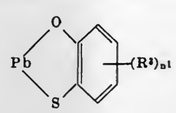
3,620,994
POLYVINYLCHLORIDE STABILIZATION WITH A LEAD SALT

Edward D. Weil, Hastings-On-Hudson, and Norman H. Gomlak, Tonawanda, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

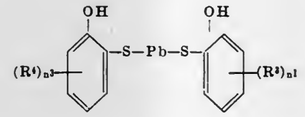
Continuation-in-part of application Ser. No. 638,683, Apr. 21, 1967, now abandoned. This application Oct. 29, 1969, Ser. No. 872,349
Int. Cl. C08f 45/14, 45/62
U.S. Cl. 260—41 9 Claims

This invention relates to lead salts of mercaptophenol derivatives which have a stabilizing action on polyvinyl chloride, and which also impart a stable yellow coloration thereto, of which typical structural formulas are

(a)



and



(b)

in which R^3 and R^4 are organic groups, or substituted forms thereof, in which n^1 and n^3 are each zero to 4.

3,620,995
VINYL CHLORIDE HOMO- AND COPOLYMERS STABILITY

Laurence F. King, Mooretown, Lambton, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Mar. 5, 1969, Ser. No. 804,706
Int. Cl. C08f 45/58
U.S. Cl. 260—45.85 3 Claims

Homopolymers and copolymers of vinyl chloride with vinylidene chloride, vinyl acetate, propylene, acrylates and methacrylates are treated as a slurry with
a. a 0.1-10 percent solution of an alkaline, water-soluble hydroxide in order to remove undesirable side products of polymerization tending to degrade the polymer, and
b. a phenolic antioxidant such as a bis or tris phenol or a salt, thio- or carboxylic acid derivative thereof.

3,620,996
POLYESTER-AMIDE-IMIDE INSULATING VARNISH AND METHOD OF PREPARATION

Shigeru Matsumura, Hyogo; Nobuyuki Asano, Suita-shi, and Munetaka Kawaguchi, Nishinomiya-shi, all of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed July 5, 1968, Ser. No. 742,545
Claims priority, application Japan, July 5, 1967, July 5, 1967; 42/43547, 42/43548
Int. Cl. C08g 20/30, 20/32
U.S. Cl. 260—47 CB 14 Claims

An insulating varnish comprising essentially a polyester-amide-imide obtained by condensating (1) a precondensation product prepared by reacting tricarboxylic acid anhydride and at least one isocyanate compound selected from the group consisting of a diisocyanate and polyisocyanate, solid precondensate having an amide linkage and an imide linkage in the molecular chain, and (2) at least one compound selected from the group consisting of terephthalic acid, isophthalic acid and lower dialkylesters thereof, di-ol and poly-ol, or (2) lower polymerization polyesters thereof.

3,620,997
QUINOXALINE-ANTHRAQUINONE POLYMERS

Carl S. Marvel, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,277
Int. Cl. C08g 15/02, 33/02
U.S. Cl. 260—50 5 Claims

Tetrachloroquinoxalines are condensed with 1,2,5,6-tetraaminoanthraquinone to produce polymers characterized by the presence of a quinoxaline nucleus and an anthraquinone nucleus in the repeating unit of the polymer. The polymers are useful in the preparation of heat-resistant articles intended for use at elevated temperatures.

3,620,998
DIIMIDAZOLE-ANTHRAQUINONE POLYMERS

Carl S. Marvel, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,276
Int. Cl. C08g 15/00, 33/02
U.S. Cl. 260—64 2 Claims

Terephthalaldehyde and isophthalaldehyde are condensed with 1,2,5,6-tetraaminoanthraquinone to produce polymers characterized by the presence of an anthraquinone moiety and two imidazole moieties in the repeating unit of the polymer. The polymers are useful in the preparation of heat-resistant articles intended for use at elevated temperatures.

3,620,999
ANTHRAQUINONE-BISBENZAZOLE POLYMERS

Carl S. Marvel, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 884,013
Int. Cl. C08g 33/02
U.S. Cl. 260—65 3 Claims

The condensation of diphenyl 1,5-anthraquinone-dicarboxylate with diaminobenzidine, diaminobiphenol and dimercaptobenzidine yields bisbenzimidazole, bisbenzoxazole and bisbenzothiazole polymers, respectively. These polymers retain the quinone function of the anthraquinone reactant and can be solubilized by reduction to the hydroquinone form. Solutions containing the hydroquinone form can be wetspun into fibers, temperature-stable on oxidation back to the quinone form.

3,621,000
A PROCESS FOR THE PRODUCTION OF CROSS-LINKED ELASTOMERS FROM BLOCKED ISOCYANATE-CONTAINING PREPOLYMERS

Hans-Georg Schmelzer, New Martinsville, W. Va.; Hermann Gruber, Leverkusen; Eberhart Degener, Leverkusen, and Wilfried Zecher, Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 23, 1968, Ser. No. 786,427
Claims priority, application Germany, Jan. 2, 1968, P 16 94 237.3
Int. Cl. C08g 22/32
U.S. Cl. 260—77.5 AM 6 Claims

Cross-linked synthetic resins are prepared by heating to a temperature of from 60° to 180° C. a mixture of (A) a linear or branched polymerization or polycondensation product containing blocked isocyanate groups and (B) a bi- or polyfunctional ketimine or enamine. The cross-linked resins are useful as sheet structures, coverings, coatings, ceiling compositions, shaped articles and films of various types.

3,621,001
ACCELERATING ANIONIC POLYMERIZATION OF LACTAMS
Adolf Steinhofer, Ludwigshafen/Rhine; Helmut Doerfel, Ludwigshafen/Rhine; Georg Falkenstein, Ludwigshafen/Rine; Wolfgang-Dieter Jeserich, Lambsheim/Pfalz, and Bernd Reichel, Frankenthal/Pfalz, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Rhineland/Pfalz, Germany
Filed July 8, 1968, Ser. No. 743,053
Claims priority, application Germany, July 6, 1967, P 17 20 282.3
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L 4 Claims
A process for accelerating the base catalyzed polymerization of lactams carried out at temperatures of 80° to 200° C. using N,N'-disubstituted arylenedicarbamoyl lactams as activators.

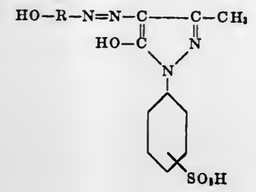
3,621,002
TRANSPARENT FIBER-FORMING COPOLYAMIDES
James S. Ridgway, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 29, 1968, Ser. No. 780,280
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 6 Claims
Copolyamides are prepared by polymerizing adipic acid, hexamethylene diamine, 3-(4-carboxyphenyl)-1,1,3-trimethyl-5-indan carboxylic acid and 3-aminomethyl-3,5,5-trimethyl-1-cyclohexylamine. Filaments made from such copolyamides are useful in reinforcing rubber articles such as pneumatic tires.

3,621,003
THERMAL STABILIZATION OF POLYPIVALOLACTONE BY DEGASSING
Jan Selman, and Hendrik van der Vliet, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,916
Claims priority, application Great Britain, Aug. 26, 1968, 40,715/68 40/716
Int. Cl. C08g *17/017, 53/00*
U.S. Cl. 260—78.3 10 Claims
A polymer of a β-lactone is degassed by heating the polymer in the molten state at a temperature of at least 275° C. The process is applicable to polymers which have been prepared at temperatures below the polymer's melting point. An example of such a preparation is a slurry-polymerization of pivalolactone. The resulting degassed polymer can be molded, extruded or injected into articles, nibs or threads.

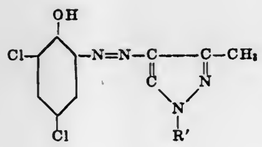
3,621,004
COPOLYMER OF AN ALKENE, AN ALKYL ESTER OF AN UNSATURATED CARBOXYLIC ACID AND A HYDROXYALKYL ESTER OF AN UNSATURATED CARBOXYLIC ACID
Rudolf J. A. Eckert, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Division of Ser. No. 721,092, Apr. 12, 1968, Pat. No. 3,518,197.
Filed Sept. 15, 1969, Ser. No. 870,777
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 4 Claims
Lubricating oil compositions containing a copolymer of (1) ethylene, (2) an alkyl ester of an unsaturated monocarboxylic acid and (3) a hydroxyalkyl ester of an unsaturated carboxylic acid exhibit excellent properties relative to thermal stability, viscosity index improvement and dispersant activity.

3,621,005
PPD-S (TUBERCULIN PROTEIN) COMBINED WITH GLUCURONIC ACID AND METHOD FOR PREPARING THE SAME
Morizo Ishidate, and Kenji Yusawa, both of Tokyo, Japan, assignors to Zaidan Hojin Tokyo Seikagaku, Kenayukai, Tokyo, Japan
Filed Aug. 19, 1968, Ser. No. 753,774
Claims priority, application Japan, Aug. 21, 1967, 45/53277
Int. Cl. A61k *27/14*; C07g *7/00*
U.S. Cl. 260—112 R 4 Claims
Tuberculin protein (hereinafter referred to as "PPD-S" in such a sense as a purified protein derivative) combined with glucuronic acid has less side effect and is chemically stable. The PPD-S combined with glucuronic acid is prepared by treating PPD-S with glucuronic acid metal salt, such as sodium glucuronate or potassium glucuronate, or with glucuronolactone.

3,621,006
MIXED CHROMIUM MONOAZO DYE COMPLEXES
Marcel Georges Jirou, and Claude Marie Henri Emile Brouard, both of Sotteville-les-Rouen, France, assignors to Ugine Kuhlmann, Paris, France
Filed Feb. 20, 1968, Ser. No. 715,456
Claims priority, application France, Feb. 10, 1967, 94405
Int. Cl. C09b *45/16*; D06p *1/02*
U.S. Cl. 260—145 B 3 Claims
Mixed chromium complexes are provided of the type (I)—Cr—(II)
wherein (I) represents the residue of a mono-azo dye of the general formula:



wherein R represents an o-arylene nucleus and (II) represents the residue of a mono-azo dye of the general formula:

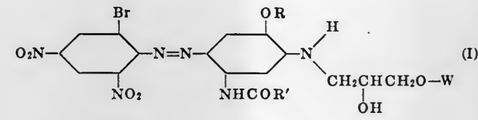


wherein R' represents a benzene nucleus.
These complexes are suitable for coloring textile fibers.

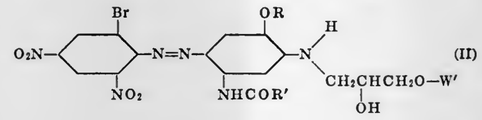
3,621,007
WATER-INSOLUBLE THIADIAZOLE CONTAINING MONOAZO DYES
Erwin Hahn, Viernheim, and Hans Guenter Wippel, Ludwigshafen, both of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed Sept. 18, 1969, Ser. No. 859,204
Claims priority, application Germany, Sept. 21, 1968, P 17 94 201.7
Int. Cl. C09b *29/08*; D06p *1/02*
U.S. Cl. 260—158 2 Claims
N,N-substituted para-aminomonoazo dyes having a 3-(β-carbalkoxyethyl)-mercapto-5-aminothiadiazole-(1,2,4) as diazo component. They are useful for dyeing cellulose esters or synthetic linear polyesters.

3,621,008
DIRECT DISAZO AND TETRAAZO UREA DYES AND METHOD OF PREPARATION
John M. Ross, Wilmington, Del., and Harvey I. Stryker, Carneys Point, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 3, 1968, Ser. No. 764,936
Int. Cl. C09b *43/14*; D21h *1/46*
U.S. Cl. 260—175 8 Claims
Direct disazo and tetraazo urea dyes useful for dyeing cellulosic materials and consisting of salts of N,N'-bis-(sulfo- and carboxyarylazoaryl) ureas and salts of N,N'-bis(sulfo- and carboxyarylazoarylazoaryl) ureas, also known as bis(anilino)ketones, for example, bis[3-methyl-4-[(6,8-disulfo-2-naphthyl)azo]anilino] ketone, the cationic portions of said salts being at least 50 atom percent lithium and/or ammonium, and the remainder, sodium and/or potassium, a process for preparing said dyes, and stable aqueous solutions or suspensions of said dyes.

3,621,009
MIXTURES OF PHENYL-AZO-PHENYL DYESTUFFS
Nobujiro Ono, Tokyo; Hiroshi Hattori, Yokohama; Shoji Tada, Kasukabe-shi, and Tsunetoshi Kaida, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1968, Ser. No. 726,525
Claims priority, application Japan, May 10, 1967, 42/29113
May 10, 1967, 45/33110, 45/33111
Int. Cl. C07c *107/06*; C09b *29/26*
U.S. Cl. 260—207 3 Claims
A mixture of dyestuffs of the general formulas (I) and (II),



(I)



(II)

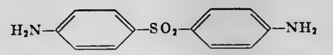
wherein R and R' are lower alkyl groups, W is a lower alkyl group and W' is a phenol group is disclosed. The respective components of the mixture are contained in an amount of more than 20 percent by weight. The mixture of dyestuffs has a particularly superior dyeing affinity to a polyester fiber.

3,621,010
6,6-DIFLUORO-17β-HYDROXY-17α-ETHYNYL-4-ESTREN-3-ONE AND 6,6-DIFLUORO-13β-ETHYL-17β-HYDROXY-17α-ETHYNYL-4-GONEN-3-ONE ETHYLENE KETALS
George Albert Boswell, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 720,493, Apr. 11, 1968, now Patent No. 3,511,861, Continuation-in-part of application Ser. No. 5,139, Jan. 22, 1970. This application Apr. 24, 1970, Ser. No. 31,763
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 3 Claims
6,6-Difluoro-17β-hydroxy-17α-ethynyl-4-estren-3-one ethylene ketal (6,6-difluoronorethindrone ethylene ketal), which can be obtained i.a. by a reaction of 6,6-difluoro-4-estren-3,17-dione 3-ethylene ketal with either ethynylmagnesium bromide or sodium acetylide, is an active progestational and antiuterotrophic agent. Its biological activity in rabbits and mice is comparable to that of norethindrone. Similarly, 6,6-difluoro-13β-ethyl-17β-hydroxy-17αethynyl-4-gonen-3-one ethylene ketal, obtained by reaction of the corresponding 3,17-dione 3-ethylene ketal with acetylene and lithium acetylide, is active.

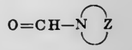
3,621,011
6-(2-AMINO-HEXAHYDRO-2-INDANCARBOXYAMIDO) AND 6-(1,2,3,4,5,6,7,8,9,10-DECAHYDRONAPHTHALENE-2-AMINO-2-CARBOXAMIDO) PENICILLANIC ACIDS
Peter B. Russell, Villanova; Harvey E. Alburn, West Chester, and Norman H. Grant, Wynnewood, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,467
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 10 Claims
The compounds are 6-(2-amino-hexahydro-2-indancarboxamido) penicillanic acids and 6-(1,2,3,4,5,6,7,8,9,10-decahydronaphthalene-2-amino-2-carboxamido) pencillanic acids, which have broad spectrum antimicrobial activity against both gram-positive and gram-negative strains of bacteria, including penicillin-resistant staphylococci. The compounds are also characterized by being relatively acid-resistant, thereby to be effective on oral administration, and by low water solubility which makes them useful in repository injectable dosage forms without the necessity for forming salts thereof with organic bases.

3,621,012
OXIDATION OF LACTAMS TO CYCLIC IMIDES
Paul S. Starcher, Charleston; David Trecker, South Charleston, W. Va., and James E. McKeon, Thornwood, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Aug. 18, 1969, Ser. No. 851,082
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 R 11 Claims
Cyclic imides are produced by contacting lactams with a hydroperoxide in the presence of a metal salt catalyst. The starting material lactam must have an unsubstituted methylene position adjacent to the ring nitrogen in order for imidization to occur.

3,621,013
FORMAMIDINE COMPOUNDS OF DIPHENYL-SULFONE
Erhardt Winkelmann, Kelkheim/Taunus, and Wolfgang Raether, Dreieichenhain, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Brunning, Frankfurt/Main, Germany
Filed Mar. 28, 1969, Ser. No. 811,642
Claims priority, application Germany, Apr. 9, 1968, P 17 70 162.1
Int. Cl. C07d *87/38*
U.S. Cl. 260—239.6 4 Claims
Formamidine derivatives of diphenyl-sulfone which are effective medicaments against malaria are prepared by reacting 4,4'-diamino-diphenyl-sulfone of the formula



with N-formyl compounds of the formula



in which —N Z is a pyrrolidino, piperidino or morpholino radical, in the presence of acid halides and, if desired, converting the salts thus obtained into the free bases.

3,621,014
17 ,21-ORTHOCARBONATES OF STEROID DERIVATIVES

Ulrich Stache, Hofheim, Taunus; Werner Haede, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Kurt Radscheit, Kelkheim, Taunus, and Hans-Georg Schroder, Hofheim, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany

Filed Jan. 14, 1969, Ser. No. 791,185
Claims priority, application Germany, Jan. 18, 1968, P 16 68 079.8
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 5 Claims

The present invention relates to 17α,21-orthocarbonates of steroid derivatives.

3,621,015
PROCESS FOR THE MANUFACTURE OF (ANDROST-17β-Y1)-α-PYRONES

Werner Haede, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Kurt Radschelt, Kelkheim, Taunus, and Ulrich Stache, Hofheim, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 3, 1969, Ser. No. 796,164
Claims priority, application Germany, Feb. 23, 1968, F 54 886
Int. Cl. C07c *169/64*
U.S. Cl. 260—239.57 9 Claims

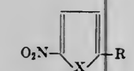
The method of making androst-(17β-αy1)-α-pyrones having inotropic, cardiovascular, and diuretic activity by Wittig reaction of a 20-keto-21-acetal pregnene with a methyl-triphenyl-phosphonium halide to form the corresponding 20-methylene compound, hydrolysis of the 21-acetal group, Michael addition of a malonic acid ester to the 20-methylene unsaturation, hydrolysis of the di-ester formed to the free di-acid, decarboxylation of one carboxy group, cyclization to a 17-enol-α-lactone with a carboxylic acid anhydride, and dehydrogenation to the corresponding α-pyrone; 3-β-hydroxy-21-oxo-23-carbomethoxy-Δ^5-cholenic acid; 3β-hydroxy-21-oxo-23-carboxy-Δ^5-cholenic acid; and 3β-hydroxy-21-oxo-Δ^5-cholenic acid, obtained as intermediates in such a method.

3,621,016
DIAGNOSTIC AIDS FOR USE IN THE DETECTION OF BACTERIA IN BIOLOGICAL AND OTHER FLUIDS

Herbert Berger, Sulzberg-Reid Allgnu, Near.; Otto Dold, Ilvesheim; Dietrich Kruger, Plankstadt/b, Schwetzingen; Kurt Stach, Mannheim; Felix Helmut Schmidt, Mannheim-Neuostheim, and Harald Stork, Lampertheim, Hessen, all of Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung

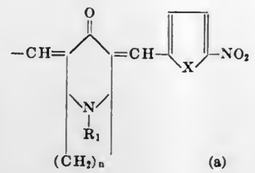
Division of Ser. No. 616,201, Feb. 15, 1967, Pat. No. 3,496,066.
Filed Dec. 26, 1968, Ser. No. 812,501
Int. Cl. C07d *5/30, 27/26, 29/00, 63/12*
U.S. Cl. 260—240.1 12 Claims

The invention is directed to novel compounds of the formula

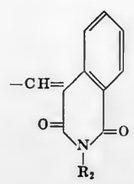


(1)

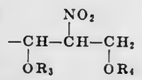
where X is oxygen, sulfur or an alkylated nitrogen atom and R is



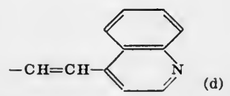
(a)



(b)

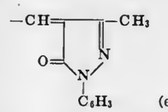


(c)



(d)

or



(e)

where R_1 is an aliphatic, aromatic, araliphatic, acyl, hydroxy, or acyloxy aliphatic radical. R_2 is hydrogen or lower alkyl, R_3 and R_4 are both hydrogen, or, together, an isopropylidene radical and n is 2 or 3; diagnostic agents containing said compounds for use in the detection of bacteria in biological and other fluids, and the process for detecting bacteria in such fluids using said agents which comprises incubating the fluid to be investigated in the presence of a nutrient medium and a compound as above set out, the number of bacteria being directly related to the color change thereafter observed.

3,621,017
SALTS OF THIADIAZINONES

Adolf Zeidler, Ludwigshafen/Rhine; Karl-Heinz Koenig, Ludwigshafen/Rhine; Adolf Fischer, Mutterstadt/Upper Palatinate, and Johann Jung, Limburgerhof/Upper Palatinate, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 23, 1968, Ser. No. 761,874
Claims priority, application Germany, Sept. 30, 1967, P 16 70 275.3
Int. Cl. C07d *93/30*
U.S. Cl. 260—243 R 1 Claim

Valuable new salts of thiadiazinones, especially substituted ammonium salts of benzo-2,1,3-thiadiazinone-(4)-2,2-dioxides and a process for regulation of plant growth with these compounds.

3,621,018
2,6-DIKETO-N-CARBOXYMETHYLMORPHOLINE

Raymond R. Hindersinn, Lewiston; George C. Hopkins, Clarence, and Charles S. Hardo, Tonawanda, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed June 28, 1968, Ser. No. 740,853
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 R 5 Claims

There is provided 2,6-diketo-N-carboxymethylmorpholine produced by a process which comprises contacting nitrilotriacetic acid in N,N-dialkyl acetamide with a dehydrating agent such as acetic anhydride and recovering the product. The compound is useful as an epoxy curing agent.

3,621,019
STEROID INTERMEDIATES

Upendra Kumar Pandit, Slichtstraat 41, Amsterdam, and Henderikus Obias Huisman, de Savornin Lohmanlaan 20, Amstelveen, both of Netherlands

Filed Sept. 3, 1969, Ser. No. 855,041
Int. Cl. C07d *87/32, 27/04*
U.S. Cl. 260—247.7 C 5 Claims

The total syntheses of steroids has become a reality and more recently has become commercially feasible. The present invention is an improvement on the currently employed techniques and involves the use of an enamine of the tetralone rather than the tetralone itself as a critical intermediate in the total synthesis. The advantage of the method is improved yields.

3,621,020
PROCESS FOR TRIMERIZING POLYISOCYANATES

Leo Ojakaar, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 676,617, Oct. 19, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 886,033
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS 10 Claims

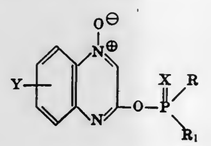
A rapid and economical method for trimerizing organic polyisocyanates by mixing an organic polyisocyanate with substituted guanidine and/or isobiguanide catalysts. The catalysts exhibit high activity, usually requiring little or no heat to induce trimerization. The trimerized polyisocyanates are especially useful in the preparation of rigid polyurethane foams.

3,621,021
QUINOXALINYL N^4-OXIDE PHOSPHATES, METHODS OF PREPARATION AND USE OF SAME AS PESTICIDES

Bernard Miller, Plainsboro, and Jackson Pollard English, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 7, 1967, Ser. No. 658,598
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 6 Claims

Novel quinoxalinyl N^4-oxide phosphates together with their preparation and use for controlling insects and arachnids are disclosed. They have the formula:



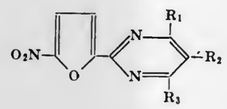
wherein R and R_1 each are selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, phenyl, halo-substituted phenyl, lower alkyl-substituted phenyl, and NR_2 groups wherein R_2 is hydrogen or lower alkyl; X is sulfur or oxygen; and Y is hydrogen, halogen, lower alkyl or lower alkoxy.

3,621,022
ANTIBACTERIAL 5-NITROFURYL-PYRIMIDINES

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Grossachsen; Hartmut, Merdes, Heidelberg; Kurt Stach, Mannheim-Waldhof; Wolfgang Voemel, Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Dec. 13, 1968, Ser. No. 783,715
Claims priority, application Germany, Jan. 20, 1968, P 16 70 307.4
Int. Cl. C07d *51/38*
U.S. Cl. 260—251 R 8 Claims

Novel 5-nitrofuran derivatives and the physiologically acceptable salts thereof having the formula:



wherein R_1 and R_2 each represent hydrogen, hydroxyl, lower alkyl, alkoxy, amino or acylamino, and R_3 is hydrogen, hydroxyl, lower alkoxy, amino or acylamino.

The 5-nitrofuran derivatives of the above formula constitute particularly effective antibacterial agents and are particularly useful in the treatment of urinary track infections.

3,621,023
1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

Dhurairajan Padmanabhan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 27, 1968, Ser. No. 732,045
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 E 2 Claims

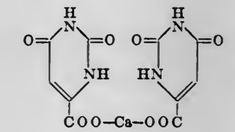
Condensed difluoro or diacetoxy 1,3,2-oxazaborinides are prepared by treating (a) a condensation product of a naphthostyril with an active ketomethylene compound, such as barbituric acid or its, N,N-dialkyl derivatives, an indandione, an oxindole or a pyrazolone, (b) a condensation product of an o-hydroxybenzaldehyde with an aromatic amine, or (c) an ortho-(beny-azol-2yl)-naphthol or phenol, the azole being oxazole, thiazole or imidazole, ortho-(benzazol-2yl)-naphthol either (1) boron trifluoride dissolved in ether, or (2) orthoboric acid, benzeneboronic acid or esters thereof, in acetic acid in the presence of acetic anhydride, at reflux. The difluoro and diacetoxy-1,3,2-oxazaborinides are characterized by affinity for polyesters when applied by disperse dyeing methods and fluoresce on the fiber. Similar effects are obtained on nylon and acetate and to some extent on modified polyacrylonitrile.

3,621,024
THERAPEUTICALLY EFFECTIVE CALCIUM DIOROTATE

Hans Alfred Nieper, Sedanstrasse 21, 3 Hanover, Germany

Filed Nov. 13, 1968, Ser. No. 775,539
Claims priority, application Great Britain, Nov. 15, 1967, 52,034/67
Int. Cl. C07d *51/30*
U.S. Cl. 260—256.4 1 Claim

The novel therapeutically valuable compound calcium diorotate, of the structural formula



and therapeutic compositions containing calcium diorotate.

3,621,025
IMIDAZO AND PYRIMIDO[2,1-b]QUINAZOLINE COMPOUNDS

Timothy Yu-Wen Jen, and Bernard Loev, both of Broomall, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Dec. 18, 1969, Ser. No. 886,370
Int. Cl. C07d *57/12*
U.S. Cl. 260—256.4 F 7 Claims

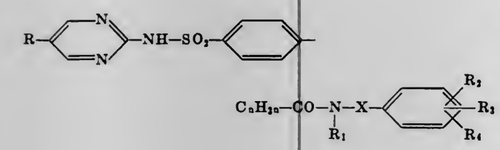
The compounds are tetrahydroimidazo (and pyrimido)-[2,1-b]quinazolines which have hypotensive activity and in addition have central nervous system depressant activity.

3,621,026
BLOOD-SUGAR-LOWERING SULFONYLAMINO PYRIMIDINES

Klaus Gutsche, and Eberhard Schroder, both of Berlin, Germany, assignors to Schering AG. of Berlin, Bergkamen and Berlin, Germany

Filed Dec. 19, 1968, Ser. No. 786,548
Claims priority, application Germany, Dec. 30, 1967, P 16 95 855.7
Int. Cl. C07d 51/36
U.S. Cl. 260—256.5 R 13 Claims

Sulfonylamino pyrimidine derivatives of the formula



wherein R is lower alkyl, lower alkoxy, lower-alkoxy-lower-alkoxy, cycloalkyl or cycloalkoxy having five or six carbon atoms, or phenyl;
R_1 is hydrogen or lower alkyl;
R_2, R_3, and R_4 are members of the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkanoyl, lower alkanoyl-amino, trifluoromethyl, halogen, aminocarbonyl, benzyloxy, lower alkenyloxy, and phenyl;
n is 1 or 2; and
X is a carbon-to-carbon bond or CH_2,
and the salts of the derivatives with physiologically tolerated bases lower the blood sugar level in warm-blooded animals.

3,621,027
1-AMINOALKYL-2,6-DIARYL 4,5,6,7 TETRAHYDRO-4-OXINDALES

Karl Schoen, Kew Gardens, and Michael Finizio, Brooklyn, both of N.Y., assignors to Endo Laboratories Inc., Garden City, N.Y.

Filed Mar. 18, 1968, Ser. No. 714,067
Int. Cl. C07d 27/56
U.S. Cl. 260—293.61 11 Claims

The novel 1-aminoalkyl-2,6-diaryl-4,5,6,7-tetrahydroindoles of the present application are useful as analgetics and antitussives. They may be prepared by either of two routes. In the first mode of preparation, the corresponding 2,6-diaryl-4,5,6,7-tetrahydro-4-oxoindole is reacted with aminoalkylating agent. In the second mode, a 2-aroylmethyl-6-aryl-1,3-cyclohexanedione is reacted with an appropriate diamine. In order to produce the compounds of this invention which are devoid of an oxo substituent at the 4 position, the 4-oxoindole produced as above is treated with an appropriate reducing agent.

3,621,028
CERTAIN Δ^2-THIAZOLINEALKANOIC ACIDS AND ESTERS

Robert Anthony Newberry, Bourne End, England, assignor to John Wyeth & Brother Limited, Taplow, Maidenhead, Berkshire, England

Filed Apr. 8, 1969, Ser. No. 814,444
Claims priority, application Great Britain, Apr. 9, 1968, 16,909/68
Int. Cl. C07d 11/24
U.S. Cl. 260—306.7 10 Claims

This invention concerns 2-cycloalkyl or aryl-4-hydroxy-2-thiazoline-4 and 5-alkanoic acids which are pharmacologically efficacious as anti-inflammatory agents and which are useful as intermediates in the preparation of the corresponding thiazoles.

3,621,029
DERIVATIVES OF AMINOPENICILLANIC ACID

Peter Bamberg; Bertil Ake Ekstrom, and Berndt Olof Harald Sjoberg, all of Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation of Ser. No. 603,150, Dec. 20, 1966.
Filed July 15, 1969, Ser. No. 849,546
Int. Cl. C07d 99/14
U.S. Cl. 260—306.7 10 Claims

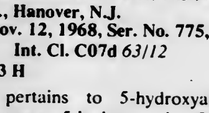
Esters of 6-aminopencillanic acid as well as a method for their preparation are disclosed. The compounds are useful as intermediates in the preparation of penicillins.

3,621,030
NEW UREIDO DERIVATIVES OF ISOPERTHIOCYANIC ACID AND THE METHOD FOR THEIR PREPARATION

Raymond Seltzer, New York, N.Y., assignor to M&T Chemicals Inc., New York, N.Y.

Filed Dec. 18, 1968, Ser. No. 784,919
Int. Cl. C07d 91/70
U.S. Cl. 260—306.8 R 2 Claims

This invention relates to heterocyclic compounds of the formula



wherein Y is selected from the group consisting of oxygen and sulfur and R is a hydrocarbon, said compounds being useful as peroxide inhibitors and corrosion inhibitors.

3,621,031
OPTICALLY ACTIVE DIAMINO PHOSPHINE SULFIDES

Henry Tolkmith, Midland, Mich.; James N. Seiber, Davis, Calif., and Paul B. Budde, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 604,153, Dec. 23, 1966, now abandoned. This application Oct. 22, 1969, Ser. No. 868,595
Int. Cl. C07d 49/36
U.S. Cl. 260—309 17 Claims

Optically active isomers of asymmetrical diamino phosphine sulfides containing a P-imidazolyl radical are resolved and separated.

3,621,032
TRICYCLIC POLYSULFUR COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Zaven S. Ariyan, Woodbury, Conn., and Robert L. Martin, Endicott, N.Y., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 6, 1969, Ser. No. 804,998
Int. Cl. C07d 77/00; C08c 11/60
U.S. Cl. 260—327 R 13 Claims

Novel polysulfur tricyclic compounds wherein two substituted aromatic rings are attached to each other through two tetrasulfide links.

3,621,033
5-HYDROXYAMINO-1,3-DIOXANES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Nov. 12, 1968, Ser. No. 775,196
Int. Cl. C07d 63/12
U.S. Cl. 260—332.3 H 5 Claims

This dislosure pertains to 5-hydroxyamino-2,5-disubstituted-1,3-dioxanes, e.g., 5-hydroxyamino-5-methyl-2-phenyl-1,3-dioxane. These compounds are useful as antifungal and antibacterial agents.

3,621,034
TETRAOXASPIRO(5,5)UNDECANES AND PROCESS FOR THE PREPARATION THEREOF

Wolfgang Fruhstorfer; Istvan Nameny; Wilhelm Baumer, and Bernd Dennler, all of Darmstadt, Germany, assignors to E. Merck A.G., Darmstadt, Germany

Filed Nov. 25, 1969, Ser. No. 879,923
Claims priority, application Germany, Dec. 7, 1968, P 18 13 316.9
Int. Cl. C07d 15/00
U.S. Cl. 260—340.7 20 Claims

Tetraoxaspiro(5,5)undecanes of the formula



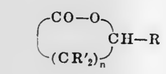
wherein A is alkylene of 1–4 carbon atoms, X is O or S and R^1 is alkyl of 2–21 carbon atoms or $-(CH_2)_n-COOR^2$ in which *n* is 1–3 and R^2 is alkyl of up to 18 carbon atoms, which are stabilizers for polyolefins and other polymers, are produced by reacting pentaerythritol with an aldehyde of the formula $R^1-X-A-CHO$ or by reacting the corresponding bis-p,p'-alkenyl substituted or bis-p,p'-hydroxyalkyl substituted tetraoxaspirol(5,5)undecanes with a compound of the formula R^1-XH in which R^1, X and A have the values given above.

3,621,035
PROCESS FOR PREPARING SUBSTITUTED LACTONES

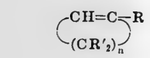
Andre Lakodey, Pierre-Benite; Henri Mathais, Ste-Foy les Lyon, and Francis Weiss, Pierre-Benite, all of France, assignors to Ugine Kuhlmann, Paris, France

Filed Oct. 22, 1969, Ser. No. 868,640
Claims priority, application France, Oct. 22, 1968, 170,806
Int. Cl. C07d 9/00, 7/06, 5/06
U.S. Cl. 260—343 8 Claims

A process for preparing substituted lactones having the formula:



wherein R is a linear or branched alkyl radical having one to 12 carbon atoms, a cycloaklyl radical having three to 12 carbon atoms, or a phenyl radical, R' represents a hydrogen atom or an alkyl radical having one to four carbon atoms, *n* is an integer number between two and 11, which comprises reacting a mixture of hydrogen peroxide and formic acid with a 1-substituted cycloalkene of the formula:

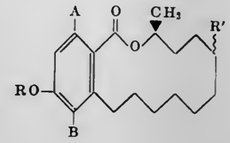


in which R has the same meaning as defined above.

3,621,036
DERIVATIVES OF ZEARALANE

Norman P. Jensen, Watchung, and Thomas B. Windholz, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 27, 1969, Ser. No. 803,048
Int. Cl. C07d 9/00
U.S. Cl. 260—343.2 F 17 Claims



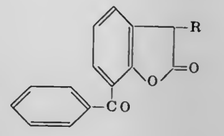
wherein A is a member selected from the group consisting of hydrogen, hydroxy, and —OR; R is a member of the group consisting of hydrogen, lower alkyl, aralkyl, lower alkanoyl and benzol; B is a member of the group consisting of hydrogen and nitro, provided that B cannot be nitro when A is hydrogen; and R' is a member of the group consisting of $-CH_2OH$, —CHO, COOR'' and $-CH_2COOR$ wherein R'' is a member of the group consisting of hydrogen, lower alkyl and aralkyl, are administered orally and parenterally to animals in order to achieve an anabolic and estrogenic response such as increasing the growth rate of meat-producing animals.

3,621,037
BENZOFURAN DERIVATIVES

Daniel Farge, Thiais; Claude Moutonnier, Paris, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc SA, Paris, France

Filed May 18, 1970, Ser. No. 38,595
Claims priority, application France, May 19, 1969, 6916092
Int. Cl. C07d 5/40
U.S. Cl. 260—343.3 3 Claims

The new benzofuran derivatives of the formula:



in which R represents hydrogen or an alkyl radical containing 1 through 4 carbon atoms, optionally carrying at least one halogen atom, possess pharmacodynamic properties making them useful as antiinflammatory agents.

3,621,038
DERIVATIVES OF 2-AZIDO-2-HYDROXY-1-NAPHTHALENEACETIC ACID γ-LACTONES AND PREPARATION THEREOF

George Santroch, and Martin A. Davis, both of Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison, Limited, St. Laurent, Quebec, Canada

Filed Sept. 4, 1969, Ser. No. 855,408
Int. Cl. C07d 5/32
U.S. Cl. 260—343.3 5 Claims

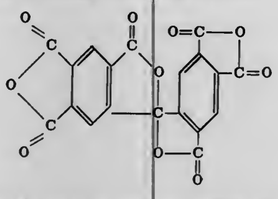
There disclosed herein 2-azido-1-carboxy-1,2,3,4-tetrahydro-2-hydroxy-7-methoxy-1-naphthaleneacetic acid γ-lactone methyl ester and 2-azido-1,2,3,4-tetrahydro-2-hydroxy-7-methoxy-1-methyl-1-naphthaleneacetic acid, γ-lactone. The compounds have antibacterial, antifungal, and trichomonicidal activities, and methods for their preparation and use are also disclosed.

3,621,039
BENZOPHENONEHEXACARBOXYLIC ACID-4,5,4',5'-DIANHYDRIDE-2,2'-DILACTONE

Helmut Muller, Lubecker Str. No. 8, Gladbeck, Germany

Filed Dec. 8, 1969, Ser. No. 883,293
Int. Cl. C07d 5/46
U.S. Cl. 260—343.3 1 Claim

Benzophenonehexacarboxylic acid-4,5,4',5'-dianhydride-2,2'-dilactone ($C_{19}H_4O_{10}$), having the formula:



This compound is made in one embodiment by the reaction of benzophenone 2,4,5,2',4',5'-hexacarboxylic acid with acetic anhydride.

Esters thereof with alkanols are useful as plasticizers for polyvinylchloride.

3,621,040
NEW SUBSTITUTED UREA DERIVATIVES

Andre R. Gagneux, Basel, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 783,411, Dec. 12, 1968. Continuation-in-part of Ser. No. 593,678 and 593,703, both of Nov. 14, 1966, abandoned. Filed Dec. 3, 1969, Ser. No. 882,381
Int. Cl. C07d 7/18
U.S. Cl. 260—345.1 6 Claims

Substituted urea derivatives having useful antibacterial activity as well as starting materials for their production and methods for preparing the said starting materials; pharmaceutical compositions containing the subject urea derivatives as active ingredient and method for the production of tuberculostatic effects. An illustrative embodiment is 1-(1-adamantyl-3-(3,4-dichloro-phenyl)-urea. One starting material variation is the use of 2-oxa-adamantane-1-amines.

3,621,041
CHROMANS

Russell Kwok, and Albert Pohland, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 5, 1968, Ser. No. 742,481
Int. Cl. C07d 7/20
U.S. Cl. 260—345.2 1 Claim

Des-N-methyldihydroacronycine and analogs thereof and a process for the preparation thereof comprising (1) halogenating a 7-alkoxy-2,2-dialkylchroman to the 6-halo derivative, (2) converting the b-halo derivative to the 5-amino-substituted chroman with sodium amide in liquid ammonia, (3) condensing the amine with an o-halobenzoic acid to yield the 2-carboxyanilino derivative and (4) cyclizing the carboxyanilino compound to the des-N-methyldihydroacronycine with polyphosphoric acid. Des-N-methyldihydroacronycine can be converted to acronycine, a known antitumor agent.

3,621,042
PROCESS FOR THE PREPARATION OF METHYL p-AMINOBENZENESULPHONYLCARBAMATE

Zdzislaw Jan Bujwid, London, and John Francis Hodgson, Romford, both of England, assignors to May F. Baker Limited, Dagenha, Essex, England

Filed Mar. 19, 1970, Ser. No. 21,194
Claims priority, application Great Britain, Mar. 20, 1969, 14,786/69
Int. Cl. C07c 143/80
U.S. Cl. 260—397.7 12 Claims

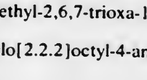
Methyl p-aminobenzenesulphonylcarbamate and its alkali metal and alkaline earth metal salts, which are useful as herbicides, are prepared by a new process which comprises reacting an alkali metal or alkaline earth metal salt of sulphanilamide with dimethyl carbonate in methanol at a temperature up to the boiling point of the reaction mixture. The free methyl p-aminobenzenesulphonylcarbamate can be obtained from the resulting alkali metal or alkaline earth metal salt of the sulphonylcarbamic ester by treatment with an acid.

3,621,043
N-SUBSTITUTED OCTADECADIENOIC ACID AMIDES AS CHOLESTEROL LOWERING AGENTS

Takashi Seki, Miyayamacho, Toyonaka; Chiharu Saito, Sonehigashi-machi, Toyonaka; Katsuyuki Toki, Kohshienguchi, Nishinomiya; Keisuke Matsuka, Shonai-nishimachi, Toyonaka; Yoshio Suzuki, Kawaranomiya, Amagasaki, and Akira Kobayashi, Ikeda, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 478,758, Aug. 10, 1965, abandoned, which in turn is a continuation-in-part of application Ser. No. 342,682, Feb. 5, 1964, now abandoned. Filed Mar. 22, 1967, Ser. No. 642,266. Claims priority, application Japan, Feb. 6, 1963, 38/6314, 38/6315; Aug. 14, 1964, 39/46998; Aug. 28, 1964, 39/49074; Aug. 29, 1964, 39/49120, 39/49121
Int. Cl. C09f 7/00
U.S. Cl. 260—404 3 Claims

N-substituted octadecadienoic acid amides of the formula



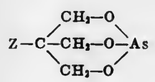
wherein R' is, for example, α-methylbenzyl and various other organic substituents, and R'' is hydrogen or a radical described with respect to R', are provided, which compounds exhibit cholesterol-lowering activity.

3,621,044
2,6,7-TRIOXA-1-ARSABICYCLO[2.2.2]OCTANE COMPOUNDS

John F. Deffner, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 24, 1969, Ser. No. 819,122
Int. Cl. C07f 9/78; A01n 9/00, 9/24
U.S. Cl. 260—440 9 Claims

Novel derivatives of 2,6,7-trioxa-1-arsabicyclo[2.2.2]octane are useful as pesticides. The compounds are represented by the general formula



wherein Z can be alkyl, aryl, aralkyl, alkaryl, cycloalkyl, alkoxy, aryloxy, acyl, acyloxy, acyloxymethyl, benzoxymethyl, amino, nitro, nitrobenzoxymethyl, ammonium nitrobenzoate and chrysanthemumoxymethyl. Examples include
4-propyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-nitro-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-amino-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-acetoxymethyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-benzoxymethyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-(p-nitrobenzoxymethyl)-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
4-chrysanthemumoxymethyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane
2,6,7-trioxa-1-arsabicyclo[2.2.2]octyl-4-ammonium p-nitrobenzoate.

3,621,045
PROCESS FOR THE PREPARATION OF ORGANOFLUOROSILANES

Richard Muller, Radebeul; Reiner Irmisch, Dresden, and Harald Rotzsche, Dresden, all of Germany, assignors to Insitut fur Silikon und Fluorkarbon-Chemie, Radebeul, Germany

Filed Nov. 4, 1968, Ser. No. 773,315
Int. Cl. C07d 7/12
U.S. Cl. 260—448.2 E 7 Claims

Process for preparing organofluorosilanes of the general formula R_a R'_b Si $F_{4-(a+b)}$ wherein a represent 0 to 2; b represents 1 to 3; $(a+b)$ is smaller than 4; R represents lower alkyl; R' stands for phenyl, iso-propoxy, trimethylsiloxy and anilino, which process comprises reacting hydrogensilanes of the general formula R_a $R°_b$ Si $H_{4-(a+b)}$ wherein R_a, $R°_b$ and $(a+b)$ have the same meaning as above, with ammonium fluoride or ammonium-hydrogen fluoride preferably in a solution of an amine or amide, whereby hydrogen linked to Si is exchanged by F, while the R—Si and R'—Si bonds are unaffected. The so obtained organofluorosilanes are valuable starting products in the synthesis of organosilicon products.

3,621,046
ORGANOSILICON COMPOUNDS

Abe Berger, and Terry G. Selin, both of Schenectady, N.Y., assignors to General Electric Company

Filed Jan. 6, 1969, Ser. No. 789,397
Int. Cl. C07f 7/04, 7/18
U.S. Cl. 260—448.8 R 3 Claims

Monomeric organosilicon compounds having an alkyl substituent with two thioacid ester groups.

3,621,047
A BIS-AND TRIS-TRIALKOXYSILYLALKYLAMINES

Hans Dietrich Golitz, Cologne Stammheim; Walter Simmler, Odenthal-Schlinghofen, and Peter Schwabe, Leichlingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 11, 1969, Ser. No. 857,203
Claims priority, application Germany, Sept. 20, 1968, P 17 94 197.8
Int. Cl. C07f 7/04
U.S. Cl. 260—448.8 R 5 Claims

Novel cross-linking agents are disclosed which can be combined with plastically shapable organopolysiloxanes; the resulting novel mixtures or compositions being storage stable under exclusion of all moisture. The cross-linking reaction takes place on exposure of the compositions to water, atmospheric humidity sufficing, at temperatures below 50° C. The compositions are especially adapted to be used for the filling of joints and as sealing materials in the building industry. The elastomers resulting therefrom have an increased adhesion to the substrate saving the expenditure of priming, and are transparent. The novel compositions comprise:

A. an α,ω-dihydroxy-poly-(diorgano-siloxane) which, in addition to its diorganosiloxane units, may contain up to 10 mol-percent of siloxane units having the formula $CH_3SiO_{3/2}$, and may be admixed with fillers and an α,ω-bis-(trimethyl-siloxy)-poly-(diorgano-siloxane); and

B. a cross-linking agent having the formula $[(RO—)_3Si—CH(R')—]_nNQ_{3-n}$

in which n is 2 or 3, R is an alkyl radical with 1 to 4 carbon atoms, R' is a hydrogen atom, an alkyl radical with 1 to 6 carbon atoms, a cyclohexyl radical a phenyl radical, and Q is an alkyl or alkenyl radical with 2 to 4 carbon atoms, an aralkyl radical with 7 to 10 carbon atoms, a dimethylaminoalkyl radical with 2 to 4 carbon atoms in its alkylene group, or a methoxy- or ethoxy-ethyl or -propyl radical.

3,621,048
QUATERNARY AMMONIUM COMPOUNDS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 578,981, Sept. 13, 1966, now abandoned. This application Mar. 14, 1968, Ser. No. 712,968
Int. Cl. C07c 155/02, 155/08
U.S. Cl. 260—455 A 10 Claims

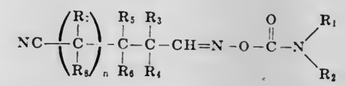
Quaternary ammonium carbamate, thiocarbamate, dithiocarbamate and carbamide compounds. Typical examples are
$[C_1H_9NHCOO(CH_2)_2N^+(CH_3)_2C_{12}H_{25}]Br$
$[C4H_9NHCSO(CH_2)_2N^+(CH_3)_2C_{12}H_{25}]Br$
$[CH_3NHCSS(CH_2)_2N^+(CH_3)_2C_{12}H_{25}]Br$
$[C_2H_5NHCONH(CH_2)_2N^+(CH_3)_2C_{12}H_{25}]Br$
These compounds are effective against gram positive bacteria and fungi and reduce caries and inhibit formation of oral calculus. The thiocarbamates can be prepared by converting amino alcohols to sodium salts thereof with metallic sodium and reacting isothiocyanates with the sodium salts followed by quaternization. The carbamates can be prepared by reacting isocyanates with amino alcohols followed by quaternization. The dithiocarbamates can be prepared by reacting isothiocyanates with sodium salts of aminoalkanethiols followed by quaternization. The carbimides can be prepared by reacting isocyanates with alkanediamines followed by quaternization.

3,621,049
CYANOALKYLALDOXIME CARBAMATES

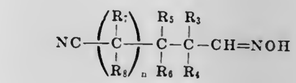
Roger Williams Addor, and David Edgar Ailman, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 1, 1969, Ser. No. 812,325
Int. Cl. C07c 121/30, 121/52, 121/00
U.S. Cl. 260—465.4 7 Claims

Insecticidal and acaricidal compounds are provided having the formula:



wherein:
R_1 and R_2 are each selected from the group consisting of hydrogen, lower alkyl, and allyl, provided that when either R_1 or R_2 is hydrogen, the other substituent must be lower alkyl or allyl, and
R_3, R_4, R_5, R_6, R_7, and R_8 are each selected from the group consisting of lower alkyl, hydrogen and phenyl, and
n is 0 or 1.
The above compounds are prepared by a variety of process routes from novel cyanoalkylaldoxime intermediates of the formula:



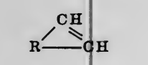
wherein R_3, R_4, R_5, R_6, R_7, R_8 and n are as defined above.

3,621,050
METHOD FOR PRODUCING A PEROXYNITRATE

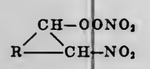
Donald R. Lachowicz; Todd S. Simmons, and Kenneth L. Kreuz, all of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 541,431, Mar. 10, 1966, Pat. No. 3,466,326, Continuation-in-part of application Ser. No. 466,816, June 24, 1965, now Patent No. 3,415,856. Filed Feb. 19, 1969, Ser. No. 831,793
Int. Cl. C07c 77/00
U.S. Cl. 260—466 6 Claims

Contacting a cycloalkene of the formula:



with a mixture of dinitrogen tetroxide and oxygen to produce peroxy nitrates of the formula:



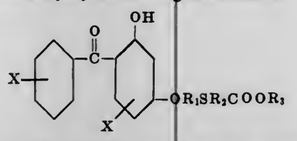
which peroxy nitrates may be converted to alkandioic acids.

3,621,051
SUBSTITUTED (4-BENZOYL-2-HYDROXY PHENOXY) ALKYL THIOALKANOIC ACID ESTERS

Ingenuin Hechenbleikner, Kenwood; John F. Hussar, Loveland; Arthur F. Koeniger, Cincinnati, and William P. Enlow, Reading, all of Ohio, assignors to Carlisle Chemical Works, Inc., Reading, Ohio

Filed Feb. 24, 1969, Ser. No. 801,791
Int. Cl. C07c 149/40
U.S. Cl. 260—470 11 Claims

Compounds are prepared having the formula



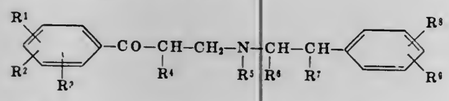
where X is H, OH, R_4, OR_4 or halogen, R_1 is hydrocarbyl of two to six carbon atoms, R_2 is hydrocarbyl of one to four carbon atoms, R_3 is hydrocarbyl of one to 22 carbon atoms. The compounds are useful as heat and light stabilizers for organic polymers, particularly alpha mono-olefin polymers.

3,621,052
N-PROPIOPHENONE-NOREPHEDRINES AND SALTS THEREOF

Kurt Thiele, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed July 1, 1968, Ser. No. 749,555
Claims priority, application Germany, June 29, 1967, P 15 93 836.0
Int. Cl. C07c 95/08
U.S. Cl. 260—570.5 C 6 Claims

Amino ketones of the formula



I

wherein:
R^1 is selected from the group consisting of —Br, lower alkyl, $—NH_2$ and trifluoromethyl;
R^2 and R^3 are selected from the group consisting of —H, —Cl, —Br, lower alkyl, —OH and lower alkoxy;
R^4 is —H, methyl or ethyl;
R^5 is —H or lower alkyl;
R^6 is —H or methyl;
R^7 is —H or —OH and
at least one of R^4 and R^5 is —OH and the other is —H, —OH, halogen, lower alkyl or lower alkoxy and certain amino ketones of said formula wherein R^4, R^5, R^6 and R^7 are —H, R^6 is methyl and R^7 is —OH and their pharmacologically acceptable acid addition salts and quaternary ammonium salts, such compounds having pharmaceutical activity in improving the heart function.

3,621,053
PROCESS FOR RECOVERING ITACONIC ACID AND SALTS THEREOF FROM FERMENTED BROTH

Tatsuyoshi Kobayashi, RA 24,537 Ikejiri-cho Setagaya-ku, and Isei Nakamura, 14-9, 2-chome, Arai, both of Tokyo, Japan

Filed Dec. 27, 1967, Ser. No. 693,706
Int. Cl. C07c 51/42, 51/52
U.S. Cl. 260—527 R 4 Claims

By adding a suitable amount of basic lead carbonate to the filtrate of itaconic acid fermentation broth, the lead salt of the itaconic acid is precipitated and then separated from the solution. This lead salt of the acid is double decomposed by adding a solution of carbonate or bicarbonate of alkali or ammonium. The precipitate of basic lead carbonate formed in the solution can be separated and recycled to the first step of the process. The alkali or ammonium salt of the itaconic acid in solution can then be crystallized by concentration to obtain said acid salt or contacted with a cation-exchanger to form the free acid which can be crystallized from the solution.

3,621,054
PRODUCTION OF METHACRYLIC ACID

Kenneth L. Olivier, 709 Emerald Way, Placentia, Calif.

Filed July 31, 1967, Ser. No. 657,011
Int. Cl. C07c 51/32, 67/00
U.S. Cl. 260—533 A 14 Claims

Methacrylic acid is produced by the oxidative carbonylation of propylene by contacting propylene, oxygen and carbon monoxide in the presence of a Group VIII noble metal catalyst containing a redox agent and an alkali metal acetate. Preferably the oxidation is performed in liquid phase comprising a low molecular weight fatty acid as the solvent. In a typical embodiment, the Group VIII noble metal concentration is from 0.001 to 1.0 molar, the concentration of the redox metal is from 0.05 to 0.5 molar, the concentration of the halide anion is from 0.1 to 0.5 molar and the carbon monoxide partial pressure is from 10 to about 70 percent of the total pressure which is from about 300 to 3,000 p.s.i.g. Under these conditions a substantial portion of the product comprises the desired methacrylic acid.

3,621,055
UREA DERIVATIVES AND METHODS FOR CONTROLLING UNWANTED PLANT GROWTH

Adolf Fischer, Mutterstadt Pfalz; Karl-Heinz Koenig, Ludwigshafen; Gustav Steinbrunn, Schwegenheim Pfalz, and Albrecht Zwchocke, Bad Duerkheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed July 10, 1967, Ser. No. 652,034
Claims priority, application Germany, July 19, 1966, P 15 42 834.9 Jan. 17, 1967, P 16 42 217.6
Int. Cl. C07c 127/22
U.S. Cl. 260—545 R 5 Claims

Urea derivatives and method for controlling unwanted plant growth.

3,621,056
SUBSTITUTED BENZYLIDENEAMINO GUANIDINES

William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Aug. 16, 1968, Ser. No. 753,068
Int. Cl. C07c 109/18
U.S. Cl. 260—545 R 2 Claims

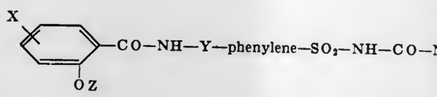
Benzylideneamino guanidines substituted with lower alkanoyl groups, e.g., 1-(2,6-dichlorobenzylideneamino)-3-acetoxy-2,3-diacetylguanidine, are useful as hypotensives.

3,621,057
BENZENESULFONYL-UREAS AND PROCESS FOR THEIR MANUFACTURE

Helmut Weber, Frankfurt/Main; Walter Aumuller, Kelkheim/Taunus; Rudi Weyer, Frankfurt/Main; Karl Muth, Kelkheim/Taunus, and Felix Helmut Schmidt, Mannheim-Neuostheim, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Nov. 29, 1966, Ser. No. 597,539
Claims priority, application Germany, Dec. 2, 1965, F 47,816
Int. Cl. C07c 127/00
U.S. Cl. 260—553 DA 12 Claims

Benzenesulfonyl-ureas of the formula



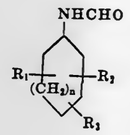
in which R^1 is alkyl or alkenyl of two to eight carbon atoms, cycloalkyl of five to eight carbon atoms, cyclohexyl-lower alkyl, lower alkyl-cyclohexyl, lower alkoxy-cyclohexyl, phenyl-lower alkyl, endoalkylene-cyclohexyl, endoalkylene-cyclohexenyl, endoalkylene-cyclohexylmethyl or endoalkylene-cyclohexenylmethyl having one to two carbon atoms in the endoalkylene moiety, cyclohexenyl or cyclohexenylmethyl; Y is an alkylene of one to four carbon atoms; Z is phenyl or ptolyl; and X is hydrogen, methyl, chloro or nitro substituted in the four- or five-position; and physiologically tolerable salts thereof are disclosed as having utility as orally administrable hypoglycemic agents in the treatment of diabetes mellitus.

3,621,058
NOVEL FORMAMIDO-CYCLOALKANE DERIVATIVES

Masuo Murakami, Tokyo; Masaru Iwanami, Kanagawa-ken; Kazuo Kubo, Saitama-ken; Kenji Sano, Saitama-ken; Mashiro Kochiya, Tokyo, and Hideki Arima, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed June 25, 1969, Ser. No. 836,648
Claims priority, application Japan, June 27, 1968, 43/44158
Int. Cl. C07c 103/00
U.S. Cl. 260—561 R 15 Claims

Novel formamido-cycloalkane derivatives of the formula



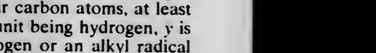
wherein R_1 and R_2 are same or different and each represents a hydrogen atom or an alkyl radical having one to five carbon atoms, R_3 represents an alkyl radical having one to 10 carbon atoms and n is an integer from one to two. The compounds are excellent as analgesic.

3,621,059
AMIDES OF HEXAFLUOROPROPYLENE OXIDE POLYMER ACIDS AND POLYANLYLENE OXIDE

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1969, Ser. No. 846,269
Int. Cl. C07c 103/00
U.S. Cl. 260—561 HL 11 Claims

Amides derived from hexafluoropropylene oxide polymer acids and polyalkylene oxide having the formula:



wherein R_f is a perfluorozlkyl radical having one to eight carbon atoms, n is an integer of zero to 100, R^1 is an alkylene radical having two to 12 carbon atoms, R^2 is hydrogen or an alkyl radical having one to four carbon atoms, R^3 is hydrogen or an alkyl radical having one to four carbon atoms, at least one of R^2 and R^3 in each repeating unit being hydrogen, y is an integer of one to 60, R^4 is hydrogen or an alkyl radical having one to four carbon atoms, and R^5 is hydrogen or an alkyl radical having one to six carbon atoms. These amides function efficiently as surfactants and emulsifying agents.

3,621,060
PROCESS FOR PREPARATION OF ENAMINES FROM HYDROCARBYLSILANES

Terry G. Selin, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 3, 1969, Ser. No. 788,936
Int. Cl. C07c 85/08; C07f 7/08
U.S. Cl. 260—563 R 8 Claims

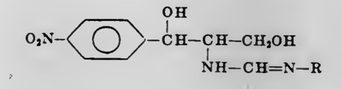
A ketonic hydrocarbon is converted to an enamine by heating a mixture of the ketonic hydrocarbon with an organosilane having at least one dialkylamino group directly attached to the silicon. In the reaction, the organosilicon is converted to a organopolysiloxane.

3,621,061
NEW FORMAMIDINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Pal Benko; Zoltan Budai, and Laszlo Pallos, all of Budapest, Hungary, assignors to Egyesult Gyogyszer es Tapszergyar, Budapest, Hungary

Filed Apr. 11, 1969, Ser. No. 815,503
Claims priority, application Hungary, Apr. 12, 1968, EE-1507
Int. Cl. C07e 123/00
U.S. Cl. 260—564 R 4 Claims

Compounds of the general formula I and their acid addition salts



(I)

wherein R stands for a member selected from the group consisting of unsubstituted phenyl, substituted phenyl, and naphthyl radicals, wherein the substituent of the phenyl group is selected from the group consisting of halogen, lower alkyl, lower alkoxy, trihalomethyl, nitro group, and a combination thereof, wherein the halogen substituent may be one or two halogen atoms. These compounds have antimicrobial effect.

3,621,062
2-(8-CYCLOHEXYLOCTANOYL OR 7-CYCLOHEXYLHEPTANOYL)-1-NAPHTHOL

Sydney Archer, Bethlehem, and Roman R. Lorenz, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 589,202, Oct., 1966, now abandoned. This application Nov. 26, 1969, Ser. No. 880,370
Int. Cl. C07c *49/82*
U.S. Cl. 260—590 2 Claims

Intermediates for the preparation of 2-hydroxy-3-(8-cyclohexyloctyl)-1,4-naphthoquinone and 2-hydroxy-3-(7-cyclohexylheptyl)-1,4-naphthoquinone, potent antimalarial agents, are prepared as follows: reacting 8-cyclohexyloctanoic acid or 7-cyclohexylheptanoic acid with 1-naphthol to form 2-(8-cyclohexyloctanoyl or 7-cyclohexylheptanoyl)-1-naphthol; reducing the 2-acyl-1-naphthol to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)1-1-naphthol; oxidizing 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1Napthol to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone; reacting the latter with a peroxide under alkaline conditions to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone-2,3-oxide; and, hydrolyzing the 2,3-oxide under acidic conditions to yield 2-hydroxy-3-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone.

3,621,063
UNSATURATED ACYCLICKETONES

Alfred A. Schleppnik, St. Louis, and Marvin L. Oftedahl, Crestwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 579,226, Sept. 14, 1966, Pat. No. 3,455,960.
Filed Dec. 24, 1968, Ser. No. 798,847
Int. Cl. C07c *49/24*
U.S. Cl. 260—594 6 Claims

Preparation of 4-pyrones by reacting (a) hydroxy or unsaturated ketone with a formate ester, (b) acetylating the condensation product, (c) replacing the acetoxy group with a mono- or dialkoxy group, (d) epoxidation of the remaining unsaturated linkage, (e) cyclization of the intermediate, (f) oxidation to yield the dihydro-4-pyrone derivative, (g) acid hydrolyze to yield the 4-pyrone derivative.
The intermediates are new and valuable compounds.
4-Pyrones are utilized as flavor enhancers in food products.

3,621,064
PRODUCTION OF 5-CHLOROSALICYLALDEHYDE

Jacob Rosin, Maplewood, N.J., assignor to Chris-Craft Industries, Inc.

Filed July 7, 1969, Ser. No. 839,638
Int. Cl. C07c *47/56*
U.S. Cl. 260—600 8 Claims

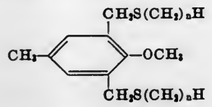
5-Chlorosalicylaldehyde, m.p. 100.6° to 101.0° C., purity 99+ percent when measured by gas chromatography, is produced in excellent yields by reaction process in which (a) salicylaldehyde is reacted with approximately an equimolar quantity of chlorine to form a crude reaction mixture composed of 5-chlorosalicylaldehyde, unreacted salicylaldehyde and minor amounts of various organic impurities, (b) the crude reaction mixture is subjected to partial vacuum distillation to distill substantially all of the unreacted salicylaldehyde from the crude reaction mixture while leaving 5-chlorosalicylaldehyde and the various organic impurites in the distillation residue, (c) the vacuum-topped distillation residue is dissolved in an aqueous solution of a lower alkanol from which solution 5-chlorosalicylaldehyde crystallizes while leaving the organic impurities dissolved in solution, and (d) the crystallized 5-chlorosalicylaldehyde is recovered. Unless the crude reaction mixture is vacuum topped to remove substantially all of the unreacted salicylaldehyde, then the crystallization of 5-chlorosalicylaldehyde requires relatively large amounts of solvent and yields a product with a low-bulk density.

3,621,065
2,6-BIS(THIOMETHYL)-4-METHYL ANISOLE

Harold Marvin Foster, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 13, 1969, Ser. No. 865,981
Int. Cl. C07c *149/00*; A01n *9/24*; C09g *1/00*
U.S. Cl. 260—609 D 3 Claims

A class of compounds having the structure:



where n is an integer from 0 to 3.

These compounds are useful as microbiocides.

3,621,066
SUBSTITUTED HALOCYCLOALKENES

Richard W. Anderson, Midland, Mich., and Claude I. Merrill, Lancaster, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 20, 1967, Ser. No. 647,337
Int. Cl. C07c *41/00*, *43/18*
U.S. Cl. 260—611 R 7 Claims

Mono and diperhaloalkoxyperhalocycloalkenes and a method of their preparation are disclosed. These compounds exhibit excellent thermal stability and oxidative resistant characteristics when subjected to elevated temperatures.

3,621,067
VINYL FLUORIDE FROM 1-FLUORO-2-CHLOROETHANE BY PYROLYSIS IN THE PRESENCE OF BROMINE

Joseph Warren Hamersma, Tustin, Calif., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed July 23, 1969, Ser. No. 844,203
Int. Cl. C07c *17/34*, *21/18*
U.S. Cl. 260—653.5 6 Claims

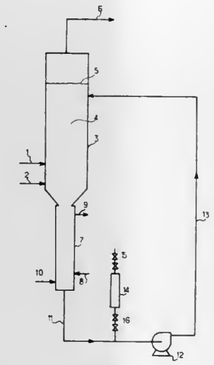
1-fluoro-2-chloroethane is pyrolized in the presence of bromine to vinyl fluoride. The pyrolysis occurs at 450° C. to 600° C. in bromine to 1-fluoro-2-chloroethane ratios of 1:10,000 to 1:15. O_2,Cl_2 and I_2 react similarly.

3,621,068
MANUFACTURE OF NAPHTHENIC HYDROCARBONS BY HYDROGENATING THE CORRESPONDING AROMATIC HYDROCARBONS

Gabriel Jacques, Saint Cloud; Alphonse Zuech, Montesson; Alain Convers, Rueil Malmaison, and Jacques Paumier, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Dec. 4, 1969, Ser. No. 882,054
Claims priority, application France, Dec. 9, 1968, 177,338
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 5 Claims

A process of hydronating benzene to cyclohexane, comprising the steps of:
a. intermittently circulating a liquid stream comprising particulate hydrogenation catalyst suspended in liquid benzene downwardly through a first elongated zone, and passing hydrogen upwardly and countercurrently to said liquid stream to convert said benzene to cyclohexane, the conversion being conducted at about 125°–275° C. and about 5–100 atmospheres under conditions wherein said benzene remains essentially in the liquid phase;
b. withdrawing gaseous cyclohexane product and excess hydrogen from the top of said first elongated zone;
c. withdrawing resultant hydrogenated benzene stream containing said dispersed particulate hydrogenation catalyst from the bottom of said first elongated zone, and passing said resultant stream downwardly through a second elongated zone, said second zone being a heat exchange zone comprising a plurality of tubular passageways surrounded by coolant fluid;
d. withdrawing resultant cooled hydrogenated benzene stream from the bottom of said second zone and recirculating same to the top part of said first zone; and



e. stopping the circulation of said liquid streams intermittently, and at least during the period during which the circulation is stopped, injecting hydrogen into the bottom of the second elongated zone, passing upwardly through said tubular passageways and said first elongated zone so as to diminish the extend of settling of said particulate catalyst whereby plugging of said tubular passageways is substantially avoided.

3,621,069
METHOD FOR PREPARING α,α'-DICUMYL FROM α-CUMENE HYDROPEROXIDE

James C. Wygant, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 24, 1969, Ser. No. 860,784
Int. Cl. C07c *15/00*, *15/02*
U.S. Cl. 260—668 9 Claims

Cumene hydroperoxide is decomposed in the presence of cumene at an elevated temperature and superatmospheric pressure to form α,α'-dicumyl, cumyl alcohol, and water.

3,621,070
PROCESS FOR PREPARING ISOCARYOPHYLLENE

Stanley Rachlin, South Amboy, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 873,100
Int. Cl. C07c *5/00*; B01j *11/74*; C09f *3/00*
U.S. Cl. 260—675.5 6 Claims

A process for preparing isocaryophyllene by heating caryophyllene at a temperature of from about 120°–235° C. in the presence of a suitable catalyst such as selenium, metal selenides which decompose to yield selenium, or sulfur. The catalyst may be supported or unsupported.

3,621,071
METHOD FOR DEHYDROGENATING AND CRACKING ALKANES AND OLEFINS

Charles R. Noddings, Midland; Andrew J. Dietzler, Midland, and Ronald G. Gates, Breckenridge, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 533,661, May 31, 1966, now abandoned, and a continuation-in-part of 604,661, Dec. 27, 1966, now Patent No. 3,409,701, dated Nov. 5, 1968, which is a continuation-in-part of application Ser. No. 335,810, Jan. 6, 1964, now abandoned, and a continuation-in-part of 335,841, Jan. 6, 1964, now abandoned, and a continuation-in-part of 335,775, Jan. 6, 1964, now abandoned, and a continuation-in-part of 335,784, Jan. 6, 1964, now abandoned. This application Mar. 21, 1968, Ser. No. 714,816
Int. Cl. C07c *3/32*, *5/18*
U.S. Cl. 260—678 7 Claims

Aliphatic hydrocarbons are dehydrogenated and/or cracked using catalysts prepared by precipitating nickel with a phosphate ion or coprecipitating chromium and nickel with phosphate ions, the latter coprecipitation being carried out to produce a material having from six to 12 atoms of chromium per atom of nickel on one hand or six to 12 atoms of nickel per atom of chromium on the other hand. The catalyst is precipated in the gel form in the presence of ammonium hydroxide.

3,621,072
PROCESS FOR PRODUCING ISOPRENE

Yoshihiro Watanabe, Kobe; Jiro Kobayashi, Ibaragi-shi; Yoshiki Toyoshima, Niihama-shi; Tooru Tokumaru, Takatsuki-shi, and Masatosi Saito, Takatsuki-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Dec. 12, 1968, Ser. No. 783,410
Claims priority, application Japan, Dec. 23, 1967, 42/82803, Jan. 23, 1968, 43/3901, May 28, 1968, 43/37345, May 24, 1968, 43/35391, May 27, 1968, 43/36254, Aug. 15, 1968, 43/58331
Int. Cl. C07c *11/18*
U.S. Cl. 260—681 10 Claims

Isoprene is synthesized in high yield according to simple procedures and at low costs by passing a mixed gas comprising isobutylene, methanol and/or methyl ether, and oxygen gas, over a solid catalyst maintained at 100°–500° C. which contains as a component one member selected from the group consisting of oxides of vanadium, tungsten, molybdenum, uranium and the like, and mixtures thereof.
When said catalyst is supported on a silica gel as a carrier, a high synergistic effect can be attained. If necessary, an acid, or an alkali or alkaline earth metal compound, may be used as a promotor.

3,621,073
PROCESS FOR PRODUCING 2-METHYL-BUTENE-2 FROM BUTENE STREAMS

Brian Patrick McGrath, Crowthorne, and Keith Vaughan Williams, Shepperton, both of England, assignors to The British Petroleum Company Limited

Filed Sept. 4, 1968, Ser. No. 757,483
Claims priority, application Great Britain, Sept. 22, 1967, 43,177/67
Int. Cl. C07c *3/62*, *11/18*
U.S. Cl. 260—683 D 18 Claims

A mixture of normal and isobutenes is converted to 2-methylbutene-2 in a series of steps comprising purification, isomerization of butene-1 to butene-2 at a temperature below 0° C. using a catalyst comprising alkali metal treated alumina and reaction of butene-2 with isobutylene using a disproportionation catalyst comprising rhenium heptoxide on alumina. The 2-methylbutene-2 can be dehydrogenated to isoprene.

3,621,074
PRODUCTION OF A MODIFIED DIGLYCOL THEREPHTHALATE POLYCONDENSATE FOR INJECTION MOLDING

Erhard Siggel, Seckmauern; Walter Rein, Obernburg, and Horst-Manfred Caesar, Erlenbach, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Nov. 22, 1968, Ser. No. 778,310
Claims priority, application Germany, Nov. 27, 1967, P 17 20 877.4
Int. Cl. C08g 45/14, 17/01; C06g 17/007
U.S. Cl. 260—835 **12 Claims**

Process of producing a polycondensate of a diglycol terephthalate especially suitable for injection molding purposes wherein the usual catalytic polycondensation is carried out after the incorporation of 0.1 to 5 percent by weight of a diglycidyl ether as a monomeric coreactant up to a solution viscosity of 1.4 to 1.8, at which point the polycondensate melt is immediately cooled and solidified, the product then being further condensed in the solid phase under an inert atmosphere at temperatures of 180° to 230° C. until the melt index of the product acquires a value of between 50 and 0.5 grams/10 minutes.

3,621,075
DYEABLE POLYOLEFINS AND METHOD FOR PRODUCING SAME

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 640,186, May 22, 1967, now abandoned. This application Oct. 8, 1969, Ser. No. 868,276
Int. Cl. C08g 41/04
U.S. Cl. 260—857 L **11 Claims**

The dye receptivity of polyolefins is improved by mixing 100 parts by weight of at least one polymer or copolymer of a 1-olefin having two through eight carbon atoms per molecule with one to 20 parts by weight of a novel dye-receptive nonbasic polyamide modifier produced by polycondensing a diamine of which both amino groups are secondary with a hydrocarbon dicarboxylic acid.

3,621,076
BLOCK POLYHETEROCYCLIC POLYIMIDE ELASTOMERS HAVING HIGH THERMAL RESISTANCE

Walter F. De Winter, 45 Antwerpen Strsst, Mortsel, Belgium, and Jack Preston, 2703 Ashland St., Raleigh, N.C.

Filed Aug. 11, 1969, Ser. No. 849,140
Int. Cl. C08g 41/04, 20/00
U.S. Cl. 260—857 **7 Claims**

Segmented aromatic imide polymers useful for spinning into elastic manmade filaments are provided. Relatively low-melting polymeric amic-acid segments resulting from combining selected o-phthalic acid derived diamines with aromatic dianhydrides and relatively high-melting polymeric amic-acid segments resulting from combining isophthalic acid or terephthalic acid derived diamines with aromatic dianhydrides are joined together and heated to form a segmented elastomeric polyimide.

3,621,077
SOLVENT RESISTANT THERMOPLASTIC POLYMERS

Frank J. Donat, Mantua, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,859
Int. Cl. C08f 15/40
U.S. Cl. 260—879 **9 Claims**

Solvent resistant thermoplastic rubbery compositions which have a good balance of low temperature properties have been prepared. The present compositions are three-block polymers obtained by the sequential polymeization of a vinyl-substituted aromatic hydrocarbon monomer, a conjugated diene monomer and a $\alpha\beta$-olefinically unsaturated nitrile monomer.

3,621,078
CHLORINATION OF A GRAFT POLYMER OF A VINYL AROMATIC ON POLYVINYL CHLORIDE

Hajime Kitamura, and Toshihide Shimizu, both of Niigata-ken, Japan, assignors to Shin-Etsu Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 595,609, Nov. 21, 1966, now abandoned. This application Jan. 8, 1969, Ser. No. 789,914
Int. Cl. C08f 19/02
U.S. Cl. 260—884 **16 Claims**

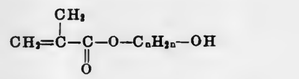
A heat-stabilized polyvinyl chloride resin prepared by chlorinating a graft polymer of 95 to 50 parts by weight of polyvinyl chloride and 5 to 50 parts by weight of a vinyl aromatic monomer. The effect of the heat stabilization will be further increased if the vinyl chloride resin, after being subjected to the postchlorination, is treated with olefinic hydrocarbon, having preferably less than four carbon atoms.

3,621,079
GRAFT OF HYDROXYALKYL METHACRYLATE ONTO POLYVINYLPYRROLIDONE

Harry R. Leeds, Rochester, N.Y., assignor to Patent Structures, Inc.

Filed Oct. 21, 1968, Ser. No. 769,032
Int. Cl. C08f 21/00, 43/00
U.S. Cl. 260—885 **11 Claims**

A polymeric plastic material suitable for contact lenses, dental liners and other prosthetic devices, intrauterine devices, and other devices to be used in or in the treatment of the body. It is made from a monomer having the formula



wherein n is 2 or 3, polymerized with polyvinyl pyrrolidone or polyvinyl pyrrolidone/vinyl acetate copoylmer. The application also discloses procedures for making contact lenses, dental liners, and intrauterine devices from such polymeric material.

3,621,080
RESIN COMPOSITIONS HAVING A BASE OF POSTCHLORINATED POLYVINYL CHLORIDE AND A PROCESS FOR THE PREPARATION THEREOF

Robert De Coene, Brussels, Belgium, assignor to Solvary & Cie, Brussels, Belgium

Filed Feb. 20, 1969, Ser. No. 801,196
Claims priority, application Netherlands, Feb. 23, 1968, 6802617
Int. Cl. C08f 29/12
U.S. Cl. 260—897 C **7 Claims**

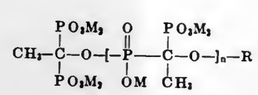
Resin compositions containing postchlorinated polyvinyl chloride and heterogeneously chlorinated polyethylene are prepared by chlorinating an aqueous suspension of polyvinyl chloride until the chlorine content of the polymer reaches a predetermined value between 58 percent and 73 percent by weight, introducing polyethylene into the aqueous suspension in an amount of 5 to 50 percent by weight with respect to the sum of the quantities of polyvinyl chloride and polyethylene and then subjecting the polyethylene to the action of chlorine at a temperature below 85° C. The resulting resin is easy to work and has a high impact strength and high resistance to heat deformation.

3,621,081
OLIGOMERIC ESTER CHAIN CONDENSATES OF ETHANE-1-HYDROXY-1,1-DIPHOSPHONIC ACID

James B. Prentice, Batesville, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1968, Ser. No. 786,371
Int. Cl. C07f 9/38, 9/40
U.S. Cl. 260—924 **2 Claims**

Organo-phosphorus compounds which are oligomeric ester chain condensates of ethane-1-hydroxy-1,1-diphosphonic acid having the following formula:



wherein M is a water-soluble cation; R is hydrogen or acetyl and n has a numerical value in the range of 1 to about 16. The compounds are useful as sequestering agents and builders in detergent compositions.

3,621,082
AMIDO-THIONO-PHOSPHORIC ACID PHENYL ESTERS

Gerhard Schrader, Wuppertal-Cronenberg; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 13, 1968, Ser. No. 775,540
Claims priority, application Germany, Nov. 30, 1967, P 16 68 047.0
Int. Cl. A01n 9/36; C07f 9/08
U.S. Cl. 260—941 **14 Claims**

(N-unsubstituted and N-mono- and N,N-di- -alkyl-substituted amido-0-alkyl-0-[(2-carboalkoxy and 2-carbocycloalkyloxy, i.e. 2-alkoxy carbonyl and 2-cycloalkyloxy carbonyl) phenyl]-thiono-phosphoric acid esters which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding thiono-phosphoric acid diester monohalide with ammonia or a primary or secondary amine.

3,621,083
PROCESS FOR PREPARATION OF PHOSPHORUS CONTAINING COMPOUNDS

Glenn R. Price, San German, P.R., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Apr. 30, 1968, Ser. No. 725,505
Int. Cl. C07f 9/08, 9/16, 9/22
U.S. Cl. 260—968 **7 Claims**

A process for preparing organophosphorus compounds of the formula:

wherein R is a radical substantially hydrocarbon in nature but which can contain relatively inert substituents, X is a chalcogen having an atomic weight less than about 35, W is a pseudohalide selected from CN, NCO, and NCS groups, and n and n' are integers of from one to two, the sum of which is not greater than three. The process comprises reacting an organophsophorus halide of the formula:

R, X, n and n' are as previously defined and hal is a halogen having an atomic weight between about 30 and 85; with a salt of pseudohalide in the presence of a catalytic amount of a tertiary amine.

3,621,084
PROCESS OF PRODUCING TRIALKYL PHOSPHITES

Lawrence F. Humphrey, Yonkers, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

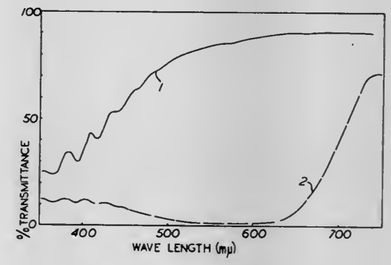
Filed June 28, 1968, Ser. No. 740,902
Int. Cl. C07f 9/08
U.S. Cl. 260—976 **5 Claims**

A process of producing trialkyl phosphites by reacting phosphorus trichloride with an alcohol in an inert solvent wherein a tertiary amine is added as a hydrogen chloride acceptor along with anhydrous ammonia. The improvement comprises the steps of maintaining the pH at between 6 and 8 and a temperature between 40° and 80° C. for reacting a phosphorus trichloride with the alcohol. Moreover, the anhydrous ammonia is added after the initial reaction between the phosphorus trichloride and the alcohol so as to not interfere therewith.

3,621,085
PRODUCTION OF LIGHT-POLARIZING FILM

Rinjiro Ichikawa, Ootsu, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1969, Ser. No. 808,940
Claims priority, application Japan, Mar. 28, 1968, 43/20590, June 7, 1968, 43/39325
U.S. Cl. 264—2 **5 Claims**



A light-polarizing film of a polymer selected from the group consisting of polyvinyl chloride, polyvinyl bromide and polyvinylidene chloride is produced by heating the polymer at a temperature of 90°–150° C. in the presence of a tertiary aliphatic amine having a boiling point higher than 90° C. as dehydrohalogenating agent to cause partial dehydrohalogenation, heating the product at a temperature of 70°–150Φv C. to produce conjugated double bond chains, and then molecularly orienting the product in at least one direction by stretching the product more than 1.2 times its length at a temperature above 100° C.

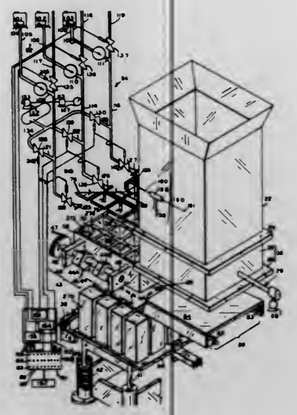
3,621,086
METHOD FOR MAKING FACING BRICK WITH VARIED COLOR AND TEXTURE

Charles James Gulde, Amarillo, Tex., assignor to Crowe-Gulde Cement Company, Amarillo, Tex.

Division of Ser. No. 489,625, Sept. 23, 1965, Pat. No. 3,425,105.
Filed Dec. 9, 1968, Ser. No. 782,216
application Dec. 9, 1968, Ser. No. 782,216
Int. Cl. B28b 1/08, 1/16, 1/32
U.S. Cl. 264—71 **6 Claims**

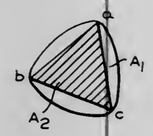
A process for making concrete brick which has a sufficiently smooth and attractively colored surface to be used as a facing or outside surface building unit. Colors are applied as fluid color mixes to a plurality of the vertical faces of the mold chambers in a block making machine prior to adding concrete mix thereto. Rapidly thereafter, concrete mix is added and the mold is vibrated to compact the mix and concurrently distribute over the surface of the material in the

mold portions of the color mix to achieve a desired color effect. The color mix applied to the mold surface may be



changed according to a predetermined pattern on each batch of such bricks.

3,621,087
PROCESS FOR THE PREPARATION OF ACRYLIC FIBERS WITH ODD-SHAPED SECTIONS
Masaharu Shimamura; Hideharu Minakuchi; Hiroshi Sakai; Tsutomu Kuwabara; Kazuo Yuki; Takao Okawa, and Abe Tamio, all of Iyo-gun, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan
Filed July 30, 1968, Ser. No. 748,821
Claims priority, application Japan, July 31, 1967, 42/48781, Japan, Sept. 22, 1967, 42/60451
U.S. Cl. 264—177 **5 Claims**

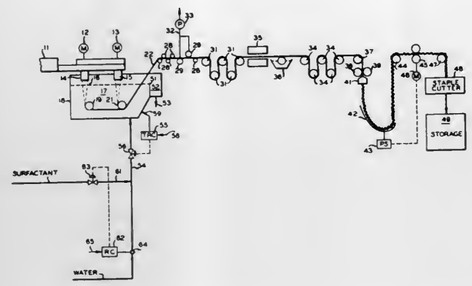


Process for the preparation of acrylic fibers with odd-shaped cross sections which comprises spinning, as the spinning solution, an organic solvent solution of a polymer containing at least 85 mol percent of acrylonitrile, at an extrusion rate of no higher than 10 meters per minute, through odd-shaped orifices of the configuration having a shape factor of not less than 16, the shape factor being defined as

$$\frac{(\text{Peripheral length of an orifice})^2}{\text{Cross-sectional area of an orifice}}$$

into a spinning bath which consists of aqueous solution of an organic solvent at a concentration of 30–60 percent and is maintained at a temperature not higher than 35° C., with a jet stretch of not less than 0.9.

3,621,088
HIGH PRODUCTION OF WATER-QUENCHED FILAMENTS
Charles S. Hatcher, and Charles H. Teague, both of Greenville, S.C., assignors to Phillips Petroleum Company
Filed Aug. 9, 1968, Ser. No. 751,459
Int. Cl. D01d *5/08*
U.S. Cl. 264—178 **19 Claims**



Melt-spinnable thermoplastic polymeric filaments are melt extruded from at least one spinneret die plate having at least 25 spinning orifices per square inch of effective spinning area through an airgap of less than 1 inch into a liquid quench medium, for example, water. The surface tension of the quench liquid is maintained at least below 65 dynes per centimeter.

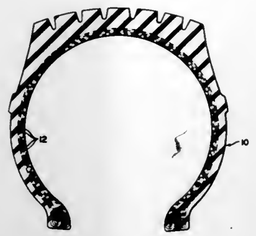
The as-spun filaments can have a denier per filament in the range of about 4 to about 600. Polypropylene filaments processed in this manner have an X-ray diffraction pattern for the diffraction angle 2θ in the range of $10°2\theta$ to $25°2\theta$ characterized by two broad peaks located at about $15°2\theta$ and about $21°2\theta$; a crystal orientation pattern for an X-ray diffraction angle of about $14°2\theta$ which exhibits a maximum at about the equator; a differential scanning calorimeter thermogram characterized by an exothermic peak at about 90° C.; and a crystallinity of less than 50 percent. The corresponding drawn polypropylene filaments have an equatorial X-ray diffraction pattern for the diffraction angle 2θ in the range of $10°2\theta$ to $25°$ 2θ characterized by a single peak located at about 15° 2θ, and a crystallinity of less than 55 percent.

3,621,089
PROCESS FOR SPINNING DYE-RESISTANT COPOLYAMIDE FILAMENTS
Owen Burchell Edgar, Blackley, Manchester, and Michael Richard Yates, Horsforth, near Leeds, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Sept. 13, 1966, Ser. No. 578,980
Claims priority, application Great Britain, Sept. 16, 1965, 39588/65
Int. Cl. D01f *1/02*
U.S. Cl. 264—211 **4 Claims**

A terpolyamide, formed from reactants polymerized in the presence of the equivalent of at least 3.0 mole percent of a monofunctional acid or basic stabilizer, is melt spun into filaments which are subsequently cold drawn.

3,621,090
PROCESS FOR PRODUCING NYLON TIRE CORD
Richard W. Kibler, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Division of application Ser. No. 444,464, Mar. 31, 1965, now Patent No. 3,459,251, dated Aug. 5, 1969.
Filed Dec. 10, 1968, Ser. No. 783,466
Int. Cl. B29c *25/00*
U.S. Cl. 264—235 **1 Claim**

The flatspotting characteristics of nylon tire cord reinforced tires can be substantially minimized by including in

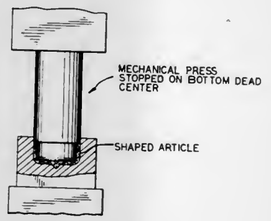


the nylon tire cord the reaction product of boric acid and an aliphatic alcohol.

3,621,091
PROCESS FOR INSOLUBILIZING A POLYPHENYLENE ETHER FIBER
Jerome J. Hertz, Broomall, Pa., and William E. Salvadore, South Lee, Mass., assignors to General Electric Company
Continuation-in-part of application Ser. No. 639,295, May 18, 1967, now abandoned. This application Sept. 8, 1969, Ser. No. 856,218
Int. Cl. D02j *1/22*; **C08q** *23/16*
U.S. Cl. 264—290 R **6 Claims**

Orienting and heat-treating polyphenylene ether fibers. Conditions include orienting by stretching 3–10X at 200°–300° C. and subsequently treating at 350°–520° C. by relaxing up to 70 percent, heating at constant length or redrawing up to 5X. The processing increases crystallinity, improves tensile properties and results in fiber insolubility in various conventional drycleaning solutions.

3,621,092
STAMPING PROCESS
Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 714,205, Mar. 19, 1968. This application Feb. 20, 1969, Ser. No. 801,129
Int. Cl. B29c *3/00*
U.S. Cl. 264—322 **7 Claims**



A process for stamping a stampable glass fiber reinforced composite made from thermoplastic resin and a lofty glass fiber mat.

3,621,093
PROCESS FOR MAKING REINFORCED THERMOSET ARTICLES
Glenn R. Svoboda, Grafton, Wis.; Fred G. Singleton, Pittsburgh, Pa., and Lindley H. Eshleman, Port Washington, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.
Continuation-in-part of application Ser. No. 516,739, Dec. 27, 1965, now abandoned. This application July 1, 1969, Ser. No. 838,339
Int. Cl. B29g *1/00*
U.S. Cl. 264—331 **6 Claims**

An improved process for rapidly making reinforced thermoset articles from molding compositions which include unsaturated polyester resins and fillers utilizing molding apparatus having heated mold surfaces. The molding composition includes 0.1 to 0.20 parts by weight of polyacrylates of polyepoxides. The cure time for the resulting article is less than one-half that required for molding compositions containing the identical unsaturated polyester resins without the polyacrylates of polyepoxides.

3,621,094
CONCENTRATED AQUEOUS LIQUID ANTACID COMPOSITIONS CONTAINING CERTAIN PHOSPHATE AND GLUCONATE SALTS
David Mayron, Whitpain Township, and Frank J. Tiano, Philadelphia, both of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed Apr. 5, 1968, Ser. No. 719,234
Int. Cl. A61k *27/00*
U.S. Cl. 424—128 **6 Claims**

Pharmaceutically elegant aqueous pharmaceutical suspensions having antacid and antiulcer activity comprising a high concentration of antacid and a combination of calcium phosphate monobasic and a nontoxic alkali metal or alkaline earth gluconate salt such as sodium, potassium, calcium or magnesium gluconate.

3,621,095
COMPOSITION FOR TREATING HISTOMONIASIS IN POULTRY
Edward W. Berndt, and Robert D. Vatne, both of Charles City, Iowa, assignors to Salsbury Laboratories
Division of Ser. No. 641,112, May 25, 1967, Patent No. 3,424,845, dated Jan. 28, 1969, which is a continuation-in-part of application Ser. No. 525,300, Feb. 7, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 598,921, Dec. 5, 1966, now abandoned.
Filed June 21, 1968, Ser. No. 767,549
Int. Cl. A61k *27/00*
U.S. Cl. 424—232 **7 Claims**

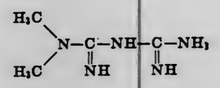
The new chemical compound 3,5-dinitrosalicylic acid, 5-nitrofur-furylidene hydrazide, compositions containing the same and its synergetic precursors, and treatments applying said compounds and compositions for the promotion of growth and the control of Histomoniasis in poultry.

3,621,096
ANTIDEPRESSANT METHOD AND COMPOSITION FOR SAME COMPRISING A TRICYCLIC ANTIDEPRESSANT AND A THYROID HORMONE
Arthur J. Prange, Jr., Chapel Hill; Ian C. Wilson, Chapel Hill, and Morris A. Lipton, Raleigh, all of N.C., assignors to The University of North Carolina, Chapel Hill, N.C.
Filed Apr. 3, 1969, Ser. No. 813,294
Int. Cl. A61k *27/00*
U.S. Cl. 424—244 **7 Claims**

The antidepressant action of tricyclic antidepressants is enhanced by concurrent administration of thyroid hormone. A composition for treating depression comprises a tricyclic antidepressant and a thyroid hormone in pharmaceutically effective amounts admixed with a pharmaceutical carrier.

3,621,097
METHOD AND COMPOSITIONS FOR TREATMENT OF MENTAL ILLNESS
John F. Scott, Poole, England, assignor to Jan Marcel Didier Aron-Samuel, Suresness, France
Continuation-in-part of application Ser. No. 732,832, May 29, 1968, now abandoned. This application Mar. 30, 1970, Ser. No. 24,034
Int. Cl. A61u *27/00*
U.S. Cl. 424—247 4 Claims

A process for the treatment of mental illness comprising the administration of dimethyl biguanide of the formula



to an animal receiving an ataractic. A pharmaceutical composition comprising dimethyl biguanide and an ataractic.

3,621,098
HYPOTENSIVE METHODS AND COMPOSITIONS UTILIZING HEXAHYDROBENZO[ ]QUINOLIZINES
Jeffrey W. H. Watthey, and Karl J. Doebel, both of Ossining, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.
Division of Ser. No. 681,078, Nov. 7, 1967, Pat. No. 3,484,443. Filed Mar. 17, 1969, Ser. No. 862,092
Int. Cl. A61k *27/00*
U.S. Cl. 424—258 12 Claims

A hypotensive effect is achieved through the use of hexahydrobenzo[*b*]quinolizines characterized by the presence of at least 2 hydroxy or 2 alkoxy groups in the 7, 8, 9 and 10 positions. Also disclosed are pharmaceutical compositions utilizing these compounds.

3,621,099
THERAPEUTIC COMPOSITIONS AND METHODS FOR STIMULATING THE CENTRAL NERVOUS SYSTEM
Charles R. Jacobson, deceased, late of 9 Cottage Ave., Orange, N.J. (by Annie T. Jacobson, heir); Anthony D'Adamo, 17 Dillon Ave., West Caldwell, N.J., and Charlotte E. Cosgrove, 30 Maple Ave., West Orange, N.J.
Continuation of application Ser. No. 742,994, June 17, 1958, now abandoned. This application Mar. 5, 1969, Ser. No. 805,121
Int. Cl. A61k *27/00*
U.S. Cl. 424—269 10 Claims

Pharmaceutical compositions which are stimulating and which contain a pharmaceutical excipient and an alkyl-substituted urazole. The process of causing stimulation by administering the composition.

3,621,100
COMPOSITION AND METHOD FOR PRODUCING A TUBERCULOSTATIC EFFECT
Andre R. Gagneux, Basel, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
Division of Ser. No. 783,411, Dec. 12, 1968, which is a continuation-in-part of application Ser. No. 593,678, Nov. 14, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 593,703, Nov. 14, 1968, now abandoned. Claims priority, application Switzerland, Nov. 18, 1965, Nov. 18, 1965, 15907/65; 15909/65
Int. Cl. A61k *27/00*
U.S. Cl. 424—322 18 Claims

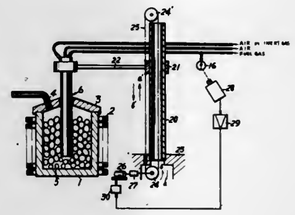
Substituted urea derivatives having useful antibacterial activity as well as starting materials for their production and methods for preparing the said starting materials; pharmaceutical compositions containing the subject urea derivatives as active ingredient and method for the production of tuberculostatic effects in mammals. An illustrative embodiment is 1-(1-adamantyl)-3-(3,4-dichloro-phenyl)-urea.

3,621,101
ANTIDEPRESSANT COMPOSITION AND METHOD OF TREATING DEPRESSION
Povl V. Petersen, Virum; Villy H. Hansen, Copenhagen, and Jes Hjortkjaer, Hvidovre, all of Denmark, assignors to Kefalas AIS, Copenhagen-Valby, Denmark
Continuation-in-part of application Ser. No. 580,206, Sept. 19, 1966, now Patent No. 3,505,404. This application Jan. 14, 1970, Ser. No. 2,928. Claims priority, application Great Britain, Oct. 10, 1965, 41849/65
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 16 Claims

1-(Aminoalkyl)-1-phenylindanes and 1-(aminoalkyl)-1-phenyl-tetralines, and the corresponding acid addition salts thereof are prepared by reacting the corresponding 1-phenylindane or 1-phenyl-tetraline with an amino alkyl halide. The prepared compounds are useful for the treatment of endogenous depression in living animals and are administered as compositions comprising the active ingredient and a suitable pharmaceutical carrier.

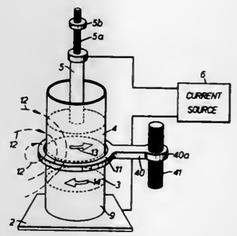
ELECTRICAL

3,621,102
LOW-FREQUENCY INDUCTION FURNACE
Yukio Tanaka; Jun Mizushina; Hitoshi Yamagishi, and Hiroshi Kosaki, all of Tokyo, Japan, assignors to Kokusai Electric Company Limited, Tokyo, Japan
Filed Mar. 3, 1970, Ser. No. 16,096
Claims priority, application Japan, Mar. 7, 1969, Mar. 7, 1969, Oct. 22, 1969, 44/16791; 44/19966; 44/83857
U.S. Cl. 13—2 6 Claims



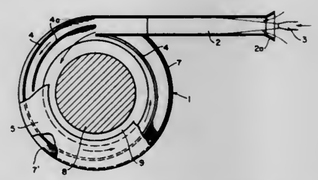
A low-frequency furnace comprising a crucible for receiving a batch of cold charge to be fused, an induction coil surrounding said crucible, a gas burner for movement into and out of said crucible and including three coaxially and peripherally spaced tubes for transporting fluids for combustion therethrough and an elevating means for said gas burner for moving the burner vertically relative to said crucible thereby to change the position of the burner relative to the surface of molten metal obtained by the fusing of said cold charge.

3,621,103
METHODS OF AND APPARATUS FOR STIRRING IMMISCIBLE CONDUCTIVE FLUIDS
John Campbell, Sheffield, England, assignor to The British Iron and Steel Research Association, London, England
Filed Jan 30, 1970, Ser. No. 7,085
Claims priority, application Great Britain, Feb. 17, 1969, 8,446/69
Int. Cl. H05b *3/60*
U.S. Cl. 13—9 12 Claims



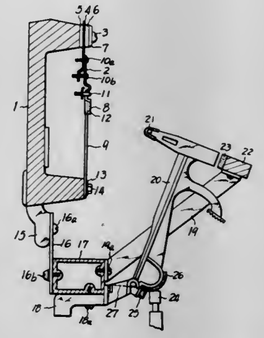
The invention relates to the stirring of mutually immiscible liquids which meet at an interface. An electric current is passed through the interface and oppositely directed magnetic field components are produced perpendicular to the direction of current flow in the fluids adjacent the interface. There thus result in the fluids adjacent the interface oppositely directed forces which produce stirring of the fluids.

3,621,104
SEALING DEVICE FOR ELECTRODE HOLES IN ELECTRIC ARC FURNACES
Alexander Yordanov Valchev, Sofia, and Kyril Hristov Tashev, Pernik, both of Bulgaria, assignors to DMZ Lenin, Pernik, Bulgaria
Filed Sept. 17, 1970, Ser. No. 73,204
Claims priority, application Bulgaria, Sept. 19, 1969, 13,046
Int. Cl. H05b *7/12*
U.S. Cl. 13—9 5 Claims



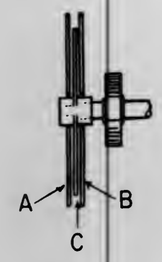
Sealing device for electrode holes in electric arc furnaces; the device includes means creating a chamber around the electrode, and means for creating in the chamber a gas pressure exceeding the pressure in the furnace space. A diffuser is placed in the access duct of the chamber and a nozzle is located in the axis of the diffuser, this nozzle delivering gas under pressure which entrains additional quantities of gas. Preferably the gas is air. The chamber of the sealing device may have two or more access ducts, diffusers being placed in all access ducts, and a nozzle being located in the axis of each diffuser, each such nozzle delivering gas under pressure. The cross section of the diffuser may have a reduced height and an increased width, and may be shaped as an oval, an ellipse, a rectangle, or another similar geometrical figure; there may be two or more nozzles located in the diffuser, such nozzles delivering gas under pressure.

3,621,105
ACTION DEVICE FOR ELECTRIC MUSICAL INSTRUMENT
Naokichi Takamatsu, Hammamatsu, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo, Japan
Filed Oct. 6, 1970, Ser. No. 78,366
Claims priority, application Japan, Mar. 10, 1970, 45/20359
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.16 12 Claims



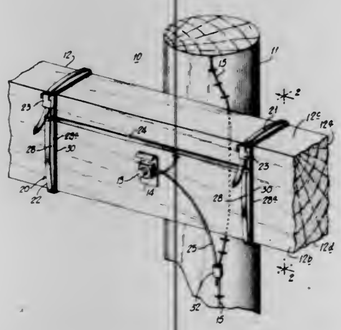
An action device for an electric musical instrument having a frame, an electrostatic type pickup mounted on the frame, a center rail fixed to the frame, a flange attached thereto, a hammer pivoted to the frame, and a hammer rail fixed to the center rail. In this case, the device is formed in such a manner that the electric charge stored on the hammer is grounded.

3,621,106
ELECTRONIC TONE GENERATOR
Javier Mugica Irastorzo, Alto de Aldaconea, San Sebastian, Guipuz coa, Spain
Filed Aug. 29, 1969, Ser. No. 854,125
Int. Cl. G10h 3/04
U.S. Cl. 84—1.28 4 Claims



An electrostatic tone generator is provided which includes at least one subelement having a rotary disk and a pair of adjacent stators. Each stator has concentrically arranged tonal patterns which are read by analyzers which are distributed in matching concentric areas. While the tonal patterns included on the matching stators are not symmetrical the analyzer arms for the outermost concentric tonal areas are symmetric and are identically sized and shaped.

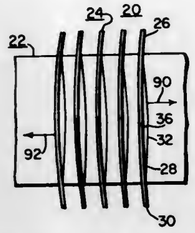
3,621,107
LINE POLE GROUNDING SYSTEM
William H. Duvendack, Butte, Mont., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed June 30, 1970, Ser. No. 51,221
Int. Cl. H02g 7/00, H01r 3/06
U.S. Cl. 174—6 5 Claims



An improved grounding system for line pole crossarms is provided to reduce line pole fires due to leakage currents. A pair of crossarm bands having an adhesive conductive material on their inner surface are wrapped around the crossarms spaced on opposite sides of the pole, and grounding means shunts the leakage currents to ground around the gains where the arm meets the pole.

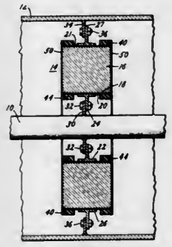
3,621,108
HEAT-CONDUCTING FINS FOR BUS BARS AND OTHER ELECTRICAL CONDUCTORS
Charles M. Cleaveland, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 21, 1970, Ser. No. 4,493
Int. Cl. H01b 7/34
U.S. Cl. 174—15 11 Claims

A plurality of heat-conducting fins disposed on various types of electrical conductors both insulated and uninsulated, and for both high- and low-voltage applications such as in bus bars, disconnect and knife switches, and circuit breakers. Each of said fins includes a central opening which is slightly smaller in one dimension than the conductor on which the fins are assembled and therefore must be distorted somewhat during assembly on the conductor. The distortion in each fin



develops a torsional stress in the fin which causes it to tightly grasp the conductor. In certain high-voltage applications, the fin may be insulated or bent over to reduce the effective radial size of the fins in the overall conductor assembly without reducing its surface area and ability to convect heat.

3,621,109
ELECTRICAL INSULATOR AND METHOD OF MAKING
Roy Nakata, Bryn Mawr, Pa., assignor to General Electric Company
Filed Dec. 4, 1970, Ser. No. 95,265
Int. Cl. H01b 9/04
U.S. Cl. 174—16 10 Claims

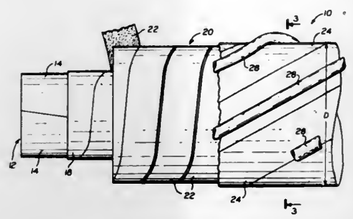


Discloses an electric insulator and a method of making same wherein an annular body of high dielectric constant insulating material is provided with conductive coatings on its inner and outer peripheries. In juxtaposition with the coatings are rings of insulating material that have their peripheries bonded to the coatings. The assembly comprising the annular body, the conductive coatings, and the insulating rings is ground along each of its lateral faces to produce precise flushness between each lateral face of the insulating body and the associated lateral edge of each conductive coating.

3,621,110
FIELD IMPREGNATED EXTRA-HIGH-VOLTAGE CABLE SYSTEM
Martin H. McGrath, New York, N.Y., assignor to General Cable Corporation, New York, N.Y.
Filed Apr. 1, 1969, Ser. No. 811,755
Int. Cl. H01b 9/06
U.S. Cl. 174—25 4 Claims

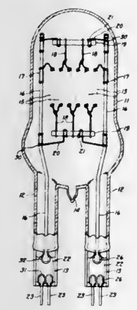
This electric cable uses a polymeric insulation in place of impregnated paper insulation to make possible underground transmission lines for high voltage. The cable is constructed for impregnation in the field and is filled, usually with oil, after installation in a pipe. The cable insulation is a fibrous paperlike sheet material of high-density polyethylene. Low friction of the insulation, when dry, permits bending around

smaller spools for shipping. The cable is free of cellulose material, or other substances that have a sponge effect when



exposed to moisture, so that no high-temperature drying is required in the field prior to impregnating the cable.

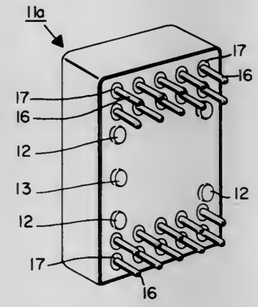
3,621,111
LEAD-IN CONDUCTOR FOR ELECTRICAL DEVICES
George K. Danko, Chesterland, Ohio, assignor to General Electric Company
Filed July 1, 1970, Ser. No. 51,639
Int. Cl. H01j 5/38
U.S. Cl. 174—50.64 2 Claims



A lead-in conductor and method of manufacture for use in electrical devices. The lead-in conductor comprises outer and inner lead wires, a foil and a tab material of a specific melting point such that the tab material melts to form a high-current-carrying joint between the lead wires and the foil.

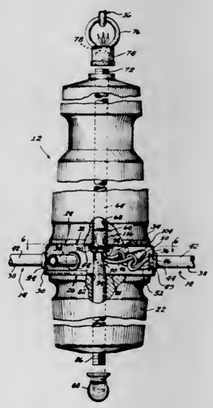
3,621,112
HOUSING FOR ELECTRICAL COMPONENTS
Beryl C. Stickley, and Edward G. Tuttle, both of Waynesboro, Va., assignors to General Electric Company
Continuation of application Ser. No. 741,011, June 28, 1968, now abandoned. This application Oct. 28, 1970, Ser. No. 84,941
Int. Cl. H05k 5/06
U.S. Cl. 174—50.52 9 Claims

A housing for electrical components that is suitable for mounting on printed circuit boards or other supporting members to be used in electrical-electronic equipment. The housing has a generally regular configuration (preferably rectangular), is enclosed on all sides, and preferably is fabricated from electrically conductive and ferromagnetic material. At least one surface of the housing (generally the bottom) has a plurality of housing supporting projections, preferably in the form of integral embossments, extending a predetermined distance for raising the housing above the surface of the printed circuit board or other supporting member a sufficient amount to provide for further processing or use such as to accommodate a cleaning or cooling flow of fluid. The projections are irregularly arrayed with respect to the sides of the housing and provide both tactile and visual indicators for facilitating proper alignment of the housing during placement on a printed circuit board or other supporting member. A plurality of electrically conductive leads extend through insulated openings in the bottom of the housing and are located at the intersections of an equally spaced grid system. The projections extending from the bottom of the housing are positioned so as to be located at selected spots corresponding to the intersections of the same equally spaced grid system that locates the electrically conductive leads. A greater number of the projections are formed on one side of the housing than are formed on the other in order to provide the



irregularity in the array of projections required to facilitate alignment of the component during placement on a printed circuit board or other supporting member. Grounding strips of conductive material may be attached to the sides of the housing and where so attached, are so positioned relative to the intersections of the same equally spaced grid system locating the electrically conductive leads and projections as to fit into a logical extension of the equally spaced grid system. The sides of the housing may be hermetically sealed closed to provide a protective environment for the electrical components contained therein.

3,621,113
CONNECTOR AND CONDUIT AND METHOD OF MANUFACTURE
Kenneth Westby, Fort Atkinson, Wis., assignor to Thomas Industries Inc., Fort Atkinson, Wis.
Filed Oct. 31, 1969, Ser. No. 872,861
Int. Cl. H02g 3/20
U.S. Cl. 174—51 22 Claims

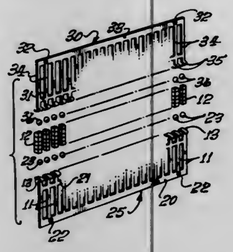


A tubular member adapted to serve as a conduit for electrical wiring and also adapted to serve as a structural element for securing together other structural elements, such as walls of a housing, or the like.

3,621,114
LEAD FRAME CONFIGURATION

Josef Ref, Los Angeles, and Mort Finhill, Palos Veedes Peninsula, both of Calif., assignors to TWR Semiconductors, Inc., Lawndale, Calif.

Filed Aug. 19, 1969, Ser. No. 851,304
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 PE **10 Claims**

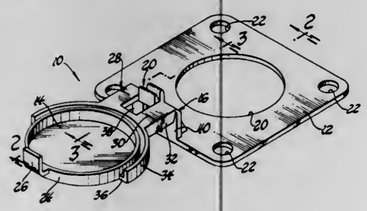


A lead frame configuration for the concurrent fabrication of a plurality of semiconductor devices. Two lead frame structures, each having an elongated metallic member with a plurality of leads integral with the metallic member and extending substantially perpendicular therefrom in parallel alignment, are axially opposed to one another. The leads of each frame structure are spaced substantially equidistant from each other, joined by an intermediate crossmember substantially parallel to the elongated metallic strip. The opposing ends of each lead frame have a resilient receiving member adapted for contacting a surface of a semiconductor device. The method includes the steps of bonding the semiconductor devices to the lead frames, encapsulating the semiconductor devices and severing the individual semiconductor devices from the completed structure.

3,621,115
CONNECTOR BOX COVER CONSTRUCTION

Wilhelm K. Kolster, deceased, late of Michigan City, Ind. (by Christel E. Kolster, executrix), assignor to Meridian Industries, Inc., Southfield, Mich.

Filed May 1, 1970, Ser. No. 33,556
Int. Cl. H05k *5/03*
U.S. Cl. 174—67 **7 Claims**



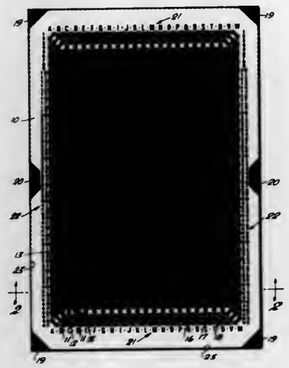
A one-piece, molded plastic connector box cover including a cover plate and closure cap with an integral hinge provided therebetween and an overcenter biasing means formed and provided between the plate and cap to keep the cap closed when disposed relatively over the cover plate part.

3,621,116
PRINTED CIRCUIT BOARD

Bertram C. Adams, 11370 S.W. 60th Terrace, Miami, Fla.

Filed Dec. 29, 1969, Ser. No. 888,303
Int. Cl. H05k *1/02*
U.S. Cl. 174—68.5 **2 Claims**

A printed circuit board for multipurpose use having printed on one face a plurality of parallel circuit tracks each of which is provided along its length with a plurality of enlarged connection stations. The connection stations of the tracks are so placed along their respective tracks as to present a grid pattern along rectangular coordinates. A system of identification indicia printed transversely and vertically along the sides of the grid pattern serves to readily identify any one of the connection stations for easy use of the circuit board in circuit assembly. The track portions between

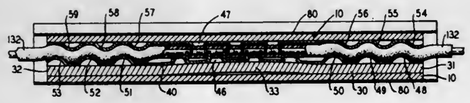


stations are each divided into a plurality of narrow, parallel subtracks to facilitate their severance for open-circuiting as may be necessary in accordance with the particular requirements of a circuit being constructed on the circuit board.

3,621,117
WRAPPED INSULATION-PIERCING CONNECTOR

Stanley Casimir Antas, Irvington; George Thomas Genneken, Whippany, and Donald Tolman Smith, Piscataway Township, Middlesex, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 25, 1970, Ser. No. 66,824
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **9 Claims**



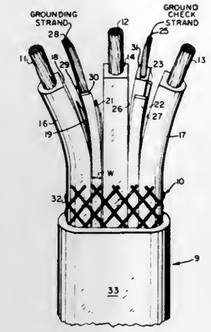
This connector consists of a shell, an insulation-piercing type insert, a leaf spring therebetween, and a plastic film bonded to the shell. A spring force on the insert maintains long term contact of the piercing tangs with the conductors. A crimping tool is disclosed having a die with a main-slot wire guide for all splice types. Wires to be severed are led to a branching slot where, during splicing, the shell edge severs conductors therein. Useful for telephone gauge conductors, this connector system requires no insulation stripback or special handling skills.

3,621,118
POWER CABLE FOR PORTABLE MACHINES

Steve Bunish; Floyd A. Wilson, and Theodore E. Hansen, all of Marion, Ind., assignors to Anaconda Wire and Cable Company

Filed July 31, 1970, Ser. No. 60,054
Int. Cl. H01b *7/00*
U.S. Cl. 174—115 **2 Claims**

A flat three-phase power able comprises a heavy grounding strand and a smaller ground-check strand with the structural balance of the cable and reliability of the ground-check



strand assured by insulating the ground-check strand with a heavy sheath.

3,621,119
INSULATED CONDUCTOR FOR COMMUNICATION CABLE

Masao Sugiyama; Toshio Suzuki; Hajime Noda; Saburo Kashimura; Shozo Hato, and Hideo Tanaka, all of Hitachishi, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Sept. 30, 1968, Ser. No. 763,612
Claims priority, application Japan, Oct. 4, 1967, Oct. 23, 1967, Oct. 23, 1967, 42/84078; 42/89409; 42/89410
Int. Cl. H01b *7/00*
U.S. Cl. 174—124 R **2 Claims**



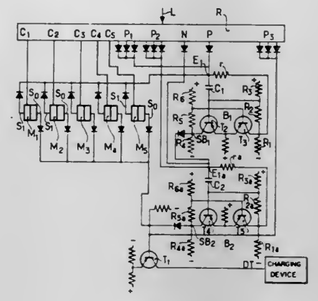
A paper-insulated conductor for communication cables in which layers of insulating paper surrounding the conductor are bonded to each other or the insulating paper is bonded to the conductor by a bonding agent so that the insulated conductor can be inserted into an insertion connector without becoming loose, jointing work with a jointing tool can easily be carried out, and any short circuit will not occur between the conductors within the cable. The insulated conductor has excellent electrical properties in spite of the use of the bonding agent.

3,621,120
SYSTEM FOR AUTOMATICALLY CHARGING TELEGRAPHIC COMMUNICATIONS

Jean Demartres, Paris, and Roger Teurnier, Rueil-Malmaison, both of France, assignors to C.I.T.-Compagnie Industrielle Des Telecommunications, Paris, France

Filed Nov. 15, 1968, Ser. No. 776,026
Claims priority, application France, Nov. 15, 1967, 128385
Int. Cl. H04l *15/26*
U.S. Cl. 178—2 F **13 Claims**

The present invention relates to a system for automatically charging telegraphic communications which permits the charging to start in the caller's office only on reception of two items of information, one of which is the international call-connected signal emitted by the receiving office, while the other is a combination of the international code No. 2, said system comprising a first device for identifying the call-

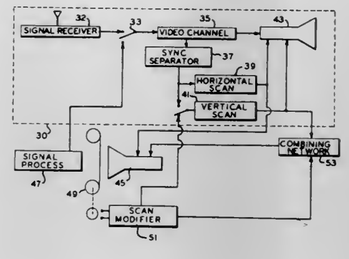


connected signal and a second device for ordering the charging.

3,621,121
CONTINUOUS ELECTRONIC FILM SCANNER

Robert Roy Eckenbrecht, East Bethany, N.Y., and Benton Boyd Scott, Tempe, Ariz., assignors to GTE Sylvania Incorporated

Filed Feb. 13, 1970, Ser. No. 11,171
Int. Cl. H04n *9/02, 5/86*
U.S. Cl. 178—5.2 D **10 Claims**



In a visual image display system, apparatus is included for deriving electrical signals representative of image information from a film of film frames, for transporting the film frames through a scanning zone at a predetermined film frame repetition rate, and for effecting continuous modification of electron beam scanning of the film frames at a rate substantially equal to the repetitive rate of film frame movement through the scanning zone.

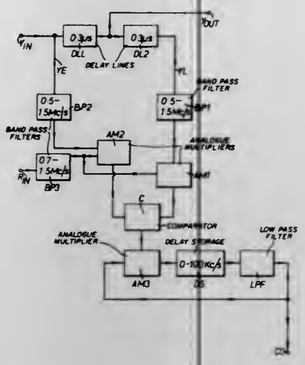
3,621,122
COLOR TELEVISION CAMERAS

William Ernest Henry Hipwell, Wickford, England, assignor to The Marconi Company Limited, London, England

Filed July 31, 1969, Ser. No. 846,399
Claims priority, application Great Britain, Aug. 13, 1966, 38,701/68
Int. Cl. H04n *5/26*
U.S. Cl. 178—5.4 M **21 Claims**

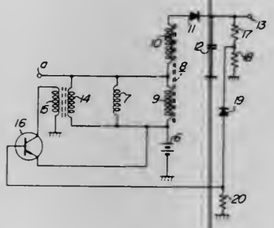
In a component camera tube color television camera registration is effected by comparing changes in the output signals from one component camera tube with changes in the output of another and using the result of the comparison to correct for registration errors. The output signals from one tube may

be subjected to two equal successive delays and the undelayed and doubly delayed signals each analogue multiplied



by the output signals from the other tube, the results of the multiplication being compared.

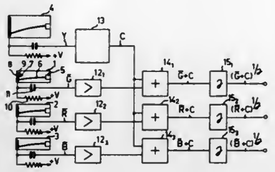
3,621,123
HIGH-VOLTAGE REGULATION CIRCUIT FOR A COLOR TELEVISION RECEIVER
Ryoichi Hirota, Yokohama; Toharu Fujishima, Yokohama; Gentaro Miyazaki, Fujisawa; Tadahiko Iwasaki, Kamakura; Mitsuharu Akatsu, Yokohama, and Tomoo Kinoshita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 19, 1970, Ser. No. 38,690
Claims priority, application Japan, May 20, 1969, 44/39094
Int. Cl. H04n *9/12, 3/18*
U.S. Cl. 178—5.4 R **21 Claims**



A high-voltage regulation circuit for a color television receiver comprising a dummy coil which is equivalent to a horizontal deflection coil a high-voltage circuit and a variable inductance element connected in parallel with said dummy coil, thereby controlling the inductance of said variable inductance element in response to the variation of a high voltage of the high-voltage circuit.

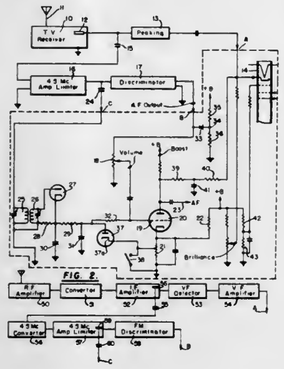
3,621,124
TELEVISION CAMERA
Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 796,987
Claims priority, application Netherlands, Feb. 8, 1968, 6801742
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 TC **7 Claims**

A camera circuit features at least two camera tubes, one of which has a larger effective target plate capacitance, hence produces a higher resolution signal, than the other tube. The high-resolution signal is applied to an aperture correction circuit and then to the low-resolution signal to correct for the "comet tail" effect. To obtain the high-target plate capacitance effect, the target plate can be made larger, or



the lower resolution tubes can have bundles of optical fibers in front of them.

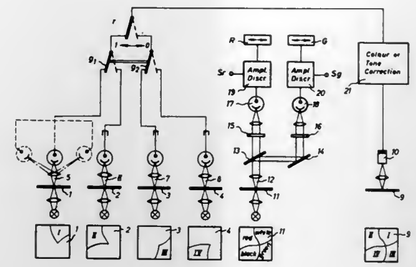
3,621,125
MUTER FOR TELEVISION RECEIVERS
Louis W. Parker, c/o Parker Electronics Inc. 2040 N. Dixie Highway, Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 785,494, Dec. 20, 1968, now abandoned. This application Oct. 5, 1970, Ser. No. 77,831
Int. Cl. H04n *5/62*
U.S. Cl. 178—5.8 **12 Claims**



An intercarrier television receiver is provided with an audio amplifier normally biased beyond cutoff. A tuned circuit, separate from the intercarrier sound system of the receiver, is sharply tuned to the intercarrier frequency for selectively producing a control signal operative to unlock the audio amplifier. Limiters are provided to prevent unlocking of the audio amplifier in response to excessive noise pulses, and to maintain the control signal at a steady value regardless of changes in amplitude of the received signal.

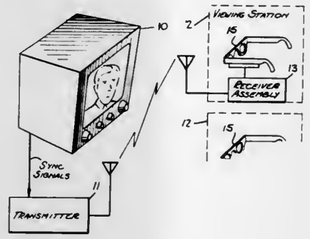
3,621,126
METHOD FOR ELECTRONICALLY COPYING PARTS OF DIFFERENT PICTURE ORIGINALS
Heinz Taudt, Kiel, and Hans Keller, Molfsee, both of Germany, assignors to Rudolf Hell Kommanditgesellschaft, Kiel-Dietrichadorf, Germany
Filed Mar. 16, 1968, Ser. No. 713,490
Claims priority, application Germany, Mar. 17, 1967, H 62 168
Int. Cl. H04n *1/38, 5/22*
U.S. Cl. 178—6 **6 Claims**

This invention is directed to method of electronically copying parts of different picture originals. The originals are photoelectrically scanned by a light beam while simultaneously scanning a mask. The scanning of the originals and the mask occur synchronously and in register with one another. Picture signals and mask signals are developed during the scanning operation, and the mask signals are split into a plurality of transducers which are sensitive to different spectral regions of each mask color to produce characteristic mask signals. The picture signals are then connected to recording



devices for reproduction in accordance with the mask signals produced.

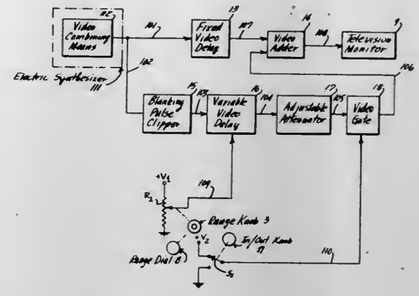
3,621,127
SYNCHRONIZED STEREOSCOPIC SYSTEM
Karl Hope, P.O. Box 184, E. Stroudsburg, Pa.
Filed Feb. 13, 1969, Ser. No. 798,981
Int. Cl. G03b *35/02, 35/16;* **H04n** *9/54*
U.S. Cl. 178—6.5 **5 Claims**



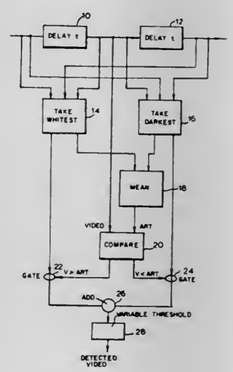
A stereoscopic system wherein two displaced images of a scene are projected sequentially on a viewing screen such that right and left images are alternately presented for equal times. The projection device is adapted to generate sync signals indicating the points in time at which the images are alternately presented. The sync signals modulate a high-frequency carrier which is emitted in the viewing area and is intercepted by receivers at portable viewing stations. Each observer is furnished with a viewing station which includes a shuttering spectacle having left and right eye elements that open and close alternately at a rate and in a phase controlled by the sync signals, whereby viewing of the displaced images is coordinated with the shuttering action.

3,621,128
PERISCOPE STADIMETER SIMULATOR WITH VIDEO DELAY
Carl R. Driskell, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 1, 1970, Ser. No. 24,750
Int. Cl. H04n *5/22, 7/18*
U.S. Cl. 178—6.8 **8 Claims**

Apparatus for use in an electronic periscope view simulator training device for electronically simulating periscope stadimeter operation.



3,621,129
DETECTION DEVICES FOR IMAGE ANALYSIS SYSTEMS
Colin Fisher, Meldreth, Royston, England, assignor to Metals Research Limited, Melbourn, Royston, England
Filed Apr. 30, 1969, Ser. No. 820,532
Claims priority, application Great Britain, May 1, 1968, 20,612/68
Int. Cl. H04n *7/02*
U.S. Cl. 178—6.8 **17 Claims**



Detection devices for image analysis systems employing line scanning in which detection is in part governed by inspecting video signal from portions of scan lines intersecting a feature under analysis other than that currently being scanned.

In one device a reference level voltage for threshold detection is generated by generating mean of the whitest and blackest signal levels of image portions immediately before and after that currently under analysis so that the reference threshold is constantly equated to the black and white content of the image under analysis.

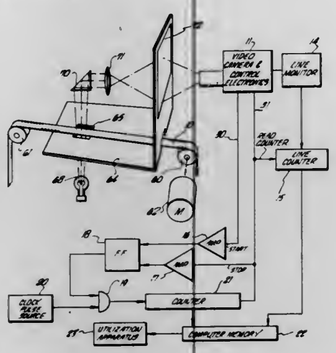
In another device the inspection of image portions before and after that currently under analysis allow a decision to be made as to whether the current portion is inside or outside a feature defined only by a boundary having an unsymmetrical density profile.

Another system allows a tentative detection decision to be made from the information from one portion of a line scan and a final detection decision to be made after comparing the provisional decision with a later decision based on information from preceding and following line scanned portions relative to that on which the tentative decision was made.

3,621,130
SYSTEM FOR QUANTIZING GRAPHIC DISPLAYS

T. O. Paine, Administration of the National Aeronautics and Space Administration with respect to an invention of, Nazem A. Habbal, Hollywood, Calif.

Filed Nov. 21, 1969, Ser. No. 878,730
Int. Cl. H04m 3/16
U.S. Cl. 178—7.2 R 5 Claims



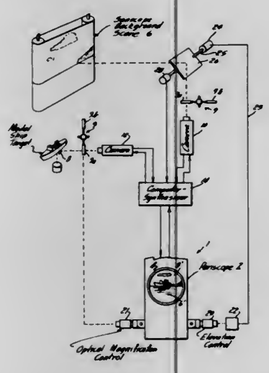
A system for digitizing a graphic display to determine the position and orientation of objects depicted thereon is disclosed. The display is provided with a reference coordinate framework. A detection apparatus scans the display in a line-by-line manner. A counter is initiated when each line scan intersects a first reference line of the coordinate framework and normally continues to count until the scan intersects a second reference line. If there is an "image" portion between the counter "start" and counter "stop" reference lines, however, then the count is terminated when the scan intersects the leading edge of the image.

The counter values from each line scan are stored in a computer memory. Since the linear speed of each scan relative to the counting rate is known, information relating to the image distance above the start reference line is obtained. Information as to the image position in the orthogonal coordinate is obtained by counting the number of scans of known separation from a reference line segment to the point where the reference scan intersects the portion of interest.

3,621,131
VISUAL ENVIRONMENT SIMULATOR

Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 21, 1969, Ser. No. 878,697
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 5 Claims

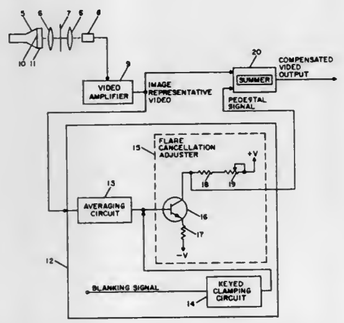


In an electronic synthesizer used in a periscope simulator training device wherein a composite picture of movable targets and a background scene is synthesized on a television display, electrically or mechanically operated optical means are used to shift the area on the background scene observed by a background camera. Means are provided to synchronize the electronic target moving means with the movement of the optical means.

3,621,132
FLARE LIGHT COMPENSATOR IN A FLYING SPOT SCANNER

Charles E. Page, Westbury, N.Y., assignor to Hazeltine Corporation

Filed Dec. 24, 1969, Ser. No. 887,850
Int. Cl. H04n 3/16
U.S. Cl. 178—72 R 10 Claims

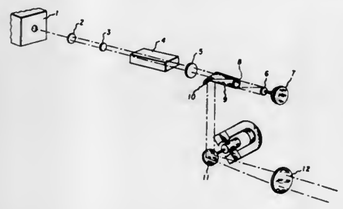


Disclosed is apparatus for compensating for the effects of flare light in an electrooptical image scanning system wherein a flying spot scanner generates a light raster and a light detector generates a video signal representative of an image illuminated by the raster. The faceplate of the flying spot scanner has been made substantially thicker than conventional faceplates in order to cause the flying spot scanner to emit a flare light which is uniform across the raster area. A portion of the amplitude of the video signal generated is representative of the uniform flare light in the scanning system and is proportional to the average brightness of the scanned image. In order to compensate for that portion, the apparatus utilizes an averaging circuit, a keyed clamping circuit, and an amplitude adjusting circuit, to develop a pedestal signal which has an opposite polarity to the polarity of the video signal and an amplitude approximately equal to the portion of the amplitude of the video signal caused by uniform flare light. The pedestal signal and the video signal are then combined by a summing circuit in order to cause their amplitudes to be effectively subtracted thereby producing a compensated output video signal which is substantially free from the effects of flare light.

3,621,133
LASER DISPLAY

Charles E. Baker, and Bob E. Martel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 439,857, Mar. 15, 1965, Pat. No. 3,549,800.
Filed Oct. 30, 1967, Ser. No. 678,965
Int. Cl. H04n 3/08, 9/14
U.S. Cl. 178—7.3 5 Claims

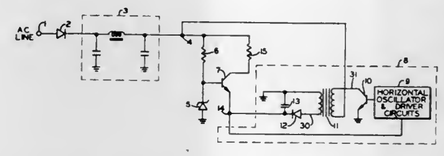


A laser display system is disclosed for displaying real time data by modulating a light beam from a laser, converting the beam of light to a curved path of light and transforming the path light into successive straight lines. The straight lines of video information are then projected into a spaced relation to one another to form a display.

3,621,134
LOW B+ START CIRCUIT FOR LINE-OPERATED RECEIVER

Richard J. Waring, Auburn, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 17, 1969, Ser. No. 807,763
Int. Cl. H04n 3/16
U.S. Cl. 178—7.3 R 9 Claims

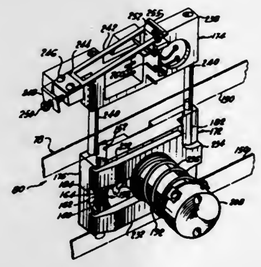


A switching transistor is provided for a solid-state line-operated television receiver which allows the low B+ voltage requirements of the receiver to initially be supplied from the high B+ through the turned-on switch transistor and subsequently on switching of the transistor to its nonconductive state, the low B+ requirements of the receiver are met by rectifying the horizontal flyback transformer voltage pulse.

3,621,135
FACSIMILE OPTICAL SCANNER AND LIGHTING MEANS

Frans Brouwer, Glencoe, and Frank L. Sobchak, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 613,545, Feb. 2, 1967, Pat. No. 3,527,882.
Filed Dec. 1, 1969, Ser. No. 881,055
Int. Cl. H04n 1/24
U.S. Cl. 178—7.6 6 Claims

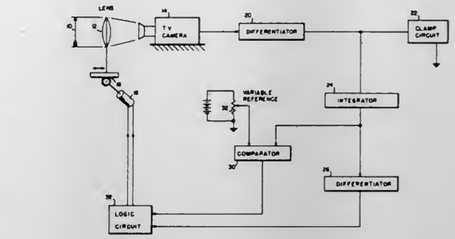


A facsimile transceiver including three optical scanners each of which carries its own light source for illuminating the copy as it is scanned. Also included are means for adjusting the optical axes of the scanners with respect to each other and printer contact means mounted on each scanner for marking recording paper when operating in the receiver mode.

3,621,136
AUTOMATIC OPTICAL-FOCUSING SYSTEM FOR TV CAMERAS

Robert K. Stanwood, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 10, 1969, Ser. No. 856,760
Int. Cl. H04m 5/00
U.S. Cl. 178—7.92 8 Claims

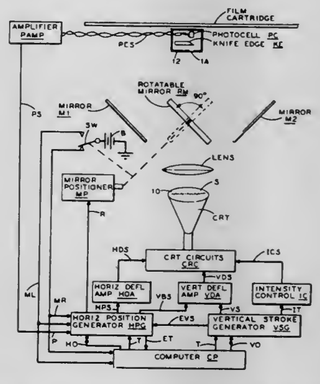


Apparatus for automatically focusing a television camera. The video signal output of the camera is successively differentiated, integrated and differentiated to produce signals which are utilized by a logic circuit to drive a motor that controls the focus of the camera.

3,621,137
WIDE-SPAN PATTERN GENERATOR

Solomon Manber, Sands Point, N.Y., assignor to Alphanumeric Incorporated, Lake Success, N.Y.

Filed Mar. 28, 1969, Ser. No. 811,474
Int. Cl. H04l 15/34
U.S. Cl. 178—15 11 Claims



A method and apparatus for positioning at least one terminal point of the scan of a medium by a beam is disclosed. The beam is moved in the direction of the scan from one point past a fiducial point having a known position with respect to the medium. There is registered a quantity related to the distance the beam moved from one point to the fiducial point. Thereafter, during scans of the medium, the one terminal point is shifted along the direction of the scan by a distance related to the registered quantity.

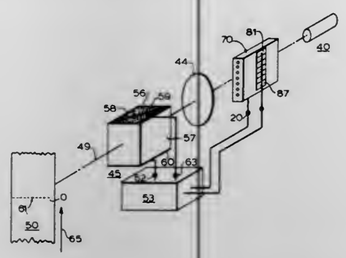
3,621,138
ALPHANUMERIC CHARACTER RECORDING APPARATUS

Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.

Filed Dec. 17, 1969, Ser. No. 885,889
Int. Cl. H04l 15/34
U.S. Cl. 178—15 3 Claims

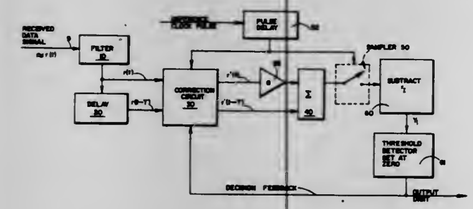
An apparatus utilizing a character generation control system between a source of light and a light-responsive record medium for recording information in the form of letters, numerals, symbols, etc., which must be recorded in well-registered lines of type fonts across the medium. This is accomplished through the use of a vertical array of individually controlled light beams that are swept simultaneously in a horizontal direction across the surface of the record medium. While doing so the beams of the array are selectively turned on or off in accordance with a predetermined set of character generation requirements. Electrooptic light gating elements are associated with an array of light guides, from

which the beams emanate, for effecting the desired on-off conditions for generating a line of characters, and electroop-



tic light beam deflectors are used to direct the beams to a series of horizontal line positions on the medium.

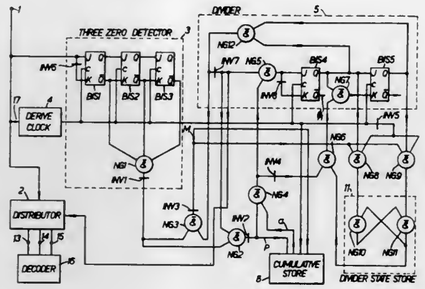
3,621,139
DATA RECEIVER WITH INTERSYMBOL INTERFERENCE CORRECTION
Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation
Filed May 11, 1970, Ser. No. 36,151
Int. Cl. H04l 25/02
U.S. Cl. 178—69 B **7 Claims**



The system of the present invention utilizes previous digit decisions to correct a large part of the intersymbol interference of a received signal by subtracting the intersymbol interference components of a previously received signal from the received signal. The system is comprised of means for delaying an input digital data signal having intersymbol interference components. A correction means receives the non-delayed and the delayed signal along with a corrected system output signal which is fed back to the correcting means from the system's output. The correcting means generates from the corrected system's output signal a new signal containing all bits normally associated with the output signal when it was first received and wherein the generated intersymbol interference signals are subtracted from the delayed and non-delayed input signals to provide corrected signals. The non-delayed signal is fed to an amplifier with a predetermined gain setting. The output from the amplifier and the delayed output from the correction means are summed together in a summing means. A sampler samples the summing means output at substantially the data bit rate. A threshold detector detects the level of the sampled signal to provide the corrected system's output signal.

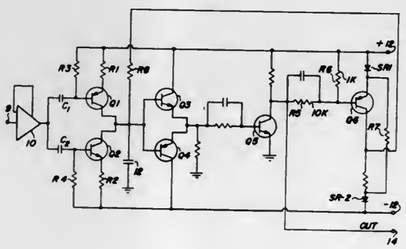
3,621,140
APPARATUS FOR ALIGNING WORD INTERVAL SIGNALS WITH THE WORD FRAME OF RECEIVED DIGITAL DATA
John Michael Griffiths, Hillingdon, England, assignor to The Post Office, London, England
Filed Oct. 20, 1969, Ser. No. 867,770
Claims priority, application Great Britain, Oct. 28, 1968, 51072/68
Int. Cl. H04l 7/06
U.S. Cl. 178—69.5 R **6 Claims**

The invention relates to a PCM synchronization system. The receiver generates a frame interval signal which identifies the length of frame within the transmitted serial digital data. Synchronization is produced by aligning the frame interval signals with a word framework of the received serial digital data. The detection of a forbidden data format within a frame indicates loss of synchronization between the trans-



mitter and receiver. A cumulative store activates a phase correction mechanism for shifting the phase of a clock located at the receiver when the cumulative store reaches a numerical state which indicates the detection of the loss of synchronization above a threshold rate.

3,621,141
DICODE DECODER
Donald E. Mack, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 17, 1964, Ser. No. 419,156
Int. Cl. H04l 25/04
U.S. Cl. 178—88 **7 Claims**

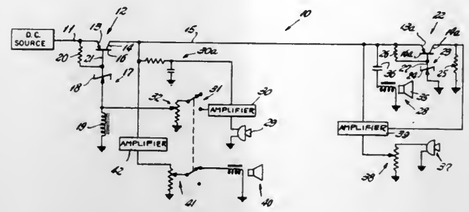


A decoder circuit for a dicode, or three-level signal. The circuit integrates a received diode signal to make a black-white decision based on one-half the normal input pulse energy. Once a decision has been made, a feedback circuit is activated which keeps the decision in its current circuit, until sufficient energy appears to force the decoder into the opposite state.

3,621,142
SINGLE WIRE DC COMMUNICATING MEANS
Earl L. Bunting, Westport, Conn., assignor to Bunting SteriSystems, Inc., Bridgeport, Conn.
Filed June 5, 1969, Ser. No. 830,756
Int. Cl. H04m 9/100
U.S. Cl. 179—1 H **4 Claims**

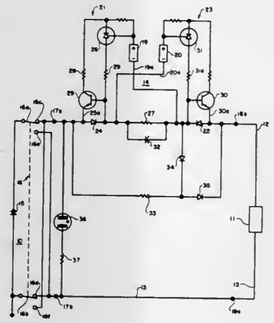
Means for communicating over a single-wire DC circuit disposed between two voltage controllers or regulators

wherein the output of a first controller or regulator is altered or modulated by an impressed signal voltage and a receiver is



connected to the wire prior to the second voltage controller or regulator to receive the modulated or altered DC voltage and reproduce the signal voltage.

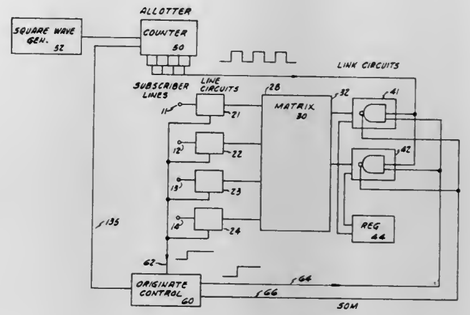
3,621,143
CURRENT-CONTROLLED VOLTAGE BOOSTER FOR TELEPHONE SYSTEMS
Charles William Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation
Filed Apr. 4, 1969, Ser. No. 813,611
Int. Cl. H04n 7/04
U.S. Cl. 179—16 F **12 Claims**



A voltage booster circuit for telephone systems utilizing reverse battery supervision. First and second switches control the connection of respective auxiliary sources in series between a central office battery and a subscriber circuit. The conduction of said switches are controlled in accordance with the polarity with which the central office battery is connected to the subscriber circuit to connect between the central office battery and the subscriber circuit that auxiliary source which is in power-aiding relationship to the central office battery. The conduction period of one of the switches is made to predominate over the conduction period of the other during dialing and ringing so as to facilitate the transmission of dial pulses and the generation of a DC boost for energizing a trip relay during ringing.

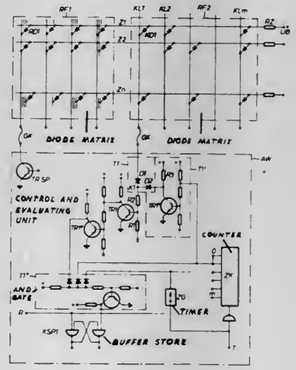
3,621,144
CALL-ORIGINATING CONTROL FOR ELECTRONIC TELEPHONE SYSTEMS
Nikola L. Jovic, Chicago, and Timothy J. Keough, Woodridge, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 13, 1970, Ser. No. 36,890
Int. Cl. H04q 3/18
U.S. Cl. 179—18 FG **8 Claims**

The system shown covers the portion of an electronic, end-marking switching network which responds to the condition of subscriber requesting service (off-hook condition) by connecting his line to an available link circuit. The request for service is coordinated with the marking of the output end of the matrix (link circuit end) to thereafter mark the input end



of the matrix to implement the connection through the "self-seeking," end-marked matrix.

3,621,145
TELEPHONE SWITCHING TRANSLATOR
Willi Verstegen, Kornwestheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,612
Claims priority, application Germany, Sept. 19, 1968, P 17 62 896.5
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET **2 Claims**

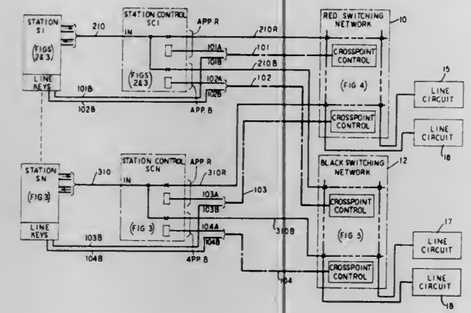


Gate circuits are allocated to the evaluating circuits in the evaluating translator unit. These gate circuits are provided with current via low-resistance secondary paths before evaluation. The gates circuits are connected to the outputs of a counting chain adapted to block the low-resistance secondary paths of the gate circuits, individually in succession, for the purposes of evaluation. The interrogation of the translator outputs involves no significant new building up processes, since only one translator output loads the corresponding row resistor at a time. Further gate circuits are assigned to the evaluating circuits. The pulse responsible for indexing the counting chain is fed, via a time-lag component, to these gate circuits. This measure ensures that no invalid output information is indicated during the short period before the occurrence of blocking.

3,621,146
KEY TELEPHONE STATION HAVING MULTINETWORK ACCESS

Charles E. Morse, and John P. Smith, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 10, 1969, Ser. No. 840,637
Int. Cl. H04m *3/38*
U.S. Cl. 179—18 AD **11 Claims**

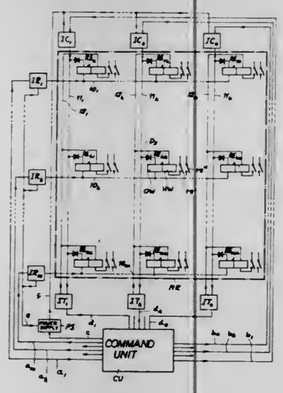


A key telephone system is arranged to provide access to both secure and nonsecure lines while, at the same time, maintaining the degree of isolation between the lines required of secure communication facilities. Each key station is selectively connected to the nonsecure lines through one switching network while connections to secure lines are made through a separate switching network. A station control circuit associated with each key station provides access for that station to either one of the switching networks. The operation of a line key at any station enables the switching network serving that line so as to cause the establishment of a transmission path from the enabling station through the control circuit to the enabled network.

3,621,147
ELECTRONICALLY CONTROLLED CROSSBAR SWITCH

Giovanni Perucca, Turin, Italy, assignor to CSELT Centro Studi e Lboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 11, 1969, Ser. No. 848,977
Claims priority, application Italy, Aug. 13, 1968, 52824-A/68
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GE **12 Claims**

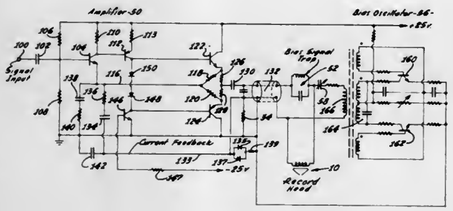


A crossbar switch for a telecommunication system has relays with operating windings and holding windings positioned at the junctions of "horizontal" and "vertical" conductors individual to respective rows and columns, the operating windings of all relays of one row being connected at one end to a common row-control circuit and at their other ends to individual column-control circuits by way of these conductors. The two control circuits include controlled rectifiers which during certain periods receive operating voltage from a central power supply for the selective energization of a relay in response to concurrent firing pulses applied to the respective controlled rectifiers. A maintenance circuit, also including a normally deenergized controlled rectifier, energizes the holding winding of the selected relay in response to the firing of the controlled rectifier of the corresponding column-control circuit and subsequently releases that relay upon deactivation of its own controlled rectifier by a disconnect pulse.

3,621,148
ELECTROMAGNETIC RECORD HEAD TRANSDUCER AND SYSTEM

Keith O. Johnson, Topanga Canyon, Calif., assignor to MCA Technology, Inc., Santa Monica, Calif.

Continuation-in-part of application Ser. No. 454,433, May 10, 1965, now abandoned. This application Sept. 9, 1968, Ser. No. 758,213
Int. Cl. G11b *5/24, 5/44*
U.S. Cl. 179—100.2 K **2 Claims**



A significant improvement in the dynamic range of the magnetic tape recording process is achieved by the electromagnetic transducer head and system of the present invention. This is achieved by providing a record head with a very high bias flux gradient in its gap, and with a significantly lower intelligence signal flux gradient. The record head gap has a nonmagnetic electrically conductive member therein which is insulated from the core material, and which provides the desired steep gradient for the bias flux. The record head is used in conjunction with an oscillator for supplying a bias signal of frequency of at least 1 MHz. and a record amplifier including circuitry for emphasizing the amplitude of high amplitude signals so as to compensate for magnetic saturation effects in the tape.

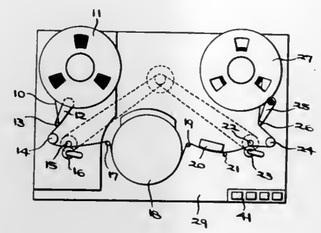
3,621,149
MAGNETIC TAPE TENSION CONTROL SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING DUAL CAPSTANS

Yoshiyo Wada, and Katsuya Yasutake, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokahama, Japan

Filed Aug. 12, 1969, Ser. No. 849,433
Claims priority, application Japan, Aug. 13, 1968, 43/57114
Int. Cl. G11b *15/43;* **B65h** *59/38*
U.S. Cl. 179—100.2 S **5 Claims**

A magnetic tape tension control system is shown for magnetic recording and reproducing apparatus of the so-called double capstan type in which a magnetic tape is moved by two capstans driven by a single motor through belts. The control system keeps a constant tension on the portion of the magnetic tape which is between the two capstans irrespective

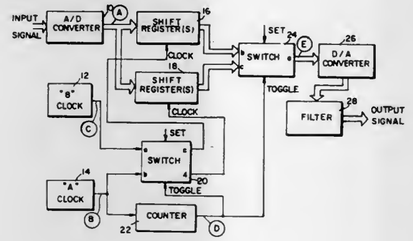
of the direction in which the tape is moved. This is done by varying the tension of the tape on the takeup reel side or supply reel side depending on whether the tape is moved in a normal direction or a reverse direction.



3,621,150
SPEECH PROCESSOR FOR CHANGING VOICE PITCH

George W. Pappas, Lyndeborough, assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 17, 1969, Ser. No. 858,623
Int. Cl. G11b *5/02, 27/10*
U.S. Cl. 179—100.2 K **21 Claims**



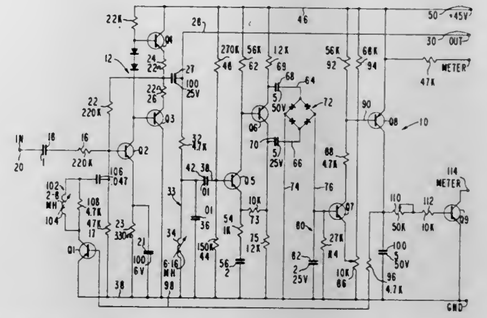
By utilizing the speech processor of the invention, the speech of a diver in a helium-oxygen atmosphere is made intelligible, or a normal recording played at higher speeds is made intelligible thereby providing a speed hearing capability, or a voice signal is compressed for transmission over low bandwidth communication lines. The invention makes use of the fact that normal speech may be chopped or segmented at certain rates and still retain its intelligibility. The basic principle of the invention is accomplished in either an electronic or electromechanical embodiment wherein the following steps are performed. The speech to be processed is segmented into very small and, in some applications, equal pieces. Every other piece is discarded and the remaining pieces are recombined. The recombined pieces are played back at a slower speed dependent on the length of the discarded pieces.

3,621,151
FREQUENCY SELECTIVE AUDIO LIMITER

James B. Wood, San Jose, Calif., assignor to GRT Corporation, Sunnyvale, Calif.

Filed Oct. 15, 1969, Ser. No. 866,545
Int. Cl. H03g *5/28*
U.S. Cl. 179—100.2 R **12 Claims**

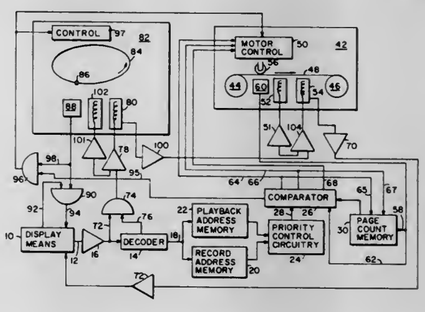
A device for limiting the higher frequency energy of an audiofrequency spectrum being delivered to a magnetic tape recording device in which the full spectrum is amplified and the output of the amplifier is sensed to determine when the higher frequency energy is above a predetermined limit to provide a feedback signal which operates a shunt in the amplifying circuit to attenuate only the higher frequencies of the audiofrequency spectrum to maintain the higher frequencies at the output of the amplifier at a point below a predetermined level.



3,621,152
MAGNETIC TAPE STORAGE DEVICE

Philip M. Billings, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, NH

Filed Nov. 25, 1969, Ser. No. 879,644
Int. Cl. G11b *5/00*
U.S. Cl. 179—100.2 S **11 Claims**



A fast access bulk storage device, using magnetic tape, for storage and retrieval of data includes a page-counting circuit which samples and stores actual page location, by detecting translucent portions on the tape denoting beginning of page, and constantly compares it to any given page address entered into the system, and a data buffer stage, comprised of a continuous loop of magnetic tape of approximately one page length, which provides for temporary storage of data while the main storage device is being accessed.

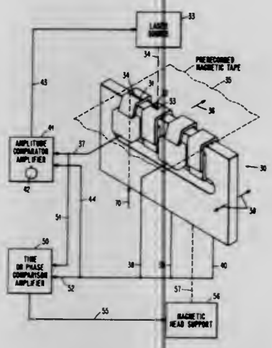
3,621,153
MAGNETIC READ/WRITE HEAD WITH PARTIAL GAP AND METHOD OF MAKING

John W. Wenner, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

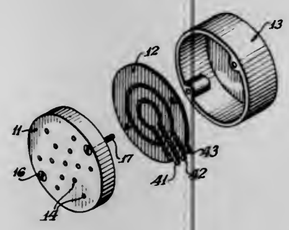
Filed Dec. 22, 1969, Ser. No. 887,147
Int. Cl. G11b *5/28, 5/24, 5/42*
U.S. Cl. 179—100.2 C **10 Claims**

A magnetic head having a plurality of read/write tracks, each track being formed of a single continuous lamina of high-permeability magnetic material which is wrapped around the edge of a support substrate and extends through an opening in the substrate. A coil encircles one leg of each of the lamina, the coils being alternately placed on opposite sides of the substrate to allow minimum space between the tracks. A magnetic gap extends less than the complete distance across each individual lamina parallel to the edge of the substrate.

The electrical characteristics of each individual magnetic gap are monitored as the gap is cut. The cutting operation is terminated in accordance with the value of an electrical characteristic to obtain uniform gap characteristics for each of the gaps. The lateral position of the cut is adjusted in accordance with the value of an electrical characteristic to obtain longitudinal alignment of all of the gaps.



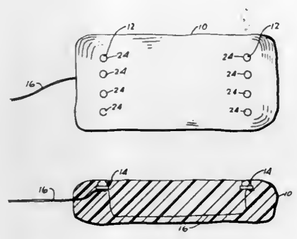
3,621,154
STRAIN-SENSITIVE SEMICONDUCTIVE THIN FILM ELECTROACOUSTICAL TRANSDUCER
James H. Kogen, Evanston, Ill., assignor to Shure Brothers Inc.
Filed Apr. 15, 1968, Ser. No. 721,309
Int. Cl. H04r 23/00
U.S. Cl. 179—110 B **7 Claims**



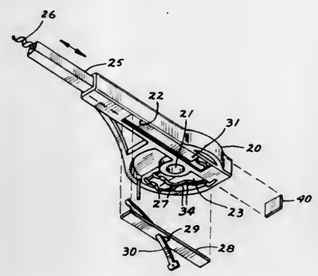
A transducer for converting low-level pressure variations (such as sound waves) into electrical signal variations. A strain-sensitive coating is applied to selected surface regions on a flexible diaphragm substrate. A conductive coating is also applied to the substrate flanking the strain-sensitive coating to provide electrical connections for the transducer. Sensitivity of the transducer is enhanced by placing the strain-sensitive coating at points of maximum bending on the diaphragm. The transducer may also include an integrally formed "transistor" to provide an active source of signal gain.

3,621,155
STEREO PILLOW
Jackson L. Pruitt, Print Shop, Box 15, U.S. Naval Station, FPO, New York, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,926
Int. Cl. H04m 1/11
U.S. Cl. 179—146 H **1 Claim**

A pillow containing a plurality of loud speakers divided into two groups and electrically connected to stereo equipment whereby each group reproduces a corresponding channel.



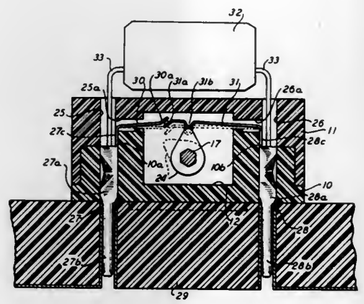
3,621,156
MICROPHONE BOOM
Donald L. Kliewer, Minneapolis, Minn., assignor to The Telex Corporation, Tulsa, Okla.
Filed May 26, 1969, Ser. No. 827,516
Int. Cl. H04m 1/04
U.S. Cl. 179—150 **5 Claims**



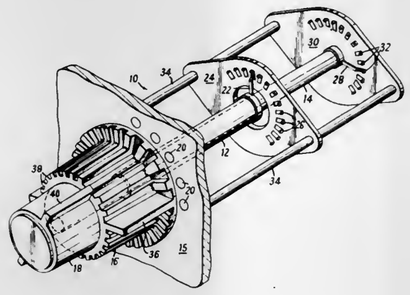
A boom for adjustably mounting a microphone in proximity to the mouth of an operator. A housing is rotatably disposed on a headphone and includes internally disposed commutators which are operable to provide a switching and slidable contacting function. A boom member is slidably disposed in a laterally extending aperture in the housing and includes an internally disposed extendable conductor that is conductively connected to the commutators and to a microphone that is rotatably mounted on the remote end of the boom.

3,621,157
MINIATURE SWITCH WITH MULTIPLE CAM-OPERATED SWITCH CONTACTS
Pierre P. Schwab, River Edge, N.J., assignor to McGraw-Edison Company, Elgion, Ill.
Filed June 1, 1970, Ser. No. 42,032
Int. Cl. H01h 19/00; H05k 7/10
U.S. Cl. 200—6 BB **4 Claims**

A miniature switch designed for plug-in connection with printed circuit cards of standard integrated circuit systems comprises a shallow rectangular insulated case provided with a series of cantilever switch arms operable closed selectively by a common camshaft disposed at right angles to the direction of plug-in. The contact portions of the switch arms are oblique to their direction of actuation so that a rubbing contact is obtained as they are closed and opened. The switch arms extend from connector bodies which have projecting pins at one side of the case for plug-in connection with a terminal board, and have openings accessible from the other side of the case for receiving plug-in pins of any other circuit components of the system.

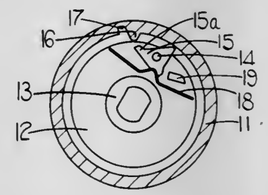


3,621,158
ELECTRICAL SWITCHING APPARATUS
Nicholas Darryl Swinstead, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed Oct. 16, 1970, Ser. No. 81,215
Claims priority, application Great Britain, Oct. 20, 1969, 51,408/69
Int. Cl. H01h 19/58, 27/10, 3/02
U.S. Cl. 200—14 **7 Claims**



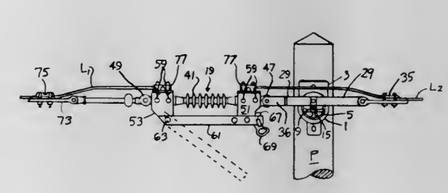
The invention relates to a dual-function switching apparatus intended particularly for controlling the two time bases of a dual time base oscilloscope. This switching apparatus comprises two switch contact assemblies of the wafer type driven in rotation by two coaxial shafts respectively. Each shaft is independently rotated by its own knob, these two knobs also being mounted coaxially one in front of the other. The rear knob has a datum index by which its position can be read on scale markings on the oscilloscope front panel. The front knob also has a datum index used for determining the position of this front knob. But to avoid parallax errors in reading the position of this front datum index on the scale markings, the rear knob is provided with auxiliary indexes which extend from the datum index on the front knob to the scale markings on the panel. When the datum index on the front knob is aligned with any particular auxiliary index on the rear knob, the position of the front knob is read by sighting along that auxiliary index from the front datum index to the scale markings.

3,621,159
IGNITION SWITCH WITH BLOCKING MEANS
Alec John Heap, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 10, 1970, Ser. No. 9,930
Claims priority, application Great Britain, Feb. 18, 1969, 8,614/69
Int. Cl. H01h 27/06
U.S. Cl. 200—42 R **1 Claim**



An electrical switch for use in road vehicles includes a casing carrying fixed contacts, and a rotor mounted for rotation in the casing of the rotor carrying a movable contact engageable with the fixed contacts to complete the circuits of the switch. The rotor has first and second stable positions with respect to the casing, and also has an unstable third position, the rotor being urged angularly from its third position back to its second position by a torsion spring. A cam form is provided on the casing, and a pawl is mounted on the rotor and is engageable with the cam form. The pawl is spring urged to either a first or second position relative to the rotor, and the arrangement of the pawl and the cam form on the casing is such that the pawl prevents movement of the rotor from its second position to its third position unless the previous movement of the rotor has been from its first position to its second position.

3,621,160
SELECTIVE MOUNTING DEVICE FOR IN-LINE SWITCHES
John L. Turner, East St. Louis, Ill., assignor to Turner Electric Corporation, St. Louis, Ill.
Filed Feb. 26, 1970, Ser. No. 14,617
Int. Cl. H01h 31/00
U.S. Cl. 200—48 **9 Claims**

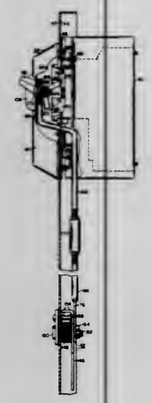


The invention provides a mounting for insulator mounted hook-operated in-line air break electric switches whereby the switch can be mounted selectively so that the switch blade swings in a vertical plane or in a plane inclined to the vertical. The mounting comprises a sleeve horizontally mountable on an insulator and having a pair of radial arms–one normal to the axis of the sleeve and the other at an acute angle, preferably about 60° to the axis of the sleeve. The switch supporting clevis which is coplanar with the switch may be secured by a bolt in embracing relation with either of these arms, so that the switch blade will swing in the same plane, vertical or inclined, as the sleeve arm to which the clevis is secured.

3,621,161
ELECTRIC SWITCH AND DOOR INTERLOCK OPERATING MECHANISM

Armand Mueller, Wauwatosa; Armand G. Mueller, Wauwatosa; Orval C. Bast, Milwaukee, and William H. Schmeling, Wauwatosa, all of Wis., assignors to Square D. Company, Park Ridge, Ill.

Filed July 13, 1970, Ser. No. 54,110
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 A **10 Claims**

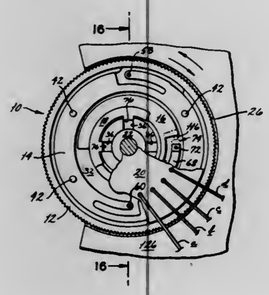


A switch and door interlock operating mechanism for a door that has a vault-type door locking mechanism. The mechanism includes an operating assembly that is mounted on the front surface of the door by concealed screws that also position a hinged support for a switch. The hinged support is rotatable to a position which will permit ready access to the terminals of the switch and positions the switch so that the buttons of the switch are aligned with a lever of the operator so the switch may be actuated from the front side of the door. The operator also has a connection with an interlock lever which will prevent opening of the door when the switch is turned on by the operator.

3,621,162
ROTATABLE SWITCH FOR PROVIDING ELECTRICAL PULSES AND INDICATING THE DIRECTION OF SWITCH ROTATION

Robert F. Wall, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 31, 1970, Ser. No. 24,276
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.39 **5 Claims**

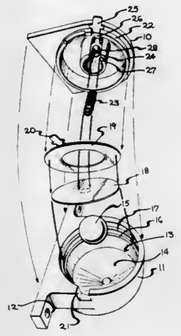


A rotatable switch having a printed circuit part including a plurality of conductive elements connected to terminals, which in turn may be connected to sources of operating potential. Two of the conductive elements cooperate with contacts of a rotatable switch part to produce electrical pulses, while other conductive elements of the printed circuit part cooperate with a switch contact of the rotatable switch part to sense and indicate the direction of switch rotation.

3,621,163
INERTIA SWITCH

Arthur A. Hitchcock, Cridersville, Ohio, assignor to A.C.B. Corporation, Lima, Ohio

Filed Jan. 19, 1970, Ser. No. 3,671
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 **4 Claims**

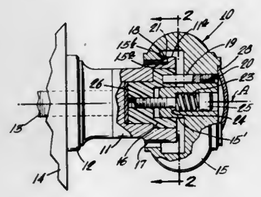


An inertia switch having a two-part housing of electrical insulating material, the lower housing part being provided with a conical ramp surface at its bottom to receive a relatively heavy ball which is adapted to move along the ramp surface in the event of a collision by an automobile, for example, to tilt a disc of electrical conductive material into contact with a flat electrical conductive ring. The ring is provided with a lead in the form of a tab extending through a notch in the housing part to the outside to receive suitable wires or leads. In engagement with the disc and extending through the center of the ring is a coil spring also of electrical conductive material, the upper end of which is disposed in a guide which is rigid with the inside of the upper housing part. Fixed within the guide and engaged by the coil spring is a conductive strip which extends to the outside of the housing through a notch in the housing part for the reception of a wire.
The upper housing part has a depending flange which fits frictionally into the lower housing part to hold the housing parts together and also to bear against the conical ramp may be built-up by increasing the wall thickness to serve as a block for reducing the effective scope of the switch.

3,621,164
APPARATUS FOR DISCHARGING STATIC ELECTRICITY

Stanley Backer, 5 Irving Road, Waban, Mass.

Filed Jan. 5, 1970, Ser. No. 569
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.58 **13 Claims**

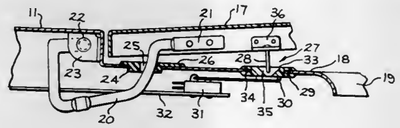


Apparatus is disclosed for use in conjunction with operators such as doorknobs, switches, pushbuttons and the like to enable a person to effect a painless discharge of an accumulated charge of electricity when the person contacts the operators. In each embodiment, the apparatus comprises two electrically conductive members one of which carries a contact surface which protrudes therefrom toward the other member but which is normally spaced therefrom by means of insulation including an airgap. Means is provided to bias the members away from one another so that the accumulated static charge is transferred from the person when he touches the member carrying the contact surface and urges it against the biasing means into engagement with or at least into proximity with the other member. The embodiments associated with doorknob structures are constructed to transfer static electricity when the knob is pushed, pulled or rotated; the embodiment associated with the pushbutton is constructed to transfer static electricity when the button is pushed; and the embodiment associated with the switch is constructed to operate when the switch is operated.

3,621,165
CLOSURE-OPERATED SAFETY SWITCH FOR AUTOMATIC APPLIANCE

Aidan M. Stone, Louisville, Ky., assignor to General Electric Company

Filed Sept. 21, 1970, Ser. No. 74,012
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.62 **3 Claims**

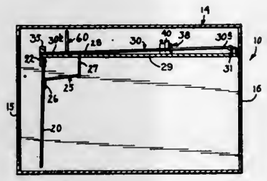


A safety switch to terminate the operation of an automatic appliance when a closure is moved from a closed position is provided including a cabinet-carried escutcheon movable laterally for alignment with an elongate, closure-carried projection adapted to engage a switch actuator disposed beneath the escutcheon. The escutcheon has a substantially centrally located aperture formed therethrough, the aperture being tapered provides a relatively large outer diameter facing the closure carried projection, and a relatively small inner diameter adjacent the interior of the cabinet. The inner diameter of the aperture is sufficiently small to prevent manual operation of the switch by an operator attempting to extend his finger through the aperture.

3,621,166
AIR IMPULSE ELECTRICAL SWITCH WITH ALTERNATE ACTION

Oscar F. Lindstrom, Great Falls, Mont.

Filed May 11, 1970, Ser. No. 35,953
Int. Cl. H01h *35/40, 13/60*
U.S. Cl. 200—81.9 R **11 Claims**

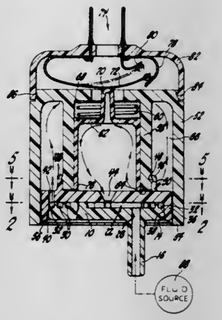


An air impulse electrical switch including a vane having an arm attached thereto for contacting a switch actuating member in the form of a loosely hinged rod. Upon deflection of the vane by an air impulse, the unhinged end of the rod moves along the sides of a triangular-shaped member between first and second positions on opposite sides of the member's apex. A pressure-sensitive switch is positioned in relation to the rod so as to provide actuation and deactuation thereof when the rod is in the first and second positions, respectively.

3,621,167
PISTON SWITCH CONTROLLED BY FLUID AMPLIFIER WITH TIME DELAY

Harold J. Burke, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1969, Ser. No. 881,366
Int. Cl. H01h *43/28;* **F15c** *1/14;* **H01h** *35/38*
U.S. Cl. 200—82 **3 Claims**

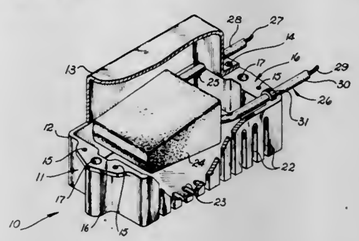


A fluid oscillator actuator having a bistable fluid amplifier including low- and high-speed circuits, and an actuator portion including a fluid motor responsive to the fluid amplifier is shown and described. The oscillator is assembled in a unitary structure and includes timing elements such as restrictors and capacitors for the low-speed circuit. The oscillator may be operated in a vacuum envelope and use atmospheric air for the fluid amplifier power source or it may be operated in the atmosphere using superatmospheric fluid as the power source.

3,621,168
SWITCHING DEVICE

John E. Durand, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,318
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 B **2 Claims**



A float switch suspended by its own electrical leads. The leads act as a cantilever beam and avoid the troublesome hinges of the prior art. A mercury switch is also encapsulated in a watertight foam plastic that has gas-filled cells. Thus, the plastic acts as a float, a mounting, and a watertight enclosure for the switch.

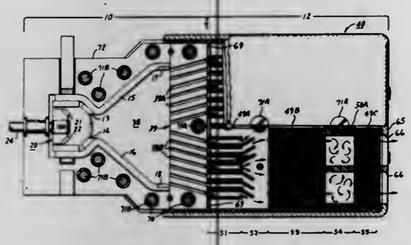
3,621,169
ELECTRIC CIRCUIT INTERRUPTER WITH NOVEL ARC GAS DISCHARGE MUFFLE ASSEMBLY

Eldon B. Heft, W. Hartford, and Harold A. Humpage, Forestville, both of Conn., assignors to General Electric Company

Continuation of application Ser. No. 593,945, Nov. 14, 1966, now abandoned. This application Apr. 20, 1970, Ser. No. 28,259
Int. Cl. H01h *33/08*
U.S. Cl. 200—144 R **6 Claims**

An electric circuit interrupter including arc establishing and interrupting means having an arc-gas venting portion and

an arc-gas filter and muffle portion in juxtaposed relation to the arc-gas venting portion, combined with a sleeve of elastomeric material surrounding the muffle portion and at least a portion of the arc establishing and interrupting means, the sleeve including a circumferentially extending inwardly directed rib positioned between the muffle portion and the arc establishing and interrupting means, the sleeve serving to prevent the flow of gases other than in the intended path of flow through the assembly.



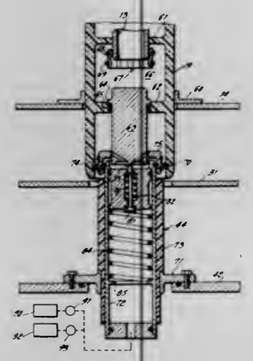
In accordance with another aspect, a plurality of arc generating and interrupting assemblies are positioned side by side to provide a multipole device, and an integral metallic, generally boxlike, enclosure is provided surrounding all of the interrupting assemblies and having an end wall with openings therein permitting the flow of arc gases therethrough, the metallic enclosure permitting the device to withstand extremely high pressures during interruption.

3,621,170

GAS-FILLED SEPARABLE CONTACTS FOR HIGH-VOLTAGE SWITCHGEAR

Otto Jensen, Plymouth, tish W. Indies, assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 24, 1970, Ser. No. 75,113
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R **6 Claims**



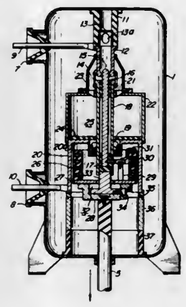
A chamber filled with high-pressure SF_6 surrounds the disconnect contacts of a circuit breaker when the breaker is connected to the cooperating terminals of a metal-clad switchgear housing to permit a relatively short bushing length.

3,621,171

GAS BLAST CIRCUIT BREAKER WITH PUFFER PISTON HAVING AN ELECTRODYNAMIC ASSIST IN THE FORM OF AXIALLY OVERLAPPING COILS

Yoshio Yoshioka, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1969, Ser. No. 821,319
Claims priority, application Japan, Aug. 30, 1968, May 6, 1968, July 12, 1968, 43/61788; 43/29868; 43/48490
Int. Cl. H01h *33/91*
U.S. Cl. 200—148 A **11 Claims**



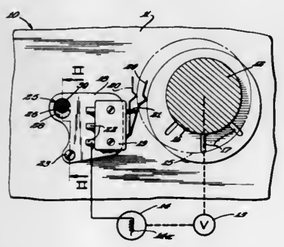
A circuit breaker having an electromagnetic actuator which comprises at least one primary coil connectable to the circuit during breaking operation, a short circuit coil associated with said primary coil, means for movably supporting one of said primary coil and said short circuit coil, and compressing means for an arc-extinguishing gas mechanically connected with the movable one of said primary coil and said short circuit coil, said primary coil and/or said short circuit coil having a large axial length such that the electromagnetic repulsive force acting therebetween has a flat characteristic, the movable one of said primary coil and said short circuit coil being brought into overlapped relation with the other in a part of the moving stroke thereof.

3,621,172

SWITCH-ACTUATING MEANS AND ADJUSTABLE CAMMING CONSTRUCTION

Malcolm D. Clark, Glasgow, Scotland, assignor to Raymond Control Sytems, Inc.

Filed Apr. 21, 1969, Ser. No. 817,779
Int. Cl. H01h *21/28*
U.S. Cl. 200—153 **1 Claim**



Switch-actuating means employing an eccentric cam which is supported above a surface for rotational sliding engagement with the operating lever arm of a switch. The switch is carried above the surface on a mounting bracket which includes means for adjusting the position of the switch lever arm in the path of rotation of the cam, whereby the electrical condition of the switch corresponds to the desired rotational condition of the shaft on which the cam is carried for accurately controlling the prime mover of a valve so that the prime mover is deenergized upon operation of the valve thereby to an open or a closed condition.

ERRATUM

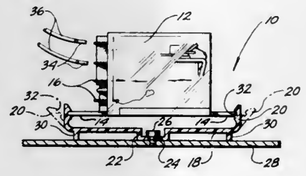
For Class 200—153 G see:
Patent No. 3,621,189

3,621,173

MOUNTING MEANS FOR ELECTRICAL DEVICES

Theodore H. O'Cheskey, Whittier, Calif., assignor to United States Filter Corporation, Whittier, Calif.

Filed Aug. 27, 1970, Ser. No. 67,339
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 C **3 Claims**



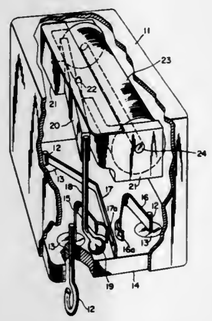
A relay mount includes a case for a relay, ears projecting away from both sides of the case, connector pins extending from the case above the plane of the ears, and a mounting track with spaced-apart elongated grooves in which the ears make a sliding and releasable fit.

3,621,174

LUBRICATIVE ATMOSPHERE FOR SEALED SWITCHES

Robert A. Holcomb, Waynesboro, Va., assignor to General Electric Company

Filed Oct. 28, 1968, Ser. No. 770,967
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **17 Claims**



A controlled atmosphere containing a monocarbon compound selected from the group consisting of methanol, chloroform, methyl iodide and methylene chloride is introduced into cleaned hermetically sealed relays to provide lubrication of metal wear points. Reactive metal for the wear points is selected to induce polymerization of the compound to obtain a lubricative surface on the wear points. The compound must be noncarbonizing over the relay operating range.

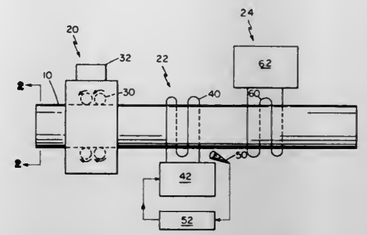
3,621,175

CONTINUOUS WELDING

Peter Dominic Prevett, Stoneham, and Theodore Joseph Morin, Needham, both of Mass., assignors to Industrial Magnetics, Inc., Canton, Mass.

Filed Sept. 20, 1968, Ser. No. 761,032
Int. Cl. B23k *13/00*
U.S. Cl. 219—9.5 **4 Claims**

Welding together two elements by placing their surfaces next to each other, moving them simultaneously along a path, heating successive zones of the elements at a station on the



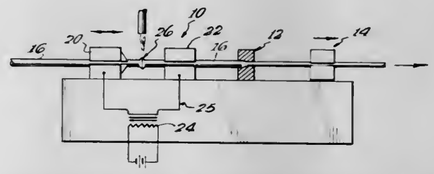
path and thereafter moving the successive zone through a zone of pulsed high magnetic field at another station.

3,621,176

WELD REDUCING METHOD AND APPARATUS

Raymond L. Valente, Kankakee, Ill., assignor to Manco Manufacturing Co., Bradley, Ill.

Filed Feb. 16, 1970, Ser. No. 11,741
Int. Cl. B23k *11/02*
U.S. Cl. 219—57 **2 Claims**



A method and apparatus for processing workpieces in the form of bar stock or the like prior to the drawing of said pieces through a reducing die. The method includes the steps of joining the workpieces together by welding to produce a welded joint, and then reducing the effective diameter of said joint by the application of a tensile stress thereto so that said welded joining may be drawn through a die without damaging said die. The step of reducing the effective diameter of said joint includes further the partial dressing of said joint by engaging the upset formed upon welding with a shear blade to sever portion thereof from the joint. The apparatus of the present invention include a pair of welding clamps for engaging said workpieces, one said clamp being movable relative to the other, for effecting both the upset weld and applying the tensile stress to the resulting welded joint. Said movable clamp has a shear blade formed thereon for partially dressing said joint.

3,621,177

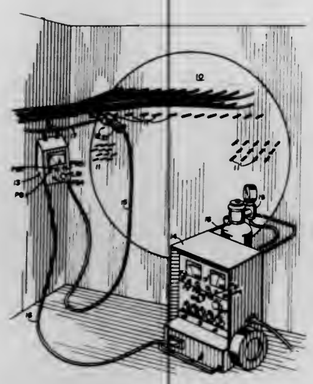
METHOD AND APPARATUS FOR TIG TUBE WELDING

Neil Freeman McPherson, Oakville, and Nils Hanssmann, Ancaster, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Dec. 9, 1968, Ser. No. 782,370
Int. Cl. B23k *31/06*
U.S. Cl. 219—61 **13 Claims**

Described herein is a method and apparatus for fully automatically weld-joining lengths of metal instrument tubing employing the TIG welding process to advance a weld puddle about the periphery of the junction of aligned ends of straight tubing, respective end portions of which are held in a closed chamber rigidly clamped in spaced seats of a robust metal head to resist elongation by heating; the unit comprises a handle portion axially separably joined with the head and providing drive to a rotating electrode carrier spool therein about the work, angular interval marking signals being transmitted to a remote control unit from which welding current and gas is supplied to the head according to a weld program selected for the material being joined. A welding cycle commences with a stationary arc developing a weld pool, followed by advance at uniform speed of the arc with controlled

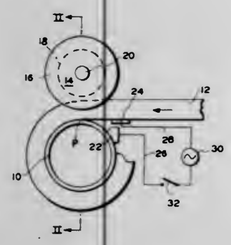
current levels over sectors, the arc being sustained beyond 360° and the complete cycle spanning two revolutions of the carrier and terminating with a bead-cooling gas flow. Repeatable welds of high quality on a production basis may be obtained, characterized by minimal fall-in of bead, full area fusion of faces, and constant internal diameter.



3,621,178
METHOD AND APPARATUS FOR MANUFACTURING FINNED PIPES

Kunihiro Nakayama; Keiichi Kojima, and Shingo Kobayashi, all of Funabashi, Japan, assignors to Nikon Kentetsu Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1970, Ser. No. 3,024
Claims priority, application Japan, Jan. 22, 1969, 44/4590
Int. Cl. B23k *1/16*
U.S. Cl. 219—107 **4 Claims**



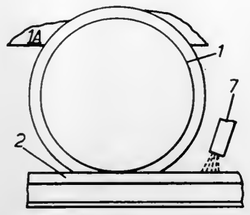
A metallic strip is wrapped into a helix around a metallic pipe by having one of its edges contacted by the pipe and welded on to the pipe with a welding current having a frequency ranging from 1 to 10 MHz. The current is applied across the strip and pipe from very close to a point where the strip begins to contact the pipe.

3,621,179
CLEANING METAL SURFACES TO REMOVE GREASE FILMS

Jozef K. Tylko, Faringdon, England, assignor to Tetronics Research & Development Company, Ltd., Faringdon, England

Continuation-in-part of application Ser. No. 702,864, Feb. 5, 1968. This application Feb. 16, 1970, Ser. No. 11,817
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **8 Claims**

A method of treating a wearing surface of a railhead to remove an oil film and improve traction of a locomotive

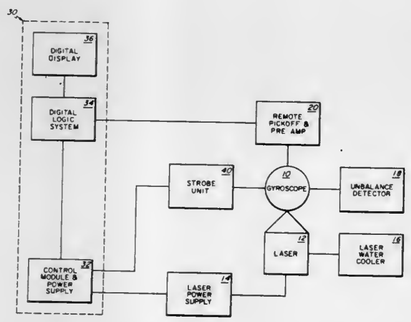


thereon in which effluent from a plasma jet torch is applied to the surface.

3,621,180
SYSTEM FOR CORRECTING UNBALANCES ON A ROTATING MASS

William Rolff, Carlstadt, N.J., assignor to Singer-General Precision Inc., Little Falls, N.J.

Filed June 3, 1969, Ser. No. 830,058
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 **2 Claims**

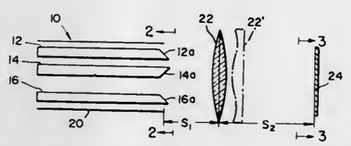


A system for correcting unbalances on a rotating mass, in which a laser is directed towards the rotating mass and is adapted to burn off a portion of the mass during its rotation. An electronic control device is connected to the laser for receiving unbalance information, comparing same with a reference point on the mass and firing the laser accordingly.

3,621,181
LASER PATTERN GENERATOR

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 15, 1969, Ser. No. 850,514
Int. Cl. H01s *3/02*; **B23k** *11/00*
U.S. Cl. 219—121 L **10 Claims**

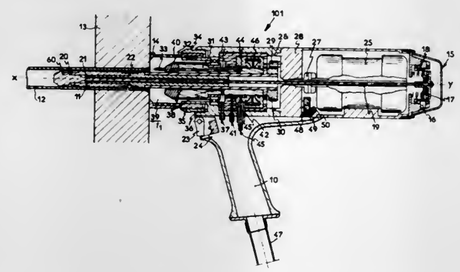


A system and construction for spot welding either in an industrial environment or for repairing retina detachments in the medical field is disclosed as comprising a fagot-laser system with each individual rod including an output end face whose normal is not colinear to the main axis of the rod. Various patterns can be generated with the arrangement by imaging the near field of the output at the laser rod ends onto the work piece or target at the desired magnification and rearranging or rotating the individual rods. An alternative arrangement is to image the far field onto the work at the desired magnification and to rotate the individual rod elements to achieve pattern variation.

3,621,182
ROTARY WELDING GUN

Jean-Pierre Peyrot, 8, domaine du Bel-Abord, Chilly-Mazarin, Essonne, France

Filed Nov. 28, 1969, Ser. No. 880,714
Claims priority, application France, Nov. 29, 1968, 176,113
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **9 Claims**

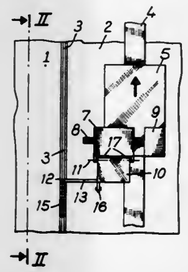


A rotary welding gun comprising a handle, an intake of gas utilized to prevent any oxidation of the weld, an inlet of cooling water, an electric current input, all the intakes being contained in a conduit in the interior of the handle, a built-in motor driving an axial shaft, a positioning mandrel projecting towards the exterior round the said axial shaft at its free extremity opposite to that of the motor, a centering means, a torch-mounted eccentric radially with respect to said mandrel, axial-adjusting means for the position of the torch, expansion means adjustable in relation to the mandrel so as to center said mandrel radially with respect to the internal surface of a tube to be welded, at the same time permitting rotation of the mandrel inside the tube.

3,621,183
SELF-PROPELLED MACHINE FOR SUPPORTING AN OSCILLATING TOOL

Andre Alphonse Chambonnet, Arles, France, assignor to La Societe "Constructions Metalliques De Provence, Levallois, Hauts de Seine, France

Filed Mar. 3, 1970, Ser. No. 16,022
Claims priority, application France, Mar. 4, 1969, July 25, 1969, 6906164; 6925374
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 PL **9 Claims**

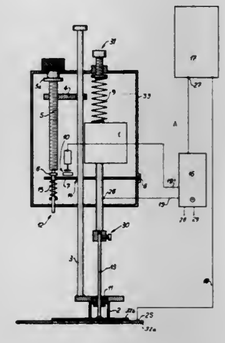


Self-propelled machine for supporting a tool which is required to describe a meandering path between the edges of two metal sheets disposed end-to-end, e.g. a welding machine, comprising means for automatically controlling the amplitude of the oscillations of the tool so that it is always equal to the width of the slot between the two sheets.

3,621,184
SPOT WELDING APPARATUS

Andre Mieville, Lausanne, Switzerland, assignor to M.E.D.I., Geneva, Switzerland

Filed May 12, 1969, Ser. No. 823,555
Claims priority, application Switzerland, Nov. 27, 1968, 17,647/68
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **4 Claims**

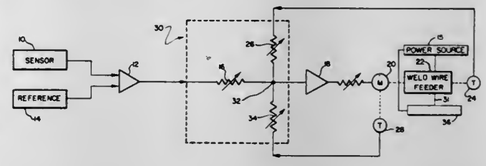


Disclosed herein is automatic spot arc-welding apparatus comprising a pressure sensitive self-actuating device having a consumable welding electrode and an automatic feed mechanism for controlling the length of electrode consumed from one weld to the next. A delay circuit controls the welding current to continue the application of such current for a short period after termination of movement of the feed mechanism to accurately control the length of electrode which is burned off.

3,621,185
WELDING SYSTEM

William F. Iceland, Los Alamitos, and Donald R. Lien, La Habra, both of Calif., assignors to North American Rockwell Corporation

Filed May 12, 1969, Ser. No. 823,634
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **2 Claims**



The invention pertains to MIG-welding apparatus wherein the actual speed of a welding wire is compared with the feeding rate of the feeding means and conditions at the arc, to compensate for slippage between the feeding means and welding wire thereby improving the response to changes in welding conditions.

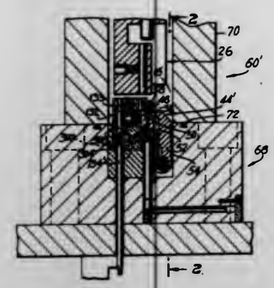
3,621,186
SUPPORT STRUCTURE

Milton Stoll, 14–19 212th Street, Bayside, N.Y.

Continuation-in-part of application Ser. No. 558,142, June 16, 1966, now Patent No. 3,490,886, dated Nov. 25, 1969. This application Nov. 28, 1969, Ser. No. 880,867
Int. Cl. B23k *9/28*
U.S. Cl. 219—138 **10 Claims**

Structure for supporting a plurality of generally tubular casing members during sealing thereof comprising a plurality of sets of separated heat-conducting chuck portions, heater

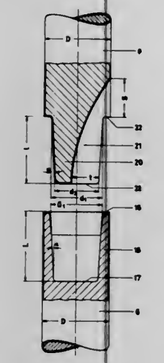
means for raising the temperature of one of each pair of chuck elements and refractory low expansion means for supporting the heated chuck portion so that the center-to-center distances therebetween remain substantially constant.



3,621,187
SECTIONAL CUTTING OR WELDING ELECTRODE

Bernard Reichelt, Nurnberg-Laufamholz, and Richard Winter, Altdorf, both of Germany, assignors to C. Conradty, Nurnberg, Germany

Filed July 14, 1969, Ser. No. 841,321
Claims priority, application Germany, Dec. 27, 1968, P 18 17 096.2
Int. Cl. B23k *35/00*
U.S. Cl. 219—145 **4 Claims**



An electrode of carbon material, especially for cutting and welding, which has one end provided with a conical plug and has its other end provided with a socket having a complimentary inner conical surface, and in which the outer surface of the plug and at least that one third of the inner conical surface of said socket which comprises the largest diameter of said inner conical surface is provided with a metallic coating.

3,621,188
WELDING ELECTRODE

A. David Joseph, New Canaan, Conn., assignor to Eutectic Corporation, Flushing, N.Y.

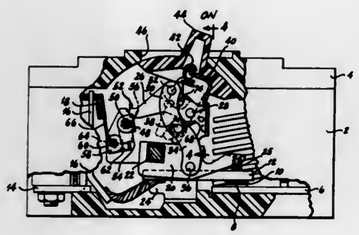
Filed Oct. 25, 1968, Ser. No. 770,787
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **10 Claims**

This invention comprises a coated electrode having a core of copper or a copper alloy and aluminum or an aluminum alloy. The coating of the electrode is composed of the fluoride of at least one of the metals chosen from the group consisting of aluminum, sodium, lithium, potassium, barium, calcium, zinc, tin and cadmium, and the chloride of at least one of the metals chosen from the same group.

3,621,189
TOGGLE LINKAGE CONTACT OPERATING MECHANISM FOR ELECTRIC CIRCUIT BREAKER

Donald A. Link, Hubertus, Wash., and Fred H. Williams, Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Aug. 26, 1970, Ser. No. 67,146
Int. Cl. H01h *5/06, 21/42*
U.S. Cl. 200—153 G **6 Claims**

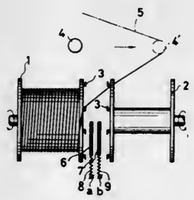


A pivotally mounted contact arm and releasable latch lever, retained by a current-responsive latch system, are interconnected by a toggle linkage, the knee of which is connected by tension springs to a manually movable handle operable to collapse and straighten the toggle to effect opening and closing movement, respectively, of the contact arm. A cam follower is pivotally suspended from the connection joining the toggle linkage and latch lever and has a free end interposed between a fixed cam and one link of the toggle, the follower being drawn along the cam by movement of the latch lever when released to break the knee overcenter of the linkage, accelerate the collapse of the toggle, and restrain the upper toggle link to prevent contact-arm rebound.

3,621,190
CONTINUOUS WINDING APPARATUS

Kazumasa Morikawa, Ichihara-shi; Makoto Kobayashi, Nikko-shi; Hiromitsu Sato, Nikko-shi, and Jun Nakajima, Nikko-shi, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,770
Claims priority, application Japan, Nov. 26, 1968, Oct. 13, 1969, 43/86576; 44/81671
Int. Cl. C21d *9/62;* **H05b** *1/00;* **B65h** *54/00*
U.S. Cl. 219—155 **6 Claims**

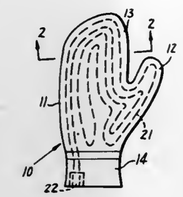


The present invention provides an apparatus for automatically and electrically cutting wires, especially those of large diameters, in a high-speed continuous winding apparatus, particularly one having two or more spools for successive wire winding, in which a wire is made to contact and short with a plurality of closely arranged electrodes while being moved from a spool on which the wire has been wound in a prescribed quantity to another empty spool and, at the point of contact, melted to break or to be so softened by heat as to be torn off under wire tension.

3,621,191
ELECTRICALLY HEATED FOOTWEAR AND HANDWEAR

Woodrow D. Cornwell, Middletown, Va. 22645

Filed Apr. 21, 1970, Ser. No. 30,497
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 **1 Claim**



Electrically heated footwear and handwear is disclosed in which an ionomer plastic insulating layer is fitted into a shoe or other footwear and a mitten or other handwear of conventional construction. A long stranded heating wire is embedded in a heat-conducting plastic member which is positioned beneath the insole of the footwear and within the insulating plastic cover of the mitten. The wires are connected to a source of low-voltage electricity for resistance heating in order to maintain the footwear and handwear at a comfortable temperature.

3,621,192
ELECTRICALLY HEATED CHAIR

Alfred Pohler, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,122
Claims priority, application Austria, Nov. 11, 1968, 10954/68
Int. Cl. H05b *1/00*
U.S. Cl. 219—217 **5 Claims**



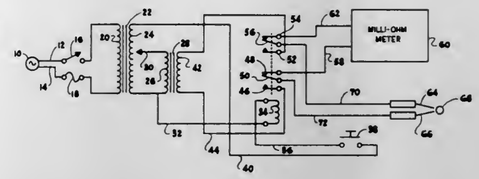
An article of body-supporting furniture having an open frame and a receiving section connected to said frame to provide a seating area within the frame. The reclining section including a reclining, flexible heating surface having a layer of electrically conductive heating material, insulating layers enclosing said electrically conductive layer, and electrical contacts connected to said heating material for electrical connection to live voltage or a battery. The heating material having a positive temperature coefficient of electrical resistance to minimize voltage supply requirements and to provide current limitations.

3,621,193
POSITIVE CONTACT RESISTANCE SOLDERING UNIT

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert D. Banta, Merritt, Fla.

Filed Sept. 21, 1970, Ser. No. 73,834
Int. Cl. B23k *3/04;* **H05b** *3/00*
U.S. Cl. 219—234 **2 Claims**

A positive contact resistance soldering unit which has a relay therein, which is operated by a foot switch for selectively coupling a milliohmeter to the electrodes for measuring the resistance between the electrodes and the workpiece in order to determine the best contact therebetween. When the

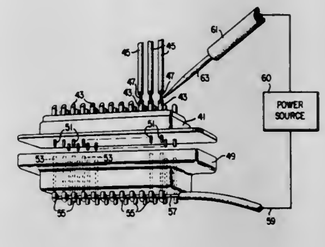


milliohmmeter indicates that the electrodes are in good contact with the workpiece the foot switch is depressed connecting the output of a power transformer to the electrodes to begin the soldering operation.

3,621,194
RESISTANCE SOLDERING APPARATUS

Clara M. Vermillion, Huntingtown, Md.

Filed Dec. 31, 1969, Ser. No. 889,558
Int. Cl. B23k *1/12;* **H05b** *3/00*
U.S. Cl. 219—234 **7 Claims**



An apparatus for resistance soldering a plurality of electric leads to a multiple-terminal block and generally comprises a complementary connector block and a probe. The probe and the complementary connector block are connected to a suitable source of electric power. The complementary connector block is the complement of the multiple-terminal block to which the leads are to be soldered. In other words, if the multiple-terminal block is a male block, the complementary connector block is a corresponding female block and vice versa. All of the terminals of the complementary connector block are commonly connected to one side of said source of electric power and the probe is connected to the other side. Hence, when the tip of the probe is brought into contact with any of the solder cups or connecting tabs of the multiple-terminal block, current flows through that cup and generates sufficient heat for resistance soldering to take place.

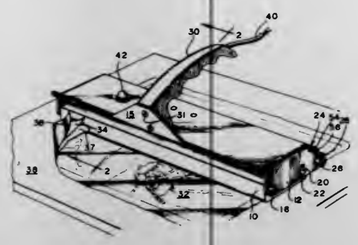
3,621,195
DRY MOUNT APPARATUS

Paul Goldstein, deceased, late of Belmont, Mass. (Phyllis Goldstein Kirschner, executrix), assignor to The Rolla-Mount Joint Venture, Boston, Mass.

Filed Oct. 2, 1969, Ser. No. 863,761
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **3 Claims**

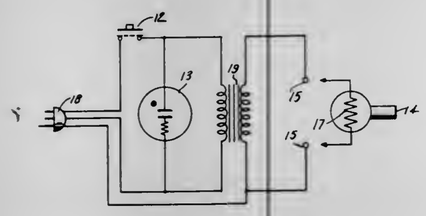
A simple and effective device for the dry mounting of different-size prints or photographs on support boards. A heated platen or relatively large area and a heat-absorbing roller thermally isolated from the platen are supported on a frame for movement across the surface of a photograph being mounted. The platen is effective to apply uniform heat and pressure while melting the adhesive resin of a dry mount

tissue and pressing the melted resin into intimate contact with the surfaces being bonded; the roller being operative to



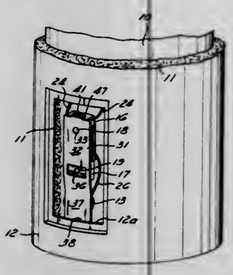
maintain all surfaces in firm contact while removing heat therefrom to effect a rigid and strong bond.

3,621,196
ELECTRIC CIGARETTE LIGHTER
William Reinbolt Sammet, 158 Marlboro Ave., Columbus, Ohio
Filed June 2, 1970, Ser. No. 42,823
Int. Cl. F23q *7/22*
U.S. Cl. 219—269 **1 Claim**



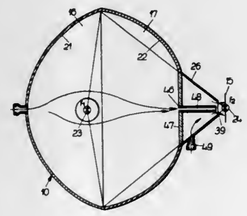
A cigarette lighting device which is electrically operated by being plugged into an electrical outlet. This device includes a housing containing a push-in-type thermostatically controlled lighter similar to that of the automobile lighter. The device also includes a transformer and pilot lamp which indicates when the device is on. A switch on exterior of the housing allows the device to be turned on or off when desired.

3,621,197
PROTECTOR SHIELDS FOR THERMOSTATS
Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Oct. 15, 1970, Ser. No. 81,029
Int. Cl. F24h *1/00*
U.S. Cl. 219—328 **6 Claims**



A protective shield for the terminals of thermostats mounted on water heaters is disclosed. The shield is formed of heavy fish paper shaped to provide access to the thermostat controls while preventing accidental contact with the terminals and connecting leads. Mounting portions are provided on the shield for removably mounting the shield in place.

3,621,198
APPARATUS FOR HEAT OPERATING A WORKPIECE WITH THE AID OF AN OPTICAL PROJECTION OF A RADIATION SOURCE
Horst Herbrich, Frankfurt am Main, Germany, assignor to Messer Griesheim G.m.b.H., Frankfurt am Main, Germany
Filed July 15, 1968, Ser. No. 745,656
Claims priority, application Germany, July 14, 1967, P 16 27 554.0
Int. Cl. H05b *3/02;* **A61n** *5/06*
U.S. Cl. 219—349 **8 Claims**

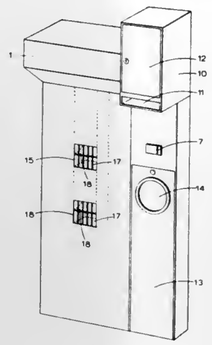


An apparatus for the heating, melting, welding, brazing, cutting and the like of a workpiece with the aid of the optical projection of a radiation source. The radiation source is disposed within a radiation focusing chamber at one focal point thereof and the radiation therefrom exits the chamber through a radiation outlet to impinge on a second external working focal point. A pressurized gas, which may be a cooling gas, protective gas or reactive gas may be introduced into at least a portion of the chamber. The gas discharges through the radiation outlet and prevents entry into the chamber of damaging vapors which develop during use of the apparatus. The chamber may be divided by a radiation permeable partition into a pair of compartments; a first containing the radiation source and a second having the radiation outlet. The gas may be introduced into the first compartment to exit through an aperture in the partition into the second compartment for discharge through the outlet. Alternatively a first gas may be introduced into the first compartment and a second gas may be introduced into the second compartment whereby both gases, either mixed or unmixed are discharged through the outlet. In other embodiments, the first compartment may be sealed and the gas or gases introduced directly into the second compartment. The second compartment may include a narrow tube disposed substantially coaxial with an imaginary line interconnecting the foci for directing a concentrated stream of a gas toward the workpiece. A fiber optic rod may be mounted at the radiation outlet to provide a concentrated radiation at a point removed from the second focus. The rod may have a bore for passage of the pressurized gas from the chamber.

3,621,199
BODY DRYING APPARATUS
Arthur Goldstein, 375 Milton Road, Cambridge, England
Continuation-in-part of application Ser. No. 799,797, Feb. 17, 1969. This application Nov. 14, 1969, Ser. No. 876,949
Int. Cl. F24h *3/04*
U.S. Cl. 219—370 **14 Claims**

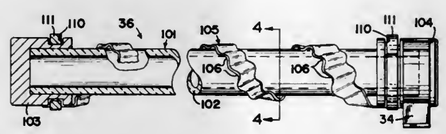
An apparatus is provided for drying the whole body of a person by hot air with the assistance of paper or other towels. The apparatus comprises a conduit or duct for hot air having

an outlet. A deflector is arranged to deflect a stream of hot air issuing from the outlet, and is oscillated so as to cause the



stream of air to sweep upwards and downwards over the body.

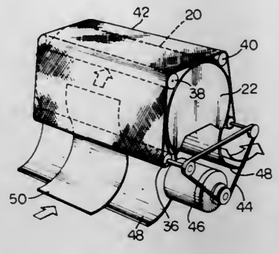
3,621,200
HEATING ELEMENT AND PACKAGING MACHINE EQUIPPED THEREWITH
Ridley Watts, Jr., Cleveland, Ohio, assignor to American Packaging Corporation, Hudson, Ohio
Continuation-in-part of application Ser. No. 726,513, May 3, 1968. This application Oct. 31, 1968, Ser. No. 772,160
Int. Cl. H05b *3/10;* **B65b** *31/00;* **F24h** *3/04*
U.S. Cl. 219—377 **20 Claims**



A machine for thermoforming and skin packaging is equipped with electric heaters having very fast response and high efficiency. In the preferred embodiment, a corrugated Nichrome ribbon heater element is helically wound around an elongated cylindrical core of quartz or other material transparent to radiant energy with the corrugations in substantially point contact with the core. In an alternative embodiment, an uncorrugated ribbon heater element is helically wound around an elongated quartz core having a generally star-shaped transverse cross section. In both embodiments the heater element is stress relieved in the helical configuration and is in relaxed condition on the core. Convolution of the ribbon may be of varying concentration along the core to provide nonuniform heat distribution where that is desired.

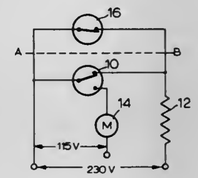
3,621,201
DEVELOPER APPARATUS FOR HEAT DEVELOPING PAPER
Paul J. Crane, Torrance, and Glenn A. Reese, San Pedro, both of Calif., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed Apr. 24, 1969, Ser. No. 819,066
Int. Cl. F27b *9/06*
U.S. Cl. 219—388 **7 Claims**

An image developer for heat developing paper, such as dry silver paper, wherein a curved platen is heated by passing a current therethrough, thereby obtaining very quick heating time and very uniform heat. A belt means, such as a fabric belt, is held by rollers snugly against the platen surface that is heated, and the belt is driven by connecting the rollers to a motor and the paper to be developed is inserted between the



fabric belt and the platen and caused to move about the heated platen, thereby providing "averaging" the heat to the paper.

3,621,202
AUTOMATIC DRYING CYCLE FOR CLOTHES DRYERS
Rudolf Gemert, London, Ontario, Canada, assignor to GSW Limited-GSW Limitee, Toronto, Ontario, Canada
Filed Nov. 16, 1970, Ser. No. 89,540
Int. Cl. H05b *1/02*
U.S. Cl. 219—492 **1 Claim**



A drying control system in automatic dryers involves the use of two thermostats with a timer and heating element, the thermostats being positioned in the exhaust airstream emanating from the drying chamber. The first thermostat is set for a lower temperature range than the second thermostat and both thermostats provide for operation of the heating element until the temperature has risen to a predetermined level, after which the thermostate set in the lower temperature range will switch to bring the timer into the circuit. The heating element continues to draw current through the thermostat set in the higher range but when the temperature reaches the upper level at which the higher range thermostat is set, the latter will open to switch off the heating element. Sequentially, the second thermostat will then cycle on and off until the total time of the timer has expired.

3,621,203
ELECTRIC RESISTANCE HEATING CABLE
Louis Joseph Henri Geominy; Hubertus Johannes Josephus Gommans; Leonardus Frans Helene Mans, and Silvester Marie Ruytenbeek, all of Venlo, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed July 7, 1970, Ser. No. 52,801
Claims priority, application Netherlands, June 26, 1970, 7009422
Int. Cl. H05b *3/34, 3/54*
U.S. Cl. 219—528 **6 Claims**

A resistance heating cable having relatively high and low temperature sectors during operation. The cable has a flexible core, a resistance wire wound thereon and an outer covering. The resistance wire is wound with a number of

layers in the low temperature sectors one across the other, which layers establish mutual electrical contact with each

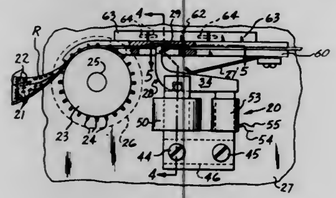


other. The high temperature sectors have at least two layers of windings.

3,621,204
ELECTRICAL HEATING ELEMENT WITH FUSED MAGNESIA INSULATION
Manfred Neidhardt, Ranzel near Troisdorf, and Joseph Schneider, Lulsdorf near Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft
Filed Apr. 29, 1970, Ser. No. 33,054
Claims priority, application Germany, Apr. 29, 1969, P 19 21 789.1
Int. Cl. H05b *3/18*; **H01c** *7/02*; **H01b** *3/10*
U.S. Cl. 219—553 **6 Claims**

An electrical heating element comprising a resistance wire in a metal tubular jacket insulated therefrom with a fused granular magnesia is improved from the standpoint of electrical leakage or loss by admixing with the magnesia a small amount of a sintered and finely divided magnesium silicate or magnesium oxide having a particle size substantially completely under 10 microns.

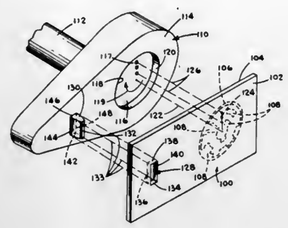
3,621,205
RECORD READER
Wilburn F. Bradbury, Northbrook, Ill., assignor to SCM Corporation, New York, N.Y.
Filed July 30, 1969, Ser. No. 846,094
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 C **21 Claims**



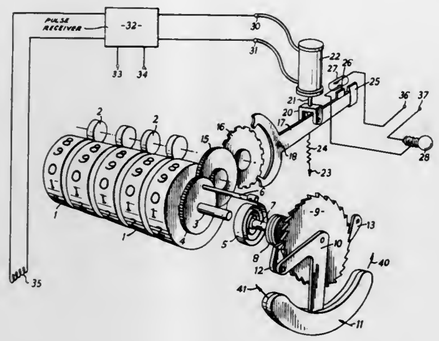
There is disclosed a record reader having a plurality of sensing levers corresponding in number to the number of code hole positions across the record medium. Each sensing lever is associated with a magnetic circuit. In two embodiments the magnetic circuits are provided by electromagnets and in two other embodiments the magnetic circuits are provided by a permanent magnet. Each sensing lever moves when it senses the presence of a code hole and consequently the condition of its respective magnetic circuit is changed. Each magnetic circuit has an output circuit which generates one type of signal if the associated lever senses the presence of a code hole and another type of signal when it senses the absence of a code hole.

3,621,206
LABEL-ALIGNING SYSTEM
Albert W. Scribner, Darien, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Aug. 21, 1969, Ser. No. 852,016
Int. Cl. G06k *7/10, 19/04*
U.S. Cl. 235—61.11 E **17 Claims**

In a data-reading system of the type which includes a label and a reading device which must be aligned with that label, the aligning function is performed by a plurality of locating surfaces on the label and a cooperating pair of locating surfaces on the reading device, at least one of the locating surfaces on the label being eccentric relative to the circular data field of the label so that the reading device is oriented angularly as well as linearly.



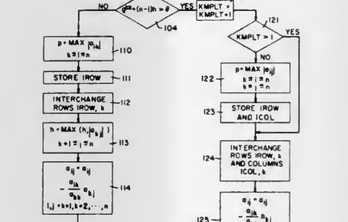
3,621,207
ROAD PRICING METER
Patrick Bass, London, England, assignor to United Gas Industries, London, England
Filed Apr. 7, 1969, Ser. No. 813,908
Claims priority, application Great Britain, Apr. 19, 1968, 18,716/68
Int. Cl. G06m *1/08*; **G01d** *4/00*
U.S. Cl. 235—92 C **4 Claims**



A meter for receiving and counting impulses from outside suitable, for instance, as a road pricing meter to be carried on a motor vehicle and to receive and count impulses to indicate the amount of use made by that vehicle of the road. The meter includes a spiral power spring which is coupled to a counter through an escapement. The escapement is operated by the signals received from outside to permit a desired degree of advancement for each signal. The energy in the spiral power spring is replenished by means of an oscillating weight winding the spring up through a pawl and ratchet gear.

3,621,208
SIGNAL POINT INTERCONNECTION ROUTING
Donald D. Isett, Dallas; Judy A. Hellmer, Dallas, and Herman W. Van Beek, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed July 15, 1969, Ser. No. 841,867
Int. Cl. G06f *9/06*
U.S. Cl. 235—150 **16 Claims**

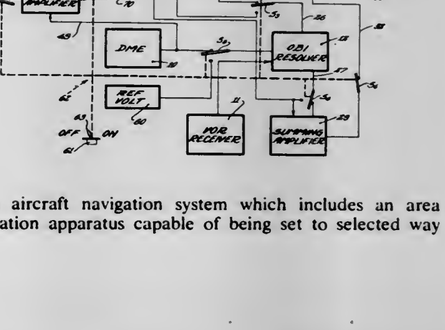
Active components, such as logic gates or flip-flops, formed in a semiconductor substrate are interconnected to input/output bonding pads and other active components in a circuit array in four separate operations. First, after arranging the active components in rows, signal points of all components in one row are interconnected by considering the longest interconnection and proceeding to the shortest. Next, component signal points between rows are interconnected again by considering the longest interconnecting path and proceeding to the shortest path. Third, input/output component signal points are assigned to input/output conductive pads. Finally, interconnecting paths are completed between the input/output component signal points and an assigned pad in a numbered order. Each operation uses a distinct algorithm to complete the necessary steps.



3,621,209
MACHINE-IMPLEMENTED PROCESS FOR INSURING THE NUMERICAL STABILITY OF GAUSSIAN ELIMINATION
Peter A. Businger, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 15, 1969, Ser. No. 885,049
Int. Cl. G06f *15/32*
U.S. Cl. 235—150 **10 Claims**

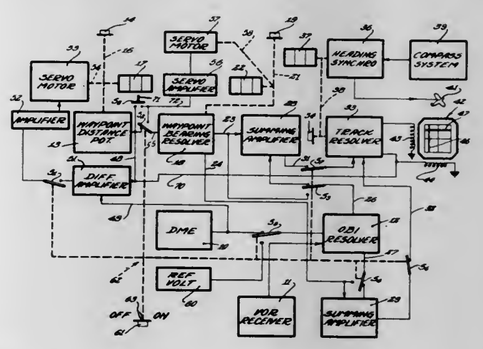
A method of insuring the numerical stability of the machine-implemented computational process of Gaussian elimination. The accuracy of the method of complete pivoting is substantially obtained without sacrificing the economy of the method of partial pivoting, except in those cases where it is essential to do so to preserve accuracy.

3,621,210
COMBINED PERFORMANCE AND COMMAND INDICATOR
Terry D. Canning, Marion, and Richard L. Jaycox, Cedar Rapids, both of Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed Dec. 5, 1969, Ser. No. 882,579
Int. Cl. G08g *5/04*
U.S. Cl. 235—150.2 **12 Claims**



Visual annunciation of predetermined scale segments of a performance indicator of the type comprising a zero or reference index and performance indications either side of the reference is utilized to combine a dynamic visual command indication with a performance monitoring indication. Annunciation may be in the form of visual optical stimuli initiated at the extreme performance indices and caused to extend in length in juxtaposition with the scale towards and beyond the reference index to define command limits in terms of performance either side of the index. The command may be easily followed by the observer by control actions to keep the monitored performance out of the annunciated areas. A combined aircraft vertical speed and collision avoidance command indicator is exemplified.

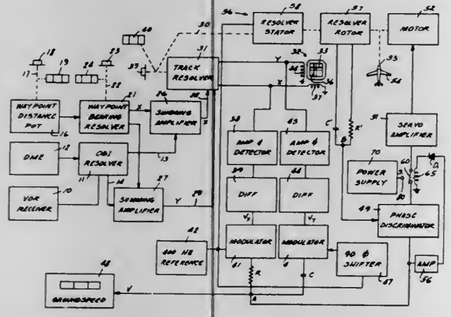
3,621,211
AUTOMATIC TRACK
Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.
Filed Apr. 15, 1969, Ser. No. 816,302
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.27 **10 Claims**



An aircraft navigation system which includes an area navigation apparatus capable of being set to selected way

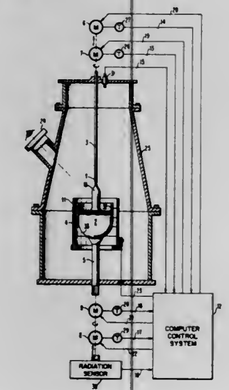
points with known bearings and distances from ground stations which includes an automatic track mode wherein an arbitrary way point along a selected track may be automatically chosen.

3,621,212
DIRECTION AND GROUND SPEED COMPUTER
James Hobbs, Overland Park, Kans.; Earl Stuart Perkins, Oak Brook, Ill., and Donald E. Floyd, Independence, Mo., assignors to Butler National Corporation, Minneapolis, Minn.
Filed Jan. 7, 1969, Ser. No. 789,433
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.27 **11 Claims**



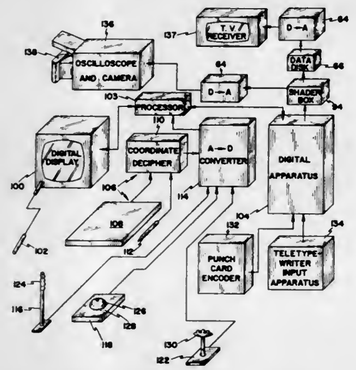
An aircraft heading and ground speed computer which utilizes the output of a way point computer and converts the X and Y distances to the way point to X and Y velocities and combines them to obtain the resultant ground speed. The track made good may also be obtained from the X and Y velocity components. A system for calculating the wind speed and direction is also disclosed.

3,621,213
PROGRAMMED DIGITAL-COMPUTER-CONTROLLED SYSTEM FOR AUTOMATIC GROWTH OF SEMICONDUCTOR CRYSTALS
Dian P. Jen, Hopewell Junction; Richard A. Slocum, Newburgh, and Carl R. Valentino, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,273
Int. Cl. G06f *15/46, 9/06*
U.S. Cl. 235—150 **3 Claims**



A Czochralski crystal puller is automatically controlled by a specially programmed digital computer to produce constant diameter, high-quality semiconductor crystals. Provision is made in the programming of the computer for the solution of partly theoretical and partly empirical mathematical models for simultaneously controlling heater temperature, crystal lift rate, crucible lift rate, crystal rotation rate and crucible rotation rate. Computer solutions of the equations are made in real time and the computer is an online integral component of the overall crystal growth system. The mathematical models concerned with heater temperature control and crystal lift control include data extrapolation for the anticipatory control of crystal diameter to compensate for the low dynamic response of the Czochralski crystal puller to changes in the heater control signals.

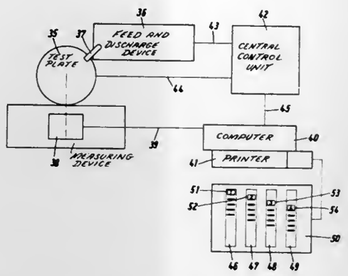
3,621,214
ELECTRONICALLY GENERATED PERSPECTIVE IMAGES
Gordon W. Romney, 1521 Princeton Avenue, Salt Lake City; David C. Evans, 1393 East South Temple, Salt Lake City; Alan C. Erdahl, 2277 East 1700 South, Salt Lake City, Utah, and Chris R. Wylie, deceased, late of Salt Lake City, Utah (Patricia A. Wylie, administratrix)
Filed Nov. 13, 1968, Ser. No. 802,702
Int. Cl. G06f *7/00, 9/12*
U.S. Cl. 235—151 **48 Claims**



A method and system for electronically generating and displaying two-dimensional perspective images which visually define three-dimensional objects by providing electrical signals representative of the surfaces of an object, converting, ordering and utilizing the signals to identify and display only visible surfaces and to control brightness along the visible surfaces of the eventual electronic display. More specifically, units of the electrical signals define surface portions of the object. These units are converted to define the projections of the surfaces defined by the units onto a two-dimensional image or view plane. The converted units are sorted to conform to the scanning pattern of the display device and those units which are to be visible, depending on the desired orientation of the object, are determined. The visual characteristics of the visible units are then calculated and converted to suitable form for controlling the intensity of the electronic display.

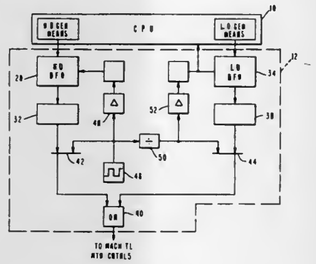
3,621,215
METHOD AND APPARATUS FOR SEQUENTIAL TESTING OF A PLURALITY OF SPECIMENS
Heinrich Netheler; Wilhelm Bergmann, and Gunter Bechtler, all of Hamburg, Germany, assignors to Eppendorf Geraetebau Netheler & Hinz GmbH, Hamburg, Germany
Filed May 5, 1969, Ser. No. 821,832
Claims priority, application Germany, May 9, 1968, P 17 73 390.3
Int. Cl. G01d *21/00*
U.S. Cl. 235—151.3 **9 Claims**

A method and apparatus are disclosed wherein a plurality of new specimens are introduced into a closed testing cycle and the period of introduction of successive samples stand in a predetermined ratio to the duration of the testing cycle; but is different therefrom. There is continuous feeding and testing of samples sequentially and periodically, while samples are supplied and removed according to the introduction period. The apparatus for carrying out this method includes a



testing plate containing a number of specimen-retaining stations. This testing plate is rotated in relation to both a measuring station and a station or stations for feeding and extracting specimens to and from the various retaining stations. In addition, unique means are shown for recording the results of tests made in carrying out the method with the apparatus of the present invention.

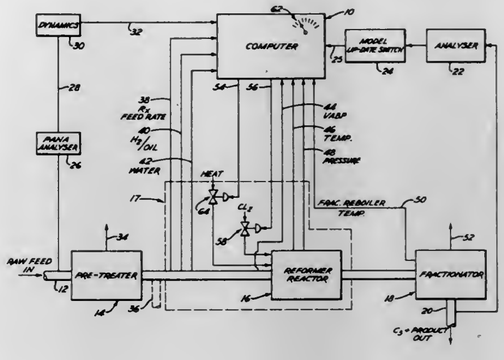
3,621,216
LINEAR INTERPOLATOR
Donald Wortzman, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of application Ser. No. 791,365, Jan. 15, 1969, now abandoned. This application June 30, 1969, Ser. No. 843,278
Int. Cl. G06f *7/38, 15/46*
U.S. Cl. 235—151.11 **19 Claims**



A system for interpolating data to generate a stream of pulses for controlling a machine tool or other precise mechanism. The interpolation is broken into a high-speed portion and a low speed portion. For a given straight line cut, the high-speed portion contains a fixed part and a variable part. The variable part of the high-speed portion is supplied by the low speed portion.

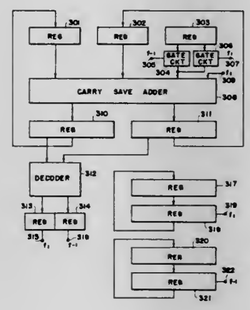
3,621,217
SPECIAL-PURPOSE PROCESS CONTROL COMPUTER
Norman L. Carr, Allison Park; Allen E. Somers, Pittsburgh, and Donald L. Stahlfeld, Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sept. 9, 1969, Ser. No. 856,438
Int. Cl. G06g *7/58;* **G06f** *15/46*
U.S. Cl. 235—151.12 **9 Claims**

A process-controlling computer wherein an analytical instrument is provided and is used as a standard against which to calibrate the model of the process in the computer. The process is of such a nature that the key output parameter



cannot be measured until some length of time after the value of that parameter is internally determined in the process.

3,621,218
HIGH-SPEED DIVIDER UTILIZING CARRY SAVE ADDITIONS
Tetsunori Nishimoto, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo-To, Japan
Filed Sept. 27, 1968, Ser. No. 763,286
Claims priority, application Japan, Sept. 29, 1967, 42/62331
Int. Cl. G06f *7/52*
U.S. Cl. 235—164 **4 Claims**

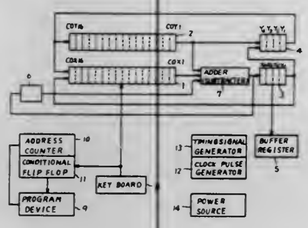


A divider is made up of a first pair of registers, a decorder, a pair of gate circuits, a carry save adder and a second pair of registers. The decorder produces a partial quotient in response to the upper parts of sum and carry signals representative of a partial remainder held in the first pair of registers. The carry save adder adds the partial remainder shifted upwards by one figure with either of divisior, zero or the complement of divisor selected by the pair of gate circuits in response to the partial quotient and produces new sum and carry signals representative of a new partial remainder to replace the previous partial remainder in the first pair of registers therewith. Thus the second pair of registers holds in succession the sequence of partial quotients produced by the decoder.

3,621,219
ARITHMETIC UNIT UTILIZING MAGNETIC CORE MATRIX REGISTERS

Isamu Washizuka, Osaka; Kunio Yoshida, Osaka; Akihiko Kunikane, Nara-ken, and Yoshinobu Kitagawa, Nara-ken, all of Japan, assignors to Hayakawa Denki Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1968, Ser. No. 749,532
Claims priority, application Japan, Aug. 15, 1967, 42/52316
Int. Cl. G06f 7/50
U.S. Cl. 235—170 6 Claims

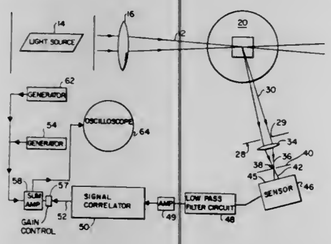


A compact computer of the serial type using magnetic memory devices as registers with one register being connected to an indicating device for immediate external indication. By using the memory devices in an improved manner with buffer registers, the alternative readout and storage procedures are avoided and addition or subtraction of binary coded decimal numbers can be performed during the readout period and thereby reduce processing time. The computer also enables the application of a correction signal to the adder or subtractor during write-in and does not require a separate binary adder or subtractor. Left and right shift operations are simplified and when the value stored in the memory device is read out starting with the most significant position, one flip-flop is set by the most significant digit and the output is fed to an indicating tube. This eliminates the need for indicating meaningless zeros.

3,621,220
SCATTERED LIGHT MEASUREMENT PROVIDING AUTOCORRELATION FUNCTION

Norman C. Ford, Jr., Flat Hills Road, Amherst, Mass.

Filed Aug. 29, 1969, Ser. No. 854,175
Int. Cl. G06g 7/19; G01m 21/00
U.S. Cl. 235—181 5 Claims

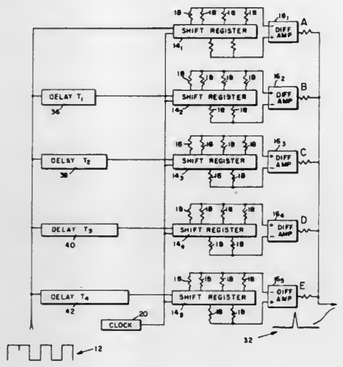


A method for measuring the diffusion constant of a macromolecule moving in a medium, e.g., in solution or suspension, comprising direction, at a sample of a macromolecule-containing medium, an incident light beam having a coherence length which is long compared to sample size, collecting light scattered by the macromolecular sample at an angle θ to the incident light beam in a sensor capable of producing a first electrical signal dependent upon the change in intensity of the collected light with time, and having a component due to scattering of light by said macromolecules, computing the autocorrelation function of said component, and producing a second electrical signal related to said autocorrelation function.

3,621,221
CORRELATOR WITH EQUALIZATION CORRECTION

Alfred J. Cann, Westford, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 11, 1968, Ser. No. 782,987
Int. Cl. G06f 15/34; H04b 3/04
U.S. Cl. 235—181 2 Claims

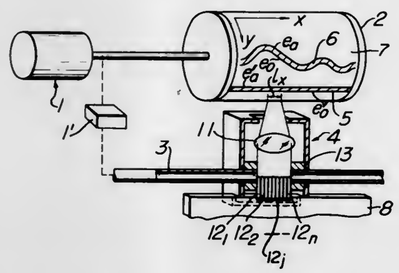


Apparatus is herein disclosed for providing in a code system correlation in conjunction with equalization correction to reduce the higher sidelobes which appear for certain autocorrelation functions. The signal to be correlated is applied to a shift register or tapped delay line, whose tap outputs are summed with various polarities and weightings to accomplish, simultaneously, correlation and equalization.
The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Navy.

3,621,222
DATA PROCESSING SYSTEM FOR CURVES RECORDING ON CHARTS WHOSE TRACE VARIES IN WIDTH

Shigeo Minami, Ashiya-shi, Japan, assignor to Hatachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1969, Ser. No. 799,428
Int. Cl. G06g 7/19; G06f 15/34
U.S. Cl. 235—181 9 Claims

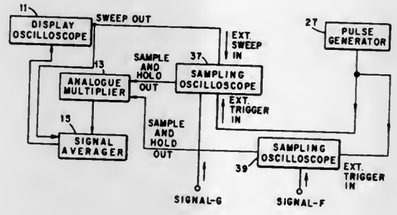


A data processing system for curves recorded on charts wherein a straight line $y=a$ (constant) and a curve $y=f_1(\kappa)$ are recorded, the curves having a certain width.
Variations in reflected light are detected by photoelectric transducer elements and converted into electrical signals.
A sequence of rectangular waves having widths equal to intervals between an electric signal corresponding to the position of the line $y=a$ and electric signals corresponding to the position of the curve $y=f_1(x)$ are obtained from the photoelectric transducer elements by rotating the chart in a y-direction and by scanning with an optical head, including a light source and photoelectric transducer elements, in an x-direction; the sequence of rectangular waves are applied to a summing integrator and its output to a display device, whereby a new curve proportional to the average position of both edges of the curve $y=f_1(x)$ is obtained; when weighting the rectangular waves according to a function $y=f_2(x)$, a new curve is obtained which corresponds to the convolution of the functions $f_1(x)$, $f_2(x)$.

3,621,223
HIGH-FREQUENCY SIGNAL CORRELATOR

Igor Alexeff, Oakridge; Rodger V. Neidigh, Knoxville, Tenn., and William Ray Wing, Pella, Iowa, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 26, 1969, Ser. No. 861,381
Int. Cl. G06g 7/19
U.S. Cl. 235—181 1 Claim

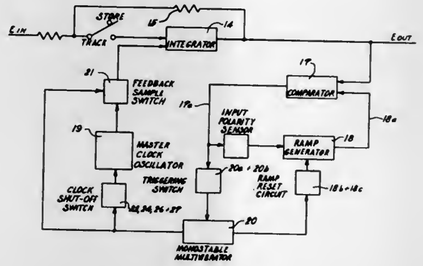


An automatic frequency correlator computes auto and cross correlation functions of up to 3 GHz. bandwidth over 100 sampling points. The frequency response of the correlator of the present invention is an improvement of three orders of magnitude over that obtainable by prior art correlators, and this is accomplished by providing a new and more convenient means of generating the necessary delay times in the operation of the present correlator.

3,621,224
ELECTRONIC TRACK AND STORE DEVICE

Robert E. Friday, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Sept. 30, 1969, Ser. No. 862,362
Int. Cl. G06g 7/18
U.S. Cl. 235—183 10 Claims

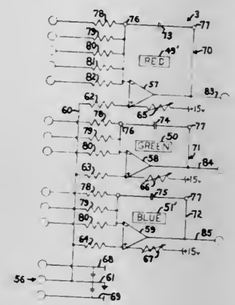


An electronic device for tracking and/or storing an electrical voltage level that utilizes an analog integrator, with an associated switch for performing track and initial storage. A hybrid feedback system prevents drift in the integrator output by utilizing the time required for a periodic fixed-rate pump signal to rise to the level of the integrator output signal. This time is used to determine the number of cycles from a fixed-frequency oscillator that occur in that time period. Deviations in the number of cycles (or portions of a cycle) occurring in the time interval are used to generate an error signal which is fed back to the integrator to correct for integrator voltage drift thereby causing the output of same to seek a quantum but stable value.

3,621,225
ELECTRICAL APPARATUS FOR OBTAINING PRINTING LIGHT INTENSITY VALUES

John V. Hanline, Kansas City, Mo., and Daniel M. Chapin, Shawnee Mission, Kans., assignors to Film Equipment Manufacturing Co., Kansas City, Mo.

Filed June 20, 1969, Ser. No. 835,143
Int. Cl. G06g 7/48
U.S. Cl. 235—193 9 Claims

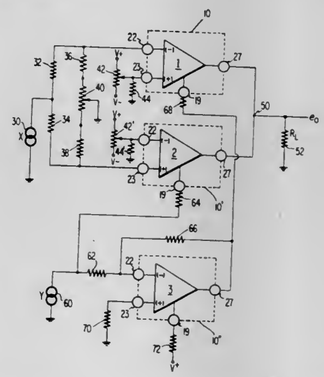


Electrical apparatus for obtaining light intensity values for printing lights for use with a production color film by comparing density values of a standard color film and light intensity values for printing lights for use with the standard color film with density values of the production color film, said apparatus having visual indicators for displaying the obtained light intensity values for the printer lights for the production color film. A computation circuit is electrically connected to the visual indicators and to a standard color film circuit and to a standard lamp level circuit and to a production color film circuit for electrically processing signals from a plurality of potentiometers in the respective circuits. The signals represent density values associated with the standard color film and the production color film and light intensity values associated printer lights for the standard color film whereby when the computation circuit is activated, numerical intensity values for the printer lights for the production color film are displayed by the visual indicators. A conversion circuit is electrically connected to the computation circuit for producing signals in selected increments of printer light intensities.

3,621,226
ANALOG MULTIPLIER IN WHICH ONE INPUT SIGNAL ADJUSTS THE TRANSCONDUCTANCE OF A DIFFERENTIAL AMPLIFIER

Harold Allen Wittlinger, Pennington, N.J., assignor to RCA Corporation

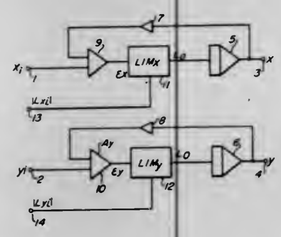
Filed Nov. 21, 1969, Ser. No. 878,650
Int. Cl. G06g 7/16
U.S. Cl. 235—194 11 Claims



An input signal representing one quantity X is applied to two amplifiers for producing an output signal proportional to

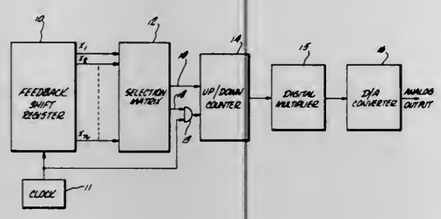
the difference of the transconductance of the respective amplifiers and the amplitude of the signal. A second input signal representing a second quantity Y is employed to adjust the transconductance of the two amplifiers in a sense and amount such that the net output signal formed by the sum of the two output signals they produce is proportional to the product of X and Y.

3,621,227
ANALOG LINE GENERATOR
Junji Tsuda, Hachioji-shi; Junzo Iwata, Hanamaki-shi, and Chikafusa Hirano, Kodaira-shi, all of Japan, assignors to Hitachi Electronics Company Limited, Kodaira-shi and Hitachi Ltd., Tokyo, Japan
Filed Feb. 3, 1969, Ser. No. 795,997
Claims priority, application Japan, Feb. 2, 1968, 43/6005
Int. Cl. G06g *7/26, 7/18*
U.S. Cl. 235—197 **9 Claims**



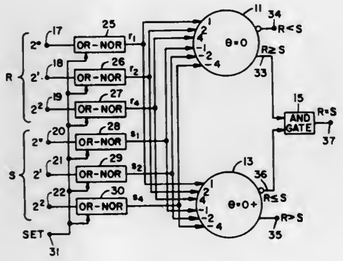
In an analog line generator for producing a straight line connecting two given points, which comprises an integrator, an adder and a feedback circuit from the integrator to the adder, an improvement comprising the provision of a limiter between the adder and the integrator to realize the line generation with higher accuracy and at higher speed.

3,621,228
DIGITAL FUNCTION GENERATOR
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marvin Perlman, Granada Hills, Calif.
Filed Sept. 24, 1969, Ser. No. 860,750
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **3 Claims**



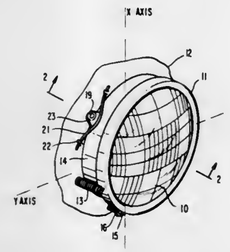
A digital function generator capable of generating any arbitrary single valued function representable by an independent and a dependent variable is disclosed. A state signal generator produces a plurality of output state signals corresponding to quantized sequential values of the independent variable. Predetermined ones of the quantized sequential signals correspond to predetermined incremental values of the dependent variable. A decoder monitors the output of the state signal generator and provides an output signal corresponding to the time of occurrence of the predetermined quantized sequential signals and the "sense" of the dependent variable change. A monitor provides an output signal which varies as a function of the decoder output. A digital-to-analog converter converts the monitor output to an analog signal representative of the function.

3,621,229
FLUIDIC BINARY COMPARATOR UTILIZING THRESHOLD GATES
Herbert M. Eckerlin, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 2, 1969, Ser. No. 881,439
Int. Cl. G06m *1/08*
U.S. Cl. 235—201 PF **7 Claims**



A fluidic binary comparator utilizing the principles of threshold logic. A plurality of fluid signals constituting the bits of first and second binary numbers are coupled to the input terminals of two threshold gates. A pair of output signals from the two gates are indicative of inequalities of the two binary numbers. Other output signals from the two threshold gates are coupled to an AND gate which produces a fluid output signal when the two binary numbers are equal.

3,621,230
HEADLAMP-MOUNTING MEANS
Henry R. Dwight, 220 Calhoun St., Charleston, S.C.
Filed Feb. 12, 1970, Ser. No. 10,731
Int. Cl. B60q *1/00*
U.S. Cl. 240—7.1 **9 Claims**

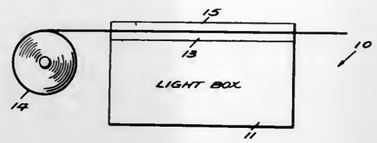


Adjustable headlamp-mounting apparatus for vehicles employing a pivotal stud and socket means in cooperation with a guide member to afford positive alignment of an intermediate support member which houses the headlamp. Adjusting screws engaging the intermediate support member act against the main mounting plate to change headlamp alignment through movement of the pivotal stud and socket means.

3,621,231
ANTIGLARE LIGHT BOX
Dwin R. Craig, Gaithersburg, Md., assignee to Elton Brown Brown, Jr., Washington, D.C.
Filed Mar. 10, 1969, Ser. No. 805,693
Int. Cl. F21 ; G02b *5/30*
U.S. Cl. 240—9.5 **3 Claims**

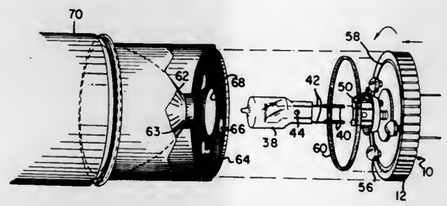
An antiglare light box is provided having a pair of right angularly disposed linear polarizers arranged in spaced relation over the lights of the light box. The material being viewed is positioned between the linear polarizers and printed on a

base which either possesses optical activity such that it will rotate the planes of polarization of the lowermost polarizer 90° so that the light will then pass through the second



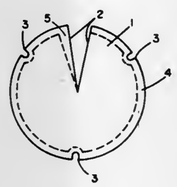
polarizer, or is a depolarizer and depolarizes the light from the first polarizing screen so that it can pass through the second polarizing screen.

3,621,232
AUTOMOTIVE DRIVING LIGHT
Harold L. Hough, and Charles W. Foss, both of Beverly, Mass., assignors to Sylvania Electric Products Inc.
Filed Apr. 9, 1969, Ser. No. 814,729
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 R **1 Claim**



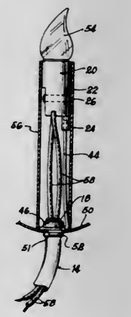
A removable weatherproof socket cover for an automotive lighting fixture is herein described. The removable cover supports a harness that optically aligns a baseless lamp that is retained therein. The harness is such that it regulates the lamp axially and symmetrically in relation to a reflector. In combination with spaced-apart locking studs and gasket, the socket cover can be attached to the fixture body and retained in a weatherproof sealed position.

3,621,233
REMOVABLY ATTACHED VEHICULAR HEADLAMP GLARE-DIFFUSING FILTER
Harry Ferdinand, Jr., 2635 Karen Court Apt. 442, Las Vegas, Nev.
Filed Nov. 8, 1968, Ser. No. 784,502
Int. Cl. F21v *9/08*
U.S. Cl. 240—46.59 **5 Claims**



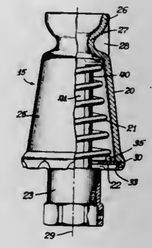
A removably attached vehicular headlamp glare-diffusing filter comprises a flat and generally circular piece of light-diffusing moistureproof material having an outer peripheral edge and a notch extending from the outer peripheral edge to the approximate center of the piece forming two substantially straight edges which converge at the approximate center, a plurality of spaced peripheral cutouts and a moistureproof adhesive along the outer peripheral edge of the piece and long one edge of the notch. When applied to a headlamp lens, the filters form a shallow cone-shaped configuration, readily adaptable to the concave face of any vehicular headlamp.

3,621,234
MOUNTING ELECTRICAL SOCKETS FOR A LIGHTING FIXTURE
Robert S. Fremont, Wilmette, Ill., assignor to Halo Lighting Division, a Division of McGraw Edison Company, Rosemont, Ill.
Filed Nov. 19, 1969, Ser. No. 878,008
Int. Cl. F21V *21/12*
U.S. Cl. 240—52.4 **7 Claims**



A mounting for an electrical socket for a lighting fixture whereby the socket is provided with an attachment clip, permitting it to be readily locked with a support bracket of any length, which support bracket is secured to an arm of a lighting fixture. This arrangement permits support brackets of any desired length to be used to provide the required support length.

3,621,235
RESILIENT LIGHTING FIXTURE HANGER
Arthur I. Appleton, c/o Appleton Electric Co., 1701 W. Willington, Chicago, Ill.
Filed Mar. 24, 1969, Ser. No. 809,525
Int. Cl. F21v *15/04*
U.S. Cl. 240—90 **5 Claims**



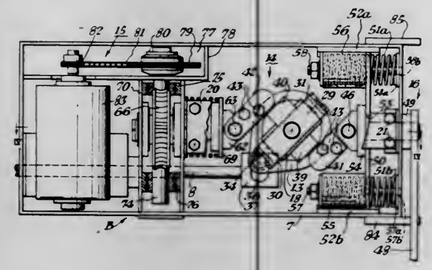
A lighting fixture hanger for isolating a lighting fixture depending therefrom from vibration, the hanger including a cushion displaying variable rate spring characteristics. In a preferred embodiment, the hanger incorporates a conical spring which can easily and quickly be captivatively assembled into a subassembly forming the essential functional portions of the hanger.

3,621,236
CONVERTIBLE SECUREMENT APPARATUS FOR SECURING STANDARD CONTAINERS AND NONSTANDARD CARGO ON VEHICLES
Emil J. Hlinsky, Oakbrook, and Allen D. Siblik, Mundelein, both of Ill., assignors to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Filed May 15, 1970, Ser. No. 37,502
Int. Cl. B60p *7/08*
U.S. Cl. 296—35 A **17 Claims**



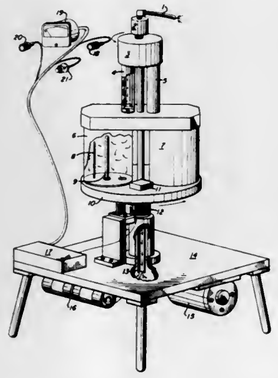
Convertible securement apparatus for a flatbed vehicle such as a trailer unit. Dual purpose pedestal has a twist lock for the corner casting of a standard transportation container; and a winch for a tiedown chain for miscellaneous cargo. A special channel is fixed to the side of the vehicle bed. A hinge pin is connected to the pedestal by a narrow link and is loosely retained in an elongated hinge pin retaining space extending along the interior of the channel. The pedestal is movable fore and aft along the channel when its link is within an upwardly open, continuous groove, providing access to the elongated hinge pin retaining space. The channel has an elongated compartment below the hinge pin retaining space, separated by a wall which extends along the length of the channel, the wall having notches at a series of locations along the channel. These notches are wider than the link carried by the pedestal, thus, when the pedestal is aligned with one of the notches, it can be pivoted about the hinge pin and movable from one to the other of the following operable positions:
a. A container-locking position with the pedestal seated upright on a horizontal extension of the deck of the flatbed vehicle, and with the twist lock upright to engage a container, and
b. a cargo tiedown position with the pedestal upside down in the channel compartment below the hinge pin retaining space, and with the winch in position to engage a cargo tiedown chain.

3,621,237
TRAILABLE RAILWAY SWITCH MACHINE
Lyle L. Hylen, Wilkinsburg, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Sept. 18, 1969, Ser. No. 859,043
Int. Cl. B61l *5/06*
U.S. Cl. 246—411 **11 Claims**



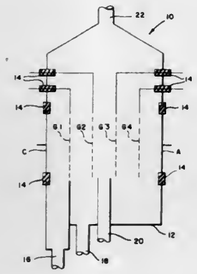
This disclosure relates to a trailable railway switch machine for use in classification yards and the like for moving the switch points between their two extreme positions. The switch machine includes a motion-translating mechanism having a hand-throw toggle, a motor toggle and a crank arm. A hand-throw lever connected to the hand-throw toggle, an electric motor connected to the motor toggle and the switch points connected to the crank arm so that rotary motion is only imparted to the crank arm when the hand-throw lever is manipulated or when the electric motor is energized and reciprocating movement is imparted to the hand-throw toggle and motor toggle when the switch is trailed.

3,621,238
GAMMA INSENSITIVE AIR MONITOR FOR RADIOACTIVE GASES
Roland A. Jalbert, and Richard D. Hiebert, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 10, 1970, Ser. No. 71,042
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 FT **2 Claims**



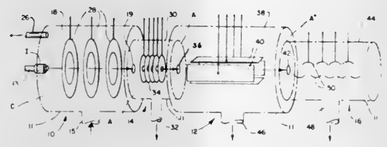
An ionization chamber instrument for measuring the concentration of radioactive gases in air is described. External gamma radiation effects on the instrument are eliminated through use of a compensating chamber mounted next to the measuring chamber with both chambers orbiting about a common axis.

3,621,239
DETECTING A TRACE SUBSTANCE IN A SAMPLE GAS COMPRISING REACTING THE SAMPLE WITH DIFFERENT SPECIES OF REACTANT IONS
Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin Gro Corporation, West Palm Beach, Fla.
Filed Jan. 28, 1969, Ser. No. 794,741
Int. Cl. B01d *59/44*; **H01j** *39/34*
U.S. Cl. 250—41.9 TF **4 Claims**



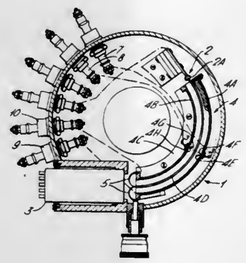
Methods for sorting and detecting trace gases which undergo ion-molecule reactions. Particular species of reactant ions are selected by choice of reagent gas and/or by reactant ion filtering to produce predictable product ions by reaction with trace gas molecules of a sample. The sample may be reacted with different species of reactant ions and the results compared to confirm the presence of particular species of product ions. The reagents producing different species of reactant ions may have ionization potentials above and below the ionization potential of the expected trace gas molecules.

3,621,240
APPARATUS AND METHODS FOR DETECTING AND IDENTIFYING TRACE GASES
Martin J. Cohen, West Palm Beach; David I. Carroll, Lantana; Roger F. Wernlund, Lake Worth, and Wallace D. Kilpatrick, North Palm Beach, all of Fla., assignors to Franklin Gro Corporation, West Palm Beach, Fla.
Filed May 27, 1969, Ser. No. 828,402
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 G **34 Claims**



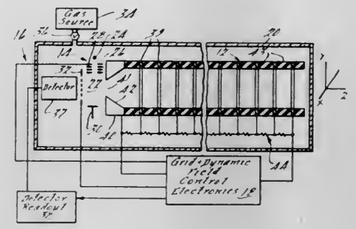
Trace components of a gaseous sample are separated at atmospheric pressure in a drift cell by producing ions of the trace gases through ion-molecule reactions and by separating the resultant product ions in accordance with drift velocity. A molecular beam, including product ions from the drift cell, passes through a transition region, where the ions are focused and separated from neutral molecules, to a mass analyzer. In the analyzer, the product ions are separated in accordance with mass and selectively passed to an ion counter. The mass analyzer and ion counter are maintained at high vacuum.

3,621,241
ELECTROSTATIC ANALYZERS WITH AUXILIARY FOCUSING ELECTRODES
David W. Turner, Headington, England, assignor to Perkin-Elmer Limited, Beaconsfield, Buckinghamshire, England
Filed Oct. 7, 1969, Ser. No. 864,458
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **8 Claims**



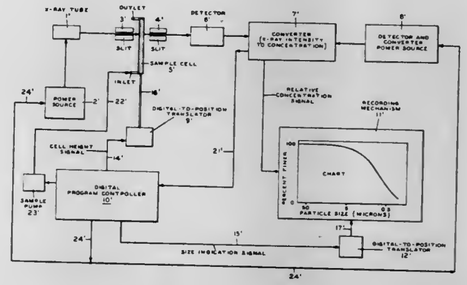
An electrostatic analyzer of the energy spectrum of charged particles is provided comprising spaced apart analyzer plates adapted for operation in a velocity-focusing mode of operation and auxiliary electrode means adjoining an inner face of an analyzer plate. Circuit means apply a potential to each analyzer plate and a potential of opposite polarity to an associated auxiliary electrode means for establishing an electrostatic field between the plates which in a zone of influence of the auxiliary electrode means is modified to direct peripheral particle trajectories towards a focus substantially common with that of paraxial trajectories.

3,621,242
DYNAMIC FIELD TIME OF FLIGHT MASS SPECTROMETER
Lowell D. Ferguson, Bloomfield Hills, and John P. Carrico, Royal Oak, both of Mich., assignors to The Bendix Corporation
Filed Dec. 31, 1969, Ser. No. 889,436
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 DS **47 Claims**



A time-of-flight mass spectrometer which employs a dynamic electric field to accelerate charged particles. For a sample containing various charged particles and given field parameters, each mass-to-charge specie of the sample has associated with it a unique flight time in the dynamic field. This flight time is derived from the interaction of the charged particles with the dynamic field. Various particles are resolved according to their mass-to-charge ratios by recording differences in their flight times in the dynamic electric field.

3,621,243
APPARATUS AND PROCESS FOR DETERMINING PARTICLE SIZE BY X-RAY ABSORPTION ANALYSIS
James Peter Olivier, and George Keller Hickin, both of Macon, Ga., assignors to Freeport Sulphur Company, New York, N.Y.
Continuation-in-part of application Ser. No. 618,841, Jan. 23, 1967, now Patent No. 3,449,567, dated June 10, 1969. This application Apr. 16, 1969, Ser. No. 816,649
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 **11 Claims**

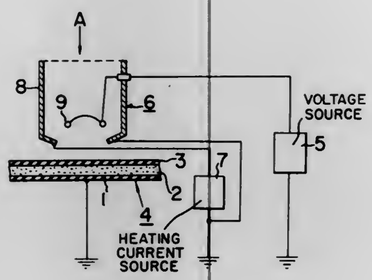


An apparatus and process for measuring and automatically recording the particle size distribution of material in fluid suspension, which is based on the application of laws of sedimentation, and which uses a digital-programmed controller. A beam of X-rays is used to measure particle concentration in terms of the transmittance of the beam in the suspension relative to the suspending fluid. This transmittance measurement is continuously converted to a quantity proportional to the concentration of suspended material in the X-ray beam at a particular instant. The programmed digital controller continuously decreases the sedimentation distance while at the same time continuously positioning a recorder to indicate the particle size being measured at that time. The use of a digital program controller provides for a high degree of accuracy and reliability.

3,621,244
CORONA DISCHARGE DEVICE WITH MEANS TO HEAT THE DISCHARGE ELECTRODES TO INCREASE THE DISCHARGE CURRENT

Seiichi Miyakawa, Nagareyama-shi, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed June 24, 1969, Ser. No. 836,024
Int. Cl. G03g 15/00
U.S. Cl. 250—49.5 4 Claims



In a corona discharge device utilized in electrophotography, means to heat directly or indirectly the corona discharge electrode is provided to increase corona discharge current.

3,621,245
METHOD OF X-RAY FLUORESCENCE ANALYSIS OF MATERIALS CONTAINING AN INTERFERING ELEMENT

Colin Geoffrey Clayton, Abingdon, England, and Bohdan Wladyslaw, Krakow, Poland, assignors to United Kingdom Atomic Energy Authority, London, England

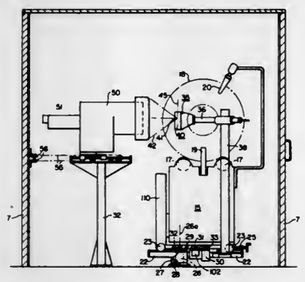
Filed Apr. 8, 1968, Ser. No. 719,610
Claims priority, application Great Britain, Apr. 28, 1967, 19,833/67
Int. Cl. G01n 23/22
U.S. Cl. 250—51.5 4 Claims

The invention discloses a method of analysis of a mixture containing a wanted element, an interfering element and a base rock designed to compensate for the effects of the interfering element and the base rock composition. In accordance with the invention the mixture is subjected to ionizing radiation and separate determinations are made, using balanced filters, of the intensity of the backscattered or fluorescent radiation:
a. at the characteristic energy of the wanted element,
b. at the characteristic energy of the interfering element, and
c. over an energy band intermediate between the above two energies.
A nomogram is plotted of the ratios *a/c* and *b/c*.

3,621,246
X-RAY TIRE INSPECTION APPARATUS

William C. Horsey, Baltimore; Robert H. Samson, Pasadena, and Don O. McCauley, Glen Burnie, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1970, Ser. No. 71,931
Int. Cl. G03b 41/16
U.S. Cl. 250—52 10 Claims

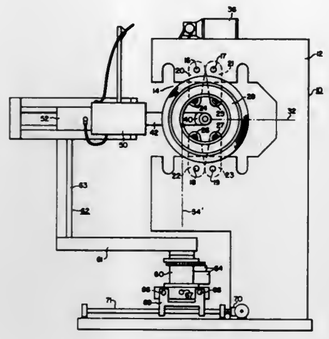


Apparatus for the complete X-ray inspection of a tire is described. Power-operated spindles arranged oppositely along an open-ended clearanceway in a supporting frame, spread the beads of the tire and rotate it about its center. An angulated X-ray tube on one end of a curved inspection arm directs an X-ray beam into the opening between the tire beads in direct alignment toward an image amplifier tube and TV camera assembly on the opposite end of the inspection arm at the tire's exterior. An L-shaped pivot support arm for the inspection arm provides for aiming the X-ray beam at different angles into the tire from one bead to the other, while the image tube is maintained in direct alignment with such beam. A TV monitor produces visible images responsively to output from the TV camera on the inspection arm.

3,621,247
X-RAY TIRE INSPECTION APPARATUS

Basil M. Lide, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1970, Ser. No. 71,932
Int. Cl. G03b 41/16
U.S. Cl. 250—52 6 Claims

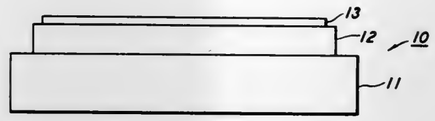


Apparatus for the complete X-ray inspection of a tire is described. An X-ray tubehead with a reversible-motor-operated tube insert turnable about a vertical axis, is disposed within the tire to aim a small-focal-spot X-ray beam horizontally outward through the tire from the center of its cross section in a series of directions ranging from bead to bead, and the tire is turned by a manipulator at least a full revolution about its normal axis of rotation in each pointing direction of the beam. The manipulator and the X-ray tubehead are mounted on a common base, motor operated to turn about the same axis as that of the X-ray tube insert, to maintain registry of the tire-exiting X-ray beam with an image amplifier-TV camera assembly.

3,621,248
METHOD OF USING A XERORADIOGRAPHIC PLATE WHICH IS INSENSITIVE TO VISIBLE LIGHT

Paul J. Regensburger, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 527,904, Feb. 16, 1966, Patent No. 3,501,343.
Filed June 25, 1969, Ser. No. 870,975
Int. Cl. G03g 13/22, 5/04
U.S. Cl. 250—65 ZE 4 Claims

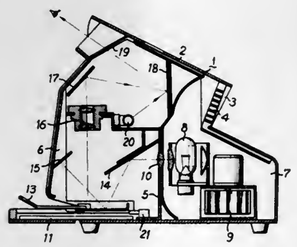


A method of imaging a xeroradiographic plate is disclosed. The method comprises rendering said plate insensitive to visible light by applying an electrostatic charge and exposing the plate to X-ray radiation to form an electrostatic charge pattern.

3,621,249
VIEWER FOR IDENTIFICATION SYSTEMS

Tomichi Kikumoto, Kashiwa-shi, Japan, assignor to Eizo Komiyama, Ichikawa-shi, Chiba-ken, Japan

Filed Sept. 9, 1969, Ser. No. 856,285
Claims priority, application Japan, Sept. 19, 1968, 43/80805
Int. Cl. G01n 21/34
U.S. Cl. 250—71 R 6 Claims

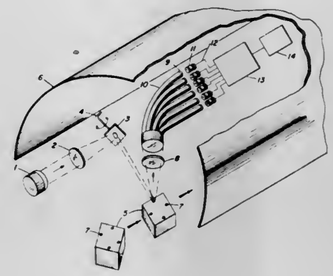


An identification system according to which it becomes possible to render visible identifying indicia such as a signature which normally is invisible. This system includes a pair of light sources respectively providing two different types of light both of which are beyond the visible spectrum. A light-directing structure directs light from one of these sources to an area which receives light from the other of the sources. This light-directing structure reflects light of the first source from an article which has thereon identifying indicia which absorbs light from this one, first source, so that the area to which the light is directed will receive light from the one source except for the light which is absorbed by the identifying indicia. At the area which receives light from both of the sources there is located a fluorescent plate which is rendered fluorescent when receiving light from the second or other source and which is rendered nonfluorescent when receiving light from the one, first source. As a result the fluorescent plate fluoresces only at an area the configuration of which corresponds to the configuration of the identifying indicia, so that the latter becomes visible at that part of the fluorescent plate which fluoresces.

3,621,250
CODING OF SYMBOLS WITH PHOTOLUMINESCENT MATERIALS FOR READOUT TO OBTAIN PROPER SEQUENCE SIGNAL READOUT FROM RANDOM READING OF SYMBOLS

Hanns J. Wetzstein, Wayland, Mass., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 22, 1970, Ser. No. 39,723
Int. Cl. G01j 3/06
U.S. Cl. 250—71 R 5 Claims

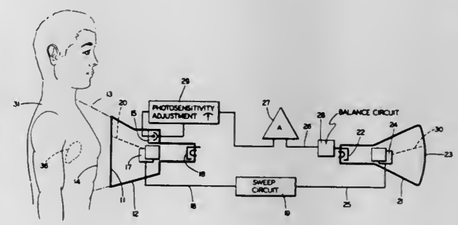


Coded inks are described having one or more photoluminescent components to represent different symbols which can then be read out by ultraviolet illumination. For example, six components can represent 63 different symbols by their presence or absence in a mark. A set of components is divided into two groups, for example, four and two in the case of six components. The four components are sufficient to generate 15 different symbols, for example, more than enough to represent 10 digits. These symbols are printed in four spatially separated small marking areas which may be circles or squares. Four digits, if arranged sequentially can represent the numbers 0 to 9,999; however, their sequence has to be known. The other group of components, for example two is incorporated into the marks to define the intended sequence of symbols regardless of the actual sequence in which marks are read.

3,621,251
ELECTRONIC RADIOACTIVE SENSING AND SCANNING DEVICE

Jack E. Slingluff, 5424 Peninsula Drive, N.W., Canton, Ohio

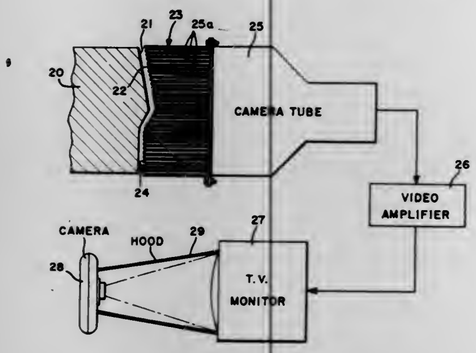
Filed Apr. 16, 1969, Ser. No. 816,663
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 3 Claims



An observer's cathode-ray tube is provided with a cathode-ray beam generator connected to a circuit responsive to light produced on the surface of a radiosensitive light-producing member in response to the conjoint effect of radiation to be observed and a beam such as a cathode-ray beam, caused to sweep the surface of the radiosensitive light-producing unit. The circuit is so adjusted that the beam of the observer's cathode-ray tube is intense enough to produce a light spot on its screen only when the radiosensitive light-producing sheet is exposed to radiation to be observed. Sweep circuits are provided which are synchronized so that beams sweep the light-producing surface and the screen of the observer's

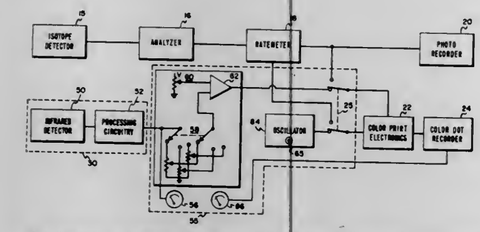
cathode-ray tube in the same pattern. Consequently, the configuration of radiation reaching the radiosensitive, light-producing sheet is reproduced on the screen of the observer's cathode-ray tube and the observation may be made at a distance from the source of radiation to be observed.

3,621,252
PROCESS AND APPARATUS FOR DEFECT DETECTION USING A RADIOACTIVE ISOTOPE
William C. Eddy, Jr.; Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Continuation-in-part of application Ser. No. 875,400, Nov. 10, 1969, now abandoned. This application Nov. 28, 1969, Ser. No. 880,721
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **18 Claims**



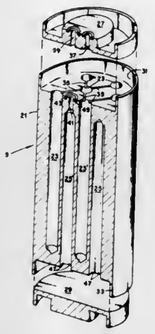
Detection of defects such as cracks, and the like, is accomplished by effecting adsorption of an inert gas radioisotope, e.g., krypton–85, onto the surface to be examined followed by obtaining a visible image of the radioactivity level pattern prior to desorption of the adsorbed gas. Prior to adsorption, the surface is outgassed to remove occluded gases, followed by exposure the the inert radioactive gas at essentially ambient temperature and pressure in the range of 2mm Hg to one atmosphere above 760mm. Hg. Visible images are obtained by use of fiber optics in bundle form, the fibers coated with a phosphor which emits light when exposed to the inert gas radioisotope. The bundle of fibers has a front face which conforms to the surface of the part examined, the light output being fed to a video camera whose output signal is amplified and displayed on a video display device.

3,621,253
COMBINATION INFRARED AND ISOTOPE SCANNER
Robert Bowling Barnes, Stamford, and Nelson E. Engborg, Greenwich, both of Conn., assignors to Barnes Engineering Company, Stamford, Conn.
Filed May 13, 1969, Ser. No. 824,130
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 S **4 Claims**



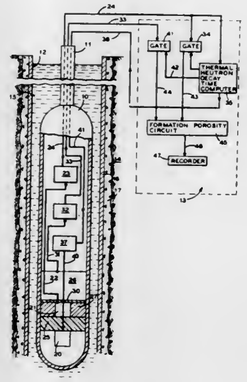
An isotope scanner is provided with an infrared capability by attaching an infrared radiometer on the scintillation probe containing the scintillation detector and using the scanning system of the isotope scanner to simultaneously scan the patient with the radiometer and the scintillation detector. The display equipment of the isotope scanner is utilized simultaneously by the isotope detector and the radiometer to provide a simultaneous infrared and isotope display of the patient under study. The isotope scanner and the infrared radiometer may also be used independently of each other.

3,621,254
DIFFERENTIAL PRESSURE NUCLEAR RADIATION FLUX DETECTOR
Casimer J. Borkowski, Oak Ridge, Tenn.
Filed Apr. 22, 1970, Ser. No. 30,715
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 R **7 Claims**



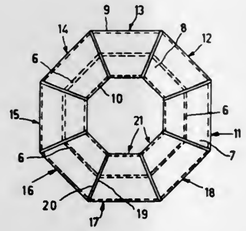
A radiation flux detector has been provided which includes a pair of chambers, each filled with a different gas and each sensitive and nonsensitive, respectively, to the flux being measured, located in the flux of interest. The pressure in the chamber filled with the sensitive gas changes at a faster rate than in the other chamber in the presence of the radiation flux and the differential pressure between the chambers is measured by a remote detector communication with the chambers to provide an indication of the flux density.

3,621,255
TWO DETECTOR PULSE NEUTRON LOGGING POROSITY TECHNIQUE
Robert J. Schwartz, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,771
Int. Cl. G01t *3/00*; G01v *5/00*
U.S. Cl. 250—83.1 **3 Claims**



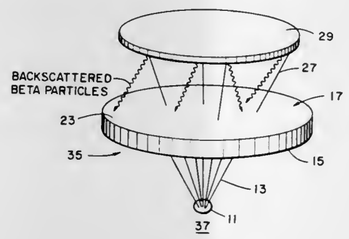
An illustrative embodiment of the invention discloses a technique for reducing the influence of borehole characteristics on earth formation porosity measurements. Measurements of this sort are accomplished with a borehole logging tool that comprises two neutron detectors spaced at different distances from a pulsed neutron generator. The thermal neutron decay time of the short-spaced detector identifies that portion of the time-dependent population that is most indicative of the formation porosity. Both detectors then register the portion of the neutron distribution so identified to produce two signals from which a ratio is computed that is related to the porosity of the formation.

3,621,256
POLYGONAL-SHAPED RADIATION DETECTOR EMPLOYING PLURAL PRISM-SHAPED SEMICONDUCTOR CRYSTALS
Jean Antoine Cacheux, and Johannes Meuleman, both of Caen, France, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Feb. 19, 1969, Ser. No. 800,405
Claims priority, application France, Feb. 19, 1968, 140341
Int. Cl. G01t *1/24*
U.S. Cl. 250—83 **6 Claims**



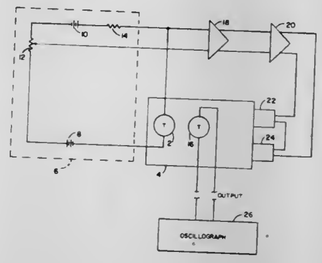
The invention relates to a semiconductor detector for measuring and/or detecting ionizing radiation, having a large sensitive volume, particularly for gamma spectrometry.

3,621,257
BETA PARTICLE DETECTION IN THIN NUCLEAR DETECTORS
Phillip A. Johnston, and Vincent L. Gelezunas, both of King of Prussia, Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 9, 1970, Ser. No. 17,403
Int. Cl. G01t *1/24*
U.S. Cl. 250—83 R **5 Claims**



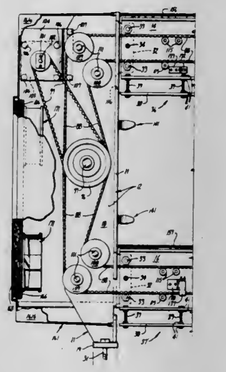
Detector for beta particles having means for scattering particles back into the detector.

3,621,258
PELTIER-CONTROLLED BOLOMETER TEMPERATURE REFERENCE TECHNIQUE
David R. Dreitzler, Huntsville; Lawrence B. Thorn, Madison, and Roy E. Yell, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Mar. 18, 1970, Ser. No. 20,762
Int. Cl. G01j *1/16*
U.S. Cl. 250—83.3 H **2 Claims**



Means for stabilizing the thermal operating point of a thermistor bolometer, wherein the detector block on which the thermistors are mounted is maintained at a predetermined temperature. The compensating thermistor mounted on the detector block is connected in a Wheatstone Bridge configuration to thereby cause a signal to be generated which causes Peltier heating or cooling of the block as the situation requires.

3,621,259
SHEET-GAUGING APPARATUS
Mathew G. Boissevain, Los Altos Hills, Calif., assignor to Measurex Corporation, Santa Clara, Calif.
Filed Jan. 17, 1969, Ser. No. 792,007
Int. Cl. G21h *5/00*
U.S. Cl. 250—83.3 D **13 Claims**



Sheet-gauging apparatus for gauging properties of sheet material and having upper and lower gauging heads with timing belt means for precisely moving the gauging heads with respect to the sheet material.

3,621,260
METHOD OF DETERMINING PROCESSABILITY OF TAR SANDS

Chester N. White, Delaware, and Philip D. Freedman, Philadelphia, both of Pa., assignors to Great Canadian Oil Sands Limited, Toronto, Canada

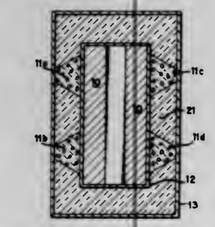
Filed July 9, 1968, Ser. No. 743,288
Int. Cl. G01v 5/00
U.S. Cl. 250—106 4 Claims

The specification discloses a method for selectively mining bituminous tar sands which comprises collecting samples of tar sands from an exploration zone, analyzing the samples for their content of aluminum, and correlating the sample locations with the analysis to determine the location having the lower content of aluminum and hence the more easily processable tar sand.

3,621,261
RADIOISOTOPE FUEL CAPSULE

Frank T. Princiotta, and Harold N. Barr, both of Baltimore, Md., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 4, 1969, Ser. No. 813,489
Int. Cl. G21h 5/00
U.S. Cl. 250—106 S 9 Claims

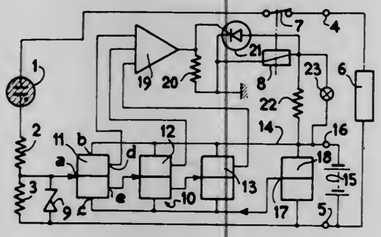


A radioisotope fuel capsule having a radioisotope heat source encapsulated by a bimodal thermal insulator comprising a porous insulating layer with a material of higher thermal conductivity and lower melting point than the porous insulating layer disposed in the insulating layer.

3,621,262
ALARM DEVICE GAS DISCHARGE TUBE

Daniel Lecuyer, Le Pecq, France, assignor to La Detection Electronique Francaise, Vanves, France

Filed Feb. 7, 1969, Ser. No. 797,402
Claims priority, application France, Feb. 15, 1968, 139945
Int. Cl. H01j 39/12
U.S. Cl. 250—214 9 Claims

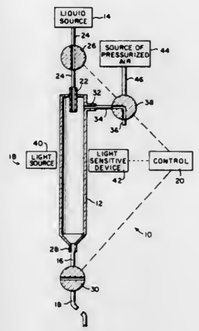


Alarm device for detecting a radiation in a given space. The device comprises a discharge tube responsive to said radiation, a pulse generator having a first frequency and connected to said tube, a counting device whose input is connected in the circuit of said tube and of said generator, a time-base circuit connected to the reset terminal of said counting device and furnishing reset pulses at a second frequence, a control device connected to said counting device, and a signal device controlled by said control device.

3,621,263
VOLUMETRIC FRACTION SUPPLY APPARATUS

Warren E. Gilson, 4801 Sheboyan Ave., and Robert E. Gilson, 4 Franklin Ave., both of Madison, Wis.

Filed Apr. 13, 1970, Ser. No. 27,847
Int. Cl. G01n 21/26
U.S. Cl. 250—218 7 Claims

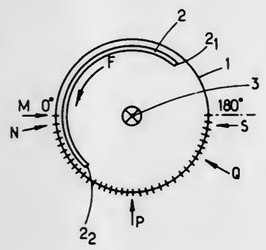


A volumetric unit for supplying fractions of predetermined volume from a source of liquid to a fraction collector receptacle includes a container into which liquid is supplied through a supply conduit and a liquid supply valve. During the supply of liquid, a liquid delivery conduit extending from the container is blocked, and displaced air is vented from the container by a vent conduit including an air vent valve. When a predetermined volume of liquid has been admitted to the container, a liquid level sensing system operates a control to simultaneously close the liquid supply valve and to close the air vent valve. The container is pressurized to force the accumulated liquid fraction through the liquid supply conduit to the fraction collector receptacle.

3,621,264
METHOD AND APPARATUS FOR PROVIDING A CYCLIC SUPPLY OF SEQUENCES PROPORTIONAL TO A GIVEN FRACTION OF THE DURATION OF A WORKING CYCLE

Francis Bonneric, Fleury-les-Aubrais, France, assignor to Service D'Eploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed May 27, 1969, Ser. No. 811,124
Claims priority, application France, Mar. 29, 1968, 146,391
Int. Cl. G01n 21/30; G01d 5/36; H01j 5/02
U.S. Cl. 250—219 D 12 Claims

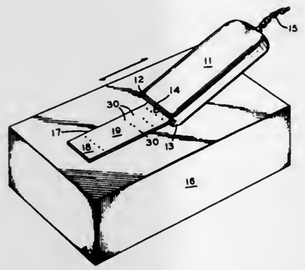


The invention relates to a programming process and device which provides a cyclic supply of sequences proportional to a given fractional part of the actual duration of a working cycle, particularly of a machine, such sequence being set by the signals produced by two sensitized units, both of which can be either in a sensitized state or in a nonsensitized state.

3,621,265
HAND HELD CODED DOCUMENT READER INTO WHICH DOCUMENT IS FIRST INSERTED AND THEN READ AS IT IS WITHDRAWN

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Filed July 29, 1969, Ser. No. 845,860
Int. Cl. G01n 21/30; G06k 7/00
U.S. Cl. 250—219 D 3 Claims

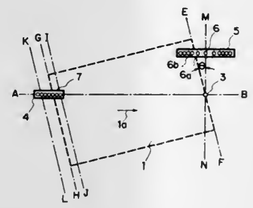


A device held in the hand for reading intelligence contained on a document in the form of coded punched holes. The device includes a slot to receive the document, a light source positioned on one side of the slot and aligned with the light source on the other side of the slot is a light detector means comprising one or more photocells. A suitably formed housing capable of substantially excluding light contains the document-receiving slot, the light source and photocell detector.

3,621,266
METHOD AND APPARATUS FOR MEASURING THE LENGTHS OF OBJECTS BEING CONVEYED

Tomohiko Akuta; Yoshio Honsyo, and Shinya Hashirizaki, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co. Ltd., Tokyo, Japan

Filed Nov. 18, 1969, Ser. No. 877,767
Claims priority, application Japan, Nov. 18, 1968, 43/84335
Int. Cl. G01b 7/04
U.S. Cl. 250—219 4 Claims

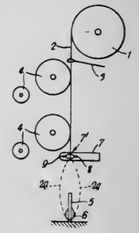


A method and an apparatus for carrying out the said method, by means of which an actual length of an object being conveyed can be accurately measured, even when the object is conveyed in an oblique state with such a continuous conveying equipment as a belt conveyor and the like.

3,621,267
METHOD AND APPARATUS FOR DETECTING A BREAK IN LONGITUDINALLY MOVING YARN

Geoffrey Alan Dent, Fence, near Burnley, England, assignor to Crabtree Engineering Group (Colne) Limited, Lancashire, England

Filed Dec. 1, 1969, Ser. No. 881,224
Claims priority, application Great Britain, Dec. 18, 1968, 60,081/68
Int. Cl. G01n 21/32
U.S. Cl. 250—219 S 5 Claims

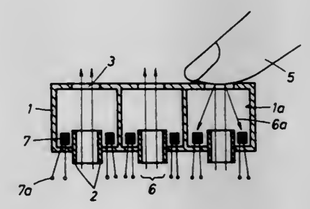


The disclosure of this specification relates to detecting yarns comprising displacing longitudinally moving yarn in a lateral direction to intermittently and repeatedly interrupt a light beam acting on a light sensitive device responsive to the intensity of light thereon, detecting the period for which the light beam is interrupted during lateral displacement of the yarn, emitting a signal in response to the detected period and utilizing the signal, or variations from a predetermined signal, to activate a yarn-handling device.

3,621,268
REFLECTION TYPE CONTACTLESS TOUCH SWITCH HAVING HOUSING WITH LIGHT ENTRANCE AND EXIT APERTURES OPPOSITE AND FACING

Kurt Friedrich, Neckarhausen, and Georg Straimer, Bad Godesberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 10, 1968, Ser. No. 782,547
Claims priority, application Germany, Dec. 19, 1967, P 15 66 695.2
Int. Cl. G01j 3/34, 3/50; G06m 7/00
U.S. Cl. 250—221 15 Claims

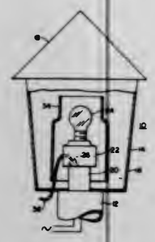


Contactless touch switch in which an electric pulse is produced by light impinging on a photosensitive cell due to reflection of a beam of light. According to the invention the touch switch is constructed in such a manner that the beam of light normally emerges through an aperture in the touch switch housing, which is closed on all sides, and that the photosensitive cell, which is protected by screening, can receive substantially only those rays which are produced by reflection of the beam of light at an object, preferably a finger covering said aperture.

3,621,269
PHOTOCONTROL APPARATUS PARTICULARLY FOR OUTDOOR POLE LANTERN

John J. Misencik, Pine Rock Park, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,511
Int. Cl. G02b 5/14; H01j 5/02
U.S. Cl. 250—227 4 Claims



For an electrical pole lantern or the like, a photocontrol adapter is provided having a base securable into the original lamp socket with a socket in the adapter for receiving a lamp to be photocontrolled. A photoelectrically responsive element within the adapter has a fiber optic light guide connected in optical relationship with it and extending from the adapter to receive exterior ambient light and conduct it to the responsive element. The fiber optic light guide permits use of the adapter with a variety of pole lantern configurations including those with decorative glass shields laterally enclosing the lamp while retaining good appearance and avoiding having electrical leads in any position where they are subject to damage or present an electrical hazard.

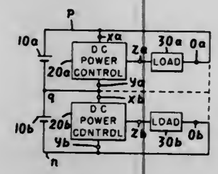
ERRATUM

For Class 296—35 A see:
Patent No. 3,621,236

3,621,270
SYSTEM FOR CONTROLLING DC POWER

Masahiko Akamatsu, Hyogo Prefecture, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1969, Ser. No. 839,509
Claims priority, application Japan, July 8, 1968, 43/47649
Int. Cl. H02j 1/10
U.S. Cl. 307—24 3 Claims



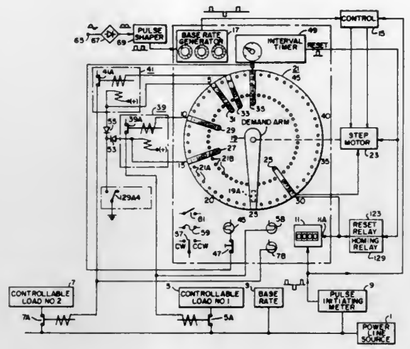
A DC source is connected across two serially connected capacitors and across two DC power control units serially connected to each other with the junction of the capacitors connected to that of the controls. Each control unit may include a series combination of a thyristor and a diode with their junction connected to a load. The two loads can be connected together to the junction of the control units or respectively to both sides of the DC source.

3,621,271
LOAD REGULATION APPARATUS

Carl J. Snyder, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1970, Ser. No. 1,588
Int. Cl. H02j 3/14
U.S. Cl. 307—38 6 Claims

A demand arm is located relative to a dial by means of a step motor in accordance with the difference between the rate at which electric energy is consumed during a demand interval and a base rate of energy consumption which should not be exceeded. Electric switches are distributed along the

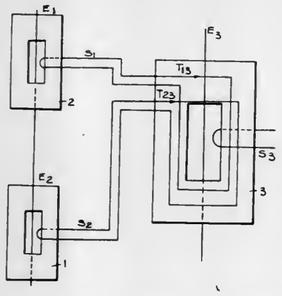


path of the demand arm for operation by the arm for shedding and adding load when the rate of energy consumption exceeds or drops below a desirable level.

3,621,272
VARIABLE-THRESHOLD MAGNETIC CIRCUIT ELEMENT

Michel Carbonel, Paris, France, assignor to Thomson- CSF

Filed July 16, 1969, Ser. No. 842,102
Claims priority, application France, July 25, 1968, 160,539
Int. Cl. H03k 19/168; G11c 11/14
U.S. Cl. 307—88 LC 4 Claims



A magnetic element having an easy magnetic axis is subjected to current pulses producing a field directed along this axis. These pulses are sufficiently short in order not to cause the direction of magnetization to change. This will take place only if these pulses coincide in time with other pulses which produce a field perpendicular to the easy magnetic axis.

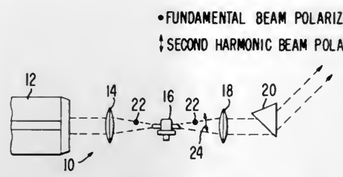
3,621,273
OPTICAL SECOND HARMONIC GENERATOR

Robert J. Rorden, Los Altos; Mark W. Dowley, Palo Alto, and Wayne S. Mefferd, Palo Alto, all of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Mar. 5, 1970, Ser. No. 16,698
Int. Cl. H02m 5/02
U.S. Cl. 307—88.3 19 Claims

A device for providing an optical second harmonic output beam of coherent radiation such as light in response to an input beam of coherent radiation at the fundamental wavelength. A nonlinear crystal is provided within a vacuum sealed enclosure. The input light beam is provided through a first window forming an integral part of the enclosure and which is maintained at Brewster's angle to the incoming

beam. A second window orthogonally oriented relative to the first window is provided for maximizing the resulting second harmonic wavelength output beam which is polarized 90°

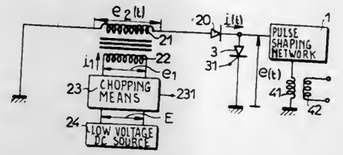


relative to the fundamental beam. Means are also provided for automatically maintaining the crystal at a predetermined temperature. During operation, the enclosure is evacuated of substantially all air, including water vapor.

3,621,274
TRIGGERED PULSE GENERATOR

Gabriel Plond, Paris, France, assignor to Thomson-CSF

Filed Sept. 9, 1970, Ser. No. 70,793
Claims priority, application France, Sept. 9, 1969, 69/30547
Int. Cl. H03k 3/00
U.S. Cl. 307—106 7 Claims

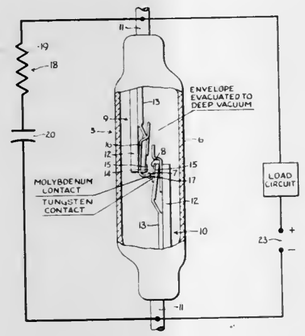


A triggered pulse generator comprising a load inductor, controlled discharging means and pulse shaping means; the load inductor builds up the secondary winding of a transformer whose primary winding is fed with a sawtooth voltage synchronized with the discharging means control.
The voltage of the triggered pulse may be controlled through controlling the duration of the teeth of the sawtooth voltage.

3,621,275
LONG LIVED SWITCH MEANS FOR INDUCTIVE DC CIRCUITS

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation-in-part of application Ser. No. 795,883, Feb. 3, 1969, now abandoned. This application Dec. 3, 1970, Ser. No. 94,9773
Int. Cl. H01h 9/00
U.S. Cl. 307—137 5 Claims

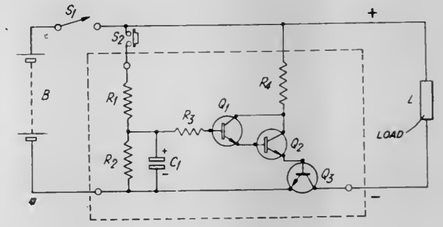


A switch having unlike metal contacts in a deep vacuum environment has its higher melting point contact connected to be negative at switch opening. In shunt across the switch contacts are a resistor and a capacitor, in series; or a resistor alone can be shunted across the load. In either case the resistor is of about 500 to 5,000 ohms. The capacitor is of a value to afford to the shunt circuit a time constant of not less than about one microsecond.

3,621,276
ELECTRIC TIMING CIRCUITS

Cyril John Mitchell, 5 Weycrofts, Bracknell, England

Filed July 30, 1970, Ser. No. 59,470
Claims priority, application Great Britain, Aug. 2, 1969, 38,829/69
Int. Cl. H02h 7/20
U.S. Cl. 307—141 1 Claim

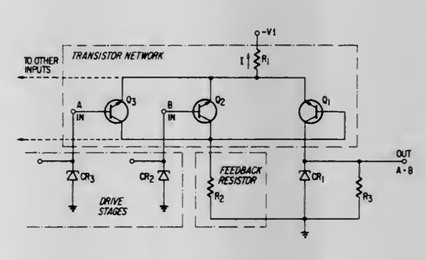


An electric timing circuit to prevent the battery of a test instrument from being discharged if the instrument is left switched on when not in use. An amplifier and a capacitive element connected across the input circuit of the amplifier so that when the battery is connected across the capacitive element, the capacitive element charges up to effect closure of a current path through the circuit, and when the battery is disconnected from across the capacitive element, the capacitive element discharges thereby breaking the current path through the circuit after an interval determined by the rate of fall of the voltage across the capacitive element.

3,621,277
FAST RESPONSE LOW-POWER-DRAIN LOGIC CIRCUITS

Ciro A. Cancro, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1969, Ser. No. 889,423
Int. Cl. H03k 19/08
U.S. Cl. 307—206 10 Claims

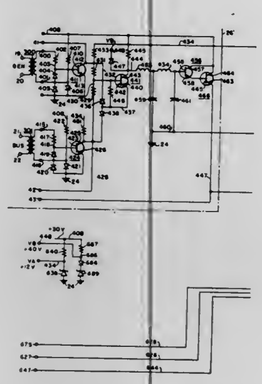


This disclosure describes switching circuits, useful as basic logic circuits, that comprise tunnel diodes in combination with transistors. The use of tunnel diodes, constant-current switching and series feedback between transistors, results in switching circuits with very fast response times and low-power drains.

3,621,278
AUTOMATIC GENERATOR SYNCHRONIZING AND CONNECTING SYSTEM AND SYNCHRONIZER APPARATUS FOR USE THEREIN

Tibor Rubner, Pittsburgh; Andre Wavre, Monroeville, and John H. Bednarek, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 695,684, Jan. 4, 1968
Filed Dec. 23, 1969, Ser. No. 889,825
Int. Cl. H03k *19/32*
U.S. Cl. 307—216 1 Claim

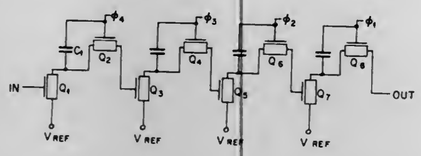


Two alternating current voltages are applied to transistor circuits and converted to square waves of constant amplitude which are applied to an additional transistor circuit which produces a positive output voltage only when both of said square waves are positive or when both of the square waves are at ground, but not while one square wave is positive and the other square wave is at ground, and circuit means for utilizing the output of the additional transistor circuit is provided.

3,621,279
HIGH-DENSITY DYNAMIC SHIFT REGISTER

Teh-Sen Jen, Fishkill; Wilbur D. Pricer, Poughkeepsie, N.Y., and Norbert G. Vogl, Jr., Essex, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,498
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 C 6 Claims



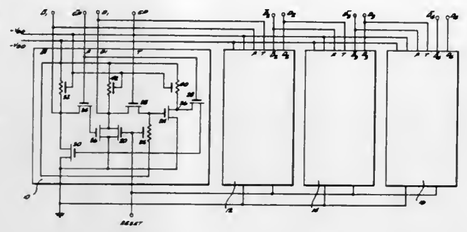
A dynamic shift register is disclosed for providing large capacity storage of digital data information in a small-volume solid-state package. A unique high-density approach is taken, involving a cell comprising n subcells capable of storing $n-1$ bits of data. The cells are fabricated preferably of field effect transistors embedded in a semiconductor wafer or monolith.

3,621,280
MOSFET ASYNCHRONOUS DYNAMIC BINARY COUNTER

Stephen P. F. Ma, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 10, 1970, Ser. No. 27,273
Int. Cl. H03k *3/26*
U.S. Cl. 307—225 3 Claims

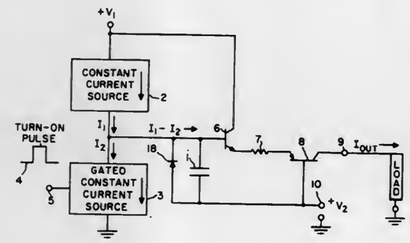
A dynamic binary counter which operates in an asynchronous manner and which can be constructed on a single semiconductor substrate with metal oxide semiconductor field effect transistor (MOSFET) techniques. The counter stages are constructed from three MOSFET inverters and associated gating MOSFET's to take advantage of the capacitance characteristics of the gates of the MOSFET transistors.



3,621,281
LINEAR RISE AND FALL TIME CURRENT GENERATOR

Thomas E. Hagen, Saugerties, N.Y., assignor to Ferroxcube Corporation of America, Saugerties, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,521
Int. Cl. H03k *3/00, 4/06*
U.S. Cl. 307—228 4 Claims

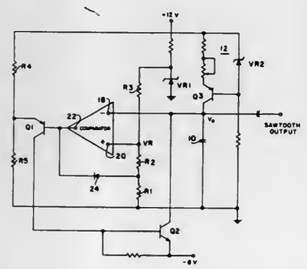


A current source having a linear rise and fall time which uses a pair of oppositely polarized constant current sources connected to a capacitor to control an emitter follower and a common base amplifier. Alternately activating and deactivating one of the constant current sources produces a linear rise and fall in the charge on the capacitor, which is reflected in a linear rise and fall in the output current of the common base amplifier.

3,621,282
SAWTOOTH GENERATOR WITH A RAMP-BIAS VOLTAGE COMPARATOR

Charles H. Haas, Edgewater, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 26, 1970, Ser. No. 22,962
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 1 Claim

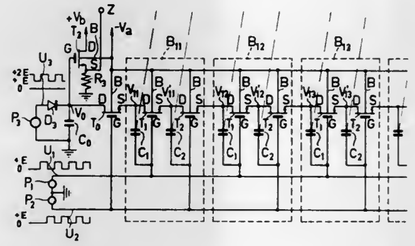


In a sawtooth generator the voltage ramp across a condenser is compared with a bias voltage source. The ramp and bias voltages are applied, respectively, to the two input terminals of a bistable comparator. When the two voltages are equal the comparator output voltage changes state suddenly to operate a first switch to discharge the condenser, and second switch to close a positive feedback circuit from the output to the input of the comparator to insure the reliable switching action. The result is a linear ramp repeated at regular intervals free of the vagaries of noise voltages in the system.

3,621,283
DEVICE FOR CONVERTING A PHYSICAL PATTERN INTO AN ELECTRIC SIGNAL AS A FUNCTION OF TIME UTILIZING AN ANALOG SHIFT REGISTER

Kees Teer, and Frederik Leonard Johan Sangster, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 816,954
Claims priority, application Netherlands, Apr. 23, 1968, 6805706
Int. Cl. G06g *7/12*
U.S. Cl. 307—229 4 Claims

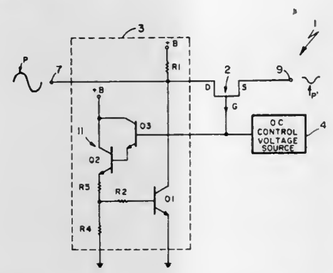


A device for converting energy patterns in the form of pressure, heat or magnetic images into an electrical signal as a function of time where the necessity for a scanning beam or a crossed bar readout system is eliminated by cascading elements which function as both storage and energy sensitive devices and by providing circuitry for shifting the charges of the energy sensitive storage elements in a single direction along the cascaded array.

3,621,284
ATTENUATION CIRCUIT

Ronald D. Cluett, Gloucester, and Vincent E. Larka, Burlington, both of Mass., assignors to Sylvania Electric Products, Inc.

Filed Dec. 7, 1970, Ser. No. 95,656
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 12 Claims

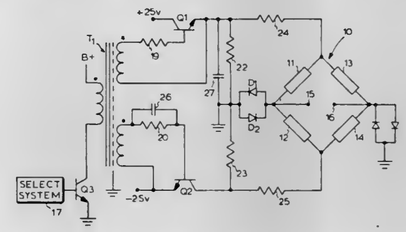


An attenuation circuit including a field effect transistor and a bypass circuit coupled to the field effect transistor for providing a wide range of attenuation values. An input signal to be attenuated is applied to the drain electrode of the field effect transistor and also to the bypass circuit, and a DC control voltage is applied to the gate electrode of the field effect transistor and to the bypass circuit. The field effect transistor and the bypass circuit each operate to cause attenuation of the input signal by a predetermined amount. As a result, the input signal applied to the drain electrode of the field effect transistor and to the bypass circuit is attenuated by a total amount related to the combined values of attenuation provided by the field effect transistor and the bypass circuit and applied via the source electrode of the field effect transistor to an output terminal.

3,621,285
PULSED EXCITATION VOLTAGE CIRCUIT FOR TRANSDUCERS

Karl F. Anderson, and Thomas L. Lynch, both of Lancaster, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 30, 1969, Ser. No. 872,602
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 10 Claims

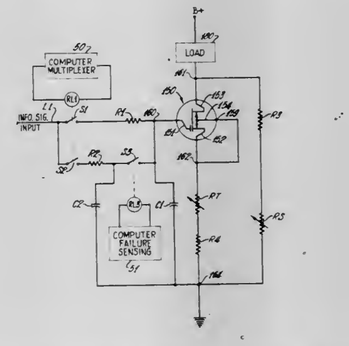


A pulsed excitation voltage circuit for a strain gauge bridge is disclosed using a transformer having its primary winding adapted to receive an excitation timing pulse and two secondary windings to turn on two transistor switches adapted to connect positive and negative voltage sources of equal amplitude to opposite ends of the bridge. Voltage limiting diodes are connected to output terminals to limit common-mode voltage spikes resulting from different turn-on and turnoff times of the transistor switches. Each transistor switch includes a base resistor selected at time of assembly to provide substantially equal turn-on times. A speedup capacitor may be used to further equalize turn-on time, and a shunt capacitor may be used at the output of one switch to offset effects of unequal turn-on times.

3,621,286
MEMORY UNIT PROVIDING OUTPUT OVER LONGER TIME PERIODS THAN DURATION OF INDIVIDUAL INPUT SIGNALS

Eugene C. Varrasso, 1853 Cedar Circle, Heath, Ohio

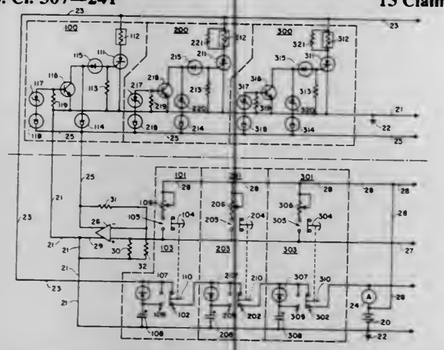
Filed Mar. 9, 1970, Ser. No. 17,677
Int. Cl. G11c *11/34*
U.S. Cl. 307—238 15 Claims



Control apparatus which includes a memory unit having input means for receiving successive input signals and output means for providing an output signal over periods of time longer than the duration of individual input signals and which is functionally related to the last-received input signal; and

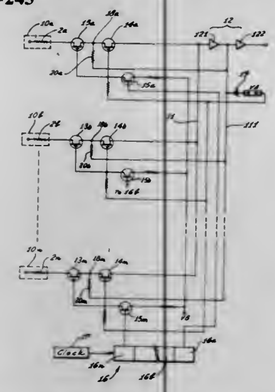
storage means for receiving, averaging, and storing the successive input signals. Means are provided for connecting the averaging or storage means to apply the averaged signal stored therein to the input means in response to an interruption in the reception of the successive input signals by the input means of the memory unit.

3,621,287
SOLID-STATE REMOTE CIRCUIT SELECTOR SWITCH
Victor S. Peterson, Sandusky, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 30, 1970, Ser. No. 76,899
Int. Cl. H03k *17/00*
U.S. Cl. 307—241 **13 Claims**



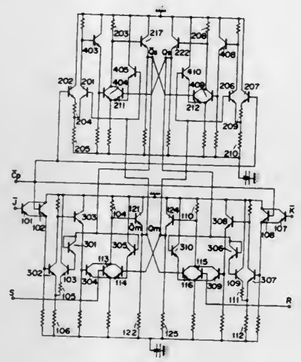
A plurality of controlled rectifiers each associated with a respective load to be energized are provided. Gate circuitry is provided for each controlled rectifier such that each controlled rectifier is sensitive to a control voltage that falls within certain limits. The limits are chosen to provide nonoverlapping ranges for the controlled rectifiers. Local selector circuits each include a bias voltage source whose output falls within respective ones of the nonoverlapping ranges of the gate circuits of the controlled rectifiers. Switch means are provided whereby the voltage of the bias sources may be selectively applied to the gate circuits of the controlled rectifiers.

3,621,288
MULTICHANNEL SWITCHING SYSTEM WITH UNITY-GAIN ISOLATION AMPLIFIER OPERATIVELY CONNECTED BETWEEN THE SELECTED CHANNEL AND REMAINING OPEN CHANNELS
Stewart C. Brown, Woodland Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 11, 1969, Ser. No. 856,992
Int. Cl. H03k *17/16, 17/56*
U.S. Cl. 307—243 **6 Claims**



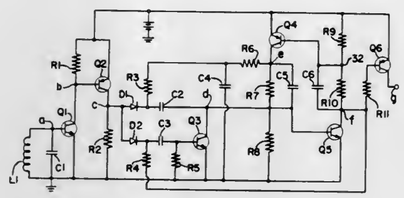
A multiplexer for low-level signals is disclosed wherein each channel has two FETs in series. A unity gain signal from an isolation amplifier for the current signal is fed through a resistor to junctions of FETs in each channel. The turnoff bias for the FETs varies in synchronism with that signal.

3,621,289
MASTER-SLAVE TYPE J-K FLIP-FLOP CIRCUITS COMPRISED BY CURRENT SWITCHING TYPE LOGICAL CIRCUITS
Sadao Sasaki, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan
Filed Dec. 6, 1968, Ser. No. 796,630
Claims priority, application Japan, Dec. 12, 1967, 42/79248
Int. Cl. H03k *17/00, 3/26*
U.S. Cl. 307—247 **8 Claims**



A master-slave type J-K flip-flop circuit comprising a master flip-flop circuit-producing outputs Qm, Qm and a slave flip-flop circuit-producing outputs Qs, Qs. The master flip-flop The master flip-flop circuit includes a first set input circuit having a current-switching type logical circuit which performs an AND operation of an input J and clock Cp in reference to the output Qs and a first reset input circuit having a current-switching type logical circuit which performs and AND operation of an input K and clock Cp in reference to the output Qs. The slave flip-flop circuit includes a second set input circuit having a current-switching type logical circuit which executes a current-switching operation of the clock Cp in reference to the output Qm and a second reset input circuit having a current-switching type logical circuit which executes a current-switching operation of the clock Cp in reference to the output Qm.

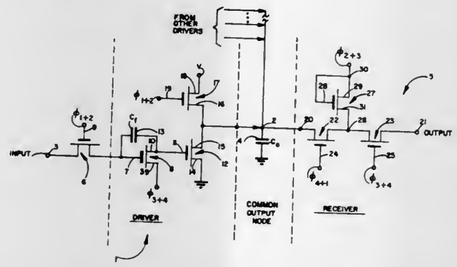
3,621,290
RF-CONTROLLED SOLID-STATE SWITCH
Thomas B. Fryer, Saratoga, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 9, 1969, Ser. No. 865,106
Int. Cl. H03k *17/60*
U.S. Cl. 307—247 **6 Claims**



An electronic element, capable of presenting either a high impedance or a low impedance between a power source and an instrument, is switched from its high impedance to its low

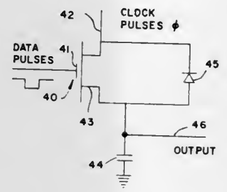
impedance state by turning on both active elements of a complementary bistable multivibrator. By momentarily short-circuiting one of the two active elements of the complementary bistable multivibrator, thereby driving its two active elements from the on to the off state, the electronic element is switched back from its low impedance to its high impedance state. When off, this circuit consumes essentially zero stand-by power.
Alternative-switching circuits use symmetrical bistable multivibrators, activated by amplified and rectified transmitted pulses, to switch a gating element from its high impedance to its low impedance state, and vice versa.

3,621,291
NODABLE FIELD-EFFECT TRANSISTOR DRIVER AND RECEIVER CIRCUIT
Ted Y. Fujimoto, Santa Ana, Calif., assignor to North American Rockwell Corporation
Filed Sept. 8, 1970, Ser. No. 70,352
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 **5 Claims**



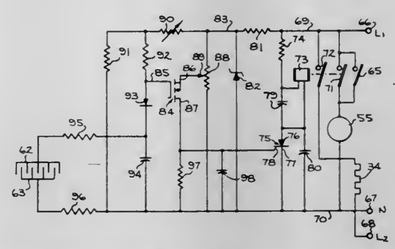
A field-effect transistor driver circuit using a feedback capacitor at the output stage unconditionally charges an output node at least during a first phase recurring clock signal and the input to the driver is evaluated during a second phase recurring clock signal so that the output is conditionally discharged as a function of the input. One or more drivers may be connected at a common output node for implementing a logic function.
A receiver pre-output node is precharged during the driver output precharge phase and the receiver output is precharged unconditionally during the driver evaluation phase. The common output node for the driver circuit is evaluated as an input to the receiver so that the receiver output is conditionally discharged as a function of the voltage at the common output node. After the receiver output has been evaluated, it is isolated until the next clock cycle.

3,621,292
PULSED SUBSTRATE TRANSISTOR INVERTER
Charles B. Vogel, and Alton O. Christensen, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Continuation-in-part of application Ser. No. 782,561, Dec. 10, 1968, now Patent No. 3,502,909. This application Nov. 24, 1969, Ser. No. 879,222
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **5 Claims**



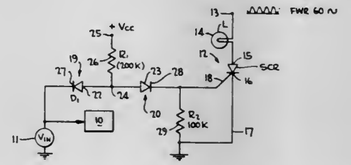
An inverter circuit for field-effect transistors consisting of at least one transistor with a capacitor connected between the source electrode and ground, a diode connected between the drain and source electrodes and a source of negative clock pulses tied to the drain electrode and substrate electrode.

3,621,293
ELECTRONIC DRYER CONTROL
Donald S. Heidtmann, Louisville, Ky., assignor to General Electric Company
Filed Mar. 9, 1970, Ser. No. 17,535
Int. Cl. H03k *17/64*; **F26b** *13/10*
U.S. Cl. 307—252 N **12 Claims**



A dryer control including sensing means to contact items being dried to establish a current path therethrough having a resistance which is a function of the moisture content of the items bridging the sensing means; switch means to terminate operation of the dryer; and circuit means, including a capacitor, interconnecting the sensing means and the switch means. The circuit means include an insulated gate field-effect transistor. The transistor operates the switch means to terminate operation of the dryer when the charge on the capacitor reaches a predetermined level.

3,621,294
SCR LAMP DRIVER
Rodger A. Cliff, College Park, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 26, 1968, Ser. No. 779,025
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 N **7 Claims**

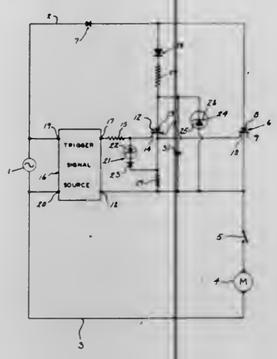


A voltage amplitude-responsive trigger circuit includes a silicon-controlled rectifier having its gate electrode biased through a first diode by a DC source. The DC source applies current through a second diode, connected in opposed relationship to the first diode, to a variable amplitude-signal source. To change the input voltage at which the SCR triggers, a plurality of diodes may be connected between the DC source and the gate electrode or a DC voltage may be connected in series with the SCR cathode.

3,621,295
CONTROLLED RECTIFIER-FIRING CIRCUIT
John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.
Filed July 7, 1969, Ser. No. 839,517
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 W **6 Claims**

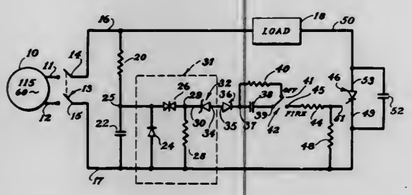
A control circuit for a DC motor has a power SCR connected between the DC motor and AC source. A sensitive

SCR is connected across the power SCR and the gate of the power SCR to fire it. The sensitive SCR is triggered by a conventional trigger signal source. A voltage-limiting Zener



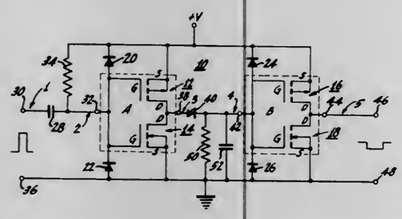
diode is connected across a sensitive SCR, and the parallel connected Zener diode and sensitive SCR are connected through a relatively large current-limiting resistor and a rectifier diode to the AC source.

3,621,296
POWER PULSE CIRCUIT
Martin Berger, 4321 Miller Road, Scottsdale, Ariz.
Filed Oct. 13, 1969, Ser. No. 865,768
Int. Cl. H03k *4/80, 17/72*
U.S. Cl. 307—252 N **3 Claims**



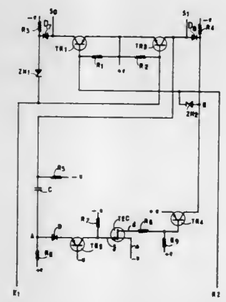
A line-synchronized pulse generator used in conjunction with a controlled rectifier which will supply a single current pulse each time a switch is closed.

3,621,297
MONOSTABLE MULTIVIBRATOR
Jack Allen Dean, Flemington, N.J., assignor to RCA Corporation
Filed Sept. 24, 1969, Ser. No. 860,591
Int. Cl. H03k *1/18*
U.S. Cl. 307—265 **8 Claims**



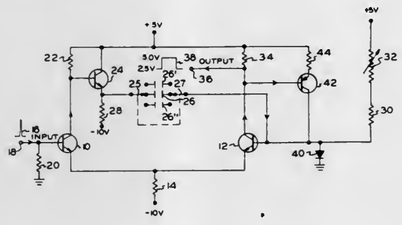
A monostable multivibrator circuit is disclosed which provides a relatively constant width pulse despite large variations from circuit to circuit in the switching transfer voltage characteristics of two switching devices used in any one circuit; in any one circuit, each of the two switching devices have the same switching transfer voltage characteristic. The two switching devices are connected in such a manner that the first device is turned on for a time determined by a first time-constant circuit, and the second device is turned on while the first device is on plus a time determined by a second time-constant circuit. In this manner, the effect on the width of the output pulse by the transfer voltages of one device is cancelled out by the effect on the width of the transfer voltage of the other device. Thus a relatively constant width pulse always results.

3,621,298
MONOSTABLE DEVICE HAVING A HIGH TIME CONSTANT WITH SHORTENED REUSE TIME
Claude Rousseau, Joinville-le-Pont, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunications, Paris, France
Filed Sept. 22, 1969, Ser. No. 859,711
Claims priority, application France, Sept. 20, 1968, 167087
Int. Cl. H03k *3/284*
U.S. Cl. 307—273 **9 Claims**



The device comprises, on the one hand, a bistable device transistors which forms a bistable flip-flop, and, on the other hand, a device consisting of a capacitor and high time-constant transistors, the latter device comprising a field-effect transistor capable of introducing itself, on a first order, into one of the bridges of the bistable device to destroy the latter's symmetry, the bistable state thus created being liable to come to an end before exhaustion of the time-constant on a second order transmitted to the bistable device.

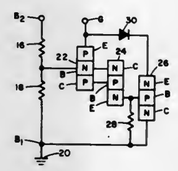
3,621,299
MONOSTABLE MULTIVIBRATOR HAVING WIDE TIMING RANGE
Ronald C. Barber, Portland, Oreg., assignor to Tektronix Inc, Beaverton, Oreg.
Filed Sept. 22, 1969, Ser. No. 859,844
Int. Cl. H03k *3/284*
U.S. Cl. 307—273 **10 Claims**



A monostable multivibrator is described in which a gate transistor is added to supply bias current to the base of an

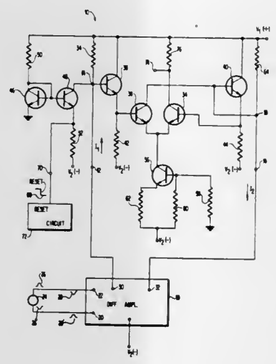
output transistor through a current path different from that through which the timing current flows. The gate transistor is of an opposite conductivity type than the output transistor and is switched off by such output transistor when the multivibrator is triggered. This monostable multivibrator has a much wider range of timing current adjustment which is greater than one thousand to one.

3,621,300
TRANSISTOR CIRCUIT HAVING THE PROPERTIES OF A UNIJUNCTION TRANSISTOR IN IMPROVED DEGREE
Lowell E. Clark, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 10, 1969, Ser. No. 856,658
Int. Cl. H03k *3/26*
U.S. Cl. 307—283 **8 Claims**



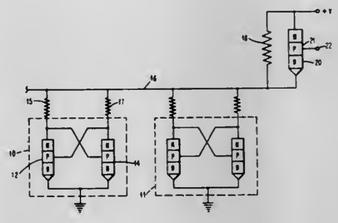
Known unijunction transistors having two bases and an emitter electrode provide a curve of emitter current vs. voltage of emitter to base one having joined negative and positive resistance branches, in which the peak-point currents and the on voltages are too high and in which the valley current at the junction of the positive and the negative branches of the curve is too low for certain applications of this circuit. A circuit has been provided which includes bipolar transistors and resistors or which includes a bipolar transistor and a four layer transistor, which can be put on a chip by known methods, that provides a wider and more controllable range for these parameters than is provided by known unijunction transistors or known bipolar transistor equivalents thereof.

3,621,301
THRESHOLD-RESPONSIVE REGENERATIVE LATCHING CIRCUIT
James J. Tomczak, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,383
Int. Cl. H03k *3/15, 3/26*
U.S. Cl. 307—290 **4 Claims**



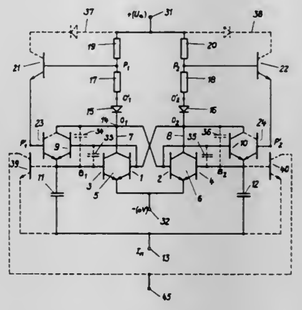
A monolithic transistorized latching circuit which switches from its normal reset state to a set state in response to a predetermined change in a differential input current. The latching circuit is normally biased to its reset state by means of a threshold-biasing circuit electrically independent of the different current. This arrangement permits the latching circuit to reject common mode nose currents which may be contained in the differential input current.

3,621,302
MONOLITHIC-INTEGRATED SEMICONDUCTOR ARRAY HAVING REDUCED POWER CONSUMPTION
Wilbur David Pricer, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,477
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **5 Claims**



A single power source is connected to a plurality of parallel-connected storage cells, which are in one of two bistable states, to provide a common constant-current source when the cells are in a standby storage condition and to apply a constant voltage source to increase the power level when the cells are in an active condition.

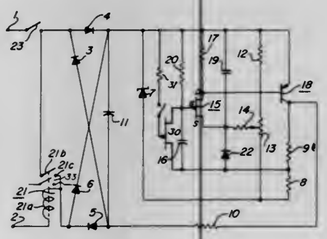
3,621,303
BISTABLE MULTIVIBRATOR CIRCUIT
Claude Roger Fonjallaz, Cormondreche, Switzerland, assignor to Centre Electronique Horloger S.A., Brequet-Neuchatel, Switzerland
Filed Nov. 3, 1969, Ser. No. 873,441
Claims priority, application Switzerland, Nov. 7, 1968, 16.596/68
Int. Cl. H03k *3/286*
U.S. Cl. 307—292 **7 Claims**



A bistable multivibrator including two symmetrically arranged pairs of transistors in which, in each pair, the emitters and the collectors of a first and of a second transistor respectively are connected together to form common emitter and collector circuits, the base of the first transistor of each pair being connected to the collector circuit of the other pair. First and second supplementary transistors are provided, each having its collector connected to the common collector circuit of a corresponding transistor pair, its base to the base of the first transistor for each of said corresponding transistor pair and its emitter to the base of the second transistor of said corresponding transistor pair. Further, first and second

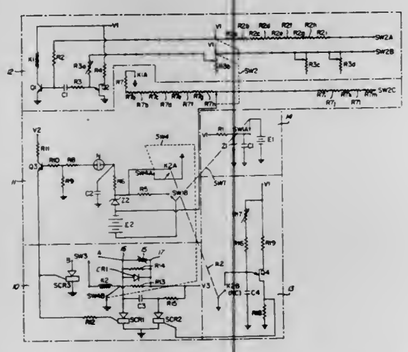
pairs of bias diodes are coupled between the base of the second transistor and common collector circuit of the first and second pairs respectively of the symmetrically arranged transistor pairs.

3,621,304
RAPID RESET TIMING CIRCUIT EMPLOYING CURRENT SUPPLY DECOUPLING
Grover K. Houpt, Wayne, Pa., assignor to Automatic Timing & Controls, Inc., King of Prussia, Pa.
Filed Jan. 15, 1969, Ser. No. 791,326
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **15 Claims**



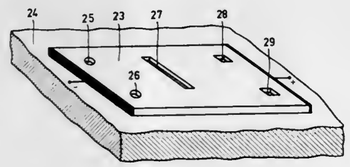
The timing circuit is adapted to be connected to a DC power supply and has four branches. One branch is coupled to the supply and includes a capacitor which begins to charge up at the beginning of the timing interval when connected to the power supply. A second branch is in parallel with the first branch and includes a field effect transistor in circuit with a first resistor. The FET is coupled to the capacitor and is adapted to be turned on when it has a predetermined charge. The third branch is in parallel with said first branch and includes a second resistor and a potentiometer which is coupled to the switching means to control the voltage, and hence the time, at which the FET is rendered conductive. A fourth branch is in parallel with the first branch and includes a second transistor connected to the first transistor and adapted to be rendered conductive in response to conduction through said first transistor and to drive an appropriate output circuit such as a relay coil.

3,621,305
SOLID-STATE, ELECTRONIC TIMER
George H. Jones, 3557 Grant Ave., Ogden, Utah
Filed Mar. 26, 1969, Ser. No. 810,686
Int. Cl. H03k *17/26, 17/28*
U.S. Cl. 307—293 **19 Claims**



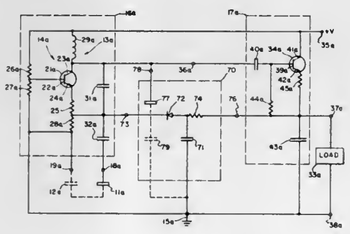
A portable, solid-state on-off sequence, electronic timer particularly useful for but not limited to the control of motion picture cameras. This timer includes a time-delay circuit interconnected with a multivibrator circuit for providing time-delay control, a control circuit for the camera or other device being controlled, and an oscillator circuit for timing duration of operation of each camera or other device. This combination provides much greater flexibility of control than has heretofore been available in equipment of comparable size and cost. The multivibrator and oscillator circuits are conventional in and of themselves, only minor modifications being required to make them function properly in the timer of the invention.

3,621,306
CONTROLLED GUNN EFFECT DEVICE
Gerhard Schickle, Backnang Wurttemberg, Germany, assignor to Telefunken Patentverwertungsgesellschaft GmbH, Ulm am Danube, Germany
Filed Sept. 23, 1968, Ser. No. 761,684
Claims priority, application Germany, Sept. 29, 1967, P 15 91 725.6
Int. Cl. H03k *19/24*
U.S. Cl. 307—299 **2 Claims**



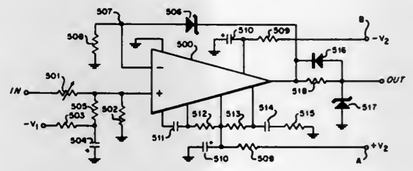
A Gunn-effect device in which the active layer of the semiconductor body is provided with a suitable recess, hole or opening which extends through the active layer and which directly or indirectly affects the high electric field zone in the crystal.

3,621,307
TOUCH RESPONSIVE CONTROL CIRCUIT
Richard C. Raven, and Leonard M. Moser, both of Reno, Nev., assignors to Raven Electronics Corporation
Continuation-in-part of Ser. No. 747,324, July 24, 1968, abandoned
U.S. Cl. 307—308 **11 Claims**



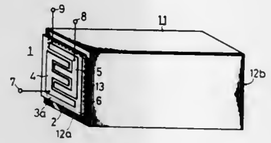
A miniaturized solid state, touch responsive circuit wherein a touchplate connected to a regenerative feedback network of a transistor amplifier is operative when touched to supply sufficient capacitive impedance in the feedback network to dispose the circuit in an oscillatory condition. In a preferred form of the invention, an electrical detection circuit is connected to the amplifier and feedback network to respond to the touch induced signal oscillations and provide a rectified control signal for actuating a load switch or the like. Also a hold circuit is provided for sustaining the oscillatory condition of the amplifier circuit automatically after being momentarily actuated by touch, and wherein a second touch plate is provided for terminating this sustained condition again in response to touch.

3,621,308
LEVEL DETECTOR
George J. Dusheck, Jr., Cinnaminson, N.J., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 3, 1969, Ser. No. 788,861
Int. Cl. H03k *3/26*
U.S. Cl. 307—318 **5 Claims**



A level detector is utilized as an interface between analog and digital circuitry. The level detector generates a digital "1" when the analog signal is above a predetermined level at other times a digital "0" is generated. This is accomplished by feeding the received analog signal through a variable resistor network to the noninverting input of an operational amplifier with a zener diode in the feedback network.

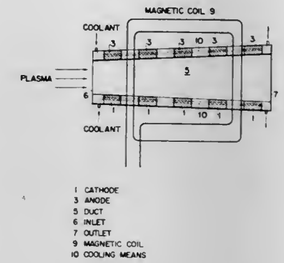
3,621,309
ELECTRIC-MECHANICAL TRANSDUCER
Takeo Yokoyama, and Kitamura Atsugi, both of Hiroshi, Kanagawa, Japan, assignors to Mitsumi Electric Company Ltd., Tokyo, Japan
Filed Apr. 13, 1970, Ser. No. 27,738
Claims priority, application Japan, Apr. 19, 1969, 44/30070
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.7 **2 Claims**



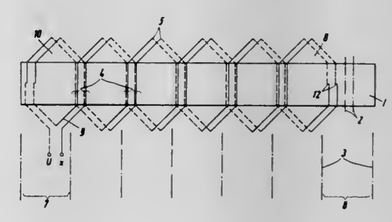
An electric-mechanical transducer having corrugated or comblike characteristics comprising an electric-mechanical transducer element constituted by a piezoelectric resonator plate having a first and a second electrode provided on one surface thereof and a common electrode provided on the other surface thereof, and reflection-type supersonic transmission medium, wherein the common electrode of the piezoelectric resonator plate is attached to one end surface of the reflection-type supersonic transmission medium, input terminals are let out of the first and common electrodes of the piezoelectric resonator plate respectively, and output terminals are led out of the second and common terminals thereof.

3,621,310
DUCT FOR MAGNETOHYDRODYNAMIC THERMAL TO ELECTRICAL ENERGY CONVERSION APPARATUS
Hisasuke Takeuchi; Ryoichi Sasaki; Humio Hataya; Ryo Hiraga; Eiichi Ishibashi, and Takao Koyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 1, 1970, Ser. No. 42,291
Claims priority, application Japan, May 30, 1969, May 31, 1969, 44/42631; 44/42710
U.S. Cl. 310—11 **12 Claims**

A duct for magnetohydrodynamic thermal-to-electrical energy conversion apparatus, which is provided with at least a pair of anode electrodes and cathode electrodes, the cathode possessing excellent erosion or corrosion resistance characteristics being made of an alloy consisting of a refractory metal and an adhesive metal, the fine grains of the refractory metal being bonded through the adhesive metal.



3,621,311
MULTIPHASE DOUBLE-LAYER WINDING FOR ELECTROMAGNETIC PUMPS AND CONVEYOR TROUGHS
Axel Von Starck, Remscheid-Luttringhausen, Germany, assignor to AEG Elotherm GmbH, Remscheid-Hasten, Germany
Filed Feb. 13, 1970, Ser. No. 11,198
Claims priority, application Germany, Feb. 20, 1969, Dec. 9, 1969; P 19 08 457.2, P 19 61 660.5
Int. Cl. H02k *3/04*
U.S. Cl. 310—13 **4 Claims**



A multiphase two-layer bar wave winding having a winding head in one plane whereby half-wound end poles are provided and at least one winding per phase occupying one slot per pole beginning at the same end of the stator and progressing from pole to pole between the top and bottom layer returning to the last pole at the stator end by forming a loop and changing from one layer to the other and then proceeding back again in mirror symmetry to the beginning of the stator so that each slot has one bar of the forward going and one bar of the returning portion of the winding.

3,621,312
SIMULATED TWELVE-POLE STEPPING MOTOR HAVING EIGHT ACTUAL POLES
Albert Palmero, Wallingford, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Sept. 22, 1970, Ser. No. 74,416
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 R **9 Claims**

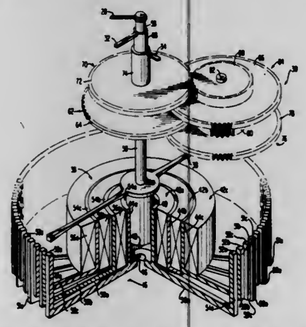
A stepping motor having a minimum of eight stator poles formed with teeth and a rotor having teeth with the effective pitches of the teeth being different to provide a three-tooth differential between the teeth. Each stator pole has a wind-

ing, and the windings are connected into two distinct phases and energized according to a four-step sequence to simulate



a twelve-pole motor to cause the rotor to move one-fourth of a rotor tooth pitch for each step of the sequence.

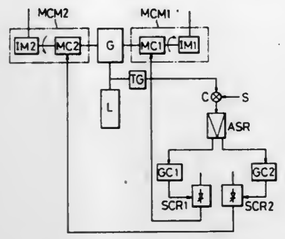
3,621,313
ELECTRONIC TIMEPIECE CONSTRUCTION EMPLOYING A FLAT STEP-BY-STEP ELECTROMECHANICAL ENERGY CONVERTER
Richard S. Walton, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Division of Ser. No. 726,090, May 2, 1968, Pat. No. 3,538,703
Filed Oct. 24, 1969, Ser. No. 871,080
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 **11 Claims**



There is disclosed herein an electrical timepiece including electronic circuitry for generating timing pulses, an electromechanical energy converter driven in stepwise fashion by the timing pulses and a mechanical movement having a second hand driven directly by the energy converter and gear train also driven by the energy converter to drive indirectly the hour and minute hands. The electromechanical energy converter disclosed is characterized by a wound stator having a plurality of magnetic circuits separately excitable to complete a magnetic path with a rotor. As the magnetic circuits are energized in succession, the rotor is attracted from one magnetic circuit to the next, producing stepwise rotation in synchronism with the excitation. A particular feature of the energy converter is the fact that its axial dimension is substantially less than its radial dimension, resulting in a flat configuration especially useful in a wrist watch.

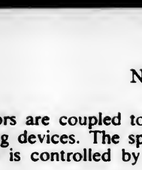
3,621,314
REVERSIBLE OPERATING APPARATUS
Yoshio Murayama, and Masao Kamura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed June 2, 1970, Ser. No. 42,803
Claims priority, application Japan, May 23, 1969, 44/47757
Int. Cl. H02k *49/04*
U.S. Cl. 310—101 **1 Claim**

A reversible, variable-speed motor mechanism comprises a pair of two-phase induction motors rotating in opposite directions. The motors are coupled to a load by a pair of eddy-current coupling devices. The speed and direction of rotation of the load is controlled by comparing a setting



signal with a signal representative of the speed of the load and then altering the excitation current fed to the eddy-current coupling devices, in an offsetting manner, until the comparison signal is zero.

3,621,315
DAMPING WINDING FOR ROTATING POLE SYSTEM
Bror Dalmo, Vasteras; John Franked, Vasteras; Hans Landhult, Vasteras; Birger Nordberg, Vasteras; Carl Ronnevig, Vasteras, and Ove Tjernstrom, Irsta, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Dec. 4, 1969, Ser. No. 882,262
Claims priority, application Sweden, Dec. 23, 1968, 17,729/68
Int. Cl. H02k *19/26*
U.S. Cl. 310—183 **1 Claim**

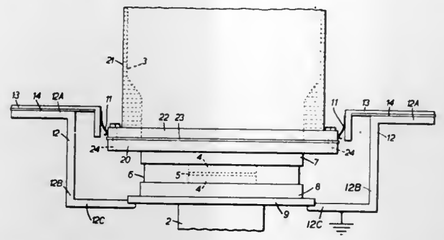


In a pole system which has damping winding slots, a damping winding is positioned in the slots. This winding is formed of damping rods of electrically conducting material and cooling tubes arranged in the slots. The damping rods are connected outside the slots by short-circuiting rings. Each damping window slot contains at least one cooling tube and two adjacent part conductors. Each part conductor has a groove therein, and a cooling tube or tubes are arranged in the grooves. The part conductors are held in position and wedges inserted into the slots are locked in position.

3,621,316
MICROWAVE ELECTRON BEAM TUBES
Geoffrey Thomas Clayworth, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England
Filed June 15, 1970, Ser. No. 46,120
Claims priority, application Great Britain, June 17, 1969, 30,566/69
Int. Cl. H01j *1/02*
U.S. Cl. 313—22 **4 Claims**

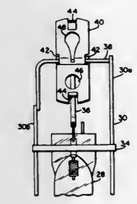
A microwave electron beam tube having a high-frequency interaction section insulated from the collector section of the tube by a gap across which the electron beam passes, the collector being surrounded by water contained in a boiler. The gap is shunted by a capacitor of solid material with its electrodes outside the evacuated envelope of the tube. The boiler is mechanically and electrically connected to a metal flange and a further flange is electrically and mechanically connected to the collector. Inserted between the two flanges is a

dielectric spacer which offers a high impedance to what would otherwise be large high-frequency current flowing



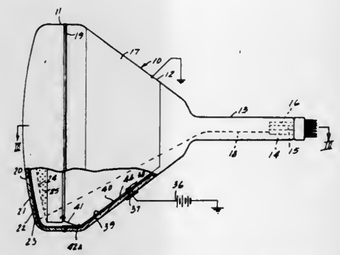
between the two flanges thus reducing radiation from the boiler to a negligible level.

3,621,317
SPRING FLIP-TOP MOUNT SUPPORT FOR MERCURY VAPOR DISCHARGE LAMP
Robert E. Kerr, Chester, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 46,382
Int. Cl. H01j *61/12, 61/52*
U.S. Cl. 313—25 **8 Claims**



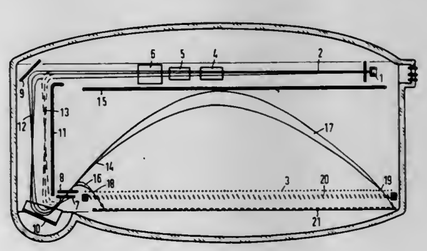
In a gas discharge lamp of the mercury vapor type, an improved upper support member for the arc tube mount assembly which comprises a leaf spring member rotatably secured to the upper crossbar element of the arc tube support frame which, during lamp assembly, enters the outer bulb in a position canted only slightly from axial alignment with the mount but rotates to a position perpendicular to the axis of mount assembly when in an assembled position against the top of the outer bulb to support and retain the arc tube mount in an axial position within the outer bulb.

3,621,318
COLOR TELEVISION PICTURE TUBE WITH METALLIC FILM COATING ON FUNNEL PORTION
Lothar J. Lewinson, Westmont, Quebec, Canada, assignor to Admiral Corporation, Chicago, Ill.
Filed Apr. 27, 1970, Ser. No. 31,934
Int. Cl. H01j *29/46*
U.S. Cl. 313—64 **5 Claims**



A cathode-ray tube for a color television receiver having an evacuated glass envelope which includes a faceplate panel, a funnel portion and a neck portion. The faceplate panel has a plurality of different color light-emitting phosphors thereon. A control electrode is positioned immediately adjacent the faceplate panel to assist in the excitation of the phosphor elements by appropriate electron beams. The control electrode takes the form of a shadow mask, and the phosphor elements are triads of blue, red and green light emitting phosphor dots. The shadow mask is supported at the inside of the faceplate panel by three springs which are mounted on bimetal "hinges" for adjustably positioning the shadow mask as temperature within the tube envelope changes. For instance, increases in temperature within the envelope tend to spread the openings in the shadow mask, and this is compensated by the effect of the bimetallic hinges which move the shadow mask in the direction of the faceplate panel. The tube envelope is coated with a vacuum-deposited aluminum layer which serves to prevent the build-up of high-voltage charges on the wall of the tube. Strips of a conductive colloidal graphite solution may be applied between certain critical points of electrical contact inside the tube envelope.

3,621,319
FLAT COLOR TELEVISION TUBE HAVING PLURALITY OF MIRROR DEFLECTION SYSTEMS
Hinrich Heynisch, Graefelfing; Hannjorg Bittorf, Munich, and Werner Veith, Munich, all of Germany, assignors to Printing Developments, Inc., Rockefeller Center, N.Y.
Filed June 26, 1968, Ser. No. 740,329
Claims priority, application Germany, June 27, 1967, S 110520
Int. Cl. H01j *29/74, 29/80, 31/20*
U.S. Cl. 313—77 **5 Claims**



An electron discharge tube for the display of luminous color images including a tube envelope having a picture screen electrode disposed adjacent to the viewing surface thereof. The picture screen electrode has a plurality of luminous strips arranged substantially parallel to one another. A pair of grids are arranged behind the picture screen electrode and a recoil electrode is spaced behind the pair of grids. The first of the pair of grids consists of a plurality of narrow parallel strips sloping against the picture screen electrode. The electron beam is directed into the space between the picture screen electrode and the recoil electrode in a direction generally away from the picture screen electrode. The potential of the recoil electrode reverses the direction of the beam toward the picture screen electrode and through the pair of grids.

3,621,320
SECONDARY ELECTRON MULTIPLIER CONSISTING OF SINGLE SAWTOOTH MULTIPLYING SURFACE
Haruo Maeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan
Filed May 27, 1969, Ser. No. 828,277
Claims priority, application Japan, May 31, 1968, 43/37665
Int. Cl. H01j *43/04, 43/18, 43/20*
U.S. Cl. 313—105 **5 Claims**

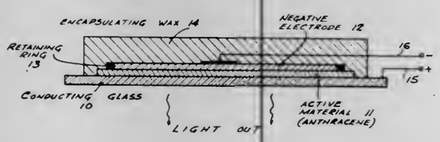
A secondary electron multiplier comprising a supporting plate having two kinds of inclined surfaces, one of which has a coating of low-resistance material and on which coating a secondary emissive layer is formed, the other of which has a coating of high-resistance material, the low-resistance and

high-resistance coatings forming a series circuit across which a voltage source is connected so that a repeller electric field



which serves to accelerate secondary electrons is built up around the surfaces of said secondary emissive layers.

3,621,321
ELECTROLUMINESCENT DEVICE WITH LIGHT EMITTING AROMATIC, HYDROCARBON MATERIAL
Digby F. Williams, Ottawa, and Martin Schadt, Vanier City, Ontario, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Oct. 28, 1969, Ser. No. 871,847
Int. Cl. H05b *33/02, 33/26*
U.S. Cl. 313—108 A **6 Claims**



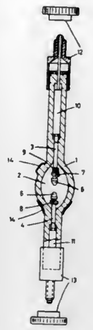
A thin body of active material in the form of anthracene or naphthalene generates light when a current is passed through it by the injection of electrons from an electrode containing negative ions of a similar material e.g. anthracene, naphthalene or tetracene) to a base electrode to which an external positive potential relative to the electron-injecting electrode is applied. The base electrode may be solid and transparent for transmission of light generated in the active material or at its interface with the base electrode. This device also acts as a rectifier, since virtually no current will flow if the externally applied potential is reversed.

ERRATUM

For Class 313—108 D see:
Patent No. 3,621,340

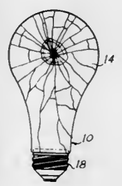
3,621,322
HIGH-PRESSURE COMPACT ARC LAMP WITH ELECTRODES CONTAINING TANTALUM CARBIDE
Manfred Rehmet, and Jurgen Begemann, both of Munich, Germany, assignors to Patent-Treuhand-Gesellschaft Fuer Elektrischi Gluehlampen mbH, Munich, Germany
Filed Sept. 2, 1969, Ser. No. 854,452
Claims priority, application Germany, Sept. 12, 1968, P 17 64 961.5
Int. Cl. H01j *61/06, 61/12*
U.S. Cl. 313—184 **8 Claims**

A high-pressure compact arc lamp with an envelope which is substantially spherically bulbous where the discharge occurs, and having opposed aligned electrodes therein spaced from each other a distance less than the distance of the bulb wall therefrom at a plane transverse to and between the ends of said electrodes, both of the electrodes comprising sintered bodies composed of from 20 to 90 percent by weight of tantalum carbide and from 80 to 10 percent by weight of at least



one metal from the group of tungsten, rhenium, molybdenum and tantalum.

3,621,323
COATED INCANDESCENT ELECTRIC LAMP
Frank W. Thomas, Baltimore, Md., and William R. Tooke, Jr., Atlanta, Ga., assignors to Thomas Manufacturing Company, Parkton, Md.
Continuation-in-part of application Ser. No. 725,568, Apr. 12, 1968. This application Aug. 14, 1969, Ser. No. 860,139
Int. Cl. H01j *5/04, 19/56, 19/57*
U.S. Cl. 313—317 **1 Claim**

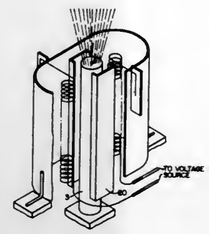


An incandescent electric lamp including an elastomeric coating extending continuously over the glass envelope of the lamp and down over the upper portion of the metallic base by at least ⅛th of an inch. Such a coating creates an electrically safe, substantially shatterproof pod which is affixed to the metallic base. Upon accidental, inadvertent or intentional shattering of the glass envelope, the coating has sufficient strength and body to retain its shape as an electrically safe pod which is attached to the metallic base. The pod thus contains the glass fragments, prevents exposure of the lamp filaments to human contact and provides a tough, homogenous body which may be rotated to safely remove the broken lamp from a socket.

3,621,324
HIGH-POWER CATHODE
Joel H. Fink, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 5, 1968, Ser. No. 773,542
Int. Cl. H01j *1/20*
U.S. Cl. 313—338 **7 Claims**

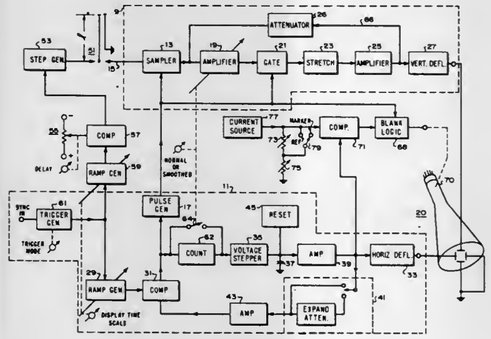
A filament arrangement in a bolt-cathode electron source that heats the bolt-cathode by electron bombardment causing the bolt-cathode to emit a beam of electrons. The filaments are positioned adjacent to the bolt-cathode and at a distance

from the bolt-cathode sufficient to render the geometry of the bolt-cathode independent from the geometry of the fila-



ments and the current flow in the filaments insensitive to the temperature of the filament.

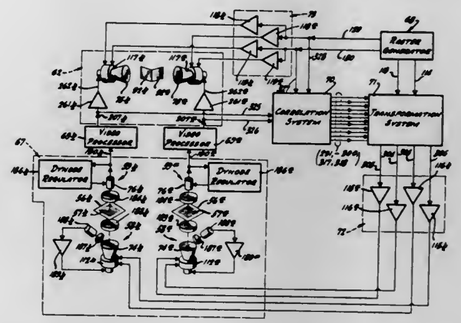
3,621,325
TIME DELAY REFLECTOMETER
Lee R. Moffitt, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 28, 1969, Ser. No. 853,788
Int. Cl. H01j *29/72*
U.S. Cl. 315—25 **8 Claims**



A sampling circuit for an oscilloscope includes feedback circuitry to the sampling gate for enhancing the sampling efficiency and also includes a sweep generator that produces stepwise increment of sweep voltage per selected number of samples. The sampling efficiency may be decreased and the number of samples per step may be increased to provide an averaging effect on the samples taken of noisy signals. Also, selective delay may be introduced between generation of a test pulse used, for example, to step-response test a circuit element and the initiation of a sweep cycle.

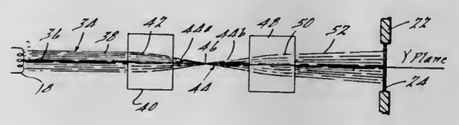
3,621,326
TRANSFORMATION SYSTEM
Gilbert L. Hobrough, Los Altos, Calif., assignor to Itek Corporation, Lexington, Mass.
Division of Ser. No. 394,502, Sept. 4, 1964, Pat. No. 3,432,674.
Filed Sept. 30, 1968, Ser. No. 822,086
Int. Cl. H01j *29/76*
U.S. Cl. 315—26 **5 Claims**

A photogrammetric system for automatically registering a pair of photographic images for stereographic inspection. Automatic registration of the photographic images is accomplished by electronically sensing parallaxes between the images, and by transforming the images to accomplish registration. Each of a pair of stereo photographs is scanned in *x* and *y* by a separate flying spot scanner which is driven by *x* and *y* raster generators. The output of each of the flying spot scanners is applied to a separate video processor for controlling and enhancing the image signals and then to a separate cathode-ray tube which is driven in *x* and *y* by the same *x* and *y* raster generators. The two cathode-ray tubes comprise the left and right sides of a binocular viewer. The output of each of the flying spot scanners and the *x* and *y* raster signals are applied to a correlation system which detects parallax errors and first and second order distortions



between corresponding sections of each of the photographic images. The correlation system divides the output signals of the flying spot scanners into different frequency band-pass regions for separate correlation of the components of each of the signals in each band-pass region. The output of the correlation system is applied, via a transformation system, as correction signals to the raster signals driving the flying spot scanners which enables the pair of photographic images to be viewed in registration.

3,621,327
METHOD OF CONTROLLING THE INTENSITY OF AN ELECTRON BEAM
Zia Hashmi, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 29, 1969, Ser. No. 888,279
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 **7 Claims**

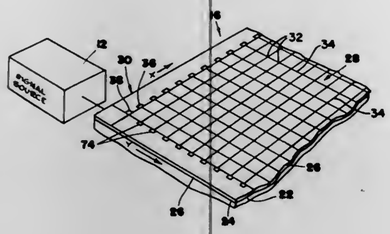


A method for controlling the cross-sectional area and intensity of an electron beam produced in an electron accelerator. A first constant electric field is applied to the beam causing dispersal of the beam in a first plane and concentration of the beam in a second plane disposed perpendicular to the first plane. Subsequently, a second constant electric field is applied to the beam causing beam concentration in the first plane and beam dispersal in the second plane. The fields are applied to the beam between the origin of the beam and the accelerator window and provide that the cross-sectional area of the beam greatly is enlarged at the point of intersection of the beam and the window relative to its original dimensions.

3,621,328
INFORMATION DISPLAY SYSTEM
Max Epstein, Highland Park, Ill.; David Fryberger, Palo Alto, Calif.; Robert J. Serafin, Highland Park, and Anthony P. Van Den Heuvel, Homewood, Ill., assignors to IIT Research Institute, Chicago, Ill.
Filed May 13, 1969, Ser. No. 824,047
Int. Cl. H04n *5/38*
U.S. Cl. 315—55 **9 Claims**

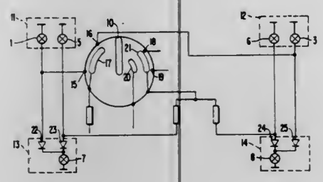
An information display system is provided which comprises a body of material serving as both a substrate for thin film

components and a medium for the propagation of Rayleigh acoustic waves along its surface. The thin film components include elements responsive to the Rayleigh waves to provide



information at selected locations on the surface of the body. These components may be either the control elements or the output elements of the display system.

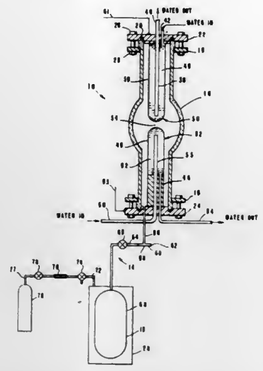
3,621,329
PARKING LIGHT SYSTEM FOR MOTOR VEHICLES
Egon Frey, Stuttgart-Degerloch, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 12, 1968, Ser. No. 783,188
Claims priority, application Germany, Dec. 12, 1967, P 16 30 398.3
Int. Cl. B60q *1/48*
U.S. Cl. 315—77 **4 Claims**



A parking light system for motor vehicles employs individual lamp elements which serve as both parking lights and as the vehicle boundary and taillights. To selectively energize the lights on one side of the vehicle, while preventing the energization of lights on the opposite side of the vehicle, a diode arrangement is connected between the light power system and the light-actuating switch.

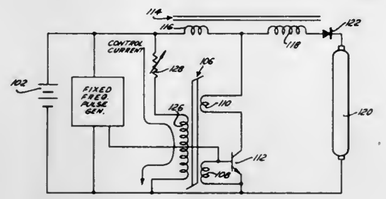
3,621,330
DEPRESSURIZATION OF ARC LAMPS
Charles G. Miller, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed July 14, 1969, Ser. No. 841,278
Int. Cl. H01j *61/28*
U.S. Cl. 315—108 **19 Claims**

A closed cycle depressurization system including a lamp envelope for containment of a discharge gas at greater than atmospheric pressure in communication with a gas storage and depressurization chamber. A substantially transparent material, potentially frangible at said pressure forms at least a portion of the envelope. In one embodiment, depressurization is effected by externally cooling the walls of the chamber and in a second embodiment the chamber contains a gas adsorbent which adsorbs gas to reduce the pressure in the lamp envelope to the desired safe nonoperating level. Repressurization is accomplished by raising the temperature of the



chamber and the stored gas and recycling the gas to the envelope.

3,621,331
ARRANGEMENT FOR IGNITING AND OPERATING GASEOUS DISCHARGE LAMPS
Benjamin Barron, Whitestone, N.Y., assignor to Cox & Company, Inc., New York, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,873
Int. Cl. H05b *41/30*
U.S. Cl. 315—207 **19 Claims**

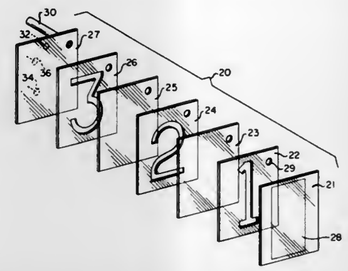


An arrangement for applying a train of pulses to a gaseous discharge lamp, so that each pulse has imparted to it the characteristics required for igniting the lamp and maintaining the latter in operation after ignition. A switching transistor operated by a pulse train derived from a pulse generator, applies its output pulses to a transformer with its secondary winding applied across the base-emitter path of the transistor. An inductor connected to the primary winding of the transformer and to the lamp to be operated, applies breakdown voltage to the lamp when the transistor is turned off. The inductor stores energy for transfer to the lamp once the latter has been ignited through the striking of an arc. Dimming of the lamp is accomplished by varying the energy imparted to the individual pulses or by varying the repetition rate of the pulses without incurring energy losses in the process.

3,621,332
STACKED PLATE VISUAL DISPLAY PANEL
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Nov. 24, 1969, Ser. No. 879,125
Int. Cl. H05b *41/00*
U.S. Cl. 315—313 **17 Claims**

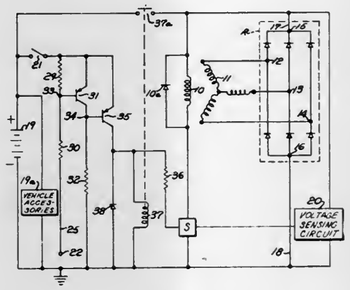
An electroluminescent display device comprising an assembly of stacked transparent dielectric plates, in which every other plate includes a channel forming a cell having a particular character configuration. Each cell is insulated

from every other cell, and each contains an electroluminescent material. A transparent film electrode is deposited on the front surface of the plate assembly in such a manner that the film electrode overlies every character configuration in the assembly. A plurality of electrodes is deposited on the rear exterior surface of the assembly, each electrode corresponding to one particular character and overlying only a portion of the character to which it corresponds. A particular character in the stacked assembly is displayed by alternately



energizing the film electrode and the electrode corresponding to the desired character. Only that character which is positioned between the film electrode and the selected character electrode will be affected by the alternating field because of the capacitive coupling effect which exists between the character electrode and the selected character cell and because of the capacitive coupling effect which exists between the film electrode and the selected character cell.

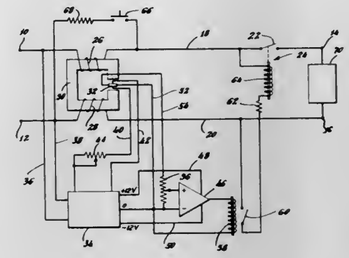
3,621,333
CONTROL FOR DEENERGIZING AN ALTERNATOR WHEN EXPOSED TO WATER
Albert D. Gilchrist, Rocky River, and Chung H. Woo, Cleveland Heights, both of Ohio, assignors to Victoreen Leece Neville, Inc., Cleveland, Ohio
Filed May 12, 1969, Ser. No. 823,686
Int. Cl. H02h *7/06, 7/08, 7/10*
U.S. Cl. 317—13 **13 Claims**



Control for an alternator having a water sensor which causes the alternator field winding to be deenergized whenever fresh water or slat water is present, thereby avoiding corrosion of the alternator windings by electrolysis.

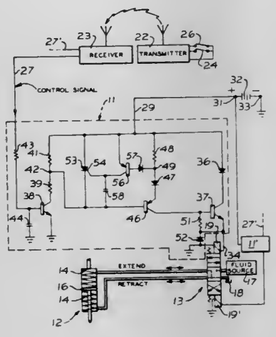
3,621,334
GROUND FAULT SENSING CIRCUIT
Edward P. Burns, West Redding, and Sung C. Lee, Bridgeport, both of Conn., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed Jan. 21, 1970, Ser. No. 4,676
Int. Cl. H02h *7/26, 3/28*
U.S. Cl. 317—18 D **12 Claims**

There is disclosed a ground fault sensing circuit usable with either AC or DC circuits. It includes a closed loop magnetic core having a gap. Two windings are disposed on the core in series, respectively, with the different conductors supplying the load. The windings are arranged in such a manner that, when the currents in the conductors are equal, there is no magnetic flux produced in the core and gap. Positioned in



the gap is a solid state magnetic field sensitive element such as a Hall effect device or magnetic transistor. Underground fault conditions, a magnetic field appears across the gap and an output signal is generated by the solid state device. This signal is amplified and trips a circuit breaker in series with the load.

3,621,335
DRIVER CIRCUIT FOR ENERGIZING AN ELECTRICAL LOAD IN RESPONSE TO SIGNALS FROM A REMOTE SOURCE
Donald F. Coleman, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 6, 1970, Ser. No. 78,438
Int. Cl. H02h *3/08*
U.S. Cl. 317—16 **6 Claims**

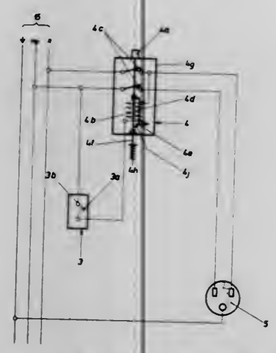


A solid-state circuit provides for energizing an electrically operated device in response to control signals from a remote source, the circuit being suitable for such purposes as controlling a vehicle through radio signals or through an umbilical cord. The circuit includes means which conducts current form a DC power supply to the electrical device in the presence of the remote signal and which deenergizes the device in the absence of the signal and further includes means which rapidly interrupts the connection between the power supply and electrical device if an overcurrent occurs from a short circuit or other malfunction. The protective means resets upon termination of the remote signals as well as upon interruption of the connection to the power supply so that attempts to reactivate the electrical device may be made through subsequent signals from the remote location.

3,621,336
CABLE REEL WITH MEANS FOR GUARDING AGAINST OVERHEATING OF CONVOLUTED CABLE

Wolfgang Angermeyer, Ittersbach Karlsruhe, Germany, assignor to Desco-Werk Seger & Angermeyer KG, Ittersbach Karlsruhe, Germany

Filed May 20, 1970, Ser. No. 39,058
Int. Cl. H02h 5/04
U.S. Cl. 317—40 R 10 Claims

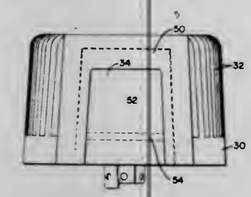


A reel for a supply of electric cable has hollow core accommodating a normally closed interrupter switch which is installed in the conductors of the cable between an energy source and one or more consumers. The interrupter switch opens when a temperature-responsive switch which is outwardly adjacent to or recessed into the core closes in response to detection of a predetermined maximum permissible temperature of convolutions which surround the core. The rise in temperature of the convolutions is caused by generation of heat in response to power losses due to conductor resistance.

3,621,337
SOLID-STATE PHOTOCONTROL HOUSING ASSEMBLY WITH EXTERNAL HEAT DISSIPATING RIBS

George A. Kappenhagen, Northfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1969, Ser. No. 850,186
Int. Cl. H01j 39/12; H02b 1/10
U.S. Cl. 317—100 3 Claims



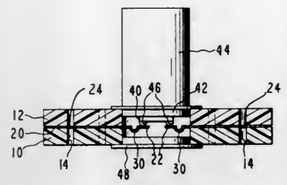
A housing configuration for a solid-state photocontrol which includes external heat dissipating ribs, internal heat sink and locating members for the circuit elements, a light-transmissive window and a bottom, electrical connector carrying closure.

3,621,338
DIAPHRAGM-CONNECTED, LEADLESS PACKAGE FOR SEMICONDUCTOR DEVICES

Bryant C. Rogers, La Jolla, and Wilbur T. Wakely, San Diego, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Jan. 2, 1970, Ser. No. 346
Int. Cl. H05k 1/014
U.S. Cl. 317—101 CC 8 Claims

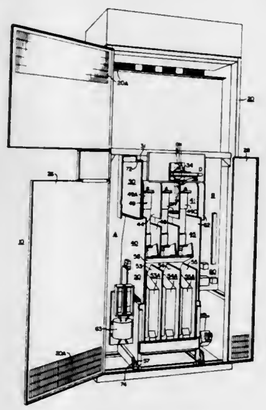
A thin patterned conductive foil is embedded between a pair of adjacent dielectric layers, at least one of which has a hole pattern therein. Portions of the foil cover the holes, so that upon insertion of conductive material into the holes to puncture the foil, electrical contact is provided therebetween.



3,621,339
MODULAR HIGH-VOLTAGE ELECTRICAL COMPONENTS COOPERATING WITHIN CABINET HOUSING TO PROVIDE ELECTRICAL INSULATION AND COOLING AIR PASSAGE

Alfred W. Hodgson, Orchard Park, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 21, 1970, Ser. No. 30,409
Int. Cl. H02b 1/04
U.S. Cl. 317—103 4 Claims



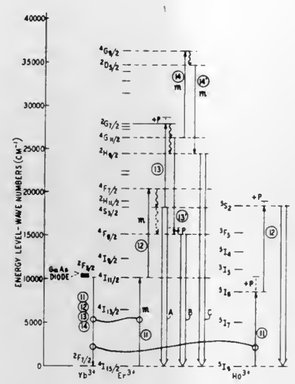
The invention relates to a high-voltage starter apparatus which is capable of accepting as modular plug-in units the standard components of a high-voltage starter such as a power fuse assembly, a contactor assembly and an isolating switch assembly while isolating the low-voltage control circuitry associated with the high-voltage starter so as to provide safe, separate access to the low-voltage circuitry.

3,621,340
GALLIUM ARSENIDE DIODE WITH UP-CONVERTING PHOSPHOR COATING

Shobha Singh, Summit, and LeGrand G. Van Uitert, Morris Township, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1969, Ser. No. 816,764
Int. Cl. H01j 1/62, 63/04; H01s 3/00
U.S. Cl. 313—108 D 9 Claims

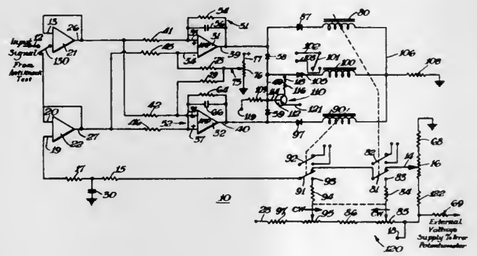
Adjustable color in the visible spectrum results from use of a gallium arsenide infrared emitting diode provided with a coating of a composition having at least one each of two different anions in some unit cells. The composition exemplified by a variety of oxyhalides contain the cation pair Yb^{3+}–Er^{3+}, Yb^{3+}–Ho^{3+} and mixtures thereof.



3,621,341
CONTROL APPARATUS

Eugene H. Lombardi, Port Chester, N.Y., assignor to Ethyl Corporation, New York, N.Y.

Filed May 20, 1968, Ser. No. 730,234
Int. Cl. H01h 9/00; G01l 23/22; H01h 47/00
U.S. Cl. 317—157 9 Claims

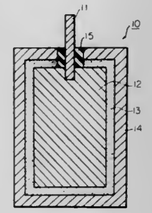


Automatic gasoline antiknock measuring control that delivers compensating action roughly proportioned to knock intensity departure from standard, the action being continued so long as departure from standard increases at a rate at least as high as a predetermined minimum rate. Compensating action can be used to adjust compression ratio of knock-testing engine, or adjust blending of knock-reducing ingredient into gasoline. Dependable operation is obtained by having all solid-state components with differential amplification doing the error-detection sensing. Control can have a pair of all solid-state operational differential amplifiers with their inputs crossconnected and a dead band bias circuit also connected to these inputs, the set point source having a capacitor connected for charging by a selected voltage and for applying the capacitor voltage through a voltage follower to a comparison input of the amplifiers, the outputs being connected to raise the capacitor-charging voltage when the signals measured are too high and lower the capacitor-charging voltage when the signals are too low.

3,621,342
SOLID ELECTROLYTIC CAPACITOR WITH γ-M_nO_2 ELECTROLYTE

Susumu Yoshimura; Katsue Hasegawa; Yoshio Yamamoto, and Iwao Tajima, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed June 18, 1970, Ser. No. 47,475
Claims priority, application Japan, June 20, 1969, June 27, 1969, 44/49872; 44/51989
Int. Cl. H01g 9/05
U.S. Cl. 317—230 14 Claims

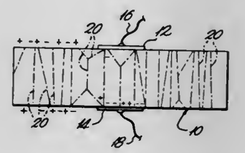


A solid electrolytic capacitor including a first electrode having formed an oxide film on its outer surface, a second electrode disposed opposite to the first electrode and a solid electrolyte composed substantially of granular manganese dioxide of gamma type and disposed in contact and between the first and second electrodes. The solid electrolyte has a high film-forming ability and is prepared by electrolyzing manganese sulfate dissolved in an aqueous solution of sulfuric acid. The solid electrolytic capacitor is capable of operating stably over a broad temperature range and for a prolonged period of time even when it is placed on use at a high-operating temperature.

3,621,343
POLAR VAPOR SENSING MEANS

Charles F. Pulvari, Washington, D.C., and Stephen F. Urban, Kenmore, N.Y., assignors to NL Industries, Inc., New York, N.Y., by said Urban

Continuation-in-part of application Ser. No. 709,642, Mar. 1, 1968, now abandoned. This application Jan. 23, 1970, Ser. No. 5,354
Int. Cl. H01g 9/00
U.S. Cl. 317—231 18 Claims

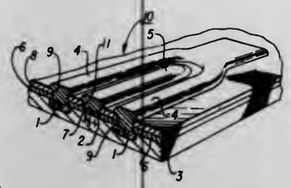


The sensing means comprises a body of metal oxide dielectric material having an active surface layer exhibiting surface conductive characteristics wherein the resistivity of the surface layer varies in the presence of a polar vapor and wherein the resistivity of the surface layer varies between a first condition in the absence of water vapor and a second condition in the presence of water vapor by a factor on the order of 1: 10,000 or more. At least two separate spaced electrically conductive electrodes are electrically connected with portions of the surface layer. Means is provided for impressing an AC voltage across said electrodes, and a load impedance is connected in series therewith from which an output signal can be derived.

3,621,344
TITANIUM-SILICON RECTIFYING JUNCTION

William M. Portnoy, 4227 53rd St., Lubbock, Tex., and Hayden M. Leedy, Jr., 1616 Westridge, Plano, Tex.

Filed Nov. 30, 1967, Ser. No. 686,984
Int. Cl. H01 *5/00, 7/02*
U.S. Cl. 317—234 3 Claims

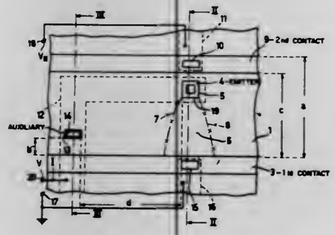


Disclosed is a metal semiconductor rectifying junction comprising a layer of titanium metal in electrical contact with a silicon surface.

3,621,345
SEMICONDUCTOR DEVICE HAVING A BISTABLE CIRCUIT ELEMENT

Wolfdietrich Kasperkovitz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 811,758
Claims priority, application Netherlands, Apr. 4, 1968, 6804787
Int. Cl. H01 *1/18, 11/00*
U.S. Cl. 317—235 27 Claims



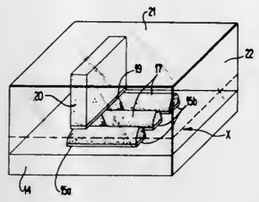
A semiconductor device having a bistable semiconductor circuit element with an I–V characteristic exhibiting three branches having a positive differential resistance is described. The bistable circuit element comprises first and second contacts between which majority carrier flow in the semiconductor is established. It also comprises an emitter for establishing minority carrier flow to the first contact to conductivity modulate the region in between. The emitter is located between the first and second contacts and is connected to an auxiliary contact located outside the region of conductivity modulation.

3,621,346
PROCESS FOR FORMING SEMICONDUCTOR DEVICES WITH POLYCRYSTALLINE DIFFUSION PATHWAYS AND DEVICES FORMED THEREBY

Joseph J. Chang, Clearwater Beach, Vt., and Madhukar B. Vora, Beacon, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,493
Int. Cl. H01 *11/00*
U.S. Cl. 317—235 6 Claims

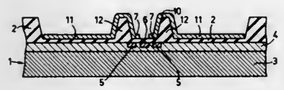
A process wherein epitaxial silicon is grown on a substrate of single-crystal silicon with islands of silicon dioxide thereon, whereby single crystal epitaxial material is grown over the single-crystal substrate areas, but polycrystalline silicon is grown over the silicon dioxide islands. Since impurity diffusion occurs more rapidly through polycrystalline material than through single-crystalline material diffusion schemes can be obtained using the rapid diffusion pathway provided by the polycrystalline material to provide subsurface configurations which are completely enclosed by single-crystal material, for instance, a buried subcollector can be formed by growing polycrystalline silicon material horizontally, extending a narrow polycrystalline channel upward to the device surface, and subsequently diffusing impurities down through the narrow vertical polycrystalline channel into the lateral polycrystalline subcollector. Further, an electrical underpass can be formed which has a very low resistance by again using the rapid diffusion characteristics of polycrystalline silicon to grow polycrystalline silicon of the desired shape which can be rapidly diffused to provide, in comparison to background, a high conductivity path.
By control of the substrate crystalline orientation, polycrystalline material can be grown which terminates because of sidewall convergence. This is desirable where it is required to terminate polycrystalline growth and begin single-crystal growth without any alteration in process conditions. The devices described are also claimed.



3,621,347
SEMICONDUCTOR DEVICE COMPRISING A FIELD EFFECT TRANSISTOR HAVING AN INSULATED GATE ELECTRODE AND CIRCUIT ARRANGEMENT COMPRISING SUCH A SEMICONDUCTOR DEVICE

Johannes A. Van Nielen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 9, 1969, Ser. No. 831,397
Claims priority, application Netherlands, June 14, 1968, 6808352
Int. Cl. H01 *11/14*
U.S. Cl. 317—235 R 17 Claims



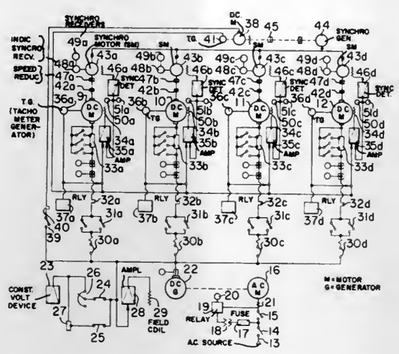
An insulated gate field-effect transistor having a decoupling capacitor between the gate and substrate.

3,621,348
CONTROL SYSTEM FOR AUTOMATIC OPERATION OF A PRESS LINE

Toshiyuki Uchida; Hisashi Miyakoshi, and Shinichi Murai, all of Komatsu-shi, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Minato-ku, Tokyo-to, Japan

Filed July 3, 1969, Ser. No. 838,900
Claims priority, application Japan, Sept. 18, 1968, 43/67106
Int. Cl. H02p *5/46*
U.S. Cl. 318—77 2 Claims

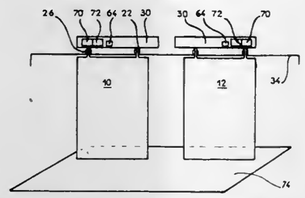
An operating method of press line including a row of presses each having a specific working region assigned thereto, and transfer feeders interposed between the presses, said press lines being adapted to produce formed articles, each of said presses are operated automatically at equalized speed, or each of said presses and each of said transfer feeders are operated synchronously.



3,621,349
LINEAR INDUCTION MOTOR SYSTEM FOR SLIDING DOOR PANEL MOVEMENT CONTROL

Philippe Reyx, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme of Rue Henri Tarze, Grenoble, France

Filed June 23, 1970, Ser. No. 49,049
Claims priority, application France, July 2, 1969, 6,922,905
Int. Cl. H02k *41/02*
U.S. Cl. 318—135 5 Claims

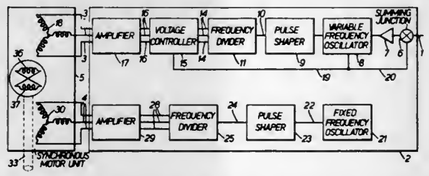


A system for opening and closing sliding doors comprising a linear induction motor having two field windings, a braking device, a plurality of detectors actuated in accordance with the position of the door and a switch sensitive to the approach of persons or objects toward the door. A control circuit is provided which controls the direction of movement and speed of the door as a function of the positions of the detectors and switch by selectively actuating the field windings and braking device.

3,621,350
TIME INTEGRAL CONTROL SYSTEM

John Michael Masterman, Churchdown, England, assignor to Dowty Rotol Limited, Gloucester, England

Filed June 19, 1969, Ser. No. 834,636
Claims priority, application Great Britain, June 19, 1968, 29,251/68
Int. Cl. H02p *5/34*
U.S. Cl. 318—171 5 Claims



A control system in which an output member is moved in accordance with the time integral of the magnitude and sense of variation relative to its datum of an input signal. The input signal is arranged to control an oscillator means to generate two alternating currents of much greater frequency than the highest frequency of the input signal such that the frequency difference between the alternating currents is in accordance with the magnitude and sense of the input signal. The alternating currents are arranged to drive a synchronous motor means in which an output member is moved at a speed in proportion to the frequency difference between the two alternating currents.

3,621,351
CONTROLLED INDUCTION MOTOR DEVICE

Tatsuo Goto, Hachioji-shi; Yoryo Matsudo, Chiba-shi, and Hiroshi Watanabe, Hitachi-shi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Aug. 28, 1968, Ser. No. 755,964
Claims priority, application Japan, Sept. 1, 1967, 42/55748
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 9 Claims

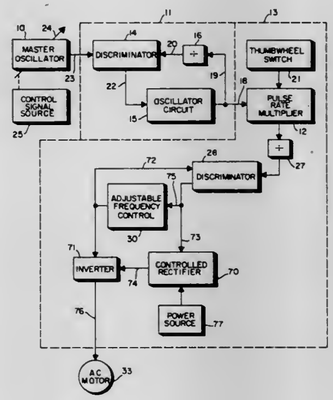


A controlled induction motor device employs a three-phase induction motor whose rotor has a rotor winding of a relatively large resistance to reduce the electrical time constant of the rotor to be equal to or less than the reciprocal of the frequency of the three-phase AC power which is supplied to the motor. A controllable rectifier is inserted in one of the three-phase AC power lines supplying power to the motor in order to intermittently supply the three-phase power to the motor, whereby the motor can be rotated at low speeds without vibration.

3,621,352
INVERTER-CONTROL SYSTEM FOR AC MOTOR WITH PULSE-LOCKED CLOSED LOOP FREQUENCY MULTIPLIER

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company

Filed Mar. 19, 1969, Ser. No. 808,443
Int. Cl. H02p *5/40*; H02m *7/20*
U.S. Cl. 318—227 8 Claims



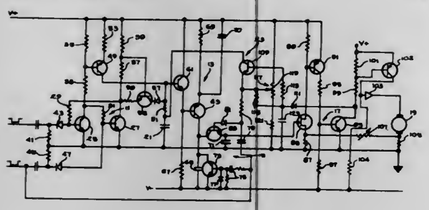
The invention is a closed loop pulse-locked frequency multiplier. A master pulse train is applied to a digital discrimina-

tor, the output of which is in turn applied to a voltage controlled oscillator. The oscillator generates a pulse train having a repetition rate that is a multiple of the repetition rate of the master pulse train. The generated pulse train is fed back to the digital discriminator by a divider having a dividing factor equal to the multiplying factor of the oscillator.

3,621,353
PHASE LOCK, SPEED CONTROL SYSTEM

Joseph Brian Matley, Monte Sereno, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 14, 1969, Ser. No. 876,777
Int. Cl. H02p *5/06*
U.S. Cl. 318—314 **6 Claims**

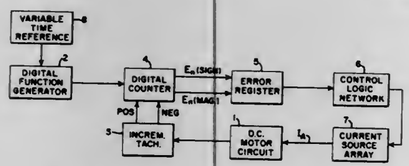


A system for controlling the speed of either a capstan or a head drum motor in a videotape recorder to phase lock the motor to a reference signal. The position of the capstan or drum motor is indicated by a tach pulse, which is compared in phase with the phase of the reference pulse by a phase detector which provides an output signal corresponding to the phase difference. The output signal from the phase detector is converted to current in a voltage-to-current converter and the current is fed to a sampling filter. The output from the sampling filter is employed to control the speed of the drum or capstan motor through a power amplifier. To provide long term position stability, an integrating capacitor is connected to the output of the phase detector. During the motor acceleration period, this integrating capacitor is clamped to a DC voltage approximately equivalent to the correct running speed of the capstan or drum motor.

3,621,354
DC MOTOR CURRENT ACTUATED DIGITAL CONTROL SYSTEM

James W. Fawcett, E. Syracuse; John M. Irwin, Clay, and Robert J. McFadyen, Syracuse, all of N.Y., assignors to General Electric Company

Filed Jan. 7, 1970, Ser. No. 1,233
Int. Cl. G05b *5/01*
U.S. Cl. 318—341 **8 Claims**



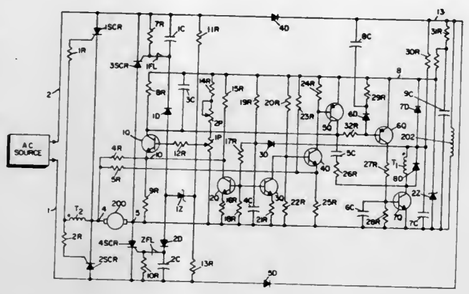
Wideband digital servosystem for accurately controlling the velocity and/or position of a DC motor. A plurality of constant current sources connected in the armature circuit are actuated in response to a sensed digital error, determined by subtracting from a digital input a number of pulses proportional to the motor rotation.

3,621,355
DOUBLE HALF WAVE MOTOR CONTROL

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company

Filed Mar. 30, 1970, Ser. No. 23,585
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 **18 Claims**

A control circuit for a DC motor pulses the motor armature every half cycle, but maintains a discontinuous armature current as in a half wave motor control circuit. The assurance of discontinuity allows the motor e.m.f. to be used as a speed feedback voltage. The armature is placed across the output terminals of a full-wave rectifier comprising four controlled rectifiers. The input controlled rectifiers provide pulses of current to the armature. At the start of each half cycle

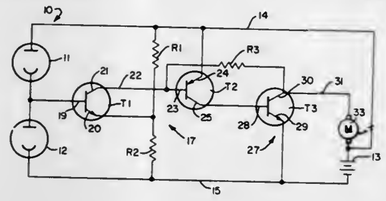


the turn-on time of the output controlled rectifiers is delayed. With the latter controlled rectifiers turned off at the beginning of each half cycle, there is no current path which allows the armature current to decay slowly. The armature current is forced to go rapidly to zero and discontinuity of the armature current is assured.

3,621,356
PHOTOCELL CONTROL CIRCUIT FOR MOTOR-OPERATED TOY

Kwan Chi On, 1800 Grant St., Berkeley, Calif.

Filed Sept. 15, 1969, Ser. No. 857,912
Int. Cl. H02p *11/00;* **H01j** *39/12*
U.S. Cl. 318—480 **14 Claims**

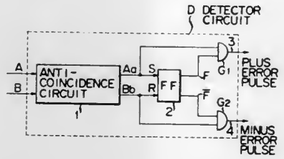


An electric circuit responsive to a difference in the intensity of radiation, such as light, between two positions, for controlling the operative state of a load. The circuit includes a pair of series-connected photocells which provide the input to a solid state amplifier which includes an output stage acting as a switch. In one embodiment, the output switching stage is in series circuit with a source of power and a motor mounted on a toy, such as a vehicle, so that the motor is actuated when the switching stage is conducting. Feedback means are provided in circuit with the amplifier and the switching stage so that the operative state of the load, such as the operation of the toy motor, is maintained after the difference in radiation intensity between the first photocell and the second photocell has ceased. In another embodiment, a pair of amplifier paths are provided to control both the actuation and deactuation of the load. The circuit may be provided as an attachment for a toy model wherein an insulating element capable of being bypassed by the output switching stage of the amplifier is in circuit with the power supply to the motor of the toy. A modification to the circuit is disclosed wherein the difference in radiation intensity between the photocells controls the movement of the toy in its forward, reverse, left, or right directions without the need for using reversing relays.

3,621,357
APPARATUS PROCESSING PULSE NUMBERS FOR USE IN A PID DIGITAL CONTROL SYSTEM

Moritada Kubo, Tokyo; Yukiharu Takahashi, Tokyo, Japan, and T. William Miles, Palmerston North, New Zealand, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 28, 1969, Ser. No. 853,813
Claims priority, application Japan, Oct. 25, 1968, 43/77321
Int. Cl. G05b *19/26*
U.S. Cl. 318—600 **10 Claims**

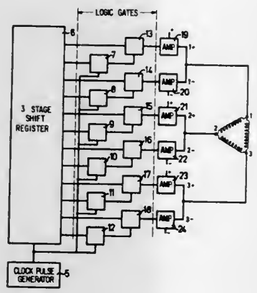


Apparatus for obtaining the proportional difference between two pulse trains by feeding input pulses of the two pulse trains to an anticoincidence circuit, which blocks the passage of only coincidence inputs the outputs from which are supplied to a combining circuit including a flip-flop circuit and a pair of AND gate circuits, thereby canceling the first of the alternately reached pulses in two trains to obtain the rest of the pulses. By combining the apparatus with a step motor and delay circuits the integral difference and differential difference may be obtained.

3,621,358
STEPPING MOTOR HAVING POSITIVE, NEGATIVE OR ZERO POTENTIAL APPLIED TO POINTS OF DELTA CONNECTED STATOR WINDING

Kurt Hinrichs, and Gerd Wilken, both of Coburg, Germany, assignors to ERC Electronic Research Corporation, Basel, Switzerland

Filed Feb. 16, 1970, Ser. No. 11,804
Claims priority, application Germany, Feb. 15, 1969, P 19 07 762.4 Germany, Nov. 19, 1969, P 19 58 032.6
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **8 Claims**

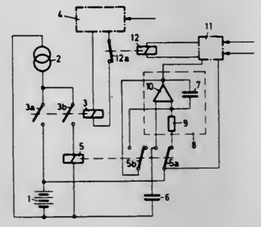


An electrical stepping motor having a two-pole permanent magnet rotor and a stator winding connected in a delta. The rotary field for the stator is produced by an electronic circuit which simultaneously applies either a positive, a negative or a zero potential signal to the three corners or inputs of the delta winding in a predetermined sequence whereby 12 steps per revolution are achieved.

3,621,359
METHOD OF DETECTING THE END-OF-CHARGE CONDITION OF AN ELECTRIC STORAGE BATTERY UNDER CHARGE AND DEVICE FOR THE CARRYING OUT OF THIS METHOD

Kurt Schnegg, Yverdon, Switzerland, assignor to Leclanche S. A., Yverdon Canton of Vaud, Switzerland

Filed Mar. 23, 1970, Ser. No. 21,947
Claims priority, application Switzerland, Mar. 28, 1969, 4761/69
Int. Cl. H02j *7/00*
U.S. Cl. 320—43 **12 Claims**

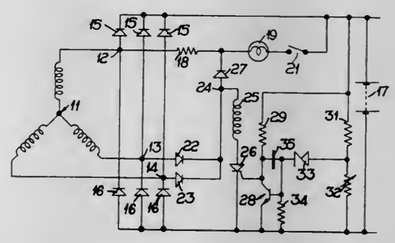


Method and means for detecting the end-of-charge condition of a storage battery under charge comprising periodically interrupting the charging current, maintaining the interruption for a period corresponding to the time constant of the internal resistance of chemical origin of the battery, measuring the voltage of the battery with a voltage test member, applying a resulting electrical magnitude developed by the test member to a threshold-comparator member which thereupon supplies a signal indicative of whether the electrical magnitude has reached a value determined in the comparator member by a threshold parameter on the basis of which the comparator was adjusted.

3,621,360
BATTERY-CHARGING SYSTEM FOR A ROAD VEHICLE WITH GENERATOR FIELD CONTROLLED BY A THYRISTOR

David Wiley, Walsall, and Maurice James Allport, Stourbridge, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 18, 1970, Ser. No. 12,168
Claims priority, application Great Britain, Mar. 25, 1969, 15,506/69
Int. Cl. H02j *7/16*
U.S. Cl. 320—48 **2 Claims**

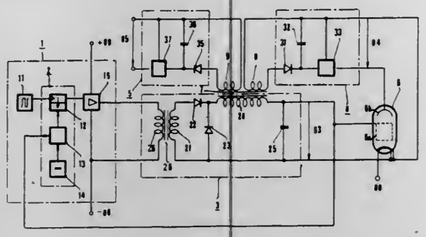


In a battery-charging system for a road vehicle there is a multiphase alternator which has a plurality of output terminals, a full-wave rectifier then connecting the output terminals to the vehicle battery but in addition there is a series circuit connecting one only of the output terminals to the vehicle battery, this series circuit including a resistor, a warning lamp and the ignition switch of the vehicle. Another set of diodes connects the other terminals of the alternator to the field winding through a thyristor, conduction of which is controlled to vary the field current, and an extra diode connects the field winding to the junction of the resistor and the warning lamp so that the warning lamp is illuminated when the ignition switch is closed until the alternator produces an output.

3,621,361
DIRECT VOLTAGE TRANSFORMER

Alfred Barth, Holzlistrasse 427, 5300 Turgi, Switzerland

Filed Oct. 19, 1970, Ser. No. 81,977
Claims priority, application Switzerland, Nov. 10, 1969, 16682/69
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **4 Claims**

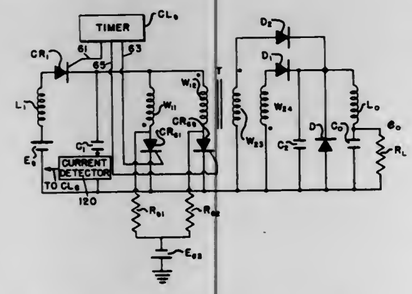


A direct voltage transformer device embodying a DC–AC inverter means at the input side thereof for delivering a square wave voltage output, said inverter means including a regulating circuit means incorporating an adjustment element for changing the pulse width of said square wave voltage output for maintaining constant the secondary direct voltage. A half-wave rectifier circuit arrangement receives the square wave voltage output of the inverter means. This half-wave rectifier circuit arrangement comprises an input transformer means constituted by a primary winding and a secondary winding, a first rectifier element electrically coupled to one terminal of said secondary winding, a subsequently coupled filter coil and capacitor filter. There is also provided a further transformer means having primary winding means and secondary winding means, wherein said primary winding means constitutes said filter coil. Additional rectifier circuit means are electrically coupled with said secondary winding means of said further transformer means, said additional rectifier circuit means conducting during the blocking periods of said first rectifier element coupled with said one terminal of said secondary winding of said input transformer. A second rectifier element is coupled between the junction point of said first rectifier element and said filter coil and the other terminal of said secondary winding of said input transformer means, this second rectifier element blocking during the conductive periods of said first rectifier element.

3,621,362
LOAD-INSENSITIVE ELECTRICAL DEVICE

Francisc Schwarz, Weston, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 26, 1969, Ser. No. 810,579
Int. Cl. H02m *3/32*; **H03b**
U.S. Cl. 321—2 **5 Claims**

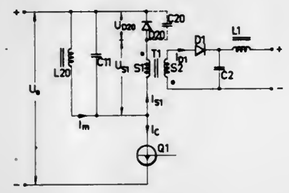


A class of power converters is disclosed for supplying direct current at one voltage from a source at another voltage which includes a simple passive circuit arrangement of solid-state switches, inductors, and capacitors by which the output voltage of the converter tends to remain constant in spite of changes in load. The switches are sensitive to the current flowing in the circuit and are employed to permit the charging of capacitance devices in accordance with the load requirements. Because solid-state switches (such as SCR's) may be used with relatively high voltage and because of the inherent efficiency of the invention that permits relatively high-switching frequencies, power supplies built in accordance with the invention, together with their associated cabling, can be substantially lighter in weight for a given output power level and efficiency of operation than systems of the prior art.

3,621,363
AN ARRANGEMENT FOR PREMAGNETIZING A STATIC DC CONVERTER

Sven N. J. Ginnman, Gottsunda 2,180 20, Akers Runo, and Per E. C. Udden, Nygatan 1,861 00, Timra, both of Sweden

Filed Oct. 14, 1969, Ser. No. 866,270
Claims priority, application Sweden, Oct. 16, 1968, 13938/68
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **4 Claims**



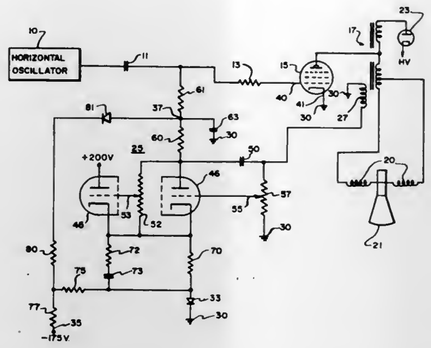
The invention relates to a DC converter for transforming a DC voltage to an AC voltage of high frequency and including one or several switching means to effect this operation. The invention is specifically related to the use of premagnetization means for magnetizing the transformer core in order to increase the efficiency of the converter. This is effected by premagnetizing the core into saturation with a magnetic field which is opposite to the field generated by the current through the corresponding switching means. The transformer core will consequently operate in its saturated state from the point when the switching means is rendered conductive and the current through said switching means is increasing up to a certain value above which the core will operate in its non-saturated state. This arrangement will provide a converter operating with substantially rectangular waveforms of the current supplied to the load, which means that the switching means can operate just below their maximum permissible current when energy is transferred from the current source to the load. The switching means will thus be utilized at a maximum thereby improving the efficiency of the converter.

3,621,364
FAULTY ELECTRICAL COMPONENT SENSING AND PROTECTION APPARATUS

Frederick E. Worster, Highland Park, Ill., assignor to Warwick Electronics Inc.

Filed Sept. 23, 1970, Ser. No. 74,667
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **6 Claims**

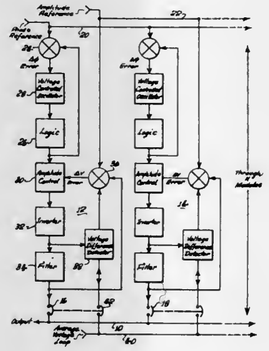
A diode is coupled in series with the high-voltage regulator of a television receiver and is normally forward biased by the current therethrough. A disabling bias potential source is coupled across the diode to reverse bias the same when the regulator current disappears due to the failure or removal of the regulator. The diode is further coupled to the horizontal-scan system such that when the disabling bias appears across the diode due to regulator failure or removal, the scan system will be disabled by the disabling bias potential.



3,621,365
PARALLEL COUPLED STATIC INVERTERS

William H. Beck, Palos Verdes Peninsula, and Daniel W. Trimble, La Habra, both of Calif., assignors to The Garrett Corporation

Filed Aug. 13, 1970, Ser. No. 63,489
Int. Cl. H02m *7/00*
U.S. Cl. 321—27 R **11 Claims**

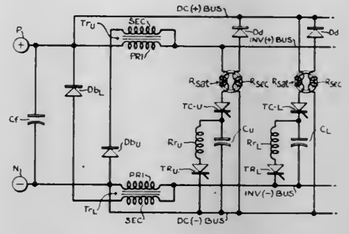


An alternating current power-supply system is disclosed in which plural static inverter modules are coupled in parallel to share a common load. Each inverter module is held in phase synchronization with a common phase reference by circuitry which generates a signal within inverter logic of the module and compares the phase of the generated signal with that of the common phase reference so as to vary the frequency of the generated signal until phase lock is achieved. The output amplitude of each inverter module is normally regulated by circuitry which compares inverter output voltage with a common amplitude reference and makes appropriate adjustments within the inverter based on the comparison so as to render the output voltage equal to the common amplitude reference. Additional amplitude regulation is provided by circuitry which determines the average of the various inverter module output voltages and corrects any inverter module having an output voltage which differs from the determined average.

3,621,366
DC SIDE COMMUTATED CHOPPER AND INVERTER

David L. Duff, Burlington, Ontario, and Shashi B. Dewan, Toronto, Ontario, both of Canada, assignors to Marathon Electric Research of Canada, Ltd., Oakville, Ontario, Canada

Filed Nov. 13, 1969, Ser. No. 876,320
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **2 Claims**

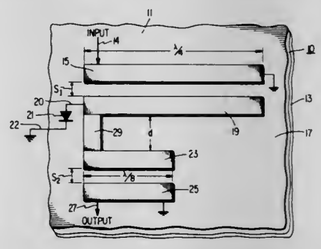


In a chopper or inverter having power thyristors that are switched on a control energization of a load from a DC source, and having commutating capacitors to which current is diverted from the power thyristors when they are to be switched off, recycling means are provided for recharging each commutating capacitor to bring it back to its original potential after each commutation and prepare it for the next commutation. Such recycling means comprises a thyristor (or a diode) and a reactor, in series, shunted across the capacitor. Several expedients are disclosed for preventing excessive charging of the commutating capacitor.

3,621,367
FREQUENCY MULTIPLIER EMPLOYING INPUT AND OUTPUT STRIP TRANSMISSION LINES WITHOUT SPATIALLY COUPLING THEREBETWEEN

Arye Rosen, Elkins Park, Pa., and Edward Mykietyn, West Windsor Township, Mercer County, N.J., assignors to RCA Corporation

Filed Nov. 26, 1969, Ser. No. 880,279
Int. Cl. H02m *5/20*; **H03h** *7/02*
U.S. Cl. 321—69 W **6 Claims**



A frequency multiplier which features a varactor diode, two coupled transmission lines for input impedance transformation and two coupled transmission lines for output impedance transformation. An intermediate strip conductor is placed between the respective coupled transmission lines so as to provide nonspatially coupling between the lines.

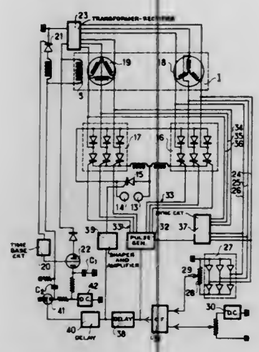
3,621,368
APPARATUS FOR OBTAINING AN ELECTRIC DISCHARGE IN A CONDUCTIVE LIQUID MEDIUM, MORE PARTICULARLY FOR ELECTRIC SEA FISHING

Andre Jules, Sartrouville, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Mar. 5, 1970, Ser. No. 16,884
Claims priority, application France, Mar. 6, 1969, 6906149
Int. Cl. H02p *13/16*; **H02k** *3/00*; **H02m** *7/08*
U.S. Cl. 322—18 **7 Claims**

Apparatus for obtaining an electrical discharge in a conducting liquid medium, particularly for electrical sea fishing.

A rotating pulse generator connected to the drive shaft of a

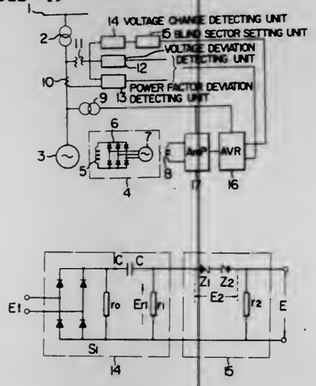


vessel is connected to electrodes immersed in a liquid by a double star and delta connected rectifying device.

3,621,369
AUTOMATIC VOLTAGE REGULATING APPARATUS FOR AC GENERATOR WITH ANTIHUNT MEANS

Masaomi Nagae, and Sumio Yokotawa, both of Kawasaki-shi, Japan, assignors to Fuji Denki Suzo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Filed Jan. 2, 1970, Ser. No. 224
Claims priority, application Japan, Jan. 9, 1969, 44/1844
Int. Cl. H02p 9/14
U.S. Cl. 322—19 **2 Claims**



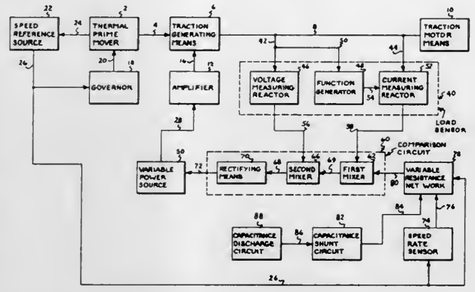
An automatic voltage regulating apparatus for an AC generator, comprising an instantaneous voltage change detecting means with a blind sector which acts to impart its output to the automatic voltage regulator only when the instantaneous voltage change thereof exceeds a predetermined value, provided in parallel with a voltage deviation detecting loop in an automatic voltage regulator for said generator, whereby when the instantaneous voltage change of the generator becomes more than a predetermined value, a transient response characteristic of said voltage regulator is caused to increase only for a predetermined period in response to said voltage change.

3,621,370
GENERATOR LOAD CONTROL SYSTEM

Thomas L. Vandervort, Erie, Pa., assignor to General Electric Company

Filed Aug. 18, 1969, Ser. No. 850,848
Int. Cl. H02p 9/00
U.S. Cl. 322—23 **14 Claims**

A control system for regulating the power output of a traction generator in response to the power capability of the diesel engine prime mover wherein feedback signals responsive to the generator output current and voltage are applied to the inputs of bridge rectifiers whose outputs are serially connected in a reference current circuit. A unidirectionally conducting circuit coupled across the bridge rectifiers provides a control signal to limit the generator load when feedback signals exceed the reference current. The reference current circuit includes in series connection a source of reference voltage whose magnitude corresponds to the power output level of the diesel engine, a resistance network and the bridge rectifier. Provision is made for retarding the rate at which the generator load is increased upon increases of diesel engine output power by a stepped increase of the resistance of the resistance circuit during an increase of diesel engine power. During such time a circuit, responsive to an increase of a reference voltage, opens a shunt connected in



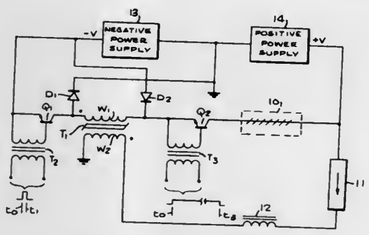
parallel with a portion of the resistance circuit. A capacitance connected serially across the load voltage source and a portion of the resistance network additionally shunt a portion of the reference current to prevent a stepped increase of reference current. A capacitance discharge circuit is operative during reductions of diesel engine power to prevent the capacitance circuit from affecting the rate of load control during such power reduction.

This invention relates to a generator excitation control system and more particularly to a system regulating the power demand of a traction generator in response to the available power of a thermal prime mover, such as a diesel engine. Provision is made for controlling the rate at which the generator output is increased responsive to increasing diesel engine power output in order to reduce the generation of smoke by the diesel engine during increases of diesel engine power.

3,621,371
CURRENT PULSE STABILIZER FOR VARIABLE LOADS

Wayne R. Brumm, Palos Verdes Peninsula, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed Apr. 2, 1970, Ser. No. 25,007
Int. Cl. G05f 3/08
U.S. Cl. 323—17 **12 Claims**



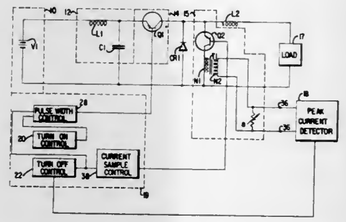
Amplitude of a fast-rise pulse current is stabilized under varying load conditions by a transformer having a first winding connected in series between a pulse voltage source and a

variable load. A square loop hysteresis core of the transformer is biased with regulated DC current in a second winding through a choke coil which stores energy while the bias field is being overcome by a voltage pulse, and restores energy to a power supply for the current pulse source at the end of the current pulse. In a core memory plane, the bias current source services current pulse sources of both polarities for all drive lines and adjacent bit lines are paired with current sources of opposite polarities during read and write cycles to provide tight controlled current loops. Positive and negative energy is returned to the power supply from the choke coil in a substantially balanced manner for both bit (*y*) and word (*x*) drive lines.

3,621,372
LOAD CURRENT SENSOR FOR A SERIES PULSE-WIDTH MODULATED POWER SUPPLY

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Roland L. Hron, Bloomington, Minn.

Filed July 31, 1970, Ser. No. 59,969
Int. Cl. G05f 1/56
U.S. Cl. 323—17 **4 Claims**

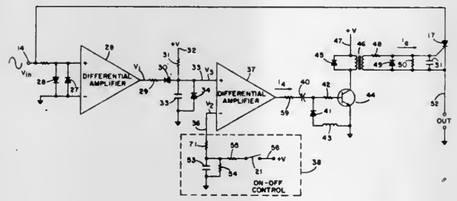


A load current sensor for use with a pulse width modulated power source and has an output filter inductor connected in series between a load and a pulse width modulated regulator. This inductor stores a portion of each pulse supplied to the load by the regulator. At the end of each pulse the stored energy in the inductor causes the current to continue flowing through the load via a freewheeling diode. This current is sampled by a sensor which is connected across the freewheeling diode and the series circuit made up of the output filter inductor and the load. The sensor comprises a gated transistor switch connected in series with a pulse transformer. The freewheeling diode has a forward conductance threshold (forward resistance) which is greater in magnitude than the series impedance of the transistor switch and the pulse transformer.

3,621,373
TRANSIENT-FREE SOLID-STATE POWER CONTACTOR

Daniel M. Mitchell, Marion, Iowa, and Chandrakant Mehta, Kettering, Ohio, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Nov. 23, 1970, Ser. No. 91,725
Int. Cl. G05f 3/00
U.S. Cl. 323—18 **12 Claims**

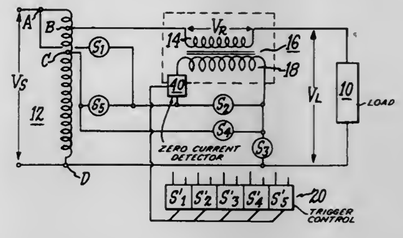


A solid-state alternating current power contactor employs silicon controlled rectifier switching elements to attain a ramp turn on by gradually increasing the rectifier conduction angle. Turnoff is effected during zero crossover. Thus transient problems associated with steplike turn on and high current turnoff are obviated.

3,621,374
VOLTAGE REGULATOR WITH ZERO CURRENT STATIC SWITCHING BETWEEN TAPS FOR A REGULATOR TRANSFORMER

Clarence J. Kettler, Lenox, Mass., assignor to General Electric Company

Filed Apr. 16, 1970, Ser. No. 29,082
Int. Cl. G05f 1/30
U.S. Cl. 323—43.5 S **16 Claims**

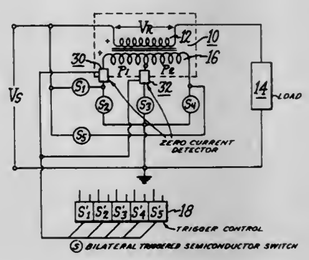


An autotransformer is connected to an unregulated voltage source, and serves as a supply transformer for a load. Interposed between this supply transformer and the load is the secondary winding of a regulating transformer, whose primary winding may be selectively coupled between various taps on the supply autotransformer winding. The primary winding of the regulating transformer is coupled to the desired points on the autotransformer winding by means of semiconductor switches, actuated when the system current waveform approaches zero.

3,621,375
VOLTAGE REGULATOR WITH ZERO CURRENT STATIC SWITCHING BETWEEN TAPPED PORTIONS OF THE PRIMARY OF A REGULATOR TRANSFORMER

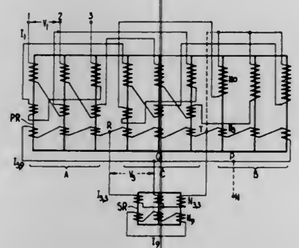
Clarence J. Kettler, Lenox, Mass., assignor to General Electric Company

Filed Apr. 16, 1970, Ser. No. 29,083
Int. Cl. G05f 1/30
U.S. Cl. 323—43.5 S **8 Claims**



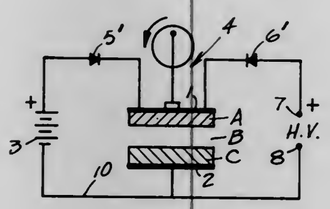
The secondary winding of a transformer is series connected between a source of unregulated voltage and a load. Gated bilateral semiconductor switches are selectively triggered to connect segments of the primary winding of the transformer across the unregulated voltage source such that incremental voltages having either bucking or boosting polarities appear across the secondary winding. A further gated bilateral semiconductor switch is provided for shorting each segment should neither bucking nor boosting voltage be required.

3,621,376
A POLYPHASE NETWORK VOLTAGE-STABILIZING ARRANGEMENT UTILIZING SATURATED REACTORS
Erich S. Friedlander, Sutton Coldfield, and Charles P. Fletcher, Birmingham, both of England, assignors to The General Electric Company Limited, London, England
Filed Apr. 27, 1970, Ser. No. 32,104
Claims priority, application Great Britain, Apr. 28, 1969, 21,810/68
Int. Cl. G05f 3/06
U.S. Cl. 323—50 17 Claims



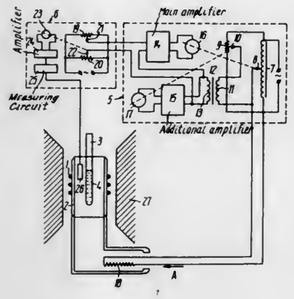
A voltage-stabilizing arrangement for three-phase alternating current networks which makes use of multicore or multilimb saturated reactors, incorporating structure for suppressing self-generated harmonics, has a group of primary alternating current saturated reactor cores provided with windings connected in shunt with the network and wound as for magnetic frequency multiplication, and compensating turns interconnected to form a closed polyphase mesh. Preferably a secondary three-phase saturated compensating treble frequency reactor has a primary winding connected in star to symmetrical treble-frequency tapping points on the closed mesh, and a secondary winding connected to form a closed short-circuited mesh.

3,621,377
METHOD AND DEVICE FOR INCREASING THE VOLTAGE OF DC ELECTRICITY
James Lim, 801 McKinley Ave., Oakland, Calif.
Filed Nov. 28, 1969, Ser. No. 880,621
Int. Cl. G05f 1/50
U.S. Cl. 323—93 6 Claims



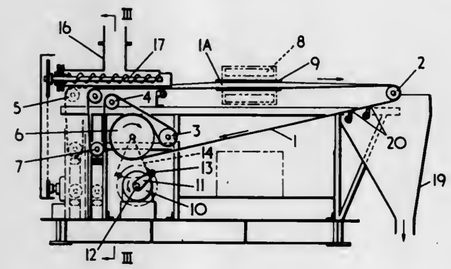
A pair of opposed spaced electrodes and dielectric medium between the electrodes, and means for changing the dielectric constant of the dielectric medium so as to vary the electrical capacitance of the electrodes with the changing of the dielectric constant. The electrodes are charged when the dielectric constant of the dielectric medium is high and discharged when the dielectric constant of the dielectric medium is low. The discharge voltage is increased by a factor proportional to the ratio of the capacitance during charging and the capacitance during discharging.

3,621,378
SAMPLE-THERMOSTATTING DEVICE FOR RADIO-FREQUENCY SPECTROMETERS NOTABLY NMR SPECTROMETERS
Jury Lvovich Kleiman, ul. Fontanka, 126, kv. 25; Nikolai Viktorovich Morkovin, Kiasnoputilovs Kaya, ul. 53, kv. 43, and Nikolai Ilich Kornilov, Nevsky prospekt, 160, kv. 16, all of, Leningrad, U.S.S.R.
Filed Apr. 25, 1969, Ser. No. 819,320
Claims priority, application U.S.S.R., May 13, 1968, 1239324
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 2 Claims



A device for thermostating samples in radio-frequency spectrometers including a circuit for comparing voltages corresponding to the preset temperature of thermostatting and the actual temperature of the sample. The comparison circuit produces an error signal proportional to the detected temperature difference which is processed by an electronic controller including a follow-up loop. The follow-up loop is provided with a potentiometer, an amplifier and a motor so interconnected that high accuracy is ensured in controlling the temperature of sample being thermostatted.

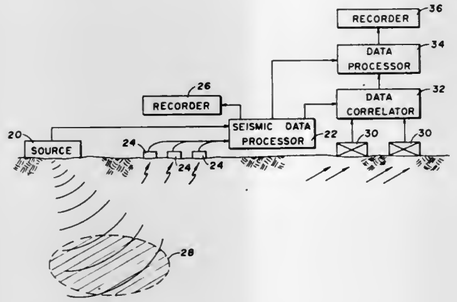
3,621,379
INTERMITTENTLY MOVING CONVEYOR APPARATUS FOR DETERMINING THE MOISTURE CONTENT OF SUBSTANCES THEREON
Edward Watson, South Hayling; Dennis M. Wilkins, Purley, and Ronald L. Johnson, New Malden, all of England, assignors to Coal Industry (Patents) Limited, London, England
Filed May 7, 1969, Ser. No. 822,605
Claims priority, application Great Britain, May 8, 1968, 21,802/68
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 5 Claims



An apparatus is disclosed in which the moisture content of a substance, whether in the form of a divided solid or a compact body, can be determined. A nuclear resonance spectrometer is used to determine the moisture content and a drive mechanism feeds a conveyor carrying the substance through the spectrometer intermittently. The conveyor is made of a water nonabsorbing material having a low

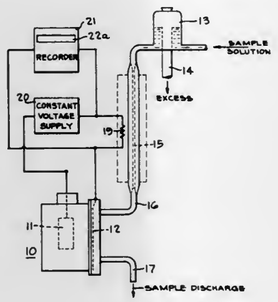
hydrogen content. The conveyor is subject to a scraping and drying action after the discharge of substance from the conveyor.

3,621,380
METHOD AND APPARATUS FOR SEISMIC-MAGNETIC PROSPECTING
Carl A. Barlow, Jr., Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 2, 1969, Ser. No. 788,409
Int. Cl. G01v 3/00, 11/00
U.S. Cl. 324—1 9 Claims



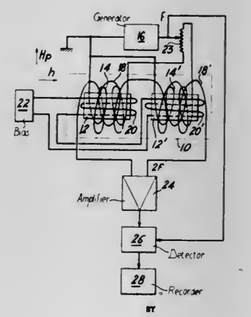
Seismic disturbances are impinged upon underground magnetic bodies to cause time varying changes in the magnetic field of the bodies. These time varying changes are sensed to provide indications of the magnetization and depth of the bodies. Seismic reflections from the seismic disturbances are also sensed and recorded, with the time varying changes processed in conjunction with the seismic reflections to eliminate noise and otherwise enhance the magnetic data.

3,621,381
COULOMETRIC SYSTEM HAVING COMPENSATION FOR TEMPERATURE INDUCED VISCOSITY CHANGES
Edgar L. Eckfeldt, Ambler, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.
Filed Oct. 16, 1968, Ser. No. 797,715
Int. Cl. G01n 27/42; G01r 27/02
U.S. Cl. 324—30 B 9 Claims



Because of solution flow rate variations occurring as a result of changes in the temperature of the sample solution passed into coulometric measuring cells, continuous coulometric systems of the prior art require use of a metering pump to maintain solution flow rate constant so as to permit accurate solution constituent concentration measurements. The invention permits accurate, continuous concentration measurements to be made coulometrically, independent of any flow rate variations caused by sample solution temperature changes. This is achieved through the use of a device (such as, for example, a thermistor) responsive to the coulometric current, which device develops an output varying with the changes in the concentration of the constituent to be measured and invariant with changes in the flow impedance of the sample solution caused by changes in its temperature.

3,621,382
ANISTROPIC THIN FERROMAGNETIC FILM MAGNETOMETER
Jean-Yves Valet, 5 Rue General Mignot, 38 Seyssinet, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Oct. 7, 1969, Ser. No. 864,307
Claims priority, application France, Oct. 10, 1968, 169,489
Int. Cl. G01r 33/02
U.S. Cl. 324—43 13 Claims

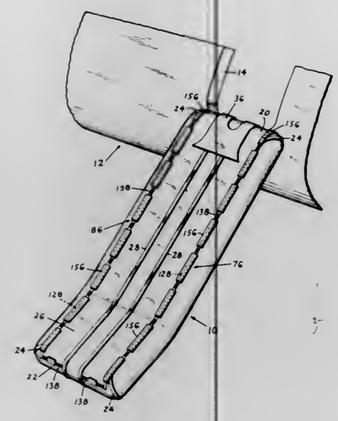


A thin bistable ferromagnetic film of the inverted type (i.e. for which the coercive forces H_r and H_{rt} are smaller than the anisotropy field H_k) is used as sensor and is associated with a pumping coil which submits the film to an alternating field (frequency f) along the easy axis and with a detection coil wound around the easy axis. A steady biasing field is applied along the hard axis, at least if the thin film is a flat strip. The value of the field component along the easy axis is deduced from the time difference between successive reversals of the magnetic vector in the strip from the amplitude of the harmonic $2f$ of the signal in the detection coil.
The magnetometer makes it possible to detect fields as low as 0.1 γ since reversal of the magnetic vector in the film is made without wall movement and consequently without Barkhausen noises.

3,621,383
LIGHTING SYSTEM FOR FOLDED INFLATABLE ESCAPE SLIDES WITH MEANS FOR TESTING SYSTEM WITH SLIDE IN FOLDED CONDITION
David H. Rush, Belle Harbor, N.Y., and Wayne E. Williams, Miami, Fla., assignors to Eastern Air Lines Inc., New York, N.Y.
Filed June 2, 1970, Ser. No. 42,840
Int. Cl. G01r 31/02; F21v 33/00
U.S. Cl. 324—51 1 Claim

Emergency lighting system for escape slides for vehicles, primarily aircraft, comprising lighting harnesses with a plurality of electric lighting units, a battery pack, switch mechanism automatically operated to energize lights upon deployment of slide, the lighting harnesses being prefabricated in one standard size adaptable for application to slides of widely varying sizes and configurations and a testing device for determining operative condition of switch, lights and batteries without deploying slide. Slide is normally carried in aircraft in tightly folded condition with battery pack and lighting units inaccessible. Testing device includes jack extended to accessible position and testing instrument with cooperating plug. Instrument may be carried to any

folded slide on an aircraft or a fleet of aircraft for periodic checking. Instrument indicates by deviation from a predeter-



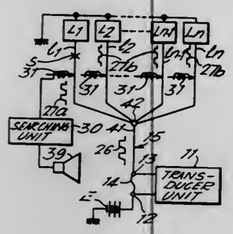
mined standard reading when defects exist in batteries, wiring, bulbs or switch.

3,621,384

APPARATUS FOR LOCATING A SHORT CIRCUIT IN A DC WIRING

Kazuo Yamada, 14-20 Nichome, Benten, Minato-ku, Osaka, Japan

Filed July 16, 1969, Ser. No. 842,221
Claims priority, application Japan, July 19, 1968, 43/51478
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **3 Claims**



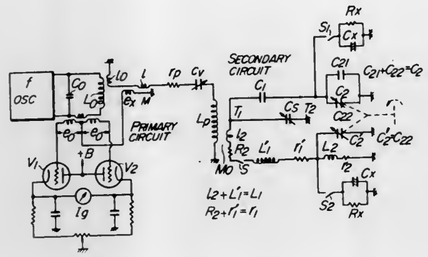
Apparatus for locating a short circuit in the wiring of a DC circuit having current-intermitting means connected in parallel with a power supply fuse of the circuit for intermittently conducting a current from a power source of the circuit to the wiring when the fuse is blown. A searching unit includes a search coil for detecting an alternating field formed around a portion of the wiring through which the intermitting current flows. The current-intermitting means includes a voltage detector for generating output signals when the voltage applied to the opposite terminals of the current-intermitting means due to blowing of the fuse reaches such a high voltage as applied if any point of the wiring is short circuited. The current-intermitting means also includes means for supplying periodic pulses into the wiring by intermittently connecting the power source to the wiring when the means for supplying periodic pulses receives actuate signals from the preselected voltage detector.

3,621,385

METER FOR MEASURING CAPACITANCES OF EXTREMELY HIGH LOSS DIELECTRIC MATERIALS

Bunjiro Ichijo, Hamamatsu-shi, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan

Filed Nov. 14, 1969, Ser. No. 876,797
Claims priority, application Japan, Nov. 18, 1968, 43/84356
Int. Cl. G01n *11/52*
U.S. Cl. 324—60 R **1 Claim**



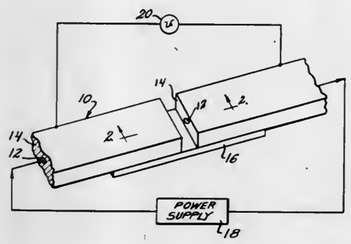
A capacitance meter for measuring capacitance of extremely high loss dielectric materials comprises a series resonant circuit which includes two parallel circuits. One of the parallel circuits comprises a fixed capacitor, a first portion of a variable gang capacitor, and a first test sample; and the other parallel circuit comprises an inductance, a second portion of the variable gang capacitor, and a second test sample identical to the first sample. An accurate measurement of the capacitance of the material in the samples, irrespective of values of resistance components thereof, is effected through a substitution method by adjusting the variable gang capacitor.

3,621,386

METHOD OF DETERMINING BONDING IN A COMPOSITE SUPERCONDUCTOR

John R. Purcell, Downers Grove, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 16, 1969, Ser. No. 885,576
Int. Cl. G01r *27/14*
U.S. Cl. 324—64 **6 Claims**



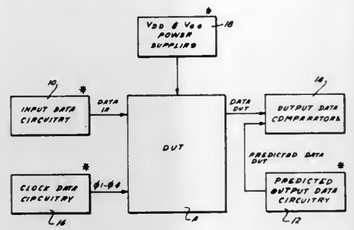
Bond quality between a superconductor and a coating thereabout of normal material having high electrical conductivity at superconducting temperatures is measured by interrupting the electrical continuity of the superconductor and cooling the superconductor and coating to a temperature to cause the superconductor to assume a superconducting state. A current of known value is applied to the superconductor and the voltage drop along the coating on both sides of the electrical discontinuity is measured to provide a measure of bond quality.

3,621,387

COMPUTER-CONTROLLED TESTER FOR INTEGRATED CIRCUIT DEVICES

Kent F. Smith, and Kay D. Smith, both of Salt Lake City, Utah, assignors to General Instrument Corporation, Newark, N.J.

Filed Aug. 21, 1969, Ser. No. 851,903
Int. Cl. G01r *31/00*
U.S. Cl. 324—73 R **19 Claims**



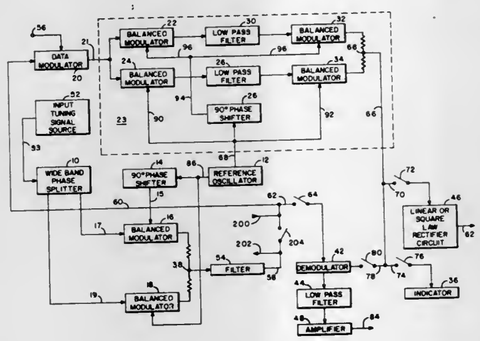
A test apparatus produces a simulated input signal for a device under test and a predicted output signal which that device would correctly product at its output in response to that simulated input. The device output signal and the predicted output signal are compared for logic content, and the amplitude of the device output signal is compared against predetermined reference levels. A separate error signal is produced upon the occurrence of an error in either of these properties in the device output signal.
The input and predicted output signals are initially stored into the apparatus from an external computer which also establishes the appropriate clock signals and power supply signals for the device under test. In the embodiment herein shown, the input and output data is preloaded in shift registers and means are provided to sequentially transfer the simulated input and predicted output signals in a time controlled manner from these shift registers to the device and to the output signal comparator.

3,621,388

ELECTRONIC WAVE ANALYZER FOR DETERMINING THE FREQUENCY AND AMPLITUDE OF COMPONENTS IN A COMPLEX WAVEFORM

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation, San Diego, Calif.

Filed Nov. 4, 1968, Ser. No. 773,156
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 **15 Claims**



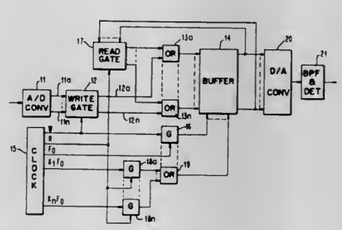
A wave analyzer capable of determining the amplitudes and phases of frequency components in a complex waveform. he selection of a frequency component is determined by the frequency of an external "tuning" signal source. The selectivity or ability to resolve frequency components close to each other is controlled by a manual or automatic bandwidth switching circuit or a voltage controlled continuously variable bandwidth circuit.

3,621,389

FREQUENCY DOMAIN ANALYZER USING VARIABLE-RATE TIME COMPRESSION

Jack T. Murray, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1969, Ser. No. 837,292
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 R **2 Claims**



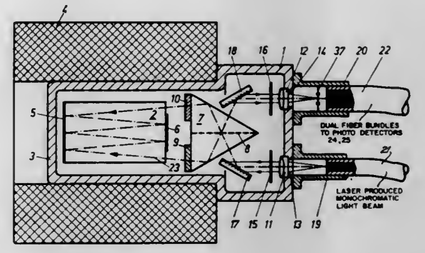
Contiguous frequency domain analysis of signals is achieved by sampling contiguous epochs of the signal; converting the sampled signal to a digital representation; storing the digital signal in a buffer; reading the stored digital signal a number of times at different reading rates to effect multiple frequency multiplications; converting the different digital signals red read analog equivalents; and passing the different analog signals through a fixed band-pass filter detector to effect an accelerated analysis of the frequency shifted signal.

3,621,390

ARRANGEMENT FOR MEASURING A TIME VARIABLE MAGNETIC FIELD USING THE FARADAY EFFECT

Friedrick K. Von Willisen, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

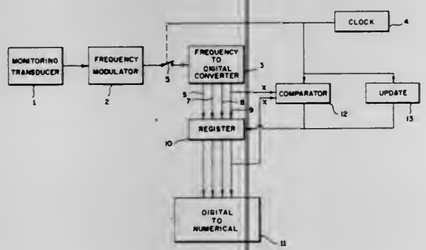
Filed Apr. 22, 1969, Ser. No. 818,290
Claims priority, application Switzerland, Apr. 23, 1968, 60005/68
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **6 Claims**



An arrangement for measuring a time-variable magnetic field in order to measure, for example, the current flowing in a high-voltage line, utilizes a measuring head subjected to a magnetic field proportional to the line current which encloses a magneto-optical element in the form of a Faraday cell that functions in conjunction with an optical divider in the form of a Koesters prism to form a two-beam interferometer. A laser produced monochromatic light beam fed to the measuring head over an optical fiber bundle passes through a polarizing filter onto the divider plane of the Koesters prism where it is split into two partial beams. One beam passes through a first quarter-wave plate in which it is circularly polarized in a dextrorotary sense, thence through

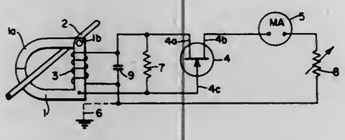
the Faraday cell where it undergoes multiple reflection in the magnetic field and thence through a second quarter-wave plate back to the divider plane of the Koesters prism. The other beam passes through the same path but in the opposite direction, passing first through the second quarter-wave plate where it is polarized in a levorotary sense, and ultimately arriving back at the divider plane. The two returning beams combine in the divider plane of the Koesters prism to form an outgoing beam consisting of two 90° phase-displaced components modulated in intensity as a function of the variation in the magnetic field. The two phase-shifted beam components are passed respectively through optical fiber bundles to a processing circuit where they are converted into correspondingly modulated electrical signal components which are then demodulated to a final output electrical signal constituting a measure of the current in the high-voltage line.

3,621,391
MEANS FOR INHIBITING FLUTTER IN A NUMERICAL DISPLAY
David E. Miller, Beverly, Mass., assignor to General Electric Company
Filed Aug. 21, 1969, Ser. No. 852,050
Int. Cl. G01r *17/06, 19/26*
U.S. Cl. 324—99 D **6 Claims**



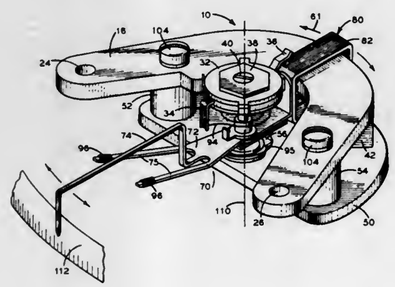
Rapid oscillation between consecutive numbers displayed by a numerical display device is prevented by comparing an incoming digitally coded signal with one representing the numeral currently registered by the device. If the incoming signal corresponds to a numeral consecutive to the one being displayed, the system inhibits the registration of the new signal by the device. At predetermined intervals the comparison system is bypassed and the device is "updated" by allowing registration of new signals, regardless of their relationship to prior signals.

3,621,392
CONNECTIONLESS ELECTRICAL METER FOR MEASURING VOLTAGE OR POWER FACTOR
Leonard N. Liebermann, La Jolla, and Stanley H. Lai, San Diego, both of Calif., assignors to Thermal Industries of Florida, Inc., Miami, Fla.
Continuation-in-part of application Ser. No. 774,113, Nov. 7, 1968. This application Jan. 22, 1970, Ser. No. 4,819
Int. Cl. G01r *7/00, 21/00*
U.S. Cl. 324—142 **22 Claims**



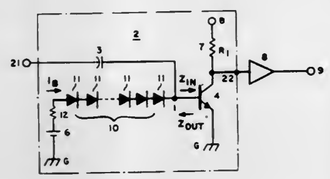
A connectionless electrical meter is described which is capable of measuring the power carried by a conductor at a voltage with respect to ground, or the power factor thereof, without the necessity for any ohmic connection between the meter and the circuit being measured. Conductor current is measured by magnetic induction with an openable transformer core which surrounds the conductor. A signal in-phase with the voltage is obtained by electrostatic induction. In certain embodiments of the invention, a unique voltage probe is used for obtaining a signal proportional to the conductor voltage. Apparatus described herein employing such voltage probe is additionally useful for measurement of voltage independently of power or power factor.

3,621,393
COMPACT MOVING COIL METER MOVEMENT
Louis W. Pignolet, Chatham, N.J., assignor to Weston Instruments, Inc., Newark, N.J.
Continuation of application Ser. No. 517,233, Dec. 29, 1965, now abandoned. This application May 29, 1969, Ser. No. 831,263
Int. Cl. G01r *1/16, 1/20*
U.S. Cl. 324—150 **3 Claims**



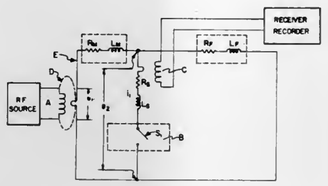
Meter movement having a single U-shaped plate with an arcuate permanent magnet secured to one surface thereof. An inward extension of the plate forms one pivotal support for a moving coil and pointer assembly. The coil surrounds the magnet and the portion of the plate adjacent the magnet and is freely movable transversely of the magnet as the moving coil assembly rotates. The second pivotal support and the remainder of the magnetic circuit is provided by a second plate which is mounted in parallel spaced relationship to the first plate, the magnet being between the two plates. The second plate is spaced from the magnet to allow clearance for one leg of the coil.

3,621,394
TRANSISTOR NOISE MEASURING CIRCUIT
Knud Knudsen, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 9, 1970, Ser. No. 1,582
Claims priority, application Japan, Jan. 24, 1969, 44/04814
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 T **1 Claim**



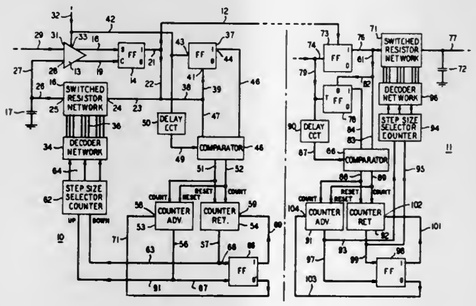
A plurality of serially connected, forward-biased diodes and a resistor supply base current from a voltage supply to a transistor under test. Bias circuit impedance is thus maintained high so that the transistor's output noise is primarily due to the transistor's equivalent input current noise and not to the transistor's equivalent input voltage noise nor to the noise generated in the bias network.

3,621,395
A METHOD AND APPARATUS FOR DETERMINING THE CUTTING TIME OF A MACHINE TOOL
Harold L. Brown, 109 Westline Road, Azle, Tex., and LeRoy M. Vaught, Rte. 1, Box 529J, Burleson, Tex.
Continuation-in-part of application Ser. No. 594,806, Nov. 16, 1966, now abandoned. This application July 22, 1969, Ser. No. 843,627
Int. Cl. G04f *9/00*
U.S. Cl. 324—181 **7 Claims**



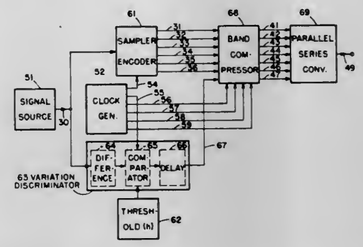
Means for accurately determining actual cutting time of a machine tool through inducing a radiofrequency voltage directly into the machine frame, then detecting amplitude modulation of the current flowing in the machine which amplitude modulations result from rapid and continuous current changes caused by the make and break of the cutter blades and the workpiece. These amplitude-modulated radiofrequency signals are converted to pulses which are used to actuate a timing or recording means.

3,621,396
DELTA MODULATION INFORMATION TRANSMISSION SYSTEM
Thomas Henry Daugherty, Oakhurst, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.
Filed May 8, 1970, Ser. No. 035,761
Int. Cl. Ho4b *1/00*
U.S. Cl. 325—38 B **6 Claims**



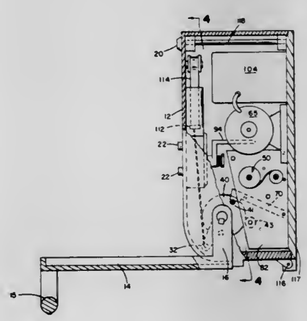
A delta-modulation system is disclosed in which an analog value, which each digit in a delta-modulated output signal represents, is varied in response to predetermined patterns of the delta-modulated output signal. The system is configured to allow the step size to alternate easily between two adjacent step sizes but imposes stricter requirements before further step-size changes are made. The easy alternation between adjacent step sizes improves system fidelity while the stricter requirements for further step-size changes have a filtering effect by preventing large changes in step size due to short bursts of noise or unwanted signal.

3,621,397
PCM TRANSMISSION SYSTEM
Masayoshi Murotani, Kanagawa; Ryoichi Tanaka, Tokyo; Keiji Tachikawa, Chiba, and Tadao Shimamura, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Nippon Electric Company, Limited, Tokyo, Japan
Filed July 22, 1969, Ser. No. 843,583
Claims priority, application Japan, July 22, 1968, 43/52062
Int. Cl. H03k *13/22*; **H04b** *1/66*
U.S. Cl. 325—38 **14 Claims**



A transmission system for a television signal represented by a pulse code modulation signal compressed in bandwidth, comprising a transmitter for dividing the television signal into a preselected number of samples indicated by a corresponding number of first sets of parallel pulse code modulation pulses which are converted into a preselected number of second sets of parallel pulse code modulation pulses containing "O" and "1" logic signals to indicate slow and rapid changes in the television signal magnitude at successive even-number signal samples; the preselected second number being smaller than the preselected first number; the second parallel pulse sets being transmitted as series pulse code modulation pulses; and a receiver for converting the received series pulses into a third set of parallel pulse code modulation pulses including the "0" and "1" logic signals and corresponding to the transmitter second pulse sets, and translating the receiver third pulse sets into a reproduction of the transmitter television signal.

3,621,398
EMERGENCY TRANSMITTER POWER SUPPLY
John George Willia, Wakefield, Mass., assignor to Solid State Technology, Inc., Saugus, Mass.
Filed Oct. 30, 1969, Ser. No. 872,576
Int. Cl. H04b *1/02*
U.S. Cl. 325—119 **7 Claims**



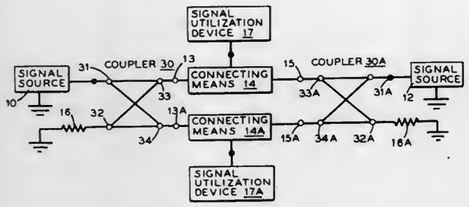
An enclosed batteryless remote wireless electrical signalling system with a radio transmitter having a plurality of selectable transmission modes and an electromechanical generator driven by a spring mounted within the enclosure. Manually operable means are provided for selecting a predetermined one of the transmission modes and operating

the generator to energize the transmitter means for a substantial period of time for transmission of the selected mode. Such means includes a manual winding lever overlying a portion of the front wall of the enclosure with its lower end pivoted adjacent the bottom of the front wall and with its free upper end having a handle. The lever is manually swingable downwardly and away from said front wall throughout an arcuate path of about 90° generally perpendicular to said front wall to wind the spring. The manually operable means also includes manual actuating means having a plurality of pushbuttons mounted on the enclosure front wall behind and normally concealed by the overlying winding lever for exposure by the downward arcuate movement of the lever, each button being connected both to the transmitter to select one of the transmission modes as indicated by indicia on the buttons, and also to the spring and generator for initiating driving of the generator upon actuation of the selected button to transmit the selected transmission mode.

3,621,399
SYNCHRONIZATION SYSTEM FOR A SYNCHRONOUS RECEIVER
Gerald Rabow, Nutley, N.J., and Albert M. Klein, Chatsworth, Calif., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Oct. 3, 1968, Ser. No. 764,800
Int. Cl. H04b 1/16; H03k 1/9; H04l 1/7
U.S. Cl. 325—321 **10 Claims**

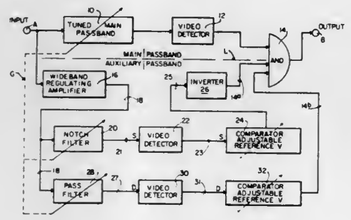
A receiver mater oscillator is synchronized to a received signal including a carrier signal predeterminately coded at a subcarrier signal rate and the subcarrier by generating a local carrier signal coded according to the predetermined code and a local subcarrier signal. The local coded carrier signal synchronously detects the received signal. When the phase difference of the received and local carrier signals is outside a given range of phase differences, the drive signal frequency cooperating to generate the local coded carrier signal is varied until the phase difference is within the given range at which time the local subcarrier signal becomes the drive signal. During this phase adjustment, a phase loop adjusts the phase of the output signal of the master oscillator. When the phase difference is with the given range, a phase detector compares the phase of the received subcarrier signal derived from the loop with the local subcarrier signal and a decision circuit coupled thereto provides an output signal for control of a switching arrangement in the loop to open the loop and apply a step voltage of proper polarity to the oscillator for achievement of the desired synchronization.

3,621,400
ALTERNATING CURRENT SIGNAL-COMBINING APPARATUS
Leonard J. Paciorek, North Syracuse, and Carl W. Gerst, Skaneateles, both of N.Y., assignors to Anaren Microwave, Incorporated, Syracuse, N.Y.
Filed Apr. 17, 1969, Ser. No. 816,986
Int. Cl. H04b 1/26
U.S. Cl. 325—446 **14 Claims**



A plurality of 3 db. couplers interconnect two signal sources to a signal utilization device. By virtue of the properties of the couplers and their interconnections there is achieved good signal isolation and low voltage standing wave ratios. Several examples of signal heterodyning devices such as mixers and modulators are shown as well as linear signal-combining devices.

3,621,401
FREQUENCY SPECTRUM RESPONSIVE NOISE REDUCTION SYSTEM
Walter J. Young, Jr., Tonawanda, N.Y., assignor to Sierra Research Corporation
Filed Sept. 23, 1969, Ser. No. 860,290
Int. Cl. H04b 1/10
U.S. Cl. 325—473 **7 Claims**

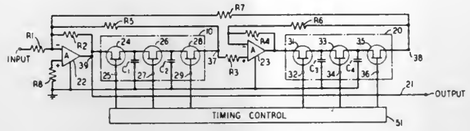


A system for accepting signals of a desired frequency as well as undesired signals of other frequencies together therewith, separately examining the desired and undesired frequency components to determine their respective intensities and using the results of both determinations to control gating means in the main signal transferring path to pass signals whenever the respective levels of both the desired and the undesired signal components simultaneously fall within satisfactory ranges. These determination are made by regulating a composite of both signal components to a constant level, separating out both components, and then comparing the levels of each with preadjusted reference threshold levels to derive two simultaneous gate controlling signals.

3,621,402
SAMPLED DATA FILTER
William Allen Gardner, Sunderland, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 3, 1970, Ser. No. 60,558
Int. Cl. H03k 23/00
U.S. Cl. 328—37 **9 Claims**

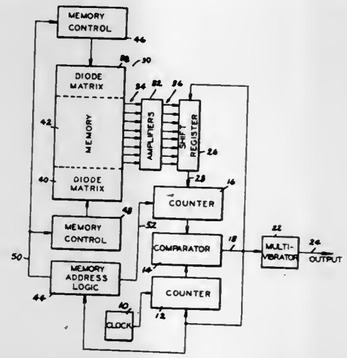
A sampled data filter is disclosed comprising a plurality of amplifiers interconnected by delay units and feedback resistors. Each delay unit comprises the cascade connection of

actuable switches and storage capacitors. The values of the capacitors and feedback resistors are preselected to obtain a



desired transfer function and to nullify the effect of residual capacitor charge.

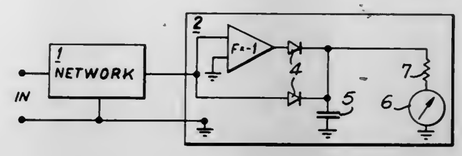
3,621,403
DIGITAL FREQUENCY MODULATED SWEEP GENERATOR
Merle E. Seiy, Fort Wayne, Ind., assignor to The Magnovox Company, Fort Wayne, Ind.
Filed Mar. 28, 1969, Ser. No. 811,286
Int. Cl. H03k 21/36
U.S. Cl. 328—61 **14 Claims**



The invention relates to a frequency modulated sweep generator in which a bistable multivibrator supplies a pulse train at its output. The multivibrator is driven by pulses from a comparator which compares the count on a preset counter with the count on a clock driven counter. Each pulse from the comparator resets the clock driven counter to zero while a memory under the control of an address circuit feeds digital information to the preset counter to vary the count therein to effect frequency modulation of the output of the multivibrator. The address circuit causes the information from the memory to move to a shift register from which it is fed to the preset counter. Pulses from the comparator control the shift register and the address circuit.

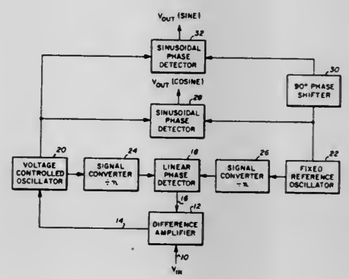
3,621,404
SIGNAL LEVEL CONTROL INSTRUMENT FOR SOUND TRANSMISSION SYSTEMS
Sven Hakan Sjogren, Civilingenjar Hakan Sjogren 23, Dolvagen 183, 40, Taby, Swden
Filed Sept. 19, 1968, Ser. No. 760,953
Claims priority, application Sweden, Sept. 20, 1967, 12940/67
Int. Cl. G01r 23/16
U.S. Cl. 328—162 **1 Claim**

This disclosure relates to signal level control instruments for sound transmission systems comprising a signal top value measuring instrument for indicating a maximal reference volume for a high quality sound signal transmission in the system without exceeding a desired maximum distortion of the signal and, in particular, transient signals of short duration. The invention teaches the use in combination with a signal top value measuring instrument of a weighing network inserted between the top value measuring instrument and the transmission chain, the output signal of which is to be measured, said weighing network having an attenuation function being essentially an image function of a function defining the maximum input signal level versus frequency for a predetermined relative intermodulation distortion. This function is



obtainable for a particular signal transmission chain by aid of conventional intermodulation measuring instruments in accordance with CCIF standard, for instance, and is in the following referred to as tolerance characteristic of the transmission chain.

3,621,405
SINUSOIDAL CONVERTER
Walter N. Carlsen, Palo Alto, Calif., assignor to Itek Corporation, Lexington, Mass.
Filed May 28, 1968, Ser. No. 732,738
Int. Cl. G01r 19/14
U.S. Cl. 328—133 **11 Claims**

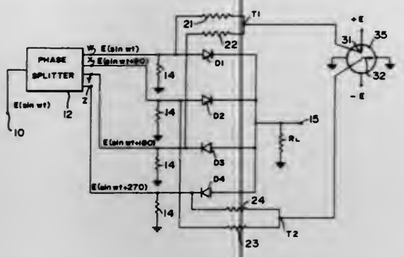


A sinusoidal converter for converting an input voltage into a voltage whose magnitude varies as the sine or cosine of a phase shift caused by the input voltage. A first oscillator is caused to shift the phase of its output signal with relation to that of a second reference oscillator by an amount proportional to the magnitude of the input voltage. The outputs of the first and second oscillators are then applied to phase detection means having sinusoidal output characteristics, and output signals are produced which correspond to the sine and cosine of a phase shift caused by the input voltage.

3,621,406
CONTINUOUSLY VARIABLE VOLTAGE-CONTROLLED PHASE SHIFTER
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Carl E. Johns, Sylmar, Calif.
Filed Dec. 9, 1969, Ser. No. 883,528
Int. Cl. H03b 3/04
U.S. Cl. 328—155 **8 Claims**

A continuously variable phase shifter including a phase splitter which provides four quadrature signals of an input signal, a summing resistor and a phase control diode matrix between the phase splitter and the summing resistor. The matrix includes a separate diode in the path of each of said four signals. The four diodes are connected to two terminals at which DC control voltages are applied to control the states of conduction of the four diodes. The diodes are controlled

so that only one diode is fully forward biased when 0°, 90°, 180° or 270° phase shift is desired while two of the four

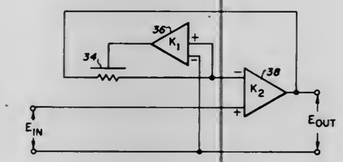


diodes are partially forward biased when a phase shift between any two of the above four values is desired.

3,621,407
MULTILOOP RC ACTIVE FILTER APPARATUS HAVING LOW-PARAMETER SENSITIVITY WITH LOW-AMPLIFIER GAIN

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; William J. Kerwin, Tucson, Ariz., and Charles V. Shaffer, Gainesville, Fla.

Filed Feb. 27, 1970, Ser. No. 15,024
Int. Cl. H03b *1/04*
U.S. Cl. 328—167 10 Claims

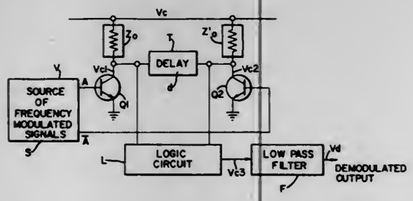


A multiloop RC active filter network having low parameter sensitivity with low amplifier gain comprising at least two passive components and two voltage amplifiers one of which has a positive gain K_1 which is less than unity and the other providing a negative gain of magnitude of K_2 in the outer feedback loop. These circuits can provide any Q and can be made to oscillate with K_1 and K_2 within certain given ranges. Monolithic integrated circuit thick or thin film techniques are used in the preferred embodiment to provide the passive RC components.

3,621,408
FM DEMODULATOR

Paul G. Kennedy, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,569
Int. Cl. H03d *3/14*
U.S. Cl. 329—103 9 Claims

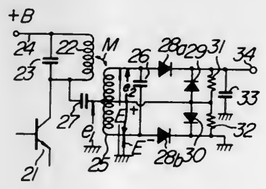


A frequency demodulator for demodulating FM signals in direct and complementary form wherein a pair of switching devices, such as transistors ro similar devices are switched to opposite conductivity states in response to the FM signals and wherein a delay line is connected between output terminals of the devices so that when one of the devices is switched to its nonconductive state a voltage is propagated from the output terminal through the delay line and reflected out of phase by the substantially zero impedance of the conductive device back through the delay line, so that, after a time delay of substantially twice the delay of the delay line, the voltage at the output terminal of the nonconductive device is substantially zero. The output voltage generated at the output electrode of each of the devices is thus a series of pulses at the frequency of the FM signals and having a constant pulse width of substantially twice the time delay of the delay line.

3,621,409
FREQUENCY DISCRIMINATOR CIRCUIT HAVING A NARROW DETECTION BAND

Kazutoshi Segawa, Ibaragi-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 27, 1969, Ser. No. 869,498
Int. Cl. H03d *3/08*
U.S. Cl. 329—110 3 Claims

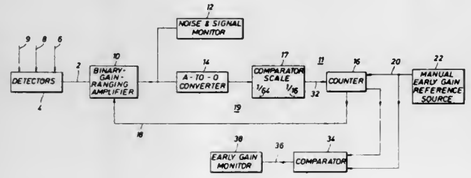


A frequency discriminator circuit comprising means for providing a signal of which the phase is varied with the frequency of an input signal, means for generating two signals by the use of vectorial sums of said signal having the phase thereof varied and said input signal, and means for comparing the amplitude of each of said two vectorial signals and that of a reference signal which is proportional to the amplitude of said input signal and detecting that one of said two signals which has a greater amplitude, wherein the demodulation and frequency detection of an FM signal having a small frequency deviation as compared with the center frequency are limited so as to be effected only in the required frequency band, thus preventing noise disturbance outside the required band from occurring in the output.

3,621,410
BINARY AMPLIFIER GAIN CONTROL

Algernon S. Badger, and Jerrell F. Moffitt, both of Houston, Tex., assignors to Geo Space Corporation

Filed Sept. 11, 1969, Ser. No. 857,088
Int. Cl. H03g *3/22*
U.S. Cl. 330—2 6 Claims

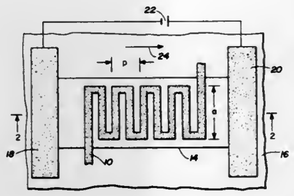


This invention relates to multichannel, seimic-data-acquisition systems and more particularly to such systems which include binary-gain-ranging amplifiers. The gain of the amplifier is allowed to range within prescribed limits. The actual grain of the amplifier is then compared with a preset early gain. The result of the comparison is displayed on a suitable monitor to alert the operator of the existence of noise or of abnormal conditions in the channel.

3,621,411
TRAVELING HIGH-GAIN AMPLIFIER

William R. Wisseman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 13, 1969, Ser. No. 876,485
Int. Cl. H03f *3/04*
U.S. Cl. 330—5 15 Claims

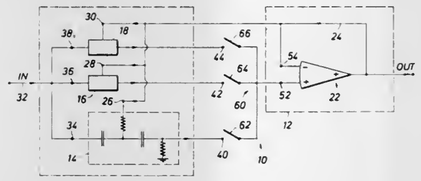


Power amplification of a radiofrequency signal is achieved in a two-valley semiconductor material such a gallium arsenide (GaAs). To achieve amplification of the radiofrequency signal, a slow wave circuit, such as a meandering line is required to slow the propagating velocity of an electromagnetic wave in the two-valley semiconductor material below the velocity of the charge carriers. The slow wave circuit may be formed by printed circuit techniques on the surface of the semiconductor wafer. For high-gain amplification or self-oscillation, a DC or pulse source generates an electric field in the semiconductor so that the carriers drift in the direction of the radiofrequency wave propagation. The magnitude of the electric field applied to the semiconductor material is adjusted such that the rate of change of conductivity vanishes.

3,621,412
METHOD AND APPARATUS FOR SELECTING ACTIVE FILTER SYSTEMS

Richard W. Keeling, deceased, late of Houston (by Katie Vee Keeling, executrix); Cecil R. Gilbreath, Houston, and Virgil O. Stamps, Houston, all of Tex., assignors to Geo Space Corporation

Filed Aug. 25, 1969, Ser. No. 870,589
Int. Cl. H03f *1/36*
U.S. Cl. 330—107 4 Claims

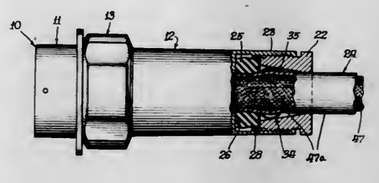


This invention relates to a method and apparatus for seismic signal processing through active filter systems adapted to transmit incoming seismic signals to a recorder in a manner as to attenuate undesired noise and frequencies outside of the band of interest. Each active filter system comprises an active network and a plurality of passive filter networks. Each passive filter network can be connected to the input circuit of the active network independently, or in parallel combination with one or more passive filter networks. Each established connection between a single passive filter network and the active network, or between a parallel combination of passive filter networks and the active network, provides a distinct cutoff frequency without deleteriously affecting the filter's frequency response.

3,621,413
STRAIN RELIEF FOR ELECTRICAL CONNECTORS

Wolfgang Hilbert, Holzkirchen, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 19, 1970, Ser. No. 4,002
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 3 Claims

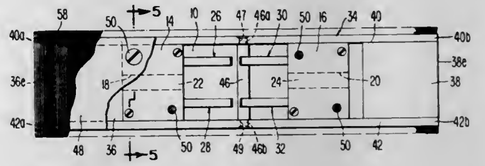


Strain relief for electrical connectors in which a tubular member is moved into one end portion of a shell to force compressible means into tight engagement with a cable. The compressible means includes a C-shaped metal member of curved cross-sectional shape providing a rounded convex outer surface for wedge engagement with a frustoconical inner surface of the tubular member and further includes an annular member of elastomeric material having an internal surface forced into pressure engagement with the cable when axially compressed between one end of the tubular member and an internal shoulder of the shell.

3,621,414
MULTIPOLE DOUBLE-THROW RELAY

Joseph W. Bird, Dauphin, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 4, 1970, Ser. No. 69,785
Int. Cl. H01h *9/20*
U.S. Cl. 335—174 11 Claims



An electromagnetic relay whose armature moves alternately in opposite directions in response to alternate signals of the same polarity similarly applied to the same input terminals of the relay coil.

ERRATA

For Classes 331—10 and 331—111 see:
Patent Nos. 3,621,450 and 3,621,469

For Classes 332—14 and 332—47 see:
Patent Nos. 3,621,472 and 3,621,474

For Classes 333—1 and 333—97 R see:
Patent Nos. 3,621,475 and 3,621,486

For Class 334—11 see:
Patent No. 3,621,487

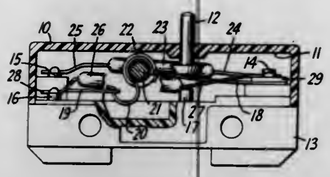
3,621,415
PRECISION REED-TYPE SNAP SWITCHES

Richard E. Bell, Princeton, Ind., assignor to AMF Incorporated

Filed June 18, 1970, Ser. No. 47,221
Int. Cl. H01h *5/18*
U.S. Cl. 335—205 11 Claims

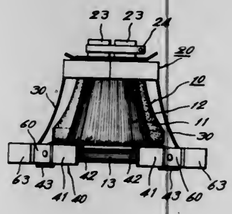
An improved precision-type snap switch with the same

package and operating characteristics as a conventional



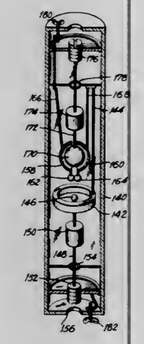
precision-type snap switch, and having magnetically actuated reed switches providing sealed contacts.

3,621,416
DEFLECTION YOKE
Koji Yabase, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1970, Ser. No. 30,549
Claims priority, application Japan, Apr. 24, 1969, 44/37988
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **3 Claims**



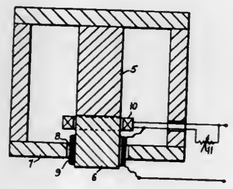
A deflection yoke wherein a resilient connecting arm is extended to an enlarged front portion of a horizontal deflection coil from opposite sides of a flange portion provided at the rear end, and insulating mount frames each to be mounted on the opposite sides of the horizontal deflection coil are provided at the extended end of the connecting arm, to which a rotating corrective magnet is secured.

3,621,417
MAGNETICALLY RESPONSIVE SWITCHING APPARATUS
Josef E. Halaby, Brooklyn, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,258
Int. Cl. H01h *51/28*
U.S. Cl. 335—205 **16 Claims**



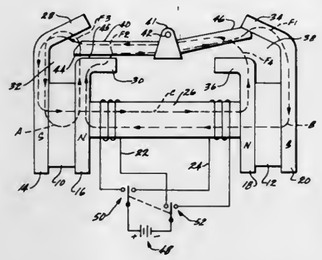
Magnetically responsive switches are provided which have contacts which are normally open or normally closed or sets of contacts which are respectively closed and open. In those switches having both the open and closed sets of contacts, provision is made for distinguishing between the presence of one controlling magnet or more than one. In the presence of one magnet, the set of contacts which is normally open is closed. The introduction of a second magnet will cause one or the other of the sets to open. Provision is made for adjustment of the responses to magnetic forces and to avoid the effects of residual magnetism.

3,621,418
TRANSDUCERS
Bernard Stuart Baker, Conventry, England, assignor to Courtaulds Limited, London, England
Filed Aug. 13, 1969, Ser. No. 849,773
Claims priority, application Great Britain, Aug. 26, 1968, 40,605/68
Int. Cl. H01f *27/42*
U.S. Cl. 335—222 **6 Claims**



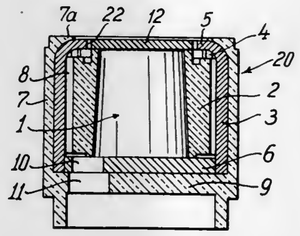
A transducer comprising an electrical conductor located in the field of a permanent magnet or an electromagnet, whereby, by passing a current through the conductor, force will be caused to act between the conductor and the magnet, the transducer including a further electrical conductor connected in a circuit with the first-mentioned conductor so as to carry a current related to the current through the first-mentioned conductor and such as to tend to nullify the effect of that current to alter the field of the magnet linking the first-mentioned conductor. A transducer element is also claimed.

3,621,419
POLARIZED LATCH RELAY
Andrew O. Adams, Inglewood, and Roman J. Capol, Norwalk, both of Calif., assignors to Leach Corporation, South Pasadena, Calif.
Filed Feb. 19, 1970, Ser. No. 12,592
Int. Cl. H01h *51/22*
U.S. Cl. 335—230 **10 Claims**



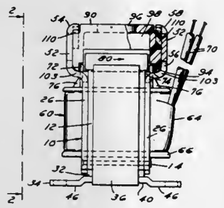
A polarized latch relay with an exceptionally strong holding characteristic in either latched condition. The relay comprises two permanent magnets, each between a respective pair of pole pieces; an armature pivotally supported apart from the permanent magnets and pole pieces with each of its ends disposed within a respective gap formed between extending end portions of each pair of pole pieces; and a core disposed between the permanent magnets and containing an electrically energizable coil wound thereon.

3,621,420
MAGNET SYSTEM FOR AN ELECTRODYNAMIC TRANSDUCER
Rudolf Gorike, and Wilhelm Kollesberger, both of Wien, Austria, assignors to AKG Akustische u. Kino-Gerate Gesellschaft mbH, Wien, Austria
Filed Jan. 12, 1970, Ser. No. 2,595
Claims priority, application Austria, Jan. 14, 1969, A 342/69
Int. Cl. H01f *7/00*
U.S. Cl. 335—231 **8 Claims**



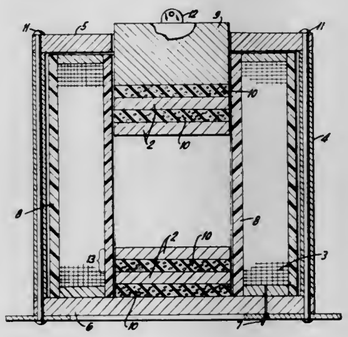
A magnet system for an electrodynamic transducer includes a magnetic core with a cover of a thermoplastic material thereon which includes a plurality of radially extending longitudinal ribs on its side face and studs which project from its end face and which bear against an inturned end wall of a magnetic cup. The ribs in turn bear against the sidewall of the cup. The cup is provided with an aperture to receive a pole plate which is attached to the magnetic core and which defines an airgap with the edge of the end wall of the cup which bounds the pole aperture in the cup. A baseplate is disposed over the opposite end of the core to retain the magnetic core in position within the cup. An external cover of thermoplastic material is then applied over the magnetic cup and the baseplate leaving the pole aperture in the end wall of the magnetic cup free. The cover is made of a plastic material which contracts to a greater degree than the metal, so that all of the metal parts are pressed firmly against each other by the external coating of plastic material. With the method of the invention, the external coating of thermoplastic material is applied so that the pole aperture is opened to permit the pole plate to be secured to the magnetic core and this is advantageously done for example, by means of an adhesive applied with the aid of a gap-forming tool.

3,621,421
SOLENOID HAVING IMPROVED BACKSTOP
Louis R. Conrath, Huntington Woods, Mich., assignor to Detroit Coil Company, Ferndale, Mich.
Continuation-in-part of application Ser. No. 726,291, May 3, 1968. This application Dec. 9, 1969, Ser. No. 883,509
Int. Cl. H01f *7/12*
U.S. Cl. 335—257 **18 Claims**



An industrial type AC solenoid comprising a stator having its laminations and sideplates riveted together as an integral assembly, and provided with a backstop member which absorbs the impact of the return stroke of the plunger, and which is readily connected in interlocking engagement with the sideplates of the stator, after the coil and plunger are inserted, by sliding the backstop between the sideplates.

3,621,422
MAGNETIC ACTUATOR
James C. Macy, North Lavallette, N.J., assignor to Thrust Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 663,792, Aug. 28, 1967, which is a continuation-in-part of application Ser. No. 486,454, Sept. 10, 1965, now Patent No. 3,376,528, Continuation-in-part of Ser. No. 715,387, Mar. 22, 1968, Pat. No. 3,467,927, continuation-in-part of Ser. No. 486,454, Sept. 10, 1965, Pat. No. 3,376,528, continuation-in-part of 663,792, Aug. 28, 1967. This application Dec. 19, 1969, Ser. No. 886,451
Int. Cl. H01f *7/08*
U.S. Cl. 335—264 **9 Claims**

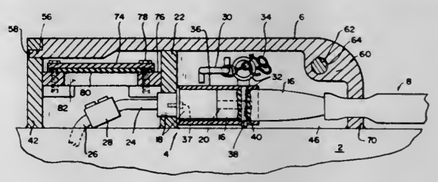


A magnetic actuating device wherein the existing magnetic gap is broken up into a plurality of increments. Elastic material is affixed between adjacent segments or core pieces within the gap to limit the maximum and minimum separations between adjacent segments or core pieces, to provide a restorative force, and to maintain the segments or core pieces in alignment. The size of the gap may be positively limited by affixing either the elastic segments or the magnetic segments to a chain have relatively movable links or beads.

ERRATUM

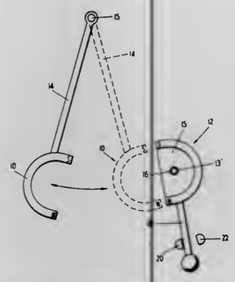
For Class 335—264 see:
Patent No. 3,621,451

3,621,423
TERMINAL BOX FOR LIFTING MAGNET
Jerry L. Swope, Columbus, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.
Filed Mar. 25, 1969, Ser. No. 810,217
Int. Cl. H01f *7/20*
U.S. Cl. 335—290 **11 Claims**



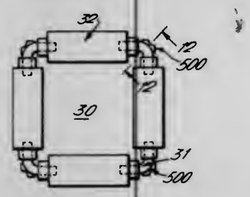
A terminal box for a lifting magnet is disclosed which may be separately fabricated and then attached to the lifting magnet. The terminal box is provided with an easily removable cover which clamps an incoming power-source cable to relieve internal cable-connection stress. Removal of the cover allows access to the internal cable connections without removal of the entire terminal box. The incoming power-source cable is held locked to the internal cable by an easily removable pin which is permanently attached to the terminal box.

3,621,424
MAGNETIC ENGINE
Joseph Query, 117 Summer St., Somerville, Mass.
Filed Oct. 19, 1970, Ser. No. 81,683
Int. Cl. H01f *7/02*
U.S. Cl. 335—306 **4 Claims**



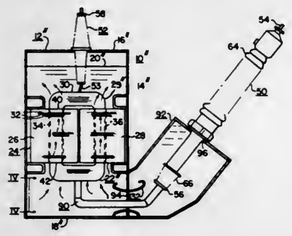
A first and a second magnet comprise the magnetic engine. The first magnet is coupled to the free end of a pendulum and the second magnet is pivotally mounted, and responsive to the swinging of the first magnet to cause pivotal or rotary motion of the second magnet.

3,621,425
MAGNETICALLY STREAMLINED HEAT SINK
Anthony B. Trench, 25 Elizabeth St., Thornhill, Ontario, Canada
Filed Apr. 9, 1969, Ser. No. 814,786
Claims priority, application Canada, Apr. 11, 1968, 017325
Int. Cl. H01f *27/08*
U.S. Cl. 336—61 **10 Claims**



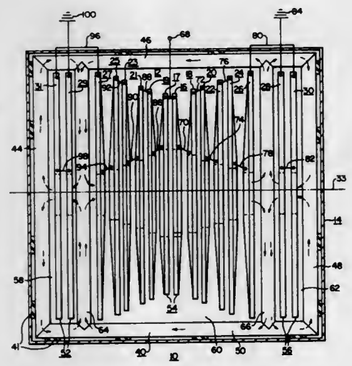
A transformer of the shell-core type having two or more conductive coils physically in the form of closed loops and located side-by-side along a common axis with magnetizable material being provided by a ribbon of grain-oriented steel spirally wound around the legs of the coils to embrace the latter. The magnetizable material may be provided by concentric cylinders of spirally wound ribbon steel with adjacent spirals having the ribbons located substantially perpendicular to one another. A cylinder with the ribbon perpendicular to the axis of the cylinder may be formed of a grain-oriented steel in which case the ribbon is undulated, facilitating bending the same into a close spiral. The undulations are located in internested relation reducing the likelihood of noise. The core-and-coil assembly is enclosed in a casing conforming substantially in shape to the outline configuration of the core-and-coil assembly and bushings are secured to the casing. Heat dissipation is facilitated by fins projecting outwardly from the casing and also by utilizing heat sinks having a portion located between the coils and a further portion projecting outwardly therefrom in direct physical contact with the casing. The heat sinks are preferably located so as not to intersect the high-density magnetic flux. The transformers may be constructed as identical units which may be stacked for increasing capacity and in which case the terminals are located electrically to interconnect adjacent units simultaneously with physically placing such units in stacked relation. A method of forming a coil is provided which includes simultaneously insulating the conductor turns one from the other and encapsulating the coil in a potting compound. To effect this, a spacer is applied to the conductor in the form of glass strands spirally wound onto the conductor and the conductor is thereafter wound into a closed-loop coil. The formed coil is then placed in apparatus for impregnating the coil with an encapsulant. The same method is utilized to form a transformer with the encapsulation being effected with the core-and-coil assembly physically located within the transformer casing.

3,621,426
TRANSFORMER WITH BUSHING COMPARTMENT
Saul Bennon, and Harold R. Moore, both of Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 12, 1970, Ser. No. 88,711
Int. Cl. H01f *15/04, 27/10*
U.S. Cl. 336—58 **8 Claims**



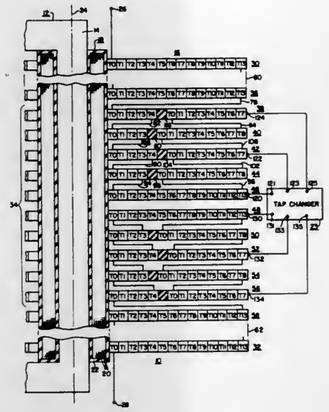
Electrical inductive apparatus of the shell-form type, having a tank filled with a liquid dielectric, and a magnetic core winding assembly disposed in the tank and immersed in the liquid dielectric. The magnetic core winding assembly includes a magnetic core, and one or more windings formed of a plurality of axially spaced pancake coils which link the magnetic core and extend outwardly therefrom above and below the magnetic core, towards the cover and bottom portions of the tank, respectively. At least the connection to the high-voltage winding is made by a lead assembly connected to a pancake coil at a point below the magnetic core. The other end of the lead assembly is connected to the encased end of high-voltage bushing assembly which is mounted in a separate bushing compartment attached to a sidewall portion of the tank, through aligned openings in the tank and bushing compartment.

3,621,427
ELECTRICAL REACTOR
Saul Bennon, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 13, 1970, Ser. No. 89,398
Int. Cl. H01f *15/04*
U.S. Cl. 336—84 **16 Claims**



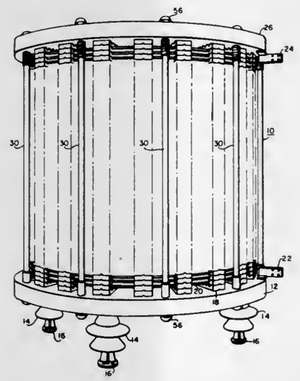
A shunt reactor, including at least two opposing winding sections separated by magnetic shielding material. Saturation of the magnetic shielding material at a predetermined voltage produces a large drop in the reactance of the reactor, due to interaction of the opposing fluxes of the winding sections.

3,621,428
ELECTRICAL WINDINGS AND METHOD OF CONSTRUCTING SAME
Robert L. Johnston, Sharon, and Wallace G. Chambers, West Middlesex, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 24, 1970, Ser. No. 75,126
Int. Cl. H01f *21/00*
U.S. Cl. 336—146 **20 Claims**



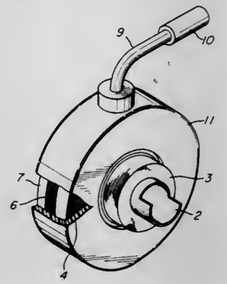
A tapped winding for electrical inductive apparatus, and method of constructing same, including a plurality of axially spaced pancake or disk-type continuous coils. Each turn to be tapped is directed to the outermost turn of a pancake coil by successively winding and interconnecting a first portion of a plurality of pancake coils, proceeding from coil to coil in a first axial direction, and returning in the opposite axial direction to complete each pancake coil, with the number of turns added to complete each pancake coil being predetermined to locate the taps at the outer turns of certain pancake coils.

3,621,429
AIR CORE REACTOR
Frank W. Benke, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1970, Ser. No. 88,289
Int. Cl. H01f *27/30*
U.S. Cl. 336—197 **7 Claims**



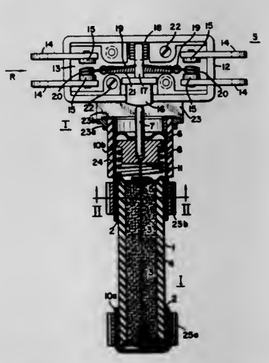
An air core reactor comprising a bottom member having a plurality of slotted cleats stacked thereon. Turns of conductors positioned in the slots in the cleats. A top member on top of the stacked cleats. Resin-impregnated fiber glass tie rods connected between the bottom member and the top member for holding the reactor assembled. A nonmagnetic metallic fitting on each end of each tie rod. The nonmagnetic metallic fittings are permanently attached to each end of the tie rods by forcing a tapered insert member into each end of the tie rods.

3,621,430
FLYBACK TRANSFORMER COIL FOR TELEVISION RECEIVER
Yohei Shimizu, Nishinomiya, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi-shi, Japan
Continuation of application Ser. No. 771,297, Oct. 28, 1968, now abandoned. This application Apr. 2, 1970, Ser. No. 22,138
Int. Cl. H01j *27/30*
U.S. Cl. 336—205 **3 Claims**



Flyback transformer coil for television receiver comprises surface-insulated wire windings having a plurality of wire layers, a plurality of layers of insulating material thereby to separate adjacent layers of wound wires, and an assembly of the wirings and interpositioned insulating material being impregnated with a liquid heat-setting 1-2 polybutadiene resin having a lower dielectric loss at both low and high temperatures, for example 20°—150° C., and heated and hardened, thereby to deposit a hardened layer of the resin in all the layers of the coil assembly.
The present coil has a good water, moisture and burning resistances and good insulating efficiency.

3,621,431
BLOWN-FUSE INDICATOR INCLUDING A CIRCUIT-CONTROLLING SWITCHING DEVICE
Paul C. Hitchcock, Sr., Haverhill, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Dec. 23, 1969, Ser. No. 887,504
Int. Cl. H01h *85/30*
U.S. Cl. 337—5 **7 Claims**



A unit including an indicating fuse and a switching device under the control of said indicating fuse is designed to be

more compact and easier to manufacture than comparable prior art devices. This is achieved by providing a tubular member of insulating material mounted on one of the terminal caps of an indicating fuse, covering but one portion of the particular cap, and exposing another portion thereof, said tubular member of insulating material forming a support for a switching device which includes relatively movable contact means.

3,621,432
THERMOSTAT

Roland D. Beck, La Crescenta, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,304
Int. Cl. H01h *37/34, 61/013*
U.S. Cl. 337—100 **5 Claims**

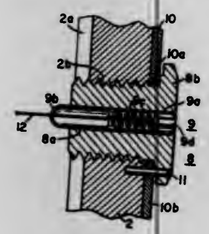


A thermostat including a nichrome wire anticipator. The wire is bent into an arc and has a spring to it. The wire, bare of insulation, is placed in contact with the bare bimetal. The spring character of the wire holds it in pressure contact with the bimetal. The wire is everywhere insulated from the bimetal except over a relatively short length of the wire near the midpoint along its length for maximum heat conduction with the bimetal shorting out a substantial length of the wire.

3,621,433
ELECTRIC CARTRIDGE FUSE HAVING PLUG TERMINALS

Richard A. Belcher, Hampton Falls, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed May 7, 1970, Ser. No. 35,465
Int. Cl. H01h *85/30*
U.S. Cl. 337—244 **7 Claims**



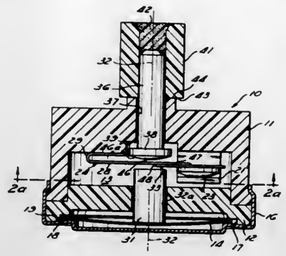
An electric fuse has a casing which is closed by terminal plugs having a relatively large axially extending internally screw-threaded bore. A screw closing the bore has an axially extending bore of relatively small diameter which houses a spring-biased blown fuse indicator mechanism.

3,621,434
MANUAL RESET THERMOSTAT

Anton J. Gerich, Mansfield, Ohio, assignor to Therm-O-Disc., Incorporated, Mansfield, Ohio

Filed Feb. 2, 1970, Ser. No. 7,896
Int. Cl. H01h *37/70*
U.S. Cl. 337—348 **8 Claims**

A trip-free manual reset thermostat wherein the travel of the reset device is limited so that the disc cannot be moved all the way to its reset position of stability. The reset device engages one side of the cantilever mounted flexible switch arm. Such switch arm is formed with an offset so that the disc-operated bumper engages the switch arm at a point

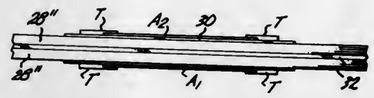


spaced from the line of action of the reset bumper. When reset is attempted while the disc remains at temperatures outside the reset temperature range, the reset device and the disc-operated bumper produce a force couple which tends to maintain the switch in the operated condition.

3,621,435
TRANSDUCER BEAM WITH BACK-TO-BACK RELATED DEPOSITED FILM TYPE STRAIN GAGES

Cecil K. Stedman, New Denver, British Columbia, Canada, assignor to Statham Instruments, Inc., Oxnard, Calif.

Division of Ser. No. 633,116, Apr. 24, 1967, Pat No. 3,479,739. Continuation-in-part of application Ser. No. 817,008, Apr. 17, 1969, now abandoned. This application Mar. 23, 1970, Ser. No. 21,560
Int. Cl. G01b *7/16*
U.S. Cl. 338—2 **11 Claims**

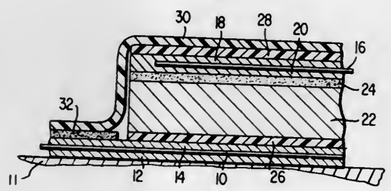


Transducer structure in the nature of a thin, laminated, flexural element having evaporated film strain gages on each of two opposite surfaces. Fabrication method involving simultaneously depositing by a single-vapor source plural films of a strain sensitive electroconductive material onto insulative front surface areas of two separate or separable parts of a sheet material, to form two substantially identical bridge arm means, then bonding the two parts together, back-to-back.

3,621,436
STRAIN GAGE WITH BUILT-IN DUMMY GAGE

Charles T. Wu, Marlboro, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.

Filed Apr. 14, 1969, Ser. No. 815,709
Int. Cl. G01b *7/16*
U.S. Cl. 338—3 **3 Claims**

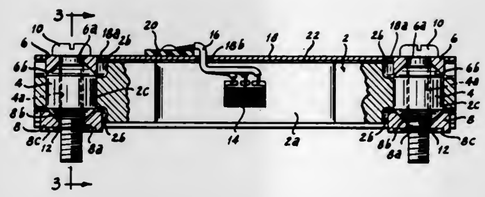


An electrical strain gage unit including an active strain gage, a laminate formed by an inactive or "dummy" strain gage bonded to a small block of rigid material with the laminate isolated from the active strain gage by a layer of high-lubricity material, a flexible plastic film enveloping the inactive gage and adhesively attached about the periphery thereof to the active strain gage, and a layer of high-lubricity material between the covering and the inactive gage.

3,621,437
BOLT-ON STRAIN GAGE TRANSDUCER STRUCTURE

James E. Mading, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 5, 1970, Ser. No. 43,772
Int. Cl. G01b *7/18*
U.S. Cl. 338—5 **8 Claims**

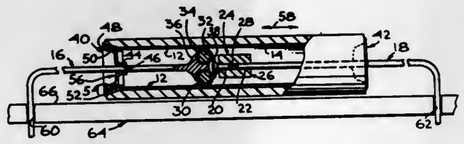


A resistance strain gage arrangement is mounted upon a strain bar housed within a protective enclosure. Opposite ends of the strain bar are provided with upper and lower spherical surfaces which are received within conical recesses of upper and lower washer-type seats. The spherical ends and seats have oversized clearance holes for a pair of screws which extend through the assembly at each end of the strain bar to provide a gimballike mounting for the structure to compensate for surface and bolt hole irregularities. Once firmly tightened to the surface to be monitored, the structure is designed to transmit strain from the surface to the strain bar where it is sensed by the resistance strain gage arrangement.

3,621,438
VARIABLE RESISTORS

Charles S. Wright, 5901 Fulton Ave., Van Nuys, Calif.

Division of Ser. No. 714,108, Mar. 18, 1968, Pat. No. 3,456,228, Continuation of application Ser. No. 379,453, July 1, 1964, now abandoned. Filed Mar. 20, 1969, Ser. No. 822,781
Int. Cl. H01c *9/02*
U.S. Cl. 338—150 **4 Claims**

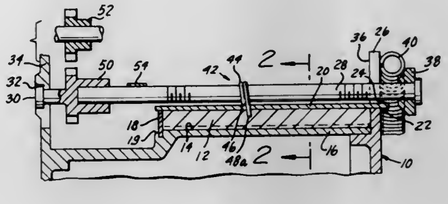


Variable resistors having at least one fixed value resistance element, terminal caps, and one or more relatively rigid terminal lead rods provided with a contact element whereby the resistance can be varied by relative movement of the case and the terminal lead rod or rods. Internal ends of opposite terminal rods may be rigidly interconnected, either conductively or nonconductively relative to each other and/or the contact element. A plurality of the same or differing resistance elements may be electrically connected in series or parallel for maintaining the same and/or permitting variations in one or more electrical characteristics.

3,621,439
VARIABLE RESISTOR

Meigs W. Newbery, East Longmeadow, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed June 8, 1970, Ser. No. 44,160
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **16 Claims**

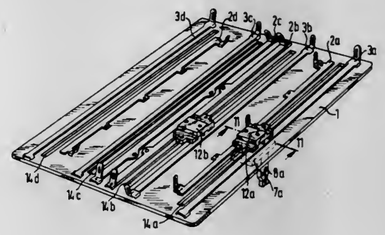


A variable resistor in which a resistive strip is mounted on a base, a threaded member is mounted on the base adjacent and parallel to the resistive strip, and a sliding contact element is wound about, and received within, the threads of the threaded member, a part of the element being in constant electrical engagement with the resistive strip. The free ends of the sliding contact element extend from the threaded member and engage the base on opposite sides thereof. Rotation of the threaded member urges a free end against the base, thereby relaxing the winding sufficiently for the contact to be moved along the threaded member within the threads.

3,621,440
SLIDE RESISTOR

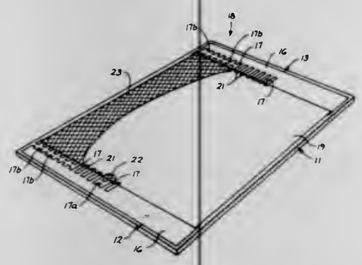
Helmut Eberwein, Wollbachstr. 179, 874 Brendlorenzen, and Wolf-Erhard Steigerwald, 31 1/6, 8741 Leutershausen, both of Germany

Filed Nov. 17, 1969, Ser. No. 877,142
Claims priority, application Germany, Nov. 20, 1968, G 68 07 771
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **7 Claims**



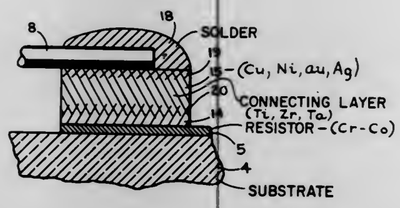
A slide resistor or voltage divider comprising an insulating baseplate having a slot or slots therethrough and a resistance element applied to one side of said plate in parallel relation to said slot, a contact carrier arranged on the same side of said baseplate as said resistance element, a slide element slidingly engaging the side of said baseplate opposite its side provided with said resistance element, connecting means extending through and being guided in said slot or slots and interconnecting said carrier and said slide element, a control knob provided on said slide element on its side opposite the side engaging said baseplate. Slide resistor of the described type wherein said control knob is laterally offset relative to said connecting means and said slot. Slide resistor of the described type in which a current contacting resistance element and/or a bus bar are provided on opposite sides of said slot but on the same side of said baseplate.

3,621,441
FILM RESISTOR ADJUSTABLE BY ISOLATING PORTIONS OF THE FILM
Joseph R. Hudnall, Lancaster, and Paul C. Wergin, Reynoldsburg, both of Ohio, assignors to Western Electric Company Incorporated, New York, N.Y.
Filed July 17, 1969, Ser. No. 842,562
Int. Cl. H01c 9/00
U.S. Cl. 338—195 2 Claims



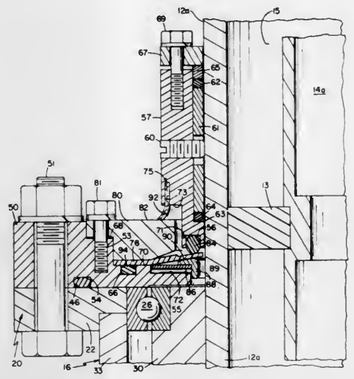
A film resistor includes a pair of conductive films which are spaced from each other and are deposited adjacent to opposite edges of one surface of a substrate. A plurality of spaced, parallel fingers extend transversely from each of the conductive films and partially into the space between the conductive films on the substrate. A resistive film is deposited onto the substrate in the space between the conductive films and overlaps the free ends of the fingers. The resistance value of the film resistor can be adjusted by removing selectively some or all of the fingers so that adjacent portions of the resistive film are substantially isolated electrically when the resistor is used in an environmental circuit even though the entire resistive film remains attached physically to the substrate and unmarred.

3,621,442
TERMINAL CONNECTION OF ELECTRONIC DEVICES
Willis J. Racht, South Milwaukee, and Paul Pfister, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed Nov. 7, 1968, Ser. No. 774,146
Int. Cl. H01c 7/00
U.S. Cl. 338—309 10 Claims



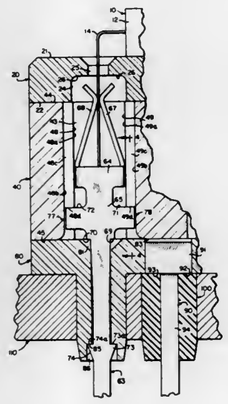
A process involving and connection for a chromium based electrically functioning portion supported on a substrate. A connecting layer is deposited and is bonded to the selected parts of the portion and comprises metals preferably taken from the group consisting of titanium, zirconium, tantalum and combinations thereof. A second layer is deposited over the connecting layer which will permit soldering if the connection is to be a termination or will become a conductor for interconnection on the substrate. This deposition of the second layer begins before the deposition of the connecting layer is phased out.

3,621,443
ELECTRICAL TRANSMISSION LINE
Donald N. Sewell, Raymond, Maine, assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed Apr. 10, 1969, Ser. No. 814,969
Int. Cl. H01r 39/02
U.S. Cl. 339—8 4 Claims



A rotary joint for an RF transmission line includes a flexible plastic disc member having a smooth annular surface adjacent its inner periphery, structure for clamping the outer periphery of the disc to one section of the transmission line and a surface of elastomeric material softer than the annular surface of the disc member secured to the other section. The inner peripheral surface of the disc is urged, by gas pressure in the line and/or a biasing structure, against the surface of elastomeric material. This structure provides a gastight seal so that a gaseous dielectric may be maintained under pressure within the transmission line.

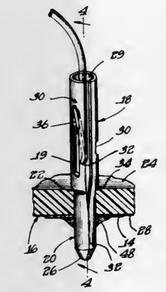
3,621,444
INTEGRATED CIRCUIT MODULE ELECTRICAL CONNECTOR
Max M. Stein, Willow Grove, Pa., assignor to Elco Corporation, Willow Grove, Pa.
Continuation of application Ser. No. 735,714, June 10, 1968, now abandoned. This application June 1, 1970, Ser. No. 42,551
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 10 Claims



An electrical connector comprises an insulating housing having a plurality of contact openings extending

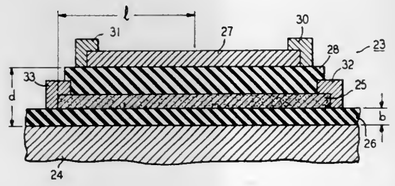
therethrough. A contact is positioned within each of said openings, and a separate lid is removably mounted on the upper surface of said insulating housing. The lid is provided with a plurality of lead openings, each lead opening being in direct alignment with, and in communication with a corresponding contact opening in the insulating housing. An adapter for insulating the contacts of the electrical connector from a metal plate is comprised of a flat insulating member having an upper and a lower surface. A plurality of hubs are integrally molded with said lower surface and extend downwardly therefrom. A plurality of tail-receiving openings are provided in the adapter, each such opening extending through the upper surface of the flat insulating member and a respective hub to receive the tail portion of a contact therein. The flat insulating member also comprises a plurality of terminal openings adjacent the tail-receiving openings, each terminal opening being adapted to accommodate a portion of a terminal pin mounted in, and grounded to the metal plate.

3,621,445
PRINTED CIRCUIT BOARD LEAD WIRE RECEPTACLE
Stanley V. Horecky, Oak Park, and Cletus McDonough, Elmhurst, both of Ill., assignors to Molex Products Company, Downers Grove, Ill.
Filed Feb. 13, 1969, Ser. No. 798,936
Int. Cl. H01r 9/12, 11/22; H05k 1/12
U.S. Cl. 339—17 C 10 Claims



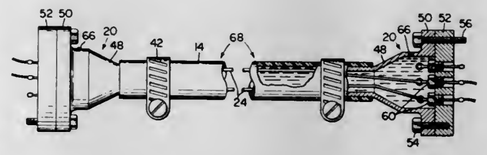
A connector terminal including a cylindrically shaped, rolled, hollow body having an opening or separation extending the length thereof. A first, narrowed end of the body is received in an aperture in a printed circuit board and is soldered to a corresponding conductor printed on the latter. The second end of the terminal extends outwardly from the opposite surface of the printed circuit board and includes resilient means therein. A lead wire of an electrical component inserted into the second end of the body of the connector terminal is engaged by said resilient means electrically to interconnect the printed conductor and electrical component.

3,621,446
THERMAL RELAY
George E. Smith, Murray Hill, and Robert H. Walden, Scotch Plains, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Feb. 17, 1969, Ser. No. 799,808
Int. Cl. H01c 7/04
U.S. Cl. 338—23 9 Claims



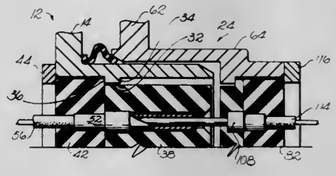
In a thermal relay of the type using a conductive heater layer to switch a layer of vanadium dioxide between nonconducting and conducting states, design advantages are attained by using a conductive substrate separated from the vanadium dioxide by a layer of insulative material having a thermal conductance per unit area that is within certain prescribed limits.

3,621,447
DEEP SUBMERGENCE ELECTRICAL ASSEMBLY
James W. Taylor, Pasadena, and Robert E. Pace, Rolling Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 22, 1969, Ser. No. 887,199
Int. Cl. H01r 11/32
U.S. Cl. 339—29 R 9 Claims



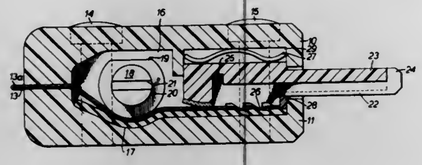
A deep submergence electrical assembly including a pair of spaced-apart connectors; a flexible tube sealably connected at each end to a respective connector; at least one wire extending through the tube between the connectors; and the flexible tube being filled with an electrical resistance liquid. The tube may be constructed of plastic, and one of the connectors may have a fill hole and the other connector may have a vent hole for filling the tube with the liquid. One of the connectors may be a socket housing for an underwater light and one or both of the connectors may include a pressure plate which is adapted for sealable connection to a pressure hull.

3,621,448
ACCORDION SEAL FOR ELECTRICAL CONNECTORS
Bruce K. Arnold, Pasadena, and Edward C. Paugh, Hacienda Hgts., both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,579
Int. Cl. H01r 13/52
U.S. Cl. 339—94 M 4 Claims



An accordion seal for electrical connectors for sealing the external surfaces of a pair of mated connectors. The seal comprises a rear portion which is secured to a surface of the connector shell. The front portion of the shell engages the other connector member with the intermediate portion folding in an accordion fashion as the connector shells are drawn closer together. Moreover, the intermediate portion may be formed of a plurality of rippled sections, the sections folding in accordion fashion upon mating of the connector shells.

3,621,449
ELECTRICAL CONNECTORS
Kenneth F. Bridle, London, England, assignor to A. B. Electronic Components Limited, Abercynon, Glamorgan, Wales
Filed May 21, 1969, Ser. No. 826,641
Claims priority, application Great Britain, May 22, 1968, 24,429/68
Int. Cl. H01r 11/20
U.S. Cl. 339—99 R 5 Claims

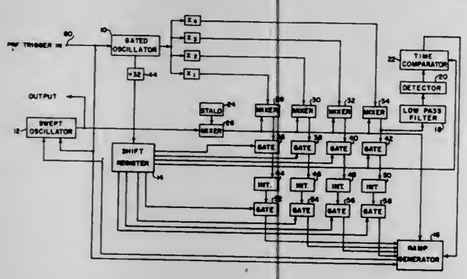


An electrical connector for a tape cable which consists of metallic tapes embedded side-by-side in an insulating medium consisting of a housing carrying an electrical contact, a rotatable member within the housing and having a portion of its diameter of greater radius and a portion of lesser radius means for clamping the tape cable with respect to the housing. The rotatable member engages the tape cable within the housing so that, when the connector is assembled and the member rotated, the portion of the rotatable member having the greater radius comes into contact with the tape cable and the cable is drawn longitudinally across the teeth on the electrical contact so that the teeth plough through the insulating medium and establish electrical contact with the metallic tape.

ERRATUM

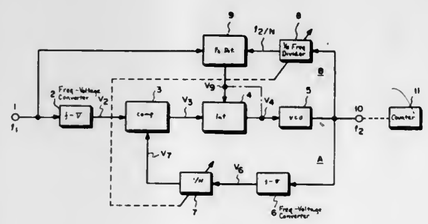
For Class 339—103 see:
Patent No. 3,621,413

3,621,450
LINEAR SWEEP FREQUENCY GENERATOR WITH SAMPLING CIRCUIT PHASE CONTROL LOOP
Lloyd R. Blair, and Gregory L. Martin, both of Phoenix, Ariz., assignors to Goodyear Aerospace Corporation, Arkon, Ohio
Filed Dec. 15, 1969, Ser. No. 884,927
Int. Cl. H03b 3/04, 23/00
U.S. Cl. 331—10 5 Claims



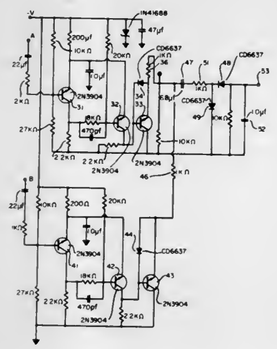
The invention includes means to generate a substantially linear FM waveform pulse. A phase comparison of the FM waveform pulse is made with respect to several reference constant frequency waveform signals whose frequencies and phase are made to match an ideal FM waveform pulse at preselected points during the pulse. The frequencies of the reference signals are chosen to be multiples of a reference oscillator. The frequency of the oscillator is chosen to give the desired number of correction points during the pulse. The FM waveform pulse and the reference signals are mixed in separate mixers and the output of each mixer is sampled at a predetermined time by a gate. The outputs of the gates are then integrated and used to correct the FM waveform pulse over the time interval just prior to the sample time. This system will reach a stable equilibrium when the phase of the reference signals and the FM waveform pulse are in phase quadrature since the output of all the mixers are zero for this condition. When a sufficient number of samples are taken, the FM waveform pulse at equilibrium is a highly linear signal.

3,621,451
FREQUENCY MULTIPLIER
Glichi Yokoyama, and Yoshihisa Kameoka, both of Tokyo, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 16, 1970, Ser. No. 11,662
Claims priority, application Japan, Feb. 26, 1969, 44/13934
Int. Cl. H03b 3/06
U.S. Cl. 331—11 3 Claims



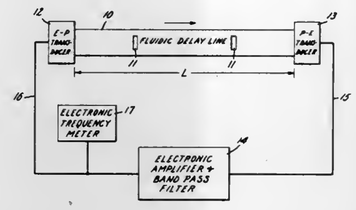
A frequency-multiplying device multiplies frequencies of input signals by N (N being a positive integer). The multiplying device can feed multiplied signal frequencies into an electronic counter for counting low frequency input frequencies quickly with high accuracy.

3,621,452
PHASE DETECTOR AND OSCILLATOR SYSTEM
Eugene Y. Ho, San Carlos, Calif., assignor to Farinon Electric, San Carlos, Calif.
Filed Nov. 20, 1969, Ser. No. 878,424
Int. Cl. H03b 3/04
U.S. Cl. 331—25 3 Claims



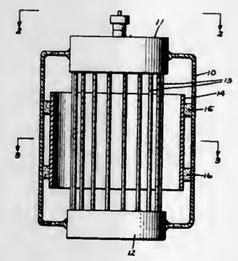
A phase detector comprising two trigger circuits each of which receives an input signal and converts the signal into square wave signals having the same frequency and phase as the input signal, and means for combining, integrating and rectifying the combined signal to provide an output signal which is proportional to the phase difference.

3,621,453
ELECTROFLUIDIC DELAY LINE OSCILLATOR
Carl G. Ringwall, Scotia, and Salvatore Bottone, Jr., Schenectady, both of N.Y., assignors to General Electric Company
Filed June 19, 1969, Ser. No. 834,840
Int. Cl. H03b 5/34
U.S. Cl. 331—64 10 Claims



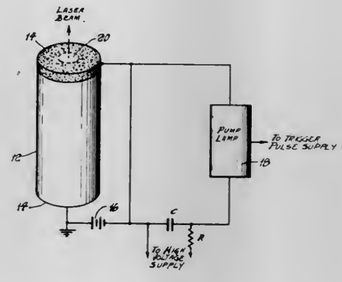
A closed loop oscillator circuit consists of a tubing of predetermined length, an electrical-to-pneumatic transducer, a pneumatic-to-electrical transducer and an electronic amplifier. The electrical-to-pneumatic transducer converts an electrical frequency signal to a pneumatic frequency signal which generates pressure waves in a gaseous medium within the tubing. The tube length corresponds to one or multiple half-wavelengths of a reference frequency of oscillation. The electronic amplifier provides sufficient gain to maintain self-sustained oscillation in the closed loop circuit. The temperature or gas content (ratio) of the gaseous medium within the tubing can be determined from the actual oscillation frequency in the circuit.

3,621,454
PLASMA MULTIPACTOR
Gene A. Meeks, American Fork, Utah, assignor to International Telephone Laboratories and Telegraph Corporation, Nutley, N.J.
Filed Feb. 7, 1969, Ser. No. 797,473
Int. Cl. H03b 9/02, 11/08
U.S. Cl. 331—92 8 Claims



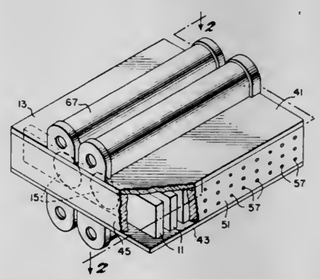
A multipactor tube includes a permeable anode positioned between dynode surfaces having a secondary emission ratio greater than one. An alternating voltage between the anode and dynodes causes ionization of a gas therein and results in continuous ion and periodic electron bombardment of the secondary emissive surface. A supply of electrons is maintained in the space to permit collection by the anode during intervals between electron bombardment. This facilitates self starting and sustaining of the multipactor oscillation and multiplication operation.

3,621,455
PINCH EFFECT LASER
Milton Green, 926 Buddington Road, Groton, Conn.
Continuation-in-part of application Ser. No. 661,732, Aug. 18, 1967, now abandoned. This application July 28, 1970, Ser. No. 59,040
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 7 Claims



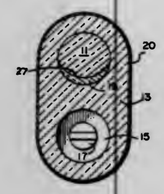
A semiconductor laser in which the efficiency is improved by forcing the PN pairs into the central volume of the laser rod. The redistribution of PN pairs is effected by adding one or more magnetic or electric fields or both to the semiconductor laser device in such a manner that a radially inward Lorentz force is produced on all charge carriers. The fields which are used can be an axial (with respect to the laser rod) invariant magnetic field, an axial electric field, a combination of an axial invariant magnetic field and an azimuthal electric field, or a combination of an invariant, axial magnetic field and a properly superposed $r\,f$ induction field. Pumping is accomplished by optical excitation, or hot charge carrier injection, or both.

3,621,456
DISC LASER SYSTEM
Charles Gilbert Young, Southwood Road, Storrs, Conn.
Filed Mar. 24, 1969, Ser. No. 809,641
Int. Cl. H01s 3/02, 3/06
U.S. Cl. 331—94.5 12 Claims



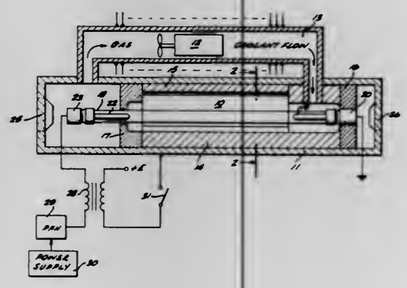
This specification discloses a disc laser system in which discs of laser glass are mounted in plates arranged in a parallel spaced relationship to permit coolant to flow therebetween. The discs are aligned in a plurality of rows and a laser cavity is made to extend through the rows in series. Elongated flash lamps extend parallel to the rows to excite the laser glass of the discs. The plates contain reflective surfaces to reflect pump light in a way to maximize the percentage of pump light entering the laser discs.

3,621,457
UNITARY GLASS LASER SYSTEM WITH ASYMMETRICAL PUMPING
David W. Cuff, Chepachet, R.I., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 1, 1969, Ser. No. 812,163
Int. Cl. H01s *3/09, 3/16*
U.S. Cl. 331—94.5 **11 Claims**



This specification discloses a glass laser structure comprising an integral assembly of an elongated matrix body of transparent material in which there is positioned a rod of glass laser material. An elongated flashlamp is also provided in the matrix body extending parallel to the laser rod. A section of transparent material adjacent to the side of the rod near the flashlamp has a lower index of refraction than the material of the laser rod. The remainder of the matrix has a higher index of refraction than the laser rod. Said transparent material may be made lossy for the wavelength at which the laser emits.

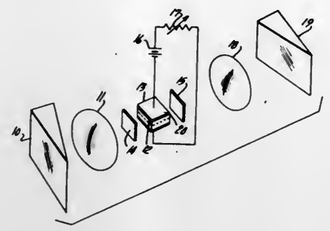
3,621,458
FLASHTUBES AND METHOD OF PROVIDING SAME
Amado Y. Cabezas, Los Angeles, and Walter Koechner, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 13, 1969, Ser. No. 865,789
Int. Cl. H01j *17/12, 61/10;* **H01s** *3/00*
U.S. Cl. 331—94.5 **8 Claims**



Uniformly low trigger levels are achieved for a flashlamp operated in a chamber filled with a cooling gas at high pressure or at atmospheric pressure by roughening the anode. A technique for roughening consists of firing the flashtube in reverse a sufficient number of times to alter the finish of the anode tip from a bright high polish to a dull gray by sputtering.

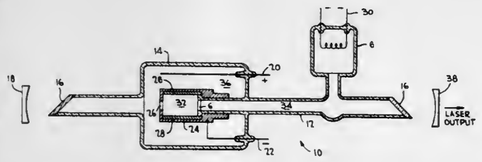
3,621,459
BROADBAND LASER AMPLIFIER
Goodwyn George Reeves, 3324 Octavia St., Raleigh, N.C.
Filed Dec. 11, 1969, Ser. No. 884,153
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **5 Claims**

A broadband laser apparatus and method for amplifying optical frequencies of electromagnetic radiation at different positions utilizing a laser device in which the frequency-determining energy gap varies with the position in the plane normal to the direction of electromagnetic wave propagation



so that different frequencies of electromagnetic radiation are amplified at different positions in the transverse plane.

3,621,460
SPUTTERED VAPOR LASER
Colin S. Willett, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army
Filed July 6, 1970, Ser. No. 52,497
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **9 Claims**

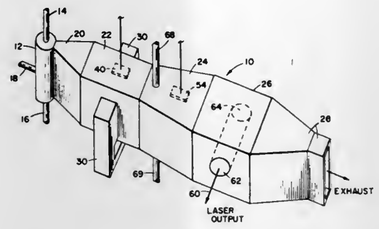


A sputtered vapor laser which features two discharges within a single lasing apparatus. A secondary discharge is caused to occur between an anode and a hollow cathode whose surface is coated with a suitable lasing material. The sputtering action of the secondary discharge on the surface of the hollow cathode produces vapor of the lasing material inside the hollow cathode. The electric field set up by the cathode of the primary laser discharge acts to draw the vapor of the lasing material towards the primary cathode along the main plasma section of the laser to provide the required concentration of atoms in which to sustain laser oscillation. The atoms of the sputtered vapor are excited in the main plasma section by inelastic collisions with excited carrier gas atoms or ions or with electrons energized by the electric field existing in the discharge between the hollow cathode and the primary cathode. The hollow cathode is biased more positively than the primary cathode so that it acts as the anode of the primary laser discharge. Electrical feedback can be utilized between the primary and the secondary discharge circuitry to control the current of the secondary discharge.

3,621,461
SELF-PUMPED ELECTROADIABATIC LASER
Charles M. Cason, III, and James F. Perkins, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Sept. 9, 1969, Ser. No. 857,645
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **24 Claims**

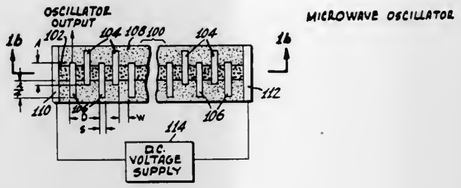
An electroadiabatic laser wherein a plenum chamber is provided in which a thermally heated gas is mixed with a relatively cold gas to provide lasing action. An alkali metal compound is mixed simultaneously with the gases to provide additional stimulation of the ionized gases by releasing additional electrons during mixing of the gases. The expanding gases pass through a nozzle into an excitation chamber wherein the gas flows through a magnetic field between two electrodes, generating a current in an electrode load circuit

that is identical to the electron flow in the ionized gases. The flowing gases are further expanded through another nozzle into a larger cavity. A pair of electrodes in the second nozzle have an electric field thereacross for further stimulation of the lasing gas. Lasing action of the gas occurs in the larger cavity, a Fabry-Perot optical cavity, and the output therefrom is coupled out of the cavity by mirrors mounted



therein. The gases are then exhausted through a diffuser to atmospheric pressure. A magnet provides the magnetic field in the excitation chamber. The excitation chamber electrode load circuit may be connected to provide the potential across the nozzle electrodes, thus using only the field produced by the magnet to generate the additional potential for further stimulated emission.

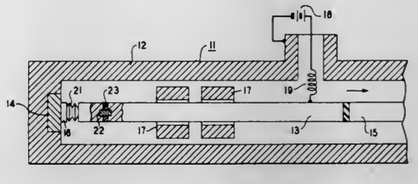
3,621,462
AMPLIFIERS AND OSCILLATORS COMPRISED OF BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE STRUCTURE
Jacob Meyer Hammer, Trenton, and Bayram Vural, Princeton, both of N.J., assignors to RCA Corporation
Filed Dec. 23, 1969, Ser. No. 887,709
Int. Cl. H03b *7/14;* **H03f** *3/10*
U.S. Cl. 331—96 **9 Claims**



A microwave device comprising an iterative multielement slow-waveline structure, when loaded with a negative resistance formed by a longitudinally distributed semiconductor material exhibiting negative differential mobility when properly biased, provides gain for an electromagnetic wave propagated the length of the line, although the phase velocity of the electromagnetic wave is many times the carrier drift velocity in the semiconductor material. An interdigital line or a meander line may constitute the slow-wave structure. The microwave device will transmit reciprocally and will ordinarily operate as a microwave oscillator. However, it may be operated as a microwave amplifier by the addition of means for rendering the transmission nonreciprocal.

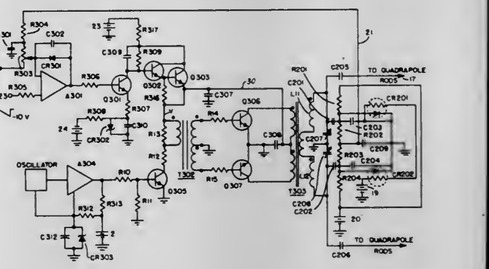
3,621,463
NEGATIVE RESISTANCE DIODE COAXIAL OSCILLATOR WITH RESISTIVE SPURIOUS FREQUENCY SUPPRESSOR
Hilding Matthews Olson, Jr., Mohnton, Pa., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Apr. 27, 1970, Ser. No. 32,191
Int. Cl. H03b *7/14*
U.S. Cl. 331—101 **8 Claims**

A microwave oscillator circuit comprises an IMPATT diode connected to the inner conductor of a coaxial cable, a voltage source connected to the inner conductor for biasing the diode, and tuning elements in the cable defining a resonator resonant at a microwave frequency. A resistor is imbedded in the inner conductor closely adjacent to the diode,



and is surrounded by an annular capacitor. Spurious low frequency oscillations are damped by the resistor, while the capacitor shunts the resistor at the output microwave frequency.

3,621,464
AMPLITUDE MODULATED RF GENERATOR FOR QUADRUPOLE MASS ANALYZER
Robert M. Bryndza, San Jose, and Fonger Wiersma, Palo Alto, both of Calif., assignors to Electronic Associates, Inc., Long Branch, N.J.
Filed Nov. 20, 1969, Ser. No. 878,315
Int. Cl. H03b *3/02*
U.S. Cl. 331—106 **2 Claims**

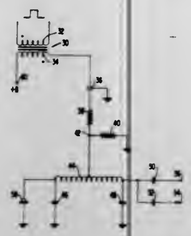


An improved radio frequency (RF) generator for use with a quadrupole mass analyzer is disclosed wherein a ramp of RF at constant frequency is provided by developing a difference signal between the output of the circuit and a control ramp input. The error signal is modulated by the desired frequency supplied from an oscillator and amplified by a push-pull arrangement. The amplified signal is applied to a series resonant tuned circuit which directly supplies the quadrupole rods.

3,621,465
SUPERREGENERATIVE AMPLIFIER OSCILLATOR WITH TUNNEL DIODE
Charles A. Beaty, Tampa, Fla., assignor to RFD, Inc., Tampa, Fla.
Division of Ser. No. 746,492, July 22, 1968, Pat. No. 3,500,398.
Filed May 19, 1969, Ser. No. 862,542
Int. Cl. H03b *7/08*
U.S. Cl. 331—107 T **2 Claims**

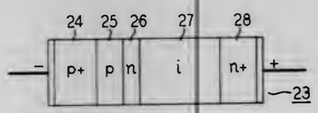
A superregenerative amplifier/oscillator having a tunnel diode as the negative resistance device, operates in the linear mode in response to a quench pulse. The tunnel diode is biased at the valley point of its forward voltage characteristic curve. The quench pulse overcomes the bias and places the tunnel diode on the negative resistance slope of its characteristic curve thereby allowing buildup of oscillations in the superregenerative amplifier/oscillator. Automatic gain control is provided by sampling the superregenerative amplifi-

er/oscillator output in response to maximum signal input, and controlling the width of the quench pulse in accordance with



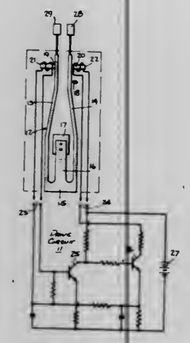
the amplitude of the superregenerative amplifier/oscillator output.

3,621,466
NEGATIVE RESISTANCE AVALANCHE DIODE STRUCTURES
Toshio Misawa, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 10, 1969, Ser. No. 883,897
Int. Cl. H03b *7/14*
U.S. Cl. 331—107 R **2 Claims**



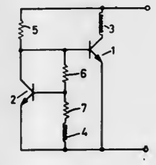
Undesired electron trapping in a Read diode is prevented in one embodiment by using a *p+pnin+* structural configuration. In another embodiment, a metal–*nin+* configuration is used, with the metal-semiconductor interface forming Schottky barrier.

3,621,467
AMPLITUDE LIMITER FOR TUNING FORK OSCILLATOR
Frank Dostal, Elmhurst, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,083
Int. Cl. H03b *3/02, 5/30*
U.S. Cl. 331—109 **2 Claims**



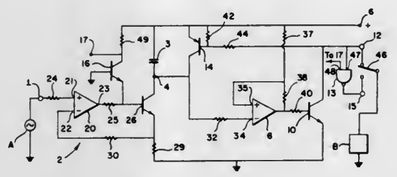
A tuning fork oscillator having a pair of tines which are sustained in vibration by an electronic drive system subject to change whereby the amplitude of fork vibration tends also to change. The amplitude is physically stabilized by mechanical stops having damping elements which are disposed to prevent the fork excursion from exceeding a preset limit, the fork being electronically driven by the system to normally exceed said limit whereby the fork amplitude neither falls below nor goes above the preset limit.

3,621,468
AMPLITUDE STABILIZED TRANSISTOR DRIVE CIRCUIT FOR MECHANICAL OSCILLATORY SYSTEM
Helmut Stechmann, Schwenningen am Neckar, Germany, assignor to Kienzle Uhrenfabriken GmbH, Schwenningen am Neckar, Germany
Filed Oct. 2, 1969, Ser. No. 863,073
Claims priority, application Germany, Oct. 5, 1968, P 18 01 444.3
Int. Cl. G04c *3/00;* **H03b** *5/30*
U.S. Cl. 331—109 **16 Claims**



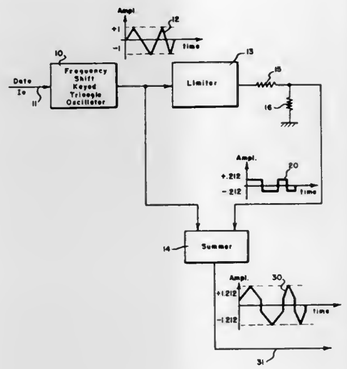
An electronic circuit for driving a mechanical oscillatory system with stabilization of the amplitude of the system includes a working transistor having a working winding in its emitter-collector circuit and a control winding in its base-emitter circuit, with its working point being determined by a voltage divider having a tap connected to its base. A second transistor is provided and its emitter-circuit forms one branch of the voltage divider, with the control winding being also connected in the base-emitter circuit of the second transistor. Thereby, control signals of the control winding, effecting modulation of the working transistor, simultaneously effect modulation of the second transistor in dependence on the amplitude of the oscillatory system. The transistors may be identical or may be complementary. When the transistors are complementary, the control winding is connected between the bases of the two transistors.

3,621,469
VOLTAGE CONTROLLED OSCILLATOR
Douglas M. Bauer, Danvers, Mass., assignor to General Electric Company
Filed Aug. 21, 1969, Ser. No. 852,042
Int. Cl. H03k *3/26*
U.S. Cl. 331—111 **10 Claims**



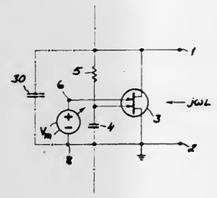
A voltage controlled oscillator is provided in which a minimal number of switching elements are employed to produce output pulses. A current source circuit determines the charging rate of a capacitor in response to an input voltage. As the capacitor charges, the potential level at one terminal thereof, which is coupled to a comparator circuit, decreases. When this potential reaches a predetermined level, the output of the comparator circuit changes state to control a switching device which produces an output pulse. In one form of the invention, the predetermined level is determined by the input voltage. Means are coupled to the output of the comparator circuit to discharge the capacitor when the output pulse is produced.

3,621,470
LOW HARMONIC DISTORTION FSK OSCILLATOR
Steven J. Davis, Ridgefield, Conn., assignor to General Datacom Industries, Norwalk, Conn.
Filed June 5, 1970, Ser. No. 43,669
Int. Cl. H03k *5/08*
U.S. Cl. 332—14 **6 Claims**



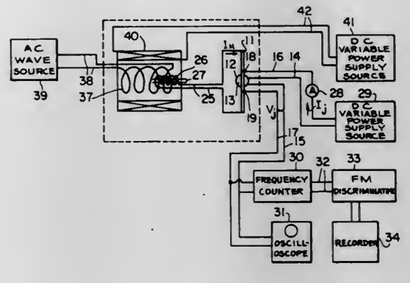
An FSK oscillator which generates extremely low second and third harmonics without the use of either passive or active filters if provided. The triangular-wave output from a frequency shift modulated triangular-wave generator is combined with a fully limited portion of the same wave to produce a stable output signal having a waveform which closely approximates that of a sinusoid.

3,621,471
RESONANT NETWORK WITH REACTIVELY COUPLED FET PROVIDING LINEAR VOLTAGE/FREQUENCY RESPONSE
Rudolf Dick, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany
Filed Nov. 26, 1969, Ser. No. 880,116
Claims priority, application Germany, Nov. 27, 1968, P 18 11 145.0
Int. Cl. H03c *3/10*
U.S. Cl. 332—16 T **9 Claims**



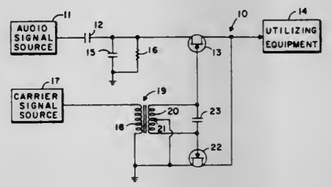
A field-effect transistor with two gates has a resistance and a reactance serially connected across its drain and source, with one gate tied to the junction of these two impedances whereas the other gate has a modulating signal applied to it. The resistance may be constituted by the output circuit of a differential transistor amplifier having its input connected in parallel with drain and source of the field-effect transistor.

3,621,472
SUPERCONDUCTING FREQUENCY CONVERTER SYSTEM
Frederick Rothwarf, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army
Filed Apr. 29, 1969, Ser. No. 820,193
Int. Cl. H03c *3/00*
U.S. Cl. 332—20 **11 Claims**



A frequency converter system for use in the superconducting range of temperature based upon the Josephson tunnelling effect, in which the detector element or device consists of a bead of lead-tin solder frozen about a fine niobium wire. A time-varying field current applied to the niobium wire produces an output signal of greatly increased frequency. This frequency converter is used to determine to a high degree of sensitivity the magnetic and resistive properties of materials by magnifying the frequency of current induced into a search coil with the material as a core.

3,621,473
BALANCED MODULATOR WITH JFET'S VOLTAGE CONTROLLED RESISTORS
C. Daniel W. Stoffer, Don Mills, Ontario, Canada, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Feb. 3, 1970, Ser. No. 8,259
Int. Cl. H03c *3/00*
U.S. Cl. 332—23 **4 Claims**

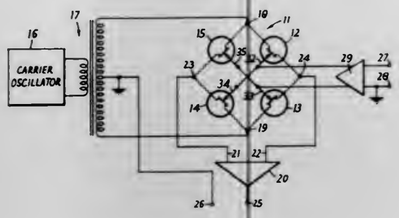


A balanced modulator up-translating an audio input signal to carrier sidebands with the carrier suppressed in the output via two field effect transistors used as voltage controlled resistors in a series shunt configuration.

3,621,474
BRIDGE TYPE AMPLITUDE MODULATORS
Henryk Banasiewicz, and Frank McLean Logie, both of London, England, assignors to G. & E. Bradley Limited, London, England
Filed Oct. 23, 1969, Ser. No. 868,774
Claims priority, application Great Britain, Oct. 24, 1968, 50,574/68
Int. Cl. H03c *1/54*
U.S. Cl. 332—47 **9 Claims**

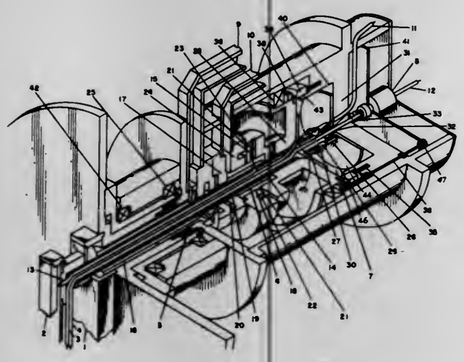
An amplitude modulator has a bridge in which each arm consists of a field-effect transistor and one pair of opposite corners of the bridge are connected across the secondary of a transformer through which carrier oscillations are supplied. Modulating signal which may change in polarity is applied to a first differential circuit having its two outputs each of which

is connected to the gates of a respective pair of the transistors which are in diametrically opposite arms of the bridge. The other pair of opposite corners of the bridge are connected respectively to two inputs of a second differential amplifier the output terminal of which constitutes the active



output terminal of the modulator, an earthed center tap on the secondary of the transformer constituting a reference output terminal for the modulator. Amplitude modulated carrier appears at the output terminals and its phase is inverted when the polarity of the modulating signal changes. The bridge eliminates second harmonic distortion.

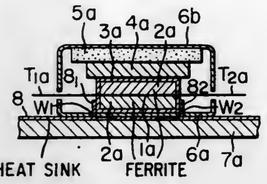
3,621,475
MULTICHANNEL ROTARY JOINT
Glenn A. Walters, 12900 Camino Del Valle, Poway, Calif.
Filed Jan. 7, 1970, Ser. No. 1,247
Int. Cl. H01p *1/06, 5/02*
U.S. Cl. 333—1 **3 Claims**



A multichannel microwave rotary joint composed of a tandem assembly of single channel microwave rotary joints is described wherein the single channel microwave rotary joints at each end of the assembly can be of a conventional design but the intermediate microwave rotary joints are any number of either or both of two types of single channel microwave rotary joint configurations described herein.

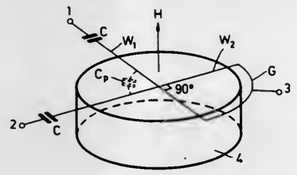
3,621,476
CIRCULATOR HAVING HEAT DISSIPATING PLATE
Naohiko Kanbayashi, Tokyo, Japan, assignor to TDK Electronics Company Ltd., Tokyo, Japan
Filed Mar. 9, 1970, Ser. No. 17,816
Claims priority, application Japan, Oct. 2, 1969, 44/78800
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **2 Claims**

A nonreciprocal circuit element in which some portions of a heat dissipating plate or heat sink which are introduced into a magnetic shield case through apertures thereof are made in close contact with a case which houses microwave



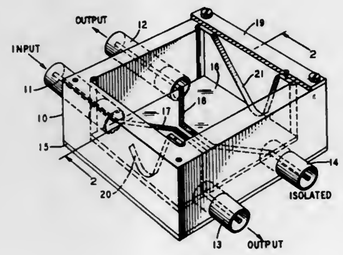
ferrite elements and a center conductor. The heat dissipating effect is remarkably improved.

3,621,477
THREE-PORT CIRCULATOR COMPRISING ONLY TWO CROSSING COILS
Hendrik Bosma, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.
Filed June 24, 1970, Ser. No. 49,392
Claims priority, application Netherlands, July 2, 1969, 6910116
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **1 Claim**



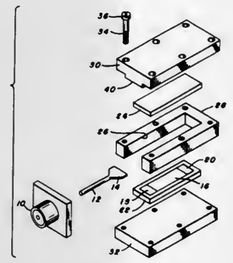
Three-port circulator comprising only two windings crossing each other at right angles so that the number of stray capacitances as compared with existing circulators is reduced and the bandwidth is less restricted.

3,621,478
SUSPENDED SUBSTRATE TRANSMISSION LINES HAVING COUPLED CENTER CONDUCTORS
Arlen Kent Johnson, New Providence, and George Isaac Zysman, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 13, 1970, Ser. No. 27,501
Int. Cl. H01p *5/14*
U.S. Cl. 333—10 **2 Claims**



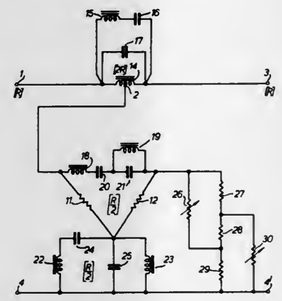
A structure is disclosed having parallel center conductors on a substrate suspended in an offset manner between a pair of ground plane conductors. Offsetting the substrate in the manner taught results in equalizing the phase velocities of the even and odd mode portions of electromagnetic energy coupled from one of the center conductors to the other center conductor.

3,621,479
APPARATUS FOR DISSIPATING WAVE ENERGY
Noel C. Peterson, Severna Park, Md., and Gerald I. Klein, Westbury, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 8, 1970, Ser. No. 1,353
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **8 Claims**



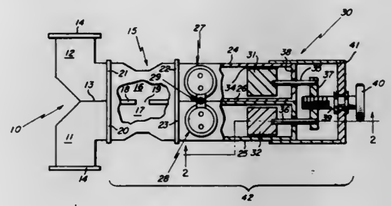
Described is a power-dissipating termination for wave energy transmission lines, characterized in having a low voltage standing wave ratio essentially independent of input power and operable in ambient temperatures up to 300° C. over a frequency range from zero to ultrahigh frequencies and above.

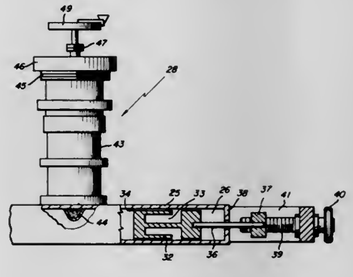
3,621,480
ELECTRICAL NETWORKS
John David Brownlie, Chesham, England, assignor to The Post Office, London, England
Filed Feb. 11, 1970, Ser. No. 10,417
Claims priority, application Great Britain, Feb. 14, 1969, 8,217/69
Int. Cl. H03h *5/00*
U.S. Cl. 333—28 **10 Claims**



Passive electrical networks for the generation of even- and odd-echo-pairs suitable for use in annulling gain and phase inequalities in color television signals are described. The networks are of the bridged-T-type. A center-tapped inductor forms the horizontal bar of the "T" and an echo-generating circuit forms the vertical bar. The bridging network contains components which with the shunt inductance and self-capacitance of the inductor form a fourth order approximation to a delay line. Values are chosen so that the inductor has a hybrid coupling action. Compensation for leakage inductance of the inductor consists of introducing delays into the echo-generating circuit and delay circuit. Adjustment of the networks and modifications to the echo-generating circuit are described.

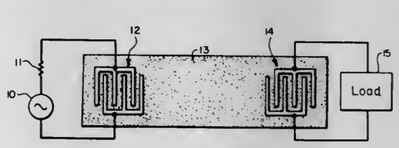
3,621,481
MICROWAVE ENERGY PHASE SHIFTER
Henry W. Perreault, Chelmsford, and Howard Scharfman, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed May 1, 1970, Ser. No. 33,742
Int. Cl. H03h *7/22*
U.S. Cl. 333—31 **7 Claims**





Means for control of amplitude, as well as phase, of electromagnetic energy in microwave frequency transmission systems are disclosed incorporating variable energy reflection, as well as absorption load means, in a compact branch transmission line structure coupled by short-slot hybrid junction means to a main transmission line. Adjustment of the load-to-line coupling results in variation of the amplitude of the energy and variation of a terminal reflecting member results in adjustment of the phase of such energy. The adjustments in amplitude, as well as phase, are made independently and have exceedingly high power capabilities in the order of megawatts.

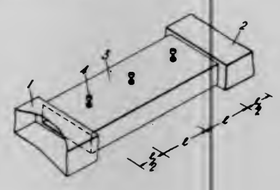
3,621,482
TUNABLE SURFACE-WAVE SIGNAL-TRANSLATING DEVICE
Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 4, 1969, Ser. No. 882,238
Int. Cl. H03h *9/30, 7/10*
U.S. Cl. 333—72 **9 Claims**



A filter has an acoustic-surface-wave propagating medium, a source and/or load for translating signals of different frequencies within a given range and a plurality of pairs of interleaved conductive combs formed on a surface of the medium with each comb pair having a unique intertooth spacing such that the comb pairs individually respond to different assigned frequencies within the range. The structure includes a plurality of conductive ribbons that are laterally spaced successively apart across a portion of the medium and a pair of

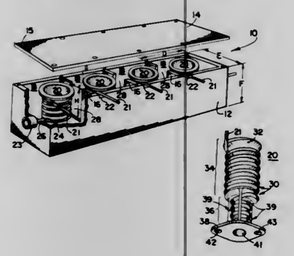
conductive strips oriented generally transverse to the ribbons is coupled across the source or load. Sandwiched between the strips and ribbons is a layer of photoconductive material. A light source illuminates at least two discrete regions of the photoconductive layer disposed individually on respective different ones of the strips in alignment with respective different ones of the ribbons. In one version, the illuminated regions each overlie respective different groups of ribbons with those different groups together then serving as the teeth of the interleaved combs. In another version, different pairs of the ribbons are coupled across respective different interleaved comb pairs and the illumination of crossing points, as between the strips and different pairs of the ribbons, selectively coupled different ones of the comb pairs to the strips. In both versions, the strips are coupled to the source or load.

3,621,483
WAVEGUIDE FILTER
George Frederick Craven, Sawbridgeworth, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed June 2, 1967, Ser. No. 643,279
Claims priority, application Great Britain, June 10, 1966, 25,966/66
Int. Cl. H03h *7/10*
U.S. Cl. 333—73 W **1 Claim**



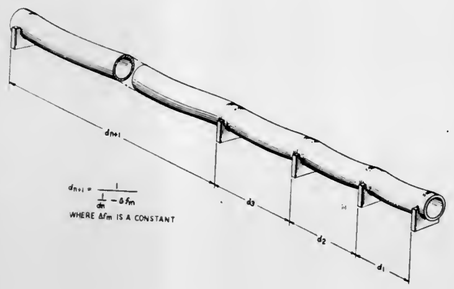
Waveguide band-pass filters operated such that only evanescent H waves exist at the operating frequency of the system are terminated in a capacitive reactance which at the center frequency of the desired pass band is the conjugate of the positive imaginary characteristic impedance of the length of evanescent waveguide. The capacitive termination is the only obstacle required in the guide.

3,621,484
HELICAL RESONATOR HAVING VARIABLE CAPACITOR WHICH INCLUDES WINDINGS OF REDUCED DIAMETER AS ONE PLATE THEREOF
Dale L. Shult, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 5, 1970, Ser. No. 16,903
Int. Cl. H10s ; H03h *7/10*
U.S. Cl. 333—83 R **8 Claims**



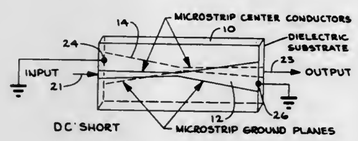
A helical resonator is comprised of a coil embedded in a plastic core which has been injection molded thereabout and a conductive housing. Windings at one end of the coil have a reduced diameter with respect to the diameter of the rest of the windings of the coil to provide one plate of an equivalent variable capacitor. The other plate is partially formed by a wall of the housing which is adjacent to the windings of reduced diameter. A screw extends through the foregoing wall into a hollow portion in the core enclosed by the windings of reduced diameter. Adjustment of the screw controls the resonant frequency of the cavity.

3,621,485
WAVEGUIDE SUPPORT SYSTEM
Robert P. Guenther, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 16, 1969, Ser. No. 885,418
Int. Cl. H01p *3/12, 1/00;* **H02g** *7/14*
U.S. Cl. 333—95 **4 Claims**



A system is disclosed for supporting a circular waveguide to minimize transmission losses caused by mode coupling resulting from the deflection of the waveguide due to its own weight between the supports. The conventional system of spacing the supports at regular linear intervals is replaced by this system which provides supports at varying linear intervals. The linear intervals vary to provide a uniform change in mechanical frequency (the inverse of linear spacing).

3,621,486
DIRECT CURRENT SHORT CIRCUIT DEVICE
Bernard F. Gunshinan, Sepulveda, and Frederick W. Hand, Jr., Burbank, both of Calif., assignors to The Bendix Corporation
Filed Mar. 30, 1970, Ser. No. 23,636
Int. Cl. H01p *3/08, 1/00*
U.S. Cl. 333—97 R **3 Claims**

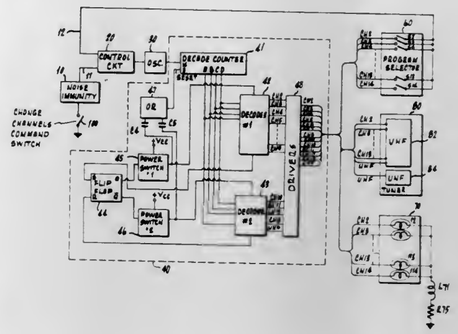


A miniature microstrip device is described which constitutes a highly effective direct current short circuit device while retaining the ability to transmit a very wide range of frequencies above the cutoff frequency. Each of two printed circuit conductor patterns is positioned on opposite faces of a dielectric substrate. Each conductor has a wide, but tapered, ground plane conductor connecting to a smoothly tapered "hot side" conductor track tapered such as according to a Tchebycheff pattern. These conductors are reversibly aligned on the substrate such that each "hot side" conductor is associated with the ground plane portion of the op-

posite conductor. Each end is adapted to be connected to a conventional microwave coaxial line with the ground plane portion of one printed conductor connected to the shielding portion and the "hot side" end of the opposite conductor connected to the center conductor of the coaxial line. Thus, each center, conductor is connected through the printed circuit conductor to a grounded portion of the opposite connector, thus grounding all direct current. The microwave frequencies, of course, are transmitted from the input lead across the substrate to the opposite center conductor.

3,621,487
SEQUENCER
Don Edward Christensen, Indianapolis, Ind., assignor to RCA Corporation
Filed June 30, 1969, Ser. No. 837,507
Int. Cl. H03j *3/04, 3/06*
U.S. Cl. 334—11 **10 Claims**

A counter, such as a decade counter, coupled to a plurality, such as two, decoders. In the case of a decade counter, each decoder is responsive to not more than ten counts. In response to the last count decoded by one decoder, it is operatively decoupled from the decoder and the next decoder is operatively coupled to the counter. This may be accomplished, for example, by removing power from one decoder and applying it to the other. In addition, in response



to this same stimulus, the counter may be reset to its initial counting state.

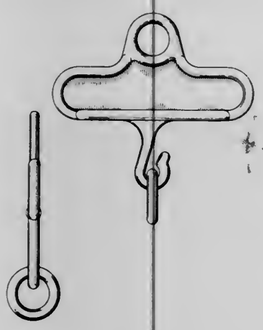
DESIGNS

NOVEMBER 16, 1971

222,603
GAME SHEARS
Alwin J. Stahel, New Brighton, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
Filed June 10, 1970, Ser. No. 23,431
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—52



222,604
GARMENT HANGER CARRIER
Charles H. Borten, Kyoto Bldg., Suite 1–U, Towers of Windsor Park, Cherry Hill, N.J. 08034
Filed May 19, 1970, Ser. No. 23,055
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—15 A



222,605
JUG
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,280
Term of patent 14 years
Int. Cl. D9—*40*
U.S. Cl. D9—40



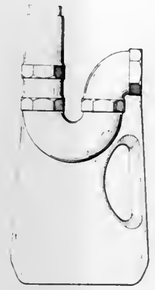
222,606
JUG
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,291
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



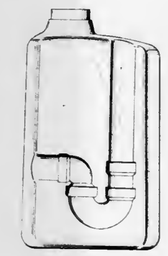
222,607
JUG
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,283
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



222,608
JUG
George N. Grosshans, Los Angeles, Calif., and Raymon E. Hobbs, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 22, 1970, Ser. No. 26,621
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



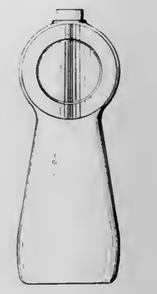
222,609
BOTTLE
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,284
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—70



222,610
BOTTLE
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,289
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—137



222,611
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 4, 1970, Ser. No. 26,290
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116



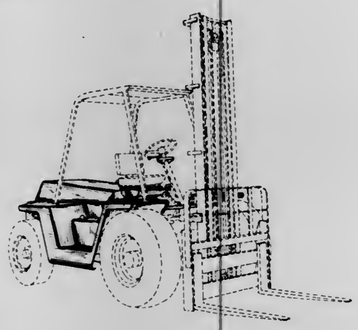
222,612
COMBINED POUR SPOUT AND HANGER FOR A CONTAINER
Joseph Marg, 24043 Greenlawn Ave., Beachwood, Ohio 44121
Original design application Feb. 5, 1969, Ser. No. 15,640. Divided and this application Nov. 13, 1970, Ser. No. 25,955
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



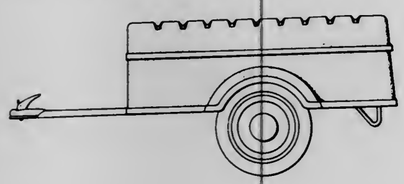
222,613
COMBINED POUR SPOUT AND HANGER FOR A CONTAINER
Joseph Marg, 24043 Greenlawn Ave., Beachwood, Ohio 44121
Original design application Feb. 5, 1969, Ser. No. 15,640. Divided and this application Nov. 16, 1970, Ser. No. 25,980
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



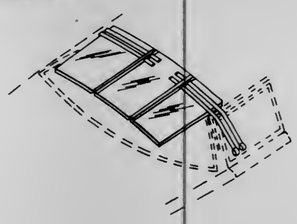
222,614
LIFT TRUCK BODY
Warner K. Brown, 111 Shadywood Lane, Battle Creek, Mich. 49015, and Darrell C. Fuller, 1602 Orchard Lane, Marshall, Mich. 49068
Continuation-in-part of design application Ser. No. 18,756, Aug. 19, 1969. This application June 10, 1970, Ser. No. 23,433
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D14—3



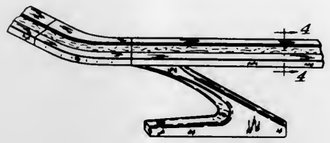
222,615
TRAILER
Horst R. Hickmann, Cincinnati, Ohio, assignor to Joseph V. Wilson, Cincinnati, Ohio
Filed Sept. 30, 1970, Ser. No. 25,277
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



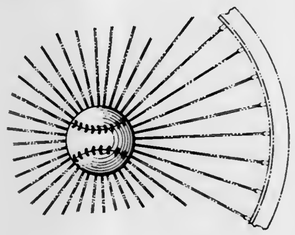
222,616
AUTOMOBILE RAIN VISOR FOR DRIVE-IN THEATRES
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 19,923, Nov. 4, 1969. This application Aug. 12, 1970, Ser. No. 24,438
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



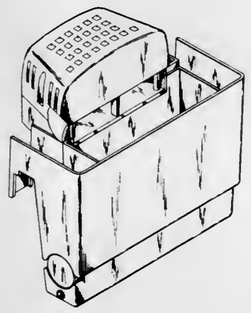
222,617
LUGGAGE RACK
John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich. 48236
Filed Apr. 16, 1970, Ser. No. 22,456
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27



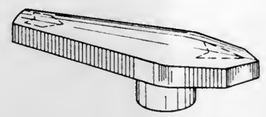
222,618
CYCLE WHEEL ORNAMENT OR THE LIKE
Donald O. Ascani, 510 Miller St., and Joseph R. Ascani, 451 Broadway, both of Bangor, Pa. 18013
Filed Feb. 25, 1969, Ser. No. 15,908
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



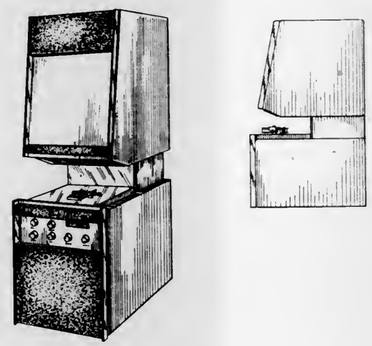
222,619
COMBINED FILTER AND PUMP FOR AQUARIUMS
David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed Aug. 21, 1970, Ser. No. 24,631
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



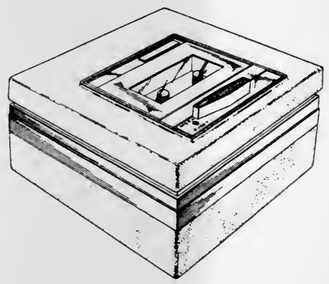
222,620
VALVE OPERATING HANDLE
Francis J. Callahan, Jr., Chagrin Falls, Ohio, and Stephen Matousek, Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed May 13, 1970, Ser. No. 22,963
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



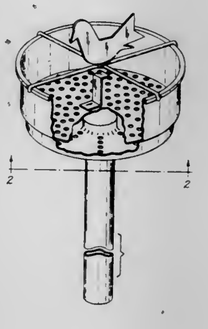
222,621
INFRARED MICROSCOPE
Bennett Sherman, Elmhurst, and Gerard J. Spillman, Floral Park, N.Y., assignors to GTE Laboratories Incorporated
Filed May 28, 1970, Ser. No. 23,195
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D26—5



222,622
CASSETTE TRANSPORT
Leon C. Sanderson, Culver City, and David R. Crouch, Los Angeles, Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Oct. 16, 1970, Ser. No. 25,524
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



222,623
COMBINED BIRD FEEDER AND WASTE FOOD DRIER
Idolee Simpson, 7631 Jerome Ave., Maplewood, Mo. 63143
Filed June 10, 1970, Ser. No. 23,427
Term of patent 7 years
Int. Cl. D30—*03*
U.S. Cl. D30—14



222,624
TABLE
John L. Gianfagna, 102 Crestwood Circle, Marietta, Ohio 45750
Original design application July 17, 1968, Ser. No. 12,808. Divided and this application May 13, 1969, Ser. No. 19,396
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



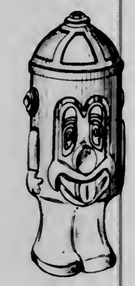
222,625
COIN BANK OR SIMILAR ARTICLE
Irwin Cohn, 746 West St., Leominster, Mass. 01453
Filed Nov. 9, 1970, Ser. No. 25,875
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11



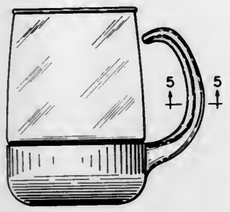
222,627
COIN BANK OR SIMILAR ARTICLE
Irwin Cohn, 746 West St., Leominster, Mass. 01453
Filed Nov. 9, 1970, Ser. No. 25,877
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11



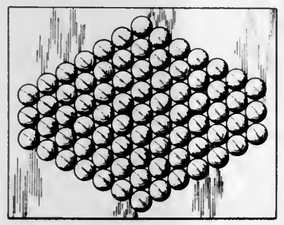
222,626
COIN BANK OR SIMILAR ARTICLE
Irwin Cohn, 746 West St., Leominster, Mass. 01453
Filed Nov. 9, 1970, Ser. No. 25,876
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11



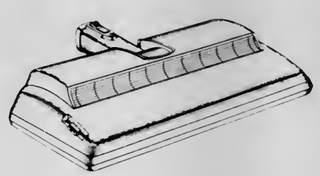
222,628
MUG
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 27, 1970, Ser. No. 22,673
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9



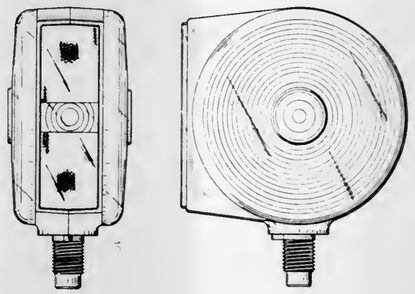
222,629
KINETIC SCREEN OR SIMILAR ARTICLE
Jon Hassell, New York, N.Y., assignor to Light Years Inc., New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 21,323
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



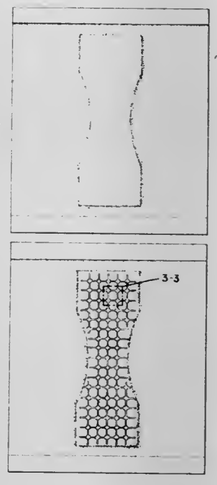
222,631
VACUUM CLEANER ACCESSORY NOZZLE
Paul E. Gaudry, 40 Ouimet St., Laval des Rapides, Laval, Quebec, Canada
Filed June 18, 1970, Ser. No. 23,558
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D49—19



222,630
COMBINED PARK, TURN SIGNAL AND SIDE MARKER LIGHT
Robert E. Dawson, Huntingdon Valley, Pa., and Edward J. Nitsch, Camillus, and John F. Stahl, Syracuse, N.Y., assignors to R. E. Dietz Company, Syracuse, N.Y.
Continuation-in-part of design application Ser. No. 13,186, Aug. 19, 1968. This application Mar. 10, 1969, Ser. No. 16,551
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32



222,632
DISPOSABLE DIAPERS
Evelyn H. Krusko, Philadelphia, Pa., assignor to Scott Paper Company, Delaware County, Pa.
Filed Mar. 30, 1970, Ser. No. 22,125
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—1



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Bro, Jacques, to Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies). Fence stretcher. 3,620,503, Cl. 254-30.

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164 : 3,619,853	59 : 3,619,916	57— 34 : 3,619,999
17— 42 : 3,619,854	37— 1 : 3,619,917	3,620,000
74 : 3,619,855	12 : 3,619,918	58.57: 3,620,001
18— 2 : 3,619,856	38— 61 : 3,619,919	.89: 3,620,002
5 : 3,619,857	40— 2 : 3,619,920	140 : 3,620,003
3,619,858	95 : 3,619,921	58— 23 : 3,620,004
12 : 3,619,859	97 : 3,619,922	28 : 3,620,005
3,619,860	118 : 3,619,923	58 : 3,620,006
16 : 3,619,861	42— 1 : 3,619,924	80 : 3,620,007
19 : 3,619,862	3,619,927	60— 30 : 3,620,008
3,619,863	16 : 3,619,926	39.16: 3,620,009
3,619,864	25 : 3,619,928	.28: 3,620,010
26 : 3,619,865	50 : 3,619,929	3,620,011
34 : 3,619,866	69 : 3,619,930	.36: 3,620,012
19— 55 : 3,619,867	901 : 3,619,925	.72: 3,620,013
65 : 3,619,868	43— 15 : 3,619,931	51 : 3,620,014
156.3 : 3,619,869	43.12: 3,619,932	52 : 3,620,015
282 : 3,619,870	54.5 : 3,619,933	54.5 : 3,620,016
21— 2.7 : 3,620,667	131 : 3,619,934	59 : 3,620,017
23—107 : 3,620,668	44— 7 : 3,620,694	202 : 3,620,018
114 : 3,620,669	3,620,695	221 : 3,620,019
127 : 3,620,670	62 : 3,620,696	226 : 3,620,020
143 : 3,620,671	46— 19 : 3,619,935	3,620,021
165 : 3,620,672	53 : 3,619,936	3,620,022
168 : 3,620,673	76 : 3,619,937	61— 13 : 3,620,023
178 : 3,620,674	94 : 3,619,938	14 : 3,620,024
230 : 3,620,675	201 : 3,619,939	45 : 3,620,025
253 : 3,620,676	3,619,940	46.5 : 3,620,026
3,620,677	216 : 3,619,941	48 : 3,620,027
3,620,678	220 : 3,619,942	72.3 : 3,620,028
259 : 3,620,679	221 : 3,619,943	62— 6 : 3,620,029
260 : 3,620,680	47— 33 : 3,619,944	11 : 3,620,030
267 : 3,620,681	48— 89 : 3,620,697	17 : 3,620,031
273 : 3,620,682	206 : 3,620,698	28 : 3,620,032
281 : 3,620,683	212 : 3,620,699	55 : 3,620,033
285 : 3,620,684	215 : 3,620,700	58 : 3,620,034
288 : 3,620,685	49— 30 : 3,619,945	3,620,035
295 : 3,620,686	264 : 3,619,946	101 : 3,620,036
341 : 3,620,687	425 : 3,619,947	158 : 3,620,037
356 : 3,620,688	51— 72 : 3,619,948	195 : 3,620,038
367 : 3,620,689	95 : 3,619,950	285 : 3,620,039
24— 68 : 3,619,871	103 : 3,619,951	354 : 3,620,040

64— 1 : 3,620,041	83— 74 : 3,620,111	99—109 : 3,620,766
3 : 3,620,042	98 : 3,620,112	111 : 3,620,767
9 : 3,620,043	3,620,113	116 : 3,620,768
14 : 3,620,044	107 : 3,620,114	134 : 3,620,769
28 : 3,620,045	226 : 3,620,115	138 : 3,620,770
3,620,046	84— 1.16: 3,621,105	140 : 3,620,771
65— 3 : 3,620,701	.28: 3,621,106	3,620,772
18 : 3,620,702	111 : 3,620,116	154 : 3,620,773
42 : 3,620,703	313 : 3,620,117	171 : 3,620,774
86 : 3,620,704	418 : 3,620,118	176 : 3,620,775
114 : 3,620,706	85— 1 : 3,620,119	199 : 3,620,776
129 : 3,620,705	76 : 3,620,120	235 : 3,620,154
271 : 3,620,707	89— 1 : 3,620,121	295 : 3,620,155
66— 25 : 3,620,047	.5 : 3,620,122	349 : 3,620,156
84 : 3,620,048	.8 : 3,620,123	100—145 : 3,620,157
138 : 3,620,049	13 : 3,620,124	154 : 3,620,158
68— 8 : 3,620,051	196 : 3,620,125	101— 28 : 3,620,159
9 : 3,620,052	91—280 : 3,620,126	128.2 : 3,620,160
17 : 3,620,054	412 : 3,620,127	291 : 3,620,161
23.5 : 3,620,053	446 : 3,620,128	102— 65.2 : 3,620,162
222 : 3,620,055	449 : 3,620,129	70 : 3,620,165
355 : 3,620,050	506 : 3,620,130	.2 : 3,620,166
70—362 : 3,620,056	92— 2 : 3,620,131	78 : 3,620,163
456 : 3,620,057	3,620,132	3,620,164
71— 33 : 3,620,708	33 : 3,620,133	93 : 3,620,167
63 : 3,620,709	79 : 3,620,134	104—202 : 3,620,168
93 : 3,620,710	97 : 3,620,135	105—282 : 3,620,169
94 : 3,620,711	151 : 3,620,136	3,620,170
106 : 3,620,712	169 : 3,620,137	369 : 3,620,171
72— 8 : 3,620,058	93— 36.3 : 3,620,138	106— 14 : 3,620,777
60 : 3,620,059	50 : 3,620,139	35 : 3,620,778
112 : 3,620,060	95— 4.5 : 3,620,140	47 : 3,620,779
199 : 3,620,061	3,620,141	55 : 3,620,780
248 : 3,620,062	10 : 3,620,142	57 : 3,620,781
250 : 3,620,063	3,620,143	59 : 3,620,782
272 : 3,620,064	11 : 3,620,144	69 : 3,620,783
297 : 3,620,065	3,620,145	84 : 3,620,784
362 : 3,620,066	15 : 3,620,146	104 : 3,620,785
407 : 3,620,067	3,620,147	213 : 3,620,786
73— 15 : 3,620,068	42 : 3,620,148	287 : 3,620,787
67.2 : 3,620,069	44 : 3,620,149	3,620,790
.8 : 3,620,070	3,620,150	288 : 3,620,788
99 : 3,620,071	64 : 3,620,151	3,620,789
117.4 : 3,620,072	89 : 3,620,152	3,620,791
133 : 3,620,073	94.00: 3,620,153	307 : 3,620,792
141 : 3,620,074	96— 1 : 3,620,721	308 : 3,620,793
3,620,075	.2 : 3,620,722	107— 1 : 3,620,172
147 : 3,620,076	.5 : 3,620,723	54 : 3,620,173
151.5 : 3,620,077	.6 : 3,620,742	108—151 : 3,620,174
170 : 3,620,078	.8 : 3,620,729	153 : 3,620,175
194 : 3,620,079	3 : 3,620,724	3,620,176
304 : 3,620,080	3,620,730	110— 8 : 3,620,177
340 : 3,620,081	3,620,731	99 : 3,620,178
362 : 3,620,082	3,620,746	112—168 : 3,620,179
398 : 3,620,083	22 : 3,620,725	407 : 3,620,180
3,620,084	27 : 3,620,726	114— .5 : 3,620,181
439 : 3,620,085	3,620,727	109 : 3,620,182
483 : 3,620,086	29 : 3,620,728	151 : 3,620,183
521 : 3,620,087	33 : 3,620,732	115— 1 : 3,620,184
74— 5 : 3,620,088	3,620,733	116—125 : 3,620,185
.6 : 3,620,089	35.1 : 3,620,734	117— 5.5 : 3,620,794
31 : 3,620,090	36 : 3,620,735	3,620,795
34 : 3,620,091	3,620,736	6 : 3,620,796
230.23: 3,620,092	.3 : 3,620,737	7 : 3,620,797
250 : 3,620,093	48 : 3,620,738	17.5 : 3,620,798
251 : 3,620,094	3,620,748	22 : 3,620,799
469 : 3,620,095	49 : 3,620,739	36.4 : 3,620,801
3,620,096	3,620,740	3,620,802
473 : 3,620,097	3,620,741	37 : 3,620,800
505 : 3,620,098	3,620,743	44 : 3,620,803
524 : 3,620,099	53 : 3,620,744	47 : 3,620,804
688 : 3,620,100	68 : 3,620,745	51 : 3,620,805
691 : 3,620,101	74 : 3,620,747	63 : 3,620,806
796 : 3,620,102	94 : 3,620,749	66 : 3,620,807
860 : 3,620,103	108 : 3,620,750	69 : 3,620,808
75— .5 : 3,620,714	114 : 3,620,751	71 : 3,620,809
.50: 3,620,713	.7 : 3,620,752	72 : 3,620,810
1 : 3,620,715	99— 2 : 3,620,753	76 : 3,620,811
68 : 3,620,716	3 : 3,620,754	3,620,812
125 : 3,620,717	17 : 3,620,755	94 : 3,620,813
170 : 3,620,718	54 : 3,620,757	106 : 3,620,814
3,620,719	71 : 3,620,756	3,620,815
206 : 3,620,720	3,620,758	114 : 3,620,816
81— 9.5 : 3,620,104	78 : 3,620,759	118 : 3,620,817
57.14: 3,620,105	80 : 3,620,760	3,620,818
121 : 3,620,106	3,620,761	123 : 3,620,819
125.1 : 3,620,107	83 : 3,620,762	124 : 3,620,820
341 : 3,620,108	92 : 3,620,763	126 : 3,620,821
82— 2 : 3,620,109	93 : 3,620,764	130 : 3,620,822
83— 66 : 3,620,110	103 : 3,620,765	138.8 : 3,620,823

117–138.8	3,620,824	141–20	3,620,266	169–15	3,620,306	198–102	3,620,350	214–63	3,620,392	235–197	3,621,227
	3,620,825	364	3,620,267	172–15	3,620,307	129	3,620,351	86	3,620,393		3,621,228
139.5	3,620,826	388	3,620,268	248	3,620,308	138	3,620,352	147	3,620,394	201	3,621,229
200	3,620,827	143–32	3,620,269	438	3,620,309	160	3,620,353	152	3,620,395	236–46	3,620,448
201	3,620,828	47	3,620,270	600	3,620,310	177	3,620,354	454	3,620,396	56	3,620,449
	3,620,829	144–2	3,620,271	173–136	3,620,311	182	3,620,355	506	3,620,397	237–8	3,620,450
	3,620,831	3	3,620,272	138	3,620,312	193	3,620,356	215–9	3,620,398	238–10	3,620,451
204	3,620,830		3,620,273	174–6	3,621,107		3,620,357	13	3,620,399	239–29.5	3,620,452
210	3,620,832	146–52	3,620,274	15	3,621,108	220	3,620,358	44	3,620,400	60	3,620,453
212	3,620,833	89	3,620,275	16	3,621,109	223	3,620,359	219–9.5	3,621,175	79	3,620,454
213	3,620,834	148–1.5	3,620,850	25	3,621,110	199–50	3,620,360	57	3,621,176	132.3	3,620,455
215	3,620,835		3,620,851	50.52	3,621,112	200–6	3,621,157	61	3,621,177	533	3,620,456
216	3,620,836	2	3,620,852	.64	3,621,111	14	3,621,158	107	3,621,178	589	3,620,457
217	3,620,837	13.2	3,620,853	51	3,621,113	42	3,621,159	121	3,621,179	657	3,620,458
	3,620,838	32	3,620,854	52	3,621,114	48	3,621,160		3,621,180	670	3,620,459
226	3,620,839	.5	3,620,855	67	3,621,115	50	3,621,161		3,621,181	240–7.1	3,621,230
227	3,620,840	121	3,620,856	68.5	3,621,116	61.39	3,621,162	125	3,621,182	9.5	3,621,231
237	3,620,841	149–18	3,620,857	84	3,621,117	.45	3,621,163		3,621,183	35	3,621,232
118–48	3,620,186	21	3,620,858	115	3,621,118	.58	3,621,164	127	3,621,184	46.59	3,621,233
58	3,620,187	150–52	3,620,276	124	3,621,119	.62	3,621,165	130	3,621,185	52.4	3,621,234
323	3,620,188	151–41.76	3,620,277	175–4.59	3,620,314	81.9	3,621,166	138	3,621,186	90	3,621,235
620	3,620,189	152–9	3,620,278	14	3,620,313	82	3,621,167	145	3,621,187	241–46.11	3,620,460
630	3,620,190	356	3,620,279	176–20	3,620,315	84	3,621,168	146	3,621,188	100	3,620,461
637	3,620,191	359	3,620,280	32	3,620,916	144	3,621,169	155	3,621,190	255	3,620,463
119–16	3,620,192	156–20	3,620,859	39	3,620,917	148	3,621,170	211	3,621,191	294	3,620,462
18	3,620,193	53	3,620,861	177–50	3,620,316		3,621,171	217	3,621,192	242–25	3,620,482
98	3,620,194	69	3,620,862	54	3,620,317	153	3,621,172	234	3,621,193	43	3,620,464
123–8.13	3,620,195	79	3,620,863	178–2	3,621,120		3,621,189		3,621,194	55.19	3,620,467
32	3,620,196		3,620,864	5.2	3,621,121	168	3,621,173	243	3,621,195	.2	3,620,465
119	3,620,197	98	3,620,865	.4	3,621,122		3,621,174	269	3,621,196	.3	3,620,466
136	3,620,198	102	3,620,866		3,621,124	203–6	3,620,928	328	3,621,197	68.3	3,620,468
140	3,620,199	117	3,620,867	.40	3,621,123	38	3,620,929	349	3,621,198	74	3,620,469
148	3,620,200	181	3,620,868	.8	3,621,125	87	3,620,930	370	3,621,199	82	3,620,470
	3,620,201	190	3,620,869	6	3,621,126	204–1	3,620,931	377	3,621,200	118.6	3,620,471
179	3,620,202	197	3,620,870	.5	3,621,127	15	3,620,932	388	3,621,201	192	3,620,472
182	3,620,203	212	3,620,871	.8	3,621,128		3,620,933	492	3,621,202		3,620,473
198	3,620,204	231	3,620,872		3,621,129	34	3,620,934	528	3,621,203	195	3,620,474
126–110	3,620,205	247	3,620,860		3,621,130	38	3,620,935	553	3,621,204	197	3,620,475
271	3,620,206	250	3,620,873		3,621,131	41	3,620,936	220–3.6	3,620,401		3,620,476
127–32	3,620,842	270	3,620,874	7.2	3,621,132	44	3,620,937	4	3,620,402		3,620,477
128–2.05	3,620,207	272	3,620,875	.3	3,621,133	55	3,620,938		3,620,403		3,620,478
.06	3,620,208		3,620,876		3,621,134	56	3,620,939	18	3,620,404	198	3,620,479
41	3,620,209	285	3,620,877	.6	3,621,135		3,620,940	40	3,620,405	199	3,620,480
74	3,620,210	309	3,620,878	.92	3,621,136	59	3,620,941	44	3,620,406	203	3,620,481
89	3,620,211	345	3,620,879	15	3,621,137	68	3,620,942	46	3,620,407	244–1	3,620,484
130	3,620,212	384	3,620,880		3,621,138	148	3,620,943	60	3,620,408	29	3,620,485
142	3,620,213	388	3,620,881	69	3,621,139	157.1	3,620,945	85	3,620,409	33	3,620,486
146.2	3,620,214	461	3,620,882	.5	3,621,140	158	3,620,944	94	3,620,410	55	3,620,487
213	3,620,215	500	3,620,883	88	3,621,141	171	3,620,946	315	3,620,411	77	3,620,488
217	3,620,216	553	3,620,884	179–1	3,621,142	180	3,620,947	221–58	3,620,412	110	3,620,489
284	3,620,217	563	3,620,885	16	3,621,143	181	3,620,948	289	3,620,413	246–411	3,621,237
334	3,620,218		3,620,886	18	3,621,144		3,620,949	222–5	3,620,414	248–58	3,620,490
410	3,620,219		3,620,887		3,621,145		3,620,950	57	3,620,415	106	3,620,491
419	3,620,220	157–1.55	3,620,281		3,621,146	196	3,620,951	59	3,620,416	171	3,620,496
422	3,620,221	159–13	3,620,282		3,621,147	198	3,620,952	136	3,620,417	188	3,620,492
481	3,620,222		3,620,283	100.2	3,621,148	202	3,620,953	209	3,620,418	278	3,620,498
130–22	3,620,223	160–331	3,620,284		3,621,149	206	3,620,954	298	3,620,419	360	3,620,493
27	3,620,224	161–1	3,620,888		3,621,150	283	3,620,955	386.5	3,620,420	405	3,620,494
131–235	3,620,225	5	3,620,889		3,621,151	298	3,620,956	402.21	3,620,421	430	3,620,495
	3,620,226	6	3,620,890		3,621,152		3,620,957	.22	3,620,422	249–127	3,620,497
267	3,620,227	38	3,620,891		3,621,153	299	3,620,958	414	3,620,423	250–41.9	3,621,239
132–119	3,620,229	89	3,620,892	110	3,621,154	302	3,620,959	450	3,620,424		3,621,240
134–9	3,620,230	109	3,620,893	146	3,621,155	206–1	3,620,361	518	3,620,425		3,621,241
15	3,620,231	114	3,620,894	150	3,621,156	.7	3,620,362	224–5	3,620,426		3,621,242
56	3,620,232	123	3,620,895	180–5	3,620,318	45.15	3,620,363	25	3,620,428	43.5	3,621,243
57	3,620,233		3,620,896	6.44	3,620,319	46	3,620,364	226–11	3,620,429	49.5	3,621,244
86	3,620,234	154	3,620,897		3,620,320		3,620,365	97	3,620,430	51.5	3,621,245
135–1	3,620,235	160	3,620,898	46	3,620,321	59	3,620,366	109	3,620,431	52	3,621,246
136–6	3,620,843	162	3,620,899	51	3,620,322	65	3,620,367	172	3,620,432		3,621,247
86	3,620,844		3,620,900	65	3,620,323	208–60	3,620,960	227–10	3,620,433	65	3,621,248
88	3,620,845		3,620,901	103	3,620,324	79	3,620,961	101	3,620,434	71	3,621,249
89	3,620,846	165	3,620,902	127	3,620,325	89	3,620,962	229–3.5	3,620,435		3,621,250
	3,620,847	169	3,620,903	181–.5	3,620,326	111	3,620,963	39	3,620,436	.5	3,621,251
138	3,620,848	173	3,620,904		3,620,327		3,620,964	43	3,620,437		3,621,252
217	3,620,849	190	3,620,905		3,620,328	120	3,620,965	51	3,620,438		3,621,253
137–13	3,620,236	203	3,620,906	33	3,620,329	143	3,620,966		3,620,439	83	3,621,254
67	3,620,237	227	3,620,907	65	3,620,330	179	3,620,967	72	3,620,440		3,621,256
81.5	3,620,238	248	3,620,908	182–36	3,620,331	216	3,620,968	85	3,620,441		3,621,257
	3,620,239	162–8	3,620,909	108	3,620,332	245	3,620,969	232–35	3,620,443	.1	3,621,255
107	3,620,228	83	3,620,910	188–30	3,620,333	209–2	3,620,368		3,620,444	.3	3,621,258
202	3,620,240	90	3,620,912	251	3,620,334	3	3,620,369	233–7	3,620,442		3,621,259
216	3,620,241	96	3,620,911	192–21.5	3,620,335	144	3,620,370	235–60.15	3,620,446	.6	3,621,238
240	3,620,242	175	3,620,913	35	3,620,336	210–23	3,620,970	.2	3,620,445	106	3,621,260
246.22	3,620,243	198	3,620,914	46	3,620,337	59	3,620,971	61.11	3,621,205		3,621,261
315	3,620,244	253	3,620,915	53	3,620,338	117	3,620,371		3,621,206	214	3,621,262
318	3,620,245	164–34	3,620,286	84	3,620,339	169	3,620,372	92	3,621,207	218	3,621,263
357	3,620,246	52	3,620,287	194–9	3,620,340	189	3,620,373	132	3,620,447	219	3,621,264
489	3,620,247		3,620,288	10	3,620,341	231	3,620,374	150	3,621,208		3,621,265
493	3,620,248	60	3,620,289	61	3,620,342	484	3,620,375		3,621,209		3,621,266
503	3,620,249	73	3,620,290	195–2	3,620,918	211–123	3,620,376		3,621,213		3,621,267
561	3,620,250	108	3,620,291	7	3,620,919	177	3,620,377	.2	3,621,210	221	3,621,268
614.11	3,620,251	140	3,620,292	28	3,620,920		3,620,378	.27	3,621,211	227	3,621,269
625.11	3,620,253	154	3,620,293		3,620,921	212–55	3,620,379		3,621,212	251–3	3,620,499
.17	3,620,254	155	3,620,294		3,620,922	214–1	3,620,380	151	3,621,214	149.1	3,620,500
.45	3,620,255	274	3,620,285	66	3,620,923		3,620,381	.11	3,621,216	333	3,620,501
.48	3,620,256	283	3,620,295		3,620,924		3,620,382	.12	3,621,217	355	3,620,502
.6	3,620,252	308	3,620,296		3,620,925	6	3,620,383	.3	3,621,215	252–1	3,620,972
138–89	3,620,257	165–23	3,620,297		3,620,926		3,620,384	164	3,621,218	8.5	3,620,973
178	3,620,258	105	3,620,298	82	3,620,927		3,620,385	170	3,621,219	.55	3,620,974
139–187	3,620,259	166–.5	3,620,299	197–6.7	3,620,343	7	3,620,386	181	3,621,220	21	3,620,975
292	3,620,260	248	3,620,300	18	3,620,344	8.5	3,620,387		3,621,221	42.1	3,620,976
295	3,620,261	251	3,620,301	198–8	3,620,345	10.5	3,620,388		3,621,222	51.5	3,620,977
307	3,620,262	258	3,620,302	16	3,620,346	15.00	3,620,427		3,621,223	313	3,620,978
140–123.6	3,620,263	272	3,620,303	25	3,620,347	16.4	3,620,389	183	3,621,224	385	3,620,979
141–1	3,620,264	274	3,620,304	75	3,620,348	17	3,620,390	193	3,621,225	404	3,620,980
8	3,620,265	282	3,620,305	78	3,620,349	38	3,620,391	194	3,621,226	429	3,620,981

252–522	3,620,982	260–564	3,621,061	287–54	3,620,558	313–105	3,621,320	328–37	3,621,402	339–94	3,621,448
254–30	3,620,503	570.5	3,621,052	292–76	3,620,559	108	3,621,321	61	3,621,403	99	3,621,449
188	3,620,504	590	3,621,062	201	3,620,560		3,621,340	133	3,621,405	103	3,621,413
256–70	3,620,505	594	3,621,063	262	3,620,483	184	3,621,322	155	3,621,406	350–3.5	3,620,589
259–4	3,620,506	600	3,621,064	294–67	3,620,561	317	3,621,323	162	3,621,404		3,620,590
25	3,620,507	609	3,621,065	82	3,620,562	338	3,621,324	167	3,621,407	6	3,620,591
72	3,620,508	611	3,621,066		3,620,563	315–25	3,621,325	329–103	3,621,408	9	3,620,592
260–2	3,620,983	653.5	3,621,067	296–23	3,620,564	26	3,621,326	110	3,621,409	12	3,620,593
.5	3,620,985	667	3,621,068	28	3,620,565	31	3,621,327	330–2	3,621,410	16	3,620,594
	3,620,986	668	3,621,069	35	3,621,236	55	3,621,328	5	3,621,411	86	3,620,595
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17.4	3,620,988	681	3,621,072	307	3,620,568	207	3,621,331	11	3,621,451	162	3,620,598
22	3,620,989	682	3,621,073	388	3,620,569	313	3,621,332	25	3,621,452		3,620,599
25	3,620,984	835	3,621,074	448	3,620,570	317–13	3,621,333	64	3,621,453	167	3,620,600
29.6	3,620,991	857	3,621,075	299–6	3,620,571	16	3,621,335	92	3,621,454	174	3,620,601
37	3,620,992		3,621,076	8	3,620,572	18	3,621,334	94.5	3,621,455	184	3,620,602
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50	3,620,997	924	3,621,081		3,620,577	157	3,621,341		3,621,460		3,620,607
64	3,620,998	941	3,621,082	305–11	3,620,578	230	3,621,342		3,621,461	351–111	3,620,608
65	3,620,999	968	3,621,083	307–24	3,621,270	231	3,621,343	96	3,621,462	352–17	3,620,609
77.5	3,621,000	976	3,621,084	38	3,621,271	234	3,621,344	101	3,621,463	172	3,620,610
78	3,621,001	261–18	3,620,509	88	3,621,272	235	3,621,345	106	3,621,464	353–20	3,620,611
	3,621,002	41	3,620,511	.3	3,621,273		3,621,346	107	3,621,465	27	3,620,612
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80.75	3,621,004	92	3,620,512	137	3,621,275	318–77	3,621,348	109	3,621,467	355–3	3,620,614
112	3,621,005	263–3	3,620,516	141	3,621,276	135	3,621,349		3,621,468		3,620,615
145	3,621,006	4	3,620,513	206	3,621,277	171	3,621,350	111	3,621,469		3,620,616
158	3,621,007	6	3,620,517	216	3,621,278	227	3,621,351	332–14	3,621,470		3,620,617
175	3,621,008	15	3,620,518	221	3,621,279		3,621,352	16	3,621,471	6	3,620,618
207	3,621,009	28	3,620,519	225	3,621,280	314	3,621,353	20	3,621,472	8	3,620,619
239.1	3,621,011	40	3,620,514	228	3,621,281	341	3,621,354	23	3,621,473		3,620,620
.3	3,621,012		3,620,515		3,621,282	345	3,621,355	47	3,621,474	30	3,620,621
.55	3,621,010		3,620,520	229	3,621,283	480	3,621,356	333–1	3,621,475	43	3,620,622
	3,621,014	264–2	3,621,085	237	3,621,284	600	3,621,357	.1	3,621,476	53	3,620,623
.57	3,621,015	71	3,621,086		3,621,285	696	3,621,358		3,621,477	61	3,620,624
.6	3,621,013	177	3,621,087	238	3,621,286	320–43	3,621,359	10	3,621,478	356–1	3,620,625
240.1	3,621,016	178	3,621,088	241	3,621,287	48	3,621,360	22	3,621,479	4	3,620,626
243	3,621,017	211	3,621,089	243	3,621,288	321–2	3,621,361	28	3,621,480	72	3,620,627
247.2	3,621,018	235	3,621,090	247	3,621,289		3,621,362	31	3,621,481	87	3,620,628
.7	3,621,019	290	3,621,091		3,621,290		3,621,363	72	3,621,482	160	3,620,629
248	3,621,020	322	3,621,092	251	3,621,291	11	3,621,364	73	3,621,483	237	3,620,630
250	3,621,021	331	3,621,093		3,621,292	27	3,621,365	83	3,621,484	401–78	3,620,632
251	3,621,022	266–23	3,620,521	252	3,621,293	45	3,621,366	95	3,621,485	147	3,620,633
256.4	3,621,023	43	3,620,522		3,621,294	69	3,621,367	97	3,621,486	408–82	3,620,634
	3,621,024	267–34	3,620,523		3,621,295	322–18	3,621,368	334–11	3,621,487	84	3,620,635
	3,621,025	269–21	3,620,524		3,621,296	19	3,621,369	335–174	3,621,414	141	3,620,636
.5	3,621,026	270–61	3,620,525	265	3,621,297	23	3,621,370	205	3,621,415	202	3,620,637
293.61	3,621,027	271–26	3,620,526	273	3,621,298	323–17	3,621,371		3,621,417	415–106	3,620,638
306.7	3,621,028	27	3,620,527		3,621,299		3,621,372	212	3,621,416	111	3,620,639
	3,621,029	51	3,620,528	283	3,621,300	18	3,621,373	222	3,621,418	126	3,620,640
.8	3,621,030	272–56	3,620,529	290	3,621,301	43.5	3,621,374	230	3,621,419	170	3,620,641
309	3,621,031	82	3,620,530	291	3,621,302		3,621,375	231	3,621,420	204	3,620,642
327	3,621,032	89	3,620,531	292	3,621,303	50	3,621,376	257	3,621,421	416–90	3,620,643
332.3	3,621,033	273–1	3,620,532	293	3,621,304	93	3,621,377	264	3,621,422	247	3,620,644
340.7	3,621,034	54	3,620,533		3,621,305	324–.5	3,621,378	290	3,621,423	417–48	3,620,645
343	3,621,035	101.2	3,620,534	299	3,621,306		3,621,379	306	3,621,424	79	3,620,646
.2	3,621,036	150	3,620,535	308	3,621,307	1	3,621,380	336–58	3,621,426	293	3,620,647
.3	3,621,037	176	3,620,536	318	3,621,308	30	3,621,381	61	3,621,425		3,620,648
	3,621,038	185	3,620,537	308–3	3,620,579	43	3,621,382	84	3,621,427	383	3,620,649
	3,621,039	274–1	3,620,538	8.2	3,620,580	51	3,621,383	146	3,621,428	417	3,620,650
345.1	3,621,040	277–63	3,620,539	9	3,620,581	52	3,621,384	197	3,621,429	436	3,620,651
.2	3,621,041	134	3,620,540	160	3,620,582	60	3,621,385	205	3,621,430	439	3,620,652
397.7	3,621,042	237	3,620,541	184	3,620,583	64	3,621,386	337–5	3,621,431	568	3,620,653
404	3,621,043	280–6.1	3,620,542	187.1	3,620,584	73	3,621,387	100	3,621,432	418–129	3,620,654
440	3,621,044	11.13	3,620,543	195	3,620,585	77	3,621,388	244	3,621,433	151	3,620,655
448.2	3,621,045	.35	3,620,544	207	3,620,586		3,621,389	348	3,621,434	210	3,620,656
.8	3,621,046		3,620,545	310–8.7	3,621,309	96	3,621,390	338–2	3,621,435	424–128	3,621,094
455	3,621,048	40	3,620,546	11	3,621,310	99	3,621,391	3	3,621,436	232	3,621,095
465.4	3,621,049	87.04	3,620,547	13	3,621,311	142	3,621,392	5	3,621,437	244	3,621,096
466	3,621,050	96.2	3,620,548	49	3,621,312	150	3,621,393	23	3,621,446	247	3,621,097
470	3,621,051	99	3,620,549		3,621,313	158	3,621,394	150	3,621,438	258	3,621,098
488.8	3,621,047	476	3,620,550	101	3,621,314	181	3,621,395	180	3,621,439	269	3,621,099
527	3,621,053	479	3,620,551	183	3,621,315	325–38	3,621,396	183	3,621,440	322	3,621,100
533	3,621,054	281–33	3,620,552	312–223	3,620,587		3,621,397	195	3,621,441	330	3,621,101
545	3,621,055	282–8	3,620,553	323	3,620,588	119	3,621,398	309	3,621,442	431–9	3,620,657
	3,621,056	285–18	3,620,554	313–22	3,621,316	321	3,621,399	339–8	3,621,443	13	3,620,658
553	3,621,057	55	3,620,555	25	3,621,317	404	3,620,631	14	3,621,444	66	3,620,659
561	3,621,058	110	3,620,556	64	3,621,318	446	3,621,400	17	3,621,445	255	3,620,660
	3,621,059	228	3,620,557	77	3,621,319	473	3,621,401	29	3,621,447	344	3,620,661
563	3,621,060										

CLASSIFICATION OF DESIGNS

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154	222,604	70	222,609	D14–3	222,614	D23–4	222,619	D33–14	222,624	D48–16	222,629
D 9–40	222,605	116	222,611		222,615	29	222,620	D34–11	222,625	32	222,630
	222,606	137	222,610	6	222,616	D26–5	222,621		222,626	D49–19	222,631
42	222,607	290	222,612	27	222,617	14	222,622		222,627	D83–1	222,632

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Drawing Requirements

These rule changes are intended to facilitate the handling and filing of patent application drawings in the Patent Office. Changing the drawing size to 8½ by 14 inches will permit filing of the original drawings in the application file wrapper in the Patent Office. The new size will also permit the use of standard storage equipment, mailing envelopes, and copying equipment.

The revised rules will prohibit the use of names within the "sight" of the drawing, thereby making additional space available for illustration and reducing the number of formal objections and corrections required.

Permanently mounted color photographs in plant patent applications will be accepted. This should result in substantial savings to applicant.

Since no names or other identification will be permitted within the "sight" of the drawing, applicants are expected to use the space above and between the hole locations to identify each sheet of drawings (note § 1.84(1)). This identification may consist of the attorney's name and docket number or the inventor's name and case number and may include the sheet number and the total number of sheets filed (for example, "sheet 2 of 4").

Notice of proposed rule making regarding revision of §§ 1.59, 1.84, 1.85, 1.123, and 1.165 and revocation of §§ 1.82 and 1.87 of Title 37, Code of Federal Regulations, relating to drawing requirements, was published in the Federal Register of January 15, 1971 (36 F.R. 610). Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Effective date. This revision shall become effective on the date of its publication in the Federal Register. However, until Jan. 1, 1972, drawings complying with the unrevised rules will also be accepted.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 1.59 is revised to read as follows:

§ 1.59 *Papers of complete application not to be returned.*

Papers in a complete application, including the drawings, will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

§ 1.82 [*Revoked*]

2. Section 1.82 is revoked.

3. In § 1.84 the introductory text preceding paragraph (a) and paragraph (h) are revoked and paragraphs (a), (b), (c), (j), and (l) are revised to read as follows:

§ 1.84 *Standards for drawings.*

(a) *Paper and ink.* Drawings must be made upon pure white paper of a thickness corresponding to two-ply or three-ply bristol-board. The surface of the paper must be calendered and smooth and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(b) *Size of sheet and margins.* The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches. One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches and bottom and side margins of one-quarter inch from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches. Margin boarder lines are not permitted. All work must be included within the "sight." The sheets may be provided with two ¼-inch-diameter holes having their centerlines spaced eleven-sixteenths inch below the top edge and 2¾ inches apart, said holes being equally spaced from the respective side edges.

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be absolutely black and permanent; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid, and fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

• • • • •

(h) [*Revoked*]

• • • • •

(j) *Arrangement of views.* All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

• • • • •

(l) *Extraneous matter.* An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

• • • • •

4. Section 1.85 is revised to read as follows:

§ 1.85 *Informal drawings.*

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required. The necessary corrections or mounting will be made by the Office upon applicant's request or permission and at his expense. (See §§ 1.21 and 1.165.)

§ 1.87 [*Revoked*]

5. Section 1.87 is revoked.

6. In § 1.123, paragraph (a) is revised to read as follows:

§ 1.123 *Amendments to the drawing.*

(a) No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the Office. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed. The paper requesting amendments to the drawing should be separate from other papers.

• • • • •

7. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165 *Drawings.*

• • • • •

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(1).

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: May 25, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-7504 Filed 5-27-71; 8:49 am]

Published in 36 F.R. 9774; May 28, 1971

United States Adopted Names

List No. 29

March 1, 1971 to June 30, 1971

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association, and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distinguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill., 60610.

adrenalone: sympathomimetic
alonimid: sedative; hypnotic
baclofen: antispasmodic; muscle relaxant
benapryzine hydrochloride: antiparkinsonism
bleomycin: antineoplastic
cephradine: antibiotic
chymopapain: chemonucleolysis
fenoterol: bronchodilator spasmolytic
fiazalone: anti-inflammatory
hetastarch: plasma expander
intriptyline hydrochloride: antidepressant
levomethadyl acetate: narcotic analgesic
maprotiline: antidepressant
mecobalamin: hematopoietic
partricin: antifungal and antiprotozoal antibiotic
*poloxamer 331: direct food additive
*poloxamer 407: direct food additive
rimiterol hydrobromide: bronchodilator
risocaine: local anesthetic
thyroglobulin: thyroid preparation
tobramycin: antibacterial antibiotic

*Poloxamer is a family name selected by the USAN Council for a group of nonionic surfactants of the poly(oxypropylene) poly(oxyethylene) copolymer type. Poloxamer is used in conjunction with a numeric suffix for unique identification of the individual copolymers.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,811,940, N. Marforio, LOOPER CONTROL FOR SEWING MACHINES, **filed** Aug. 13, 1971, D.C., N.D. Ga. (Atlanta), Doc. 15508, *S.p.A. Virginio Rimoldi & Co.* v. *Sunbrand Corporation and Wilcox & Gibbs, Inc.*

3,103,466, A. Farkas, TOPICAL MEDICAMENT INCLUDING POLYURONIDE DERIVED FROM ALOE, **filed** Jan. 22, 1970, D.C., S.D. Fla. (Miami), Doc. 70-92-C-JE, *Alexander Farkas* v. *Aloe Creme Laboratories, Inc.* Final summary judgment, complaint was dismissed without prejudice for failure of plaintiff to prosecute his case, July 20, 1971.

3,109,503, Recknor, Merchant, Miller and Miller, WEIGHING AND MEASURING APPARATUS FOR GRANULAR AND THE LIKE MATERIAL, **filed** Apr. 27, 1971, D.C. Nebr. (Omaha), Doc. C-03522, *Prodx Corporation* v. *Automatic Equipment Manufacturing Co.* Order, patent valid and injunction granted against defendant, July 22, 1971.

3,115,879, D. Kaplan, BODY SUPPORT GARMENT, **filed** May 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1219, *Baka Mfg. Co.* v. *The Burrows Co.* Order by stipulation cause dismissed without prejudice, July 2, 1971.

3,116,557, J. R. Trice, Jr., METHOD AND MEANS FOR LAYING SEWER PIPE, **filed** Dec. 3, 1968, D.C. Md. (Baltimore), Doc. 20165, *Alignment Systems, Inc. (later changed to Laser Alignment, Inc.)* v. *Canova Bros., Inc. and Anthony W. Canova.* Consent judgment and decree, patent valid, June 30, 1971.

3,119,590, G. J. Eriksson, ADJUSTABLE, COLLAPSIBLE, AND ARTICULATED BRACKET FOR SUPPORTING A CONCRETE FORM FOR A BRIDGE FASCIA, **filed** Aug. 19, 1970, D.C., N.D. Ga. (Atlanta), Doc. C.A. 14072, *Superior Concrete Accessories, Inc.* v. *Shattuck Denn Mining Corporation.* Consent dismissal, July 15, 1971.

3,127,518, C. H. Pruitt, SERVICE VEHICLE ELECTRICAL SUPPLY APPARATUS, **filed** July 6, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71-429-C, *Cary H. Pruitt* v. *Vassar Manufacturing Company, and I. D. Vassar.*

3,141,620, K. F. Guggemos, LIGHTING DEVICE, **filed** Sept. 7, 1966, D.C.N.J. (Newark), Doc. C-903-66, *Pfaff and Kendall* v. *Sterner Lighting, Inc.* Order dismissing complaint and counterclaim, July 19, 1971.

3,143,230, C. R. Golinick, REFUSE VEHICLE, **filed** June 22, 1971, D.C. Wis. (Milwaukee), Doc. 71-C-307, *Leach Co.* v. *The Heil Co.*

3,171,765, Bellinger and Chapdelaine, POWDER COMPOSITION FOR BRIGHT DIPPING ZINC AND CADMIUM, **filed** July 12, 1971, D.C., E.D. Mich. (Detroit), Doc. 36791, *Conversion Chemical Corp.* v. *Aldoa Co.*

3,174,863, A. A. Shoup, SMOKELESS BROILER, **filed** Aug. 12, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1682, *Marian Shoup* v. *Marshall Field & Co.* Opinion, defendant's motion for summary judgment is granted, May 11, 1971.

3,193,674, T. S. Fleming, EXTENSIBLE LIGHT FIXTURE, **filed** July 1, 1971, D.C., M.D. Fla. (Tampa), Doc. 71-328-C-T, *Theodore Samuel Fleming* v. *William T. Bardouski, doing business as Florida Manufacturing Company.*

3,238,939, F. F. Stubbs, WRIST SUPPORT, **filed** June 18, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1447-R, *Frank F. Stubbs, doing business as Frank Stubbs Co.* v. *Master Industries, Inc.*

3,247,757, W. I. Callaghan, INSPECTION APPARATUS FOR TURNING AND VIEWING COINS, **filed** Sept. 17, 1970, D.C., N.D. Ill. (Chicago), Doc.70 c2292, *Advanced Product Development Corporation et al.* v. *John Plain & Company et al.* Order on stipulation, cause dismissed without prejudice, June 9, 1971.

3,265,103, D. E. Hervey, WOOD VENEER SLICING ELEMENTS TEMPERATURE MAINTENANCE MEANS, **filed** July 23, 1969, D.C., S.D. Ind. (Indianapolis), Doc. IP69-C-349, *The Hervey Foundation, Inc. and David E. Hervey* v. *Capital Machine Co., Inc.* Memorandum of decision, patent is invalid over prior art. No genuine issue of material fact is represented and that summary judgment should be entered for the defendant, July 6, 1971.

3,272,911, Rollins and Falion, SHIELDED CABLE CONSTRUCTION, **filed** July 9, 1971, D.C., S.D.N.Y., Doc. 71-C-3054, *Ansonia Wire & Cable Company* v. *Texas Instruments, Inc.*

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, **filed** June 25, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1512, *Free Standing Stuffer, Inc.* v. *National Broadcasting Company, Inc.* Order, stipulation of dismissal under F.R.C.P. Rule 41(a)(1)(i)(ii) granted, Feb. 4, 1971.

3,291,417, R. W. Peters, WIRE TENSION DEVICE; **3,467,324,** same, STATOR WINDING MACHINE, **filed** May 25, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-283, *Lincoln Tool & Mfg. Co.* v. *Adam Products, Inc., Adam Products & Associates, Inc.* Stipulation of dismissal pursuant to Rule 41(a)(1) of F.R.C.P., June 10, 1971.

3,297,153, L. A. Fattori, SHOCK RESISTANT PLASTIC CONTAINERS WITH SELF-CONTAINED LOCKING MEANS, **filed** July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1600, *Plastic Reel Corporation of America* v. *Film Editing Equipment Corp., also known as Hollywood Film Company.*

3,315,548, Anderson and Connor, METHOD OF MAKING BAND SAW BLADE, **filed** Mar. 17, 1971, U.S. Ct. of App., 1st Cir. Mass. (Boston), Doc. 71-1082, *Contour Saws, Inc.* v. *L.S. Starrett Company.* The judgment of the District Court as to the invalidity of the patent in suit is affirmed, June 29, 1971.

3,316,294, Feighner and Kapur, DETERGENT ALKYLATE AND THE SULFONATE DERIVATIVE, **file** July 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1631, *Continental Oil Co.* v. *Union Carbide Corp.*

3,377,568. (See 3,397,365.)

3,397,568, Kruse and Baskins, OSCILLATOR WITH SEPARATE VOLTAGE CONTROLS FOR NARROW AND WIDE RANGE TUNING; **3,377,568,** Kruse, Storke and Baskins, VOLTAGE TUNED OSCILLATOR, **filed** Jan. 7, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71-25, *Kruse Electronics* v. *Addington Laboratories, Inc.* **Same, filed** Feb. 8, 1971, D.C. Ariz (Phoenix), Doc. C-71-86 PHX, *Kruse Electronics* v. *Omni Spectra, Inc.*

3,467,324. (See 3,291,417.)

3,518,800, H. G. Tank, FLOORING SYSTEM, **filed** Aug. 10, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-450, *Connor Forest Industries* v. *Duo-Lok, Inc. et al.* Stipulated final judgment and order, defendants enjoined and defendants' counterclaim dismissed with prejudice, July 12, 1971.

Certificates of Correction for the Week of Nov. 23, 1971

Re. 27,061	3,581,319
3,525,802	3,582,606
3,526,606	3,582,873
3,533,742	3,583,213
3,535,228	3,583,217
3,536,207	3,584,443
3,547,620	3,584,997
3,550,818	3,585,999
3,553,109	3,586,209
3,553,232	3,586,595
3,558,553	3,588,249
3,565,298	3,589,217
3,565,572	3,590,196
3,565,927	3,591,088
3,566,157	3,591,378
3,566,730	3,591,736
3,572,348	3,592,121
3,573,937	3,592,557
3,576,814	3,592,740
3,577,007	3,593,124
3,577,867	3,593,981
3,580,346	3,594,518
3,581,001	3,595,972
3,581,076	

Disclaimers

2,979,381.—*Joseph G. Gottstine, Buffalo,* and *Emery H. Westerland,* Tonawanda, N.Y. PROCESS FOR PRODUCING ZEOLITE X. Patent dated Apr. 11, 1961. Disclaimer filed Aug. 26, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

3,223,983.—*Wilbur G. Hespenheide,* Malvern, Pa. RETENTIVE DATA STORE AND MATERIAL. Patent dated Dec. 14, 1965. Disclaimer filed Aug. 9, 1971, by the assignee, *Burroughs Corporation.*

Hereby enters this disclaimer to claims 10 and 11 of said patent.

3,463,028.—*Herbert C. Polidor,* Springfield, Vt. VARIABLE SPEED TRANSMISSION. Patent dated Aug. 26, 1969. Disclaimer filed Aug. 12, 1971, by the assignee, *Simmonds Precision Products, Inc.*

Hereby disclaims the entire 17-year term of said patent.

3,574,273.—*Richard G. Hilbert,* Esmond, R.I. FALSE TWIST SPINDLE AND METHOD OF THREADING THE SAME. Patent dated Apr. 13, 1971. Disclaimer filed Aug. 17, 1971, by the assignee, *Leesona Corporation.*

Hereby enters this disclaimer to claims 1, 2, 4, 8, 11 and 12 of said patent.

3,580,714.—*John R. Lucek,* Pittsfield, Mass. DISCHARGE CONTROL ELEMENT FOR GLASS-MELTING FURNACES. Patent dated May 25, 1971. Disclaimer filed Feb. 19, 1971, by the assignee, *General Electric Company.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 10, 1987.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 2, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-08-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-25-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-01-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-13-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-14-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-31-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	8-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during November 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,692,987 to 2,695,997, inclusive
Plant Patents ..... Numbers 1,312 to 1,327, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 23, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

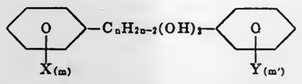
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T892,001
BACTERIOSTATIC HALOARALKANOLS

Joseph W. Baker, 421 Greenleaf Drive 63122, and Ignatius Schumacher, 1009 S. Elm 63119, both of St. Louis, Mo.

Filed May 11, 1970, Ser. No. 36,382
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 D
No Drawing. 7 Pages Specification

Certain halogenated compounds represented by the formula



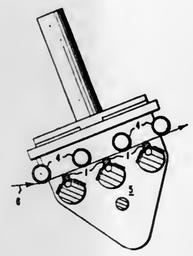
wherein
C_nH_{2n-2} is a saturated hydrocarbon chain;
n represents an integer selected from 2 through 4;
m and m' each represent an integer selected from 1, 2 or 3, provided that sum of $m+m'$ is at least equal to 4; and
X and Y represent chloro or bromo,

are prepared by reduction of the corresponding diketones. The halogenated aralkanols effectively control the growth of microorganisms.

T892,002
COATING THICKNESS REGULATOR

Larry Eugene Seever, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1970, Ser. No. 38,928
Int. Cl. B05c *11/02, 11/06*
U.S. Cl. 118—63
1 Sheet Drawing. 8 Pages Specification

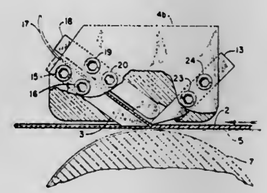


An apparatus for smoothing and regulating the thickness of liquid coatings on a thin substrate comprising at least one wire wound rod, scraping means supporting the rods and tensioning rolls for the substrate.

T892,003
METHOD AND MECHANISM FOR MACHINING HINGES IN PLASTIC SHEETING

Robert G. Peace, Ryers Lane, Matawan, N.J. 07747, and Charles G. Chandler, 100 Walton Court, Kingsport, Tenn.,37663

Filed May 22, 1970, Ser. No. 39,756
Int. Cl. B26d *3/06*
U.S. Cl. 83—5
2 Sheets Drawing. 10 Pages Specification



A method and mechanism for producing hinges in plastic sheeting primarily for the purpose of producing plastic notebooks, book covers, book backs and similar articles. The method involves the use of a machine which has a table or other structure for supporting an endless belt or other means of feeding a plastic sheet into contact with a groove-cutting element at high linear speeds. The cutting element is fixed but adjustably and angularly mounted on the supporting means in such manner as to bring it into skiving contact with and to skive out one or more longitudinal grooves or channels in the sheet. The machine is provided with a cooperating presser foot, also adjustably and angularly mounting on the supporting means in such manner as to bear down on the plastic sheet at the point of cutting. By operating the machine plastic sheets of suitable thickness may have one or more grooves cut therein at a high rate of speed, the portion or strip at the bottom of the cut in each case forming a flexible portion or "hinge," after which the sheet may be cut to any desired size to make a notebook cover, book back or similar article.

T892,004
POLYETHYLENE WAXES AND PREPARATION THEREOF

Hugh John Hagemeyer, Jr., and Reeder Eugene Bissell, both % Texas Eastman Co., Box 2068, Longview, Tex. 75601

Continuation of application Ser. No. 679,662, Nov. 1, 1967. This application Aug. 27, 1970, Ser. No. 67,580
Int. Cl. C08h *9/06*
U.S. Cl. 106—271
No Drawing. 18 Pages Specification

Synthetic emulsifiable polyethylene waxes having excellent hardness and softening point characteristics are

produced by the esterification of degraded hydrogenated and oxidized polyethylene with an aliphatic primary alcohol. The emulsifiable wax products are useful in the preparation of liquid emulsion polishes for floors, automobiles, and in the other similar commercial applications.

T892,005

CLARIFICATION OF CONCENTRATED WET-PROCESS PHOSPHORIC ACID

Robin M. Scheib, Rte. 8, Box 223, Florence, Ala. 35630, and Raymond D. Thrasher, Rte. 4, Tuscumbia, Ala. 35674

Filed Sept. 28, 1970, Ser. No. 76,228
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 23—165
No Drawing. 22 Pages Specification

Wet-process acid and mixtures of wet-process acid and electric-furnace acid are clarified by heating to predetermined temperatures and adding ammonium nitrate to said hot acids. The minimum temperature is dictated by (1) absolute minimum temperature at which the oxidizing agent will remove the black coloring, and (2) maximum temperature to which the product will be raised in subsequent processing. The ammonium nitrate acts as an oxidizing agent upon partially decomposed organic materials present in wet-process acids produced from uncalcined ores. Ammonium nitrate is added subsequent to heating (1) to preclude loss of oxidizing power prior to reaching the temperature at which it will be effective, and (2) to effectively minimize undesirable foam production and accumulation. From 0.1 to 2 percent ammonium nitrate is needed depending on the proportion of wet-process acid mixed with electric-furnace acid and the concentration of the acid. The minimum temperature for removal of the black material is about 250° F. and the upper range in final processing to fertilizers is about 400° F. If the acid is subsequently raised to a temperature higher than that at which the ammonium nitrate was initially added, further decomposition of dissolved organic material causes return of the black color.

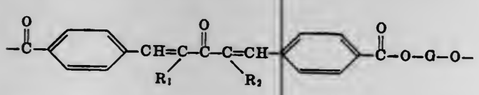
T892,006

PHOTOSENSITIVE POLYMERS

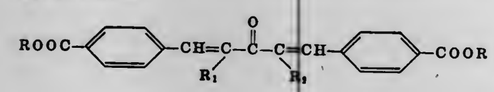
Thomas M. Laakso and Jack L. R. Williams, both of Kodak Park, Rochester, N.Y. 14650

Filed Sept. 29, 1970, Ser. No. 76,597
Int. Cl. G03c *1/68*
U.S. Cl. 96—115
No Drawing. 12 Pages Specification

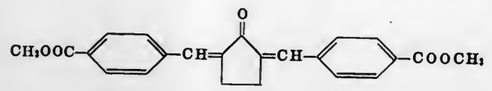
There are disclosed light-sensitive polyester condensation products of the bis(p-carboxybenzylidene)cycloalkanones, or their esters with organic diols containing recurring groups having the formula



wherein R_1 and R_2 are hydrogen atoms, or together represent the atoms necessary to complete a cycloalkanone ring having 5 to 8 carbon atoms in the ring and G is the residue remaining after removal of the hydroxyl groups from an organic diol. These polyesters are obtained by reacting a diol with a dibenzylidenealkanone monomer having the formula



wherein R_1 and R_2 are as defined above and R is a hydrogen atom, a lower alkyl group or an aryl group. An example of such a monomer disclosed is 2,5-di(4-carbomethoxybenzylidene)cyclopentanone having the formula



This monomer is obtained by the reaction of methyl 4-formylbenzoate and cyclopentanone. There is disclosed the preparation of a light-sensitive polyester by the reaction of dimethylisophathalate and 2,5-di(4-carbomethoxybenzylidene)cyclopentanone with 1,4-(β-hydroxyethoxy)cyclohexane. The light-sensitive polyesters are useful in photo-mechanical reproduction processes such as for lithographic purposes or as photo-resists.

T892,007

METHOD FOR PREPARING THALLOUS ETHOXIDE

Thomas M. Gormel, 1669 Lake Ave., Rochester, N.Y. 14650

Filed Oct. 29, 1970, Ser. No. 85,304
Int. Cl. C07j *5/00*
U.S. Cl. 260—429 R
No Drawing. 7 Pages Specification

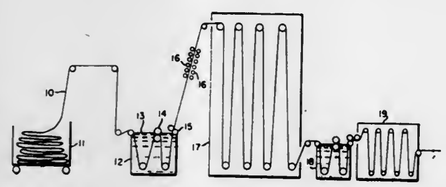
Thallous ethoxide is prepared by the reaction of an alkali metal ethoxide with thallous nitrate or thallous sulfate in ethanol. The alkali metal can be sodium potassium or lithium. The reactants can be dissolved in ethanol and the solution heated at reflux temperature. Alternatively the alkali metal ethoxide can be formed in situ as by adding the alkali metal or its hydroxide to an excess of hot ethanol, the thallous nitrate or sulfate then is added, and the solution is heated at reflux temperature. Time of heating at reflux can be 6 to 48 hours, preferably 24 to 48 hours. The product is then recovered by filtration followed by recovery of product from the filtrate in a separatory funnel.

T892,008

DISPERSE ACID AND VAT OR SULFUR DYEING OF POLYESTER-POLYAMIDE BLEND IN A POLYESTER-CELLULOSE BLEND USING DRY HEAT AND FABRIC SO DYED

William Fred Ibach, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1970, Ser. No. 89,224
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 B
1 Sheet Drawing. 15 Pages Specification



A dyed fabric which has substantial freedom from frosting and is unusually durable when rendered press-free by resin treatment has two sets of crossing and inter-

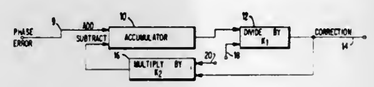
locked yarns of which one set protrudes to form a wear surface and the other set is submerged with respect to the wear surface. The protruding set is a blend of polyester and polyamide fibers and the submerged set is a blend of 50–70% by weight polyester fibers with 50–30% cellulosic fibers. Cross-dyeing may be accomplished in a continuous, high-speed single-pass process in which the fabric is impregnated in bath **13** with an aqueous acid dye and an aqueous dispersion of disperse dye, flash dried at **16** to remove at least 25% of the water, exposed for 15 to 90 seconds to dry heat at 205–225° C. in oven **17** to fix the dye, submerged in an aqueous bath **18** for dyeing cellulosic fibers, passed through steamer **19**, and then through conventional finishing treatments.

T892,009

DIGITAL PHASE SCALER

Robert F. Heidecker, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 792,232, Jan. 15, 1969. This application Dec. 2, 1970, Ser. No. 94,558
Int. Cl. G06f *7/48*
U.S. Cl. 235—156
1 Sheet Drawing. 11 Pages Specification



A digital phase scaler for weighting the detected phase error between input and output signals in an all digital phase lock loop so that the proper phase and frequency corrections are initiated. The scaler is a digital logic circuit which accumulates the phase errors and decodes a phase correction pulse at a controlled value of the accumulated phase errors. The scaler may also decode a frequency correction pulse at a controlled value of accumulated phase errors. Control points are included to vary the weighting function of the scaler and, hence, the response of the phase lock loop. The scaler is implemented in two basic designs: a binary adder-type scaler, and a binary counter-type scaler.

T892,010

MODACRYLIC FIBERS OF REDUCED FLAMMABILITY

Thomas H. Larins, Jr., 300 Stuffle St., Kingsport, Tenn. 37660

Filed Dec. 11, 1970, Ser. No. 97,354
Int. Cl. C08f *15/22*
U.S. Cl. 260—897 C
No Drawing. 7 Pages Specification

A modacrylic textile fiber reduced flammability comprising

(A) Fiber forming polymeric material comprised of a copolymer of

(1) acrylonitrile and
(2) vinyl chloride or vinylidene chloride

(B) Uniformly dispersed throughout the fiber, based on the weight of the fiber, from about 1 to about 15 weight percent of a metal compound such as antimony oxide, tin oxide, bismuth oxide, arsenic oxide, molybdenum oxide, vanadium oxide, platinum oxide, aluminum oxide, boron oxide, phosphorus oxide, and mixtures thereof.

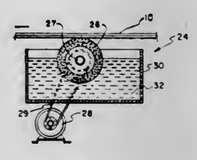
The fiber forming polymeric material (A) may contain an additional, dissimilar polymer component. Tin oxides such as SnO and SnO_2 are especially useful in this invention. Other metal compounds such as esters can be used. Stannous acetate is particularly useful in this invention. Also disclosed is a process for producing the above fiber wherein the fiber is spun from a spinning dope solution of a modacrylic fiber and a metal compound which is uniformly dispersed throughout the spinning dope solution.

T892,011

METHOD AND APPARATUS FOR CLEANING PHOTOSENSITIVE ELEMENTS

Gary Boyd Gustafson and Oliver William Gnage, both of 901 Elmgrove Road, Rochester, N.Y. 14650

Filed Dec. 14, 1970, Ser. No. 97,758
Int. Cl. G03g *13/22, 15/22*
U.S. Cl. 134—9
5 Sheets Drawing. 10 Pages Specification



Apparatus for and a method of cleaning a photoconductive surface wherein an open cell or partial open cell sponge material, such as polyurethane, is utilized for cleaning the photoconductive surface. The sponge material is either moved through a cleaning fluid or a cleaning fluid is adapted to flow through the sponge material during the cleaning operation. In one embodiment, the sponge material is wound in a helix on a core. In another embodiment the sponge material is ribbed radially and in a further embodiment the sponge material is ribbed longitudinally. In a still further embodiment the sponge material is an oscillatory pad and in another embodiment is in the form of a paddle wheel.

T892,012

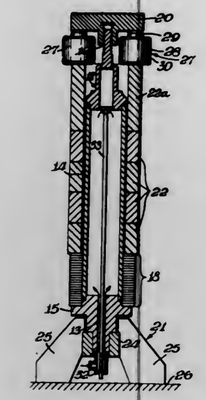
PROCESS FOR MAKING NAPPED SPONGE STRUCTURES

Ronald E. Lovell, Jr., Columbia, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 803,121, Feb. 27, 1969. This application Jan. 4, 1971, Ser. No. 103,838
Int. Cl. B29d; B29h *7/20*
U.S. Cl. 264—49
No Drawing. 10 Pages Specification

Process for making fibrous regenerated cellulose sponge structures having napped surfaces which comprises spraying the surfaces of the extruded or cast viscose-fiber-salt mixture, immediately prior to regeneration, with water droplets.

T892,013
PROCESS OF MAKING LAMINATED ROLL
Donald William Edwards, 13 Breeze Hill Road, Wilmington, Del. 19807
Filed Jan. 5, 1971, Ser. No. 104,025
Int. Cl. B21d *53/12;* **B21h** *1/12, 1/14*
U.S. Cl. 29—148.4
2 Sheets Drawing. 24 Pages Specification



A method of making a laminated roll for use in magnetic calenders wherein the roll includes a plurality of annular laminations installed on a concentric core under particular loading conditions which confer a stiffness that prevents lamination separation in service. The method includes the steps of assembling the laminations in abutment with one another concentrically on a metallic core having a stop on one end and applying an axially directed compressive force to the laminations concurrently with a substantially equal but opposed axially directed tensile force to the core. The loading force applied is equal to about twice the level of loading at which it is desired to permanently preload the laminated roll. The laminations after being placed on the core are permanently locked in place under the compressive and tensile forces applied during assembly of the roll.

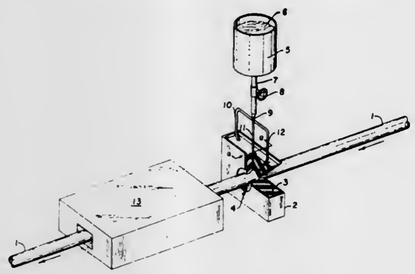
T892,014
METHOD FOR THE PREPARATION OF IMPACT POLYSTYRENES
Ervin E. Schroeder, Akron, and William J. Kern, Barberton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of application Ser. No. 747,831, July 26, 1968, which is a continuation-in-part of application Ser. No. 661,217, Aug. 17, 1967. This application Jan. 11, 1971, Ser. No. 105,655
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 R
No Drawing. 15 Pages Specification

The production of modified polystyrenes of high impact strength is improved by polymerizing styrene containing a rubbery modifier dissolved therein, which styrene solution has a surprisingly low viscosity. These modifiers are branched rubbery lithium-catalyzed polymers derived from (1) stereolinear homopolymers of butadiene and (2) stereolinear copolymers of (a) butadiene and isoprene and (b) styrene, by treatment with a joining agent. They are substantially gel free. The butadiene homopolymers and the diolefin portions of the copolymers contain less than 12% vinyl structure (1,2-structure as to the polybutadiene or the butadiene portion; and 1,2-structure and 3,4-structure as to any isoprene portion). The molecular weight distribution of the polymers is increased by the joining action.

T892,015
POTASSIUM AMMONIUM POLYPHOSPHATES
Richard C. Sheridan, 105 Terrace, Sheffield, Ala. 35660, and John F. McCullough, 2909 Alexander, Florence, Ala. 35630
Filed Feb. 4, 1971, Ser. No. 112,801
Int. Cl. C01b *25/28*
U.S. Cl. 23—106
No Drawing. 13 Pages Specification

A method for producing long-chain crystalline potassium ammonium polyphosphates with the general formula $K_x(NH_4)_yP_nO_{3n+1}$ where n is greater than about 50, $x+y=n+2$, and y/x ranges from 0.25 to 4.0 by thermal condensation of ammonium ortho-, pyro-, tripoly-, tetrapoly, tetrameta-, or long-chain polyphosphates with potassium orthophosphate, metaphosphate, carbonate, or chloride by heating in a stream of ammonia at temperatures of about 200° C. to 400° C. for a period of about 1 to 16 hours. The strongest lines in the X-ray powder diffraction patterns are given. The product mole ratio K/N is substantially the same as the mole ratio $K/(P-K)$ in the starting material, and the products are high-analysis fertilizers with N-P_2O_5-K_2O grades ranging from 2–62–33 to 11–70–10. Small amounts of Cu, Zn, B, Fe, and Mo were incorporated as micronutrients in several preparations.

T892,016
PREPARATION OF PLASTIC CONTAINERS HAVING A HIGH DEGREE OF RESISTANCE TO VAPOR TRANSMISSION
Edward R. Hollander, Jr., P.O. Box 511, Kingsport, Tenn. 37662
Filed Feb. 8, 1971, Ser. No. 113,405
Int. Cl. B44d *11/02, 11/09*
U.S. Cl. 117—94
1 Sheet Drawing. 10 Pages Specification



A high degree of resistance to the transmission of moisture vapor through the walls of a tubular or other form of plastic container is attained by the in-line coating of the outer surface of such containers with polyvinylidene chloride applied in the form of an aqueous emulsion. Coating with the emulsion is attained by (a) passing the plastic container through and in wiping contact with a resilient porous medium, such as a sponge saturated with the emulsion, thereby leaving a coating of the emulsion on the container; and (b) evaporating off the water content of the deposited emulsion by heating the emulsion-coated container in a current of air to leave a very thin, highly moisture-resistant polyvinylidene chloride coating adhered to the outer surface of the container.

T892,017
METHOD OF REDUCING MELT LOSS IN DIE CASTING MAGNESIUM BASE ALLOYS
Stephen C. Erickson and John N. Reding, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 27, 1970, Ser. No. 116,694
Int. Cl. B22d *27/10*
U.S. Cl. 164—72
No Drawing. 7 Pages Specification

The present invention relates to improvements in a method of die casting magnesium base alloys to reduce melt loss. Such improvements comprise employing certain magnesium base alloys and/or lubricants, the latter being controlled in quantity and/or place of application so as to inhibit the formation of a material, presumably manganese-carbon particles, which stabilizes the flux-metal emulsion in the magnesium alloy melt being die cast. It has been discovered that such stabilizer material surrounds or entraps metal globules in the sludge layer of the magnesium alloy melt causing a high melt loss. Such stabilizers can be avoided by the present method by, for example, using a magnesium base alloy with a low manganese content when an oil base lubricant is employed; applying lubricant to the die surface or die plunger rather than to the shot well of the die casting machine; using a non-carbonaceous lubricant; or reducing the amount of lubricant normally used in the die casting operation.

REISSUES

NOVEMBER 23, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

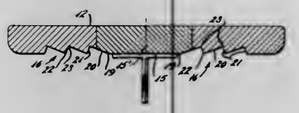
27,235
TRACKING SKI

Richard D. Pope, Jr., and Sanford L. Faught, Winter Haven, Fla., assignors to Cypress Gardens Skis, Inc., Cypress Gardens, Fla.

Original No. 3,395,411, dated Aug. 6, 1968, Ser. No. 593,474, Nov. 10, 1966. Application for reissue Jan. 8, 1970, Ser. No. 10,664

Int. Cl. A63c *15/00*

U.S. Cl. 9—310 A — 6 Claims



A ski having a plurality of longitudinally disposed grooves on its running surface, the grooves being spaced from the longitudinal center of the ski and having relatively wide planing surfaces and relatively narrow reaction surfaces disposed approximately at right angles to each other, the reaction surfaces preventing side slipping during use of the ski.

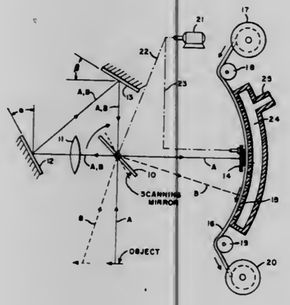
27,236
OPTICAL SYSTEMS FOR PANORAMIC CAMERAS

Ralph H. Wight, Portuguese Bend, Calif., assignor to Fairchild Camera and Instrument Corporation

Original No. 3,416,423, dated Dec. 17, 1968, Ser. No. 564,378, July 11, 1966. Application for reissue Aug. 15, 1969, Ser. No. 853,569

Int. Cl. G03b *37/02*

U.S. Cl. 95—16 — 6 Claims



An optical system for a panoramic camera which comprises a continuously rotatable plate having mirror surface on both sides which are parallel to the axis of rotation. The light from an object element is reflected from one surface of the rotating mirror through a converging lens to a set of mirrors which redirect the light from the object to the other side of the rotatable mirror. The light from the object is then focussed on an arcuate film-supporting platen.

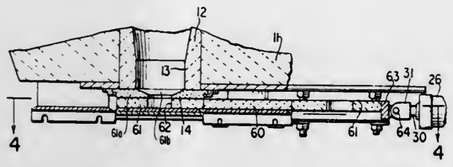
27,237
REFRACTORY CLOSURE MEMBER FOR BOTTOM POUR VESSELS

James T. Shapland, Wilkins Township, Allegheny County, Pa., assignor to United States Steel Corporation

Original No. 3,352,465, dated Nov. 14, 1967, Ser. No. 453,730, May 6, 1965. Application for reissue Nov. 14, 1969, Ser. No. 871,505

Int. Cl. B22d *37/00*

U.S. Cl. 222—512 — 18 Claims



A closure for the discharge outlet of a bottom-pour vessel for holding molten metal, in the form of a refractory block, is slidably mounted on guide rails carried below the vessel by spring-urged pivoted levers. Flanges at the sides of the block ride on the rails. A hole through the block is brought in register with the outlet by a fluid-pressure cylinder.

27,238
METHOD OF PREPARING SLOW RELEASE FERTILIZER COMPOSITIONS

Robert L. Stansbury, Littleton, Colo., and Charles S. Lynch, Lebanon, and Kamil Sor, Linden, N.J., assignors to Esso Research and Engineering Company

Original No. 3,276,857, dated Oct. 4, 1966, Ser. No. 401,672, Oct. 5, 1964, which is a continuation of Ser. No. 719,794, Apr. 2, 1968. Application for reissue Jan. 16, 1970, Ser. No. 3,534

Int. Cl. C05f *11/00*

U.S. Cl. 71—27 — 4 Claims

A method for making a slow release extruded compressed pelletized fertilizer composition comprising at least 75% by weight of a suitable fertilizer substance and less than 15% by weight of a water soluble hydrocarbon binder material, said binder and fertilizer being further encapsulated with either microcrystalline wax, asphalt, or a mixture of wax and asphalt so as to provide a coating completely around the outside of the fertilizer substance. Such pellets exhibit an improved leaching rate of the fertilizer substance to the surrounding area over similar commercial materials.

27,239
MEMORY SYSTEM

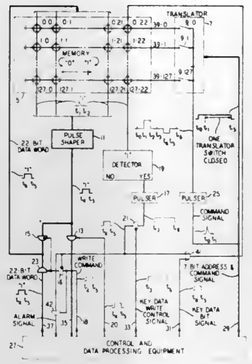
Werner Ulrich, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original No. 3,365,704, dated Jan. 23, 1968, Ser. No. 410.084, Nov. 10, 1964. Application for reissue Nov. 14, 1968, Ser. No. 793,203

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 — 16 Claims

I disclose apparatus for protecting the storage of information in the memory registers of a data processor. Each register is provided with an extra ("key data") bit which may be set to indicate that the information contained in the register has a degree of importance such that it is not to be casually over-written by a ordinary order to write new information. Circuitry is provided which is capable of responding to a special control signal for overriding the appearance of a set key data bit. In this way it is possible to alter the information content of the register by program command when it is in fact desired to do so.



27,240
THERAPEUTIC PREPARATION OF IRON

Eric London, Fareham, Hampshire, and George Daniel Twigg, Goostrey, Cheshire, England, by Fisons Pharmaceuticals Limited, Loughborough, Leicestershire, England, assignee, assignors to Fisons Limited, Felixstowe, Suffolk, England

No Drawing. Original No. 2,820,740, dated Jan. 21, 1958, Ser. No. 412,405, Feb. 24, 1954. Reissue No. 24,642, dated Apr. 28, 1959, Ser. No. 765,693, Sept. 22, 1958. This application for reissue Oct. 7, 1969, Ser. No. 871,812

Claims priority, application Great Britain, Feb. 27, 1953,

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 — 15 Claims

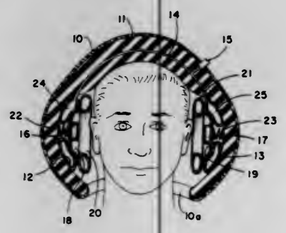
4. A therapeutic composition for treating iron deficiency anemia comprising a non-toxic, sterile, colloidal aqueous solution of a substantially non-ionic complex of ferric hydroxide with a dextran having an average intrinsic viscosity at 25° C. of about 0.025 to about 0.25, said solution having a pH of about 4 to about 8.5.

PATENTS

GRANTED NOVEMBER 23, 1971

GENERAL AND MECHANICAL

3,621,488
SOUND ATTENUATING HELMET
Robert S. Gales, 1645 Los Altos Road, San Diego, Calif. 92109
Filed July 27, 1970, Ser. No. 58,479
Int. Cl. A42b *3/00*; H04r *1/10*
U.S. Cl. 2—6 **5 Claims**



A helmet having a rigid, outer protective shell lined with a cushioning sound attenuating layer configured to conform to the shape of wearer's head is provided with a pair of cup-shaped recesses, slightly larger than, and laterally spaced from, a wearer's ears. An electroacoustic transducer, hereinafter referred to as an acoustic speaker, carrying an annular cushioning pad is normally maintained in a retracted position within each recess by a deflated, toroidal-shaped sac to permit effortless donning and removal of the helmet. By simply inflating each toroidal-shaped sac, the acoustic speaker and annular cushion are laterally displaced to snugly fit against a wearer's head to shut out airborne noise. By being separated from the helmet by the air filled toroidal-shaped sac, an acoustic decoupling from the helmet results to eliminate helmet transferred noise.

3,621,489
SHIN GUARD
Edmund Keller, Wredestrasse 10, Ludwigshafen (Rhine), Germany
Filed Aug. 11, 1969, Ser. No. 848,860
Claims priority, application Germany, Aug. 31, 1968, G 67 51 308
Int. Cl. A41d *13/06*
U.S. Cl. 2—22 **1 Claim**



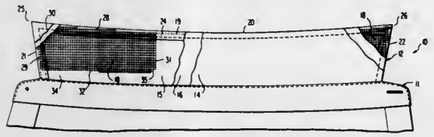
The shin is protected against the pressure from the uppers of a mountain climbing or ski boot by an axially slotted, flexible sleeve which fits around the shin and extends from the ankle to several centimeters above the boot. A soft lining is provided in the sleeve.

3,621,490
MODESTY CLOSURE
Barbara J. Willarson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1970, Ser. No. 17,738
Int. Cl. A41d *1/00*
U.S. Cl. 2—96 **3 Claims**



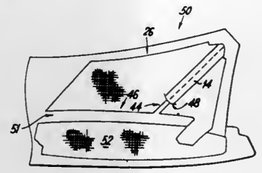
A modesty closure is provided for snap-fastened garments made of nonwoven fabric. An over-panel portion of the garment is folded inwardly to form a flap, and a first snap-fastener member is attached through the over-panel and the flap. An under-panel portion is similarly folded inwardly to form a flap portion, a mating snap-fastener attached to the under-panel and its flap, and the under-panel flap folded outwardly to extend beyond the edge fold of the under-panel portion.

3,621,491
SHIRT COLLAR
John W. Hall, Decatur, John P. Hunter, Jr., Dunwoody, and Jack W. Fields, Vidalia, Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.
Filed May 28, 1970, Ser. No. 41,366
Int. Cl. A41b *3/00, 3/06*
U.S. Cl. 2—131 **8 Claims**



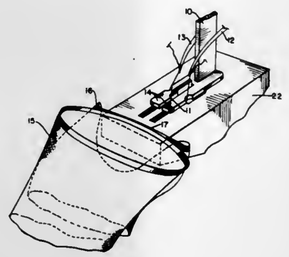
A shirt collar which includes a pair of relatively stiff open weave material inserts anchored at the corners or wings of the collar between the external plies of material by the external top stitch about the edge of the collar. The inserts are of a width shorter than the width of the collar so as to define a fold line in the collar material between the inserts and the shirt collar band. Also, the internal inserts are of a length shorter than one half the length of the collar and each insert has a smooth rounded edge opposite from its collar corner.

3,621,492
MANUFACTURING OF COLLARS
David Samuel Teperson, Johannesburg, Transvaal, Republic of South Africa, assignors to Permastay (Proprietary) Limited, Johannesburg, Transvaal, Republic of South Africa
Filed Jan. 7, 1970, Ser. No. 1,133
Int. Cl. A41b *3/06*
U.S. Cl. 2—143 **3 Claims**



A collar stiffener comprising a panel of backing material arranged to lie along the fold line of a collar, and having a corner formation for positioning at the wing end of the collar; and a stiffening strip secured to the panel and extending from the corner formation to an inner end stopping short of the fold line edge of the panel to provide a clearance space between the inner end of the strip and the fold line edge of the panel. Also a die for and a method of manufacturing collar stiffeners as described.

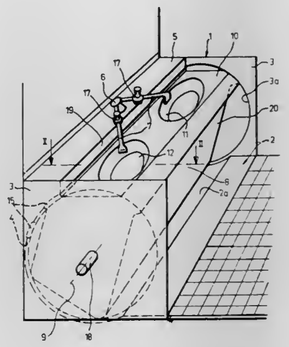
3,621,493
METHOD OF FABRICATING PANTY HOSE
Stanley E. Krueger, High Point, N.C., assignor to Indian Head, Inc., New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,164
Int. Cl. A41b *9/04, 11/00*
U.S. Cl. 2—224 R **1 Claim**

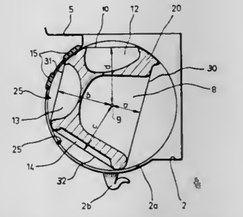


Disclosed are panty hose and a method of fabricating said panty hose wherein two panty hose leg blanks are separately knit. The tubular blanks are then joined to form the panty portion by uninterrupted slitting and simultaneous sewing of the slitted fabric along a predetermined line.

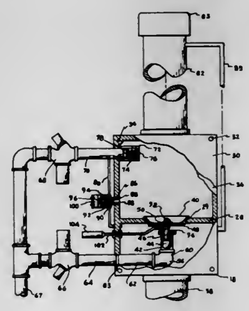
3,621,494
LAVATORY UNIT
Rene Bucher, Stockackerstrasse 17, Reinach, Switzerland
Filed Apr. 7, 1970, Ser. No. 26,342
Claims priority, application Switzerland, Apr. 10, 1969, 5,424/69
Int. Cl. A47k *3/18*
U.S. Cl. 4—4 **10 Claims**

A lavatory unit comprises an elongate body means of substantially trapezoidal cross-section which is mounted for rotation through 360° about a horizontal longitudinal axis. In each of the principal longitudinal faces of the body means a washing facility is provided. One face contains a bath, a second face contains a pair of wash basins and a third face a child's bath. By rotating the body means the various washing facilities can be brought into use according to whichever principal face is horizontally uppermost. The faces containing the bath and wash basins are respectively at different distances from the axis of rotation so that the bath and basins are presented to the user at a convenient height above the floor.





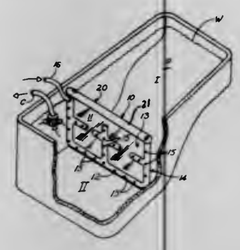
3,621,495
FLUSHING DEVICE
Monte A. Carson, 4512 Bates Drive, Yorba Linda, Calif. 92686
Filed Aug. 14, 1970, Ser. No. 63,881
Int. Cl. E03d *3/04, 3/06, 3/08*
U.S. Cl. 4—31 **5 Claims**



An electro-hydraulic mechanism for flush toilets is disclosed which is sufficiently compact to permit its installation inside the wall behind the toilet bowl. The mechanism employs a flush valve which is directly linked to a hydraulic actuator without any intervening mechanical

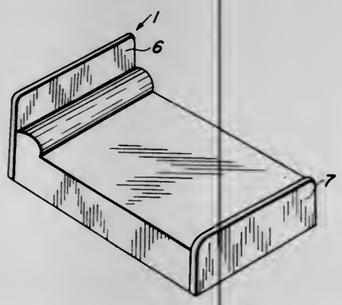
linkage so that the high maintenance and service required for mechanically actuated devices is avoided. The device uses a simple electrical system to actuate the flush valve and a second solenoid valve which is automatically controlled by a level sensing device to refill the water standpipe.

3,621,496
REMOVABLE THERMAL DIVIDER FOR A SWIMMING POOL
Donald A. McWilliams, 1916 N. Gilbert, Fullerton, Calif. 92633
Filed Mar. 19, 1970, Ser. No. 20,998
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 **10 Claims**



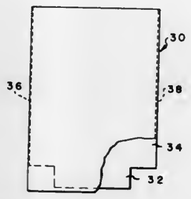
A removable thermal divider for a swimming pool, which serves to reduce the volume of water in a swimming pool to be heated at a given time without reducing the total volume of water in the pool. The divider is a removable wall that separates one section of the swimming pool from another section and comprises an impervious wall with a lower section of ballast, an upper air filled floating section and an intermediate section with tubing that discharges heated water into a divided section of the pool. The wall is rigidified by the floating section and by the pressure of the heated water in the tubing of the intermediate section.

3,621,497
BED FRAMES
Gordon E. Fitzgerald, Apt. 3308, 777 N. Michigan Ave., Chicago, Ill. 44011
Filed Dec. 11, 1969, Ser. No. 884,217
Int. Cl. A47c *19/00*
U.S. Cl. 5—131 **9 Claims**



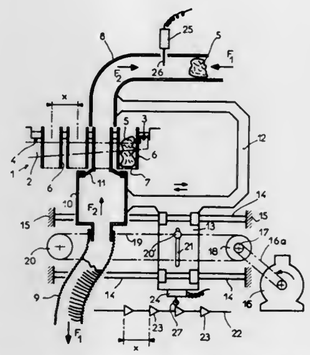
A bed frame which may constitute a separate unit, or an integral part of a box spring, and the like, and embodying supporting members which are positioned to supportingly underlie, at an acute angle, all of the cross slats of a box spring mounted thereon.

3,621,498
BEDCOVER
Elizabeth J. Cooper, Box 152, Mayesville, S.C. 29104
Filed Mar. 21, 1969, Ser. No. 809,167
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C **2 Claims**



An improved bedcover of the type having a skirt portion adapted to overlie the sides and end of a mattress, and having a flap attached to the underside thereof adapted to be tucked between the mattress and springs at the foot end of the mattress to maintain the bedcover in proper position on a bed during use.

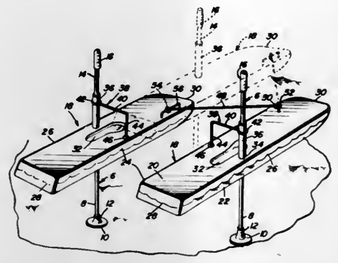
3,621,499
APPARATUS AND METHOD FOR LOADING AND UNLOADING A MULTIPLE CELL MODULE FOR PROCESSING TEXTILE ARTICLES
Maurice Joseph Heliot, 2 bis Rue Passerat, Troyes 10, France
Filed July 8, 1970, Ser. No. 53,258
Claims priority, application France, Feb. 3, 1970, 7003648
Int. Cl. D06f *35/00*
U.S. Cl. 8—150 **12 Claims**



An apparatus for loading or unloading textile articles from the individual cells of a multiple-cell module in which the goods are subjected to a processing under forced fluid flow, said cells having retaining means thereacross to retain an article while permitting fluid flow through the cell, which apparatus include pneumatic means for positioning an article in each cell at a loading station and withdrawing the article from each cell at a unloading station.

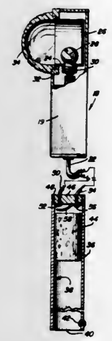
3,621,500
WATER WALKING FLOAT-EQUIPPED STILTS
Louis G. Senghas, 39611 Duluth Road, Mount Clemens, Mich. 48043
Filed Apr. 9, 1970, Ser. No. 27,010
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 D **9 Claims**

An exercising, amusing, and fun provoking device for aquatic use in shallow water, three to four feet deep, at a bathing beach shore or in a swimming pool. An innovation which permits the user to shuffle, walk or scamper over the water's surface and characterized by a pair of suitably constructed stilts and a pair of horizontally elongated foot pads which are buoyant. These



pads resemble and function as skis or floating pontoons and have stabilizing guide sleeves which are shiftably adjustable on the stilts, are linked together, and braced and effectually balanced for adequate performing and controllable use.

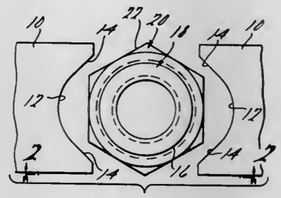
3,621,501
LIFE PRESERVER WITH FLASHING DISTRESS SIGNAL
Johnnie B. Jordan, Silsbee, Tex., assignor of fractional part interest to Carl R. Griffith, Beaumont, Tex.
Filed Oct. 21, 1969, Ser. No. 868,037
Int. Cl. B63c *9/20*
U.S. Cl. 9—313 **4 Claims**



A U-shaped neck embracing shoulder-supported collar-type life preserver has the forward ends of its legs equipped with a pair of depending ballast-like adapters. A median top surface portion of one leg of the life preserver has a built-in flashlight with an exposed amber colored distress signalling lens. The flashlight bulb is automatically flashed on by a float operated switch when the overboard wearer is imperiled in the water.

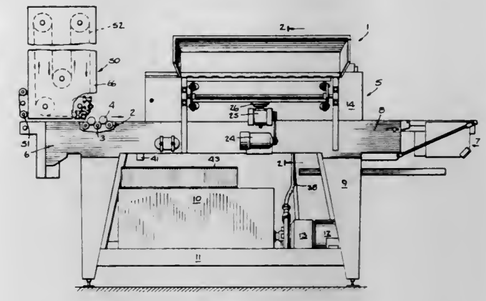
3,621,502
METHOD AND APPARATUS FOR PRODUCING LOCKNUTS
Arthur E. Velthoven, Warren, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed July 22, 1969, Ser. No. 843,637
Int. Cl. B21d *53/24;* **B21k** *1/64;* **B23g** *9/00*
U.S. Cl. 10—72 **6 Claims**

A method and apparatus for manufacturing collar type locknuts in which the nut collar is squeezed between a pair of opposed indentors. The collar engaging indentor surfaces are concave or segmentally cylindrical in shape.



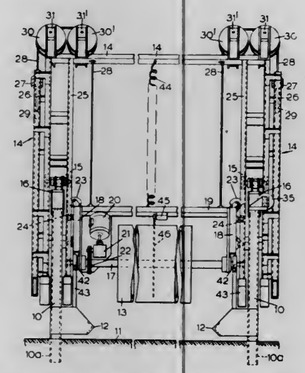
By this means relatively large areas of the collar are displaced inwardly a uniform amount and the frictional locking force is distributed over a large thread area.

3,621,503
APPARATUS FOR WASHING EGGS
Alvin T. Classen, Norfolk, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,489
Int. Cl. A01k *43/00*
U.S. Cl. 15—3.13 **9 Claims**



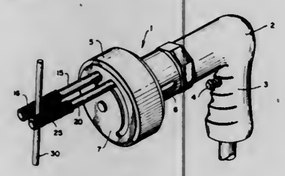
A compact machine for washing eggs prior to egg breaking or other egg processing or handling operations. One form of the machine has a roller-type conveyor mounted on a suitable frame carrying rows of eggs through a washing station. The washing station includes a series of elongated brushes, several of which are mounted in the direction of egg movement. The brush mounting means includes a drive for moving the brushes back and forth laterally across the conveyor in an egg brushing action. A series of nozzles are mounted above the brushes to spray the eggs during their forward movement and during the brushing operation. A drive means is provided to move the nozzles in the opposite direction from that of the brushes. A filtered supply of the washing solution is maintained in a tank positioned in the lower portion of the machine together with a suitable pump for providing the necessary fluid pressure for the spraying operation. A second form of the washer is used for particularly dirty eggs. It includes an additional washing chamber in the form of a tower in which the eggs are moved up and down several times on generally vertical paths during an additional spraying operation whereby an initial cleaning is obtained during an appreciable period which uses only a short horizontal distance on the machine conveyor.

3,621,504
VEHICLE WASHING APPARATUS
Gilbert McMilan, 96 Hardy Mill Road, Harwood Bolton, Lancashire, England
Continuation-in-part of application Ser. No. 738,055, June 18, 1968. This application Feb. 13, 1970, Ser. No. 11,080
Claims priority, application Great Britain, June 22, 1967, 28,866/67
Int. Cl. B60s *13/06*
U.S. Cl. 15—21 D **8 Claims**



Broadly, according to the invention, the apparatus is for supporting a horizontal, usually counterbalanced, brush of or for a vehicle washing apparatus and has means for guiding said brush firstly in a plane which is upwardly inclined with respect to the relative direction of movement of a vehicle and secondly in a reversely inclined plane.

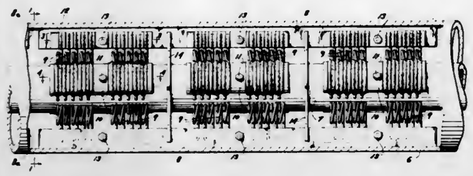
3,621,505
DUAL ROTARY SURFACE CONTACTING TOOL
Harold Ray Vocker, 109 Kentucky St., and David Louis Marcovitz, 2022 Valencia St., both of Monroe, La. 71201
Filed Mar. 12, 1970, Ser. No. 18,962
Int. Cl. A46b *13/02*
U.S. Cl. 15—23 **7 Claims**



A portable tool with a pair of brushes or other rotary surface contacting friction elements is mounted on a portable power source for driving the elements. One of the brushes or elements is bodily movable about the axis of a drive shaft so that operation of the drive shaft through friction in the drive mechanism moves the brush angularly toward the other brush, causing the two elements to contact frictionally an article interposed between them.

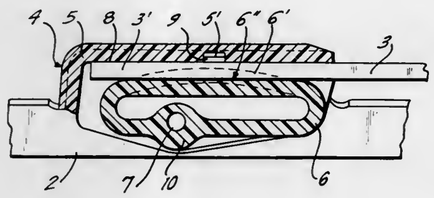
3,621,506
SCRAPER BLADE MOUNTING ARRANGEMENT
Richard M. Armstrong, P.O. Box 566, and Andrew J. Armstrong, R.D. 4, both of West Chester, Pa. 19380
Filed Oct. 14, 1969, Ser. No. 866,218
Int. Cl. F28g *3/12*
U.S. Cl. 15—246 **14 Claims**

Scraper mechanism for use in scraping deposits from the interior surface of a shell including a scraper blade and a plurality of spring assemblies each incorporating a cluster of spring elements for yieldingly holding or suspending the scraper blade in a predetermined position with an edge of the blade in scraping engagement with the



shell wall. Provision is also made for limiting motion of the blade from said predetermined position and therefore for limiting spring deflection. Provision is still further made for preventing appreciable movement of the blade from its predetermined spring suspended position.

3,621,507
DEVICE FOR ATTACHING THE WIPER TO THE WIPER ARM OF A WINDSHIELD WIPER
Eugenio Allaria and Luigi Guzzi, Milan, Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy
Filed Sept. 30, 1969, Ser. No. 862,350
Claims priority, application Italy, Oct. 10, 1968, 22,268/68
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **3 Claims**

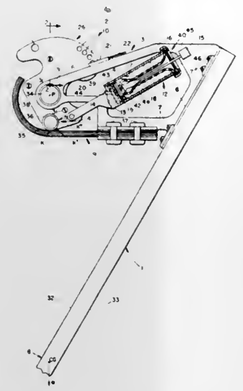


Easy and rapid connection of a wiper to a windshield wiper arm is accomplished with an elastically deformable structure secured to the bridge piece of the wiper blade in oscillating fashion by means of a pin, and having an inner opening to receive the end of the wiper arm and to hold it disengageably with cooperating parts held together by the elastic pressure exerted by the deformable structure.

3,621,508
FORCE GOVERNING DOOR HINGE
Emanuel J. Di Nola, Briar Cliff Manor, and Henry B. Klatte, Yonkers, N.Y., and Theodore R. Breunich, Stamford, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 5, 1970, Ser. No. 77,943
Int. Cl. E05f *1/12*
U.S. Cl. 16—180 **6 Claims**

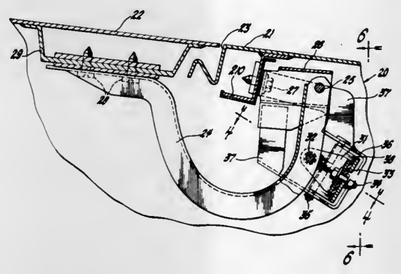
A door hinge for governing the force required to rotate a door upwards about an axis having a horizontal component. A negator spring creates a constant force on the door member. The force due to the negator spring aids the moment due to the weight of the door and acts through a moment arm that varies inversely with the moment created by the weight of the door with respect to the axis of rotation. The moment arm through which the

negator spring acts and the moment arm of the weight of the door are directly dependent upon the lateral devi-



ation of the center of gravity of the door from vertical alignment with the axis of rotation.

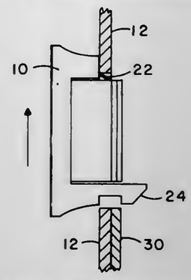
3,621,509
VEHICLE BODY CLOSURE COUNTERBALANCE
Felix C. Bugnell, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 18, 1969, Ser. No. 850,900
Int. Cl. E05d *15/58;* **E05f** *1/12*
U.S. Cl. 16—85 **5 Claims**



A leaf spring is pivoted intermediate its ends to a hinge arm which swingably mounts a vehicle closure on a vehicle body. The ends of the spring slidably bear on fixed pins mounted on the body. The leaf spring is in a free position when the closure is in open position and is flexed opposite to its free position when the closure is closed to provide an opening spring counterbalance force. The leaf spring may be located parallel with the hinge arm or transverse of the hinge arm. In another embodiment, the leaf spring has one end fixed to the closure and the intermediate portion and the other end thereof respectively slidably bearing on one lobe of an adjustable multilobed cam and an abutment on the body.

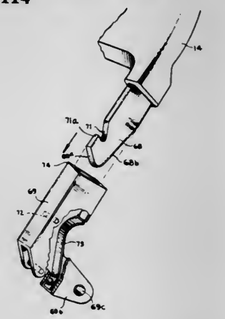
3,621,510
LOCKING HANDLE
Henry Rollins, Jr., Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed July 29, 1970, Ser. No. 59,264
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 **8 Claims**

An integral locking handle which may be attached to a panel or like member without the need for screws, pins or the like. The handle is attached through a slot in the panel, and biasing means yieldably maintains a locking member



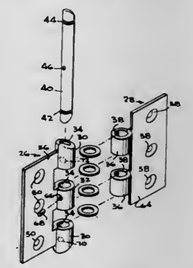
in engagement with a complementary member of a supporting cabinet or the like.

3,621,511
DETACHABLE HANDLE DEVICE
Wilbur-Webb Selley, 130 N. Lake Sybelia Drive, Maitland, Fla. 32751, and Richard H. Schaffer, 854 Edgewater Drive, Orlando, Fla. 32804
Filed Feb. 24, 1969, Ser. No. 801,611
Int. Cl. B62b *3/02*
U.S. Cl. 16—114 **5 Claims**



A detachable handle for a tool, floor scrubber, vacuum cleaner, sweeper or other device, which handle may be moved freely and effectively when in its installed position, yet which can be readily removed or thereafter reinstalled without the manipulation of pins or levers, or the installation or removal of screws or other fastening devices.

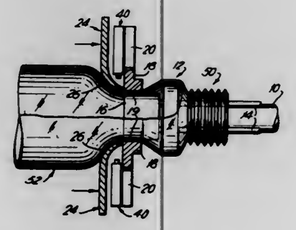
3,621,512
TAMPER RESISTANT HINGE
Arthur Johnson, Box 293, R.D. 12, Jamestown, N.Y. 14701
Filed June 12, 1970, Ser. No. 45,642
Int. Cl. E05d *11/00*
U.S. Cl. 16—137 **6 Claims**



A butt hinge is provided in which a pivot pin extends through interleaved knuckle members with the end of the

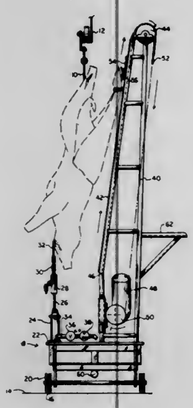
pivot pin and the outer knuckle members forming a continuous smooth surface and with the pivot pin being retained in position by a lock pin and a plurality of swaged lugs positioned on the inward side of the knuckle members to be inaccessible when the closure member supported by the hinge is in a closed position.

3,621,513
METHOD AND APPARATUS FOR AUTOMATIC STUFFING MACHINES
Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 22, 1969, Ser. No. 826,951
Int. Cl. A22c *13/00*
U.S. Cl. 17—41 **13 Claims**



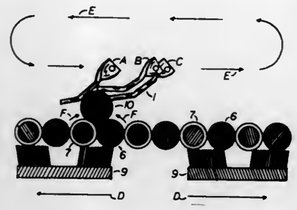
A method and apparatus are provided for constricting and compacting the last filled end of a sausage casing after it has been stuffed with a food emulsion, thereby facilitating the application of a clip to close its last filled end. There is also provided a method and apparatus for preventing food emulsion flow back during the stuffing of, and after, a sausage casing has been stuffed with a food emulsion.

3,621,514
HOG SKINNING METHOD
Kenneth J. Brown, P.O. Box 1539, Plainview, Tex. 79072
Original application Oct. 27, 1969, Ser. No. 869,828. Divided and this application Feb. 23, 1971, Ser. No. 117,971
Int. Cl. A22b *5/16*
U.S. Cl. 17—50 **4 Claims**



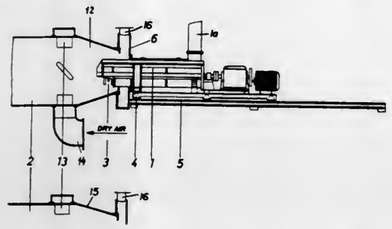
A hog hung by the hamstrings is skinned by cutting the skin from the belly, legs, and head, then holding the head down while pulling the hide upward.

3,621,515
SCALLOP EVISCERATOR
Charles Milton Bunnell, P.O. Box 1695, St. Augustine, Fla. 32084
Filed Dec. 22, 1969, Ser. No. 887,058
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **4 Claims**



This invention relates generally to the machine-processing of scallops and specifically to improvements in the eviscerator, that machine which effects the separation of the viscera from the scallop meat, using the principle of rotating rollers with surfaces having different surface character and external pressure.

3,621,516
GRANULATING DEVICE FOR SYNTHETIC FERTILIZERS
Wilhelm Wengeler, Bochum-Stiepel, and Lothar Hoffmann, Dortmund, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Filed June 9, 1969, Ser. No. 831,619
Int. Cl. B29j *1/00;* **C05g** *3/00*
U.S. Cl. 18—1 A **2 Claims**

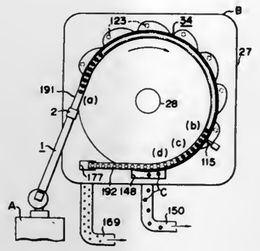


A granulating device for synthetic fertilizers in which the material is fed to the rear portion of a granulator in the form of a horizontally shiftable granulating device, including a power driven worm equipped with paddle-like members, housing for same being in two parts, the lower part of which can be raised or lowered, and the upper part of which is mounted on rollers which travel along horizontal tracks, enabling the granulator to move toward and away from a drying drum which is provided with air inlet openings and having a conical inlet section to which material from the granulator is discharged.

3,621,517
APPARATUS FOR PRODUCING THERMOPLASTIC RESIN MOLDINGS
Isamu Nishikawa and Shigeo Tasaka, Kyoto-shi, Japan, assignors to Toyo Pafuto Company Limited, Kyoto-shi, and Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
Filed Nov. 4, 1968, Ser. No. 773,099
Claims priority, application Japan, Nov. 8, 1967, 42/94,226; Nov. 13, 1967, 42/95,541
Int. Cl. B29c *3/00*
U.S. Cl. 18—20 C **11 Claims**

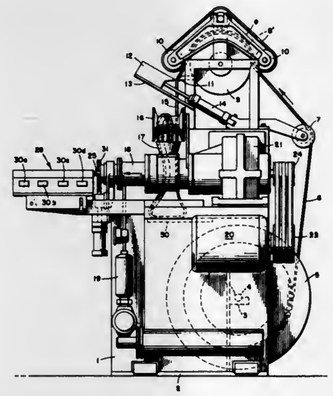
An apparatus, of rotating type, for producing thermoplastic synthetic resin moldings automatically and at high

speed comprises introducing the thermoplastic synthetic resin strip material, which has been plasticized in a moldable state, into a molding machine, pressing the strip at a predetermined position between a plurality of upper and lower molds mounted on a rotating base of the molding



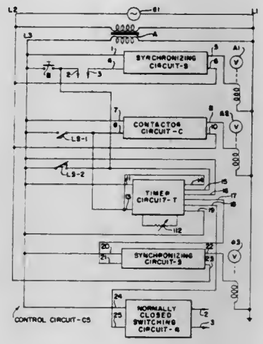
machine, molding the material at the mold surfaces of the upper and lower molds during rotation of the rotating base, and cutting the material into a predetermined shape by means of a cutting mechanism provided on the upper and lower molds so as to obtain desired products.

3,621,518
APPARATUS FOR PRODUCING BATCHES OF ELASTOMERIC COMPOSITIONS AT THE HIGHEST TEMPERATURE CONSISTENT WITH THE NATURE OF THE COMPOSITIONS
Achille Gallizia, Milan, Italy, assignor to Pirelli S.p.A., Milan, Italy
Original application Sept. 24, 1968, Ser. No. 762,014. Divided and this application Mar. 25, 1970, Ser. No. 25,613
Claims priority, application Italy, Sept. 29, 1967, 21,051/67
Int. Cl. B29c *3/06*
U.S. Cl. 18—2 J **6 Claims**



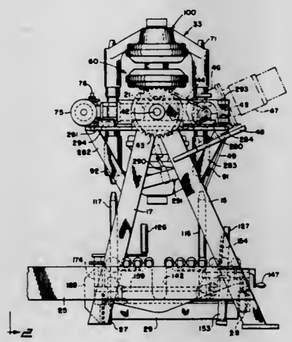
Charges of elastomeric material of predetermined uniform weight(s) for introduction into molds are produced by heating and forming elastomeric material into an intermediate article of substantially uniform cross section, sensing the length of the article, and cutting the article into individual charges of predetermined length employing photocell actuated apparatus to sense and cut the lengths of the preform.

3,621,519
SOLID-STATE PROCESS CONTROL SYSTEM
James J. Vandemore, Geneseo, Ill., and Donald E. Henry, Davenport, Iowa, assignors to E. W. Bliss Company, Canton, Ohio
Filed Sept. 26, 1968, Ser. No. 812,486
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. B29c *3/06*
U.S. Cl. 18—2 **15 Claims**



There is provided a process control system including a plurality of functional modules for sequencing a plurality of operations of a machine, such as a plastic molding machine, wherein the functional modules include a static electrical control circuit. The static control circuit is comprised of an input circuit for receiving alternating-current signals; static direct-current logic means for performing an electrical function and then providing a direct-current output signal; static direct current to alternating current converter means, such as a triac switching circuit, coupled to the logic means for providing an alternating-current output signal from the direct-current signal; and, actuatable means such as a solenoid controlled valve, coupled to the converter means, for upon energization, providing at least one of the plurality of machine operations.

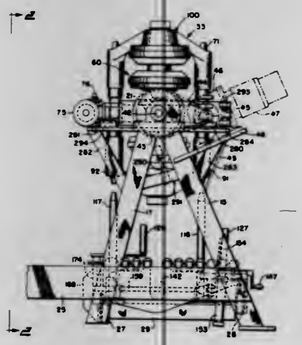
3,621,520
POST CURE INFLATOR
Ernest S. Ulm, Stow, Ohio, assignor to NRM Corporation, Akron, Ohio
Original application June 12, 1967, Ser. No. 645,283, now Patent No. 3,483,596, dated Dec. 16, 1969. Divided and this application Aug. 19, 1969, Ser. No. 851,256
Int. Cl. B29h *5/02*
U.S. Cl. 18—2 TP **17 Claims**



A four tire post cure inflator for a two tire press adapted to receive and inflate each tire but with every other

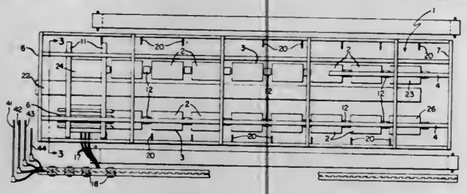
tire on a separate pair of axially rotating chuck elements, index such tires into a vertical plane for ambient cooling as they are rotating, with yokes for the outer elements being guided for opening and closing partly on fixed and partly on movable guides, and improved chuck lock mechanisms and rotary seals with the former firmly securing the chuck elements together in any relative rotative position thereof.

3,621,521
POST CURE INFLATOR
Ernest S. Ulm, Stow, Ohio, assignor to NRM Corporation, Akron, Ohio
Original application June 12, 1967, Ser. No. 645,283, now Patent No. 3,483,596, dated Dec. 16, 1969. Divided and this application Aug. 19, 1969, Ser. No. 851,321
Int. Cl. B29h *5/02*
U.S. Cl. 18—2 TP **17 Claims**



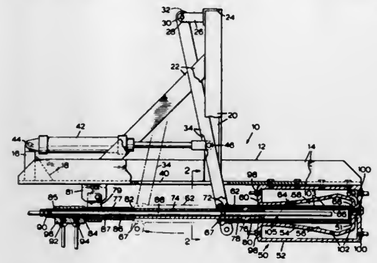
A four tire post cure inflator for a two tire press adapted to receive and inflate each tire but every other tire on a separate pair of axially rotating chuck elements, index such tires into a vertical plane for ambient cooling as they are rotating, with yokes for the outer elements being guided for opening and closing partly on fixed and partly on movable guides, and improved chuck lock mechanisms and rotary seals with the former firmly securing the chuck elements together in any relative rotative position thereof.

3,621,522
POLYURETHANE FOAM APPARATUS
Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 16, 1969, Ser. No. 833,424
Int. Cl. B29c *5/00*
U.S. Cl. 18—4 P **3 Claims**



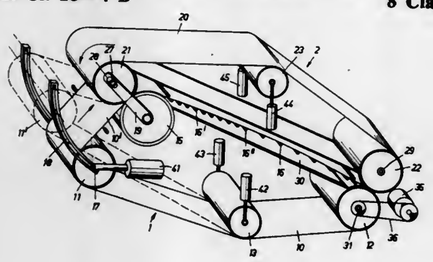
This invention relates to an apparatus for pouring polyurethane foamable molded goods wherein at least one pouring head has moved over the molds of one row of one set of molds and then moved over to the second row to permit the second row of molds to be poured in the desired sequence.

3,621,523
APPARATUS FOR MOLDING PLASTIC ARTICLES
Peter D. J. Dicks, Kitchener, Ontario, William M. Hill, Ayr, Ontario, and James T. Horn, Port Credit, Ontario, Canada, assignors to Cecil Harold Royce Day, Grimsby, Ontario, Canada
Original application Nov. 16, 1967, Ser. No. 683,656, now Patent No. 3,478,781. Divided and this application Jan. 30, 1969, Ser. No. 795,322
Int. Cl. B29c *5/06*
U.S. Cl. 18—5 BJ **7 Claims**



The present invention relates to an apparatus for the manufacture of plastic articles such as bottles from a foamable plastic material such as expandable polystyrene. The apparatus of the present disclosure includes a mould which has a first moulding chamber surrounded by a second moulding chamber and separated therefrom by a movable wall. The movable wall is adapted to be removed from the mould to permit the parison formed within the first mould to be expanded to the contour of the second mould. In the method of operation of the apparatus, the first moulding chamber is charged with a foamable plastic and the foamable plastic is expanded therein to form a tubular parison. After the expansion of the plastic material within the first mould has been substantially completed the movable outer wall of the first mould is withdrawn and the parison is further expanded by blow-moulding to the contour of the second mould. After the blow-moulding has been completed, the mould is split and the moulded article removed.

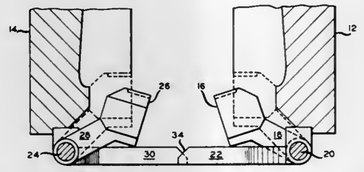
3,621,524
APPARATUS FOR THE CONTINUOUS PRODUCTION OF SHEET FROM FLOWABLE MATERIAL
Robert E. Sherwood, Westport, Conn., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Jan. 17, 1969, Ser. No. 792,075
Claims priority, application Germany, Jan. 20, 1968, P 17 04 696.6
Int. Cl. B29c *15/00;* **B29d** *7/14*
U.S. Cl. 18—4 B **8 Claims**



Apparatus for production of sheet material in which flowable, preferably thermosetting, material is formed into a sheet between adjacent runs of a pair of synchronously movable endless belts each passing over and being tensioned by at least two rollers. Preferably the upper

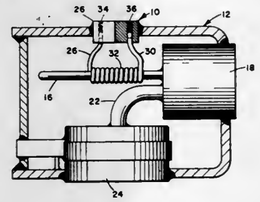
run of the lower belt is outwardly bowed to reduce the possibility of ripples occurring in the belts while they are shaping the flowable material into sheet.

3,621,525
PIVOTAL BOTTOM INSERTS FOR BLOW MOLDING MOLD
Alvin E. Butcher, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Aug. 18, 1969, Ser. No. 850,796
Int. Cl. B29d *23/03;* **B28b** *7/10;* **B29c** *7/00*
U.S. Cl. 18—5 BR **7 Claims**



In a mold for forming articles by blow molding, pivotal inserts are provided in the bottom forming portion of the mold. Preferably, these inserts pivot downward as the mold opens so that bottles with recessed bottoms can be removed without damage.

3,621,526
PLUGGING MEANS FOR MELT SYSTEM POLYMER LINES
John H. Bell, Jr., and Charles S. W. King, Charlotte, N.C., assignors to R. H. Bouligny, Inc., Charlotte, N.C.
Filed Sept. 10, 1969, Ser. No. 856,719
Int. Cl. D01d *3/00*
U.S. Cl. 18—8 P **6 Claims**

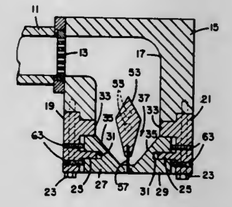


Means is provided for plugging any one of a plurality of polymer distribution conduits upstream of an associated metering pump in a melt system so that the pump may be disconnected and replaced whenever necessary without interrupting operation at the other conduits. The plugging means provided includes a heat exchange structure installed on each of the distribution conduits and arranged for selective circulation of cooling fluid therethrough to solidify polymer temporarily in the related distribution conduit and thereby plug the same whenever desired.

3,621,527
APPARATUS FOR MAKING NARROW SINTERED METAL STRIPS
Martin H. Michalak, 165 Kings Highway, Westport, Conn. 06880
Filed July 16, 1968, Ser. No. 745,194
Int. Cl. B22f *3/18*
U.S. Cl. 18—9 **6 Claims**

Before sintering, a compacted powdered metal web is slit longitudinally into a plurality of relatively narrow strips by a row of thin high-speed slitting disks spaced laterally on a supporting shaft to provide strips of desired widths which may be all of the same width or of varying widths depending on how the slitting disks are spaced on the shaft. Shafts for other rows of slitting disks which may be variously spaced may be carried squirrel-cage fashion in a supporting structure which is rotatable to bring a selected row of disks to cutting position in which the shaft of the row is coupled to driving means.

3,621,528
APPARATUS FOR EXTRUDING NET-LIKE FABRICS
Theodore H. Fairbanks, Liverpool, and Robert F. Gillespie, Havertown, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed Apr. 20, 1970, Ser. No. 29,843
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 N **6 Claims**

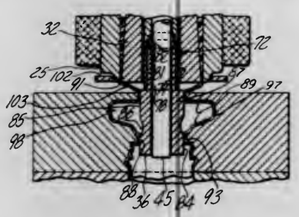


Apparatus for making net-like structures which include a pair of displaceable die-carrying members having sets of cooperating, complementary die-forming orifices along opposing surfaces to which flowable plastic or strand-forming material is delivered and extruded therefrom as shaped streams. Positioned between and in snug but sliding contact with the opposing surfaces of the die-carrying members is a separator plate which includes a plurality of spaced partitions for keeping the shaped streams apart at certain of their locations of crossing. The separator plate is flared laterally in the areas adjacent to the sets of orifices so as to direct the shaped streams along diverging paths as they issue from the sets of orifices.

3,621,529
APPARATUS FOR MAKING BLOW-MOLDED ARTICLES WITH FINISHED OPENINGS
Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Dec. 5, 1969, Ser. No. 882,425
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 BS **7 Claims**

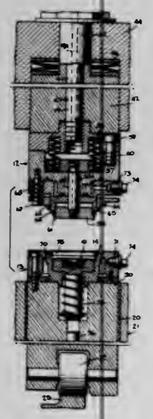
Blow-molded articles are initially formed with a disposable hollow nodule severed from the neck of the container along the periphery of a finished opening at the

end of the container neck. The apparatus for blow molding the container and the nodule as a unit includes a complementary mold and a trimming and sealing spool mounted on a blow pipe interiorly of a region traversed



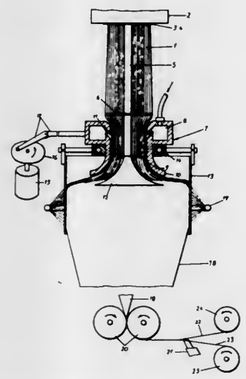
by the parison. The spool is shaped to effect sealing of the mold at the axial extremity of the unit provided by the nodule and to effect finishing of a container as the spool is traversed along the blow tube in a direction outwardly of the mold.

3,621,530
MEANS FOR MOLDING CLOSURE CAP GASKETS
Orin L. Pfleger and Daniel D. Acton, Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Filed June 30, 1969, Ser. No. 837,709
Int. Cl. B29c *17/00*
U.S. Cl. 18—5 RR **6 Claims**



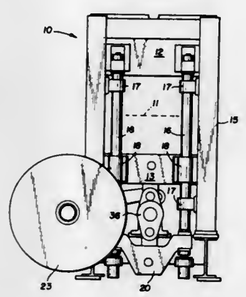
A machine is disclosed for shaping or molding sealing gaskets within hollow closure cap shells. Closure cap shells having a hollow or cup-like form first have a predetermined amount of gasket material inserted in them either in the form of a cut-ring or as a flowed-in ring. These closure shells are fed into the machine which shapes or molds the gasket material into precisely formed cap gaskets. The machine has a rotating turret mounting a number of molding heads or spindles at its periphery. Each of these heads includes a lower spindle for receiving the closure shells with their hollow gasket receiving interior uppermost. Gasket shaping tools in each head are mounted on an upper spindle. The lower spindle is moved upwardly forcing the closure shell and its included gasket material into engagement with the gasket shaping tools in the upper spindle. The upward movement of the lower spindle is provided by an inclined cam having a slowly rising molding portion which moves the gasket material smoothly and progressively into molding engagement with the upper spindle tools with great force. Adjustable pressure determining members are included in the upper spindle to give a precise control of the final molding force applied by the lower spindle. During the molding operation, the upper and lower spindles are cooled by a circulating temperature controlling fluid which keeps these molds at a relatively low temperature as contrasted with the elevated temperature of the gasket material as has been heated prior to the feeding of the caps into the molding machine.

3,621,531
APPARATUS FOR THE CONTINUOUS PRODUCTION OF A RANDOM-FILAMENT FLEECE
Karl-Heinz Feltgen, Dormagen, and Gunther Espanion, Cologne, Mauenheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 28, 1969, Ser. No. 848,138
Claims priority, application Germany, Sept. 7, 1968, P 17 85 302.0
Int. Cl. D01d *23/00*
U.S. Cl. 18—8 WB **2 Claims**



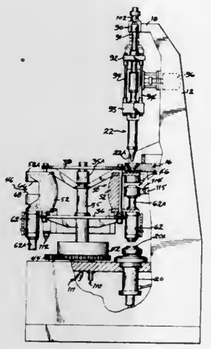
An apparatus for forming a random-filament fleece and having a spinning head to supply filaments to a trumpet-shaped aerodynamic take-off means which throws the filaments against a collecting means where the filaments adhere to form a tubular fleece.

3,621,532
THERMOFORMER
Kurt G. Dahlberg, Pittsford, N.Y., assignor to Thermo Trim, Inc., East Rochester, N.Y.
Filed May 15, 1969, Ser. No. 824,978
Int. Cl. B29c *17/00;* **B30b** *1/14*
U.S. Cl. 18—19 **13 Claims**



A thermoforming machine for molding products from thermoplastic sheet stock includes a shaft below the sheet stock plane and toggle lever sets each having one toggle lever fixed to the shaft and the other fixed to a movable part. One toggle lever set is connected to the lower mold platen and the other to vertically movable guides that guide the lower mold platen and carry the upper mold platen. The toggles are oppositely oriented and are operated by reciprocally turning the shaft to draw the mold platens together at the sheet plane on one stroke and separate them on the other stroke.

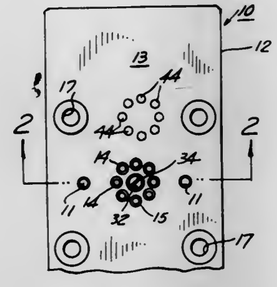
3,621,533
APPARATUS FOR PRODUCING RUBBER AND LIKE MOLDED ARTICLES
Luigi Bertrandi, Via Peano 11, Turin, Italy
Filed Oct. 28, 1968, Ser. No. 771,059
Claims priority, application Italy, Nov. 2, 1967, 53,577-A/67
Int. Cl. B29c *3/00*
U.S. Cl. 18—20 H **10 Claims**



An apparatus which includes a plurality of molds which open and close, means for closing the molds, for holding them closed under a first pressure or force, and for moving them into registry with a clamping station where a second, much greater force or pressure may be applied, while a charge of article-forming material is forced into the molds, one at a time, as they are brought into position, and means for maintaining the lower force on the molds after the material has been introduced into the molds, whereby only one high force cylinder assembly is needed for a plurality of molds, since each mold requires a high force to remain closed only during a short period within a molding and vulcanizing cycle. The process is particularly described with respect to a hydraulically operated machine in which molding is by way of injection of rubber into mold units mounted on a turntable so as to permit free but limited axial movement, to simplify operation of the clamping and high force-applying steps, and continuous operation.

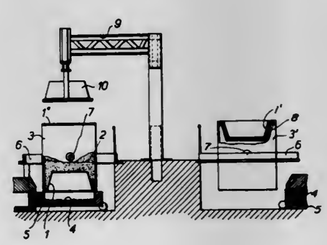
3,621,534
TOOL SET ASSEMBLY FOR POWDER COMPACTING PRESS AND THE LIKE
Georges D. De Troyer, Detroit, Mich., assignor to Wolverine Pentronix, Inc., Lincoln Park, Mich.
Filed Sept. 29, 1969, Ser. No. 861,672
Int. Cl. B30b *11/02*
U.S. Cl. 18—16.5 **21 Claims**

A unitary tool set assembly for mounting in a powder compacting press, having a die plate provided with one or a plurality of die cavities and to which is mounted a housing extending below the die plate and containing one or a plurality of punches individually disposed in each die cavity. A stationary core rod is disposed in each punch and the punches are collectively actuated for reciprocation by a common punch holder to which they are



rigidly affixed during initial assembly of the tool set in an improved manner such as to maintain their accurate alignment relative to the die cavities and the core rods.

3,621,535
APPARATUS FOR PRODUCING ARTICLES FROM PLASTIC MATERIAL
Lars Ringdal, Montebellovelen 15, Oslo 3, Norway
Filed Oct. 8, 1969, Ser. No. 864,636
Claims priority, application Norway, Nov. 4, 1968, 4,365/68
Int. Cl. B29c *5/00, 5/04*
U.S. Cl. 18—26 R **9 Claims**

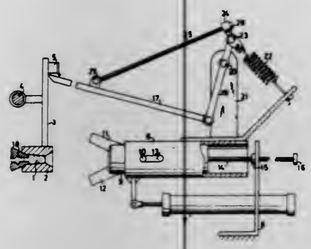


Apparatus for moulding articles from plastic materials comprising a container holding a body of plastic material and having a plurality of openings for receiving moulds on which the articles are to be formed, said container being rotatable to move one of the moulds so that it is at the bottom of the container with its mould surface facing into the container and covered with the plastic material, and means for heating said one mould to form a plastic article thereon.

3,621,536
APPARATUS FOR REMOVING A PLUG OF MOLDING MATERIAL FROM THE INJECTION PASSAGE OF A MOLD
Germain D. Remmery, St. Amandsberg, Belgium, assignor to ACEC Ateliers de Constructions Electriques de Charleroi
Filed Nov. 13, 1969, Ser. No. 876,233
Claims priority, application Belgium, Nov. 14, 1968, 66,072
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 NR **2 Claims**

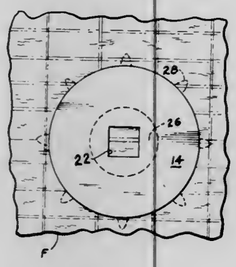
Apparatus for removing a plug of molding material from the injection passage of a mold including a slider displaceable in rectilinear movement toward and away from

the plug and a piston slidably mounted in the slider so as also to be displaceable toward and away from the plug. The piston is provided with a pair of jaws articulated at one end to pivot about an axis transverse to the direction of movement of the piston and slider. The piston has



a rod provided with a pair of thrust members arranged on either side of a stationary frame whereby to limit the displacement of the piston. A cutout is formed on the wall of the slider to allow opening and closing of the jaws while a spring biases the jaws toward open position.

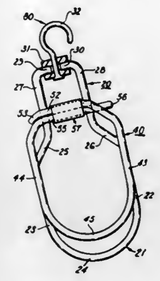
3,621,537
FASTENER FOR NON-WOVEN FABRICS
Hugh Hill Andrews, Cheshire, Kenneth W. Flisher, Middlebury, and Donald O. Taylor, Waterbury, Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Dec. 10, 1969, Ser. No. 883,693
Int. Cl. A44b *17/00*
U.S. Cl. 24—216 **3 Claims**



A plastic snap fastener for non-woven fabrics having thin flexible base flanges and integral setting prongs which in use are rolled outward or collapsed to clamp the fastener parts to the scrim of the non-woven fabric.

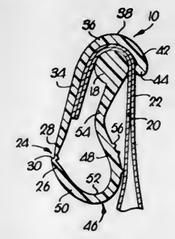
3,621,538
OVERLAPPED LOOP TOWEL CLAMP
Charles A. Nickason, 1581 Rupert St., Vancouver 6, British Columbia, Canada
Filed Aug. 30, 1968, Ser. No. 756,545
Int. Cl. A44b *21/00*
U.S. Cl. 29—263 **20 Claims**

A clamp for holding a towel, wash cloth, or the like, on a wall which includes a loop member and a clamp member slidably mounted thereon wherein the clamping member has two parts, one being located on each of opposite sides of the loop so that when a cloth is threaded through the two members and the loop it is clamped by being pressed against the loop by each of the two members upon the application of a force on the cloth. Movement of the two parts of the slider is permitted toward and away from the loop by torsion bar members spaced from the portion



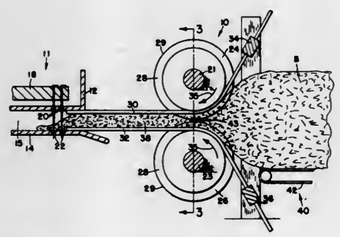
of the slider which engages the cloth. The torsion bars are also positioned so as to limit sliding movement of the slider relative to the loop.

3,621,539
BAG SEALER
Ralph L. Ayers, Kansas City, Mo., assignor to Variform Plastics, Inc., Kansas City, Mo.
Filed Feb. 27, 1970, Ser. No. 15,005
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 R **5 Claims**



A bag sealer having a pair of hingedly interconnected segments, one of said segments carrying a locking head and the other segment defining a pocket for receiving said locking head whereby to retain in juxtaposed, sealed relationship the flexible walls of a bag disposed therebetween.

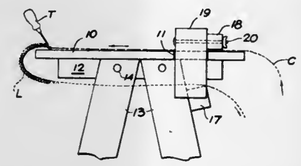
3,621,540
FIBROUS BATT FEEDING MECHANISM
Frank Baxter Morrill, North Adams, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.
Filed Nov. 3, 1969, Ser. No. 873,336
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **5 Claims**



A mechanism for feeding a fibrous textile batt to a processing area such as a needling machine. The feed mechanism includes a pair of upper and lower feed rolls,

each of which have spaced circumferential grooves; grooves of one roll being aligned with grooves of the other roll. A plurality of upper and lower elongated guide elements which extend through the grooves in the upper and lower feed rolls, respectively, from the entering side of the rolls, between the rolls and up to the batt processing area. The circumferential areas of the rolls, which lie between the grooves, compress the batt and advance it through a channel formed by the guide elements which maintain the batt in a compressed state up to the processing area.

3,621,541
HOOKED RUG WORKTABLE
Dwight G. Watkins, 110 Forest Garden Drive, Youngstown, Ohio 44512
Filed May 19, 1970, Ser. No. 38,770
Int. Cl. D06c *3/08*
U.S. Cl. 28—15 **5 Claims**



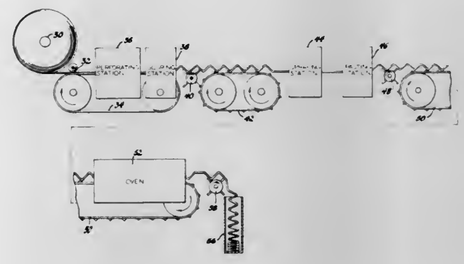
A hooked rug worktable has a rectangular table top and a pair of support assemblies mounted beneath the ends thereof along with an inner connecting cross bar or baffle which is spaced below the table top. A longitudinally extending bail carried on vertically movable members registrable with notches in the ends of the table top is positioned above the table top so that the rug canvas on which the hooked rug is being formed can be passed across the table top beneath the bail and backwardly and under the table top and over the cross bar or baffle, the arrangement being such that the rug canvas is held under desirable tension facilitating the formation of the hooked rug.

3,621,542
PRESSURIZED SUIT FABRIC CONVOLUTE MANIPULATION THROUGH MATERIAL DISTRIBUTION
Douglas E. Getchell, Windsor Locks, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 20, 1968, Ser. No. 785,693
Int. Cl. A41d *13/00;* **A63c** *11/04*
U.S. Cl. 28—72 **4 Claims**



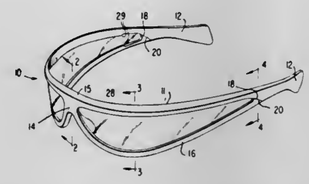
Root cords in fabric convolutes are displaced relative to the general center line of restraint fabric material of which a generally tubular section of convolutes is comprised in order to stabilize or displace given convolutes with respect to other convolutes in the section. Further, the amount of fabric adjacent to various incremental lengths of a root cord is adjusted differentially so as to alter the characteristics of one or more convolutes formed thereby. The invention is illustrated in terms of overcoming adverse effects of repetitive bending of joints, and in terms of overcoming a tendency toward cutting in as a result of wedge-shaped convolutes.

3,621,543
METHOD OF FABRICATING BATTERY PLATE GRIDS
Norman L. Willmann, Anderson, and Ellis G. Wheadon, Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 6, 1970, Ser. No. 25,630
Int. Cl. H01m *35/26*
U.S. Cl. 29—2 **3 Claims**



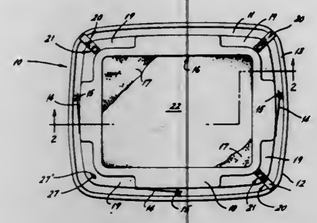
A method is disclosed for fabricating battery plate grids from a continuously moving strip of material. One form of the method includes the steps of punching a plastic strip into successive grids interlinked by at least one connecting member, reducing the thickness of the interconnecting member to form an integral hinge portion thereon, and accumulating the strips prior to their entering an oven by folding them in an accordion-like manner at the integral hinge portions.

3,621,544
METHOD OF MANUFACTURING AN EYEGLASS FRAME
Albert C. Petitto, Hudson, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Original application Sept. 6, 1966, Ser. No. 577,321. Divided and this application Sept. 2, 1969, Ser. No. 854,421
Int. Cl. B28b *1/24*
U.S. Cl. 29—20 **3 Claims**



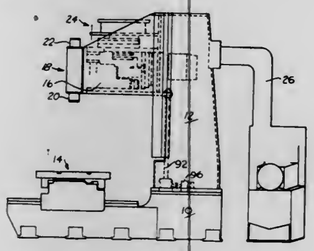
A method of forming a lens surround eyeglass frame by molding the frame as a unitary structure in a cavity between a pair of cooperating mold blocks, the cavity being oriented in an angular position relative to the separation direction of the mold blocks so that each surface thereof is freely retractable over corresponding eyeglass frame surfaces molded in the cavity during separation of the blocks.

3,621,545
CATHODE RAY TUBE MANUFACTURE
Bruno F. Puntel, North Wales, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed June 22, 1970, Ser. No. 48,198
Int. Cl. H01j *9/06, 9/10, 9/46*
U.S. Cl. 29—25.19 **8 Claims**



A set of spacing fixtures are used in combination with the shadowmask and the screen-carrying faceplate of a color cathode ray tube. The fixtures are releasably secured to the shadowmask framing member during formation of the mosaic screen pattern, and project outwardly beyond the shadowmask into contact with the edge of the glass panel or flange which extends peripherally around and forms part of the faceplate. They virtually eliminate the possibility of the shadowmask making contact with the faceplate, and therefore prevent damage to the tube screen.

3,621,546
TOOL CHANGER FOR UNIVERSAL MACHINE TOOL
James A. Wilmer, Fort Thomas, and John S. Reynolds, Park Hills, Ky., assignors to The Notch & Merryweather Machinery Co., Cleveland, Ohio
Filed May 8, 1969, Ser. No. 823,045
Int. Cl. B23g *3/157*
U.S. Cl. 29—26 **8 Claims**

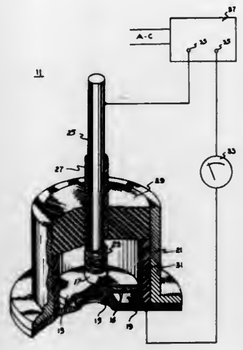


Tool changer including a rotatable tool holding matrix movable in a path generally parallel to the axis of rotation, and also movable in a second path normal to its axis of rotation. This three way movement of the matrix is effective to load, unload and reload cutting tools in a stationary spindle.

The working spindle is carried by a reciprocable saddle which in turn carries the matrix described above.

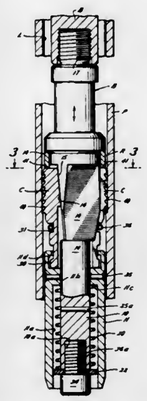
3,621,547
METHOD FOR OPTIMUM MOUNTING OF PIEZOELECTRIC CERAMIC FILTER ELEMENTS
Carl T. Durham, Jr., Roanoke, Va., assignor to General Electric Company
Filed May 16, 1969, Ser. No. 825,279
Int. Cl. B01j *17/00*
U.S. Cl. 29—25.35 **4 Claims**

An apparatus and method of mounting a piezoelectric ceramic element to provide optimum electrical/mechanical functioning, the apparatus including a receptacle having a fixed contact and a movable contact between which the ceramic element is clamped, the clamping force being variable via the movable contact, which in one form is a sleeve with a resiliently coupled plunger, slidably adjustable in the sleeve and bearing against the element.



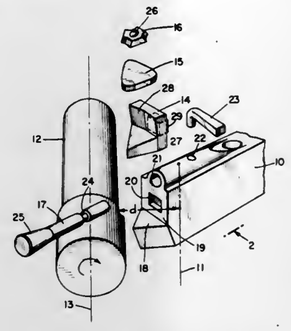
The method of mounting the element consists of providing a circuit across the aforesaid contacts including a variable frequency, alternating current source set to the operating, or resonant, frequency of the element and a milliammeter, varying the movable contact to change the clamping force, and fixing the movable contact from further variation when a maximum deflection of the milliammeter is obtained.

3,621,548
BROACH FOR WELL PIPE
John C. Kinley, 5815 Royalton St., Houston, Tex. 77036, and Clifford E. Anderson, Houston, Tex.; said Anderson assignor to said Kinley
Filed Feb. 2, 1970, Ser. No. 7,512
Int. Cl. B26d *1/04*
U.S. Cl. 29—95.1 **11 Claims**



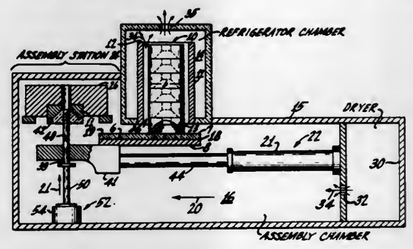
A broach for cutting a portion of the inside surface of a well pipe or an object extending into a well pipe, wherein the broach is adapted to be lowered through a restriction in the pipe, thereafter expanded below the restriction for effecting the enlargement, and then passed upwardly through the restriction for withdrawal from the pipe.

3,621,549
CUTTING TOOL INSERT ASSEMBLY
James O. Billups, 1601 Oak Ave., Manhattan Beach, Calif. 90266
Filed Mar. 6, 1970, Ser. No. 17,150
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **9 Claims**



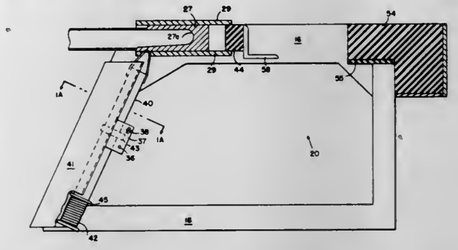
A tool holder to be used in place of a conventional tool holder is secured, for example, to the tool post of a machine lathe and appropriate settings of the machine may be made to define a given depth of cut and desired elevational work engaging position for a tool in the holder. A plurality of tool adapter members each having a seating surface defining a desired rake angle are provided together with a plurality of cutting tools each having different cutting nose radii, any one of the tools being receivable on any one of the adapter members. A selected tool and adapter member in accord with the desired nose radii of cut and rake angle are secured in the holder by a cooperating hold down means. The adapter members and cutting tools are dimensioned such that any one adapter member and any one cutting tool may be held in the tool holder to provide a desired rake angle and nose radius combination without changing the depth of cut, elevational engagement of the tool with the work, or any of the machine settings locating the tool holder. A cooperating chip breaker member designed for use with the cutting tool is also provided in the preferred embodiment.

3,621,550
SHRINK FIT ASSEMBLY PROCESS
Harry Elliott Colestock, Ann Arbor, Mich., assignor to International Telephone and Telegraph Corporation
Filed June 15, 1970, Ser. No. 46,408
Int. Cl. B21k *1/20;* **B23p** *11/02, 13/00*
U.S. Cl. 29—156.7 A **9 Claims**



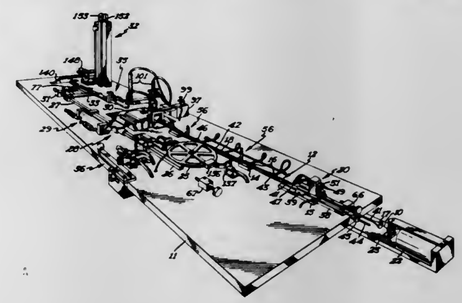
A method for assembling two piece parts using the shrink fit technique includes providing cooling and assembly chambers for the piece parts, and drying the chambers to prevent formation of condensation and frost which might otherwise interfere with the assembly sequence.

3,621,551
RETRACTOR AND CAPTURE MECHANISM FOR A MISSILE ANTENNA COUPLER
Robert N. Strommer, Venice, Calif., assignor to the United States of America as represented by the Secretary of the Army
Filed Jan. 22, 1970, Ser. No. 5,070
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **4 Claims**



The mechanism includes a vertically disposed support frame for a traveling link guide track mounted alongside a missile. A pivotable traveling link, in the general shape of a bell crank, has one end connected to the missile antenna coupler with breakaway bolts. The other end is positioned in the traveling link guide track and moves along the track as the missile is launched. The pivotable traveling link has a length of coaxial cable firmly attached thereto with one end of the cable electrically connected to ground support equipment. The other end of the cable is connected to missile electrical circuits by the coupler. When the missile is fired and moves along the traveling link guide track, the pivot portion of the traveling link strikes a slider block in a retractor and capturing mechanism, and releases a spring loaded ram normally retained in compression by the block. The slider block impact force fails the breakaway bolts, kinetic energy rotates the traveling link into its captured position where it is retained by the released spring loaded ram. The padded portion is positioned at the upper end of the vertically disposed support frame.

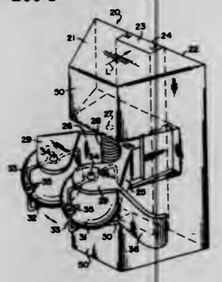
3,621,552
PNEUMATIC WIRE STRINGING APPARATUS FOR CORE MEMORIES
Leslie R. Walstrom, Excelsior, Minn., assignor to Fabri-Tek Incorporated, Minneapolis, Minn.
Filed July 23, 1970, Ser. No. 57,725
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 MM **36 Claims**



Pneumatic apparatus for stringing wires through a row or column of aligned toroidal magnetic cores, the apparatus including a pneumatic gun in the form of a plurality of tubular means, the tubular means having a plurality of pneumatic ports through which pneumatic pressure enters the gun, and the means by which wire

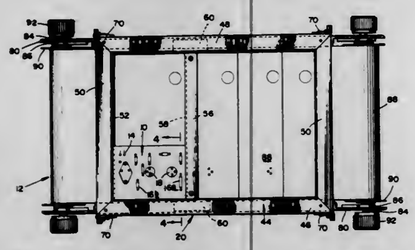
to be strung is fed through the tubular means. Apparatus is provided for automatically positioning the gun adjacent to the cores to be strung, and then applying pneumatic pressure through the ports into the gun to force the wire directly through the row or column of cores to be strung. Apparatus is also provided for holding and cutting a strung wire, and indexing the core memory to an unstrung column or row.

3,621,553
EXPANSION JOINT RETAINING MEANS
Raymond J. Lafeber, 3180 9th St., Cuyahoga Falls, Ohio 44221
Filed Nov. 4, 1969, Ser. No. 873,815
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **10 Claims**



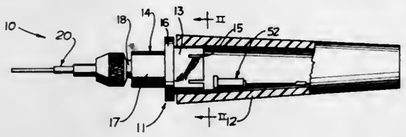
The retaining means includes a non-magnetic frame, permanent magnet means carried by the frame and exposed on one flat face thereof, a pair of opposed arms resiliently biased towards each other and with each arm positioning a roller member thereon on a horizontal axis for receiving an expansion joint therebetween to position it in a building when the magnet means engages a vertically extending flat faced metal column in the building.

3,621,554
APPARATUS FOR SETTING ELECTRIC COMPONENTS INTO PRINTED CIRCUIT BOARDS
Gustav Feldman, 263 Roosevelt Blvd., Long Beach, N.Y. 11561, and Charles Winkler, 21 Devon St., Malverne, N.Y. 11565
Filed May 19, 1969, Ser. No. 825,529
Int. Cl. H05k *3/30*
U.S. Cl. 29—203 **9 Claims**



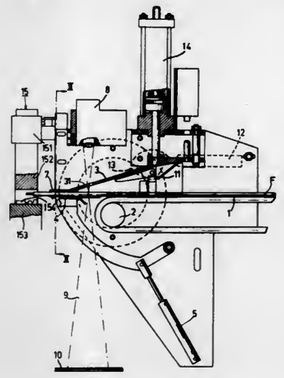
The method for setting a variety of types of electronic components in duplicates of a printed circuit board and apparatus for practicing the method; such apparatus consisting of an illuminated open-top box with a light-diffusing rigid pane set into its open top, a frame for supporting a circuit board above the pane, and an opaque film reciprocally movably mounted on the box between the pane and the board support. The film is first made into a template by perforating different areas thereof, with the perforations of each area conforming in arrangement to the lead wire openings for one component type, by passing a film perforating tool through the appropriate openings of the prototype board and then using the template film to set appropriate component lead wires through board openings registering with illuminated perforations of each template film area as the areas are successively moved under a duplicate board.

3,621,555
TOOL FOR USE WITH ELECTRICAL CONNECTORS
Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Aug. 21, 1969, Ser. No. 851,911
Int. Cl. H01r *9/16*
U.S. Cl. 29—203 H **9 Claims**



A tool for insertion or withdrawal of fragile elongated contact units into or from electrical connectors in which flexible resilient means are provided in a tool bit to allow angulation of a handle while allowing proper alignment of the contact unit in a passage of a connector and while avoiding bending or breaking of the contact unit. In one type of bit, one end of a tubular member fits over a contact unit and the opposite end is flared to engage a ball bearing while being supported within a sleeve of elastomeric material. In another type of bit, one end of a member of U-shaped cross-section forms a trough receiving a contact unit and the opposite end is firmly connected to the handle, an intermediate portion being flexible and resilient. Means are provided for selective attachment of either type of tool bit to a common handle.

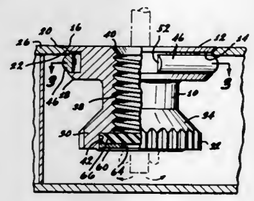
3,621,556
FEEDING AND EJECTING DEVICE
Michel Thierri and Pierre Toussaint, Amiens, Somme, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,540
Claims priority, application France, Dec. 20, 1968, 179,502
Int. Cl. H01r *3/00;* **H05k** *3/04*
U.S. Cl. 29—203 D **12 Claims**



A method and device for feeding an object to be worked on from a first working position to a second working position by advancing the object by means of an endless conveyor belt of variable speed to a position directly in front

of the second working position including a guide member for guiding the object to the desired position and a brake member arranged at the end of the conveyor belt for cooperation with the guide member so as to accurately set the object in the proper position. A clamping member for tightly holding the object after the brake member has been released is actuated by a hydraulic press and after the object has been worked on the object is ejected from the position by a compressed air nozzle having a length adaptable to the length of wire.

3,621,557
INSERT FOR SANDWICH PANELS AND METHOD OF INSTALLATION
Kenneth V. Cushman, Santa Ana, and Delmar S. Miller, Newport Beach, Calif., assignor to Delron Fastener Division of Rex Chainbelt, Inc., Milwaukee, Wis.
Filed June 6, 1969, Ser. No. 831,162
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 **7 Claims**



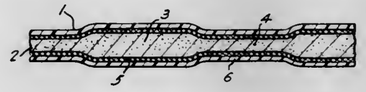
The device is an insert to be potted (molded) into light weight cores or sandwich panels. It has a flanged head with detent means to hold the insert in position in which it is to be potted in, in the panel. An improved method is provided whereby the potting material is injected through the bore of the insert, back flow being prevented by a diaphragm or valve disc having a slit (in a preferred form) through which the nozzle of the potting gun is inserted. The insert may be of the floating nut type with improved means in the bore of the insert to prevent rotation of the nut.

3,621,558
MANUFACTURE OF DETONATING FUSE CORD
David Martin Welsh and Peter Edgar Phillips, Brownsburg, Quebec, Canada, assignors to Canadian Safety Fuse Company Limited, Montreal, Quebec, Canada
Filed Jan. 19, 1970, Ser. No. 3,860
Claims priority, application Canada, May 6, 1969, 50,767
Int. Cl. B22f
U.S. Cl. 29—420 **2 Claims**



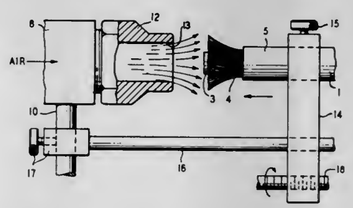
Detonating fuse cord having along its length alternating sections of greater and lesser explosive energy is manufactured by forming dry particulate explosive into a core about a centre threadline in such a manner that the core is made up of connected sections of greater and lesser explosive mass. The core is thereafter enveloped with a protective covering.

3,621,559
MANUFACTURE OF DETONATING FUSE CORD
David Martin Welsh, Brownsburg, Quebec, Canada, assignor to Canadian Safety Fuse Company Limited, Montreal, Quebec, Canada
Filed Jan. 19, 1970, Ser. No. 3,861
Claims priority, application Canada, May 6, 1969, 50,766
Int. Cl. B22f
U.S. Cl. 29—420 **3 Claims**



Detonating fuse cord having along its length alternating sections of greater and lesser explosive energy is manufactured by the controlled ejection of slurried particulate explosive into a stocking and thereafter drying and covering the filled stocking.

3,621,560
METHOD AND APPARATUS FOR OPENING AN END OF A BRAIDED CONDUCTOR OF A COAXIAL CABLE
Edwin L. Le Bright, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed July 17, 1969, Ser. No. 842,556
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **1 Claim**



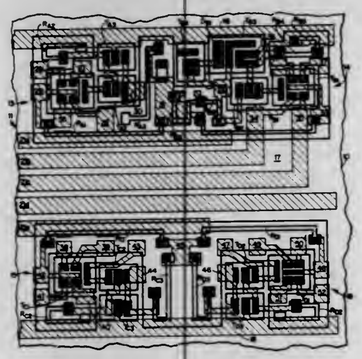
The apparatus includes an air compressor connected to a nozzle for expelling a jet of air therefrom. A clamping device is slidably mounted and holds an end of a coaxial electric cable in alignment with the nozzle which, in one embodiment of the invention, has an orifice slightly larger than the end of the coaxial cable. A motor-driven mechanism operates to slide the clamping device toward the nozzle for bringing the end of the cable into the jet of air and, subsequently, moving it inside the nozzle which, in another embodiment of the invention, has a flared orifice.

The method comprises the steps of removing a section of the external protective jacket of the coaxial cable at an end thereof for exposing a portion of the woven metallic wires of the braided conductor, holding this end of the cable in alignment with the nozzle, moving the cable end into the jet of air for at least partly unweaving the braided wires and thereby uncovering a portion of the underlying dielectric material, and then inserting the dielectric material inside the orifice of the nozzle for further unweaving the strands of wire and for forcing them to move away from the dielectric material in a direction normal thereto and thereby completely opening the end of the braided conductor. The method also comprises the step of further inserting the entire end of the cable inside the nozzle for folding the unwoven wires back over the external jacket of the cable.

3,621,561
METHOD FOR FABRICATING A METALLIC COMPOSITE INGOT
David A. Higbee and Joseph C. Jasper, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
No Drawing. Filed Feb. 4, 1969, Ser. No. 796,616
Int. Cl. B23k 19/00; B23p 17/00
U.S. Cl. 29—527.7 8 Claims

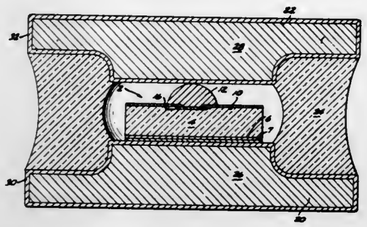
This disclosure relates to the product and to the method whereby a metallic composite is produced having a thin stainless steel core sandwiched between two relatively thick carbon or alloy steel outer layers. The composite is formed at the ingot stage by casting carbon steel or low alloy steel simultaneously about a stainless steel plate suspended in a mold, which plate has had its major surfaces covered by a protective layer so as to control the alloy depletion therefrom. The resulting product exhibits excellent resistance to pitting and penetration in those corrosive environments where such phenomena are known to be a problem.

3,621,562
METHOD OF MANUFACTURING INTEGRATED CIRCUIT ARRAYS
Hasmukh M. Patel, Woburn, Mass., assignor to Sylvania Electric Products Inc.
Filed Apr. 29, 1970, Ser. No. 32,934
Int. Cl. B01j 17/00; H01l 1/16
U.S. Cl. 29—577 8 Claims



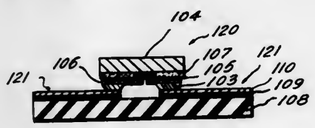
Method of metallizing an integrated circuit network containing an array of identical cells to produce a specific subsystem. Each identical cell includes several groups of components, each group being capable of being interconnected in several different arrangements to form several different basic logic circuits. A first identical metallization pattern is placed on each cell of the array and includes all the different arrangements of interconnections between the components of each group of the cell, and also a block of metal adjacent the cell. To commit each cell to a specific logic arrangement, metal is removed so that each group becomes one specific basic logic circuit and so that the block of metal becomes a first set of discrete conductive paths. A layer of non-conductive material is applied over the array, openings are made therein to expose appropriate areas of the first metalliaztion, and then a second metallization pattern is applied to form a second set of conductive paths generally transverse to the first set. The second set in conjunction with the first set interconnects the basic logic circuits into a specific subsystem.

3,621,563
METHOD OF TREATING JUNCTION DIODES TO PREVENT TEMPERATURE-VOLTAGE DEGRADATION
Allen Gee, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 19, 1968, Ser. No. 722,724
Int. Cl. B01j 17/00; H01l 1/10
U.S. Cl. 29—588 14 Claims



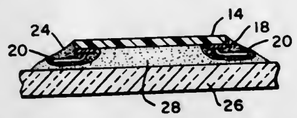
Method of preventing temperature-voltage degradation of P-N junction diodes by packaging the diode with a compound which yields phosphorous pentoxide upon being heated.

3,621,564
PROCESS FOR MANUFACTURING FACE-DOWN-BONDED SEMICONDUCTOR DEVICE
Shigezo Tanaka and Katsuji Minagawa, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed May 7, 1969, Ser. No. 822,484
Claims priority, application Japan, May 10, 1968, 43/31,406
Int. Cl. B01j 17/00; H01l 7/24
U.S. Cl. 29—590 4 Claims



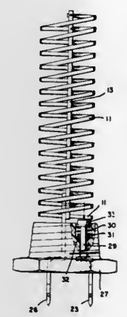
A face-down-bonded semiconductor device is disclosed in which the electrodes of a semiconductor element and of the substrate carrying that element by face-down-bonding has a surface formed of a first metal which readily forms an alloy with a second metal, that alloy having the characteristic that its melting point is higher than that of the second metal.

3,621,565
FABRICATION OF SINGLE-CRYSTAL FILM SEMICONDUCTOR DEVICES
Donald B. Sandstrom, Gleasondale, and David E. Sawyer, Newton Centre, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 12, 1969, Ser. No. 832,603
Int. Cl. B01j 17/00; H01l 7/24
U.S. Cl. 29—590 4 Claims



The fabrication of devices wherein a single-crystal film is formed on a growth substrate, device fabrication operations are performed on the exposed surface of the film and the film thereafter transferred to a nonconductive base. The transfer step includes dissolution of the growth substrate and may be followed by additional device fabrication operations performed on the second side of the film.

3,621,566
METHOD OF MAKING AN ELECTRICAL HEATING ELEMENT
James W. Welsh, Summit, N.J., assignor to Standard Motor Products, Inc., Long Island City, N.Y.
Filed May 7, 1969, Ser. No. 822,575
Int. Cl. H01c 17/00
U.S. Cl. 29—610 6 Claims

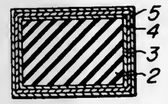


Method of making an electrical heating element which includes cutting a planar resistance member into a plurality of laterally interconnected strips and bonding insulating material about the strips. The insulating material is preferably a thermoplastic material and is preferably affixed by dipping the strip into liquified material. The insulating material has a thickness of from .0025–.006 inch with preferred thickness being .001 inch.

An electrical heating element is also described which comprises a resistance member having insulation bonded thereto. The resistance member is formed of an integral interconnected plurality of laterally disposed members with each member connected to the adjacent member at an opposite side portion.

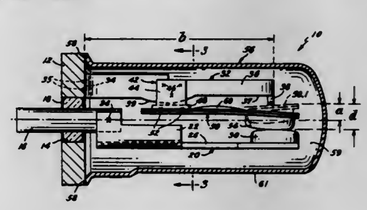
A water heater is shown which includes a water-containing tank having inlet and outlet conduits. An electrically operated heater member is disposed within the tank and a pressure-controlled switch is provided to render the heater member inoperative when the water within the tank falls below a predetermined level.

3,621,567
PROCESS FOR PRODUCING METALLIC FILM RESISTORS
Takeshi Hasegawa, Neyagawa-shi, and Yasuhiro Shindo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 24, 1968, Ser. No. 786,637
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 2 Claims



A process for producing metallic film resistors, comprising forming two or more layers of different metals on the surface of heat-resistant insulating substrates one on the other by non-electrolytic plating or electroplating and thereafter subjecting the coated substrates to heat treatment, whereby the different metals are alloyed by interlayer diffusion and thus a metal alloy coating is formed on the surface of the insulating substrates.

3,621,568
METHOD OF MAKING A MOTOR PROTECTOR
John R. D'Entremont, Foxboro, and Leith B. Young, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Original application Apr. 12, 1968, Ser. No. 720,980, now Patent No. 3,538,478, dated Nov. 3, 1970. Divided and this application Jan. 26, 1970, Ser. No. 10,703.
Int. Cl. H01h 11/00
U.S. Cl. 29—622 2 Claims

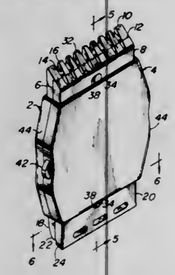


A hermetically-sealed, pressure-resistant motor protector is shown to comprise a header plate having a terminal post attached thereto in insulated relation to the plate, a cup-shaped body having its rim sealed to the header plate, a rigid angle-shaped heater element, a rigid angle-shaped contact arm having a fixed contact thereon, and a thermally-responsive snap-acting member having a movable contact at one end and having an angle-shaped support welded to the opposite end of the snap-acting member. These protector components are secured together by welding to provide a circuit from the header plate through the heater and snap-acting member with its movable contact to the fixed contact and from the fixed contact through the contact arm to the terminal post. The snap-acting member is adapted to move in response to heat generated by the heater element to open this circuit when an overload current occurs in the circuit. Each of the angle-shaped components has a first portion disposed in a selected plane and has an angularly disposed portion welded to an adjacent component. In this way, any collapse of the component materials which occurs during welding does not alter the disposition of the first portion of the respective component in its desired plane. This permits the components to be accurately assembled and secured together to provide an accurate motor protector. Preferably the angle-shaped support component has one flange welded to the thermally-responsive snap-acting member before the member is deformed to provide the member with its thermal response characteristics. Subsequent welding of the other flange of the support to an adjacent component permits accurate mounting of the snap-acting member in the motor protector without subjecting the snap-acting member to welding forces and temperatures which might alter its thermal response characteristics.

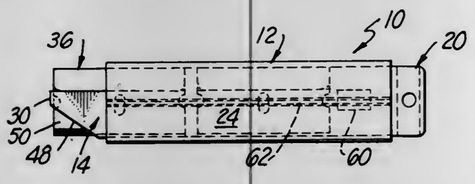
3,621,569
HOME HAIR TRIMMER AND SHAVER
Nathan K. Morris, 41 Ridge Ave., Neptune, N.J. 07753
Filed Feb. 19, 1970, Ser. No. 12,545
Int. Cl. B26b 21/12
U.S. Cl. 30—30 1 Claim

A novel home hair trimmer and shaver is disclosed comprising an elongated body portion having at each end thereof a blade holder portion of generally rectangular configuration secured thereto and preferably forming an

integral part thereof. The blade holder portion at one end of the body portion terminates in a transverse edge having a plurality of notched recesses therein defining teeth, while the blade holder portion at the other end terminates in a rounded transverse edge. The integral body portion and head portions are separable into a pair of opposing trimmer half members between which double-edge razor blades may be secured, with a cutting edge thereof exposed adjacent and parallel to each of the transverse edges. Positioning means and centrally disposed locking means are provided for aligning and selectively locking the opposing trimmer half members in mating juxtaposed relationship with the transverse notched edge of one half member vertically offset with respect to the other, and with the double edged razor blades being retained therebetween. Removal of the razor blade is effected by merely sliding one of the trimmer half members laterally with respect to the other. This novel home hair trimmer and shaver performs the multiple functions of trimming, shaping, thinning and shaving hair depending upon the particular mode of use of the trimmer assembly.

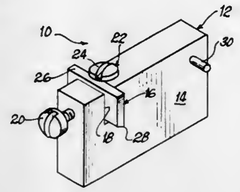


3,621,570
RAZOR BLADE TOOL
Arthur Kolde, 896 Collingwood Drive, Pomona, Calif. 91766; Robert J. Ferjo, 14055 E. Lomitas, La Puente, Calif. 91746; and Kenneth M. Ferjo, 1201 Riderwood Ave., Hacienda Heights, Calif. 91745
Filed May 22, 1970, Ser. No. 39,711
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 **4 Claims**



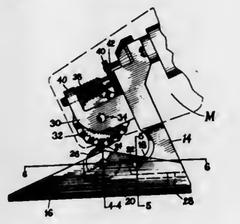
A razor blade tool having a flat sheath-like handle containing a blade holder in the form of a flat slide with a spare blade holding means between its ends and cutting blade holding means at its ends for receiving razor blades in positions wherein one cutting blade has its cutting edge extending lengthwise of the slide and an exposed cutting corner at one end of the slide and the other cutting blade has its cutting edge extending crosswise of and exposed beyond the opposite end of the slide. The slide is movable longitudinally of the handle to locate either blade in cutting position beyond the adjacent end of the handle and to locate the blade with the exposed cutting corner in sheathed relation within the handle. Resilient latching detents on the slide releasably lock the slide against movement from the latter blade sheathing position.

3,621,571
SKI DRESSER
Fritz Gern, 40 Flower City Park, Rochester, N.Y. 14615
Filed Oct. 21, 1970, Ser. No. 82,764
Int. Cl. B26b *3/00*
U.S. Cl. 30—169 **8 Claims**



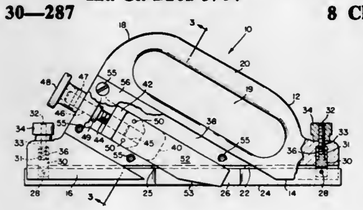
A ski dresser for dressing metallic ski surfaces. The dresser provides a surface for stably contacting a ski surface and a blade and guide pin for stably contacting the surface to be dressed. The blade is adjustable to dress surfaces of different dimensions.

3,621,572
ELECTRIC ROTARY PINKING SHEARS
James B. Kruger, Oxford, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed May 18, 1970, Ser. No. 38,217
Int. Cl. B26b *17/00*
U.S. Cl. 30—178 **2 Claims**



An electric rotary pinking shears has a pivoted anvil foot affording comfortable use positions and convenient storage means.

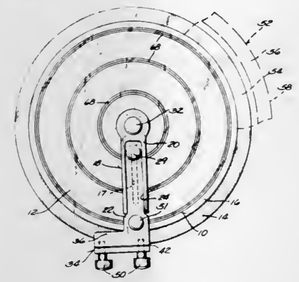
3,621,573
CARPET CUTTER AND TRIMMER
John A. Summers, East Rochester, N.Y., assignor to Carder Industries Inc., Rochester, N.Y.
Filed Jan. 23, 1969, Ser. No. 793,467
Int. Cl. B26b *3/04*
U.S. Cl. 30—287 **8 Claims**



The cutter comprises an aluminum casting having an elongate, plane support surface on its underside, an elongate guide projecting downwardly from said surface intermediate its sides, an adjustable cutting blade in the casting

having a sharp cutting edge projecting below and adjacent to the guide, and an integral hand grip for manipulating the cutter to move the guide longitudinally between two adjacent rows of pile in a carpet, while forcing the cutting edge downwardly to sever the carpet backing. The support surface is substantially wider than the guide and cutting blade so that opposite sides of the support surface overlie the adjacent rows of pile to stabilize the cutter during cutting. The guide may be mounted for vertical adjustment in the casting. In one embodiment of the invention, a second support surface, guide, and cutting blade may be mounted in the underside of the cutter parallel to the first-named guide, and blade so that two cuts along parallel lines may be made simultaneously.

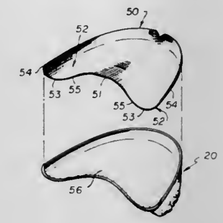
3,621,574
PHOTOGRAPHIC PRINT CIRCLE CUTTER
Gerald F. Yanke, 7301 N. Granville Road, Milwaukee, Wis. 53224, and Burton E. Yanke, W173 N9444 Erika Road, Menomonee Falls, Wis. 53051
Filed June 30, 1970, Ser. No. 51,062
Int. Cl. B26b *27/00*
U.S. Cl. 30—290 **5 Claims**



Disclosed herein is a centerless circle cutter particularly adapted for trimming circular photographic prints from rectangular prints of negatives taken with a fish-eye lens. The circle cutter comprises a transparent central disc having a peripheral flange of less thickness than the disc, and a radially adjustable cutting arm which is pivotably supported on an upstanding boss on the disc and carries a cutting blade. Adjustment of the cutting arm to cut various diameter circles is facilitated by a plurality of concentric varying diameter templates or rings having inner and outer offset flanges which overlap and interfit with the flanges of the adjacent rings. The outermost surface of the flange and the associated shoulder of the disc and template provide guiding surfaces for the cutting blade and cutting arm for the appropriate diameter circle.

3,621,575
IN-SITU DENTURE AND METHOD OF FORMATION
Sidney Schneider, 576 Sussex Ave., Morristown, N.J. 07960, and Harry Katz, 785 Pleasant Valley Way, West Orange, N.J. 07052
Continuation-in-part of application Ser. No. 809,086, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 635,579, May 2, 1967, now Patent No. 3,460,252. This application Feb. 16, 1970, Ser. No. 11,577
Int. Cl. A61c *19/00*
U.S. Cl. 32—2 **65 Claims**

Disclosed are devices and methods for forming a denture in-situ in the mouth of a dental patient. A liquid resin curable to a rigid plastic is placed over the upper portion of false teeth held in a tray, a thin shim which may be a porous shim including a gutter portion generally positioned over the teeth is placed on said resin, a second liquid resin curable to a semi-rigid plastic is placed

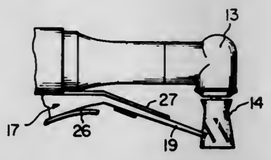


over the shim, and the resulting assembly placed in the patient's mouth where pressure is applied and the resins cured to form the denture which is thereafter separated from the tray.

3,621,576
SEMIBAKED PORCELAIN TEETH
Rafael Gnecco, 3820 Waldo Ave., Riverdale, Bronx, N.Y. 10463
No Drawing. Continuation of application Ser. No. 674,027, Aug. 10, 1967. This application Mar. 17, 1970, Ser. No. 19,522
Int. Cl. A61c *13/00*
U.S. Cl. 32—8 **10 Claims**

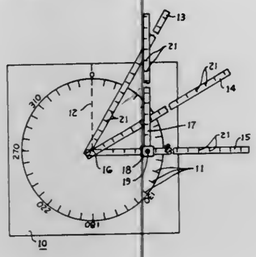
A process for fabricating a dental appliance or tooth structure in which a porcelain mixture is initially shaped and fired to a temperature below the vitrification point. Those surfaces which are to be worked and modified subsequently to fit the appliance to a particular case, are then coated with refractory material. After heating the structure to the vitrification point, the covered surfaces are worked and shaped to particular requirements, and the resulting mass is reheated to the vitrification point to render a homogeneously fused structure with finished surfaces.

3,621,577
DENTAL PROPHYLAXIS APPARATUS
Ronald P. Spinello, 372 Post Ave., Westbury, N.Y. 11590
Filed May 1, 1970, Ser. No. 33,770
Int. Cl. A61c *13/22*
U.S. Cl. 32—58 **16 Claims**



A dental prophylaxis device including a rotary, pliable tooth-engaging member of flexible material, onto the side wall of which is discharged, under the finger control of the dentist, a cleaning paste from the tip of a collapsible reservoir in the form of an expendable vial mounted on the nearby shank of the dental tool and having a contoured, flexible discharge tip which extrudes paste onto the tooth-engaging member when the reservoir is squeezed. The pliable member is preferably formed with paste-impelling surfaces which move the paste toward the tooth, and the tip of the vial maintains its proximity to the side wall of the pliable member both to continue the flow of paste to the tooth surface, and to preclude accumulations which result in splattering.

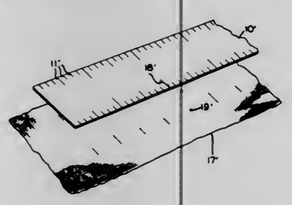
3,621,578
NAVIGATIONAL INSTRUMENT
Stephen Novakovic, 3718 Library St., Cleveland, Ohio 44109
Filed Sept. 22, 1969, Ser. No. 859,842
Int. Cl. G01b *5/24*
U.S. Cl. 33—1 SB **7 Claims**



A navigational instrument is provided adapted for direct reading as a guide in quickly determining navigational data, distances from fixed locations, true wind speed, true wind angle, and the like.

In one form, the instrument comprises an angle scale, preferably 360 degrees, having a plurality of arms pivotally mounted at its center. By positioning the arms on the scale at certain angles and utilizing a reading arm, certain navigational data can be quickly ascertained, both for motor ships and sailboats.

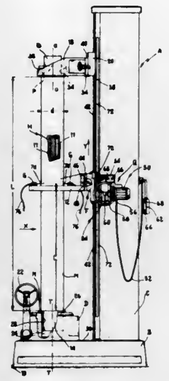
3,621,579
TAPE WITH INDICIA TRANSFER
Rose Dubitsky, 1734 N. Troy St., Arlington, Va. 22201
Filed Nov. 20, 1967, Ser. No. 684,324
Int. Cl. B43l *7/00;* **G01b** *3/10*
U.S. Cl. 33—137 **3 Claims**



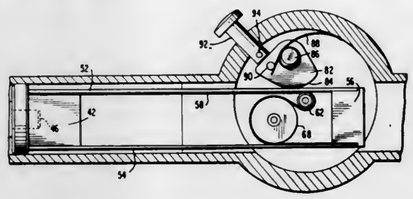
This invention relates to a measuring instrument such as a tape which is provided with legible calibrated markings and an adhesive for affixing the instrument to a surface to be marked, a transfer medium being so disposed between the instrument and the surface to be marked that upon application of pressure to certain areas of the instrument, the transfer medium is deposited on the surface to be marked, over an area coincident with the area below which the pressure is applied to the instrument.

3,621,580
MACHINE FOR THE DIMENSIONAL CONTROL OF ELEMENTS FOR NUCLEAR FUELS
Gian Luigi Tovaglieri, Busto Arsizio, Varese, Italy, assignor to Tovaglieri & C. S.p.A., Busto Arsizio, Varese, Italy
Filed Jan. 15, 1968, Ser. No. 697,720
Claims priority, application Italy, Oct. 4, 1967, 21,253/67
Int. Cl. G01b *5/04*
U.S. Cl. 33—174 **10 Claims**

A machine for the dimensional control of nuclear fuel elements, comprising a base plate and a vertical column carrying respectively a bottom and a top seat to which the element to be inspected can be secured with its axis strictly parallel to the column axis. Along said vertical column a slide can be moved upwardly and downwardly, in order to permit inspection by feeler means on the outer surface of the nuclear element.



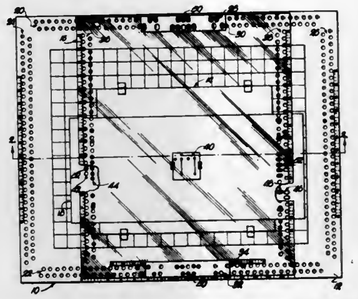
3,621,581
HOLE DIAMETER MEASURING GAUGE
Rodney E. Moseman, Lititz, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed Aug. 9, 1968, Ser. No. 751,460
Int. Cl. G01b *5/12*
U.S. Cl. 33—178 **11 Claims**



The measuring gauge has an elongated cylindrical casing housing a plunger mounted for axial reciprocal movement and carrying a constantly tapered measuring needle externally of the casing. The plunger includes a pair of laterally spaced bars. A metal band having an S-shape is constrained between the bars with opposite ends of the band being fixed to the respective inner faces of the bars. A pair of different diameter rollers pivotally mounted to the casing and mounting respective dial hands on a gauge frictionally engage within the loop portions of the S-shaped band. Insertion of the needle into the hole with the corresponding end of the casing butting the annular margin of the hole provides a hole diameter measurement readout on the dial face.

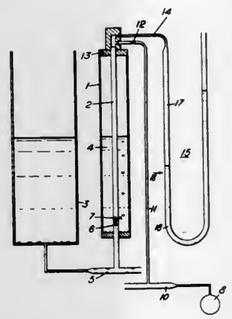
3,621,582
LITHOGRAPHIC APPARATUS
Frank J. Radencic, 7932 Haskell, Kansas City, Kans. 66109
Filed Feb. 19, 1970, Ser. No. 12,699
Int. Cl. B41b *1/00*
U.S. Cl. 33—184.5 **9 Claims**

Photolithographic apparatus for treating a photosensitive surface by the successive imposition upon different predetermined spaced portions of the surface of identical photoimpressions of an image created by the passage of light through an image-forming negative or positive comprises a guide panel for supporting the surface, a transparent carrier member and a frame-like chase which supports the negative or positive. Hence, the negative or positive



is positionable relative to the photosensitive surface in either of two perpendicular directions by fractional increments of corresponding perpendicular dimensions of the negative or positive without the need for remounting or repositioning of the latter relative to the chase.

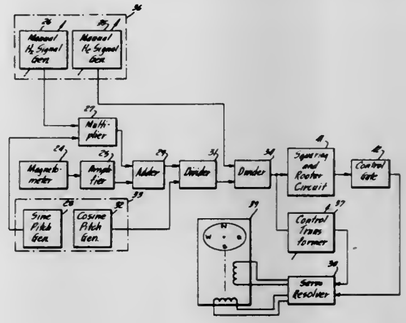
3,621,583
JACK LEVEL INDICATOR
Stanley Peter John Ellis, London, England, assignor to John Laing and Son Limited, London, England
Filed Apr. 25, 1969, Ser. No. 819,153
Claims priority, application Great Britain, Apr. 29, 1968, 20,188/68
Int. Cl. G01c *5/04*
U.S. Cl. 33—209 **2 Claims**



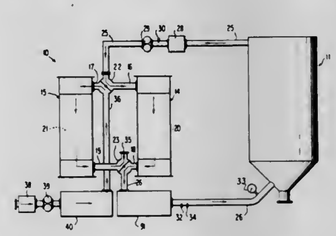
The invention relates to a method and apparatus for determining the levels of a plurality of work-pieces. A container is placed on each work-piece and connected to a source of liquid of which an amount, depending on the level of the container, enters the container. A tube extends into the container and is open to the liquid. A fluid forces liquid out of the tube and bubbles through the liquid. The back pressure on the fluid depends on the amount of liquid in the container, and this pressure is measured.

3,621,584
MAGNETOMETER COMPASS
Wayne E. Burt, P.O. Box 4072, Panama City, Fla. 32401
Filed Dec. 10, 1969, Ser. No. 883,719
Int. Cl. G01c *17/02, 17/38*
U.S. Cl. 33—224 **10 Claims**

This invention describes a magnetic compass suitable for use in a small craft. The compass employs a single magnetometer for sensing the earth's magnetic field and associated circuitry for computing the magnetic heading. The associated circuitry includes a pitch sensitive signal generator which together with analog circuits compensates for pitching motions of the vessel in which it is operated. Manually set signal sources provide signals for compensation of the horizontal and vertical components of the earth's magnetic field over the area in which the device is operated. An adjustable mounting for the magnetometer sensor places the device in a remote location and provides for adjustment which effectively compensates the compass for errors caused by vehicle roll.

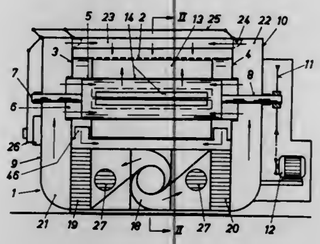


3,621,585
MATERIALS DRYER
Joseph D. Robertson, 980 Swathmore Drive NW., Atlanta, Ga. 30327
Filed Oct. 31, 1969, Ser. No. 873,002
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 **23 Claims**



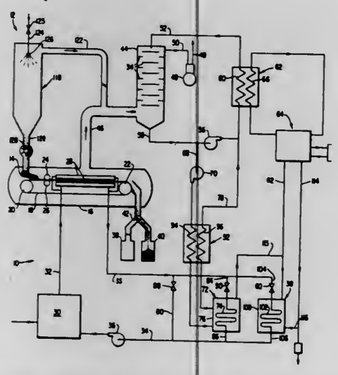
A materials dryer for drying or dehumidifying particulate hygroscopic plastics materials or similar materials that are stored in and dispensed from a closed hopper. The air from the hopper is passed in a closed loop stream at constant volume flow through a filter, a first desiccant bed, a heat exchanger to control the temperature of the air, and back to the materials hopper. In the meantime, a second stream of air is passed through a filter, an air heater which heats the air to the optimum desiccant drying temperature above 400 degrees Fahrenheit, and through a second desiccant bed to remove the moisture from the second desiccant bed. After a time interval, when the first desiccant bed has accumulated a relatively high moisture content, the closed loop air stream from the materials hopper is switched from the first desiccant bed to the hot dry desiccant bed, and the hot drying air stream is switched to the moist desiccant bed. The heat exchanger controls the temperature of the closed loop air stream so that the air stream whether flowing from a hot or cool desiccant bed, is at the optimum material drying temperature as it enters the materials hopper.

3,621,586
APPARATUS FOR THE CONTINUOUS TREATMENT OF WEB-SHAPED MATERIALS, ESPECIALLY TEXTILE WEBS
Arnfried Meyer, Neckargartacherstrasse, 7101 Frankenbach, Germany
Filed Dec. 2, 1969, Ser. No. 881,401
Claims priority, application Germany, Dec. 7, 1968, P 18 13 334.1
Int. Cl. F26b *19/00*
U.S. Cl. 34—60 **8 Claims**



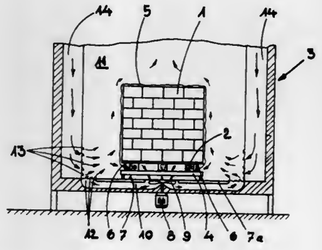
Apparatus for the continuous treatment of web-shaped, elastic material, especially textile webs, wherein the material to be treated is placed on a perforated supporting plate and is retained on this supporting plate under gas pressure. In order to advance this material in the feed direction and to loosen the material simultaneously, nozzles are provided which move in the feed direction and extend over the width of the web to be treated, while having a gas flowing therethrough. This gas produces a pressure directed oppositely to the first-mentioned gas pressure and lifts the material in ripples or waves off from the plate in the longitudinal zone of the nozzle. Each wave moves with the nozzle in the feed direction and thus effects the advancement of the material, which is simultaneously subjected to a heat treatment by heating the gas.

3,621,587
FREEZE DRYING APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Aug. 6, 1970, Ser. No. 61,772
Int. Cl. F26b *19/00*
U.S. Cl. 34—92 **13 Claims**



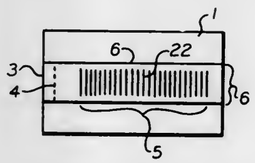
Freeze drying apparatus including a vacuum chamber in which one or more radiators are disposed. A fluid heat transfer medium is circulated through the radiator to heat it to a temperature sufficiently high to sublime the moisture and/or other volatiles from the frozen material. The volatiles thus evolved are condensed and removed from the evacuated part of the apparatus by a suitable sorbent. After leaving the radiator(s), the heat transfer fluid is employed to heat and concentrate the sorbent and/or to generate steam for operating an absorption type refrigeration system for cooling the sorbent and is then reheated and recirculated to the radiators.

3,621,588
DEVICE FOR PACKAGING PIECE GOODS ON A BASE FRAME
Diethelm Grocke, Nuremberg, Germany, assignor to Nutro Hirsch & Co., Nuremberg, Germany
Filed Sept. 9, 1969, Ser. No. 856,370
Claims priority, application Germany, Oct. 10, 1968, G 68 01 652
Int. Cl. B65b *1/02*
U.S. Cl. 34—225 **4 Claims**



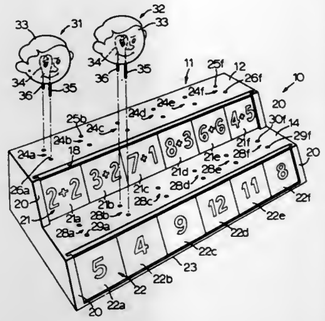
In apparatus for shrinking an envelope of synthetic material onto a stack of piece goods or a base frame, such as a pallet, there is provided a permeable area in the platform supporting the base frame and suction means so that a current of air flows downwards through the permeable oven whereby the portion of the envelope protruding below the stack of piece goods in the base frame is turned inwardly under the base frame, so that manual prefastening is obviated.

3,621,589
INDICIA CODING AND DECODING APPARATUS
Harry S. Jones, 50 Mavesink Drive, Monmouth Beach, N.J. 07750, and Richard P. Spohn, 108 Potter Road, Scarsdale, N.Y. 10583
Filed Dec. 3, 1968, Ser. No. 780,769
Int. Cl. G09b *1/00*
U.S. Cl. 35—2 **6 Claims**



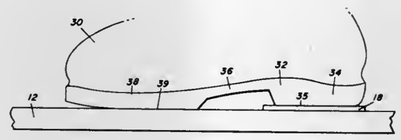
An information security system wherein a masking pattern is permanently added to either a signature or any larger written or printed matter or diagram thus coding and causing the material to be substantially unreadable and wherein an optical readout plate having a multiplicity of lenses arranged to match the masking pattern is used for decoding or readout purposes. The use of camouflaging marks on the masking pattern further reduces the possibility of readout without the optical readout plate.

3,621,590
CHILD'S EDUCATIONAL TOY
Joseph Louie Olynick, St. Catherines, Ontario, Canada, assignor to Edmund Ma, Toronto, Ontario, Canada
Filed Aug. 10, 1970, Ser. No. 62,274
Int. Cl. G09b *7/10*
U.S. Cl. 35—9 C **6 Claims**



An educational toy is provided with two sets of double-pole electrical sockets. An electrically operable indicator or lamp can be selectively inserted into each socket. Panels having a number of indicia-bearing frames or units are inserted into guideways provided for such purpose on the housing of the toy so that each such frame of one panel is disposed in apposition to a respective one of the sockets of one set and each such frame of the other panel is similarly disposed in apposition to a respective one of the sockets of the other set. The terminals of the various sockets are electrically interconnected within the housing to an electric storage cell so that both lamps are illuminated when they are inserted into sockets which are in apposition to panel frames bearing indicia having a predetermined relationship.

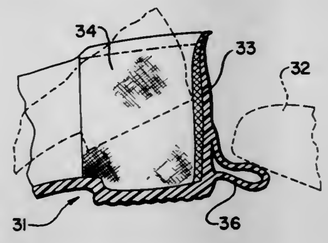
3,621,591
SKI BOOT
Chris A. Hanson and Alden B. Hanson, Boulder, Colo., assignors to The Lange Company, Broomfield, Colo.
Filed Apr. 17, 1970, Ser. No. 29,535
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **2 Claims**



An improved ski boot has a curved, flexible sole to permit easier walking and more rigid anchoring to a ski boot binding apparatus.

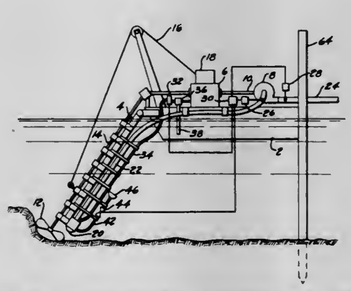
3,621,592
RUBBER WITH BUILT-IN BOOT JACK
Isaac Goldmerstein, 210 Riverside Drive, New York, N.Y. 10025
Filed Aug. 21, 1970, Ser. No. 65,855
Int. Cl. A43b
U.S. Cl. 36—2.5 RY **5 Claims**

A foot rubber or boot is provided with an elongated pull tab extending rearwardly from the heel portion to permit the toe of the other foot to secure this tab to the floor while lifting upon the shoe to remove the heel of the shoe from the heel portion of the rubber. The heel portion of the rubber is preferably provided with a liner or other rigid material adhered to the inside of the normal flexible rubber material to render the heel portion rigid and stiff to facilitate the removal of the shoe but also the easy insertion of the heel of the shoe into the rubber while in a standing position and without having to pull the rubber over the shoe from a sitting position. The pull tab can be again in the form of a vertically-extending loop which when collapsed is flat-



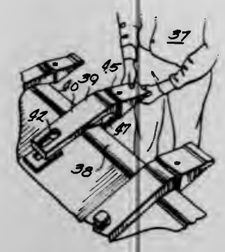
tened upon the floor by the toe and which when rubber is being worn serve as a storage for a toe filler body which can be used in the toe of the shoe to render the rubber tight upon the foot on certain occasions. For a further form of the invention a pull tab is anchored to the lower portion of the heel and extends upwardly over the outer surface of the heel portion and is retained by a transversely-extending elastic loop leaving the upper end of the tab accessible for placing the foot over the same and for lowering the pull tab to the floor to hold the rubber by the pull tab as the shoe is lifted from the rubber.

3,621,593
SELF-REGULATING SYSTEM FOR TRANSMISSION OF SOLIDS IN A FLUID MEDIUM
James R. Hickey, 3324 Carpenter Road, Titusville, Fla. 32780
Continuation of application Ser. No. 675,386, Oct. 16, 1967. This application Jan. 13, 1970, Ser. No. 1,989
Int. Cl. E02f *3/88*
U.S. Cl. 37—57 **11 Claims**



A device for automatically regulating the solids to liquid ratio in a dredging system and the like, utilizing pressure sensors to detect pressure variations caused by clogging or mass ratio changes in the system. The pressure sensors in turn control a valve or valves which meter clear fluid to the intake of the dredging system, in an amount to unplug the intake and/or lower the solids to liquid ratio to a safe level.

3,621,594
CUTTING EDGE FOR EXCAVATING DEVICES
Frederick C. Hahn, Beaverton, and Robert K. Emrich, Portland, Oreg., assignors to ESCO Corporation, Portland, Oreg.
Filed Feb. 13, 1969, Ser. No. 798,953
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 **2 Claims**



An excavating device scoop wherein the lip is equipped with forwardly extending excavating teeth which additionally serve to confine wear shrouds.

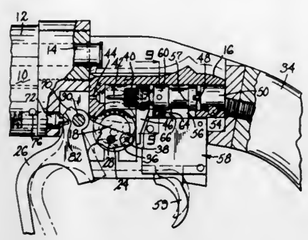
3,621,595
ELECTROLUMINESCENT LIGHT SOURCE AND STRUCTURES ILLUMINATED THEREBY
Richard W. Coolbaugh, East Aurora, and Floyd W. Engels, Colden, N.Y., assignors to A-T-O Inc., Cleveland, Ohio
Continuation-in-part of application Ser. No. 694,967, Jan. 2, 1968, now Patent No. 3,545,110. This application May 9, 1969, Ser. No. 823,302
Int. Cl. G09f *13/22*
U.S. Cl. 40—130 M **12 Claims**



A light source comprising an electroluminescent member encapsulated within a shell of light transmitting material and a separate indicia-bearing member of light transmitting material positioned adjacent the source so as to be illuminated thereby. The encapsulating medium is a transparent, light coupling potting compound having a high index of refraction. The source can serve as a mounting plate for the indicia-bearing member which is releasably attached thereto in an overlying manner. The source can be positioned within an instrument casing so that a light transmitting face of the shell is positioned directly behind the dial face, the shell face having a degree of curvature substantially equal to that of the dial face.

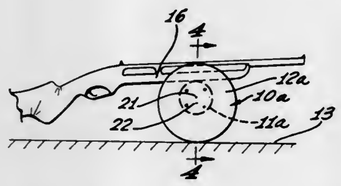
3,621,596
FIREARM WITH FALLING BREECHBLOCK
Carl T. Colliander, Warwick, R.I., and Robert L. Hillberg, Cheshire, Conn., assignors to Colt's Inc., Hartford, Conn.
Filed Sept. 11, 1969, Ser. No. 856,968
Int. Cl. F41c *11/00, 7/00*
U.S. Cl. 42—23 **15 Claims**

A firearm having a falling breechblock adjacent a barrel, which is mounted in a stationary position on the frame of the firearm. The breechblock is slidably mounted, such that it is displaced by the movement of a crank lever connected to a disc rotatably mounted on bearings located in the side walls of the breechblock. A spring-biased pin member is slidably mounted in the breechblock and is



cocked by abutment means located on the crank lever upon the pin member when the breechblock is lowered below the barrel. Extracting means are also provided for partially extracting a cartridge from the barrel upon movement of the crank lever to an open position.

3,621,597
ADJUSTABLE FIREARM REST COMPRISING AN IRREGULAR ROTATABLE MEMBER
Gerald E. Price, 9221 Bolsa Ave., Westminster, Calif. 92683
Filed Sept. 15, 1969, Ser. No. 858,054
Int. Cl. F41c *29/00*
U.S. Cl. 42—94 **7 Claims**

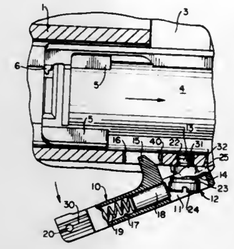


An improved rifle rest for aiming and firing purposes. The rifle rest takes the form of an irregular rotatable member for supporting the forestock of the rifle, and which may be rolled along a surface or turned on an axis, so as to raise or lower the muzzle of the rifle with respect to a reference plane. The rotatable member, for example, has irregular side flanges, or an eccentric hub or rim, so that the elevation of the forward end of the rifle may be varied as the rotatable member is rolled along the reference plane, or rotated about a reference axis, so as to bring the rifle into exact alignment with the target.

3,621,598
RIFLE BREECH BOLT LATCH
William B. Ruger, Southport, Conn., and Leroy J. Sullivan, Huntington Beach, Calif., assignors to Ruger, Sturm & Co., Inc., Southport, Conn.
Filed July 22, 1969, Ser. No. 843,387
Int. Cl. F41c *11/06, 11/00*
U.S. Cl. 42—16 F **6 Claims**

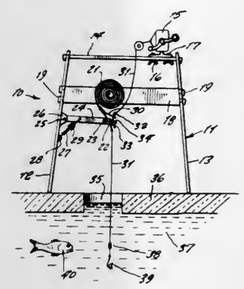
An improved latch for releasably stopping the rearward travel of the bolt in rifles having slidable breech bolts, for example of the Mauser type. The latch is pivotably mounted on a headed screw secured in the receiver and includes a spring-pressed plunger bearing on the screw head, which holds the latch in its bolt retaining position. The latch has an elongated hole for the screw which not

only holds the latch on the receiver but permits pivoted movement of the latch toward and away from the receiver. The latch also has a bolt stop lug which extends through an opening in the receiver to engage lug means



on the blot and stop its rearward travel. The latch may be pulled outward to its bolt releasing position and when released it snaps back to its locked position by the spring-pressed plunger bearing on the screw head.

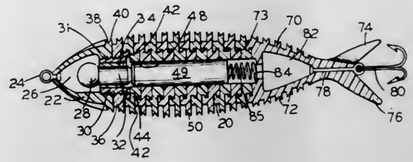
3,621,599
AUTOMATIC FISH CATCHER
Dan Uhlich and Marvin Uhlich, both of Main St., Anamoose, N. Dak. 58710
Filed Sept. 15, 1969, Ser. No. 857,927
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **1 Claim**



A device for automatically hooking a fish during ice fishing comprising an upright frame upon which a reel may be removably mounted. A coil spring and a spring-biased pivoted lever are also mounted on the frame with a pin on the lever engaging the free end of the coil spring to retain the spring compressed. A fishing line extends from the reel to a hook member hooked over the outer end of the lever and from the hook member to a fish hook in the water. A pull on the line will cause the hook member to pivot the lever and disengage the pin from the end of the coil spring, thus freeing the spring to jerk the line and set the hook in the fish's mouth.

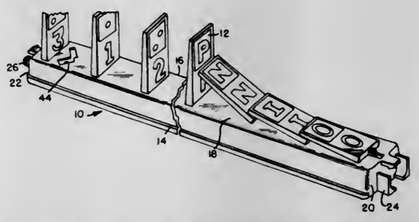
3,621,600
FISH LURE
Michael Dworski, 468 French Road, Rochester, N.Y. 14618
Filed June 20, 1969, Ser. No. 834,979
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **7 Claims**

A fish lure having a series of annular or peripheral fins with peripheral V grooves. The lure has a separate translucent head and body members assembled to the head either in the form of a series of disks or like halves which can be assembled around an incandescent lamp and drycell which weight the lure. The fins may be oval and



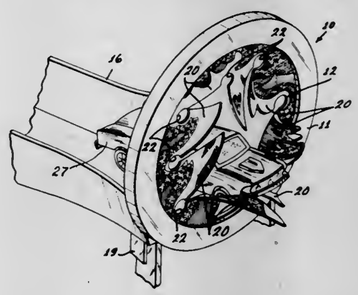
have turbulence—creating apertures, or may be of dished shape.

3,621,601
TOY
Allen Greenberg and Harry Meth, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Jan. 31, 1969, Ser. No. 795,666
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **12 Claims**



A toy which includes an elongate base member and a plurality of flat plate members or chips pivotally attached to the top surface of the base. A plurality of spaced apart openings are provided in the top surface, and each chip is connected to the base so that it engages one of the openings. In assembled relationship, the chips are pivotable between inclined and upright positions, and they are separable from the base member with a minimum amount of effort.

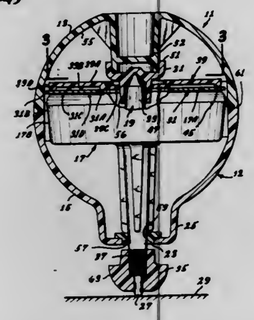
3,621,602
TRACK MEANS COMBINED WITH SIMULATED STUNT HOOP FOR TOY VEHICLES
Jack L. Barcus, Palos Verdes Peninsula, and Lester T. Stormon, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sept. 25, 1969, Ser. No. 861,053
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 K **8 Claims**



A hoop or ring accessory for use with toy vehicles. The hoop is provided with an insert of flexible material imprinted with a flame pattern and cut so as to deflect

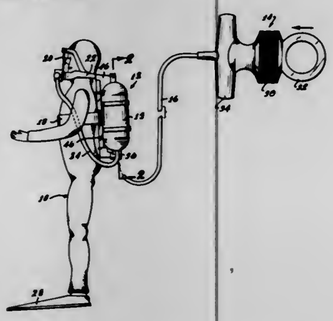
outwardly to allow a toy vehicle to pass therethrough thereby simulating the vehicle leaping or driving through flames.

3,621,603
COLOR CHANGING TOY TOP
Jacob de Gelder, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 8, 1970, Ser. No. 96,196
Int. Cl. A63h *1/22*
U.S. Cl. 46—49 **11 Claims**



A toy top having a housing with a gyroscopic-type rotor mounted on a freely rotatable shaft that extends below the housing and terminates at a spinning tip which supports the top in spinning engagement with a playing surface, the top includes a color disc rotating with the top's rotor and a substantially freely rotatable coaxially disposed apertured opaque disc positioned between the color disc and a transparent portion of the top's housing so that the apertured disc may rotate at a speed different from that of the color disc to provide the illusion, that the color disc is changing colors.

3,621,604
AQUANAUT TOY
Berne E. Danielsen, Pacific Palisades, and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 24, 1969, Ser. No. 879,237
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 **4 Claims**



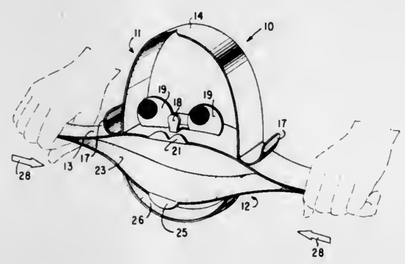
Toy apparatus that can be attached to a toy figure to make it sink or float in water comprising a hollow backpack with flexible walls that can contract or expand when air is pumped out or in. A hand pump is coupled through a long hose to the backpack to enable a child to pump air into or out of the pack. The pack is attached to the figure by a strap that extends around the figure's body, and a hose extends from the pack to a face mask that is attached to the figure's head.

3,621,605
REMOTE-CONTROL DEVICE FOR SPINNING TOPS
John Dale Witiak, P.O. Box 5024, Milwaukee, Wis. 53204
Filed Dec. 16, 1969, Ser. No. 885,547
Int. Cl. A63h *33/26*
U.S. Cl. 46—45 **10 Claims**



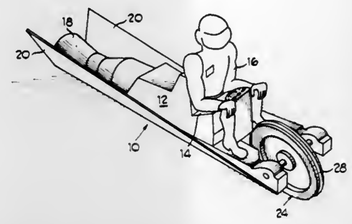
A device used for either amusement purposes or for physical therapy, including one or more spinning tops, each of which has at least a portion fabricated from a metallic material, and means for selectively controlling the rotation of the tops from a remote location, including a manually-operable control member for each top and a mechanical linkage connecting each respective control member and its associated top, each linkage incorporating a magnet adapted to selectively engage the metallic portion of the top.

3,621,606
SOUNDING FAVOR WITH REPRESENTATION OF A FANCIFUL CHARACTER
Stanley G. Potrzuski, 452 Elrino St., Baltimore, Md. 21224
Filed Oct. 22, 1969, Ser. No. 868,531
Int. Cl. A63h *5/00*
U.S. Cl. 46—118 **9 Claims**



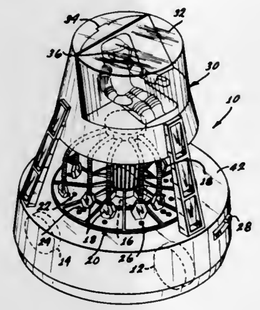
A sounding party favor having a pair of thin, elongate strips of firm, flexible material secured in superposed relation at their opposite ends, the intermediate portions of which may be separated by moving the ends inward toward each other and upon outward movement of said ends in a rapid fashion away from each other will produce a slapping sound. The motion of the strips and the sound produced thereby are related to a fanciful character in which a mouth is formed from the strips and head and jaw appendages are secured to the strips.

3,621,607
SELF-PROPELLED TOY VEHICLE
Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 15, 1969, Ser. No. 885,001
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **11 Claims**



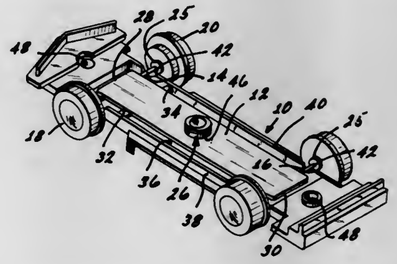
A self-propelled toy vehicle wherein the supporting and driving means also provides a gyroscopic effect on the travel of the vehicle. The toy vehicle has mounted thereon a single supporting wheel in the form of a rotatable flywheel, which is capable of storing sufficient energy to provide a gyroscopic effect on the vehicle when the rotating flywheel is placed on a supporting surface. In the illustrated embodiment, the flywheel is wound with a string, similarly to the winding of a gyroscopic top, and a launching device is also provided in order to facilitate launching the device in a balanced condition and along a straight line.

3,621,608
PROGRAMMABLE STEERING TOY VEHICLE
Denis V. Bosley, Palos Verdes Peninsula, Donald C. Hartling, Garden Grove, Richard E. Henderson, Huntington Beach, James F. Munday, Southgate, and Conrad B. Sloop, Huntington Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 2, 1970, Ser. No. 15,669
Int. Cl. A63r *17/00*
U.S. Cl. 46—206 **10 Claims**



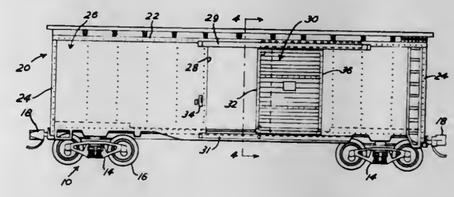
A toy vehicle which can be programmed to move in a desired course, by inserting plugs into appropriate holes in a programming wheel. The programming wheel has three concentric groups of holes, to receive plugs to designate a left turn, right turn, or straight-ahead movement. The programming wheel is slowely turned so that it makes one revolution while the vehicle makes one complete run along its route, the wheel bringing the plugs successively into position to direct the course of the vehicle. Two sets of cams positioned below the programming wheel are moved by the plugs to turn the vehicle wheels, each set of cams including a turning cam which can steer the vehicle at a predetermined angle, and a return cam which is struck by a plug a predetermined time after the turning cam is struck, to return the vehicle to its straight-ahead position after the vehicle has turned approximately 90° from its previous direction.

3,621,609
SPRUNG AXLE ASSEMBLY AND METHOD FOR TOY VEHICLES
Harvey W. LaBranche, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 15, 1969, Ser. No. 816,196
Int. Cl. A63h *11/10*
U.S. Cl. 46—201 **11 Claims**



A toy vehicle in which axle wires are molded into a thin block of resilient plastic to keep the axles well aligned. The block is attached to the vehicle frame at its center, so the opposite ends wherein the axles are held are free to deflect upwardly, thereby permitting greater wheel deflection by a child pressing down on the vehicle without causing deflection of the axles past their elastic limit.

3,621,610
MODEL RAILWAY BOX CAR WITH SLIDING DOORS
Clarence K. Edwards, 865 Morrison St., and Lawrence D. Edwards, 2816 Rosemont Ave., both of Medford, Oreg. 97501
Filed Apr. 3, 1970, Ser. No. 25,309
Int. Cl. A63h *19/16*
U.S. Cl. 46—218 **5 Claims**

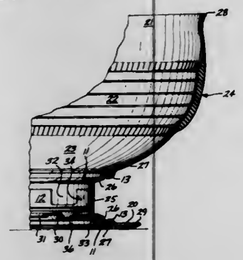


A model railway box car is provided having sliding doors, the doors being guided by interiorly located guide means to travel between narrow, upper and lower external, parallel, shouldered guide ribs, which ribs are not substantially wider than the door thickness. Each door is adapted to be operatively assembled with the associated side wall of the car without resort to any implement or tool. The invention is especially useful in very small scale equipment such as N-gauge, where even the finest scale, external, channeled guides would project objectionably, offsetting the realistic effect sought to be produced by the provision of sliding doors.

3,621,611
CONTAINER FOR PLANTS AND OTHER MATERIALS AND METHOD OF MAKING SAME

Jacob Wingerter, 9504 Maple SW.,
Tacoma, Wash. 98499

Filed Oct. 14, 1970, Ser. No. 80,579
Int. Cl. A01g 9/02; A01k 5/00
U.S. Cl. 47—34 11 Claims

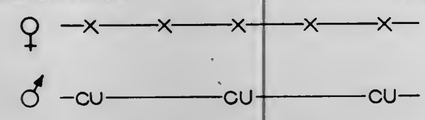


A container primarily designed to hold soil in which to plant flowers, small trees, shrubs, flowers and other plants generally referred to as a "Planter" and constructed from a discarded automobile wheel having mounted thereon a worn and discarded automobile tire and the method of manufacturing such a container.

3,621,612
PROCESS OF REGULATING PLANT GROWTH

Frederic E. Porter, Minneapolis, Minn., assignor to Northrup, King & Co., Minneapolis, Minn.

Filed Apr. 24, 1970, Ser. No. 31,499
Int. Cl. A01c 1/06
U.S. Cl. 47—58 9 Claims

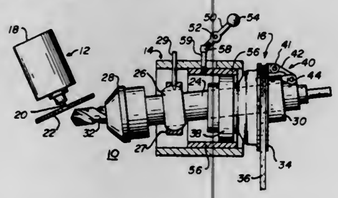


Seeds (e.g. seed corn) are coated to retard or delay emergence of the seedlings following planting. Then, coated seeds are planted in competitive proximity to uncoated seeds to permit competition between the resulting seedlings, thereby preserving through the flowering and maturation phases of growth the time lag or delay caused by the coatings.

3,621,613
METHOD AND APPARATUS FOR THINNING THE WEB OF A DRILL

Theodore Grob, Grafton, and Donald H. Tesker, Saukville, Wis., assignors to Grob & Tesker Corporation, Grafton, Wis.

Filed May 15, 1969, Ser. No. 824,758
Int. Cl. B24b 3/28, 19/02
U.S. Cl. 51—90 8 Claims

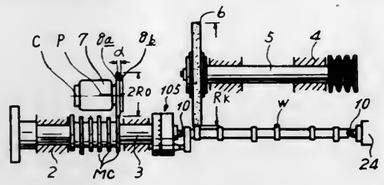


To thin the web of a drill, the drill is orbited so that, once during each orbit, its web contacts a rotating grinding wheel that is positioned approximately at a 25-degree angle from the horizontal. The grinding wheel abrades the web to form a recess having a radius determined by the radius of the orbit. The raduis of the orbit may be adjusted while the drill is orbiting.

3,621,614
CAM GRINDING MACHINE

Ryotaro Hikita, Riichi Takahashi, Rokuro Kimura, Mikishi Kurimoto, and Teruyuki Ito, Nagoya-shi, and Sadamu Kato, Hekikai-gun, Japan; said Hikita, Takahashi and Kimura assignors to Toyota Central Research and Development Laboratories, Inc., and said Kurimoto, Ito and Kato assignors to Toyoda Machine Works, Ltd., both of Tokyo, Japan

Filed Dec. 23, 1968, Ser. No. 785,897
Int. Cl. B24b 17/00
U.S. Cl. 51—101 R 16 Claims

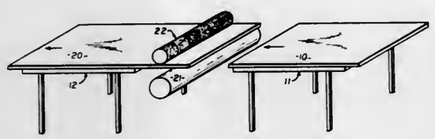


A cam grinding machine for grinding a cam on a workpiece while copying or duplicating a master cam. The machine is equipped with an apparatus for substantially compensating lift error on a workpiece due to grinding wheel wear, said apparatus being provided with a plurality of cam rollers having different diameters including a cam roller which engages with a master cam or master cams, said cam rollers being automatically or manually changed when the grinding wheel diameter is reduced by a predetermined extent, whereby the lift error on the workpiece is substantially compensated.

3,621,615
APPARATUS AND METHOD FOR THE MANUFACTURE OF A TEXTURED PANEL

Lester V. Ottinger, Danbury, Conn., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,340
Int. Cl. B24b 1/00
U.S. Cl. 51—5 3 Claims



Textured panel and apparatus and method for manufacturing the same which comprises a fibrous board such as lumber, plywood, hardboard, particle board, etc. which has been operated on by one or a plurality of scoring sleeves or scoring cylinders in order to produce a decorative structural element appearing to have a plurality of parallel sections with a weathered barnboard appearance.

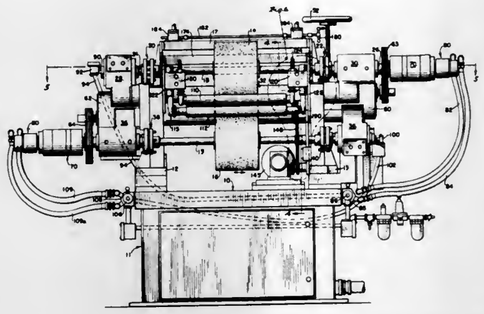
3,621,616
SURFACE PROCESSING MACHINE

James W. Weatherell and Francis R. Chesner, Olean, N.Y., assignors to Clair Mfg. Co., Inc., Olean, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,432
Int. Cl. B24b 7/00
U.S. Cl. 51—87 10 Claims

A machine for simultaneously grinding, abrading, deburring, or otherwise surface-processing both sides of cut-to-length sheet, plate, strip, continuous coil, or other

type workpieces; featuring self-dressing oppositely rotating processing rolls, and stirrup plates at opposite sides of the machine which mount an improved workpiece transport "pinch" roller drive system, permitting adjustments

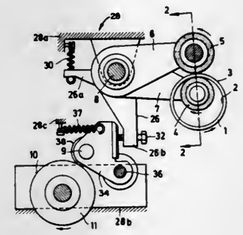


thereof so as to prevent "skipping" of the workpiece as it travels through the processing roll gap and thereby ensuring equal and smooth processings of opposite sides of the workpiece throughout its length.

3,621,617
MACHINING APPARATUS

Theo Muller, Pattscheid, Germany, assignor to Goetzewerke Friedrich Goetz Aktiengesellschaft, Burscheid, Germany

Filed Sept. 2, 1969, Ser. No. 854,493
Claims priority, application Germany, Aug. 30, 1968, P 17 77 065.9
Int. Cl. B24b 17/02
U.S. Cl. 51—101 R 8 Claims



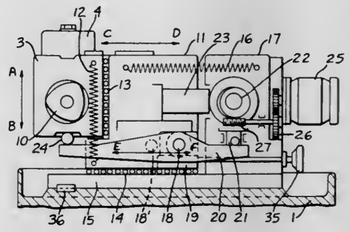
Apparatus is provided which can simultaneously machine the inner and outer surfaces of non-circular hollow bodies, such as piston rings, which are made with small departures from circularity. At least the inner machining tool is a rotating grinding wheel. Means are also provided to radially adjust the machining tools relative to the axis of the bodies to be ground.

3,621,618
APPARATUS FOR PRODUCING AND MACHINING CYCLIC NON-ROUND PROFILES

Curt Pleger, Oberrieden-Zurich, Switzerland, assignor to Fortuna-Werke Maschinenfabrik Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

Filed Sept. 29, 1969, Ser. No. 861,607
Claims priority, application Germany, Oct. 1, 1968, P 18 00 349.1
Int. Cl. B24b 17/02
U.S. Cl. 51—101 10 Claims

An apparatus wherein a tool forms a non-circular profile on a rotating workpiece. The workpiece is mounted on a workpiece spindle and an eccentric control cam is mounted on a control spindle which is parallel to and spaced from the workpiece spindle. A push rod and a lever engage the control cam and impart motion to the workpiece spindle in two directions at right angles to each

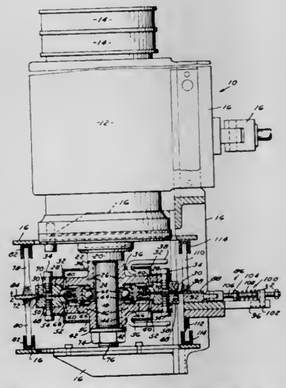


other in a plane normal to the axis of the workpiece spindle The workpiece spindle and the control spindle are drivingly interconnected so the speed of the former equals the speed of the latter multiplied by a whole number.

3,621,619
GLASS EDGE GRINDING MACHINE

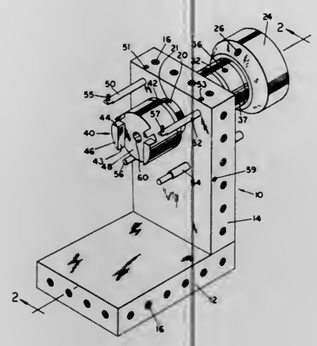
Eugene H. Augustin, Dearborn Heights, and Richard M. Kudrzycki, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 13, 1970, Ser. No. 27,558
Int. Cl. B24b 9/10
U.S. Cl. 51—102 9 Claims



An improved glass edge grinding machine includes the following structure. A first grinding element and a second grinding element are mounted on a rotatable spindle and the elements have exposed circumferential surfaces for contacting opposed corners of an edge of a glass sheet. The grinding elements are mounted about an axis of the spindle in a spaced relationship such that the exposed circumferential surface of each element presents a continuous grinding surface for one of the corners of the edge of the glass sheet. A positioning device is located in the space between the grinding elements. The positioning device engages the central portion of the edge of the glass sheet placed between the grinding elements to position the corners of the glass sheet with respect to the grinding elements. In such a manner, the grinding elements accurately grind the corners of the glass sheet and remove the proper amount of stock therefrom.

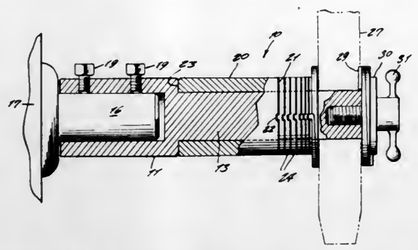
3,621,620
MACHINING TOOL
Merle Leslie Kinder and Merle Leslie Kinder II, Columbus, Ohio, assignors to Ohio Machine Tool Products, Inc., Columbus, Ohio
Filed Mar. 20, 1969, Ser. No. 808,833
Int. Cl. B24b *41/06, 53/12*
U.S. Cl. 51—216 R **11 Claims**



A basic rotatable workpiece and tool holder is disclosed along with several attachments. The basic unit has a support frame to which an arbor is mounted in a bearing. The arbor has a thrust adjustment comprising an annular longitudinally tapered groove surrounded by a collar. The collar is provided with set screws seating against the groove. A hand gripped knob is provided at one end of the arbor for rotating it and a connector having intersecting slots and of planar seating surface is fixed to the opposite end of the arbor. Stop pins are provided on the support frame for limiting the arc of rotation, and threaded bores are provided on the support frame for the attachment of accessories. A wheel dresser arm attachment is connectible to the connector of the basic unit. A V block clamp which is slidable along a radial bar is mountable on the connector. Also shown is an adjustable arc of rotation limiter having slidable stop pins adjustable to a desired arc of rotation. A band grinder is disclosed which is attachable to the basic unit and comprises an arcuate platform which is concentric with the axis of rotation and on which the butt welded ends of a band are clamped and then ground to a uniform thickness. A drilling fixture for guiding a drill bit is disclosed which comprises a laterally adjustable cross beam and a longitudinally slidable sleeve for containing a drill bushing. A grinding method is shown in which a grinding wheel is first dressed to an arcuate surface and then a workpiece is grindingly rotated against this surface.

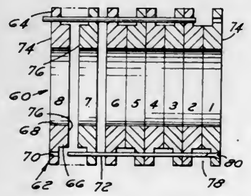
3,621,621
POWER TAKEOFF GRINDER
William Husack, Box 130, Calder, Saskatchewan, Canada
Filed Aug. 25, 1969, Ser. No. 852,737
Int. Cl. B24b *19/00, 41/00*
U.S. Cl. 51—258 **2 Claims**

An improved grinder secured to the power takeoff of a tractor, the grinder unit also including a stub shaft for positioning a grinding wheel a relatively far distance from a bearing of the power takeoff shaft where grinding work is readily more accessible, and the assembly also including a sleeve positioned adjacent a shoulder of the stub shaft and a plurality of washers positioned adjacent one end of the sleeve, the grinder disc being secured between a



pair of spring lock washers and retained by a thumb screw secured in the end of the stub shaft.

3,621,622
ADJUSTABLE WIDTH ROTARY FINISHING TOOL
James A. Belanger, 17502 Rexwood, Lavonia, Mich. 48152
Filed Sept. 10, 1969, Ser. No. 856,773
Int. Cl. B24b *9/02*
U.S. Cl. 51—337 **2 Claims**

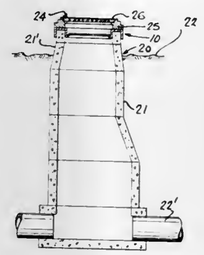


The adjustable width rotary finishing tool comprises a carrier or hub made from a plurality of discs or elements arranged in side by side abutting relationship. The hub includes a plurality of circumferentially extending endless grooves or channels in the outer surface of the hub. The hub includes annular rims adjacent the grooves, with the grooves and rims being formed by the discs. A plurality of radially spaced openings extend longitudinally through the rims and the end surfaces of the hub, each opening being defined by a series of annular bearing points. A plurality of generally radially extending finishing flaps are provided with retainer means on the inner ends thereof which extend into the grooves of the hub in alignment with the corresponding bearing points. Pivot pins extend through the openings and the retainer means of the flaps. With such a construction the finishing flaps and corresponding pins are arranged to pivot through a small predetermined angular movement to help maintain the wheel in proper balance. The length of the hub may be increased by adding discs to the hub or the length may be decreased by removing discs from the hub.

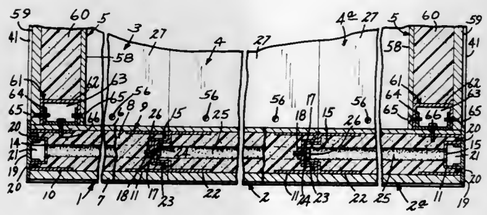
3,621,623
APPARATUS FOR TEMPORARILY CLOSING AN OPENING FORMED AT THE TOP OF VERTICAL WALLS OF A CATCH BASIN, MANHOLE OR THE LIKE
Allan MacMillan Downes, 2662 Draper Court, Ottawa 6, Ontario, Canada
Continuation-in-part of application Ser. No. 816,278, Apr. 15, 1969. This application Mar. 23, 1970, Ser. No. 21,790
Int. Cl. B65d *59/06;* **E02d** *29/14*
U.S. Cl. 52—20 **11 Claims**

During construction of roads and the installation of public utilities (e.g. strom sewers, electric, gas and telephone services), the tops of vertical concrete walls of catch

basins, sewers, manholes etc., often protrude above ground level. A frame of a cover assembly is fixed to the top surfaces of these walls, the frame having a central opening for receiving a removable cover portion. Apparatus for temporarily closing the opening formed at the top of the vertical walls is disclosed comprising a protective member that is fixed between the tops of the walls and the frame in a position to close the wall opening, this protective member having a displaceable central portion for gaining access to the wall opening. The member preferably has a peripheral portion that embraces the tops and sides of the walls to establish firm engagement therewith to resist lateral displacement therefrom. The central portion is also preferably recessed below the tops of the walls. The member is of plastic material and in one embodiment, is initially of unitary construction, the central portion when it is to be displaced, being cut out from the remainder of the protective member. In another embodiment, the central portion is hinged to the remainder thereof, while in a third embodiment the central portion is formed separate from the remainder thereof so as to be removable and replaceable. The upper and lower surfaces of the peripheral portion are preferably ribbed to improve the sealing effect when the member is attached to the top surfaces of the walls, and the frame is then fixed to the upper surfaces of the protective member. The member thus serves to permanently seal the exposed tops of the walls of the catch basin, and also cushions vibration and shock between the iron frame and the concrete walls.

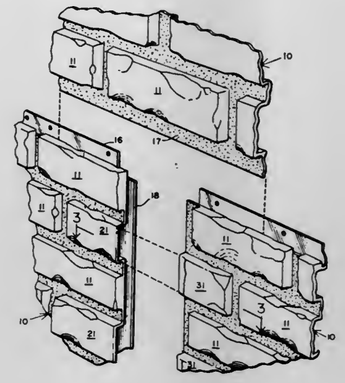


3,621,624
PANEL WALL CONSTRUCTION
Evert W. Gustafson, Box 1009, Fork Peck Highway, Glasgow, Mont. 59230
Filed Apr. 13, 1970, Ser. No. 27,844
Int. Cl. E04b *1/02, 7/02*
U.S. Cl. 52—90 **10 Claims**



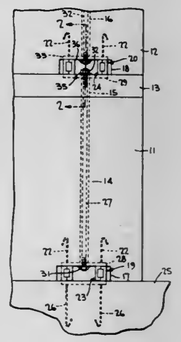
A plurality of panels of sandwich construction each having spaced wall elements, a core and a peripheral frame between the wall elements. The frame provides tongues and cooperating grooves for reception of the tongues of adjacent panels when the panels are disposed in end-to-end engagement. Anchoring screws extend through frame portions of adjacent panels to releasably lock the panels in wall forming end-to-end engagement.

3,621,625
BRICK SIDING
Robert S. Medow, 9225 Collins Ave., Surfside, Fla. 33154
Filed Aug. 17, 1970, Ser. No. 64,259
Int. Cl. B44f *9/04;* **E04c** *2/20*
U.S. Cl. 52—314 **2 Claims**



Brick siding for covering building walls simulating antique, used or old brick consisting of a plurality of rectangular sheets of fiberglass fastened to the wall with each horizontal row of sheets positioned in overlapping relation with the adjacent row, each sheet having formed thereon to simulate rows of old brick having chips, distress marks and the like thereon. In order to achieve authentic appearance that is in keeping with the aesthetics of proper masonry practices, the end bricks on alternate rows along one side of each sheet are grooved to receive the end portion of the bricks of an adjacent sheet so that these bricks appear to span the mortar joint of the adjacent rows of bricks, the tongue and groove bricks, when joined appear as a single brick having a distress mark.

3,621,626
SYSTEM FOR CONNECTING PRECAST CONCRETE SLABS TOGETHER
Adolfo Tylius, Washington, D.C., assignor to Alvic Development Corporation, Washington, D.C.
Filed May 7, 1970, Ser. No. 35,473
Int. Cl. E04c *1/10, 3/22*
U.S. Cl. 52—227 **9 Claims**



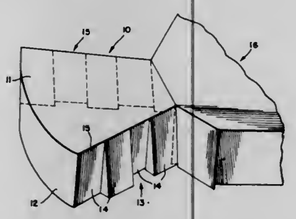
Precast concrete slabs of a building are connected together with coaxial tensioned rods extending through aligned, elongated bores, running between edges of the

slabs. In one of the slabs a cut-out is provided along one of the edges to receive one connector half fixedly positioned in the slab by tie-bars. A second connector half fixedly mounted on the other slabs projects into the cut-out of the first slab. Each connector half includes a base having a centrally located aperture therein for enabling a tensioned rod to be secured to an outer edge of the base. Extending from each of the bases is a pair of walls having parallel faces, each having a slot with sloping top and bottom edges. Faces on walls extending from one base are in abutting relationship with faces extending from the other base, with mating slots in the faces forming an enclosed groove. A wedge having sloping top and bottom surfaces fits into each of the grooves to form camming surfaces securing the two connector halves together. To prevent lateral movement of the connector halves, on one of the bases there are provided lips extending in a direction at right angles to the bore and longitudinal axes of the wedges.

ERRATUM

For Class 52—235 see:
Patent No. 3,621,635

3,621,627
REFRACTORY GRID
Walter W. Kramer, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.
Filed Apr. 20, 1970, Ser. No. 30,117
Int. Cl. E04b *5/04*; **E04c** *2/04*
U.S. Cl. 52—608 **3 Claims**



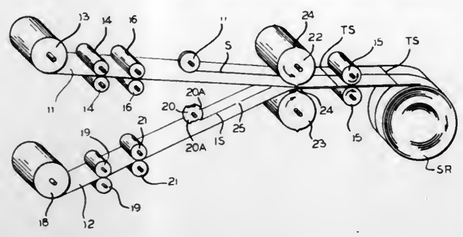
This invention relates to a refractory grid comprising a plurality of abutting sections, the side walls of each section which abut an adjacent section being formed of contiguous portions alternately beveled inwardly downwardly and outwardly downwardly from the top edge of the side walls.

ERRATUM

For Class 52—626 see:
Patent No. 3,621,631

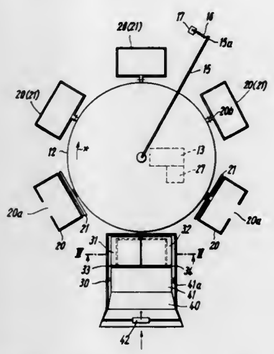
3,621,628
METHOD AND APPARATUS FOR FORMING CARRIERS FOR GROUPED ARTICLES
Francis A. Chidsey, Jr., Devon, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 24, 1970, Ser. No. 22,222
Int. Cl. B65b *43/00*; **B32b** *31/08, 31/18*
U.S. Cl. 53—29 **10 Claims**

A method and apparatus for forming a carrier from webs of resinous material. The resultant carrier consists of conjugate tube-like elements particularly adapted to hold a group of containers such as bottles, cans or the like. The resinous material forming the carrier is in the form of a pair of webs which are appropriately slitted and sealed to form the tube-like elements which later are placed in position around a container group. The webs are preferably pre-stressed to make use of the memory characteristics of the material to cause them to snugly engage



the individual containers and provide a carrier for a group of such containers.

3,621,629
APPARATUS FOR PACKING PIECE GOODS SUCH AS POTATOES PACKED IN BAGS OR SIMILAR GOODS, INTO SACKS
August Wickersheim, 4 Industriestrasse, Egenbuttel, near Hamburg, Germany
Filed June 10, 1970, Ser. No. 44,912
Claims priority, application Germany, Oct. 3, 1969, G 69 38 621.6
Int. Cl. B65b *57/20, 5/10*
U.S. Cl. 53—59 **6 Claims**

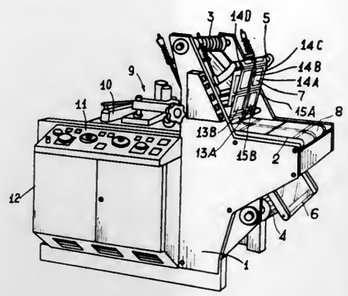


A semiautomatic packing apparatus with a rotary sack holder for holding a plurality of sacks and a transfer container for introducing piece goods or articles packed in bags into the sacks. Means are provided for coordinating the rotation of the rotary sack holder with the discharge of articles from the transfer container so that the articles will be discharged into the sacks in a predetermined orientation.

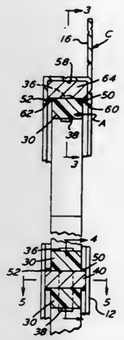
3,621,630
PACKAGING MACHINE
Giuseppe Bianchi, Busto Arsizio, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy
Filed Aug. 15, 1969, Ser. No. 850,528
Claims priority, application Italy, Sept. 7, 1968, 20,989/68
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 A **6 Claims**

A packaging machine is provided including a loading station of articles to be packaged, a welding station for securing upper and lower films of packaging material about the articles, and means for advancing and cutting of the successive packages formed at the welding station. The advancing and cutting means include a sliding member movable in a feeding direction relative to the fixed structure of the machine and a clamp element in the form

of a transversal bar mounted on the sliding member. The clamp element and sliding element have splits for receiving and guiding a cutter in its movement across the feeding direction.



3,621,631
MOLDED DECORATIVE GRILLE
Norman Cutler, Wyncote, Pa., assignor to Royal Factories, Inc., Philadelphia, Pa.
Filed Nov. 13, 1969, Ser. No. 876,378
Int. Cl. E04c *2/42*; **F16s** *3/08*
U.S. Cl. 52—626 **4 Claims**

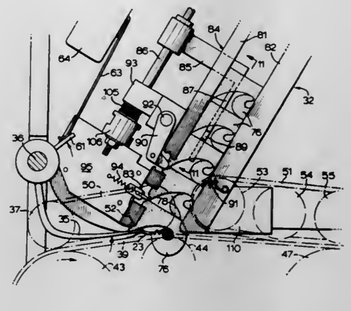


A decorative grille, primarily for storm doors or windows, in which the design is an interlocking composite of individual molded plastic scroll elements. The scroll elements have integrally formed outwardly extending pins and integrally molded tapered holes which snap into each other with an extruded rail bar sandwiched therebetween. Upper and lower rows of scroll elements slidably engage within respective transverse channels by means of integrally molded ears and are locked in place by bars inserted within the complementary space. Side channel members are connected in mitered disposition with the upper and lower channels by screws threaded into tapped holes in the ends of the bar to define a frame.

3,621,632
METHOD AND MEANS FOR APPLYING BAG CLOSURES OR FASTENERS
Stanley A. C. Browning, Glen Williams, Ontario, Canada, assignor to Hybrid Turkeys Limited, Toronto, Ontario, Canada
Filed Jan. 12, 1970, Ser. No. 2,325
Int. Cl. B65b *7/02*
U.S. Cl. 53—138 A **12 Claims**

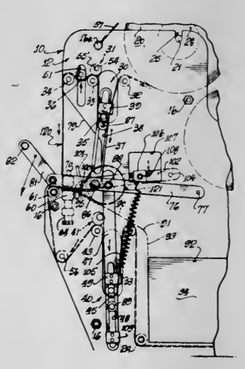
A novel method of a machine for applying closures of the form disclosed in Canadian Pat. 738,149, issued July 12, 1966, entitled "Bag Closure Fastener."

The machine employs the provision of a ground edge on the fastener and the characteristic facility of that fastener to flex while being applied to achieve a substantially continuous travel of the bag to which the closure is applied.



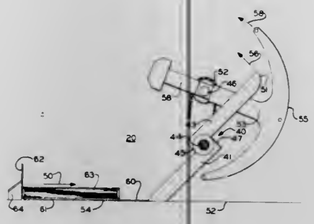
On the entry of a bag neck into the machine feed conveyor a cutting mechanism responds to partially sever a fastener which is in a bag receiving position. The feed gathers the bag neck into the bag receiving position where it is engaged by a second portion of the conveying mechanism and carried through a predetermined path. The fastener or closure is carried along in engagement with the bag neck through the rear edge of the closure being wedged down and the junction between the closure being applied and a succeeding closure is broken by the combined movement of the closure and the bag.

3,621,633
MACHINE FOR WRAPPING ARTICLES IN HEAT SEALABLE FILM
Raymond Thomas Law, Salinas, Calif., assignor to Lockwood Technical, Inc., Sand City (Seaside), Monterey County, Calif.
Filed Feb. 2, 1970, Ser. No. 7,572
Int. Cl. B65b *11/48, 41/16, 67/08*
U.S. Cl. 53—198 R **7 Claims**



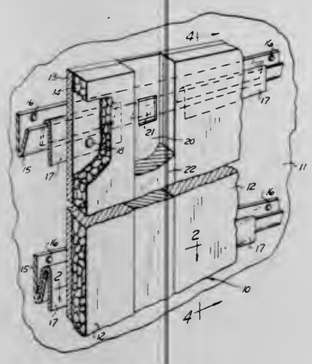
Heat sealable film is metered to an overwrap machine from two supply webs by mechanism coupled to the sealing frame by which the film is wrapped, cut and sealed. That metering mechanism permits accurate centering of a pattern preprinted on one of the supply webs. An auxiliary "tucker bar" is driven in response to sealing frame movement and aids wrapping of each article prior to sealing. A convenient and economical power assist mechanism is described.

3,621,634
AUTOMATIC FLAP FOLDER
Anthony Freakes, Leonia, N.J., assignor to General Corrugated Machinery Co., Inc., Palisades Park, N.J.
Filed June 1, 1970, Ser. No. 42,159
Int. Cl. B65b *11/10*
U.S. Cl. 53—209 **7 Claims**



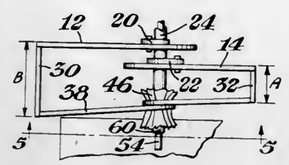
An automatic flap folder for folding the leading and trailing flaps of a paperboard sheet which is in the process of being transformed into a package. A rotating, leading flap folding arm and a rotating, arcuate, trailing flap folding arm are positioned on axes above a conveyor carrying the sheet and contents to be there enclosed. As the sheet passes toward and beneath the arms, the leading flap impinges upon the first folding arm and is turned over the contents of the package. Partially coincident with this operation, the arcuate arm engages the previously erected, trailing flap and in cooperation with continuing movement of the sheet folds the trailing flap over the package contents.

3,621,635
PANEL WALL
Cornelis J. de Lange, Farmington, Mich., assignor to Cement Enamel Development, Inc., Detroit, Mich.
Filed Mar. 2, 1970, Ser. No. 15,599
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **5 Claims**



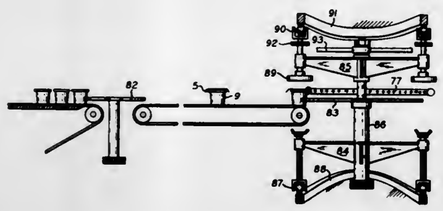
A monolithic aggregate textured type wall formed of large panels made of thin base sheets covered with a bonded textured coating, with the panels arranged edge to edge upon a support surface and mounted thereon by means of panel mounting strips having downwardly extending flanges interengaged with horizontally arranged J-shaped strips fastened to the support surface; the panel mounting strips being secured to the base sheets only by mechanical fasteners before coating the sheets, wherein the fasteners are covered and concealed by the coating.

3,621,636
DEVICE TO ASSIST AUTOMATIC VACUUMIZATION OF FILLED BAGS
Oliver R. Titchenal, Berea, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed June 25, 1970, Ser. No. 49,726
Int. Cl. B65b *65/00, 31/04*
U.S. Cl. 53—393 **12 Claims**



A device for automatically gathering the open end of a film bag about a vacuum or gas flushing nozzle or like means of a type such as is inserted into the bag to effect a certain environment therein. Such a device basically comprises a strap and a pair of movable arm members. The arm members move to tightly wrap the strap about the nozzle with the bag being held firmly underneath the strap, and thus tightly against the nozzle. The arm members maintain the strap so positioned until vacuumization and/or gas flushing is completed and the bag closed such as by clipping, tying or the like.

3,621,637
APPARATUS FOR FORMING CLOSURES
Martin M. Sternau, Flushing, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.
Continuation of application Ser. No. 508,639, Oct. 23, 1965, and a continuation-in-part of application Ser. No. 209,882, July 16, 1964. This application June 16, 1970, Ser. No. 48,902
Int. Cl. B65b *7/16*
U.S. Cl. 53—329 **1 Claim**

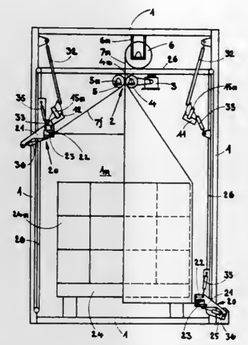


An apparatus for forming covers on containers comprising vertically movable shielding heads to hold a heat shrinkable covering film thereon and means to rotate the shield and container while heat is applied to shrink the exposed edges of the film against the side of the container.

3,621,638
APPARATUS FOR COVERING PALLETS WITH TUBULAR SHAPED FOIL OR SHEETING
Diethelm Grocke, Schnieglinger Strasse 132, Nuremberg, Germany
Filed Dec. 9, 1969, Ser. No. 883,436
Claims priority, application Germany, May 9, 1969, P 19 23 672.7
Int. Cl. B65b *1/02*
U.S. Cl. 53—386 **17 Claims**

Apparatus for applying a flattened foil tube particularly of shrinkable foil over a loaded pallet supported on

a frame in which the flattened tube is fed to units movably connected with the frame for movement toward and away from the fed tube, with such units having suction air inlets and clamping means operable so that the tube is initially separated or pulled apart by the suction air action on opposite surfaces of the tube after which the

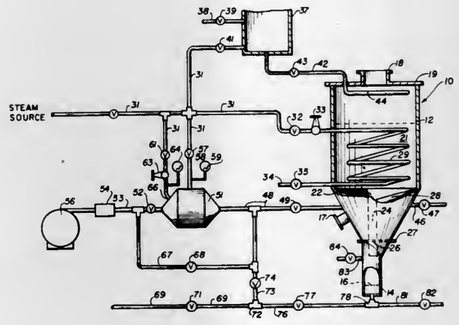


clamping means functions to clamp the tube and further separate the tube with the air suction inlets being inactive and further gripping means movable toward and away from the units being effective to grip the thus separated tube and after inactivation of the clamping means move the tube to a position covering the loaded pallet.

ERRATUM

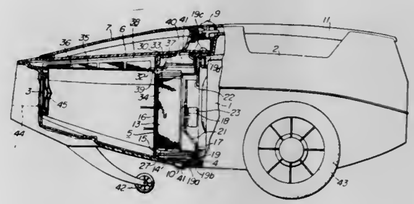
For Class 55—234 see:
Patent No. 3,621,834

3,621,639
DUST FILTER APPARATUS UTILIZING GRANULAR SOLID FILTER MEDIA
Edwin F. Edwards, Whittier, Jun Fukuzawa, Monterey Park, and Robert L. Solnick, Newport Beach, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 26, 1969, Ser. No. 880,040
Int. Cl. B01d *25/06*
U.S. Cl. 55—243 **5 Claims**



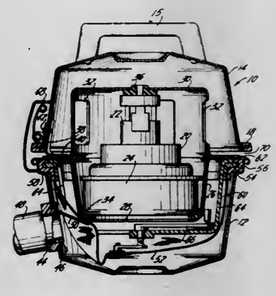
Apparatus for filtering dust from a stream of gaseous medium using granular siliceous filter media with provision for regeneration by means for immersion of media in water with controlled gas flow agitation, followed by means for drying with heated gas flow.

3,621,640
ELECTRIC VACUUM CLEANER
Hiroshi Ohno, Amagasaki-shi, Katuo Sawada, Suita-shi, and Chuzi Takeda and Kenji Okano, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Oct. 8, 1969, Ser. No. 864,686
Claims priority, application Japan, Oct. 14, 1968, 43/76,275, 43/76,276, 43/79,739, (utility model) 43/91,452
Int. Cl. B01d *46/02*
U.S. Cl. 55—300 **11 Claims**



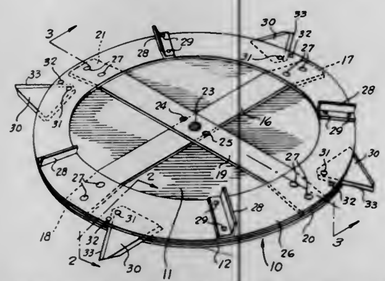
A vacuum cleaner comprising a body housing an electric fan and a dust collecting vessel removably mounted in said body, said dust collecting vessel having a suction port at a front end thereof and a widely open rear end where a dust removing unit composed of a prefilter of rough meshes, a main filter of fine meshes and means for causing vibration of said main filter to shake off dust attached thereto is removably mounted. The dust collecting vessel is further provided with a bypass channel which compensates for a decrease of air flow through said prefilter due to dust accumulation, whereby a large dust collecting capacity is obtained.

3,621,641
ELECTRIC CLEANER
Hisao Takei and Satoru Kato, Gunma Prefecture, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 21, 1969, Ser. No. 878,836
Int. Cl. B01d *46/04*
U.S. Cl. 55—305 **4 Claims**



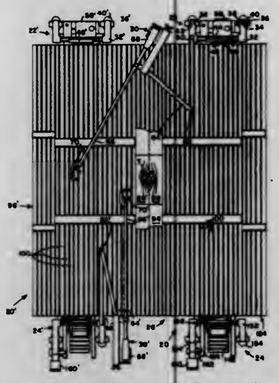
A flexible filter for straining out dirt sucked through rotation of an electric blower is disposed in opposite relationship with a rotatable dusting lever such that one portion of the filter is secured to that end eccentric to the center of rotation of the filter. The filter is rotated to vibrate, expand and contract the filter to remove the dirt stuck to the filter from it.

3,621,642
ROTARY CUTTER HEAD ASSEMBLY FOR LAWN MOWERS
Harry A. Leake, Jr., Rte. 1, Box 143, Shawsville, Va. 24162
Filed Oct. 9, 1970, Ser. No. 79,422
Int. Cl. A01d 55/18
U.S. Cl. 56—295 5 Claims



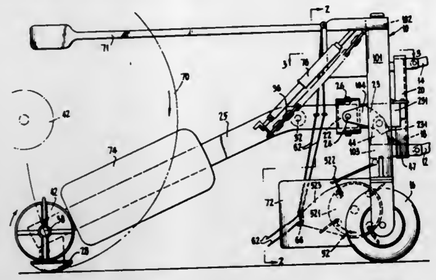
A rotary cutter head assembly for lawn mowers in which a generally flat disk is provided with an integral downwardly sloping annular ring. A pair of crossed bars are arranged perpendicularly to each other and extend radially outwardly to the outer edge of the disk. The bars have downwardly sloping outer end portions contacting the downwardly sloping annular ring on the disk. A downwardly sloping annular ring having a diameter the same as the downwardly sloping annular ring formed on the disk is arranged in spaced parallel relation thereto contacting the upper faces of the bars. The two annular disks are secured together with rivets passing through the ends of the bars. Upstanding air impeller members are secured to the upper surface of the annular disk. A plurality of cutter blades are pivotally mounted between the annular rings for movement to a position between the annular rings when striking an unyielding object. Centrifugal force normally holds the cutter blades in extended position against a stop provided a limit the movement of the cutter blades outwardly while the bars are positioned to serve as a stop to limit the movement of the blades inwardly.

3,621,643
SOFT FRUIT HARVESTER
William A. Gerrans, 15 Florimond Drive, Colusa, Calif. 95932
Filed Feb. 3, 1969, Ser. No. 795,821
Int. Cl. A01g 19/08
U.S. Cl. 56—329 15 Claims



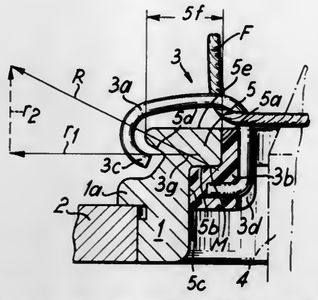
A harvester for peaches or other soft fruits which includes a fruit-catching draper conveyor with fruit-decelerating means thereover supported between two steerable wheel trucks, one of which carries a movable tree shaker, the fruits dislodged by the shaker and dropping onto the draper conveyor being movable away from the tree for subsequent conveyance and deposit in a fruit bin.

3,621,644
ROLL FORMING FODDER HARVESTERS
William Richard Clifford Geary, Flat 4, 18 Kensington Road, South Yarra, 3141 Victoria, Australia
Filed Dec. 7, 1970, Ser. No. 95,685
Int. Cl. A01d 43/06
U.S. Cl. 56—341 10 Claims



The invention relates to roll forming fodder harvesters having a frame adapted for attachment to the linkage of a towing tractor, and including a laterally spaced pair of longitudinally extending side arms which have their forward end portions pivoted to the frame to enable their free rear ends to swing upwardly and downwardly about a transverse axis. The free rear ends of the arms rotatively support transversely extending windrow winding means adapted to progressively roll up a swathe of mown fodder as it lies on the ground thereby to form a roll which rolls along the ground and which progressively raises the side arms as it increases in diameter.

3,621,645
RING AND TRAVELLER FOR RING SPINNING MACHINES AND THE LIKE
Stefan Fürst, Monchen-Gladbach, Germany, assignor to Reiners & Fürst, Monchen-Gladbach, Germany
Filed Jan. 28, 1969, Ser. No. 794,540
Claims priority, application Germany, Feb. 8, 1968, P 16 85 963.5
Int. Cl. D01h 7/52, 7/60
U.S. Cl. 57—119 14 Claims



The ring of a ring and traveller assembly for a ring spinning or twisting machine has an annular and substantially horizontal flange along which the travel path of a generally C-shaped traveller extends. The appertaining traveller has

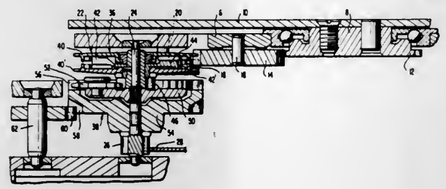
a foot of synthetic plastic engageable with the ring and a thread guiding eye of wear resistant material, such as steel wire, joined with the foot. The main contacting contour of the fot has an angular shape whose upper leg portion extends vertically toward the top of the ring flange. The lower leg of the angular shape extends substantially in a horizontal direction. Preferably the contacting contour has a further substantially vertical portion below the horizontal leg portion.

3,621,646
COMPOSITE FIBRID YARNS AND METHOD OF MANUFACTURE
Emilian Bobkowicz and Andrew John Bobkowicz, both of 1435 St. Alexander St., Room 310, Montreal 111, Quebec, Canada
Filed Nov. 24, 1969, Ser. No. 879,454
Claims priority, application Canada, Sept. 15, 1969, 62,054
Int. Cl. D02g 3/02
U.S. Cl. 57—140 BY 13 Claims



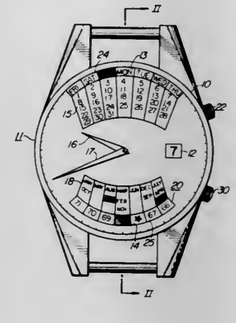
Novel composite yarn is produced which comprises a continuous polymer substrate constituent combined with fibrids which are embedded within the polymer substrate and consolidated therewith; these fibrids generally protrude outwardly from the polymer substrate constituent in the form of filamentous units having an average length of from ⅛ to ½ inch and a fineness of between 0.2 and 1 denier as well as a characteristic specific surface above 2 $m.^2/g.$; they impart to the composite yarn a fibrous surface texture; this novel yarn is produced by a process generally involving extrusion of the polymer substrate and combination as well as consolidation of the extruded substrate with the fibrid units through pressure and cooling.

3,621,647
SELF-WINDING ALARM-WATCH
Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland
Filed Sept. 30, 1969, Ser. No. 862,334
Claims priority, application Switzerland, Oct. 7, 1968, 14,883/68
Int. Cl. G04b 23/12
U.S. Cl. 58—57.5 9 Claims



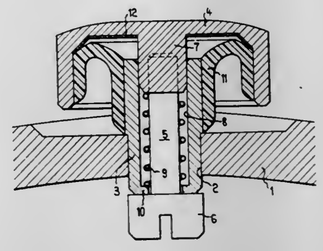
A self-winding alarm-watch including as a source of energy a single barrel, characterized in that the transmission of the self-winding mechanism and the transmission of the alarm-mechanism both consist of a single initial gear-train, going from the barrel ratchet-wheel and ending in a differential gear-system diverting the transmission towards the self-winding mechanism and the alarm-mechanism, respectively, so that they cooperate with the barrel independently of each other.

3,621,648
CALENDAR DEVICE IN WRISTWATCH
Tooru Takagi, Kokubunji, Japan, assignor to Orient Watch Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1970, Ser. No. 78,400
Claims priority, application Japan, Apr. 16, 1970, 45/36,855
Int. Cl. G04b 19/24
U.S. Cl. 58—58 1 Claim



A calendar device in a wristwatch, which is designed to indicate the relationship between the days of the week and the dates in each calendar month for many years.

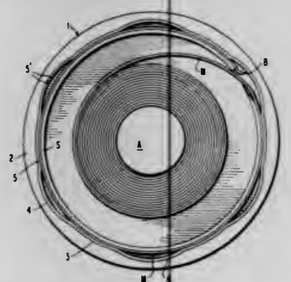
3,621,649
WATERTIGHT CONTROL MEMBER FOR WATCHES
Udrea Vulcan, Le Locle, and Etienne Cart, Bienne, Switzerland, assignors to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland
Filed Dec. 1, 1969, Ser. No. 881,228
Claims priority, application Switzerland, Dec. 18, 1968, 18,852/68
Int. Cl. G04b 37/08
U.S. Cl. 58—90 B 8 Claims



A watertight control member for watches, comprising a gasket which adheres on the one hand to the watchcase or to a part rigidly fixed to the watchcase and, on the other hand, to the movable portion of the control mem-

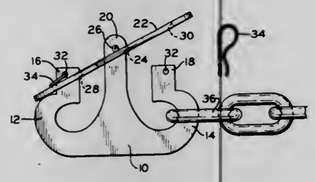
ber, the middle portion of said gasket being susceptible of deformation for permitting the actuation of the control member while continuing the ensure the watertightness.

3,621,650
BARREL FOR A SELF-WINDING TIMEPIECE
Eduard Schnyder and Christoph Bieri, Bienne, Switzerland, assignors to Omega Louis Brandt & Frere S.A., Canton, Bern, Switzerland
Filed Jan. 22, 1969, Ser. No. 792,963
Claims priority, application Switzerland, Jan. 26, 1968, 1,272/68
Int. Cl. G04b *1/18*
U.S. Cl. 58—87 7 Claims



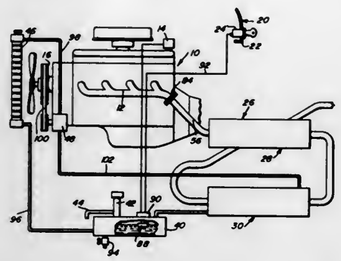
A main spring barrel for a timepiece, particularly a self-winding timepiece, has an inner cylindrical wall to be frictionally engaged by the main spring or a slip spring associated therewith to enable slipping of the main spring relative to the barrel when the main spring is sufficiently wound. The inner surface of the barrel has a hardness substantially equal to that of the main spring or the slip spring and has self-lubricating characteristics. The inner barrel wall or surface is provided with a relatively wide, shallow depression that extends outwardly beyond the cylindrical surface of the inner wall, and constitutes a deterrent to relative movement between the main spring or its slip spring and the inner barrel surface by providing gradually sloping or inclined areas over which the end of the spring, either main or slip spring, must pass.

3,621,651
CONNECTOR FOR CHAIN LINKS
Herman L. Gillespie, Fort Wayne, Ind., assignor to Hide-A-Way-Jax, Inc., Fort Wayne, Ind.
Filed Oct. 7, 1969, Ser. No. 864,481
Int. Cl. F16g *13/00*
U.S. Cl. 59—85 9 Claims



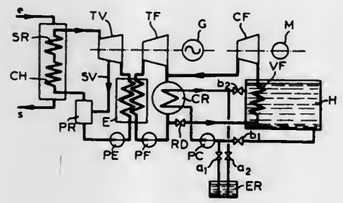
A connector for chains in which a body member is formed, as by stamping, so as to have hooks at the ends opening to the same side of the body member and a projection between the hooks and a keeper moveably captive on the projection. The keeper can be connected to the outer ends of the hooks to confine chain links therein and is releasable from the hooks to permit chain links to be removed from or placed in the hooks.

3,621,652
EXHAUST GAS WASHING APPARATUS
John S. DeMaree, P.O. Box 201, Georgetown, Tex. 78626
Filed July 2, 1970, Ser. No. 51,908
Int. Cl. F01n *3/04*; B01d *47/00*
U.S. Cl. 60—30 3 Claims



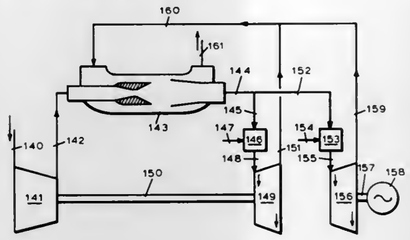
An exhaust gas treatment apparatus including a heat exchanger defining first and second passages extending therethrough in good heat transfer relation and an exhaust gas scrubbing chamber including water jet discharge means for water spray cleansing and cooling of exhaust gases passing through the scrubbing chamber. The exhaust gases to be treated are first passed through the first passage of the heat exchanger, through the scrubbing chamber and thereafter through the second passage of the heat exchanger. The supply of water for the water jet discharge means comprises at least a semi-closed system wherein the sprayed water is collected, cooled and then pumped back through the water jet discharge means.

3,621,653
POWER GENERATION PLANT
Pierre Henri Pacault, Ville d'Avray, and Francis J. Mary, Paris, France, assignors to Babcock-Atlantique Societe Anonyme, Paris, France
Filed Mar. 17, 1969, Ser. No. 807,511
Claims priority, application France, Mar. 25, 1968, 145,151
Int. Cl. F01k *23/00, 23/10*
U.S. Cl. 60—38 17 Claims



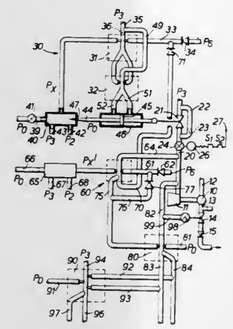
Power generation plant includes a primary steam power generation cycle and a secondary power generation cycle employing a working fluid of low freezing point, the vapourisation of the working fluid being performed by heat exchange with the vapour exhausted from the primary cycle. In addition, the plant includes a refrigerating cycle which is appropriate to lower the temperature at the cold source of the secondary cycle. This refrigerating cycle is intended to be brought into operation during the hours of slack demand for motive power.

3,621,654
REGENERATIVE GAS TURBINE POWER PLANT
Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y. 11210
Continuation-in-part of application Ser. No. 847,779, July 15, 1969. This application June 15, 1970, Ser. No. 45,969
Int. Cl. F02c *7/10*
U.S. Cl. 60—39.15 27 Claims



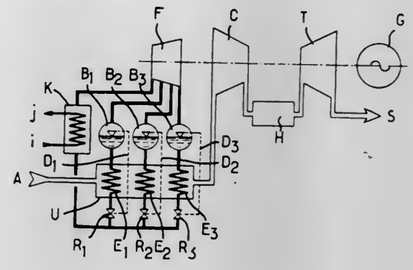
This invention is directed to regenerative Brayton cycle gas turbine power plants of either the internal combustion type or the closed cyclic type wherein the compressed intake fluid stream is pre-heated through contact interchange in parallel flow with hot low-pressure turbine exhaust gases within velocity-accelerated contact-type heat exhangers. This invention is also directed to exhaust-fired gas turbine power plants wherein the compressed intake fluid stream is heated through contact interchange in parallel flow with high-temperature turbine exhaust gases directly following the combustion process within velocity-accelerated contact-type heat exchangers so as to limit both turbine inlet temperatures and the fouling of turbine blade surfaces.

3,621,655
FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE
David J. Hawes, Derbyshire, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England
Filed Mar. 16, 1970, Ser. No. 19,713
Claims priority, application Great Britain, Mar. 27, 1969, 16,164/69
Int. Cl. F02c *9/06, 9/08*
U.S. Cl. 60—39.28 10 Claims



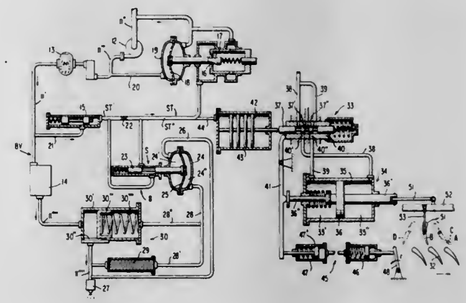
The invention concerns a fuel control system for a gas turbine engine comprising a fuel pump and a closed loop fluid logic system including proportional amplifier means the output of which is connected to control the delivery of the said fuel pump, and the effective input of which is a function of jet pipe pressure and at least one compressor pressure.

3,621,656
GENERATION OF ENERGY IN A GAS CYCLE
Pierre Henri Pacault, Ville d'Avray, and Francis J. Mary, Paris, France, assignors to Babcock-Atlantique Societe Anonyme, Paris, France
Filed Jan. 3, 1969, Ser. No. 788,748
Claims priority, application France, Jan. 10, 1968, 135,423
Int. Cl. F02c *7/14*
U.S. Cl. 60—39.02 7 Claims



Energy is generated in a gas cycle by establishing a refrigeration cycle by mechanical compression of a cold-producing fluid and by lowering the cold source temperature of the gas cycle by heat exchange with the cold-producing fluid. The apparatus provided for this process includes a refrigerating machine for compression of the cold-producing fluid and means for performing a heat exchange between the same and the working fluid.

3,621,657
CONTROL INSTALLATION FOR THE AUTOMATIC ADJUSTMENT OF THE MOVABLE GUIDE BLADES, ESPECIALLY OF THE OUTPUT TURBINE OF A GAS TURBINE DRIVE UNIT
Wilhelm Jurisch, Nellingen-Parksiedlung, and Gerhard Walliser, Waiblingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Sept. 25, 1968, Ser. No. 762,579
Int. Cl. F02c *3/10, 3/24*; F02g *3/00*
U.S. Cl. 60—39.16 24 Claims



A control installation for the automatic adjustment of the movably arranged guide blades, especially of the output turbine, of a gas-turbine drive unit which includes an output turbine mechanically separate from the gas producer and serving, in particular, for the drive of a

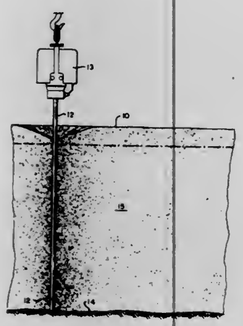
vehicle; the installation includes a system for producing control pressures corresponding to the respective guide blade adjusting program which, in turn, control the actuating mechanism for the guide blades to adjust the same to the predetermined positions; the control system is connected in particular with the fuel supply system of a gas turbine so as to utilize already existing parts.

3,621,658
COMBUSTION PROCESS
John J. Grebe, Sun City, Ariz.
(11604 114th Drive, Youngstown, Ariz. 85363)
No Drawing. Continuation-in-part of application Ser. No. 701,254, Jan. 29, 1968, which is a continuation-in-part of application Ser. No. 584,916, Oct. 6, 1966, which in turn is a continuation-in-part of application Ser. No. 480,519, Aug. 17, 1965. This application June 16, 1969, Ser. No. 833,770
Int. Cl. F23r *1/12*; C06d *5/08*
U.S. Cl. 60—205 4 Claims

This invention is an improvement in the combustion process disclosed in application Ser. No. 701,254 and Pat. No. 3,365,880 which comprise generally controllably introducing separately and sequentially predetermined amounts of a fuel and air or a preblended fuel-air combustion mixture and a mass of a displaceable inert mass, usually a gas, into a combustion zone and utilizing the heat of combustion from rapid combustion of the fuel-air combustion zone during operation with a magnetic field mass.

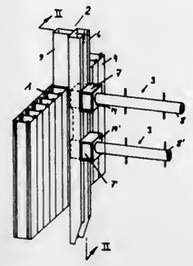
The present improvement comprises encompassing the combustion zone during operation with a magnetic field thereby confining and directing the combustion products toward the exhaust of said combustion zone and simultaneously generating electrical power therein.

3,621,659
METHODS OF SOIL COMPACTION
Robert D. Anderson, Pittsburgh, Pa., Alvin E. Herz, Nutley, N.J., Clabeorn Jones, Dawson, Ga., Harold Strickland, Gretna, La., and William K. Wilson, Mammouth, Ark., assignors to L. B. Foster Company, Pittsburgh, Pa.
Filed July 10, 1969, Ser. No. 840,619
Int. Cl. E02f *1/00*
U.S. Cl. 61—35 7 Claims



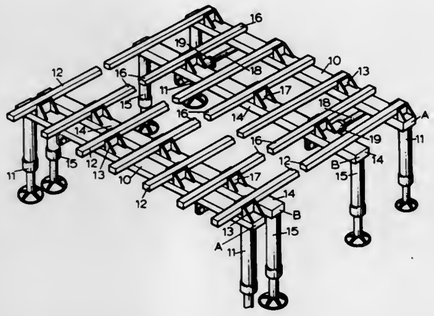
A method of compacting soil is provided using the steps of driving a probe into the soil to be compacted using a vibratory driver and extracting said probe using a vibratory extractor and repeating the same steps at spaced intervals over the area to be compacted.

3,621,660
BUILDING SET FOR THE SHEETING OF SERVICE DITCHES
Josef Krings, 23 Hans Bocklerstrasse, 5138 Oberbruch, Germany
Filed May 11, 1970, Ser. No. 36,112
Claims priority, application Germany, Nov. 8, 1969, P 19 56 337.2
Int. Cl. E02d *5/06*; E21d *5/10*
U.S. Cl. 61—39 10 Claims



This disclosure relates to sheeting for shoring ditches and similar embankments. In lieu of the usual arrangement in wooden timbers, or in the case of permanent sheeting, steel plates, each wall of the sheeting is formed of hollow steel sections joined together with there being disposed at regular intervals guide supports, each of which includes one leg which is receivable in the sheeting and a second leg which projects into the ditch and has received therein shoes of tightening devices. The guide supports are longer than the sheeting and project therebelow so as to provide support for the sheeting and to permit the additional driving of the sheeting as excavation proceeds without releasing the supporting pressure on the sheeting.

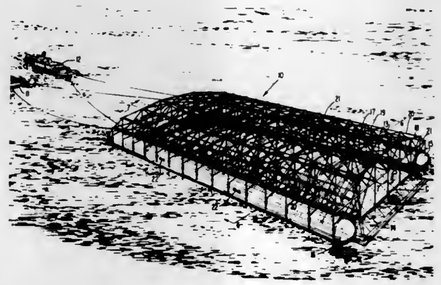
3,621,661
MINE ROOF SUPPORTS
Archelaius D. Allen, Leyland, England, assignor to Gullick Dobson Limited, Wigan, England
Filed Oct. 28, 1969, Ser. No. 871,862
Claims priority, application Great Britain, Nov. 5, 1968, 52,291/68; Aug. 26, 1969, 42,424/69
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D 13 Claims



A mine roof support comprises two units which can be advanced relative to each other. The units have parallel roof beams extending in the direction of advance, those of each unit alternating in the breadth direction with those of the other unit. Each unit comprises two

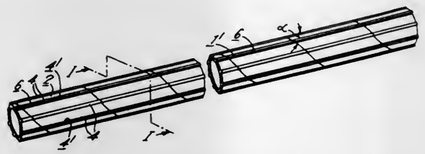
sub-units, each comprising a cross beam and supporting hydraulic legs (the sub-units being connected only by the roof beams of that unit), and can be advanced separately by a ram. The roof beams can have cantilever bars at their leading ends and means for raising permanent roof bars at their trailing ends. An anchor plate can be suspended in cradle-like manner from one unit by means of double acting staker props and be displaceable by means of another double acting ram.

3,621,662
UNDERWATER STORAGE STRUCTURE AND METHOD OF INSTALLATION
Lawrence A. Starr and Joseph W. Roberts, Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.
Filed Sept. 29, 1969, Ser. No. 861,560
Int. Cl. B63b *35/44*; E02b *17/00*
U.S. Cl. 61—46.5 16 Claims



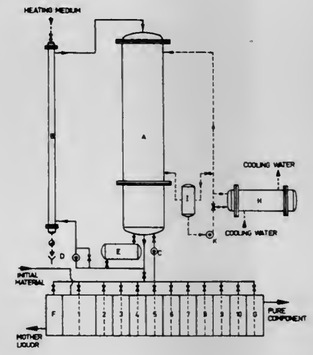
An underwater storage structure, for fluids such as oil which are immiscible with and of lesser specific gravity than water, is capable of being towed to a site and submersed to the floor of the body of water. The storage structure is made of concrete and has a truncated pyramidal shape with the interior of its lower portion in communication with the body of water. A tender frame having tanks for buoyancy and ballasting may be used to install the storage structure on the floor of the body of water. The installation procedure includes positioning the tender frame over the storage structure, tying the tender frame to the storage structure, flooding the storage structure, and ballasting the tender frame to achieve negative buoyancy and to position the storage structure on the floor of the body of water.

3,621,663
RIBBED PILE
Akemasa Otani, 4, 2-chome Asakusa Hashiba-cho, Daito-ku, Tokyo, Japan
Filed Mar. 13, 1969, Ser. No. 806,918
Int. Cl. E02d *5/28*
U.S. Cl. 61—53 4 Claims



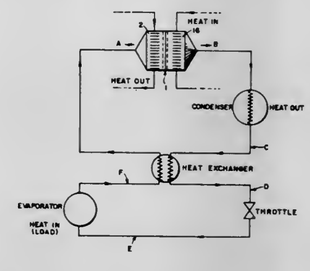
This low-cost, light-weight, high-strength, hollow cylindrical pile having longitudinal ribs is manufactured by rolling an elongated metal plate of predetermined width so as to produce spaced ridges thereon extending at a predetermined angle between lateral edges. The ridged metal plate is spirally wound so that the ridges register to produce longitudinally-extending ribs and the juxtaposed lateral edges are joined, preferably by welding, to form a continuous spiraled joint. When driven into a penetrable medium, the ribs provide directional control and means for joining adjacent piles into a unitary structure.

3,621,664
FRACTIONAL CRYSTALLIZATION PROCESS
Kurt Saxer, Buchs, Switzerland, assignor to Metallwerk Aktiengesellschaft Buchs, Buchs, Switzerland
Filed Apr. 11, 1968, Ser. No. 720,553
Claims priority, application Austria, Apr. 14, 1967, A 3,510/67
Int. Cl. B01d *9/00*
U.S. Cl. 62—58 3 Claims



A single or multiple-step fractional crystallization process and apparatus for separating fluid material having two or more components, the material flowing down a cooled wall surface and a component crystallizing thereon. Each step comprises a single crystallization and all steps of a complete cycle are conducted within a single crystallizer.

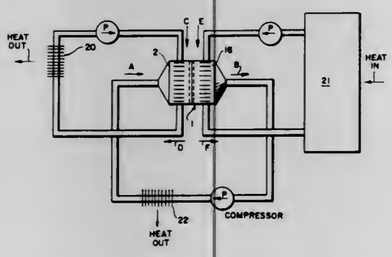
3,621,665
THERMAL PUMP AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to American Gas Association, Arlington, Va.
Filed Nov. 28, 1969, Ser. No. 880,732
Int. Cl. F25b *7/00*
U.S. Cl. 62—79 15 Claims



Thermal pump and process for pumping gases by contacting a gas of relatively low pressure and low temperature with one face of a non-porous permeable membrane

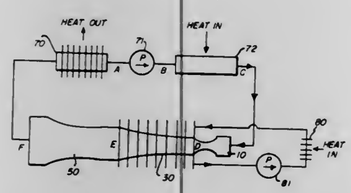
supported on both faces by rigid porous material, passing the gas through the membrane by means of solution therein, evaporating gas from solution in said membrane at the other face of said membrane, the evaporated gas being at a higher temperature and higher pressure than before its passage through the membrane, heat-exchange means being placed on both sides of the membrane.

3,621,666
COOLING APPARATUS AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to American Gas Association, Arlington, Va.
Filed Nov. 28, 1969, Ser. No. 880,733
Int. Cl. F25b *7/00*
U.S. Cl. 62—79 **16 Claims**



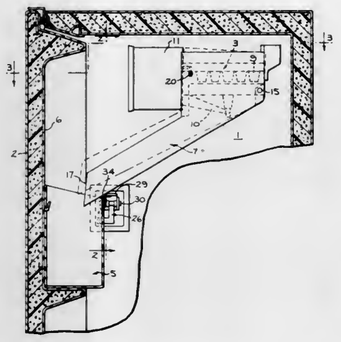
Apparatus and process for cooling by contacting a pressurized, heated gas with one face of a non-porous permeable membrane supported on both faces by rigid porous material, passing the gas through the membrane by means of solution therein, evaporating gas from solution in said membrane at the other face of said membrane, the evaporated gas being at a lower temperature and lower pressure than before its passage through the membrane, heat-exchange means being placed on both sides of the membrane.

3,621,667
COOLING APPARATUS AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to The American Gas Association, Arlington, Va.
Filed Mar. 24, 1969, Ser. No. 809,521
Int. Cl. F25b *1/00*
U.S. Cl. 62—116 **10 Claims**



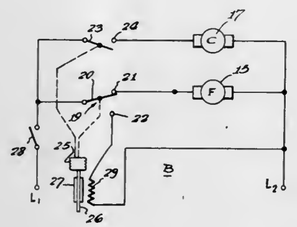
A high efficiency cooling process and apparatus utilizing a closed fluid refrigerant containing loop having a sequential communication; a liquid pump, a liquid heater, an adiabatic nozzle to obtain supersonic dual phase fluid flow and expansion of the fluid refrigerant to evaporation conditions, a dynamic evaporator for supersonic flow and in thermal exchange relationship with a confined volume to be cooled, a diffuser reducing the velocity of the fluid and increasing the pressure of the fluid to condensation conditions, and a thermal exchanger to condense the fluid to a liquid for recycling.

3,621,668
REFRIGERATOR INCLUDING AN AUTOMATIC ICE MAKER AND A DOOR MOUNTED ICE RECEPTACLE
Leo Swerbinsky, Louisville, Ky., assignor to General Electric Company
Filed Dec. 17, 1969, Ser. No. 885,711
Int. Cl. F25c *1/00*
U.S. Cl. 62—137 **6 Claims**



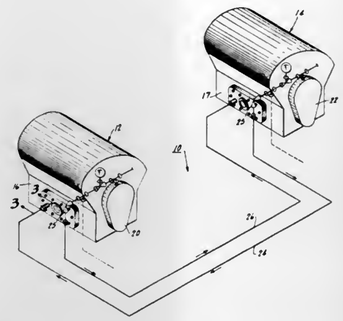
A refrigerator including a freezer compartment containing an automatic ice maker within the compartment and an ice storage receptacle mounted on the freezer compartment door includes a chute for transferring ice pieces from the ice maker to the storage receptable. The chute is pivotally supported and connected to the ice maker operating mechanism to provide a vertical movement of the outlet or receptacle end of the chute which is employed to sense the level of ice in the receptacle and stop operation of the ice maker when the receptacle is filled.

3,621,669
AIR CONDITIONER CONTROL
Duane C. Nichols and Edwin M. Marks, Evansville, Ind., assignors to Whirlpool Corporation
Filed Nov. 3, 1969, Ser. No. 873,448
Int. Cl. F25d *17/00*
U.S. Cl. 62—157 **9 Claims**



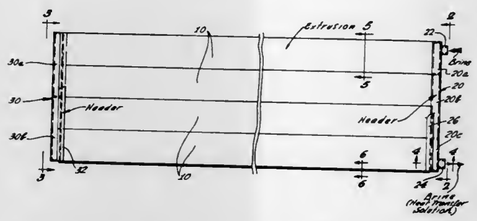
A control for use in an air conditioner or the like wherein means are provided for intermittently energizing the air circulating fan so as to cause the temperature of the air sensed by the control thermostat to correspond more directly to the temperature of the room air. For this purpose a low wattage heater is associated with the thermostat to heat the thermostat or heat the air adjacent the thermostat when the fan is de-energized and thereby cause the temperature sensed by the thermostat to reach a level sufficient to effect the intermittent operation of the fan.

3,621,670
LUBRICATING OIL EQUALIZING SYSTEM
Raymond W. Kinney, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.
Filed Jan. 12, 1970, Ser. No. 2,022
Int. Cl. F25b *31/00*
U.S. Cl. 62—192 **10 Claims**



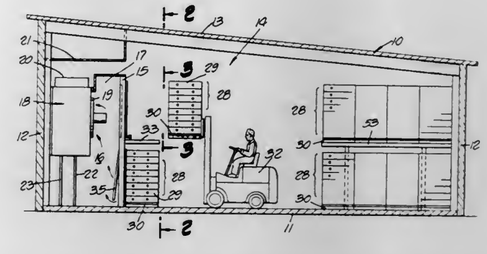
An oil level equalizing system interconnecting the compressor crankcases for a multi-compressor refrigeration system to maintain an equal level of oil in the crankcase of each of the compressors. The oil level control system includes a bypass line connecting the outlet of the lubricating pump on each compressor to the crankcase of an adjoining compressor and a liquid level operated valve responsive to the level of oil in the adjoining crankcase to control the admission of oil from the lubricating pump. The liquid level operated valve can be controlled by a float directly connected to open the valve or by a float switch connected to a solenoid valve located in the bypass line.

3,621,671
PORTABLE ICE SKATING RINK
William R. Ullrich, Van Nuys, Calif., assignor to Beverly Refrigeration Incorporated, Burbank, Calif.
Filed Dec. 15, 1969, Ser. No. 884,984
Int. Cl. A63c *19/10*
U.S. Cl. 62—235 **4 Claims**



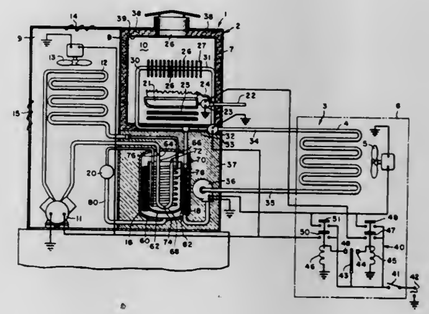
A portable ice skating rink is provided which includes a floor made up of a series of extruded panels placed adjacent one another. Tubular passageways for carrying the heat transfer solution are formed integrally with the extrusion. Appropriate headers are provided at each end of the panels so that the heat transfer solution may be circulated through the passageways in each of the panels and a freezing condition may be created to form ice on the top surface of the panels. Insulation and a bottom protective surface are applied to the underside of the panels to provide a complete ice rink system.

3,621,672
PRESSURE COOLING APPARATUS
Diven Meredith, 87–135 Ave. 56, Thermal, Calif. 92274
Filed June 1, 1970, Ser. No. 41,931
Int. Cl. F25d *27/00*
U.S. Cl. 62—237 **14 Claims**



Apparatus for cooling produce such as fresh vegetables or fruits includes a refrigerated enclosure having a barrier wall provided with a series of groups of openings. The produce is confined in apertured containers stacked on pallets and each is moved by a fork truck into lateral engagement with the barrier wall. The pallets are supported in two tiers. Flexible seals on the barrier wall encompass the openings and engage the apertured containers on one side. A fan causes air to move in a circuit including the apertured containers, the openings in the barrier wall, and through a cooler-humidifier to cool the produce. The proximity of the stack or pallet opens an air valve which otherwise blocks flow of air through the wall openings adjacent the stack.

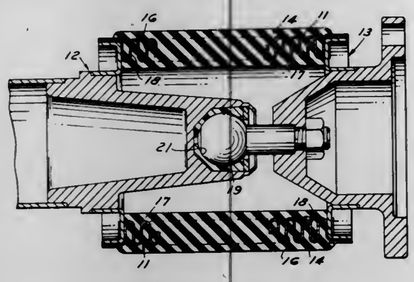
3,621,673
AIR-CONDITIONING SYSTEM WITH COMBINED CHILLER AND ACCUMULATOR
Harry D. Foust, Dakota, Minn., assignor to The Trane Company, La Crosse, Wis.
Filed Dec. 8, 1969, Ser. No. 883,140
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **2 Claims**



An outdoor hydronic heating-cooling unit provides hot and chilled liquid to an indoor fan coil unit. The outdoor unit has a compression cycle refrigeration system for cooling a liquid heat exchange fluid. The heat exchange liquid is cooled by passing it through a finned spiral tube disposed within the refrigeration system suction line accumulator. The outdoor unit also includes a liquid heater

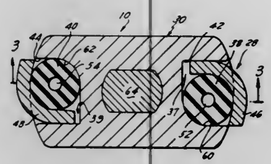
with gas burner. A single pump is used to circulate heat exchange liquid between the indoor fan coil unit and the outdoor heating and cooling unit. The liquid heater is arranged above the chiller-accumulator within a single enclosure.

3,621,674
REINFORCED BELLOWS UNIVERSAL JOINT
George Ulics, Plymouth, and Donald G. Wheatley, Orchard Lake, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 26, 1969, Ser. No. 861,329
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 B 6 Claims



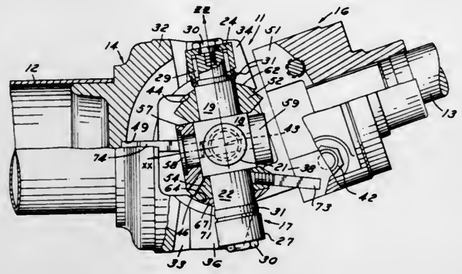
A universal joint assembly including a flexible, cylindrical torque transfer bellows which is reinforced by an elastomeric stiffener material received within the bellows grooves. The elastomeric material increases the torque capacity of the bellows by reducing torsional windup under high torque loads.

3,621,675
FLEXIBLE COUPLING DEVICE
Daniel J. Conaghan, Franklin, Robert W. Matthews, Norwood, and Brendon V. Tully, Dracut, Mass., assignors to Holtzer-Cabot Corporation, Boston, Mass.
Filed Apr. 13, 1970, Ser. No. 27,813
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 7 Claims



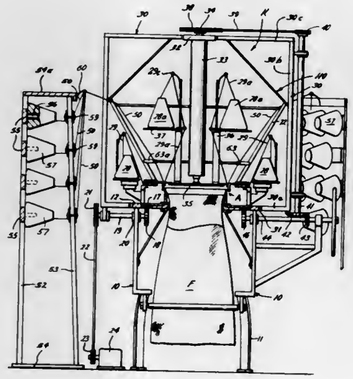
A coupling device comprises a driving member having a driving part extending outwardly therefrom, a driven member having a receiving section, and a resilient member such as an elongated tube positioned in the receiving section and engaged by the driving part of the driving member. When moving between first and second positions, the driving part compresses the resilient member and forces it against the driven member. The resilient member is composed of a compressible but sturdy material such as neoprene and is effective to transmit the driving force to the driven member, causing the driven member to also move. When the driven member reaches its seated or second position it is positively stopped. The driving member continues to move to reach its second position, compressing the resilient member. The driven member is thus resiliently held in its second position, wear of the second member and/or its seat is compensated for by expansion of the resilient member, and the driving member overtravel positively ensures actuation of external limit stops or the like.

3,621,676
CONSTANT VELOCITY TYPE UNIVERSAL JOINT
Moses Shachter, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 29, 1969, Ser. No. 888,280
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 6 Claims



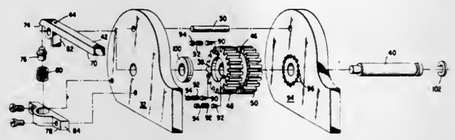
A constant velocity type universal joint having a driving yoke, a driven yoke and a torque transmitting intermediate cross assembly. The cross assembly includes gear means having sliding contacts with the yokes which function to maintain the cross member in a plane forming an angle with the bisecting plane equal to one-half the acute joint angle.

3,621,677
APPARATUS FOR PRODUCING A KNITTED FABRIC INCLUDING INTERLACED INSERT ELEMENTS
Ronald H. Marks and Lawrence R. Goodman, Dallas, Tex., assignors to Enterprise Incorporated, Dallas, Tex.
Filed Aug. 6, 1969, Ser. No. 847,982
Int. Cl. D04b *9/16*
U.S. Cl. 66—9 R 9 Claims



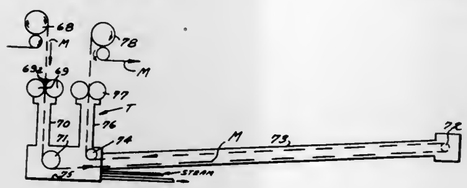
The invention relates to an apparatus for producing a fabric in which knitted yarn or yarn-like elements have a plurality of insert elements interengaged or interlaced therewith; said apparatus having an improved guide means which positively guides the insert elements and maintains them in proper relationship to the courses of fabric as said courses are being knitted. The apparatus also includes an improved actuating and control means for actuating and controlling movement of the guide means, which actuating and control means is disposed exteriorly of the knitting needles of the knitting machine whereby a maximum number of insert elements in relationship to knitting machine size may be inserted and also whereby the central area or interior of said knitting machine is made more accessible.

3,621,678
STRIPING BOX FOR CIRCULAR KNITTING MACHINES
Lester Mishcon, Miami Beach, and Paul M. Wolford, North Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.
Filed Apr. 9, 1970, Ser. No. 26,999
Int. Cl. D04b *15/58*
U.S. Cl. 66—138 2 Claims



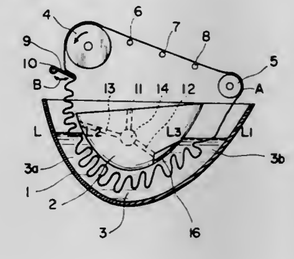
A striping box is compactly constructed in an improved manner to economize on the space required for such device on a kniting machine, and to provide for accurate positioning of the striping box drum as well as the maintenance of such drum in positively defined positions for periods of time.

3,621,679
CONTINUOUS LIQUID TREATMENT OF TEXTILE MATERIALS
James E. Greer, Box B2, Greensboro, N.C. 27402
Application Mar. 6, 1968, Ser. No. 716,256, which is a continuation-in-part of application Ser. No. 292,389, July 2, 1963. Divided and this application Oct. 31, 1969, Ser. No. 870,826
Int. Cl. D06c *1/00*
U.S. Cl. 68—5 E 11 Claims



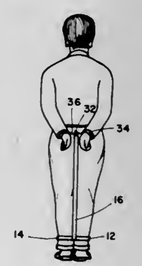
There is provided an apparatus for wet-heat treating a textile material while maintaining the textile material in a stretched, completely restrained condition. The apparatus comprises a treating vessel having an inlet and outlet for the textile material, means for introducing steam into the treating vessel and pressure sealing means for sealing the inlet and outlet to maintain an atmospheric pressure of up to 3 atmospheres within the treating vessel, while permitting the continuous passage of the textile material therethrough. Inlet restraining means are positioned exteriorily of the treating vessel and adjacent the inlet, for restraining the textile material passing into and through the treating vessel. Outlet restraining means are positioned exteriorly of the treating vessel and adjacent the outlet, for restraining the textile material passing out of the treating vessel. The outlet restraining means is adapted to operate at a greater speed than the inlet restraining means to accomplish a 2–5% elongation of the textile material. A plurality of interior restraining means are positioned within the treating vessel for maintaing the textile material in a completely restrained and elongated condition during treatment in the treating vessel.

3,621,680
METHOD FOR TREATING KNITTED OR WOVEN BROAD MATERIAL WITH LIQUID AND AN APPARATUS THEREFOR
Masao Masuda, 80, 2-chome, Shimoyama-ku, Nagoya, Japan
Filed May 23, 1969, Ser. No. 827,335
Claims priority, application Japan, May 29, 1968, 43/36,059
Int. Cl. B05c *3/02*
U.S. Cl. 68—177 3 Claims



Satisfactory treatment, with a circulating liquid, of broad fabrics, such as jersey, taffeta and carpet, is effected by circulating unidirectionally such a fabric through a U-shaped passageway formed by an outer vessel of a concave cross sectional configuration and by an inner assembly of a convex cross sectional configuration, of a treating apparatus, while only longitudinally folding the fabric as it enters in said passageway.

3,621,681
LEG IRON ARTICLE
Steve F. Mikesic, 1196 Herberich Ave., Akron, Ohio 44301
Filed Mar. 5, 1970, Ser. No. 16,760
Int. Cl. E05b *75/00*
U.S. Cl. 70—16 6 Claims



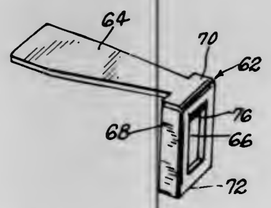
A leg iron article for use by a law enforcement officer in restraining a prisoner. The leg iron article consists of a pair of generally C-shaped clips which are secured at one end to a bar and which are adapted to be snapped around the legs of a prisoner. A handle is hinged to the rear end of the bar for controlling the position movement of the clips and it has a ring at its upper end through

which may be passed a connecting link of a pair of handcuffs. A second embodiment is also shown which may be used to restrain two prisoners simultaneously. This embodiment has a central bar having a handle and leg encircling clips attached to opposite sides of the point of attachment of the first clip to the central bar. The legs of the first prisoner are retained by the clips on one side of the central bar while those of the second prisoner are retained by the clips on the opposite side of the bar.

3,621,682
LOCK MECHANISMS FOR SWITCHES OR THE LIKE

Fred N. Schmidt, Mukwonago, Wis., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed Nov. 17, 1969, Ser. No. 877,285
Int. Cl. E05b 15/14, 29/02
U.S. Cl. 70—364 R 9 Claims

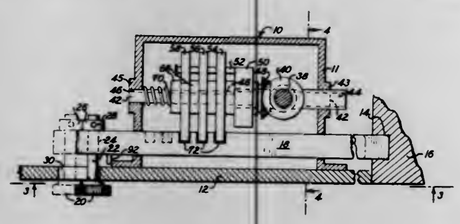


Each of the illustrated lock mechanisms comprises a lock barrel or casing having an opening therein for receiving a lock cylinder which is formed with a longitudinal key slot. A combined spring and locking member is mounted in the lock cylinder. In one embodiment, the spring and the lock member are made in one piece from sheet metal. The spring is in the form of a slender spring arm. The locking member is formed with an aperture for receiving the key. The locking member has a key engaging portion at one end of the aperture. A second portion is formed at the other end of the aperture and is adapted to be moved by the spring into a lock recess in the barrel. When a key is inserted, the second portion is moved out of the lock recess so that the cylinder can be turned. In a second embodiment, the spring and the locking member are formed in one piece from wire. The spring is preferably U-shaped. The key engaging portion of the locking member is preferably in the form of a finger bent laterally therefrom. The second portion of the locking member preferably comprises a U-shaped bend formed therein.

3,621,683
COMBINATION LOCK

Max Mann, 80 Haddenfield Road, Clifton, N.J. 07013

Filed Nov. 7, 1969, Ser. No. 874,913
Int. Cl. E05b 37/02, 65/52
U.S. Cl. 70—70 18 Claims

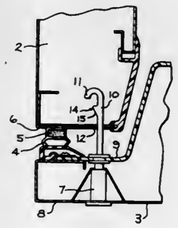


A combination lock in which the locking means comprising several slotted and grooved discs cooperate with a latching means mounted for sliding movement in the grooves in unlatched position, and being gripped by the discs rotatable through notches in the latching means in locked position, the entire assembly being slidable axially upon a shaft to disconnect it from driving engagement with an operating dial, the discs responsive to movement of an operating dial through a control pin are alignable to free the latching bar by movement of the pin, aligning each in forward and reverse movement of the dial, the slidable locking means being disengageable from the operating dial for movement to different combinations.

3,621,684
CHILD SAFE FREEZER

Julius B. Horvay and Bernard J. Grimm, Louisville, Ky., assignors to General Electric Company

Filed Feb. 9, 1970, Ser. No. 9,860
Int. Cl. E05b 65/06; E05c 17/12
U.S. Cl. 70—93 3 Claims

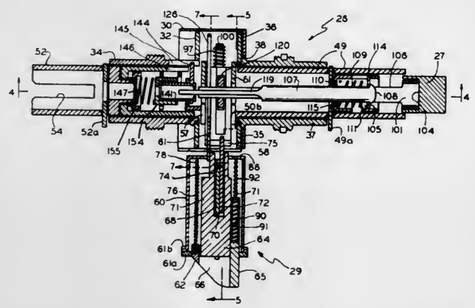


A freezer cabinet including magnetic latching means for normally maintaining the freezer door in a closed position and locking means adapted to permit partial opening of the locked door to provide ventilation of the cabinet interior while preventing access to the contents of the cabinet. Means may also be provided for holding the locked door in the partially open position. An alarm device can also be employed to indicate that the locked door is partially open.

3,621,685
CYLINDRICAL LOCK

Thomas J. Sargent, 106 Alder St., Liverpool, N.Y. 13088

Filed Oct. 1, 1969, Ser. No. 862,772
Int. Cl. E05b 59/04; E05c 9/12
U.S. Cl. 70—107 12 Claims

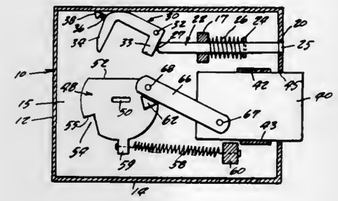


A cylindrical lock having a deadbolt and a guarded latchbolt, the deadbolt being actuated by turn button means on the inside and key means on the outside. The deadbolt projects a substantial distance beyond the latchbolt when both are in fully projected position providing an added safety feature. Also provided are a pick-proof cylinder unit and a spinning knob arrangement for frustrating entry by forcing the outside knob.

3,621,686
AUTOMATIC BOLT LOCK

John N. Klein, New Britain, Conn. (58 Wildwood Road, Wethersfield, Conn. 06109)

Filed May 1, 1970, Ser. No. 33,558
Int. Cl. E05b 15/04, 63/20
U.S. Cl. 70—157 11 Claims

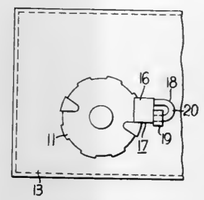


A lock housing on a door having a sliding spring pressed striker bar projectable through an opening in the outer edge of the housing and movable inwardly by the door post when the door is closed. Rearwardly of the striking bar within the lock housing is a pivoted sear having spaced depending forward and rearward arms. The forward arm is adjacent the inner end of the striking bar and is engaged thereby when the latter is depressed. The rearward arm engages a rotatable cam and functions to prevent rotation thereof. The cam is fitted to a key slit and can be rotated by turning of the key inserted into the key slot. A spring member within the lock housing acts on the cam to rotate the same counterclockwise. A slidable lock bolt within the lock housing is projectable through the same edge of the lock housing and a link is pivotally connected at its ends to the cam and the lock bolt. Inward depression of the striker bar when the door is closed will activate the sear such that its rearward arm will disengage from the cam allowing the spring member to rotate the same counterclockwise wherein such movement will through the connecting link cause the lock bolt to move outwardly of the lock housing into locking engagement with the door frame. A spring engages the sear to hold its rearward arm in locking connection to the cam when the lock is open and a stop means on the cam functions to limit rotation of the cam when the lock bolt is wholly projected outwardly in its locked position.

3,621,687
PADLOCK INSTALLATION

Gerald L. Granda, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 6, 1970, Ser. No. 34,977
Int. Cl. B65d 55/14; E05b 65/02
U.S. Cl. 70—164 4 Claims

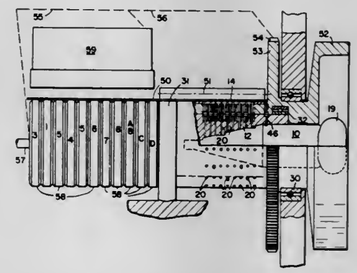


The body of the padlock is used as a blocking member to prevent the opening of a closure, thus denying unauthorized access to an enclosure. The padlock can be secured to a support adjacent the closure in one locked position in which the body of the padlock prevents the closure from being opened and can be secured to the support in a second locked position in which the closure can be opened. The second position is a storage position for the padlock pending subsequent locking use.

3,621,688
MECHANICAL CODE SETTING DEVICE

Romeal F. Asmar, 1837 Andrea Lane, Concord, Calif. 94520, and Henry Janoski, Concord, Calif.; said Janoski assignor to said Asmar

Filed July 13, 1970, Ser. No. 54,517
Int. Cl. E05b 19/02, 27/06, 39/04
U.S. Cl. 70—352 10 Claims

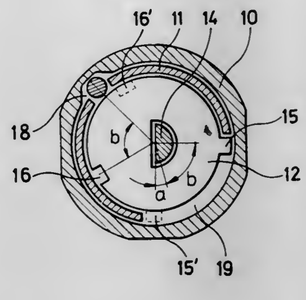


A mechanical code setting device is disclosed comprising a core provided with a recess having a cross section which decreases from the surface of the core to the bottom of the recess, pin tumblers extending through passageways in the wall of the core and projecting into the recess, a key having a patterned outer surface of the same general configuration as the recess which contacts the inner ends of the pin tumblers when inserted in the recess to cause the outer ends of the pin tumblers to terminate at points with respect to the outer surface of the core in accordance with the pattern on the outer surface of the key and means for sensing such termination points. A preferred embodiment of the device is described and various applications and modifications are disclosed.

3,621,689
CYLINDER LOCK OPERABLE WITH TWO KEYS

Reino Koskinen and Kaarlo Henrik Solitanner, Helsinki, Finland, assignors to Oy Wartsila AB, Helsinki, Finland

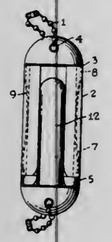
Filed May 26, 1969, Ser. No. 827,831
Claims priority, application Finland, May 25, 1968, 1,467/68
Int. Cl. E05b 25/00, 29/02
U.S. Cl. 70—366 8 Claims



A cylinder lock is disclosed with turnable locking disks and operable with two different keys. One key can be

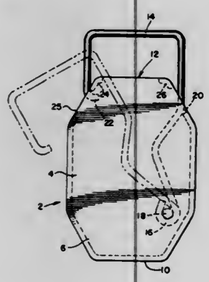
used to operate the lock clockwise only and the other key to operate the lock counterclockwise only. The function of the lock is based on the principle that the locking disks can move within a limited angle with respect to the cylinder of the lock, that is between two end positions, and that the one key starts its operation movement with the locking disks in one end position and the other key with the locking disks in the opposite end position.

3,621,690
KEY RETAINER
George E. Whitcomb, 5464 Hill and Dale Drive, Cincinnati, Ohio 45213
Filed Apr. 15, 1970, Ser. No. 28,750
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R 7 Claims



A two piece key retainer or the like held together by magnetic attraction and mechanical friction.

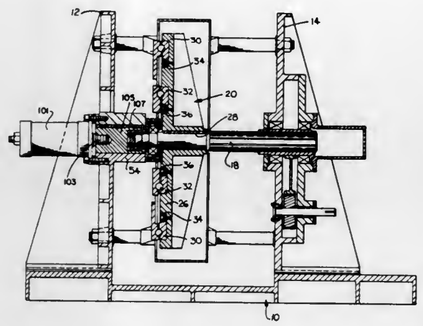
3,621,691
KEYHOLDER
Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60613
Filed Apr. 20, 1970, Ser. No. 29,794
Int. Cl. A44b *15/00*
U.S. Cl. 70—459 10 Claims



An easily fabricated, low cost keyholder especially useful as a promotional, give-away item comprising a plastic body housing, a loop wire key retainer pivotally mounted therein and being capable of being positioned into the open or locked position by simple pivotal movement.

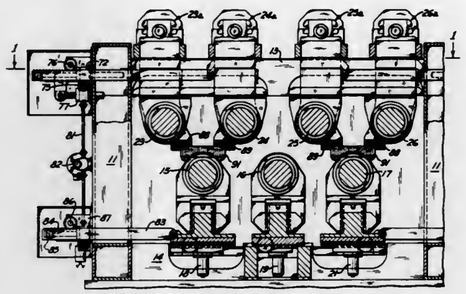
3,621,692
APPARATUS FOR SHAPING AND SIZING BALLS
Wayne B. Weed, Independence, Mo., assignor to Armco Steel Corporation, Middletown, Ohio
Filed June 12, 1969, Ser. No. 832,591
Int. Cl. B21h *1/14*
U.S. Cl. 72—93 21 Claims

A machine having a rotating die and a segmented stationary die defining therebetween a circular die passage so that when a ball is delivered to the die passage, movement of the rotating die will cause the ball to spiral



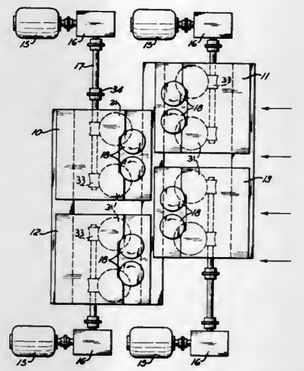
through the circular die passage and discharge from the machine.

3,621,693
STRAIGHTENING MACHINE FOR STRUCTURAL WORKPIECES
Paul Frederick Adams, Carnegie, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Aug. 8, 1969, Ser. No. 848,548
Int. Cl. B21d *1/02*
U.S. Cl. 72—164 5 Claims



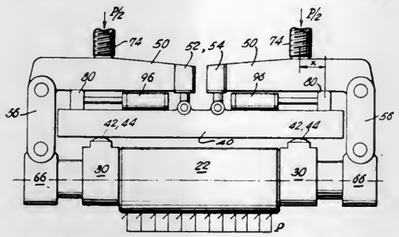
The disclosure relates to a straightening machine wherein there is provided a number of independent roller assemblies so arranged that they form sets of three rollers between which the product to be straightened is fed. Each roller assembly is provided with a frame and with reference to the upper assemblies, there is provided a gear driving arrangement for the rollers thereof. Each gear driving arrangement is constructed as a unitary assembly adapted to be quickly removed from and inserted into the frames as a unit. Positioning means are provided for the individual roller assemblies, which means allow the assemblies to be moved parallel to the pass line without disturbing their predetermined spaced relationship. Also disclosed is a locking means for maintaining the roller assemblies in their predetermined spaced relationship after it has been established. There is disclosed, in addition, a pressure take-up mechanism associated with each frame of the upper roller assemblies for eliminating any clearance between the frames and the housing.

3,621,694
ROLLING MILL
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Apr. 20, 1970, Ser. No. 29,976
Claims priority, application Great Britain, May 5, 1969, 22,853/69
Int. Cl. B21b *31/32*
U.S. Cl. 72—226 12 Claims



This invention relates to a rolling mill and, for the purpose of description, to a vertical mill of the type employed as an integral part of a continuous casting plant.

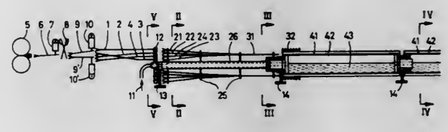
3,621,695
ROLLING MILL CROWN PREVENTION AND CONTROL MEANS
Werner W. Eibe, McCandless Township, Allegheny County, and Paul E. Huzyak, Pittsburgh, Pa., assignors to Blaw-Knox Company, Pittsburgh, Pa.
Filed Oct. 24, 1968, Ser. No. 770,358
Int. Cl. B21b *31/00*
U.S. Cl. 72—237 14 Claims



A rolling mill having means utilizing the rolling load to control the crown of the rolls. A beam in conjunction with associated structure is arranged to receive the rolling load and direct it to the outboard bearings of the backup rolls so as to control the crown of the rolls, the arrangement being such that no crown controlling load is applied to the mill housing.

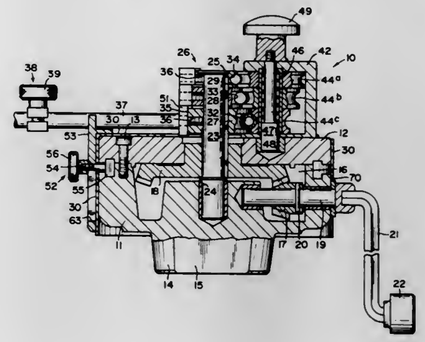
3,621,696
DEVICE FOR TRANSFERRING ROLLED MATERIAL FROM A ROLLING MILL TO A COOLING BED
Sven Erik Malte Norlindh, Morgardshammar, Sweden, assignor to Morgardshammar Aktiebolag, Morgardshammar, Sweden
Filed Aug. 21, 1969, Ser. No. 851,908
Claims priority, application Sweden, Aug. 27, 1968, 11,490/68
Int. Cl. B21b *39/00, 43/00, 43/08*
U.S. Cl. 72—201 3 Claims

This invention relates to a device for the transferring of rolled hot material from a shearing device after a finishing roll stand to a cooling bed. Two or several tubular guides are arranged after the shearing device in order to receive the cut bar sections, which via a change over device are directed to longitudinal guides and then directed to a device where the bar sections are retarded and then fall down onto the cooling bed. The present invention resides in that the longitudinal guides comprise rotatably arranged sets of longitudinal tubular guides, each



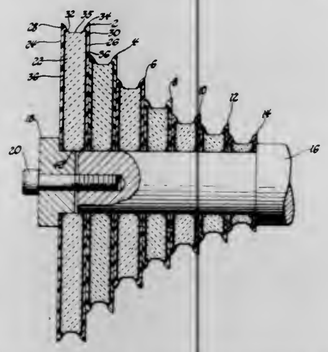
set containing guides placed at different distances (R1, R2, R3 and R4) from the axis of rotation and that these guides within each set converge to one and the same distance (R5) from the axis of rotation and that the bars from there are further guided to subsequent drum sections between outer guides arranged on these sections in a longitudinal direction where the cut bar sections are retarded and then fall down onto a cooling bed.

3,621,697
TUBE BENDING TOOL
Robert S. Martinko, Chagrin Falls, Ohio, assignor to Crawford Fitting Company, Solon, Ohio
Filed June 16, 1969, Ser. No. 833,415
Int. Cl. B21d *7/02*
U.S. Cl. 72—219 7 Claims



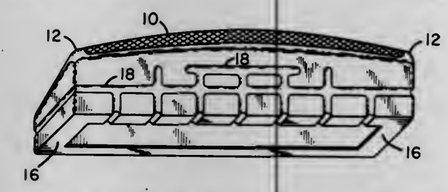
Disclosed is a hand operated tube bending tool of the type wherein a bend is placed in a tube by rotating the tube end about a forming roll or mandrel. The tube bending tool of this invention is provided with a forming roll means having a plurality of substantially circular mandrels concentrically arranged on a shaft. Each of the mandrels has a diameter different from the diameter of the other of the mandrels with a substantially peripheral groove formed in each of the mandrels. A second shaft is provided on the tool with a plurality of idler rollers thereon, each roller disposed substantially adjacent one of the mandrels. A cover is adjustably carried on the tool in such a manner as to be adjusted vertically whereby the upper surface of the cover may be aligned with a particular mandrel and idler roller such that the tube bending tool may be used to place bends in tubing of various diameters without the necessity of replacing the mandrel and the idler rollers.

3,621,698
COMPOSITE CAPSTAN ASSEMBLY
Anthony J. La Rocco, Arvada, Robert M. Smith, Evergreen, and Frank C. Miner, Englewood, Colo., assignors to Coors Porcelain Company, Golden, Colo.
Filed Apr. 30, 1970, Ser. No. 33,236
Int. Cl. B21c *1/02*
U.S. Cl. 72—289 9 Claims



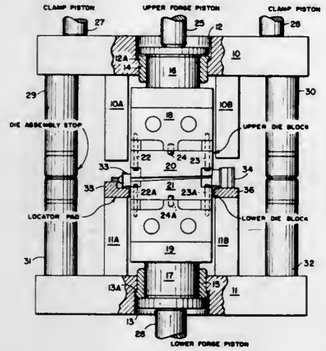
A capstan comprising a ceramic ring having bonded to each of the side walls thereof a ring of another material having a greater crack resistance than that of the ceramic ring and having a greater outside diameter than that of the ceramic ring such that the rings of other material provide radially outwardly extending annular flanges on each side of the ceramic ring, at least the inner surface of each of the rings of other material being an organic resin and the side walls of the ceramic ring preferably having a thin layer of metal thereon to increase the bond strengthen between the ceramic ring and the rings of other material. In the preferred embodiment the rings of other material are formed entirely of organic resin and the metal layer on the side walls of the ceramic ring is titanium. An assembly of such composite capstans of decreasing diameter provides a stepped-cone draw block for wire drawing which has optimum wear resistance along with optimum resistance to breakage and yet which can be manufactured simply and at low cost.

3,621,699
METHODS AND APPARATUS FOR MANUFACTURING SHADOW MASKS FOR COLORED TELEVISION TUBES
John G. Valek, La Grange Park, and Myron C. Kirchner, Itasca, Ill., assignors to Tubal Industries, Inc., Elk Grove Village, Ill.
Filed July 15, 1969, Ser. No. 841,805
Int. Cl. B21d *11/04, 22/00, 51/00*
U.S. Cl. 72—306 11 Claims



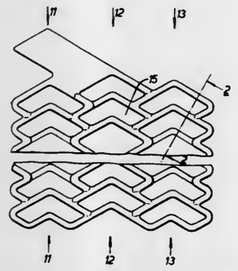
A manufacturing method and apparatus for forming the edges of a shadow mask into a self-supporting structure in which all portions of the shadow mask are firmly supported while they are being shaped so as to avoid destruction or distortion of the perforated section of the mask. Nine internal supporting blocks and dies are positioned by a rotary cam and an air cylinder to support the inside concave surface of the shadow mask while eight dies are brought in from the exterior of the mask to form the edges into a self-supporting flanged and ribbed structure.

3,621,700
STRAIGHTENING OF GUIDE VANES
Richard L. Wachtell, Tuxedo Park, N.Y. 10987, and Edward C. Palmenberg, 72 Briar Road, Nanuet, N.Y. 10954
Filed Mar. 9, 1970, Ser. No. 17,689
Int. Cl. B21k *3/04*
U.S. Cl. 72—309 8 Claims



A method and apparatus are disclosed for restoring distorted guide vanes to their original shape for proper location and performance in a final vane assembly. A heated airfoil section having locating buttresses at opposite ends thereof is clamped under pressure between a pair of heated dies having contoured working surfaces defining the desired airfoil shape, with the buttresses of the vane extending freely outside the dies. The pressure is maintaind on the airfoil until it has conformed to the configuration defined by the dies and, while maintaining the pressure on the airfoil, the freely extending buttresses are then oriented relative to the airfoil section to the correct attitude required for proper location of the vane in the final vane assembly.

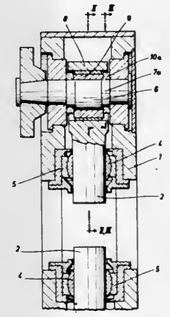
3,621,701
MANUFACTURE OF GRIDS FOR THE PLATES OF ELECTRIC STORAGE BATTERIES
James Arthur Evans and Norman Shanks, Manchester, Lancashire, England, assignors to Electric Power Storage Limited, Manchester, Lancashire, England
Filed Aug. 19, 1969, Ser. No. 851,345
Claims priority, application Great Britain, Aug. 27, 1968, 40,945/68
Int. Cl. H01m *35/10, 35/22*
U.S. Cl. 72—364 7 Claims



In rolling a grid for an electric storage battery plate from a sheet of lead, dispersion strengthened lead, or lead alloy, the rollers are grooved so as to produce a grid

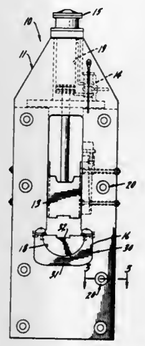
of lattice-like pattern of interconnected bars or ribs comprising predominantly junctions from which only three bars radiate, the direction of rolling being such that at each such junction only one bar extends towards the junction but two bars diverge from it in the direction of rolling. The preferred pattern comprises rows of obtuse angled V portions each having the outer ends of its limbs joined to intermediate points in the limbs of adjacent V portions in an adjacent row.

3,621,702
CONTINUOUS SWAGING APPARATUS
Bruno Kralowetz, Weinleiten 142, St. Ulrich, Steyr, Austria
Filed Feb. 10, 1970, Ser. No. 10,237
Claims priority, application Austria, Feb. 25, 1969, A 1,866/69
Int. Cl. B21j *7/14*
U.S. Cl. 72—429 3 Claims



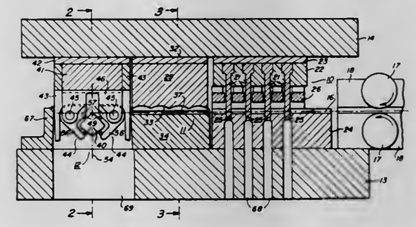
A continuous swaging apparatus provided with at least two hammers, each generally located radial with respect to the workpiece, and actuated in a reciprocating, oscillating motion to swage, and also feed the continuous workpiece. The feed movement of the workpiece can be of a specific requirement independently of the hammer blow requirements. This is accomplished by actuating the reciprocating motion of the hammers and the oscillation motion of the hammers by two different eccentrics.

3,621,703
LAMINATED STEAM HAMMER FRAME
Arthur H. Swift, Worcester, Mass., assignor to Wyman-Gordon Company, Worcester, Mass.
Filed June 12, 1969, Ser. No. 832,799
Int. Cl. B21j *7/02*
U.S. Cl. 72—455 7 Claims



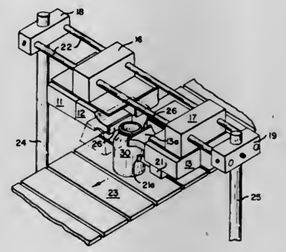
There is disclosed a hammer wherein the frame of the hammer comprises a series of substantially identical plates laminated together so that the frame is unitary in vertical extension and wherein the plates are joined together and connected by tie bolts. The tie bolt comprises a bolt, necked down between its ends wherein a split resilient sleeve encircles the bolt and encircling the split rubber sleeve in turn is a second split sleeve. Nuts are engaged on the end portion of the bolt and when turned tightly onto the end of the bolt the resilient sleeve is compressed, causing the steel sleeve to expand, thus tying the entire laminated frame together. The frame further comprises a shaped seat in the laminated frame to house a sow-block which may be segmentally cylindrical or modified segmentally cylindrical in shape and which is anchored to the frame by locking members.

3,621,704
BENDING APPARATUS
Charles W. Schaeffer, Lebanon, Pa., assignor to Bethlehem Steel Corporation
Filed June 17, 1969, Ser. No. 834,003
Int. Cl. B21d *9/05, 28/00*
U.S. Cl. 72—339 5 Claims



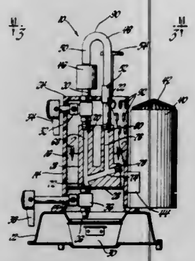
Apparatus for making a product, such as an expansion shell, from a strip of metal includes a station for shearing notches along one side of the strip to form the leaves of a shell and a station to shear a blank, including a number of the leaves, from the strip and to bend the blank about a mandrel by means of a pair of pivotally mounted dies.

3,621,705
METHODS AND APPARATUS FOR TESTING GLASSWARE
John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation
Continuation-in-part of application Ser. No. 749,533, Aug. 1, 1968. This application Aug. 10, 1970, Ser. No. 62,259
Int. Cl. G01n *3/32, 3/38*
U.S. Cl. 73—12 3 Claims



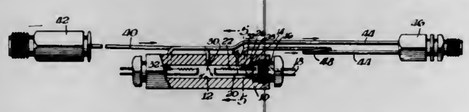
A method of detecting articles containing defects such as hair line cracks, fire checks comprises impacting the glassware against a source of vibration. An apparatus is provided having an ultrasonic transducer and means adapted to impact an article to be tested against a source of vibration.

3,621,706
FLUID VAPORIZATION TESTER AND METHOD
Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 2, 1969, Ser. No. 838,514
Int. Cl. G01n 25/02
U.S. Cl. 73—17 A 6 Claims



A visual fluid vaporization indicator in which a sample of the fluid is placed in a boiler and heated to cause a percolating action. A fluid column surges through the visual indicator tube at the vaporization temperature of the fluid. This temperature is measured and is considered to be the boiling point of the fluid sample.

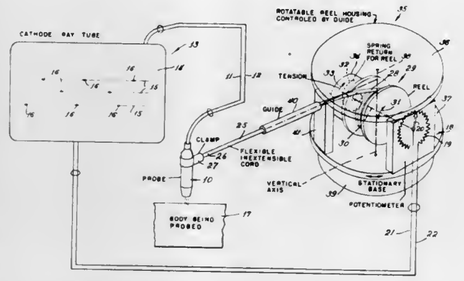
3,621,707
THERMAL CONDUCTIVITY DETECTOR ASSEMBLY
Richard H. Kolloff, West Chester, Pa., Herbert L. Greenhaus, Burlington, Vt., and Richard A. Arms, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed July 8, 1969, Ser. No. 839,834
Int. Cl. G01n 27/18
U.S. Cl. 73—27 1 Claim



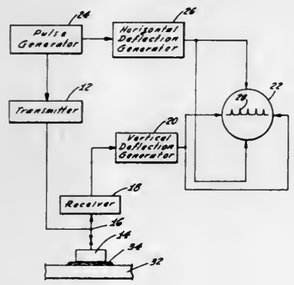
A pair of separate thermal conductivity detector cells, each containing two detecting elements, are clamped between two mating housing halves which provide a large heat sink. Each of the detector cells include a single passage in a housing symmetrically disposed about the axis of the passage to facilitate matching like cells for use in the detector assembly. The detecting elements are coaxially disposed at both ends of each cell. Gas is introduced at the central portion of each passage and permitted to split and flow over the respective detecting elements and exit at the respective ends of the passage. Conduits for conducting the gas to and from the respective detector cells pass through an open space between the two mating housing halves which aids in reducing deleterious thermal effects and facilitates construction of the assembly.

3,621,708
APPPARATUS FOR DETECTING INTERFACES IN A BODY
Stelios Regas, 3021 E. 7th Ave., Denver, Colo. 80206
Continuation-in-part of application Ser. No. 752,874, Aug. 15, 1968. This application June 19, 1970, Ser. No. 47,819
Int. Cl. G01n 24/00
U.S. Cl. 73—67.8 S 4 Claims

The position of the sweep on the screen of a cathode ray tube along which traces appear corresponding to interfaces in a body detected by an ultrasonic probe is controlled by variable impedance means operated by a reel on which an inextensible cord connected to the probe is wound. The cord is unwound against the biasing action of a spring and extends through a guide tube. The variable impedance means, reel and guide tube are mounted to pivot about an axis perpendicular to the axis of pivotal movement of the reel. In one embodiment the reel is rotatable about a horizontal axis in a housing that is rotatable about a vertical axis with the cord extending radially from the housing. In another embodiment the reel is rotatable about a horizontal axis in a stationary housing and the cord is withdrawn through a bushing in a top plate and in any generally radial direction. Provision is made for releasing the spring biased reel in steps corresponding to one complete revolution of the variable impedance means.



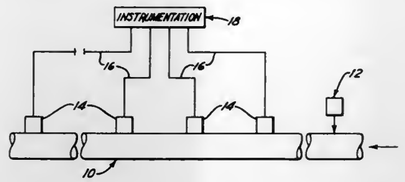
3,621,709
ULTRASONIC COUPLANT
Albert E. Frey, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.
Filed Jan. 28, 1969, Ser. No. 794,715
Int. Cl. G01n 29/04
U.S. Cl. 73—71.5 8 Claims



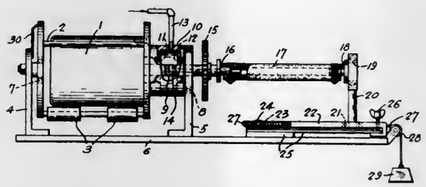
A couplant of ultrasonic material testers is described which includes a mixture comprised of borax and glycerin.

3,621,710
MEASURING VELOCITIES IN MULTIPHASE SYSTEMS
John J. Day, Pittsburgh, Pa., Wilfred R. McLeod, Houston, Tex., and Donald F. Rhodes, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sept. 26, 1969, Ser. No. 861,383
Int. Cl. G01f 1/00
U.S. Cl. 73—194 16 Claims

Methods and apparatus to measure the velocities of all or selected ones of the components of a multicomponent material transmission system. Radioactive tracers, each compatible with only one component in the system, are utilized. Various electronic embodiments to handle the data, means to clamp the detectors to a pipeline, and means to inject radioactive gaseous and liquid tracers are disclosed.

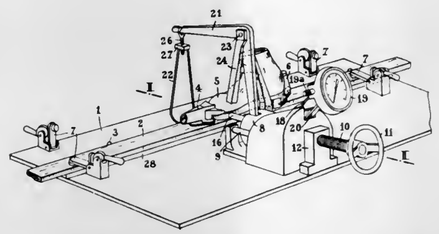


3,621,711
APPARATUS FOR TESTING REINFORCED ELASTOMERIC STRUCTURES
Ronald L. Griffith and Albert L. Promislow, Kingston, Ontario, Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada
Filed Feb. 16, 1970, Ser. No. 11,397
Claims priority, application Canada, Feb. 17, 1969, 43,189
Int. Cl. G01n 3/32
U.S. Cl. 73—100 6 Claims



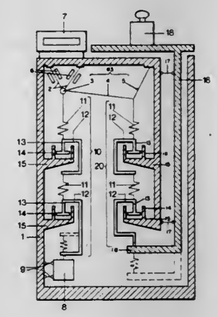
An important apparatus for the testing of textile reinforced flexible structures by means of strain cycling. The apparatus permits the measurement of work input during strain cycling by taking account of the generation of energy in the form of heat. The dynamic modules of the textile reinforcement in the interior of the test sample may also be measured.

3,621,712
DEVICE FOR TESTING SAFETY SKI BINDINGS
Jean JosephAlfred Beyl, Boulevard Victor Hugo, Nevers, Nievre, France
Filed July 22, 1969, Ser. No. 843,323
Claims priority, application France, Aug. 6, 1968, 162,053
Int. Cl. G01l 5/03
U.S. Cl. 73—133 4 Claims



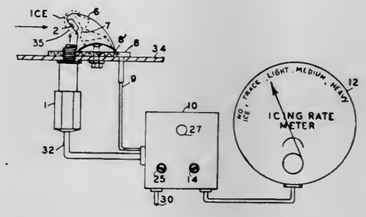
Device for testing the operation of heel and toe safety ski bindings by causing either one of the bindings to operate under a pressure or tractive effort exerted on the ski boot retained by the binding. This is achieved by means of an actuating member adapted to act upon the boot and connected to means whereby the magnitude of the effort exerted on the boot can be measured.

3,621,713
INSTRUMENT FOR MEASURING MASSES AND FORCES
Armin Wirth, Mario Gallo, and Johannes Wirth, Zurich, Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland
Filed Jan. 19, 1970, Ser. No. 3,821
Claims priority, application Switzerland, Feb. 28, 1969, 3,146/69
Int. Cl. G01l 5/22
U.S. Cl. 73—141 A 10 Claims



The invention relates to load-measuring instruments which employ electrical means as the load-measuring means. In the instrument of this invention, the load-measuring means comprises a pair of tensioned strings which are electrically excited to vibrate. A load is applied to said strings so as to vary the tension with a consequent variation in their vibration frequency, which information in turn is transmitted to a digital device which translates it into a load-indicating quantity.

3,621,714
ICE DETECTOR MEANS
Alfred R. Puccinelli, 36 Bay Drive E., Huntington, N.Y. 11743
Filed May 13, 1969, Ser. No. 824,217
Int. Cl. B64d 15/20; G01w 1/00
U.S. Cl. 73—170 1 Claim

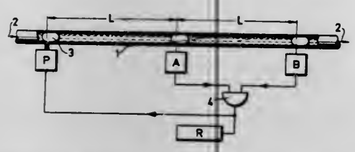


An ice detector probe is mounted on the test surface. The probe contains a radiation source and a radiation detector. Ice forming on the probe will cut off the radiation to the detector. Icing rate is detected by automatically heating and de-icing the detector when the ice forms. The required repetitive heating cycle is counted over a period of time to provide an indication of icing rate.

3,621,715
SYSTEM FOR MEASURING THE FLOW VOLUME OF A LIQUID FLOW

Anton Lars Olof Söderkvist, Vallingby, and Kjell Esbjörn Jidling, Spanga, Sweden, assignors to LKB-Produkter AB, Mariehall, Sweden

Filed Aug. 6, 1969, Ser. No. 848,035
Int. Cl. G01f 3/00
U.S. Cl. 73—194 E 9 Claims

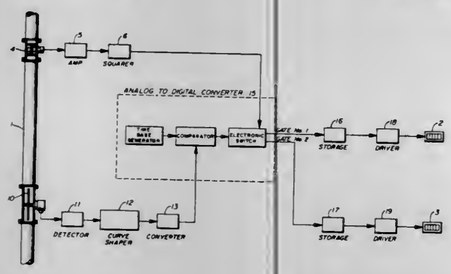


A system for measuring the flow volume of a liquid flow comprises a conduit for the liquid flow to be measured and a gas pump connected to this conduit for introduring gas bubbles into the liquid flow in the conduit. The operation of the gas pump is controlled via a logic control circuit from two detectors positioned close to the conduit downstream from the gas pump. Each detector is capable of detecting whether the conduit is filled with gas or liquid in front of the detector and generating an output signal indicating the presence of gas or liquid respectively in the conduit. The first detector is located at a predetermined distance downstream from the gas pump and the second detector is located at a substantially equal distance downstream from the first detector. The logic control circuit is responsive to the output signals from the detectors and produces a control signal for the gas pump to introduce a gas bubble into the liquid flow in the conduit when gas bubbles previously introduced into the liquid flow are detected simultaneously by both detectors. The system includes also a counter for counting the number of gas bubbles introduced into the flow.

3,621,716
METHOD AND MEANS FOR COMPENSATING A NONLINEAR RESPONSE IN AN ELECTRICAL CIRCUIT

John B. Rosso, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Oct. 14, 1969, Ser. No. 866,231
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R 5 Claims

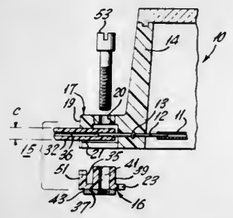


A function generator in combination with the Net Oil Computer of U.S. Patent No. 3,385,108. The change in amplitude of the voltage produced from a capacitance device is nonlinear with a change in the ratio of constituents of a fluid mixture. The voltage is amplified by a curve-shaper circuit compirsed of a voltage-dividing arrangement of resistors through which the voltage is applied to bias the bases of a plurality of transistors. Slope potentiometers acting through an operational amplifier for increments of the input curve control the ratio between the voltage input due to the capacitance device and the voltage output of the amplifier. A composite voltage output substantially linear with respect to the ratio of constituents of the fluid mixture is produced.

3,621,717
TUBING CONNECTOR FOR PNEUMATIC READOUT SYSTEMS

William John Korenicki, Linden, N.J., assignor to Gamon-Calmet Industries, Inc., Newark, N.J.

Filed Sept. 15, 1969, Ser. No. 857,818
Int. Cl. G01f 15/18; F16l 33/22
U.S. Cl. 73—272 19 Claims

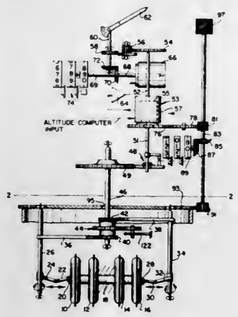


There is provided a novel type of connecting arrangement for simply and effectively establishing fluid communication between various portions of a fluidic system. Although the arrangement has broad application, it is specifically adapted for conveying fluid pulses between a fluid meter (such as a water meter) and a remotely located register which provides an indication of flow through the meter. The connecting arrangement comprises one or more hollow pins inserted through a wall of the casing into which it is desired to convey fluidic flow; a fluid carrying conduit connected to a portion of the pin which extends externally of the casing; and clamping means located beyond the outermost extremity of the pin for maintaining the connection of the conduit and the pin and at the same time for preventing mechanical stress from being applied to the pin.

3,621,718
TEMPERATURE-COMPENSATED PRESSURE-RESPONSIVE INSTRUMENT

Graham A. Ireland, Ottawa, Ontario, Canada, assignor to Leigh Instruments, Carleton Place, Ontario, Canada

Filed July 7, 1969, Ser. No. 839,724
Int. Cl. G01l 19/04
U.S. Cl. 73—393 15 Claims



A pressure-responsive instrument such as an altimeter having the following three temperature-compensating features:

(1) The aneroid capsule hub assembly has a cup-shaped hub element whose contraction matches the expansion of the fittings of the capsule hub assembly.

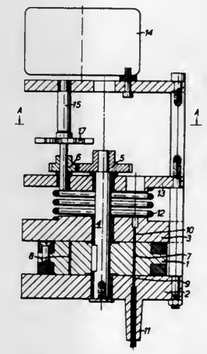
(2) The connecting linkage between the hub element and the shaft driven thereby is made of materials having a temperature coefficient of expansion selected to match that of the capsules as mounted.

(3) The shaft at the point of attachment of the connecting linkage is displaced to compensate for the thermal displacement of the instrument frame, preferably by mounting one bearing of the shaft on an annular ring having a different coefficient of expansion from that of the frame at about 90° from the two diametrically-opposite points of attachment of the ring to the frame.

3,621,719
ANALYTICAL APPARATUS

Geoffrey Willoughby Goodman, 105 Banstead Road S., Sutton, England, and Lawrence Harvey, Highland Cottage, Cold-Harbour, near Dorking, England

Filed Nov. 4, 1969, Ser. No. 873,940
Claims priority, application Great Britain, Nov. 14, 1968, 53,989/68
Int. Cl. G01n 1/00
U.S. Cl. 73—422 GC 5 Claims

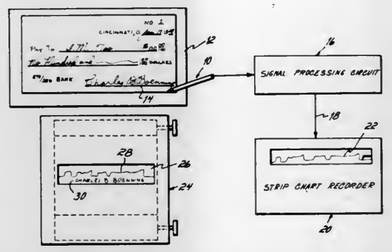


Apparatus suitable for loading liquid samples onto an analytical device such as a chromatographic column. The apparatus has a rotatable barrel containing chambers which are filled with liquid, and a Geneva mechanism to control rotation of the barrel.

3,621,720
IDENTIFICATION SYSTEM

Robert Kenley Clark, Forest Park, Cincinnati, Ohio, assignor to The Mosler Safe Company, Cincinnati, Ohio

Filed Jan. 27, 1969, Ser. No. 793,961
Int. Cl. G01l 5/00
U.S. Cl. 73—432 1 Claim

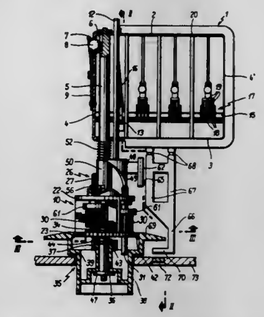


A system for verifying the identity of a person wherein verification is established by a favorable comparison between (a) the time-varying force between a writing instrument and writing surface produced when the person to be identified writes his signature and (b) stored data correlated to the time-varying force previously generated by a person of known identity while writing his signature.

3,621,721
TUNERS AND, MORE PARTICULARLY, TUNERS FOR TELEVISION SETS

Rudolf Mayer, Charlottenwalde, and Lothar Volkheimer, Trossingen, Germany, assignors to Messrs. R. & E. Hopt KG

Filed Oct. 8, 1969, Ser. No. 864,665
Claims priority, application France, Sept. 12, 1969, 6931076
Int. Cl. F16h 35/18
U.S. Cl. 74—10.6 17 Claims

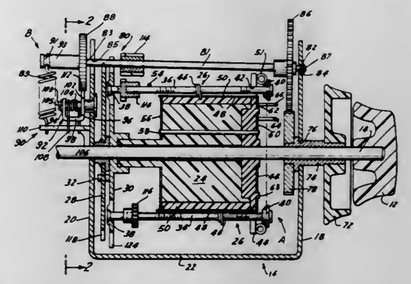


A tuner for a television set includes a drive arrangement comprising a drum rotatably supported about its longitudinal center axis, and provided with a plurality of set screws which are evenly spaced in an angular direction about said axis. The screws extend in parallel relationship with the longitudinal center line of the drum and are engageably coupled with a scanning member which is provided with a V-shaped cam piece located in the path of the set screws. The peak of the V-shaped cam piece contacts the end of the set screw which is operated when a tuning knob connected with the tuner is moved whereby a tuning element which is coupled to the scanning member is controlled.

3,621,722
PRESET MULTICHANNEL TUNING ASSEMBLY

Meigs W. Newberry, East Longmeadow, Mass., assignor to General Instrument Corporation, Newark, N.J.

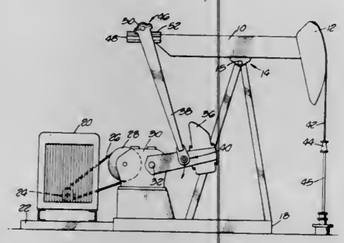
Filed Aug. 3, 1970, Ser. No. 60,334
Int. Cl. F16h 35/18
U.S. Cl. 74—10.8 30 Claims



A multichannel tuning assembly of the preset type is provided for use with television receivers and like devices, in which the fine tuning adjustment mechanism, once engaged with the operative tuning element, permits

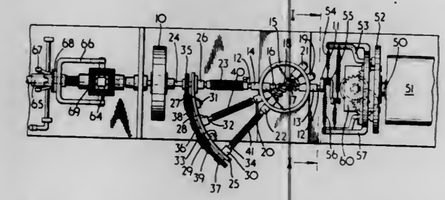
continuous uninterrupted tuning in both clockwise and counterclockwise directions. Tuning elements on a body, or turret-type carrier, are adjusted by rotation of a tuning wheel, the initial rotation of which in either direction causes adjusting means to engage with the tuning elements, and the subsequent rotation of which continuously fine tunes a given station in both directions. The initial rotation actuates control means which lowers the adjusting means into driving engagement with the tuning elements which can then be adjusted without "play" or lost motion. Rotation of the coarse tuner or station selector disengages the adjusting means and resets the control means, as well as rotating the next sequential tuning element to the tuning station.

3,621,723
LIFT PUMP UNITS
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif. 90024
Filed Aug. 28, 1969, Ser. No. 853,771
Int. Cl. F16h *21/32*
U.S. Cl. 74—41 **8 Claims**



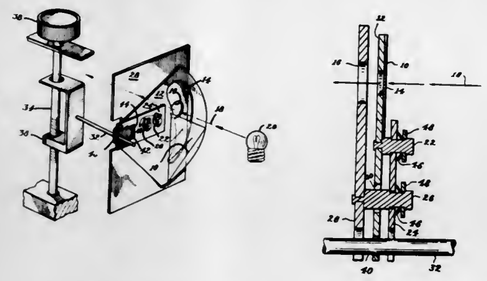
Torque load fluctuations on the prime mover of oil well pumps and the like having a rotary crank for driving a walking beam are minimized through coupling of the pitmans to the walking beam along a movable line of contact between abutting bearing surfaces that are affixed to the pitmans and the beam respectively, and that are held in nonsliding rolling engagement with each other, so that the lever arm distance between the line of contact and the pivot axis of the walking beam varies as the angle between the pitmans and the beam changes with rotation of the crank to provide a greater mechanical advantage during the power stroke of the pump and a lesser mechanical advantage during its return stroke.

3,621,724
VARIABLE DRIVE RATIO POWER TRANSMISSION
Roy Cyril Vaughan, Dublin, Ireland, assignor of fractional part interest to Alan Salisbury Lamburn, Kencott, via Lechlade, Gloucestershire, England
Filed Nov. 20, 1969, Ser. No. 878,297
Claims priority, application Great Britain, Nov. 30, 1968, 56,953/68
Int. Cl. F16h *29/12*
U.S. Cl. 74—63 **12 Claims**



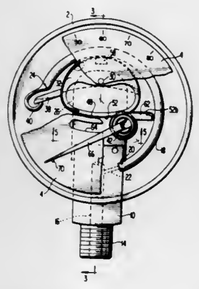
In a power transmission an input shaft drives means provided to convert input torque into a pulsating torque applied to a member. A unidirectional drive element is connected between the member and a stationary part so that torque pulses in one direction of rotation cannot rotate the member in that direction, and an output shaft is connected to be driven by the member, preferably through a smoothing spring.

3,621,725
CONTROL MECHANISM
Henry J. Emmel, Irondequoit, and Thomas J. Morgan, Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 2, 1970, Ser. No. 23
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **3 Claims**



A control mechanism has a coarse adjustment mode and a fine adjustment mode actuated from a common grip. Two levers are provided. One of the levers is a follower lever and is pivotally mounted upon the other, a main lever, beyond a point at which the main lever is pivotally mounted upon a base. A gradient control means such as a gradient filter, is mounted at the end of the follower lever. An actuator pin connected to a grip drives both levers for a large magnification of movement, coarsely adjusting the gradient control means to a point slightly beyond a predetermined setting. The pin then disengages from the main lever and drives the follower lever in the opposite direction for a small magnification of movement, finely adjusting the gradient control means.

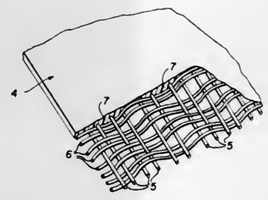
3,621,726
PRESSURE GAUGES
Dean E. Gladow and Donald F. Wilkes, Albuquerque, N. Mex., assignors to Rolamite, Incorporated, San Francisco, Calif.
Filed Apr. 22, 1970, Ser. No. 30,671
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.2 **33 Claims**



A movement for meters and gauges. A roller provides the output motion for a pointer. The roller is supported

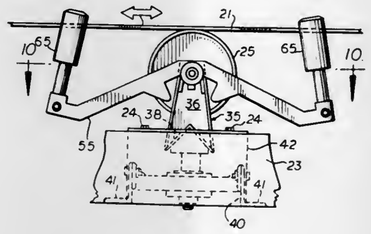
for movement along a guide surface on an actuating member. A band encircles the roller and the actuating member for holding the roller against the guide surface while allowing the roller to roll along the surface. A portion of the band is wrapped on the roller and extends outwardly from the roller to a fixed support. The actuating member rotates about an axis spaced from the guide surface and motion is transmitted from the input member, which may be a Bourdon tube, by an arm extending outwardly from the actuating member. Upon rotation of the actuating member about its axis by the input member, the roller rolls along the guide surface, causing the pointer to follow approximately a circular path.

3,621,727
WEAR-RESISTANT TOOTHED BELT
Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A.
Filed Apr. 3, 1970, Ser. No. 25,463
Claims priority, application Italy, Apr. 14, 1969, 15,531/69
Int. Cl. F16g *1/18, 1/26, 1/22*
U.S. Cl. 74—239 **6 Claims**



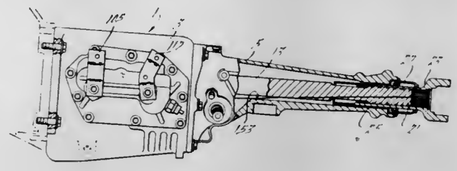
The disclosure comprehends a belted driving system having a wear-resistant toothed belt which comprises a body of chloroprene rubber. The body has a resistant core formed by cords selected among textile fibres, glass fibres and metallic wires. A self-lubricating fabric is utilized for covering the teeth of the belt and the intervening spaces.

3,621,728
SELF-ENERGIZING BELT TRAINING IDLER
Hubert Steorts, Jr., Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 10, 1969, Ser. No. 883,708
Int. Cl. F16h *7/18;* **B65g** *15/62*
U.S. Cl. 74—241 **9 Claims**



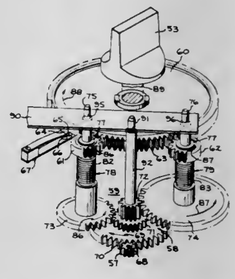
An improved belt training idler for a reversible material carrying belt conveyor with a self-energizing double guide roll actuating mechanism on each side of the belt. Each actuating arm carries an upright guide roll on each of its ends and extends in both directions along the belt from the axis of the idler roll assembly. The actuating arm assembly is pivotally mounted about the idler roll axis to tilt in a vertical plane parallel to the belt and is entirely supported on the idler end bracket so that special idler roll assemblies are not required. This means of mounting is adaptable to a troughed-belt-carrying-run training idler, a flat-belt-carrying-run training idler, or a flat-belt return-run training idler. When the misaligned belt contacts one of the guide rolls, it tilts upward and acts to swivel the entire idler roll assembly to apply a corrective force to the belt.

3,621,729
TRANSMISSION
Bohdan A. Andrushkiw, Dearborn Heights, and Lynn A. Range, Detroit, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 13, 1970, Ser. No. 19,375
Int. Cl. F16h *5/08, 3/08;* **G05g** *5/10*
U.S. Cl. 74—335 **2 Claims**



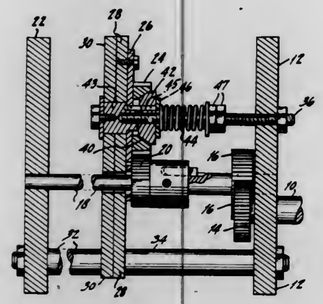
A fully synchronized three forward speed transmission with interlock levers to prevent engagement of more than one gear at a time. The housing is constructed to provide a dam for retaining a supply of lubricant adjacent a rear bearing for the mainshaft.

3,621,730
WASHING MACHINE WITH DUAL SPEED CYCLE CONTROL MEANS
Gresham N. Jennings, Louisville, Ky., assignor to General Electric Company
Filed Dec. 22, 1969, Ser. No. 887,190
Int. Cl. F16h *3/34*
U.S. Cl. 74—354 **3 Claims**



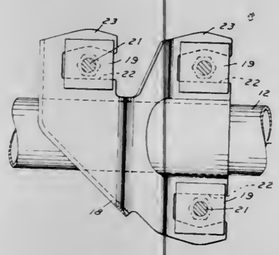
A motor-driven cam-operated switch having a rotary cam adapted to selectively open and close at least one switch means in response to the rotation of the cam and having a drive motor adapted for connection to a source of electrical energy, is provided with a two-speed drive train adapted to selectively transmit low or high speed rotational motion to the rotary cam. The two-speed drive train comprises first and second drive pinions adapted to engage and drive the rotary cam, means to selectively engage one of the drive pinions with the rotary cam, and drive means adapted to connect each of the drive pinions to the drive motor such that the first drive pinion may be operative to drive the rotary cam at high speed and the second drive pinion may be operative to drive the rotary cam at low speed.

3,621,731
SELF-ACTUATING BRAKE FOR INTERMITTENTLY OPERATING MECHANISM
Max Houss, 1123 E. 26th St., Brooklyn, N.Y. 11210
Filed June 12, 1970, Ser. No. 45,857
Int. Cl. F16h *5710*; B60t *13/04*
U.S. Cl. 74—411.5 7 Claims



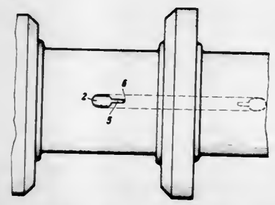
To prevent damage by rotating mechanisms which intermittently start and stop many times per minute, as for example in a Pitney-Bowes stamp meter machine, there is provided braking mechanism which is self-actuating and effective only in the relatively short interval of time before the stoppage of rotation occurs during each cycle of operations. The braking mechanism is in the form of a special gear which frictionally engages a stationary element to cause a drag on the rotating mechanism during the final 25% of travel of the rotating mechanism immediately before the rotating mechanism arrives at the home or rest position in each cycle of operation.

3,621,732
FASTENING FOR MOTOR VEHICLE-SAFETY STEERING COLUMNS
Herbert Kaniut, Cologne-Heimersdorf, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 27, 1970, Ser. No. 15,170
Claims priority, application Germany, Mar. 5, 1969, P 19 11 054.4
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 8 Claims



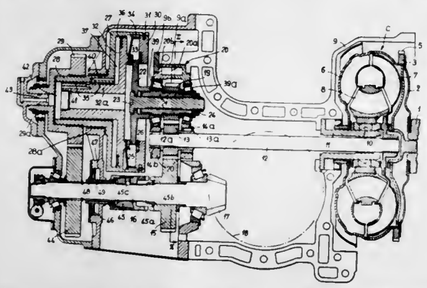
A releasable mounting means for an energy absorbing steering column that includes one or more sliding components received within a corresponding number of slots formed in a bracket. A portion of each slot is defined by a lug which partially encloses or grasps one of the sliding components and secures it to the bracket. The bracket is made of material sufficiently deformable to release the sliding components on application of a predetermined axial force to the upper end of the steering column.

3,621,733
INDUCTIVELY-HARDENED STEEL COMPONENTS CONTAINING AN OIL DUCT
Gerhard Seulen, Remscheid, and Hermann Kuhlbars, Remscheid-Luttringhausen, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany
Filed Sept. 30, 1969, Ser. No. 862,394
Claims priority, application Germany, Oct. 9, 1968, P 18 02 027.4
Int. Cl. F16c *3/14*
U.S. Cl. 74—605 6 Claims



Inductively-hardened steel components containing an oil duct extending obliquely from a hardened surface thereof, e.g., crankshafts, tend to wear at the point where the oil duct meets the said hardened surface. The invention provides means whereby the wear is reduced, comprising a supplementary opening extending from the hardened surface to the oil duct on the side of the oil duct which makes an oblique angle with the hardened surface. In one embodiment of the invention the supplementary opening consists of a slot extending from the oil duct, and in another embodiment the supplementary opening consists of a bore extending to the said oil duct. Where two or more oil ducts extend from a common point on the hardened surface of the steel component the supplementary opening may be a complex slot having portions extending in the general direction of the said oil duct branches.

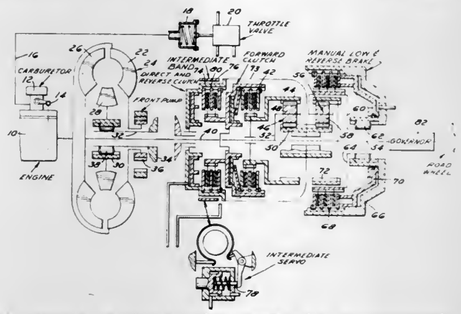
3,621,734
TORQUE-CONVERTER AND VARIABLE-RATIO TRANSMISSION MECHANISM
Pierre Bouthors and Philippe Quemerais, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed Feb. 16, 1970, Ser. No. 11,585
Claims priority, application France, Mar. 5, 1969, 6906116
Int. Cl. F16h *15/04, 47/06*
U.S. Cl. 74—730 5 Claims



A torque-converter and variable-ratio transmission mechanism in which the torque converter has its output shaft drivingly connected to a friction-type variator formed by a disc rigid with an input shaft and interposed between a pair of rings rigid with an output shaft. The variator is adapted, according to the clamped or released condition of the rings in relation to the disc, to cause the variator to be connected to, or disconnected from, the drive. The output shaft of the converter carries a driving

pinion in constant meshing engagement with a pair of driven pinions, the first driven pinion being rigid with the input shaft of the variator, which has its output shaft connected to the output shaft of the mechanism via a couple of pinions providing the forward drive, the other driven pinion being mounted for loose rotation on the output shaft of the mechanism and provided with releasable coupling means for providing reverse drive without passing through the variator.

3,621,735
ELECTRONICALLY OPERATED HYDRAULIC CONTROLS
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 15, 1969, Ser. No. 885,160
Int. Cl. B60k *17/04*; F16h *5/50*
U.S. Cl. 74—753 8 Claims

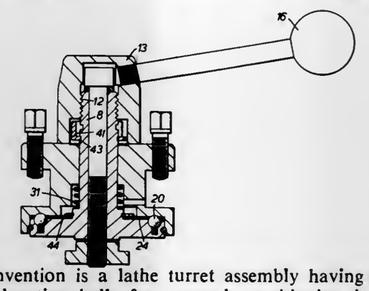


A pressure regulator valve system for an automatic control valve circuit in a multiple ratio power transmission comprising a pressure regulator valve situated in the valve circuit with a pressure source, an electrical pulse valve which establishes a predetermined pressure on a movable valve element of the regulator valve, the magnitude of the pressure being determined by the frequency of electrical voltage pulses applied to the pulse valve, the frequency in turn being controlled by electronic sensors that measure transmission output shaft speed and power input shaft torque.

ERRATA

For Classes 74—868 and 75—170 see:
Patent Nos. 3,621,737 and 3,622,234

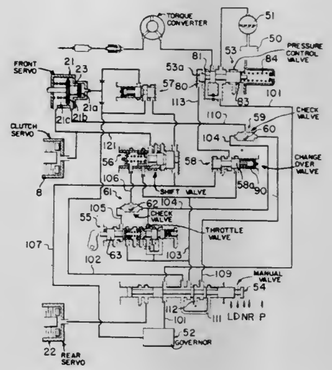
3,621,736
TURRET ASSEMBLIES
Frederic Reginald Stanley, Farnham, Surrey, England, assignor to H.C.F. (Turrets) Limited, London, England
Filed May 1, 1969, Ser. No. 821,561
Claims priority, application Great Britain, May 1, 1968, 20,663/68
Int. Cl. B23b *29/28*
U.S. Cl. 78—824 11 Claims



This invention is a lathe turret assembly having self-retained locating balls for correctly positioning it and

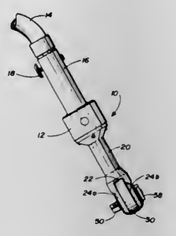
having a handle which can turn it through a pre-determined discrete angle when a different tool is to be used.

3,621,737
OIL PRESSURE CONTROL SYSTEM FOR FLUID TYPE TRANSMISSION SYSTEM
Sumio Uozumi, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed July 28, 1969, Ser. No. 845,138
Claims priority, application Japan, July 31, 1968, 43/53,588
Int. Cl. B60k *21/08*
U.S. Cl. 74—868 4 Claims



This invention provides an oil pressure control system used for fluid type transmission consisting of a torque converter and a speed change gear provided with servo mechanisms. Over the broad range of the servo mechanism, not only the oil pressure controlled by oil pressure control valve but also the oil pressure corresponding to the engine throttle valve opening or vacuum pressure of the intake manifold is supplied by a separate circuit to the servo mechanism, so as to control the oil pressure control valve in accordance with the vehicle speed for relieving the impact at the automatic shift with the aid of appropriate servo capacity.

3,621,738
POWERED RATCHET WRENCH
Oren V. Northcutt, Rte. 1, Box 982, Dallas, Tex. 75216
Filed June 17, 1969, Ser. No. 834,033
Int. Cl. B25b *13/46*
U.S. Cl. 81—57.39 21 Claims



A ratchet wrench includes a shaft rotatable by a motor with a stud at one end of the shaft parallel and eccentrically disposed with respect to the longitudinal axis of the shaft. A ball is carried by a ratchet head and has a hole

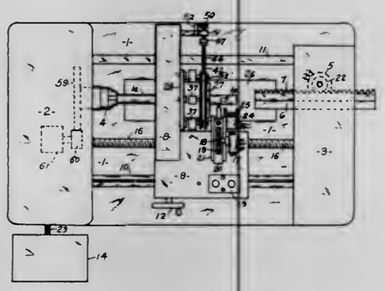
therein for receiving the stud on the shaft. Rotation of the shaft causes the ratchet head to oscillate. A wrench drive is mounted within the ratchet head and includes a pawl which engages teeth in the ratchet head to rotate the wrench drive upon oscillation of the ratchet head. A friction pawl is carried by the wrench drive to provide a resistive force on the wrench drive only during one direction of oscillation of the ratchet head. The direction of the ratchet action of the wrench drive may be selectively changed without changing the direction of rotation of the motor.

3,621,739
REVERSIBLE TOOL DRIVE
Wendell Seablom, 316 S. 138th St., Tacoma, Wash. 98444
Filed July 24, 1970, Ser. No. 57,950
Int. Cl. B25b *13/00, 13/46*
U.S. Cl. 81—59.1 **13 Claims**



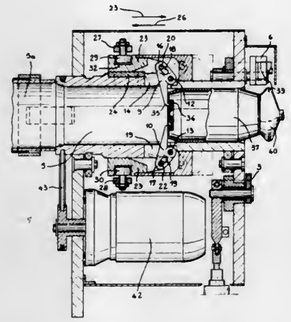
This invention relates to a socket wrench drive characterized by a reversible one-way clutch wherein a rotatable cylindrical member is releasably locked with a central cavity in the head for conjoint rotation by rollers wedged between the cylindrical member and a cam surface at the end of a radial recess opening onto said cavity. Spring elements are releasably held against the rollers by a control ring to bias same in either a "forward" or "reverse" position.

3,621,740
TURNING MACHINE
Albert G. Thomas, Charlottesville, Va., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Feb. 19, 1970, Ser. No. 12,744
Int. Cl. B23b *5/00*
U.S. Cl. 82—2 **6 Claims**



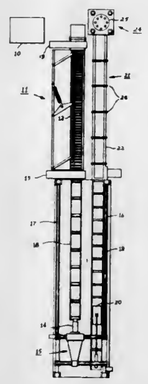
The present invention relates to an improved centerless turning machine in which a bar is tightly gripped in a rotating chuck and is supported near the free end of the bar, near the shaping tool, by means of a slip chuck which allows the bar to be turned or rotated therein. Novel features of this invention are automatic regulation of the clamping force of the slip chuck, means for breaking and directing chips from the bar, and movable trough-like means for catching and moving severed pieces of the bar.

3,621,741
MACHINE FOR CUTTING, MORE PARTICULARLY FOR CUTTING OFF THE CORES OF ARTICLES OF PLASTIC MATERIALS
Jacques Bourgeois, Lyon, France, assignor to Lesieur-Cotelle, Boulogne-sur-Seine, France
Filed July 1, 1969, Ser. No. 838,362
Claims priority, application France, July 2, 1968, 50,177
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—101 **5 Claims**



A machine for cutting burrs from plastic articles comprises a rotatable cell in the form of a tube having opposite open ends, the articles being fed in succession one after the other to the cell where they are held and rotated and brought into contact with the cutter whereafter the articles are fed through the other end of the cell under the action of a continuous suction applied thereto. The articles are held within the cell by means of a pair of pivotal claws which are extended into the cell to hold the article when it is being cut whereafter the claws are retracted to allow the article to pass to the outlet of the cell.

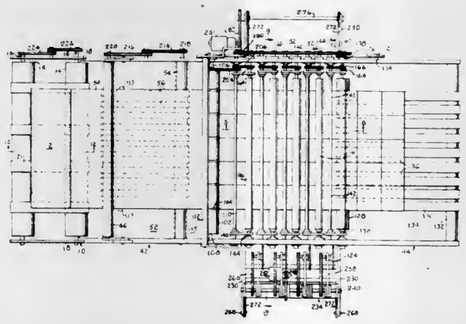
3,621,742
IRRADIATED FUEL PROCESSING SYSTEM
Wyvil R. Kendall, San Jose, Calif., assignor to General Electric Company
Filed Mar. 25, 1968, Ser. No. 715,602
Int. Cl. B26d *7/04, 7/08*
U.S. Cl. 83—42 **27 Claims**



A system for handling irradiated nuclear reactor fuel bundles preparatory to reprocessing the irradiated fuel contained therein is disclosed. This system includes a fuel bundle clamping table including means to remove bundle

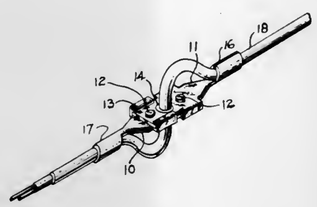
end fittings and to clamp the bundle in a fixed position while permitting longitudinal movement of the fuel rods through the bundle; a fuel rod pulling assembly including means for pulling fuel rods from the bundle, for handling the rods and for collecting groups of rods; a shear feed assembly including means to feed groups of fuel rods incrementally to a shear; and a shear assembly including means to simultaneously cut two small pieces from the end of each rod of a set with each shearing stroke. A process for performing the above-indicated operations is also disclosed. This system is simple, reliable and capable of being remotely operated, disassembled and modified.

3,621,743
CARPET TILE CUTTING MACHINE
James M. Feighery and Michael A. Lewallyn, Dalton, Ga., assignors to Tex-Del Corporation, Dalton, Ga.
Filed May 5, 1970, Ser. No. 34,773
Int. Cl. B26d *11/00*
U.S. Cl. 83—408 **15 Claims**



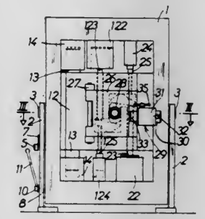
A cradle supports a roll of carpet for the pulling therefrom of the end of the carpet over horizontal work tables having a first section in which the carpet is cut longitudinally in strips during movement of the carpet and a second section in which the carpet is cut transversely while stationary to form tiles, the cutting taking place from beneath the carpet and only through the backing thereof and not through the pile.

3,621,744
CABLE CUTTER
John H. Kelly, Hartselle, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed June 4, 1970, Ser. No. 43,332
Int. Cl. B23d *15/00*
U.S. Cl. 83—198 **5 Claims**



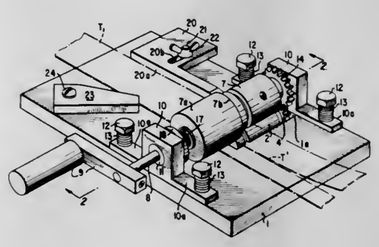
An electric cable or a rope passes loosely through aligned sharp-edged holes in each of two plates adapted to slide over one another but fastened together with rivets. The cable is fastened securely to each of the two plates. As overload tension is applied to the cable, the two plates are pulled apart in opposite direction in a sliding manner as the rivets are sheared and the cable is cut by the sharp edges of the holes as they move out of alignment.

3,621,745
SHEARING-ACTION ROD CUTTING DEVICE
Bernard André Cavalan, Paris, and François Kropin, Verneuil-sur-Avre, France, assignors to Chevallier SA., Verneuil-sur-Avre, and Paul Sarda, Paris, France, fractional part interest to each
Filed July 11, 1969, Ser. No. 840,980
Claims priority, application France, July 16, 1968, 159,381
Int. Cl. B26d *1/00, 7/02*
U.S. Cl. 83—198 **12 Claims**



A device for cutting a workpiece into lengths including a first die which is carried by a frame, a second die which is carried by a movable slider, means for clamping the workpiece in the die which is carried by the frame, and means, which are independent of the preceding ones, for successively clamping the workpiece in the die which is carried by the slider and giving said slider a translatory motion in relation to the frame, whereby the workpiece is sheared in the dividing plane between the two dies.

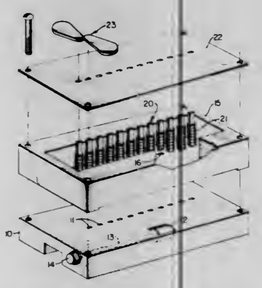
3,621,746
TRIMMERS
Hudson Womack, Box 14, McMinnville, Tenn. 37110
Filed Apr. 24, 1970, Ser. No. 31,644
Int. Cl. B26d *1/28*
U.S. Cl. 83—430 **5 Claims**



The machine for trimming tapes has a base having an opening therein adjacent one edge. A roll is journaled in the opening and is provided with a cutting end. A second roll cooperates with the first roll and has an enlarged portion providing a cutting shoulder which engages the cutting end of the first roll. A shaft on the base carries the second roll which is axially slidable thereon. Bearings on the base at the ends of the shaft yieldably maintain the rolls in peripheral contact. Intermeshing gears on the rolls rotate the rolls in opposite directions to feed a tape therethrough when caught in the bite of the rolls. A spring on the shaft

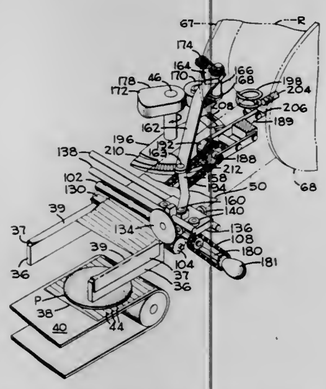
yieldably urges the cutting shoulder into contact with the cutting end of the first roll to longitudinally sever the tape passing between the rolls. And guides on the base direct the tape into the bite of the rolls in desired relation to the cutting shoulder.

3,621,747
CARD PUNCH
William Worthington, 2921 Brook Drive, Falls Church, Va. 22042
Filed Nov. 24, 1969, Ser. No. 879,394
Int. Cl. G06k *1/08*
U.S. Cl. 83—436 **3 Claims**



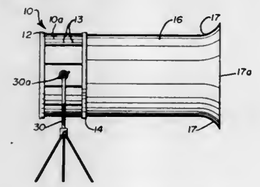
A portable data card punch has a lower card support and punch die member, a superimposed card guide and punch housing member, and an upper punch guide member. A manually operated friction roller in the lower member serves to advance the card. Punches are resiliently mounted to extend through the housing member and the guide member. Interfitting plastic caps are secured to the tops of the punches whereby the punches may be manually actuated to punch selected positions on the data card.

3,621,748
FOOD MOLDING MACHINE
Eugene F. Felstehausen, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.
Original application Dec. 1, 1966, Ser. No. 598,288, now Patent No. 3,461,483, dated Aug. 19, 1969. Divided and this application Mar. 24, 1969, Ser. No. 858,208
Int. Cl. B23d *19/02*
U.S. Cl. 83—487 **4 Claims**



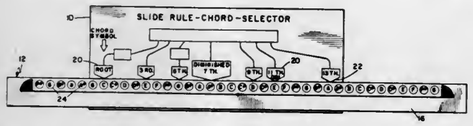
The leading end portion of a rolled web of separator material, such as waxed paper, is advanced into underlying relation to the patty discharge station of a food molding machine and is severed to form a separate sheet which intercepts the patty dropped thereon so that the patties in an accumulated stack of patties are separated from one another. Under the present invention, a laterally reciprocating carriage mounts a web cutting wheel by means of a removable stub axle that is resiliently loaded from its end point. Also, the web cutter carriage is positively driven during the cutting stroke which tensions a carriage return spring, the carriage being released at the end of the cutting stroke so that the spring can rapidly restore the carriage to its initial position.

3,621,749
SOUND PROJECTOR HORN AND SINGLE HEAD DRUM COMBINATION
Alan Lee Aluisi, 4359 E. Batavia Place, Denver, Colo. 80220
Filed June 18, 1970, Ser. No. 47,181
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 **18 Claims**



A drum having a tubular-like shell with a vibratable head over an open end thereof and having another open end with a sound projecting horn thereon.

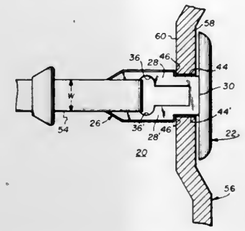
3,621,750
SLIDE RULE CHORD SELECTOR
Verna M. Leonard, 6353 N. Blackstone, Fresno, Calif. 93721
Filed June 1, 1970, Ser. No. 42,251
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **7 Claims**



A simple mechanical device for instant finding of the names and position of the notes in the chromatic scale used in building the various chords and polychords including the thirteenth chord. This chord finder is constructed from sheet material with a strip body portion and an elongated slide, a return flap on the bottom edge of the strip body portion functioning as a rail upon which the slide is saddled for longitudinal sliding adjustment. The latter carries a chromatic scale of two or more octaves with flatted tones on one side and sharped tones on the other side, both scales being dimensioned and arranged to be read in reference to chord indications on the body portion. The slide is foldable to facilitate handling and storage when not in use.

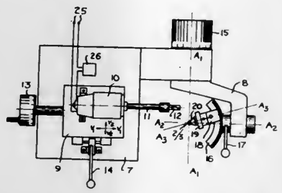
3,621,751
MOUNTING STUD
Arthur A. Fiorentino, Piscataway, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed May 22, 1970, Ser. No. 39,729
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 R **11 Claims**

The invention is directed to an improved unitary, self-locking, readily attachable mounting stud. Extending outwardly from a relatively flat button-like head member is a body member comprising a pair of generally resilient, spaced apart, recessed, elongated, interconnected portions adapted to receive therebetween a generally elongated member. The elongated portions are compressible inwardly normal to the longitudinal axis thereof to permit the



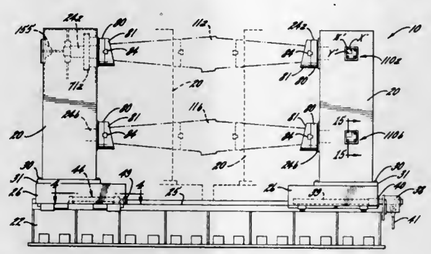
body member to be forcibly urged through a dimensionally restrictive aperture in a panel or similar structure. A recessed portion of the body member directly adjacent the head member serves as a locking means to secure the mounting stud in position.

3,621,752
APPARATUS FOR TRIMMING SPECIMEN BLOCKS FOR MICROTOMY
Hellmuth Sitte, Homburg (Saar), Germany, assignor to C. Reichert Optische Werke A.G., Vienna, Austria
Filed Aug. 14, 1969, Ser. No. 850,137
Claims priority, application Austria, Aug. 30, 1968, A 8,470/68
Int. Cl. B23c *3/00*
U.S. Cl. 90—11 R **2 Claims**



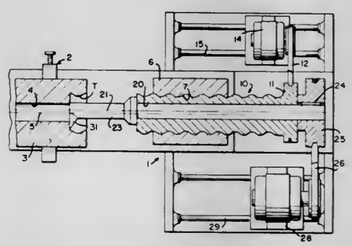
A milling apparatus in which the cutter is movable axially and transversely and the work piece is rotatable about infinitely variable axes.

3,621,753
DOUBLE TRUNNION ACCESSORY FOR MILLING MACHINES
Calvin S. Gladoske, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Sept. 11, 1969, Ser. No. 857,160
Int. Cl. B23c *1/04, 3/04*
U.S. Cl. 90—11 R **20 Claims**



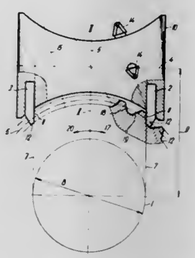
A machine tool work support having a pair of spaced columns each rotatably carrying a pair of work supporting trunnions. The trunnions of one column are in axial alignment with the trunnions of the other column so that work pieces may be suspended between the aligned trunnions for rotation therewith to present all sides of the work pieces about the axes of rotation to the machine tool. Each column has a servo motor which operates through a preloaded backlash free gear transmission to synchronously drive the trunnions of the respective column for precisely positioning the work pieces at a determined angular orientation and also for rotating the work pieces during a machining operation to provide an axis of motion in addition to the axes of motion of the machine tool.

3,621,754
METHOD AND APPARATUS FOR FORMING THREADS
J. D. Ditson, Asbury, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Sept. 26, 1969, Ser. No. 861,283
Int. Cl. B23c *3/28*
U.S. Cl. 90—11.58 **10 Claims**



A method and apparatus for cutting threads on a workpiece. The workpiece is held stationary. The cutting tool axis is parallel and eccentric to the longitudinal axis of the workpiece. The cutting tool is rotated at high speed about its own axis to make a circular cut in the workpiece. The cutting tool axis is orbited at a low rotational speed about the axis of the workpiece and advanced along the axial length of the workpiece in timed relation to the orbital movement to thereby form a thread on the workpiece.

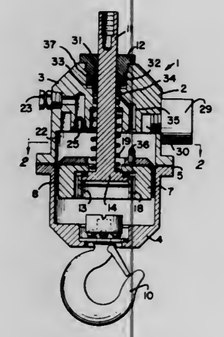
3,621,755
METHOD OF MANUFACTURE OF A GLOBOID WHEEL AND AN ARRANGEMENT FOR ITS MANUFACTURE
Bohuslav Strejc, Plzen, Czechoslovakia, assignor to Skoda, narodni podnik, Plzen, Czechoslovakia
Filed Dec. 29, 1969, Ser. No. 888,645
Claims priority, application Czechoslovakia, Dec. 29, 1968, 8,880/68
Int. Cl. B23f *13/06*
U.S. Cl. 90—9.6 **4 Claims**



The globoid worm wheel is worked by means of a multiknife milling head which both rotate at the transmission ratio of the globoid gear, the workpiece being radially fed into engagement with said milling head until

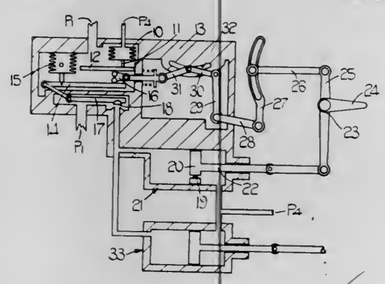
the distance of their rotation axis coincides with the proper distance of the axis of the globoid gear, whereafter the external knives of the milling head are removed and the workpiece finished by the remaining knives in the course of their rotation at their transmission ratio after a limited relative turning of the workpiece with respect to the tool.

3,621,756
LOAD BALANCER
Otmar M. Ulbing, Berkshire, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed May 20, 1969, Ser. No. 826,253
Int. Cl. F15b *15/26;* **F01b** *15/00*
U.S. Cl. 91—43 **3 Claims**



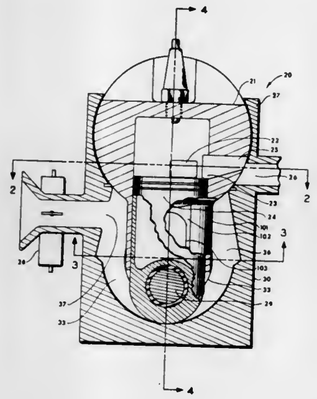
A load balancer adapted to be suspended from a hoist and to support a load in a floating balanced manner. The load balancer contains a pneumatic chamber and a valve means for automatically admitting pneumatic pressure into and exhausting it from the chamber to automatically maintain the balancer piston in a position relative to the chamber intermediate the ends of its travel stroke. A brake grips the piston to restrict its speed of travel to prevent its oscillation and this brake grips the piston progressively tighter as the pressure in the pneumatic chamber increases.

3,621,757
SERVO MECHANISM RESPONSIVE TO THE RATIO OF TWO FLUID PRESSURE SIGNALS
Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 14, 1969, Ser. No. 876,960
Claims priority, application Great Britain, Nov. 14, 1968, 54,068/68
Int. Cl. F15b *15/17, 9/10, 13/16*
U.S. Cl. 91—49 **10 Claims**



The invention relates to a servo-mechanism for producing an output movement proportional to a ratio of two fluid pressure signals. The output movement is provided by the displacement of a piston in a double acting piston and cylinder unit and having an orifice controlled bypass. Pressure drop across the bypass is controlled by a lever movable in response to one of the signals and also in response to the force exerted by a second lever via an interconnecting member. The second lever is movable in response to the difference between the two signal pressures. The position of the interconnecting member is controlled by the piston via a feedback mechanism. An interconnection of the feedback mechanism is constrained to move along a cam surface, whereby the displacement of the piston can be made a desired function of the ratio of the two fluid pressure signals.

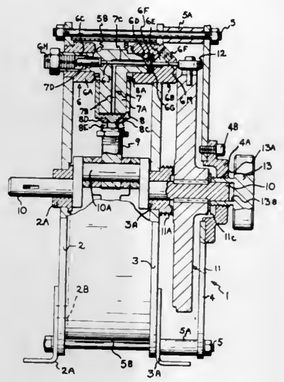
3,621,758
RECIPROCATING PISTON MACHINE
John Herbert Beveridge, P.O. Box 485, Folsom, Calif. 95630
Continuation-in-part of abandoned application Ser. No. 717,085, Mar. 29, 1968. This application June 16, 1970, Ser. No. 46,713
Int. Cl. F01b *15/06;* **F02b** *59/00, 33/04*
U.S. Cl. 91—176 **2 Claims**



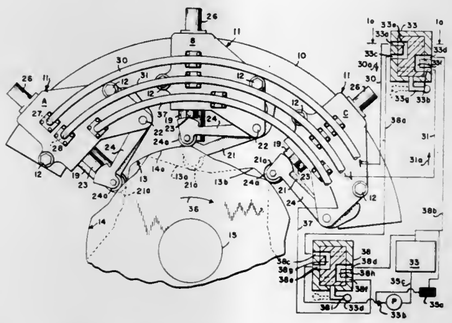
A reciprocating piston-pivotally oscillating cylinder internal combustion machine is provided in which the components are designed and constructed in a manner so as to increase the aspirating capacity per cycle of the machine, and in which a simple and effective means is provided for closing the cylinder exhaust port independently of the piston reciprocating motion relative to the cylinder so as to retain in the cylinder a large portion of the aspirated charge.

3,621,759
FLUID PRESSURE ENGINE AND VALVING SYSTEM THEREFOR
Walter F. Cousino, Toledo, Ohio, assignor to Thermad, Inc.
Filed Feb. 6, 1970, Ser. No. 9,233
Int. Cl. F01b *1/06, 13/06, 15/02*
U.S. Cl. 91—481 **7 Claims**

The invention relates to a valving system for fluid pressure engines, such as steam engines, featuring the utilization of spring pressed check valves, such as a ball, for controlling the supply of pressured fluid to the engine, each such valve being periodically actuated to an open position by a momentarily applied impact force. The invention also provides an inexpensive construction for a relatively small fluid pressure engine, permitting the utilization of such engines in applications such as domestic lawn mowers, small garden tractors, or marine engines.



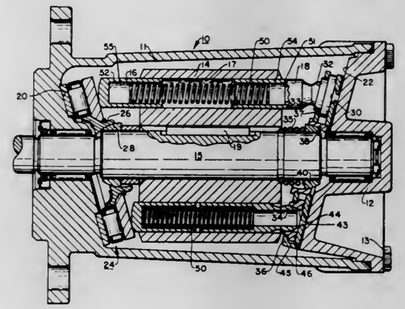
3,621,760
UNIVERSAL POWER UNIT
Robert W. Goode, 2708 Peach Tree Lane, Arlington, Tex. 76010
Filed June 2, 1969, Ser. No. 829,490
Int. Cl. F01b *1/06, 13/06*
U.S. Cl. 91—481 **8 Claims**



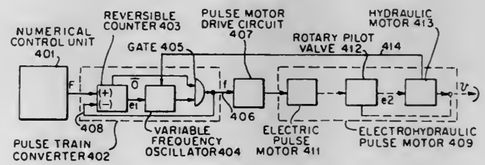
A hydraulic device adapted either for rotary or linear motion, this device employs one or more universal power units, each unit consisting essentially of a power piston or pistons and a valve or valves provided with means adapted to engage a cam track or tracks such that the power unit is adapted to function either as a motor or load such as a pump. This device is also constructed so that the track engaging means may be disengaged therefrom for free wheeling operation.

3,621,761
BIASING MEANS FOR HYDRAULIC DEVICE
Loren L. Alderson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed July 27, 1970, Ser. No. 58,534
Int. Cl. F01b *3/00, 13/00*
U.S. Cl. 91—491 **16 Claims**

A positive displacement fluid device having a biasing spring associated with the pistons for urging the pistons of the fluid device toward a camming surface which induces piston reciprocation. The biasing springs are of a predetermined length less than the length of the piston stroke so as to engage and act on the piston only during a predetermined portion of the piston stroke thereby reducing spring flexure and fatigue, yet providing sufficient biasing force to continuously overcome the tendency of the piston to lift off the cam. In the preferred embodiment, the length of the springs approximate the mean distance of the piston stroke and bias the piston only through that half of the stroke during which the piston accelerates toward the cam surface. In other arrangements, the length of the spring may be varied to act for more or less than one-half of the stroke and, either singly or in conjunction with other biasing means, provide initial preload on the piston at the zero displacement position of variable displacement units.



3,621,762
ERROR-PREVENTING DRIVING SYSTEM FOR ELECTROHYDRAULIC PULSE MOTOR
Yo Ikebe and Jun Ikebe, Tokyo, and Seiuemon Inaba, Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 17, 1969, Ser. No. 877,209
Claims priority, application Japan, Nov. 21, 1968, 43/85,478
Int. Cl. F01b *3/02, 13/04;* **F15b** *9/10*
U.S. Cl. 91—503 **2 Claims**

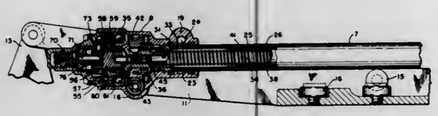


The gain of an electrohydraulic motor is controlled in accordance with the torque load of the motor to maintain a constant total gain and thereby decrease error.

3,621,763
FAN THRUST REVERSER ACTUATOR
Howard M. Geyer, Dayton, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed July 17, 1969, Ser. No. 842,660
Int. Cl. F01b *15/02;* **F15b** *15/26*
U.S. Cl. 92—17 **11 Claims**

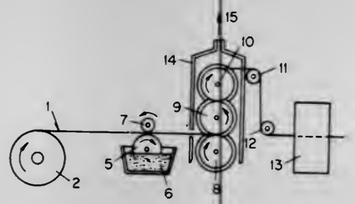
A fluid actuator in which the piston rod is fixed and the cylinder is movable, and all of the fluid connections for

the cylinder are through the fixed piston rod. Synchronizing and locking mechanisms are also contained in the



fixed piston rod so that their connections may also be through the fixed piston rod.

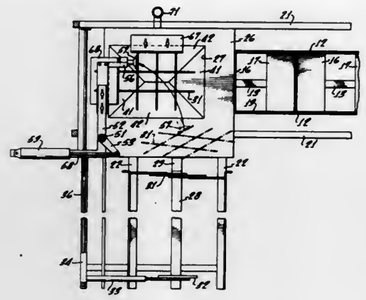
3,621,764
METHOD FOR MAKING FILTERING MATERIAL FOR TOBACCO PRODUCTS
Paul A. Muller, 9497 Triesenberg 405, Liechtenstein, and Hans Muster, 8340 Hadlikon, Hinwil, Switzerland
Filed Apr. 28, 1970, Ser. No. 32,569
Claims priority, application Switzerland, Mar. 24, 1970, 6,590/70
Int. Cl. B31d
U.S. Cl. 93—1 C **40 Claims**



Method for treating paper to render it particularly adapted to be gathered and enclosed in a wrapper to make a filter cord subdividable into efficient cigarette filters. The paper is first moistened with a volatile, impregnating agent to prevent undue tearing in a longitudinal grooving and lateral stretching treatment which loosens and exposes fibers by passage through the nip between heated meshing rollers having alternating circumferential ribs and grooves. The impregnating agent has a boiling point and heat of evaporation less than those of water to reduce drying time. Coating materials, e.g. cellulose triacetate, cellulose acrylic acetate, may be dissolved in the impregnating agent so that the fibers of the paper will be coated with the material on evaporation of the impregnating agent.

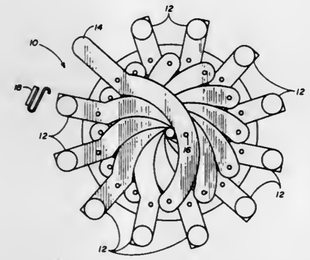
3,621,765
DEVICE FOR INSERTING PARTITIONS INTO CARTONS
Charles L. Sootheran, Fullerton, Ralph L. Johnson, San Gabriel, and Frederick A. Grant, Temple City, Calif., assignors to Glass Containers Corporation
Filed May 5, 1969, Ser. No. 821,574
Int. Cl. B31b *1/80, 11/02*; **B65b** *35/54*
U.S. Cl. 93—37 R **11 Claims**

A conveyor system for handling shipping cartons is provided with a work station at which a partitioning assembly of criss-crossed divider walls is to be inserted. The work station has a sectional platform comprised of a plurality of trapdoor elements for receiving and supporting a partitioning assembly above the carton conveyor. When a carton has been brought into position below the platform, a reciprocable ram engages the partitioning assembly and moves it downwardly into the carton, the trapdoor elements yielding and functioning as a guiding chute, as well as correcting minor misalignment



of the carton relative to the work station and holding the carton flaps out of the path of the partitioning assembly.

3,621,766
FORESHOOT SYSTEM
Henry A. Giesecke, Oklahoma City, Okla., assignor to Apromat, Incorporated, Oklahoma City, Okla.
Filed Sept. 23, 1969, Ser. No. 860,219
Int. Cl. G03b
U.S. Cl. 95—1 **13 Claims**

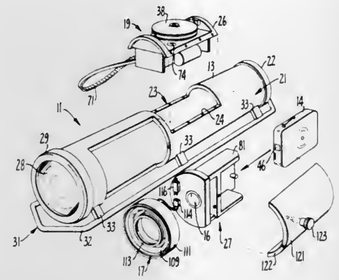


A foreshoot system includes a portion of an exposing system having a foreshoot aperture formed through it. The member is activated to position the aperture on the optical axis of the exposing system and to simultaneously close a light flash activating contact. In one embodiment of the system, the aperture comprises a pinhole formed through one leaf of an iris diaphragm. The leaf is activated to cover the diaphragm opening and to open the pinhole. In another embodiment, the aperture is formed in a shutter blade and includes a lens system for directing light through a focal point located at the diaphragm of the exposing system.

3,621,767
PIPE CAMERA FOR PHOTOGRAPHING THE INTERIOR OF A PIPE OR THE LIKE
William G. Hyzer, 136 S. Garfield, Janesville, Wis. 53545, and Ernest M. Whitley, 3061 Stelling Drive, Palo Alto, Calif. 94303
Filed June 11, 1969, Ser. No. 832,253
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **17 Claims**

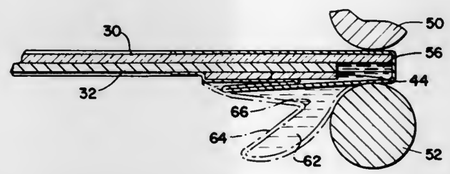
A pipe camera for photographing the interior of a pipe or the like at regular intervals comprising a watertight

housing, a transport device for moving the camera through the pipe, and a camera drive mechanism for operating the camera independently of the transport device but in response to movement of the camera through the pipe. The transport device consists of a tow line and skid members which are detachably secured to the camera housing. The camera drive mecahnism includes a pulley, a train of drive elements for interconnecting the pulley with the film



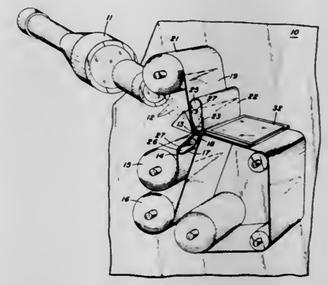
advance, the shutter and the flash element of the camera, and a clutch arrangement for providing a single direction of operation of the drive elements irrespective of the direction of rotation of the pulley. The operation of the flash element is synchronized with the opening of the shutter. A counter may also be connected to the train of drive elements for indicating the degree of camera movement through the pipe.

3,621,768
PHOTOGRAPHIC FILM UNIT HAVING EXPANDABLE HIGH VOLUME TRAP
Richard J. Chen, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Aug. 19, 1969, Ser. No. 851,291
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **12 Claims**



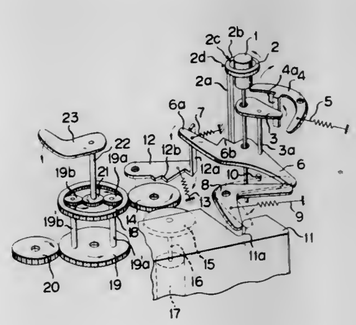
A self-developing film unit including a photosensitive sheet and a transparent second sheet held in face-to-face relation with respect to the photosensitive sheet. The sheets are bound together at their sides and a container of liquid processing composition is situated near a leading edge of the sheets. The sheets are adapted to be moved relative to pressure-applying rollers, leading edge foremost, thereby spreading the liquid processing composition across the area of the photosensitive sheet that has been exposed through the transparent sheet. Liquid processing composition in excess of that needed to completely cover the exposed area of the photosensitive sheet is collected in trapping means near the trailing edge of the face-to-face sheets in a chamber that responds to an increase in hydraulic pressure of the excess liquid processing composition to increase its volume.

3,621,769
CONTINUOUS RAPID ACCESS FILM PROCESSOR
Andrew A. Blatz, Cinnaminson, N.J., assignor to the United States of America as represented by the Department of the Navy
Filed Oct. 14, 1968, Ser. No. 767,177
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **6 Claims**



An information transfer system to receive radio signals and convert them to light waves which impinge a photographic film. A processing film is brought into laminating contact with the exposed film to develop it and during the laminating contact the films are heated after which they are delaminated and wound on separate rolls. The processing film in the form of a positive print is viewed and stored. The photographic film, which is the negative, is also stored for future use The process is continuous and the system provides a permanent record within minutes of the receipt of the information.

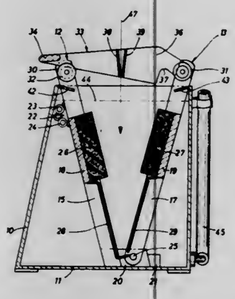
3,621,770
MULTIPLE-EXPOSURE DEVICE
Tomio Tsuruoka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 17, 1969, Ser. No. 816,893
Claims priority, application Japan, Apr. 28, 1968, 43/32,862
Int. Cl. G03b *17/42, 9/68*
U.S. Cl. 95—31 R **10 Claims**



A multiple-exposure device for a camera comprising a film advance or winding member, a shutter charging mechanism and a film wind up mechanism employs a differential gear mechanism. A stop member, and a manually operable switching member which actuates the stop member, are provided in the film wind up mechanism. To make multiple-exposures, the stop member is actuated by the manually operable switching member

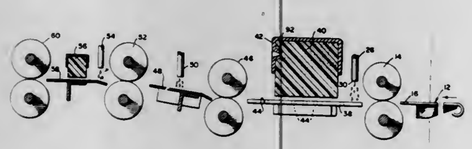
to stop the film wind up mechanism and to enable only the shutter charging mechanism to operate. As a result, multiple-exposure operation is afforded until the switching member is returned to normal double exposure prevention operation.

3,621,771
PHOTOGRAPHIC PROCESSING DEVICE
Emile Frans Stievenart, Hoboken, and Marcel Nicolas Vrancken, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed May 7, 1969, Ser. No. 822,378
Claims priority, application Great Britain, May 7, 1968, 21,654/68
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 R **7 Claims**



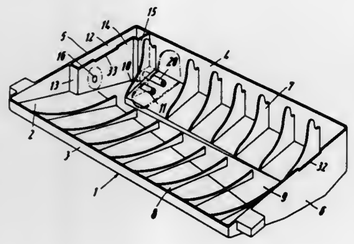
Apparatus for developing sheet material including a recording layer having differentially solvent-soluble areas therein by removing the more soluble areas. The apparatus consists of cooperating sheet rubbing members and squeeze rollers which are carried respectively within and above a container of solvent on frame sections hinged together about a horizontal axis at their lower ends. The hinge permits the rubbing members and rollers to be separated for the admission of the sheet material and brought together for frictionally engaging the sheet material on removal thereof from the container by rotation of said squeeze rollers. At least one rubbing member has a surface of porous resilient material for contacting said recording layer.

3,621,772
PLATE PROCESSOR
Irving R. Bogue, Hebron, Conn., assignor to Rogers Corporation, Rogers, Conn.
Filed Sept. 4, 1969, Ser. No. 855,299
Int. Cl. G03d *5/04*
U.S. Cl. 95—89 R **6 Claims**



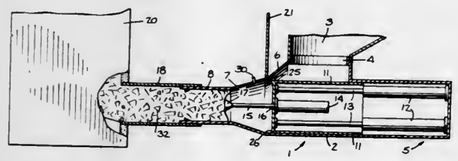
A processor is presented for lithographic plates wherein the plate is advanced through a series of opposed rollers to successive processing stations. The developer is delivered through a series of spaced apart, individually supplied dispensing ports, each of the ports being fed by a positive displacement pump, and the developer is scrubbed on the plate by a unitary oscillating sponge. Oscillation and deactivation of successive stations throughout the processor are time-coordinated with the passage of the plate through the processor.

3,621,773
DEVELOPING DEVICE
Walter Limberger and Jürgen Limberger, Hamburg-Poppenbuttel, Germany, assignors to Lumoprint Zindler KG., Hamburg, Germany
Filed Aug. 11, 1969, Ser. No. 848,915
Claims priority, application Germany, Aug. 23, 1968, P 17 97 165.2
Int. Cl. G03d *13/04*
U.S. Cl. 95—96 **10 Claims**



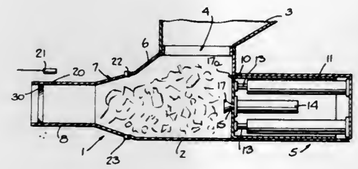
A developing device for a transfer method using two different materials each of which is guided through a different treatment tank. The treatment tanks are nested together and connections are provided to supply separate treatment fluid to each of the treatment tanks. The lower treatment tank has a chamber formed along a part of one side with an opening into the chamber. The upper treatment tank which nests into the lower one has a socket extending from its side which fits into the opening into the chamber for providing fluid communication between the chamber and the upper treatment tank. Supports are formed on the upper treatment tank which fit into abutments on the lower treatment tank for positioning the treatment tanks in a nested arrangement and maintaining the socket in position within the opening into the chamber.

3,621,774
COMPACTING MECHANISM
Douglas A. Dedio, Torrington, and John E. Baker, Waterbury, Conn., assignors to Waterbury Hydraulic & Pollution Sciences, Inc., Waterbury, Conn.
Filed Feb. 18, 1970, Ser. No. 12,347
Int. Cl. B30b *1/32*
U.S. Cl. 100—74 **11 Claims**



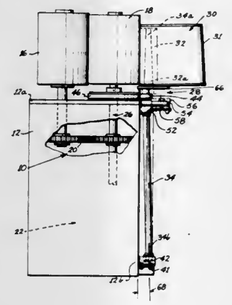
A refuse compacting mechanism which has a sealing gate adjacent its discharge section to seal off the discharge section from the hopper section of said mechanism. When the mechanism is used with a sealed air type incinerator the sealing gate permits incineration to proceed under the controlled conditions existing within the incinerator.

3,621,775
COMPACTING MECHANISM
Douglas A. Dedio, Torrington, and John E. Baker, Waterbury, Conn., assignors to Waterbury Hydraulic & Pollution Sciences, Inc., Waterbury, Conn.
Filed July 31, 1969, Ser. No. 846,542
Int. Cl. B30b *15/16*
U.S. Cl. 100—49 **17 Claims**



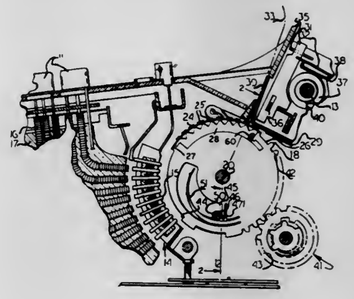
A refuse compacting mechanism which has a variable restricted throat in its outlet tube to apply sufficient resistance to permit effective compacting.

3,621,776
VERTICAL GRAINING MACHINE
Kurt G. Savke, 3934 Farrel Drive, Cincinnati, Ohio 45211
Filed May 18, 1970, Ser. No. 38,434
Int. Cl. B41f *17/18, 17/28*
U.S. Cl. 101—38 R **10 Claims**



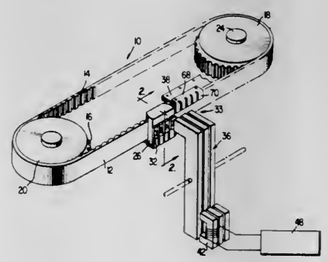
An improved vertical graining machine, for graining articles having tapered or straight sides and being round, square or rectangular in cross section and provided with rounded corners, of the type having a frame with a horizontal surface mounting substantially vertical master and printing rolls, the master roll having a graining pattern etched thereon and being contiguous with the printing roll, inking means to ink the master roll, gear means joining the master and printing rolls, drive means mounted within the frame and connected directly to at least the printing roll, and work holding means for holding the articles to be grained contiguous with the printing roll. The work holding means comprises a vertical back-up pressure roll, a pressure roll drive shaft adjacent the frame and coaxial with the pressure roll, the drive shaft mounting the pressure roll at one end thereof and being pivotal about the other end so as to adjust the position of the pressure roll as desired, the pressure roll drive shaft being operatively connected intermediate its ends to the drive means of the graining machine so that the surface speed of the large base of the pressure roll is substantially identical with the surface speed of the printing roll, and means to lock the pressure roll drive shaft and thus the pressure roll in a desired position.

3,621,777
TYPE SECTOR SETTING MEANS IN DATA PRINTERS
John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed Mar. 4, 1970, Ser. No. 16,316
Int. Cl. B41j *1/58*
U.S. Cl. 101—93 R **7 Claims**



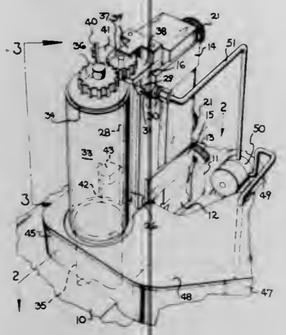
The printing sectors of an adding or calculating machine are provided with outwardly yieldable type carrying sections. An aligning member is movable outwardly into engagement with detenting notches in the sections, the member flexing the sections to form a solid base against which type hammers impact.

3,621,778
TYPE SLUG MOUNTING FOR HIGH SPEED CHAIN PRINTER
David J. Ripple and Joseph N. Bond, Commack, N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.
Continuation of application Ser. No. 778,631, Nov. 25, 1968. This application Mar. 10, 1970, Ser. No. 17,043
Int. Cl. B41j *1/20*
U.S. Cl. 101—93 **15 Claims**



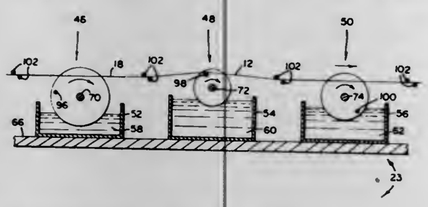
A high speed chain-type printer having a plurality of relatively wide, multi-character type slugs mounted on the print type carrier in close proximity to each other. The carrier is an endless toothed belt driven by gears in mesh with its teeth. The slugs are mounted on the belt by cylindrical pins straddling selected teeth on the belt. Spring fingers are also provided at the print station to urge the type slugs against a back-up means.

3,621,779
VERTICAL INK FOUNTAIN
David G. Carl, Sylvania, and John R. Johnson and Jack H. Myers, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed July 2, 1969, Ser. No. 838,477
Int. Cl. B41f *31/12*; B41l *27/10*
U.S. Cl. 101—366 4 Claims



Apparatus for producing an ink film on a vartically positioned off-set inking roll in which the ink is supplied in a substantially vertical line or at spaced points to the surface of the ink roll and an adjustably positioned, rotating doctor-roll is utilized to control the thickness of the ink film which is produced on the inking roll for an off-set printing or decorating process.

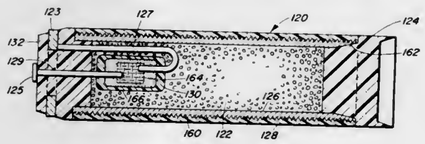
3,621,780
PRODUCTION OF RANDOM DYED PILE TEXTILES
John G. Tillotson, Dalton, Ga., assignor to Advance Finishing, Inc., Dalton, Ga.
Original application June 26, 1967, Ser. No. 648,652. Divided and this application Mar. 21, 1969, Ser. No. 851,512
Int. Cl. B41f *17/10*
U.S. Cl. 101—172 2 Claims



Dye printing means wherein a number of yarns in a horizontal path are engaged by a plurality of printing bar units, arranged seriatim along the path of travel, to produce a random multi-color pattern on the yarns.

3,621,781
HAND WEAPON AND CARTRIDGE THEREFOR
Erich Cornelius Johnsen, 1205 Broad St., Victoria, British Columbia, Canada
Filed June 11, 1968, Ser. No. 736,196
Int. Cl. F42b *5/08*
U.S. Cl. 102—38 10 Claims

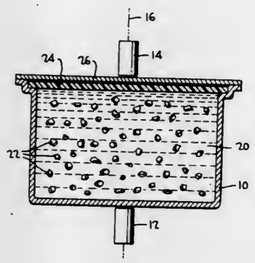
The disclosure relates to cartridges for guns composed of a steel cartridge sleeve having a Teflon or nylon, etc., jacket therearound to prevent excessive friction. In one embodiment of the disclosure, the sleeve is closed at the front end by a nylon top cap and a main charge is positioned immediately behind the top cap and within the steel sleeve. At the rear portion of the steel sleeve, there is positioned a nylon end cap which is secured within the sleeve, the end cap including a negative electrical contact passing from the outer portion thereof into the main body of the sleeve and a positive electrical contact also passing therethrough into the inner portion of the sleeve. Within the sleeve is positioned a glass or plastic capsule which encloses an explosive composition positioned between the positive and negative contacts. The cartridge is designed to cause an explosion upon the placement of the voltage across the positive and negative contacts to project the nylon top cap outwardly, the spent shell being retained in the gun barrel and not undergoing any movement.



A second embodiment of the disclosure sets forth a cartridge having a two-part sleeve and a steel disc therebetween, only the forward portion of the sleeve being projected upon explosion within the cartridge, the other portion being retained within the barrel of the gun.

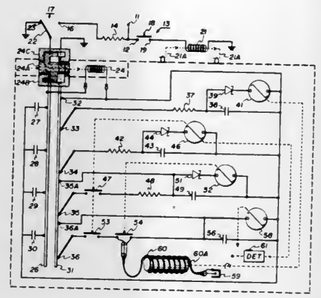
A third embodiment of the disclosure sets forth an armor piercing projectile unit wherein a leading projectile is followed by an explosive trailing projectile, the leading projectile providing an opening for the trailing projectile to pass through and provide an explosion due to inertial impact. An end cap, which is provided as in prior embodiments, forms the well known "dum-dum" projectile and drops from the flight path of the other two projectiles.

3,621,782
CENTRIFUGALLY OPERATED SAFETY AND ARMING DEVICE
Allan M. Biggar, Arlington, Va., assignor to the United States of America as represented by the Secretary of the Army
Filed Oct. 17, 1969, Ser. No. 867,165
Int. Cl. F42c *15/22*
U.S. Cl. 102—70 R 6 Claims



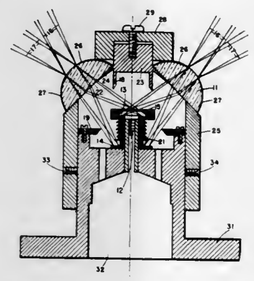
A safety and arming device for use in spin-operated munition fuzes. A container placed along the spin axis of the explosive train is filled with a fluid in which are randomly spaced explosive granules of a density less than that of the fluid. The mixture, in addition to providing a detonation wave barrier, maintains the explosive train out of line prior to launch. After launching, the centrifugal force due to spin acts to align the less dense explosive granules along the axis of rotation of the device, thus completing the explosive train and arming the fuze.

3,621,783
RETARDED BOMB FUZE
Howell M. Sumrall, 4447 Marraco Drive, San Diego, Calif. 92115
Filed Feb. 9, 1970, Ser. No. 9,832
Int. Cl. F42c *11/04, 15/12, 15/40*
U.S. Cl. 102—70.2 R 4 Claims



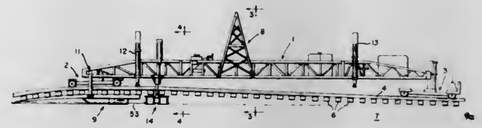
A retarded bomb fuze which requires a first arming actuation for charging a bank of capacitors; one of the capacitors being coupled through an RC network and a Zener diode to a bellows motor for paying-out a tethered switch; a second capacitor operates through an RC time build-up to operate a second bellows motor for enabling a third and fourth circuit; a third capacitor discharges through an RC time network to operate a third bellows motor which acts as a time-delay destruct should other firing signals fail, and a tethered all-attitude impact switch comprising two hemispherically-shaped weights separated by a flexible insulator for actuating the firing squib upon impact, and a second releasing switch for physically releasing the bomb after the plurality of capacitors have been charged.

3,621,784
OPTICAL SYSTEM FOR AN INFRARED MISSILE FUZE
Lloyd G. Mundie, Ann Arbor, Mich., assignor to the United States of America as represented by the Secretary of the Navy
Filed Dec. 29, 1955, Ser. No. 556,363
Int. Cl. F42c *13/02, 19/00, 13/00*
U.S. Cl. 102—70.2 P 9 Claims



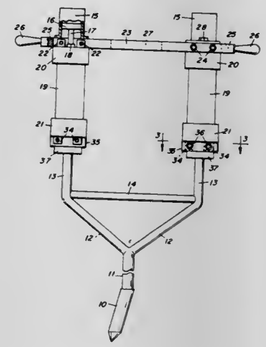
1. An infrared fuze comprising an annular toroidal lens, a pair of annular detectors positioned concentrically with respect to the axis of said lens and on opposite sides of the focal point of said lens, shielding and reflecting means associated with one of said detectors whereby the energy passing through said lens crosses the axis thereof before striking said detector, and electronic means associated with said detectors and adapted to receive successive signals from said detectors during a predetermined interval for actuating a detonation circuit.

3,621,785
BALLAST SPREADER AND COMPACTOR
Joseph G. Fearon and Alan R. Blair, Libby, Mont., assignors to Morrison-Knudsen Company, Inc., Boise, Idaho
Filed Aug. 6, 1970, Ser. No. 61,726
Int. Cl. E01b *27/17, 27/18*
U.S. Cl. 104—2 4 Claims



An apparatus for spreading and compacting ballast under railway tracks which utilizes a sled structure with ballast spreading means which is advanced beneath the rails and ties. The sled is followed immediately by a plurality of vibratory tampers or compactors which compact the ballast before the rails and ties are replaced on the ballast layer. The novel method includes the steps of preparing a subgrade or sub-base, laying the ties and rails on the subgrade, depositing ballast along the rails and ties from such means as rail cars, utilizing the apparatus of the present invention to raise the rails and ties and uniformly spread the ballast thereunder while compacting the same before the rails and ties are replaced, tamping additional ballast beneath the rails and ties to bring the railway to a proper elevation alignment and cross level and then dressing the rails and ties with fine ballast.

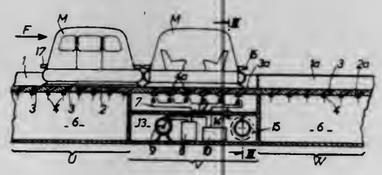
3,621,786
RAILWAY BALLAST TAMPER
Ivan L. Joy, 1616 W. 29th St., Topeka, Kans. 66611
Filed Apr. 22, 1970, Ser. No. 30,701
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 14 Claims



A ballast tamper having a tool support operable by a resonant frequency power drive. The direction of the tamping force on the tool is controlled by providing a pair of resonant frequency actuators, each operably connected to a separate force-transmitting branch member of a bifurcated tool mounting structure. The other ends of the branch members are connected together to a common point on the tool support. The relative vibration phase relationship of the power drives is controllably variable through one hundred and eighty degrees whereby the

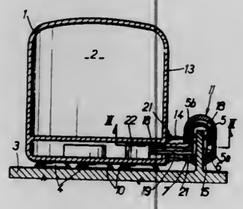
resultant direction of the force on the tool is variable from vibratory vertical movement to vibratory horizontal movement and in passing between these limits can assume an ellipsoidal orbital circumferential movement with the major axis vertical to ellipsoidal movement with the major axis horizontal providing in the intermediate relations forces both horizontal and vertical and variable in both direction and magnitude by variation of the relative power drive phase relationship of the two actuators.

3,621,787
MARSHALLING PROCESS AND DEVICE FOR GROUND EFFECT TRANSPORTATION
François Louis Girand, Plaisir, France, assignor to Societe de l'Aerotrain, Paris, France
Filed Jan. 28, 1969, Ser. No. 794,651
Claims priority, application France, Mar. 27, 1968, 145,717
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **2 Claims**



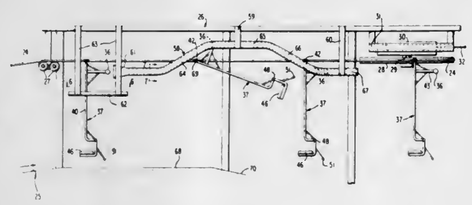
A ground effect transportation system has a marshalling yard by-passing a main line and having a station area which is fluidically activatable by means of valve-controlled pressure fluid jets distributed thereon; a carriage is switched from said main line into said marshalling yard and propelled towards said station area which is first deactivated during a predetermined lapse of time thereby eliminating ground effect thereon and immobilizing said carriage as it overlies the area, then re-activated thereby restoring ground effect and carriage movability thereon; the carriage is thereafter propelled over said marshalling yard and switched into said main line.

3,621,788
GROUND-EFFECT TRANSPORTATION SYSTEM
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France
Filed Dec. 11, 1968, Ser. No. 782,968
Claims priority, application France, Apr. 29, 1968, 149,966
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **2 Claims**



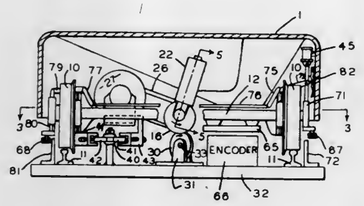
A guiding device for a tracked air cushion vehicle movable over a guideway having a dissymmetrical upward extension laterally offset relatively to the base section of the guideway, said guiding device being carried by the body portion of the vehicle at a laterally offset location and extending astride said extension to engage the opposite faces thereof.

3,621,789
SKI LIFT
David R. Pender, 1018 Marion St., Columbia, S.C. 29201
Filed Oct. 22, 1968, Ser. No. 769,559
Int. Cl. B61b *11/00*
U.S. Cl. 104—173 **12 Claims**



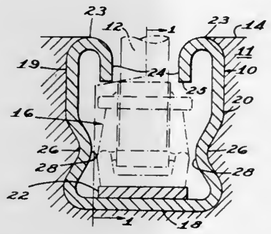
An apparatus for conveying skiers safely to the top of a ski slope characterized by saddle-type seats which are mounted and de-mounted by skiers from the rear while the seats are moving at a relatively fast rate in comparison to conventional equipment, thereby greatly increasing the overall speed and capacity of the lift without decreasing safety. Existing conventional equipment is readily convertible.

3,621,790
RAILWAY PROPULSION SYSTEM
Joseph Wesley Broome, Milwaukee, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Aug. 11, 1969, Ser. No. 849,082
Int. Cl. B61b *13/00;* **B61c** *3/00;* **B61d** *15/00*
U.S. Cl. 104—147 **9 Claims**



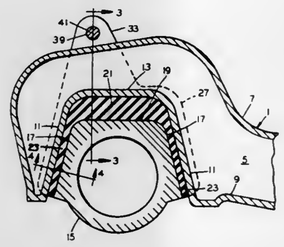
A propulsion system for an individual car of a railway transportation system comprises a rotating drive tube extending longitudinally of and resiliently supported from the chassis of the car in position to cooperate with reaction wheels spaced along the path of the car at intervals less than the length of the drive tube. The drive tube is driven at a generally constant speed so that the speed of the car past any reaction wheel is determined by the angular position of the reaction wheel relative to the drive tube. Some of the reaction wheels are journalled in pivotable mountings to be responsive to external controls for varying the speed of the car past the wheel. Auxiliary power may be supplied directly to a reaction wheel to supplement the power supplied through the drive tube. The reaction wheels may be used in laterally spaced pairs to cradle the drive tube and thus guide the car.

3,621,791
TRACK FOR FLOOR TRUCK DRAGLINE CONVEYORS
Martin Pachuta, Allen Park, Mich., assignor to Jervis B. Webb Company
Filed Jan. 21, 1969, Ser. No. 792,397
Int. Cl. B61b *9/00*
U.S. Cl. 104—172 BT **3 Claims**



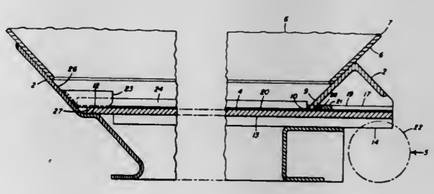
A track member, used for a dragline conveyor propelling tow pin equipped floor trucks, which is of one piece construction, having a U-shaped cross section incorporating a tow pin guide slot, a chain supporting base portion and chain guiding said portions having integrally formed anchoring means which enable the track member to be expeditiously placed in a poured floor. Preferably, the anchoring means are ribs extending longitudinally along the side portions of the track member and projecting inwardly toward the longitudinal center line thereof, the ribs being capable of performing a guiding function on the chain.

3,621,792
RESILIENT JOURNAL BOX MOUNTING
Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Mar. 6, 1969, Ser. No. 804,922
Int. Cl. B61f *5/28, 5/30, 5/38*
U.S. Cl. 105—224.1 **5 Claims**



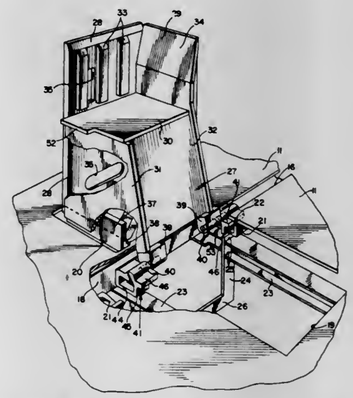
A resilient mounting for a railway truck framing element on a journal box comprising a pedestal jaw having inwardly and upwardly sloping sides and a horizontal top, a journal box having similarly sloping sides and a horizontal top wider in proportion to the height of its sides than the pedestal jaw top, and a molded elastomeric pad of inverted generally U-shape having a relatively thick central top portion positioned between the opposing tops of the journal box and pedestal jaw and thinner inclined end portions positioned between the inwardly sloping opposing sides of the journal box and pedestal jaw, the journal box having outwardly extending peripheral flanges spaced apart a greater transverse distance transversely than the thickness of the jaw, the pad having protruding flanged marginal portions compressed into the intervening spaces between the journal box flanges and the outer and inner surfaces of the framing element whereby to fix the transverse portion of the journal box within the pedestal jaw.

3,621,793
PLASTICALLY AND RESILIENTLY SEALED RAILWAY HOPPER GATE ASSEMBLY
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Oct. 24, 1969, Ser. No. 869,274
Int. Cl. B61d *7/20, 7/22, 7/26*
U.S. Cl. 105—282 A **9 Claims**



An otherwise conventional railway hopper car discharge gate assembly modified to transport finely divided lading by fixing to the frame above the gate bendable plates and bars for pressing the gate at sides and rear against its seat and applying plastic cement between the gate and the frame adjacent the gate-receiving opening in the front of the frame.

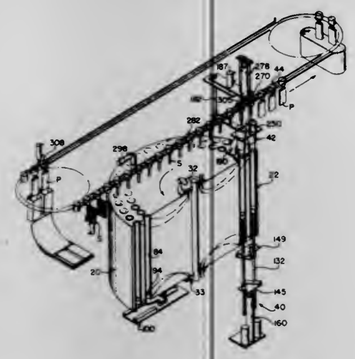
3,621,794
MULTI-PURPOSE RAILROAD CAR
Harold E. Gramse, Chicago Heights, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Apr. 25, 1969, Ser. No. 819,370
Int. Cl. B65i *1/22;* **B61d** *45/00*
U.S. Cl. 105—366 D **6 Claims**



A railroad flat car readily interchangeable for container and trailer-on-flat-car operations is provided with a container bracket arrangement having a plurality of slots in the deck of the car which permits container brackets to be longitudinally adjusted to various positions on the deck for accommodating different length containers. Apertures are provided which extend transversely of the slots and in which the container brackets are stored when

the car is utilized for trailer operation. The container brackets are provided with engaging elements which are adapted to be engaged with slide blocks for permitting adjustment of the brackets longitudinally within the slots, the engaging elements on the container bracket being disengageable from the slide blocks so that the container bracket may be recessed within an adjacent aperture in a retracted position.

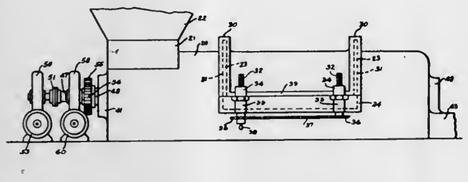
3,621,795
CONFECTION FORMING MACHINE AND METHOD
Kenneth A. Lorz, Oroville, Donald E. Rasmussen, Kennewick, and Forrest C. Smith, Richland, Wash., assignors to Kamino Industries, Incorporated, Yakima, Wash.
Filed Apr. 10, 1969, Ser. No. 815,041
Int. Cl. F25c 7/22
U.S. Cl. 107—8 **31 Claims**



A machine for extruding form-sustaining products, particularly confection novelties or the like, including a pair of rotary turrets mounted for rotation about parallel axes, each turret having tube assemblies for freezing the confection material. The turrets are indexed by a cam and follower mechanism. As they are indexed the material is placed in the tube assemblies which are then cooled to solidify the material and then warmed for a short duration to free the material from the tube assemblies. Coolant and warmant are controlled by rotary valve mechanism. Each tube assembly includes a tubular confection receptacle covered by a cooling jacket. The confection material is fed into the receptacle against a sliding piston which is also used to force the confection material from the tube assembly. The piston is moved by a pushing mechanism which includes an elongated rod and a pair of fixed and movable clamping plates. The plates are provided with holes that encircle the elongated rod and grip the rod when a plate is canted. The rod is raised in steps by holding the rod with one canted plate while raising the plate, then holding the rod with the other canted plate and releasing the first and lowering it. The confection material is moved from the tube assemblies into an extruder mechanism. The extruder mechanism includes an outer extruder tube having a die at its upper end and circumscribes an inner reservoir tube when in a retracted position. The extruded tube is extended by filling it with confection material from the reservoir tube. A gate closes off the inlet end of the reservoir tube and the extruder is retracted to extrude the confection material through the die onto sticks suspended above the extruding assembly. The sticks are mounted in a plurality of stick-holders carried by a conveyor overlying the rotary turrets.

One method comprises cooling an extruable material to a form-sustaining constituency, placing a stick in position along a predetermined path, moving an extruding orifice along the path and over the stick, extruding the material through the orifice as it is moved along the path over the stick whereby the material is left on the stick as the orifice passes it, and severing the extruded material from the material remaining in the orifice. By arranging the tube assemblies adjacent one another the machine may extrude and fill simultaneously enabling the filling mechanism to feed a continuous supply of confection material into alternate confection receptacles. Finally, the sticks are held in a slot formed by two opposed body members that are held together by a rubber ring. The sticks are released by pressing on the tops of the body members to rock them open. The body members are carried on a conveyor that is moved by a ratchet type drive.

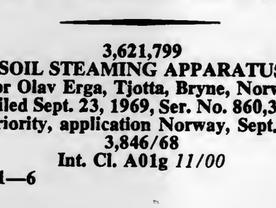
3,621,796
METHOD AND APPARATUS FOR CONTINUOUS DOUGH MIXER
George P. Sternberg, 3740 Wyoming St., Kansas City, Mo. 64111
Filed Aug. 28, 1968, Ser. No. 755,966
Int. Cl. A21c 1/00
U.S. Cl. 107—30 **18 Claims**



A continuous dough mixer that has a mixing chamber having a tubular wall to which a hopper feeds the dough ingredients at one end and from which an outlet connection discharging developed dough leads from the other end, and an agitator that has lengthwise adjacent pre-mixing and developing sections extending lengthwise in the chamber. Both sections have a core, the core of the pre-mixing section having a cylindrical surface concentric with the axis of rotation of the agitator and a spiral flange on the core that has a gap in it and spaced projecting agitating bars on the spiral flange, while the developing section has a spiral flange that has regularly spaced openings in it and its core has helically spaced thickened portions between the turns of the flange, providing protuberances extending toward the wall and reduced passage portions between the core and wall. The tubular wall at the developing zone has an arcuate portion movable toward and away from the agitating means to vary the spacing between the agitating means and the wall for adjustment of the developing action. A screw conveyor driven and adjustable in speed independently of the agitating means pulls the developed dough out of the developing chamber. Inwardly directed ribs run lengthwise of the pre-mixing and developing chambers along the tubular wall.

3,621,797
LOCATING DEVICE FOR PALLET
Calvin W. Hunter, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 12, 1969, Ser. No. 875,618
Int. Cl. B65d 19/18
U.S. Cl. 108—51 **1 Claim**

Locating devices are secured to the corner of a rectangular central panel to form a captive pallet. The devices have an outer angled surface that mates with an angled surface on automatic material handling transport devices.



The locating devices also have an inner surface that positions and retains a material unit upon the captive pallet.

3,621,798
FURNACES FOR THE COMBUSTION AND DESTRUCTION OF WASTE MATERIALS
Frode Pedersen, Oslo, Norway, assignor to A. S. Mustads Fabrikker, Oslo, Norway
Filed Sept. 16, 1969, Ser. No. 858,441
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R **7 Claims**

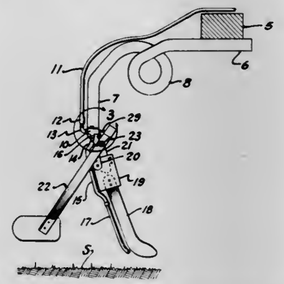
A furnace is disclosed, intended for the combustion and destruction of waste materials, the furnace being provided with an external heat source and a downwardly tapering combustion chamber. The combustion chamber is provided with a separate removable mantle of sheet material supported by the refractory lining of the furnace. The combustion chamber may be extended upwardly by two coaxial mantles, the inner mantle being removable and preferably made in one piece with the tapering mantle portion. Combustion air is fed to the combustion chamber through slots in the tapering mantle portion.

3,621,799
SOIL STEAMING APPARATUS
Tor Olav Erga, Tjotta, Bryne, Norway
Filed Sept. 23, 1969, Ser. No. 860,390
Claims priority, application Norway, Sept. 28, 1968, 3,846/68
Int. Cl. A01g 11/00
U.S. Cl. 111—6 **1 Claim**



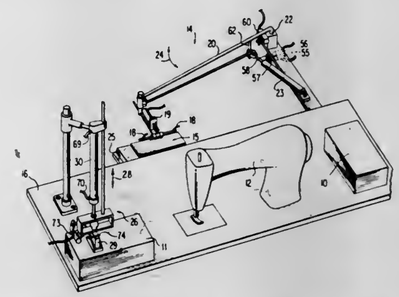
A method for soil steaming comprises penetrating a plastic foil placed on the ground with a plurality of vertical steaming pipes fed by a steam supply pipe, the steaming pipes having caps or hoods at their upper ends, and engaging the plastic foil with the caps or hoods during the steaming to aid in anchoring the foil and to prevent escape of steam.

3,621,800
RELEASE MECHANISM FOR ANHYDROUS AMMONIA APPLICATORS
Arthur J. Rellinger, R.R. 2, Fort Jennings, Ohio 45844
Filed June 30, 1970, Ser. No. 51,076
Int. Cl. A01c 23/02
U.S. Cl. 111—7 **5 Claims**



This invention consists of a horizontally disposed valve mounted on a vertically disposed bracket secured to the lower end of the shank of an ammonia applicator which may be a harrow or a similar tillage farm implement. The aforesaid valve has its inlet connected by a hose to an ammonia supply tank and its outlet connected by a hose to a tube that extends vertically down the back edge of the knife of the aforesaid applicator or the like. The aforesaid valve is opened and closed by having its plunger activated by the upper and back end of the cover arm of the applicator. The aforesaid cover arm is swingably mounted on a horizontally disposed shaft that extends outwardly from the aforesaid bracket. The aforesaid cover arm is moved whenever its lower end comes in contact or ends contact with the soil over which the aforesaid ammonia applicator is being moved. The opening or closing of the aforesaid valve releases or stops the flow of anhydrous ammonia out of the aforesaid tube, as will hereinafter be described.

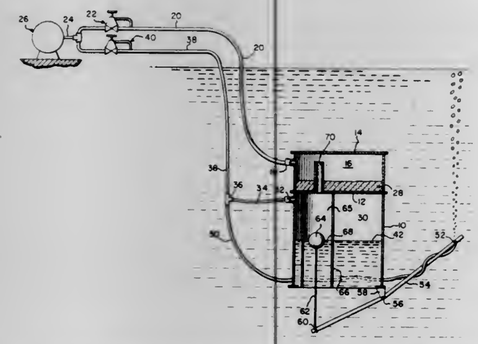
3,621,801
PLY NUMBERING AND SEWING SYSTEM
Erie George Huddleston, Monroe, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed June 3, 1970, Ser. No. 42,980
Int. Cl. D05b 1/00
U.S. Cl. 112—262 **4 Claims**



A numbering system in a process of manufacturing pants or similar garments wherein bunches of pattern parts are delivered from the pattern cutting room to sewing stations in various processing lines, and bunch and ply numbers are applied to the individual pattern parts in the bunches at the first sewing station of each processing line. When the first pattern parts from the first sewing stations are delivered to the second and subsequent sewing stations in each processing line the subsequent pattern parts

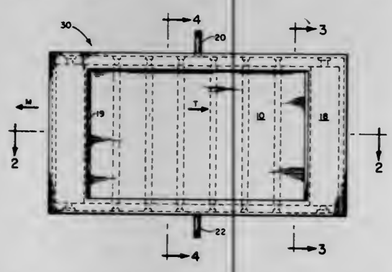
are taken in order directly from their bunches and connected to the previously marked first pattern parts and will thereafter be identified by the bunch and ply numbers carried by the first pattern parts. A stamping mechanism at each first sewing station of the processing lines stamps the bunch and ply numbers on pocket parts, etc., which are attached to the first pattern parts in response to the movement of a stacker at the sewing stations.

3,621,802
DEPTH CONTROLLABLE UNDERWATER APPARATUS AND METHOD OF USE THEREOF
Samuel L. McGinn, Jr., New Orleans, La., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed Sept. 29, 1969, Ser. No. 861,922
Int. Cl. B63g *8/00*; **B63c** *7/00*
U.S. Cl. 114—16 E **21 Claims**



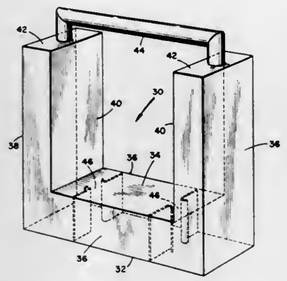
A body means includes a buoyancy chamber and means is provided for selectively controlling the pressure in said buoyancy chamber to adjust the depth of the apparatus. A compensator chamber is open to the surrounding water and receives a variable amount of water therein to form ballast for the body means. Air under pressure is introduced to said compensator chamber and is controlled by a depth sensing means including an open end conduit supported by an arm swingably connected with the body means. The position of the arm is controlled by a float riding within a sensing chamber provided within the body means, such sensing chamber being in communication with the buoyancy chamber.

3,621,803
MOVING SURFACE TO REDUCE DRAG
Richard E. Foster, 5883 Silverleaf, Baton Rouge, La. 70812
Filed Sept. 15, 1969, Ser. No. 857,856
Int. Cl. B63b *1/36*
U.S. Cl. 114—67 **3 Claims**



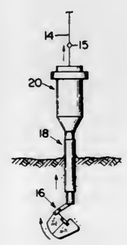
Vehicles (e.g., boats and ships) are equipped with freely movable surfaces contacting the fluid medium through which the vehicles travel. During travel the surfaces move in a direction opposite to the direction of travel.

3,621,804
METHOD FOR STABILIZING A SHIP WITH CHANGING GM
Frans V. A. Pangalila, Matawan Township, N.J., assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Oct. 10, 1969, Ser. No. 865,417
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **2 Claims**



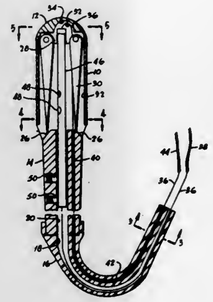
A passive stabilizing tank for use in a vessel whose GM is apt to change substantially, and a method of operating such a tank. The tank of the present invention is in the form of a U-shaped tank with an optional cross-over duct bridging the upstanding members of the tank. When filled with a liquid up to a predetermined level, the tank functions as a free-surface tank having a given frequency range. When, however, the liquid level in the tank is raised above a predetermined limit, the tank functions as a U-tube tank having a frequency range substantially less than the frequency range of the free-surface tank. The present invention further relates to a method of stabilizing a ship whose GM is apt to change substantially, comprising adjusting the liquid level in a tank so that the tank functions as either a free-surface tank or as a U-tube tank.

3,621,805
EMBEDMENT ANCHOR
Jasper E. Smith, Ventura, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 2, 1970, Ser. No. 7,725
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 R **4 Claims**



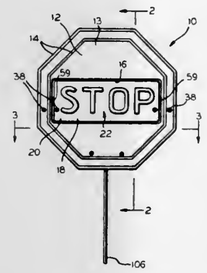
An anchor of the embedment type having an elongate staff and an articulated soil penetrating tip bearing radially arranged flukes. During soil penetration, the flukes are disposed edgewise to insure minimum resistance to soil penetration. After full penetration a short upward pull on the staff rotates the articulated tip to a position with the flukes disposed cross-wise to gain maximum purchase on the soil. It may be embedded either by free fall impact or by vibration.

3,621,806
ANCHOR WITH RETRACTABLE FLUKES
Robert F. Brown, 400 Cedar St., Clearwater, Fla. 33515
Filed May 16, 1969, Ser. No. 825,155
Int. Cl. B63b *21/44*
U.S. Cl. 114—208 R **8 Claims**



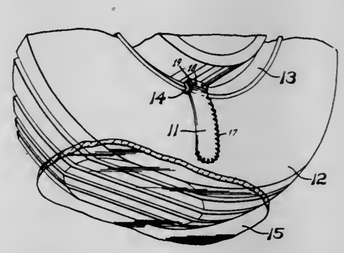
A ship's anchor takes the form of a cylinder with retractable and extendable flukes. The cylinder carries two cables. Application of tension to one cable extends the flukes. Application of tension to the other cable retracts the flukes.

3,621,807
AUTOMOBILE PARKING GUIDE
Chuwan Kang, 2301 Ridgeway Ave., Evanston, Ill. 60201
Filed Nov. 23, 1970, Ser. No. 91,762
Int. Cl. B60q
U.S. Cl. 116—28 **8 Claims**



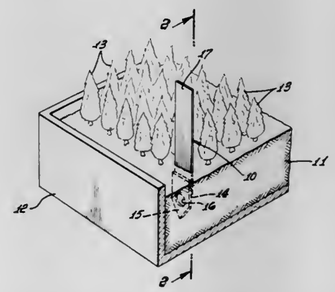
A guide device for parking an automobile or the like to dispose its front or rear bumper at a predetermined distance from the inner end wall of a garage or the like comprising a sign in the form of a hex-shaped member mounted on the wall in spaced relation therefrom and about level with the vehicle operator's line of sight and having a window opening formed in its midportion in which a slat is mounted for swinging movement about a horizontal axis at its midportion, with the slat being balanced such that under the action of gravity, it is disposed substantially edgewise to the plane of the sign. The slat bears the word "stop" on its normally downwardly facing surface, and its other surface is engaged by an arced arm of a feeler member pendantly mounted at the rear of the sign that includes a shank adapted to be engaged by the vehicle bumper such that as the bumper is advanced toward the wall after engaging the feeler member, the slat is tilted into alignment with the plane of the sign to indicate that the desired spacing of the bumper from the wall has been reached.

3,621,808
EXCESSIVE DEFLECTION WARNING DEVICE FOR INFLATABLE TIRES
James Sidles, West Richfield, and Donald R. Bartley, Cuyahoga Falls, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,531
Int. Cl. B60c *23/02*
U.S. Cl. 116—34 **9 Claims**



A device attachable to an inflated vehicle tire to warn of excessive deflection such as that produced by underinflation, overload, or both. The device comprises an elongated flexible member secured in compact condition to the rim, or to the inflated tire adjacent the rim, with a portion of the supporting means for the member disposed for contact with the road when the tire is operated under conditions of excessive deflection to thereby release the member for extension into striking contact with the road and/or vehicle on which the tire is mounted, thus producing audible warning of the excessive deflection.

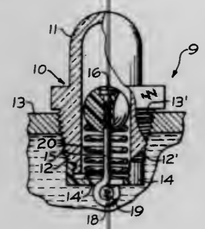
3,621,809
PLANT MARKER
Ted L. Paxton, Riverside, Calif., assignor to International Development Trust, Yakima, Wash.
Filed July 17, 1970, Ser. No. 55,774
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **2 Claims**



A plant identifying marker stuck in the soil in nursery flats, trays and pots and transferred with the plants when brought and set out in the customer's garden. The marker has a stiff polystyrene anchor portion for readily penetrating the soil and being buried beneath the surface

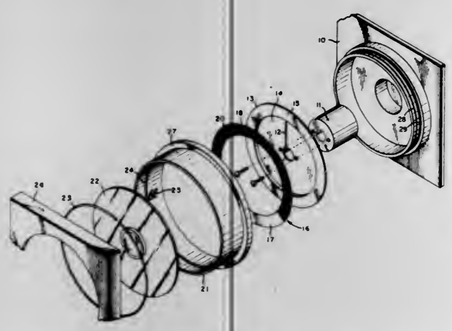
thereof and which is apertured to assist in resisting its removal, and a flexible plant identifying paper upper portion the lower end of which adheres to said anchor portion and which readily yields to pressure thereagainst whereby the buried lower portion remains anchored in the soil and loss of the marker is avoided.

3,621,810
CORROSION DETECTOR
Charles L. Zuck, Jr., Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 5, 1970, Ser. No. 87,083
Int. Cl. G01k *1/02*
U.S. Cl. 116—114.5 **10 Claims**



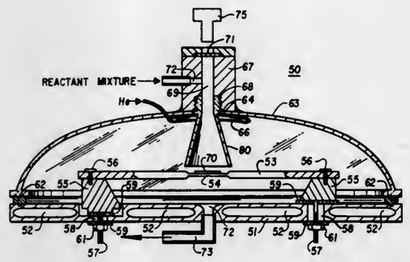
A detector for visually indicating the occurrence of significant corrosion in a pipe has an indicator held in a non-visible position against a spring by a corrodible member which is exposed to the fluid in the pipe. Corrosive destruction of the corrodible member releases the indicator to a visible position, where it serves as a visual signal that corrective measures are needed.

3,621,811
INDICATING CONDITION CONTROLLER
Lyman L. Hill, Jr., St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 16, 1970, Ser. No. 11,389
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 **5 Claims**



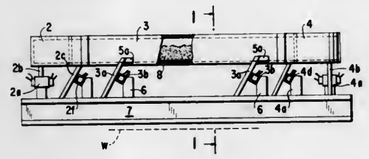
An improved visual presentation for an indicating temperature controller for use in controlling the temperature of an area and indicating the temperature of the area. A scale plate carries a circular temperature scale. Manual rotation of the scale plate rotates the temperature scale about an axis. A meter whose pointer is at a rest position between extremities of movement is energized by the error voltage and has a pointer which rotates about the axis and is capable of swinging through a 250° arc substantially equal to the arc length of the temperature scale. The scale plate is coupled to rotate as the potentiometer wiper moves so that the set point indicator indicates the set point temperature and the pointer position indicates the thermocouple temperature. The rotatable scale face is a disc made of a transparent material having white scale division lines painted onto the scale face and also having a white circular border or band painted around the periphery of the scale face. Within this opaque band the set point indicia numerals are formed by leaving the numerals transparent. The stationary meter face, which is of the same color as the painted band and the scale division lines, has superimposed thereon a 250° dark arcuate mask which contrasts with the white division lines carried by the movable scale face, this arc equaling the movement of the indicating meter, so that as the scale face is adjusted throughout its range, the division lines and numerals which are in the range of the meter pointer movement stand out sharply and those which are out of the range of possible movement of the pointer tend to disappear. The operator's attention is thus constantly directed to the operative portion of the meter face.

3,621,812
EPITAXIAL DEPOSITION REACTOR
George E. Hissong, Jr., Dallas, Tex., and Warren Rice, Tempe, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 649,427, June 23, 1967, which is a continuation of application Ser. No. 237,161, Nov. 13, 1962. This application June 18, 1969, Ser. No. 838,017
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **3 Claims**



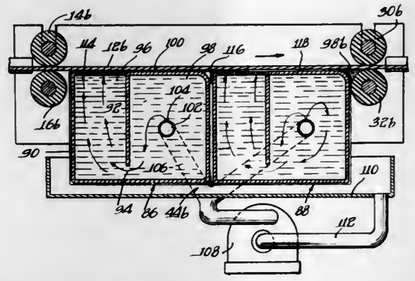
An epitaxial deposition reactor having a conically divergent, reactant gas outlet which closely overlays and circumscribes a substrate which is supported on a graphite, resistance heater. Means sheath the reaction zone with an inert gaseous atmosphere.

3,621,813
FLOCKING APPARATUS
Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Aug. 14, 1968, Ser. No. 752,565
Int. Cl. B05b *17/04*
U.S. Cl. 118—308 **3 Claims**



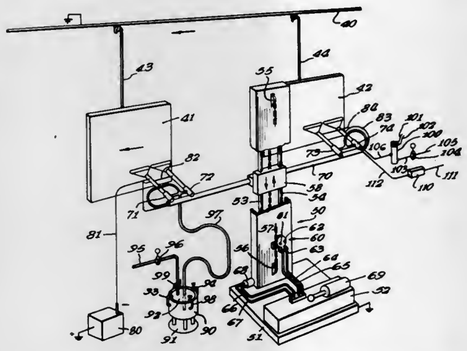
This disclosure relates to apparatus for flocking and more particular to a device for dosing flocking material in an even and controlled manner. The device for dosing the flocking material operates in a manner so that the flocking material is dispensed therefrom in a relatively even flow and includes a means for vibrating the dosing device. The combination of the dosing device and the means for vibrating the same provide a novel combination which produces desirable results not obtained with apparatus previously known in the prior art.

3,621,814
COMPACT LIQUID TONER APPARATUS WITH STRAIGHT THROUGH FEED
Meyer L. Sugarman, Northbrook, and Joseph H. Jaeger, Evanston, Ill. (both % Apto/Graphics Inc., 512 Green Bay Road, Kenilworth, Ill. 60043)
Continuation-in-part of application Ser. No. 692,234, Dec. 20, 1967. This application July 11, 1969, Ser. No. 841,097
Int. Cl. B05c *3/00*
U.S. Cl. 118—411 **6 Claims**



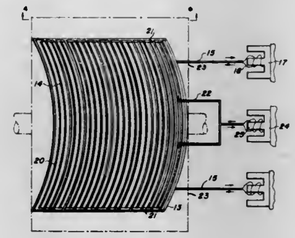
Apparatus for applying a liquid toner only to the surface of the sheet of paper or the like for developing an electrostatic image thereon. The paper is fed in a rectilinear path with the active face thereof down, and the paper floats on a meniscus of liquid toner. In the preferred embodiment the paper is positively spaced from the surface of the toner distributor by a strand of plastic material wound around the distributor.

3,621,815
SPRAY GUN
Arvid C. Walberg, Lombard, Ill., assignor to Graco, Inc., Minneapolis, Minn.
Original application Sept. 16, 1966, Ser. No. 580,468, now Patent No. 3,463,121, dated Aug. 26, 1969. Divided and this application Aug. 22, 1969, Ser. No. 852,253
Int. Cl. B05b *5/02*
U.S. Cl. 118—631 **14 Claims**



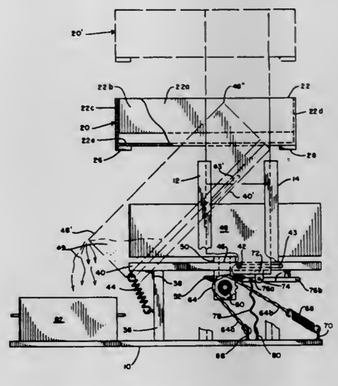
Work is electrostatically coated with highly conductive materials by hydrostatic atomizing spray guns. The rate of material application to work for water base material such as porcelain enamel is high being in excess of three mils of film thickness in less than sixty seconds to prevent "dry spray." The problem of "dry spray" is further controlled by placing the spray guns very close to the work (less than twelve inches).

3,621,816
INTERLACED VIBRATING ELECTRODE
Daniel J. Donalies, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,296
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **9 Claims**



An apparatus for developing a latent electrostatic image wherein the developer material is circulated in a highly mobile manner past the image bearing surface. The high mobility of the developer is achieved by the use of interlaced vibrating electrode members wherein the relative movement thereof causes developer material to be circulated about an inner electrode means thereby achieving a high degree of circulation of the carrier material in the developer. The high degree of circulation of the carrier particles alleviates the problem of sticking of the carrier material to the image bearing surface and overcomes insufficient leading edge development of solid image areas.

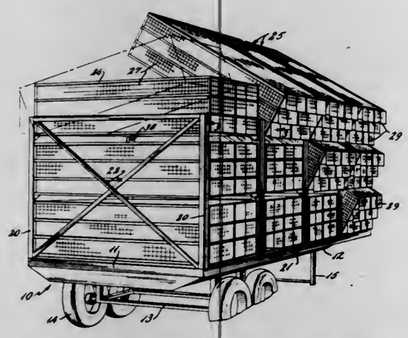
3,621,817
ANIMAL DUMPING LITTER BOX
Philip J. Printz, 221 Oak Terrace, Mount Penn, Pa. 19606
Filed Mar. 23, 1970, Ser. No. 21,839
Int. Cl. A01k *15/00, 29/00*
U.S. Cl. 119—1 **4 Claims**



Apparatus for supporting an animal, receiving its body waste and dispersing its body waste in litter comprising a base having a superimposed, vertically depressible apertured platform for the animal, a bowl containing litter and positioned beneath the apertured platform so as to

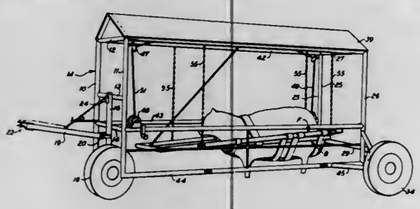
receive the body waste, and means attached to the base and engaging the platform and actuated by the weight of the animal for tilting and rotating the bowl, thereby dispersing the body waste in the litter.

3,621,818
DEVICE FOR THE TRANSPORTATION AND QUICK UNLOADING OF POULTRY AND OTHER COMMODITIES
Ambrose G. Johnston, Rte. 2, Box 247A; William W. Bradshaw, Jr., P.O. Box 45; and Guy W. Howard, P.O. Box 12, all of Rose Hill, N.C. 28458
Filed Nov. 20, 1969, Ser. No. 878,471
Int. Cl. B61d *9/00*
U.S. Cl. 119—12 **3 Claims**



The device of the present invention includes a base frame, which may consist merely of side and end members, which are carried in superimposed relation multiple tiers of containers for poultry or other commodities, the containers having their ends provided with closures which can be secured in position or released for the loading and unloading of the same, and being provided also with releasable pivotal supports at both ends so that either end of the containers may be released and elevated for discharging the contents from the opposite ends.

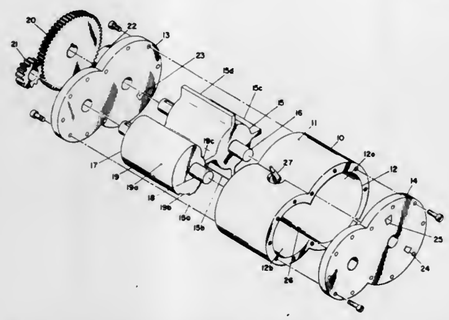
3,621,819
COW WALKER
Pleas J. Hooper, Rte. 2, Hastings, Okla. 73548
Filed July 2, 1970, Ser. No. 51,811
Int. Cl. A61d *3/00*
U.S. Cl. 119—102 **10 Claims**



This specification discloses apparatus for hoisting a cow, which is incapacitated because of calving, into an erect position, and which offers support as the cow walks about on her way to recovery. The apparatus consists essentially of a mobile frame, a pair of winches at the opposite ends of the frame, a cable taken up on each winch and passing over pulleys supported from the frame top with a hook at the free end of each cable. A pair of belly straps are positioned under the cow after the frame is located above her and the hooks are secured to loops at the end of the straps whereupon operation of the winches raises the cow to an erect position.

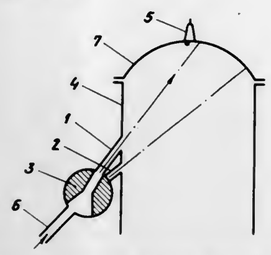
A stretcher like frame is then positioned beneath the cow and the hooks are removed from the belly strap and secured to the opposite ends of the stretcher frame. A breast harness is then mounted over the head end of the cow and secured to the rear end of the mobile frame.

3,621,820
ROTARY INTERNAL COMBUSTION ENGINE
Floyd F. Newsom, Rte. 1, Box 78, Marshfield, Wis. 54449
Filed Jan. 12, 1970, Ser. No. 2,186
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **2 Claims**



A rotary internal combustion engine having a multiple-vaned rotor and a rotatable abutment journalled in a twin-lobed cavity. The rotor and abutment are in slideable sealing engagement with the cavity wall to form a plurality of combustion chambers peripherally about the rotor between the vanes. The combustion chambers are continually sealed from one another by the rotor vanes. A blower and fuel injector supply air and fuel, respectively, to the combustion chambers wherein the resulting mixture is compressed by further rotation of the rotor and then ignited by a sparkplug to produce a force against the leading vane of the chamber in which the ignition occurs to drive the rotor. The cavity may have more than two lobes and more than one rotatable abutment and associated mechanism in order to provide an increased number of firing points per revolution of the rotor and thereby provide power over a greater part of each revolution of the rotor.

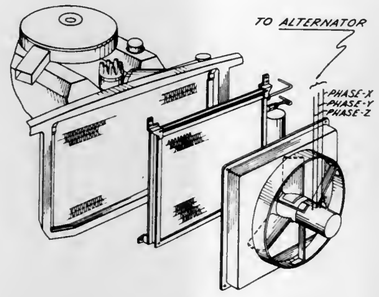
3,621,821
ARRANGEMENT FOR STRATIFYING THE FUEL CHARGE IN SPARK-IGNITION ENGINES
Stanislaw Jarnuszkiewicz, Swierczewskiego 29/8, Krakow, Poland
Filed July 8, 1969, Ser. No. 839,850
Claims priority, application Poland, July 17, 1968, P 128,168
Int. Cl. F02m *63/02*
U.S. Cl. 123—32 ST **7 Claims**



An internal combustion engine has a cylinder, spark plug and fuel injector apparatus which directs fuel near

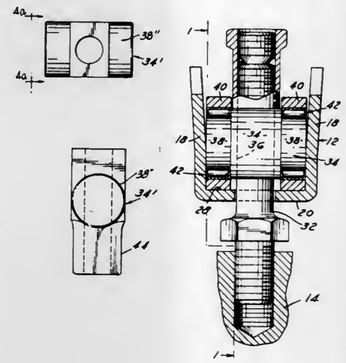
to the spark plug at low loads and further from the spark plug at high loads. In one embodiment, two orifices are provided, one directed near the spark plug and the other further from the spark plug; fuel may be supplied to either or both. In another embodiment, the injector apparatus including a dirigible injector is provided.

3,621,822
INDUCTION MOTOR DRIVEN COOLING FAN
Thomas H. Oster, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 20, 1970, Ser. No. 39,054
Int. Cl. F01p *5/02, 5/04, 7/08*
U.S. Cl. 123—41.12 **1 Claim**



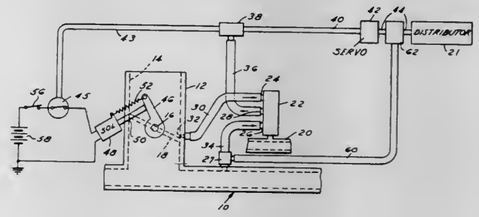
This invention relates to an internal combustion engine system in which the cooling fan is driven by an induction electric motor rather than mechanically by the engine. This induction motor is a poly phase induction motor and is driven by direct electrical connection to the alternator which normally supplies electric power to vehicular components. The induction motor includes squirrel cage rotor conductors mounted on the rotor and deeply buried in the rotor to enhance the reactivity of the motor at high slips.

3,621,823
FRICTIONLESS ROCKER ARM FULCRUM ASSEMBLY
John Lombardi, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 27, 1969, Ser. No. 853,349
Int. Cl. F01l *1/18*
U.S. Cl. 123—90.42 **2 Claims**



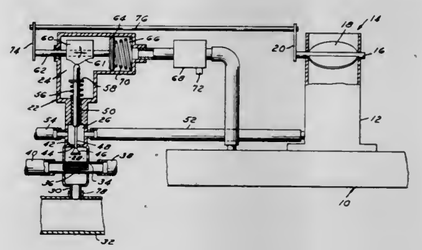
A one-piece rocker arm with straight side walls and a semi-cylinder bottom bearing surface is mounted on a fulcrum having cylindrical stub shafts on which are mounted needle bearings and bearing housings; the rocker arm bearing surface has a no-lash engagement with the bottom portion of the bearing housing which rotates with the rocker arm as a unit during a loaded condition of the valve train but rotates relative to the rocker arm during the unloaded valve train condition due to vibrations of the engine and inertia of the parts to provide even wear of the parts. The fulcrum is provided with an integral sleeve shaft of rectangular or square cross-section which extends through the rocker arm bearing surface and into a slotted recess or groove in the engine cylinder head. A bolt which passes axially through the sleeve shaft secures the fulcrum to the cylinder head.

3,621,824
ENGINE TEMPERATURE CONTROL SYSTEM
Donald M. Burnia, Pontiac, and Alastair S. MacLennan, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 4, 1970, Ser. No. 34,219
Int. Cl. F02p *5/08*
U.S. Cl. 123—117 A **4 Claims**



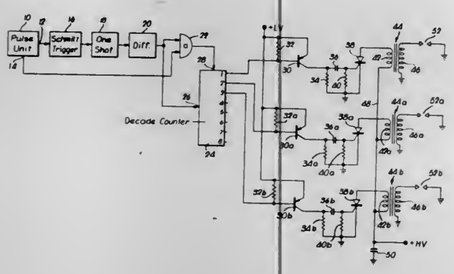
A temperature responsive mechanism that applies intake manifold pressure to an ignition timing mechanism whenever engine temperature exceeds normal operating range interrupts an electrical circuit that deactivates a throttle positioning solenoid. The deactivated solenoid permits the throttle blade to move to a more closed position and thereby reduces engine idling overspeed resulting from the increased timing advance.

3,621,825
EXHAUST GAS RECIRCULATION CONTROL VALVE
William K. Ojala, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 27, 1970, Ser. No. 58,511
Int. Cl. F02m *25/06, 31/08*
U.S. Cl. 123—119 R **8 Claims**



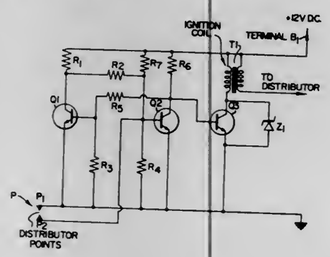
Exhaust gases of an internal combustion engine are inducted back into the intake manifold in quantities controlled by an integral valve mechanism responsive to throttle blade opening and intake manifold pressure. A heat exchanger built into the valve mechanism reduces the temperature of the recirculating exhaust gases to provide further reductions in oxides of nitrogen.

3,621,826
PULSE COUNTER IGNITION SYSTEM
Gene L. Chrestensen, 3325 Sergeant, Joplin, Mo. 64801
Filed Jan. 15, 1970, Ser. No. 3,010
Int. Cl. F02p *3/02, 1/00*
U.S. Cl. 123—148 E **5 Claims**



An ignition system having a decade counter responsive to sequential timing pulses produced by an optical pulse generating unit driven by the timing shaft of the engine. The counter is reset following each firing cycle in response to a reset pulse produced by the pulse unit, such cycle comprising a count equal to the number of cylinders of the engine. Each counter output triggers a separate SCR that, in turn, activates an ignition transformer connected to a respective spark plug.

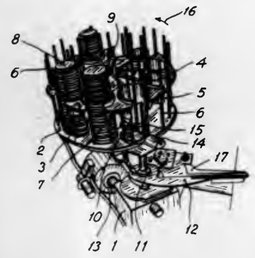
3,621,827
ELECTRONIC AUTOMOBILE IGNITION CIRCUIT
Arnold Milrot, 30 Grand Ravine Road, Suite 3, Downsview, Ontario, Canada
Filed Oct. 14, 1969, Ser. No. 866,315
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **4 Claims**



An internal combustion engine ignition circuit with an output power transistor for driving the coil, and a flip-flop circuit triggered by the breaker points for driving the output transistor.

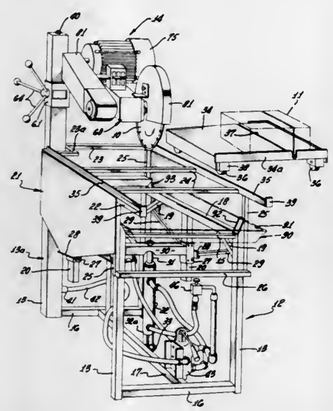
3,621,828
TARGET PROJECTING DEVICE WITH MAGAZINE INDEXING MECHANISM
Ib Schreiner Hansen, Aaso 5953 Tranekaer, Denmark
Filed Jan. 27, 1969, Ser. No. 801,221
Claims priority, application Sweden, Oct. 21, 1968, 14,220/68
Int. Cl. F41b *7/00*
U.S. Cl. 124—8 **2 Claims**

A target trap with a revolvable magazine has a plurality of circularly arranged stacks of clay pigeons which can be successively brought into position above an aperture provided in a plate supporting the stacks and hence down upon the throwing arm of the trap, the magazine being revolved in stages by means of an electromotor controlled by photocell means mounted with the line of



sight above the aperture so that the electromotor is started when the line of sight is unbroken as the last clay pigeon of a stack is lowered into position beneath the level of the plate.

3,621,829
MASONRY CUTTING APPARATUS
Werner A. Maluck, Littleton, Colo., assignor to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Apr. 23, 1969, Ser. No. 818,513
Int. Cl. B28d *1/04*
U.S. Cl. 125—13 R **15 Claims**

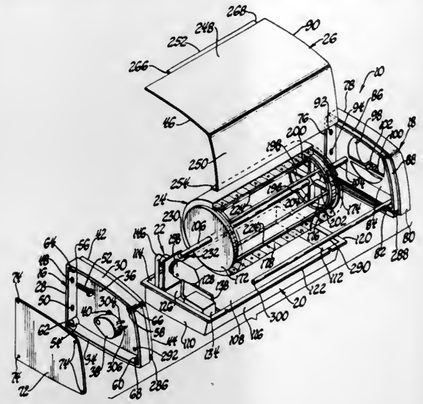


An adjustable power driven saw blade is fixed for rotation in a selected position by bodily shifting an entire rigid saw assembly. A work carrying table assembly located below the saw is hydraulically adjustable vertically between limits, and is fixed in adjusted position, the vertical movement of the table assembly, in being shifted relative to the saw blade, being in a straight vertical line.

3,621,830
HUMIDIFIER ASSEMBLY
Russell W. Geisler, 1290 Lake Crescent, Bloomfield Hills, Mich. 48013, and John W. Wheaton, 7264 Heather Heath Lane, Birmingham, Mich. 48010
Filed Nov. 24, 1969, Ser. No. 879,145
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **8 Claims**

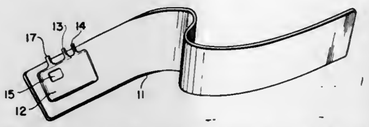
A humidifier assembly for use with a related hot air heating system has separate end support members individually mountable, in spaced relation, to a portion of

the heating system; the end supports in turn support a separate lower water pan, a water carrying rotatable



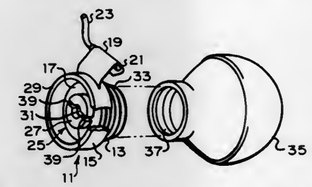
drum assembly which is also removable as a subassembly and a detachable cover assembly for enclosing the operating components of the humidifier.

3,621,831
INFLATABLE BLADDER WITH SELF-CONTAINED FLEXIBLE LISTENING DEVICE FOR THE SOLE PURPOSE OF MEASURING BLOOD PRESSURE
John C. Pisacano, 1 Bunker Road, Lido Beach, N.Y. 11561
Substituted for abandoned application Ser. No. 288,718, June 18, 1963. This application Sept. 4, 1969, Ser. No. 871,388
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 C **5 Claims**



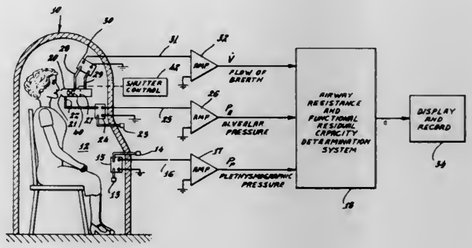
An inflatable bladder with one wall of the bladder having a recess therein defined by a flexible peripheral wall disposed within the confines of the bladder and including a tube for communication with a listening device such as a stethoscope for the sole purpose of measuring blood pressure when used with a conventional blood pressure cuff.

3,621,832
FLUID COLUMN SUCTION ELECTRODE
James T. Fearnside, Lexington, and Kenneth M. Patton, Wayland, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sept. 18, 1969, Ser. No. 859,119
Int. Cl. A61b *5/04;* **A61n** *1/00*
U.S. Cl. 128—2.06 **5 Claims**



An electrode structure provides an electrically conducting fluid column interface between a patient and a cardiac signal receiving cable. A suction bulb draws a vacuum in the fluid column when in contact with a patient to thereby removably secure the electrode to the patient.

3,621,833
METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING PHYSIOLOGICAL PARAMETERS RELATED TO HUMAN BREATHING AIRWAY RESISTANCE AND FUNCTIONAL RESIDUAL CAPACITY
Robert Crane, 21 Cynthia Lane, Plainview, N.Y. 11803
Filed June 26, 1969, Ser. No. 836,781
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **14 Claims**

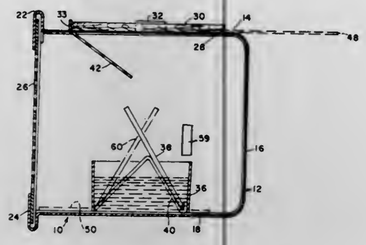


Method, system and apparatus for automatic determination of physiological respiratory parameters related to human breathing airway resistance and functional residual capacity are disclosed. The person for whom the determinations are being made is seated within a whole body plethysmograph (closed cabinet) and breathes air which is located therein with him in a sequence of short rapid breaths known as panting, the pressure within the plethysmograph (P_p) relative to atmosphere being sensed after a predetermined number of breaths at respective points corresponding to predetermined respective breathing air flow rates ($\dot{V}$) (both inspiratory and expiratory points may be used). The difference in plethysmograph pressure (ΔP_p) at these respective points is determined, which is proportional to changes in "body volume." The breathing flow path is thereafter obstructed by a closed shutter, and the pressure in this obstructed flow path (P_A) relative to atmosphere is sensed at respective points when the pressure in the plethysmograph corresponds to that occurring at the predetermined flow rates. The difference in pressure (ΔP_A) in the obstructed flow path at the latter respective points is determined, this difference corresponding to inspiratory and/or expiratory airway resistance (R_{AI} and R_{AE}), the ratio between these respective pressure differences indicating the functional residual capacity of the person.

3,621,834
AIR PURIFIER AND HUMIDIFIER
Henry P. C. Keuls, 205 E. 63rd St., New York, N.Y. 10021
Continuation-in-part of application Ser. No. 685,034, Nov. 22, 1967. This application July 23, 1969, Ser. No. 843,986
The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed
Int. Cl. B01d *45/10*
U.S. Cl. 55—234 **4 Claims**

A window-mounted air purifier and humidifier comprising a housing having an inlet for external air covered by an insect excluding, non-dirt-filtering screen and

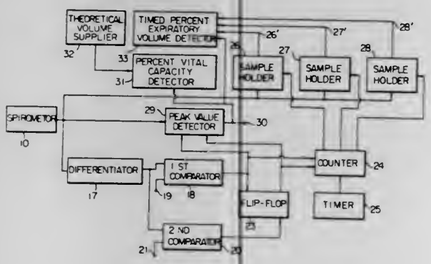
an air outlet covered by an air filter. Incoming air impinges upon an air scrubber or wick mounted in a liquid reservoir and generation of proper air flow paths are facilitated by a depending vane directed toward the wick.



3,621,835
APPARATUS FOR AUTOMATICALLY TESTING PULMONARY FUNCTIONS

Takaji Suzuki, 1–217 Higashi-koigakubo, Kokubanji, Tokyo, Japan; and Sunao Wada, 2–3–11 Senda-machi; and Yukio Nishimoto, 2–9–11 Senda-machi, both of Hiroshima, Japan

Filed July 7, 1969, Ser. No. 839,487
Claims priority, application Japan, July 8, 1968, 43/47,107
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **18 Claims**



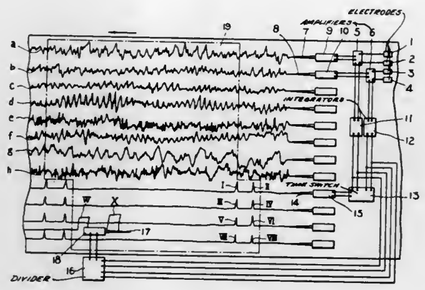
Apparatus for testing pulmonary functions which automatically measures vital capacity, measures volumes of air expired at predetermined intervals, compares vital capacity with a theoretical value, and compares vital capacity with expiratory volumes at different times, with electrical circuitry for providing start and end point detecting means, vital capacity detecting means, timed expiratory volume detecting means, time detecting means and ratio computing means.

3,621,836
METHOD OF AND APPARATUS FOR MEASURING AND RECORDING THE RATE OF SLOW BRAIN WAVES

Kotaro Nagatomi, 20–19, 2-chome, Taishido, Setagaya-ku, Tokyo, Japan

Filed Apr. 6, 1970, Ser. No. 25,821
Claims priority, application Japan, Apr. 10, 1969, 44/27,250
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 B **4 Claims**

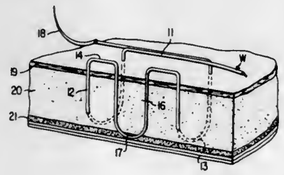
A method of and an apparatus for measuring and recording the rate of slow brain waves comprising at least a pair of electrodes to be mounted on the head of a person to be examined, integrator means for integrating the slow brain waves and all the brain waves respectively as they are taken out through said electrodes, divider means for calculating the ratio of the output of one integrator means to the output of the other integrator means, and a mechanism for recording and indicating the result of calculation in conformity with the output of said divider means.



3,621,837
METHOD OF IMPLANTING HAIRPIECE ANCHOR

Bernard C. Gindes, 8920 W. Olympic Blvd., Beverly Hills, Calif. 90211

Continuation-in-part of application Ser. No. 9,748, Feb. 9, 1970. This application July 23, 1970, Ser. No. 57,453
Int. Cl. A61b *17/00;* **A61f** *1/00*
U.S. Cl. 128—330 **2 Claims**



A length of Teflon coated stainless steel surgical suture wire is sewn into the scalp and brought through the aponeurosis layer thereof at locations constituting the corners of a triangle. Portions of the wire are trained above the skin and provide anchorage for a hairpiece attached thereto. The leading and trailing end portions of the wire protrude above the skin and are welded together, thus making the suture wire a closed loop of irregular formation permanently implanted in the scalp.

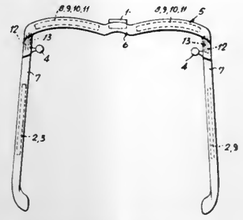
3,621,838
THERAPEUTIC SPECTACLES

Graham Frederick Anthony Harding, Shenstone, near Lichfield, and Neville Drasdo, Curdworth, England, assignors to National Research Development Corporation, London, England

Filed Mar. 26, 1970, Ser. No. 22,821
Claims priority, application Great Britain, Apr. 2, 1969, 17,243/69
Int. Cl. A61n
U.S. Cl. 128—82.1 **10 Claims**

A therapeutic device for alleviating photosensitive epilepsy comprises a pair of spectacles or the like in combination with means for detecting flickering illuminations

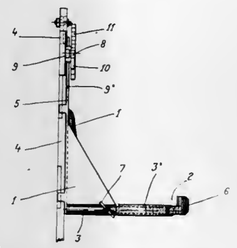
in the adjacent environment at a predetermined frequency to which the intended wearer is sensitive, and a secondary source of steady illumination arranged for energisation in response to detection of said flickering illuminations.



3,621,839
APPARATUS CONTROLLING THE RELAXATION AND ELONGATION OF THE SPINE

Henri P. Barthe, Villa Princesse Pauline, Bd. Reine Jeanne, 06 Grasse, France

Filed Dec. 12, 1969, Ser. No. 884,607
Claims priority, application France, Oct. 14, 1969, 6935778
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **2 Claims**

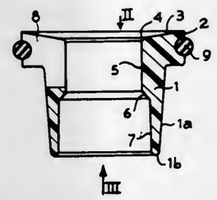


An apparatus for elongating and relaxing a patient's spine wherein the patient's head is carried peripherally, so as to ensure comfort, by a block including a coat of yielding material and engaging the nape and sides of the patient's neck and by a chin strap secured to the block by lateral telescopic tubes. The elongating operation is ensured by a lever pivotally secured to the upright along which the block is adapted to slide so as to exert a vertical stress on the head support constituted by the block and chin strap.

3,621,840
DEVICE FOR USE AS A REMEDY AGAINST MALE IMPOTENCE

Pietro Aurelio Macchioni, Corso San Martino 8, Turin, Italy

Filed July 29, 1969, Ser. No. 845,827
Claims priority, application Italy, July 29, 1968, 52,626/68
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **7 Claims**

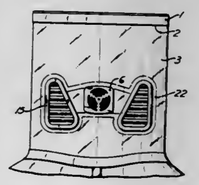


A device for use as a remedy against male impotence has a tubular elastic element which fits around the base of the penis of a user. The bore of the element has a diameter (or mean diameter if elliptical) corresponding to the mean diameter of the penis in a non-erect state, at least over a portion of the bore adjoining the end of the element which faces the body of the user.

3,621,841
FOLDABLE PROTECTIVE HEAD ENCLOSURE

Harry W. Austin, Monroeville, John C. Miller, Pittsburgh, Rutherford B. Snyder, Jr., Bradford Woods, and John W. Neidhart, Monroeville, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 14, 1970, Ser. No. 37,135
Int. Cl. A62b *17/04*
U.S. Cl. 128—142.7 **6 Claims**

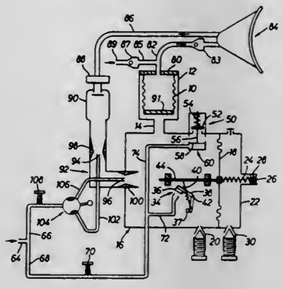


A protective hood for the head has a front window formed from a sheet of flexible plastic provided with a central outlet opening in front of the mouth and inlet openings at each side of the central opening. Secured to the window is an outlet valve surrounded by a breathing tube that extends rearwardly for insertion in the mouth. Each inlet opening is closed by a filter, and a cover has an upright body spaced behind the filters and valve and also has forwardly extending walls sealed to the inner surface of the window around the openings as a group. This cover body is provided with an opening through which the breathing tube extends, and the tube has a lateral inlet opening between the cover body and the window for establishing communication between the inside of the tube and the air duct formed by the cover. At opposite sides of the tube opening in the cover it has hinged portions to permit the cover and window to be folded rearwardly on opposite sides of the breathing tube when not in use.

3,621,842
VENTILATING MACHINE

Roger E. W. Manley, Chesham, England, assignor to Blease Medical Equipment Limited, Deansway, Chesham, England

Filed July 3, 1969, Ser. No. 838,996
Claims priority, application Great Britain, July 5, 1969, 32,259/69
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.6 **9 Claims**



A ventilation machine particularly for surgical use allows a full facility for adjustment of inhalation and exhalation duration and pressure. The machine is actuated

by an over-centre toggle mechanism responsive to the volume of a control chamber. The latter is connected to a chamber containing a bag from which gas is forced to the user.

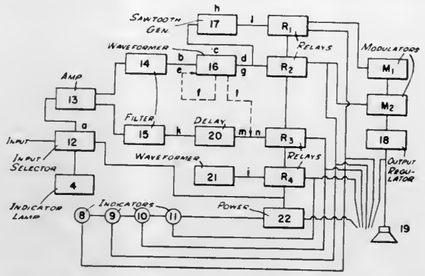
3,621,843
SYRINGE
Theo Metten, 1 Kaule, 506 Bensberg-Immekeppel, Germany
Filed Apr. 15, 1969, Ser. No. 816,327
Claims priority, application Germany, Apr. 20, 1968, P 17 66 222.5
Int. Cl. A61m *5/18*
U.S. Cl. 128—218 M **7 Claims**



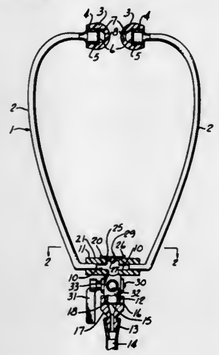
There is disclosed a syringe for injecting a solution of a dry substance and a solvent, including a syringe barrel carrying the injection needle, said barrel containing the dry substance, and a piston shiftably mounted in the barrel and closing the syringe barrel above the dry substance, wherein the injection needle is carried by the syringe barrel axially shiftable between two settings, a resilient seal is disposed between the barrel side and of the injection needle and the syringe barrel shutting same off, said seal being punctured by the needle upon shifting thereof into a limit position, and the syringe piston consists of a resilient material and has a recess with female threads at the end facing away from the injection needle into which threads a plunger serving to shift the syringe piston is capable of being screwed-in which carries a hollow needle puncturing through the syringe piston in the completely screw-in location, the other end of said needle being capable of being connected with an ampoule containing the solvent the solvent thereby being passed to the dry substance upon retracting the syringe piston in the syringe barrel.

3,621,844
METHOD AND APPARATUS FOR INDICATING THE CONDITION OF A WOMAN AND UNBORN CHILD DURING CHILDBIRTH
Yoshio Hayashi and Kimitaka Sawano, Sapporo-shi, Japan, assignors to Daiichi Yakuhin Sangyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 4, 1969, Ser. No. 804,125
Claims priority, application Japan, Apr. 2, 1968, 43/21,580
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **7 Claims**

The method and apparatus for indicating the condition of pregnant women and unborn children during each successive stage of parturition includes converting a fetal heart tone and heart beat into electric signals having a frequency and amplitude indicative thereof and sensing the electric potential of the signals to determine whether the potential is above or below a desired level. A filter unit is employed to eliminate noise signals occurring at the onset of labor pains from the signal from which the potential level is sensed, and these noise signals are fed to a second filter means to operate a labor pain indicator. When the electric potential of the sensed signal is below a desired level, the signal is employed to operate a normal condition indicator which includes both visual and audio indication means, while signals above a desired potential level are employed to operate an abnormal visual condition indicator as well as the audio indication means.



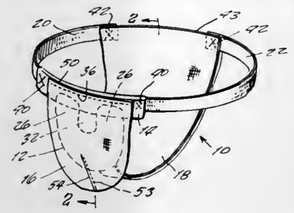
3,621,845
SPHYGMOMANOMETER
Dennis G. Oates, 250 Darragh St., Pittsburgh, Pa. 15213
Filed May 14, 1969, Ser. No. 824,593
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **13 Claims**



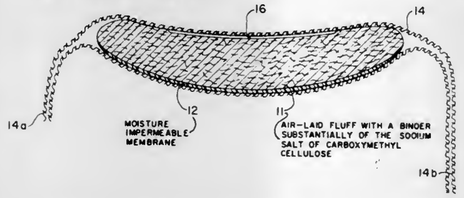
A sphygmomanometer having a constriction blood pressure cuff with an inflatable portion having a built-in stethoscope audio pickup. A single transmission duct or tube is cooperatively connected to the inflatable portion of the cuff and the stethoscope audio pickup such that pneumatic pressure may be supplied to the inflatable interior of the cuff through the transmission duct while at the same time sound is transmitted from the audio pickup through the same transmission duct to the ear of an operator. A housing is also provided to automatically retract the transmission duct into the housing for convenient storage.

3,621,846
MACK II BRIEFS
Charles C. Lehman, New York, N.Y., assignor of fractional part interest to Joseph H. Arsenault, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,999
Int. Cl. A61f *5/40*
U.S. Cl. 128—159 **10 Claims**

A male undergarment of the "brief" type having a fabric scrotum support pouch secured to and suspended from a waist band, the pouch having an opening through which the penis extends and a free falling flap partly of pouch-like formation at its lower end disposed in front of the scrotum support pouch and also secured to the waist band. A triangular shaped fabric seat panel is secured at its forward smaller end to the bottom of the scrotum support pouch and at its wide rear end to the back of the waist band. The waist band is formed of side elastic sections secured at their forward ends to the ends of a front central fabric waist band section which carries the scrotum support pouch and the forward free falling flap, the rear ends of the side elastic sections being secured to the corner end portions at the wide rear base of the triangular fabric seat panel which passes between the thighs of the wearer to lie against the buttocks of the wearer.



3,621,847
ARCUATE CORE FOR SANITARY NAPKINS WITH A WATER SOLUBLE CARBOXYMETHYL CELLULOSE BINDER
John P. Roberson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 20, 1967, Ser. No. 692,055
Int. Cl. A61f *13/18*
U.S. Cl. 128—290 R **1 Claim**



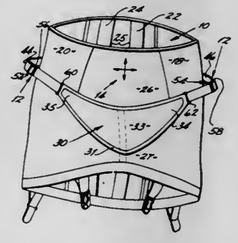
A sanitary napkin having an arcuately configured core containing a water-soluble binder distributed uniformly throughout. The binder consists essentially of the sodium salt of carboxymethylcellulose having a Degree of Substitution of at least 0.4 and being present in specified ranges in accordance with the weight of the core. The binder has a medium to high viscosity such that when dissolved in water to form a 1% solution at 75° F., the viscosity of the solution will be in the range of from about 25 to about 2000 cp.

3,621,848
SURGICAL DRAINAGE TUBE HAVING REMOVABLE LINERS
George J. Magovern, 715 Delafield Road, Pittsburgh, Pa. 15215
Filed Nov. 17, 1969, Ser. No. 877,112
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **1 Claim**



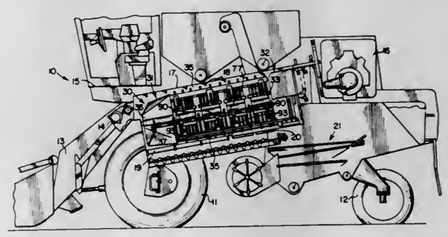
A surgical drainage tube has a tubular outer wall and a tubular lining frictionally engaging the inner surface of that wall. If the tube becomes obstructed by blood clots inside the lining, the lining tube can be pulled out of one end of the tubular outer wall to remove the clots.

3,621,849
THERAPEUTIC GARMENT FOR MATERNITY USE
Marguerite R. Williams, Trumbull, Conn., assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Oct. 13, 1969, Ser. No. 865,887
Int. Cl. A41c *1/08*
U.S. Cl. 128—579 **3 Claims**



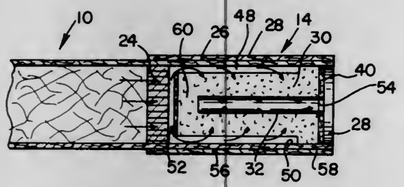
A therapeutic garment for maternity use including contiguous front, rear, and opposite left and right side panels adapted in use to encircle the trunk of a pregnant user having a distended or enlarged abdominal region; an elastic support panel secured to and overlying the front panel and having tapered ends terminating adjacent the right and left side panels; right and left triangular anchor panels having their respective base edges vertically disposed and secured to the back panel and their opposite free ends or apexes terminating adjacent the left and right side panels at a point higher than the ends of the anchor and support panels, whereby a maternity garment is provided which without structural modification comfortably accommodates users having wide, narrow, high or low hips, does not bind or cut the user when worn, provides a smooth, unrumpled or ungathered appearance, and provides adequate abdominal support throughout all stages of pregnancy.

3,621,850
CONVERTIBLE ROTOR
William H. Knapp, Davenport, Iowa, and Richard L. Wood, El Dorado Springs, Mo., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 6, 1970, Ser. No. 995
Int. Cl. A01f *12/22*
U.S. Cl. 130—27 R **16 Claims**



A rotor for an axial flow combine having spike teeth protruding from its outer periphery and adjustable spike teeth covers that can be positioned to cover a selected portion of the spike teeth to thus change the threshing characteristic of the rotor. The spike teeth covers are divided lengthwise of the rotor so that one end of the rotor can be adjusted to be less aggressive than the other.

3,621,851
FILTER FOR SMOKER'S ARTICLE
Donald E. Heskett, Villa Park, and John B. Heskett, Lombard, Ill., assignors to Kata Manufacturing & Filtering Co.
Continuation-in-part of applications Ser. No. 490,802, Sept. 28, 1965, and Ser. No. 581,507, Sept. 23, 1966. This application Nov. 26, 1969, Ser. No. 880,109
The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed
Int. Cl. A24b *15/02;* **A24d** *1/06;* **A24f** *1/08*
U.S. Cl. 131—10.5 **30 Claims**

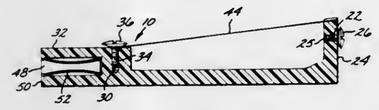


A cigarette or cigar filter assembly having a large entry surface area in respect to its volume and characterized by low pressure drop, high effectiveness, and a simple configuration which is adapted to economical mass production. The body of the filter assembly is made from a bed of filter material, preferably aggregate particles which are bound by a minor proportion of resinous binder material into a fixed relation to one another. The body, in spite of having significant structural rigidity, and a density substantially equal to the density of the active aggregate material alone in its loose bed or uncompacted form, characterized by a low pressure drop thereacross, and the aggregate material, in a preferred embodiment, is bound so as to have substantially none of its activity impaired by the binder. Smoke flow through the axial ends of the filter body itself is blocked off so that smoke enters the filter body around the large entry surface presented by the outer surface of the filter body, passes radially through the filter body, and is drawn through the opening lying at one end of the core and facing to the rear of the body. Preferably, the filter assembly comprises an outer cylinder forming the mouthpiece and an inner filter body in the form of a hollow body. An annular smoke chamber is defined between the outer surface of the body, the entry portion of the body, and inner surface of the mouthpiece, and the center or core of the body opens to the rear of the body. The method of manufacture of the filter body is easily adapted to extrusion or like continuous manufacture, as well as batch method manufacure. Preferred filter materials include activated charcoal and ion exchange resins in finely divided form. The entire filter assembly is preferably of the same cross-sectional area and configuration as the end of the cigarette, while the filter body itself is of reduced diameter in respect to the cigarette diameter. In some embodiments, the advantages of effective filtration and low pressure drop are achieved with the use of filter materials which need not be surface, or otherwise, active provided they are arranged to provide a flow pattern in accordance with this invention.

3,621,852
METHOD OF PERMANENTLY CHANGING CONFIGURATION OF MODACRYLIC HAIR
Hyman Henkin, Glencoe, and Norman L. Edelberg, Des Plaines, Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.
No Drawing. Filed July 11, 1969, Ser. No. 841,131
Int. Cl. A45d *44/00*
U.S. Cl. 132—1 R **8 Claims**

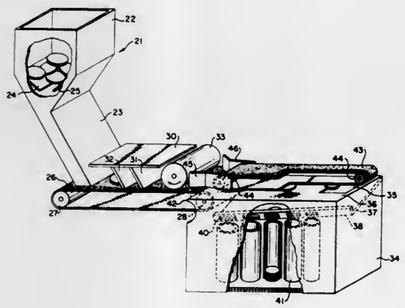
Synthetic modacrylic hair dimensionally stable at temperatures at least as high as 212° F., in the form of wigs, are given a permanent deformation without change of luster condition by shaping the hair to the desired form and heating in the range 120° to 170° F. in contact with water for five to thirty minutes, followed by cooling and drying. This method makes practical the home or beauty shop permanent restyling of wigs.

3,621,853
DENTAL FLOSS HOLDING DEVICE
George H. Montalbo, 1667 W. 208th St. 3, Torrance, Calif. 90501
Filed Nov. 24, 1969, Ser. No. 879,300
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **6 Claims**



A device including an elongate handle adapted to be gripped manually by a user or mounted on the reciprocating portion of a power-driven toothbrush whereby a taut length of dental floss may be removably supported therein and used for dental hygiene purposes.

3,621,854
ELASTOMERIC COIN SORTER
Samuel A. Redman, Garden City, N.Y., assignor to The National Cash Register Company, Dayton, Ohio
Filed Nov. 5, 1969, Ser. No. 874,205
Int. Cl. G07d *3/04*
U.S. Cl. 133—3 H **3 Claims**

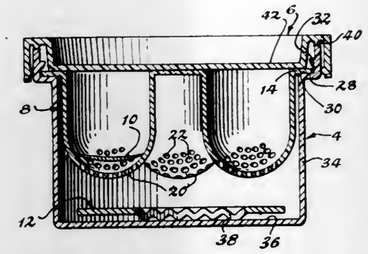


A low-cost coin sorter which utilizes an elastomeric material to sort a pile of coins into an orientated position where each coin can be transported to a designated location. Drive belts, sorting curtains, and rolls constructed of an elastomeric material cooperate to align each coin and transport it out of a pile of coins to a predetermined receptacle.

3,621,855
ARTICLE CLEANING AND STORAGE UNIT
Lewis Rabinowitz, Tonawanda, N.Y., assignor to Ellar Products, Inc., Silver Creek, N.Y.
Filed Sept. 30, 1969, Ser. No. 862,364
Int. Cl. B08b *3/04, 11/02*
U.S. Cl. 134—57 R **12 Claims**

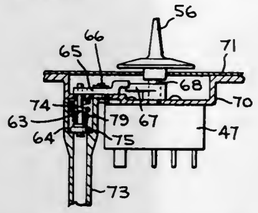
A container is provided with a plural pocketed basket for individually supporting articles, such as contact lenses, within a cleaning and/or storage solution. One

or more movable solution agitating elements, which are loosely positioned within the container out of contact with the articles, are adapted to be sonically vibrated to effect agitation of the solution by either manually moving the container or placing the container on a support device



operable to place the agitating element in a pulsating magnetic field. The support device features a wobble base support for the container, which serves to increase the degree of solution agitation by effecting simultaneous movement of the container.

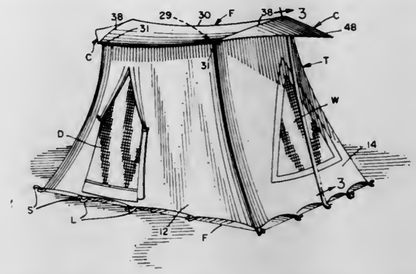
3,621,856
ROTARY CONTROL MEANS FOR CHANGING THE FORCE OF WASHING ACTION IN AN AUTOMATIC DISHWASHER
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company
Filed Sept. 19, 1969, Ser. No. 859,442
Int. Cl. B08b *3/00*
U.S. Cl. 134—58 D **4 Claims**



An automatic dishwashing machine has an air inlet to the machine's pump for the purpose of reducing the energy level of pumped washing liquid during at least one of several manually selectable cycles available in the operation of the machine. The air inlet to the pump receives air through a conduit having its input end located anwardly adjacent the control panel of the machine. The input end of the conduit is provided with a normally closed valve that is operatively linked to a cycle selecting switching mechanism including a manually operable control knob on the end of a rotary shaft. The valve is adapted to be opened to the atmosphere when the cycle selecting switching mechanism is switched to a specific cycle to thereby allow air to flow to the inlet side of the machine's pump and reduce the energy level of the liquid pumped therefrom and into the machine's washing chamber.

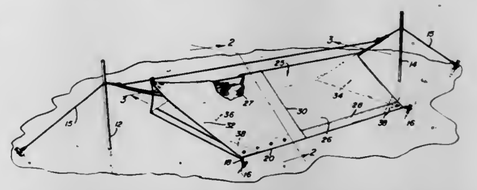
3,621,857
TENT FLY ASSEMBLY AND POLE SUPPORT COMBINATION
Randall L. May and John F. Kurtyka, Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Apr. 9, 1970, Ser. No. 26,914
Int. Cl. A45f *1/14*
U.S. Cl. 135—1 R **8 Claims**

A tent fly in the form of a protective cover of sheet material dimensioned to overlie the roof of the tent is provided with novel supporting and tensioning means to mount the fly in taut condition spaced from the roof of the tent, thereby permitting circulation of air beneath the protective cover over the tent roof. The fly includes



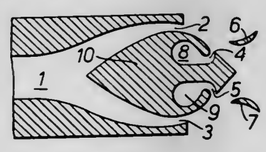
at least one canopy portion which projects outwardly from an end of the tent. Support means is also provided for the canopy portions, which facilitates its extension and tensioning.

3,621,858
TENT CONSTRUCTION
Benjamin F. Steele, 2117 Pecan Drive, Alamogordo, N. Mex. 88310
Filed Apr. 13, 1970, Ser. No. 27,546
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 R **5 Claims**



A wedge-shaped tent having side walls with an entrance formed therein. A flap is attached to the side walls and is adapted to be selectively moved in covering or uncovering relation to the entrance. A drawstring of the clothesline type longitudinally encircles the apex edge of the tent. The flap is connected to a point along the drawstring. By operating the string from within the tent, the flap may be moved to cover or uncover the entrance in the tent without requiring a person in the tent to leave.

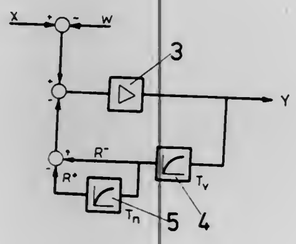
3,621,859
JET DEFLECTION CONTROL SYSTEMS
Athelstane Bodley Scott, Drayton, Middlesex, England, assignor to National Research Development Corporation, London, England
Filed June 25, 1969, Ser. No. 836,505
Claims priority, application Great Britain, June 27, 1968, 30,668/68
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **6 Claims**



The present invention concerns a jet deflection control system for use with a "jet flap" type of control surface, which requires a high momentum in the output jet formed

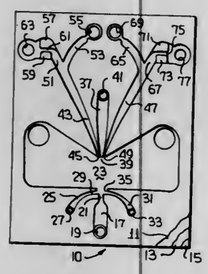
and controlled as near to the point of operation as possible, the control being produced by splitting a primary jet into two subsidiary jets which are normally convergent with deflection being effected by controlling at least one of the subsidiary jets to modify the normal convergence.

3,621,860
CONTROLLER ARRANGEMENT
Horst Bader, Stuttgart-Fasanenhof, Germany, assignor to J. C. Eckardt AG., Stuttgart-Fasanenhof, Germany
Filed Oct. 3, 1969, Ser. No. 863,642
Claims priority, application Germany, Oct. 4, 1968, P 18 01 240.3
Int. Cl. F15c *1/12, 3/04*
U.S. Cl. 137—81.5 **16 Claims**



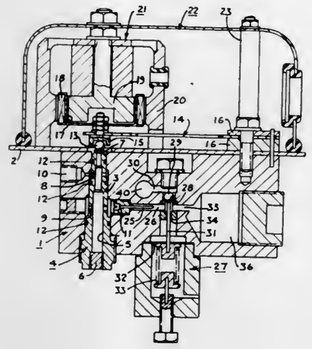
A control system for PID-controllers (proportional-plus integral-plus differential controller) with feed back in which a first sum is produced from the "actual" value signal and the positive feedback signal and a second sum is produced from the "set" value signal and the negative feedback signal which serve as input signals of a differential pressure amplifier.

3,621,861
FLUIDIC AMPLIFIERS WITH ADAPTIVE GAIN AND/OR FREQUENCY RESPONSES
Romald E. Bowles, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.
Filed Nov. 12, 1969, Ser. No. 875,663
Int. Cl. F15c *3/00*
U.S. Cl. 137—81.5 **78 Claims**



Techniques are disclosed wherein symmetry of operation, gain and/or frequency response characteristics of fluidic amplifiers may be selectively varied. In one technique an amplifier vent passage is provided with one or more inserts which change in size and shape in response to temperature and/or qualitative composition of the working fluid, the latter two parameters being selectively variable to change the flow impedance of the vent passage. Another technique employs a similar insert in a fluidic capacitor connected to the amplifier output passage, whereby the capacity of the output passage, and hence the frequency response of the amplifier, is selectively variable with either working fluid temperature or working fluid qualitative composition. In still another technique the Reynolds number of a power stream in a turbulence amplifier is selectively varied by varying fluid temperature, pressure and/or qualitative composition, whereby to vary the sensitivity of the power stream to turbulence in response to different input signal frequencies. In another technique fluidic capacitors, connected to the input and/or output passages of a fluidic amplifier, are selectively varied by introducing variable quantities of control fluid into the capacitors; the variable capacity provides corresponding variable amplifier frequency response characteristics. In another technique, the power stream pressure in a fluidic amplifier is automatically varied to maintain the minimum power stream pressure necessary to provide a linear amplifier gain characteristics for varying input signal ranges.

3,621,862
FLUID METERING DEVICE
Boguslaw W. Wojtecki, London, England, assignor to Westinghouse Brake and Signal Company Limited
Continuation-in-part of application Ser. No. 600,799, Dec. 12, 1966, and a continuation of application Ser. No. 715,390, Mar. 22, 1968. This application June 9, 1970, Ser. No. 48,822
Claims priority, application Great Britain, Mar. 30, 1967, 14,571/67
Int. Cl. F15b *5/00;* **G05d** *16/00*
U.S. Cl. 137—82 **3 Claims**

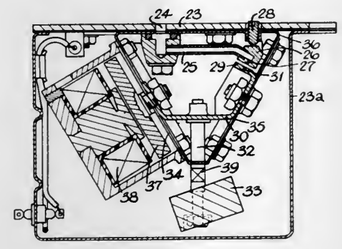


A fluid pressure control valve of which the output pressure is determined by the amount of an input pressure which is dissipated to atmosphere wherein the input pressure is fed through a fluid metering device which maintains a constant pressure difference across a feed choke controlling the flow of air to a converter irrespective of the difference in pressure between supply and outlet.

This results in a much reduced air consumption for zero or low outlet pressures and an evening up of air consumption over the whole range and also an improvement in the linearity of the curve at higher pressure settings.

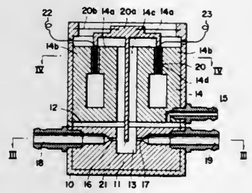
Variations in the supply pressure normally result in slight varations in output pressure for given converter input conditions. These variations in output pressure are virtually eliminated by the inclusion of this device.

3,621,863
VALVES
Douglas Alan Caine, Moseley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 16, 1968, Ser. No. 783,968
Claims priority, application Great Britain, Feb. 1, 1968, 5,136/68
Int. Cl. F16k *31/06*
U.S. Cl. 137—83 **2 Claims**



A valve comprising a body having an inlet for fluid, a member movable relatively to the inlet to control flow therethrough, operating means acting on one end of the member and a pair of expandable support members connected to the ends of the member and by which it is solely supported, the support members being disposed at an acute angle with respect to one another to control movement of the member under the action of the operating means about an arc.

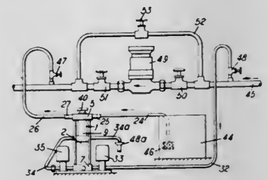
3,621,864
ELECTRICITY-FLUID PRESSURE CONVERTER
Hiroshi Tonegawa, Kawagoe-shi; Tadayuki Kawasaki, Higashi-Matsuyama-shi, and Kenji Nakayama, Higashi-Matsuyama-shi, all of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,399
Claims priority, application Japan, June 5, 1969, 44/43576
Int. Cl. G05d *16/00;* **F15b** *5/00*
U.S. Cl. 137—83 **1 Claim**



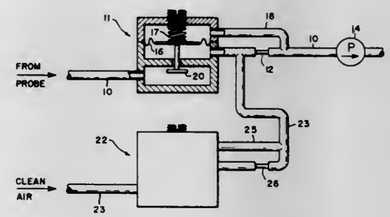
Electricity fluid pressure converter comprising nozzles disposed in opposite at a distance coaxially, one of which is a delivery nozzle and the other a receiving nozzle having a pressure receiving port of a delivered fluid with its opposite side being an output side, and a shield plate provided in the middle of said nozzles, said plate being displaced to a direction at right angles to the nozzle axes thus varying distribution of the jet speed to change the pressure generated in the pressure receiving nozzle.

3,621,865
FLUID PRESSURE-OPERATED PUMPS
Thomas Henry Baggaley, 34 Rothschild Street, London, S.E. 27, England
Filed Dec. 22, 1969, Ser. No. 886,882
Claims priority, application Great Britain, Jan. 6, 1969, 805/69
Int. Cl. G05d *1/00*
U.S. Cl. 137—98 **6 Claims**

Apparatus for supplying metered quantities of an additived water flowing under pressure through a pipe comprises a pump which is operated by water from the pipe and includes to coaxial cylinders of different diameters. The cylinders have pistons which are connected to each other and together form a plunger which is spring loaded in one direction. The cylinder of smaller diameter forms a pump chamber for the liquid additive and the cylinder of larger diameter forms an operating chamber to which the water for operating the pump is admitted under the control of a valve which is itself controlled by a flowmeter in the pipe to allow a pulse of water under pressure from the pipe to act on the larger piston to cause the plunger to make a delivery stroke and then to vent the water to allow the plunger to make a return stroke under the action of its spring, the frequency of the pulses and hence the pump output being dependent on the crate of flow of the water through the meter so that a constant proportion of the liquid additive is supplied to the water flowing through the pipe.



3,621,866
FLUID-MIXING SYSTEM
Joseph O. Thorsheim, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 25, 1969, Ser. No. 879,683
Int. Cl. G05d *11/00*
U.S. Cl. 137—100 **5 Claims**

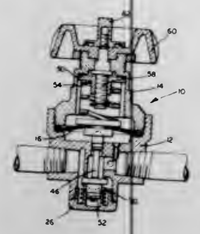


A fluid-mixing system employs two flow rate regulators connected so that one of the regulators meters one of the fluids and the other regulator meters a mixture of the two fluids. In an exhaust gas analyzer that mixes a sample of exhaust gas with air prior to testing there is less fouling of the flow regulator handling the exhaust gas if mixing and consequent dilution occurs before passing through the metering orifice. Also, the orifice through which the mixture flows is considerably larger and therefore less subject to fouling.

3,621,867
AIR LINE PRESSURE REGULATOR
John Leslie Johnson, Morrisville, N.C., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed July 17, 1970, Ser. No. 55,757
Int. Cl. F16k *17/02*
U.S. Cl. 137—116.5 **3 Claims**

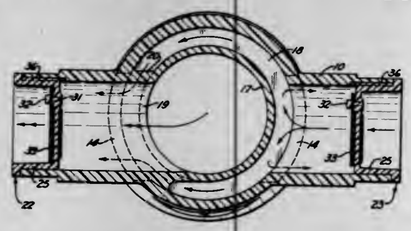
A pressure regulator has its valve member balanced with downstream pressure working on both sides. A novel leak

path through the valve member enables downstream air to reach the other side and incorporates a valve stem having an



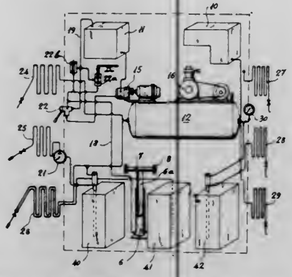
enlarged portion with a flat side seated on a funnel-shaped opening in the valve member.

3,621,868
BREATHING-TUBE CHECK VALVE
Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Original application Apr. 29, 1969, Ser. No. 820,070, now Patent No. 3,572,332. Divided and this application Sept. 14, 1970, Ser. No. 071,802
Int. Cl. F16k *51/00*
U.S. Cl. 137—315 **2 Claims**



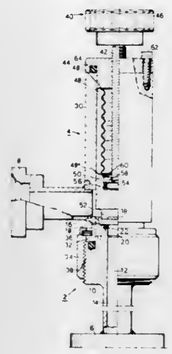
A breathing tube has a pair of circumferentially spaced parallel rib-receiving grooves in each end, with the grooves in one end a different distance apart than those in the other end. A valve body is provided in the form of a cup with a base surrounded by a sidewall adapted to fit in either end of the tube. The base has an opening through it surrounded at each end by a valve seat. A valve closure can be secured to the base for engagement with either seat. The outer surface of the cup sidewall has three parallel ribs parallel to the cup axis and spaced different distances apart. One rib is removable to permit the cup to be inserted in one end of the tube, and another rib is removable to permit the cup to be inserted in the other end of the tube.

3,621,869
VEHICLE SERVICE CENTER
Emilio M. Albarran, Claudio Coello, 44, Madrid, Spain
Filed Mar. 20, 1970, Ser. No. 21,404
Claims priority, application Spain, May 14, 1969, 367257
Int. Cl. B67d *5/14*
U.S. Cl. 137—234.6 **12 Claims**



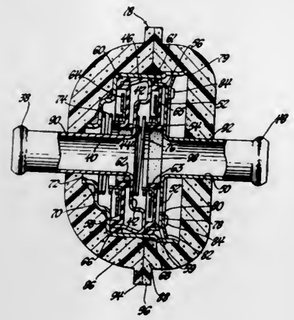
An integrated vehicle service center including an improved lift for raising a vehicle and exposing its underside, together with integral devices for servicing the vehicle.

3,621,870
VACUUM DEVICE INCLUDING VALVE AND SERVICE COUPLING THEREFOR
Micha Harchol, Kibbutz Kineret, and Nachman Pundak, Kibbutz Fin-Harod, both of Israel, assignors to Ricor Ltd., Kibbutz Ein-Harod, Israel
Filed July 31, 1970, Ser. No. 59,887
Int. Cl. F16k *15/18*
U.S. Cl. 137—322 **8 Claims**



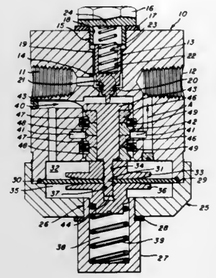
A vacuum device including a valve and a detachable service coupling having a manipulatable operator for opening and closing the valve, wherein the valve includes a magnet member and the operator includes a movable body carrying a magnet engageable with the magnetic member of the valve for opening and closing the valve. The service coupling includes a housing and a bellows seal disposed therein with its upper end fixed to the housing and its lower end fixed to the movable body of the operator. The operator further includes a stem passing through the bellows seal with the upper end of the stem threaded through the top of the housing and the lower end coupled to the movable body for moving it and the magnet to open and close the valve.

3,621,871
PRESSURE CONTROL VALVE
Wilbur J. Zimmerle, Bellbrook; Lamar L. Kerr, Englewood, and Loren R. Gute, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 15, 1969, Ser. No. 885,060
Int. Cl. F16k *17/26*
U.S. Cl. 137—493 **4 Claims**



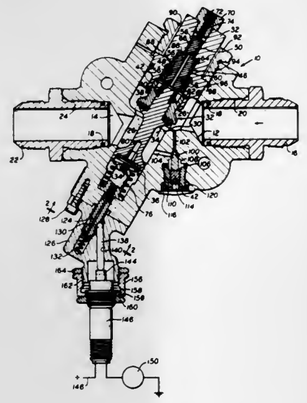
A valve in an automotive fuel tank vent line has a pair of pressure-responsive members which respectively relieve excess pressure and vacuum in the vent line.

3,621,872
SAFETY VALVE
Walter Fisher, 122 Douglas Shand Avenue, Pointe Claire, Quebec, Canada
Continuation of application Ser. No. 753,675, Aug. 19, 1968, now abandoned. This application June 30, 1970, Ser. No. 51,054
Int. Cl. F16k *17/04*
U.S. Cl. 137—494 **8 Claims**



A valve assembly for use in systems involving the regulation of pressure from a high-pressure source to a low-pressure or subatmospheric system. The valve assembly comprises a main valve and an auxiliary valve, means biasing the main valve towards a closed position, a diaphragm, one side of which is exposed to working pressure and the other side of which is exposed to a reference pressure, and a valve-operating member engageable with the main valve and movable with the diaphragm between two limiting positions within which the main valve is opened by the operating member or closed under the action of the biasing means. The valve-operating member engages with the auxiliary valve to close the auxiliary valve on movement of the operating member beyond either of the two limiting positions.

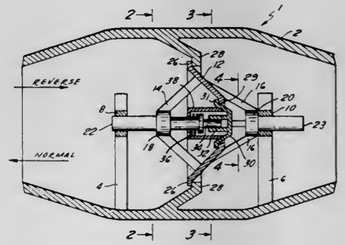
3,621,873
PNEUMATIC FUSE
John G. Kenann, Chatham, and Joseph Detaranto, Jr., Parsippany, both of N.J., assignors to Marotta Valve Corporation, Boonton, N.J.
Continuation-in-part of application Ser. No. 284,148, May 29, 1963, now abandoned. This application July 8, 1969, Ser. No. 839,969
Int. Cl. F16k *31/12*
U.S. Cl. 137—495 **12 Claims**



The open position of this pneumatic fuse valve is adjustable to change the rate of fluid flow at which the valve closes.

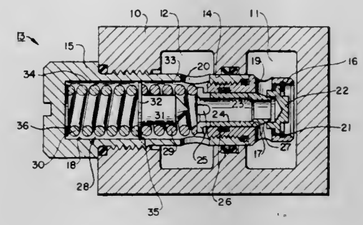
The valve has static pressure balance when opened regardless of the pressure in the pipeline and even though the valve has a connection with the space surrounding the outside of its housing for inserting a means for overriding the actuator. This pressure balance permits adjustment of the valve when there is fluid pressure in the line and it permits the valve to be closed by a small force. A bleed connection equalizes pressure on both sides of the valve to permit it to open after the high rate of fluid flow that closed it has been shut off.

3,621,874
LIFT-TYPE CHECK VALVE
Richard C. Murphy, Hickory Hills, and Balakrishnan R. Nair, Evanston, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 17, 1970, Ser. No. 64,544
Int. Cl. F16k *17/10*
U.S. Cl. 137—512.1 **12 Claims**



A phased closure check valve having a primary closure means and a secondary closure means positioned on the primary means, both of which are conical and are mounted on a common shaft. Upon reversal of flow, the primary means is seated to thereby throttle the reverse flow through the valve. The secondary means, which is spring biased to retard closing, is subsequently closed by the throttled flow to completely close the valve in a manner which substantially reduces the pressure rise in the piping system since the reversed fluid velocity is decreased in stages.

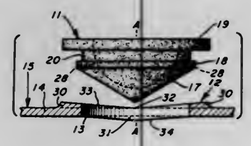
3,621,875
PRESSURE-ACTUATED VALVE
Frank N. Alexander, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Nov. 25, 1969, Ser. No. 879,816
Int. Cl. F16k *21/06, 17/02*
U.S. Cl. 137—514 **7 Claims**



A pressure-actuated relief valve is disclosed having biasing means urging the poppet to a closed position which biasing means includes a damped and an undamped member cooperating to provide fast response while controlling poppet

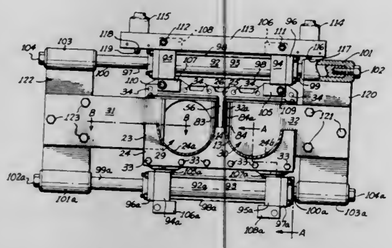
oscillation. The damped member includes a spring within a hydraulic dashpot and serves as a reaction seat for the undamped member. Fast pressure increases compress only the undamped member while longer duration pressure signals will also compress the damped member.

3,621,876
SELF-SEALING CHALK VALVE
Robert K. Campbell, 2985 Newport Blvd., Costa Mesa, Calif.
Filed Jan. 19, 1970, Ser. No. 3,854
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.1 **4 Claims**



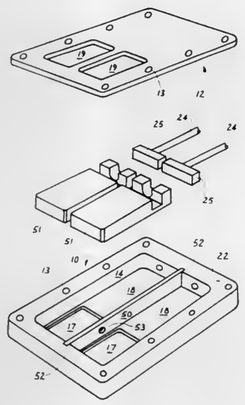
A cup-shaped molded rubber valve body having a diaphragm with a diametric slit, said valve body being forced into an aperture in a rigid chalk confining shell, and expanding into and around the edges of said aperture, said shell embodying a dihedral seat bordering said aperture which bends said valve about an axis at a right angle to said slit, thereby biasing the lips of said slit together causing said valve to close when a chalk-injecting nozzle has been withdrawn from said valve.

3,621,877
VALVE ASSEMBLY
Horst R. Hickmann, Cincinnati, Ohio, assignor to North West 16, Inc., Cincinnati, Ohio
Filed May 18, 1970, Ser. No. 38,107
Int. Cl. F16k *11/02*
U.S. Cl. 137—595 **10 Claims**



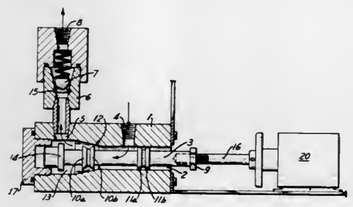
A valve assembly for use in pump means for flowable or semiflowable material, said valve assembly comprising a hollow valve body having a pair of opposite sides, a top, a bottom and end portions. The valve body is divided into two chambers in side-by-side relationship. Each of said opposite sides of said valve body having two large, circular openings therethrough, each opening communicating with one of said chambers. A disposable liner is provided for each of said chambers and forms in conjunction with the openings in the valve body to its respective chamber, a passage through the valve body which has an interior configuration which conforms to the circular openings in the valve body sides and is rectangular within the valve body. The valve assembly includes a pair of flat, opposed, coplanar blades. Each blade extends through an opening in one of the ends of said valve body and a mating hole in the adjacent liner. Each blade is longitudinally slidable within the rectangular portion of its respective liner. Means are provided to simultaneously shift said blades between a first position wherein one of said blades fully closes its respective passage, the other passage being fully open, and a position wherein the other of said blades fully closes its respective passage, the remaining passage being fully open.

3,621,878
VALVE FOR EXHAUST BRAKE SYSTEMS
Harold Cain Smith, 121 Murry Farm Road, Beecroft, New South Wales, Australia
Filed Sept. 15, 1969, Ser. No. 857,706
Int. Cl. F16k *11/00*
U.S. Cl. 137—595 **3 Claims**



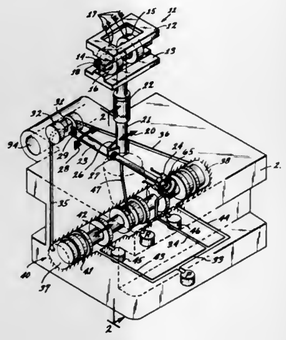
The invention concerns an engine braking slide valve for use in a vehicle exhaust system between an exhaust manifold and a gas-driven impeller or turbine for driving a supercharged-type blower. The valve is characterized by a casing having a body portion and a cover portion between which a valve member is slidable to cover and uncover aligned ports in the body and cover portion, the valve member in being so slidable requiring a minimum of effort to move it between the open and "brake" position and being self-cleaning in operation.

3,621,879
FEED CONTROL AND CHECK VALVE SYSTEM
James E. Ticcioni, and Raymond Herman Enters, both of Milwaukee, Wis., assignors to Calgon Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,771
Int. Cl. F16k *15/14, 15/18*
U.S. Cl. 137—614.2 **4 Claims**



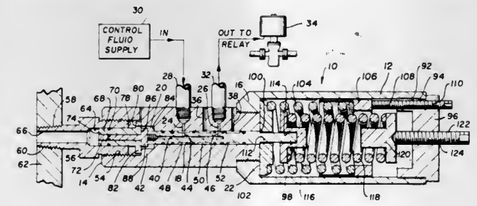
A feed control device is disclosed for controlling the flow of caustic and other aggressive liquids. It incorporates a double safety device including a check valve and a U-cup to stop reverse flow.

3,621,880
JET PIPE SERVO VALVE
James M. Jessee, Granada Hills, and Ernest Niederer, Hollywood, both of Calif., assignors to Bell Aerospace Corporation
Filed June 13, 1969, Ser. No. 833,042
Int. Cl. F15b *13/044*
U.S. Cl. 137—625.64 **1 Claim**



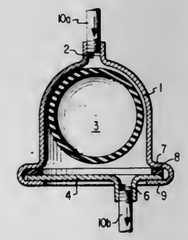
Disclosed is a jet pipe-type servo valve wherein the feed tube is disposed angularly with respect to a flapper to which it is affixed and which is movable by a torque motor the armature of which is connected to the flapper. The feed tube has one end thereof affixed rigidly to the housing and the other end thereof terminating in a nozzle which is positioned adjacent a receiver. The output ports of the receiver are connected to the end chambers of a cylinder within which a power control valve is slidably positioned so as to control the flow of fluid under pressure from a source thereof to an apparatus to be positioned such as an actuator. The jet pipe stage and the power control valve stage are isolated from each other.

3,621,881
HIGH-LOW PRESSURE PILOT VALVE MECHANISM
Felix J. Vicari, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,497
Int. Cl. F16k *11/07, 31/12*
U.S. Cl. 137—625.66 **11 Claims**



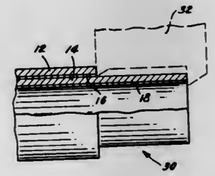
A high-low pressure pilot valve mechanism according to the present invention, comprises a single valve body having a valve chamber with an elongated spool valve element disposed for reciprocation therein. The valve body includes controlled fluid inlet and outlet passages disposed in fluid communication with the valve chamber and are communicated through a passage formed in the valve element when the valve element is located at the operating position thereof. The valve body is provided with exhaust ports in fluid communication with the valve chamber, which ports allow bleeding of pressurized control fluid to the atmosphere when the valve element is disposed in position other than the operating position thereof. Valve actuation is accomplished by a pair of concentric pistons that impart movement to the valve element against the bias of a pair of adjustable compression springs responsive to sensed fluid pressure introduced through a pressure-sensing inlet defined by the valve body. The compression spring and pistons cooperate to move the valve element to a first position in the event the sensed fluid pressure is below an operating pressure range, thereby blocking the flow of pressurized control fluid at the control fluid supply inlet and communicating the control fluid outlet with one of the exhaust ports. One of the compression springs is overcome when the sensed pressure is within a predetermined operating range allowing the valve element to move to a second position communicating the control fluid inlet and outlet and blocking the exhaust ports. Both of the compression springs are overcome upon sensing of pressure above the operating pressure range, thereby allowing movement of the valve element to a third position where the control fluid inlet is blocked and the control fluid outlet is communicated with one of the exhaust ports.

3,621,882
INLINE, THROUGH-FLOW PRESSURE COMPENSATOR AND ACCUMULATOR
Harry P. Kupiec, 10 Dunman Way, Baltimore, Md.
Filed Feb. 25, 1970, Ser. No. 13,985
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **3 Claims**



The pressure compensator and accumulator comprises a casing having ports at opposite ends. A hermetically sealed air chamber means of elastomeric material is loosely housed within the casing. The device is serially inserted in the flow line by connecting one port to an open end of the flow line, and connecting the adjacent open end of the flow line to the opposite port, whereby flow takes place through the casing from one port through the opposite port. Means are provided to prevent the blocking of the outlet port by the air chamber means when the means moves toward the outlet port under the influence of the flow.

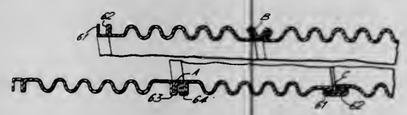
3,621,883
TRANSITIONAL CONNECTOR
Edwin A. Miller, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 24, 1969, Ser. No. 879,072
Int. Cl. F16l *9/02*
U.S. Cl. 138—143 **6 Claims**



An inexpensive transitional connector, suitable for use in joining aluminum tubes to tubes formed of a variety of other materials which cannot be readily soldered, brazed or welded

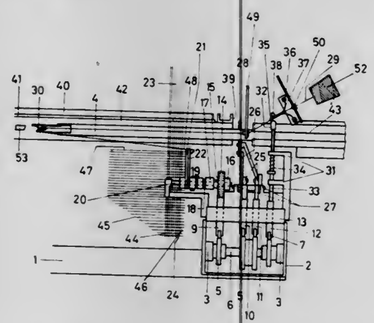
to aluminum, is shown to comprise steel and aluminum tubular elements disposed in coaxial relation to each other, the tubular elements being metallurgically bonded together. Preferably, the transitional connector incorporates a silicon-aluminum layer between the aluminum and steel elements thereof to retard formation of aluminum-iron intermetallic compounds at the interface between the aluminum and steel elements during soldering, brazing or welding of the transitional connector. If desired, the steel element of the connector is clad with a layer of copper.

3,621,884
HELICALLY WOUND TUBING
John Massey Trihey, Balwyn, Victoria, Australia, assignor to Johns-Manville Corporation, New York, N.Y.
Filed Oct. 10, 1969, Ser. No. 865,275
Claims priority, application Australia, Oct. 17, 1968, 44936/68
Int. Cl. F16l *11/16*
U.S. Cl. 138—154 **6 Claims**



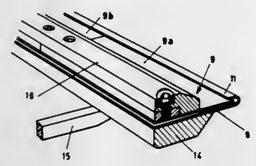
A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

3,621,885
FILLING CUTTING DEVICE FOR A WEAVING MACHINE
Anton Egloff, Brugg, and Oskar Bernath, Umiken, both of Switzerland, assignors to Georg Fischer A. G. Brugg, Brugg, Switzerland
Filed Sept. 2, 1970, Ser. No. 68,859
Claims priority, application Switzerland, Nov. 21, 1969, 17348/69
Int. Cl. D03d *47/36*
U.S. Cl. 139—122 R **4 Claims**



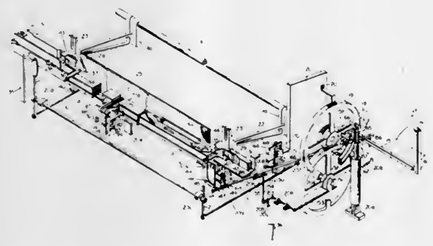
The invention relates to a filling cutting device on a weaving machine with filling insertion from a supply package outside of the warp shed, said filling cutting device being actuated synchronously with the movement of filling insertion members movable in relation to each other, each one provided with a cutting edge, the one of which is situated at the edge of a catching recess for the filling yarn of one cutter member and so oriented as to function with either of two types of pick insertion.

3,621,886
TEMPLE FOR USE IN A WEAVING LOOM
Hubert Peter Van Mullekom, Voortsweg 11, and Geert Jan Vermeulen, Beethovenlaan 34, both of Deurne, Netherlands
Filed Jan. 28, 1970, Ser. No. 6,426
Claims priority, application Netherlands, Feb. 4, 1969, 6901771
Int. Cl. D03j *1/22*
U.S. Cl. 139—292 **5 Claims**



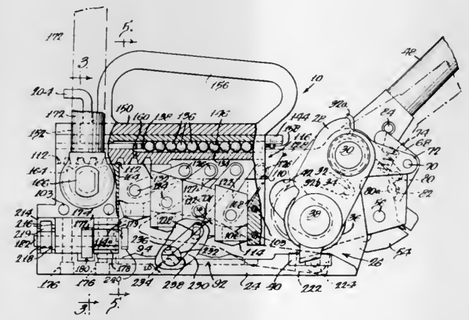
A temple adapted for use in a weaving loom, comprising a bladelike bar adapted to be fixedly mounted in a transverse position in the beating-up zone of the loom, said bar having a bend at one of its longitudinal edges, a second bladelike element extending at one of its longitudinal edges into the seat formed by said bend so as to constitute a tortuous path for the woven fabric passing around the rebent edge of said bar and then around the edge of said second bladelike element, the assembly of said bar and said bladelike core element being characterized by a relatively small overall height when mounted in place in a weaving loom.

3,621,887
PROTECTION AND CONTROL MEANS FOR FLY SHUTTLE LOOMS
Edgar P. Turner, P. O. Box 70, Scotch Plains, N.J.
Filed Oct. 17, 1966, Ser. No. 587,219
Int. Cl. D03d *51/02, 51/44, 51/36*
U.S. Cl. 139—336 **7 Claims**



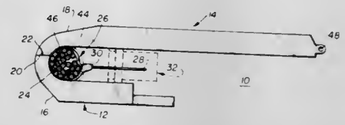
The invention disclosed herein relates in general to improvements in automatic stopping of fly shuttle looms. As applied to a loom which is arranged for protection stopping responsive to detection of a late shuttle condition prior to arrival of the shuttle within the shuttle receiving box, the invention discloses improved mechanical sensor means for detecting late shuttle arrival at a detection point adjacent the entrance of a shuttle-receiving box, equivalent sensor means adjacent the entrance of an oppositely disposed receiving box, and interconnecting linkage means arranged such that when contact of the moving shuttle with one of the said mechanical sensor means causes the said sensor to move from a position within the shuttle flightpath to a position without said flightpath, the oppositely disposed mechanical sensor is caused to move from a position without the shuttle flightpath to a new position within the shuttle flightpath. A clutch quick disconnect element of improved design is also disclosed, together with a novel cam-positioned stop link assembly selectively engageable with the shuttle sensor interconnecting linkage means to cause release of the clutch and engagement of the brake when shuttle action is faulty. A primary benefit of the invention is the providing of shuttle flight-sensing means entirely separate from the independent of shuttle boxing means. Also disclosed is a fill thread detector of novel design which provides means responsive to absence of fill thread to cause loom stop by creating interference to prevent normal functioning of the shuttle sensor interconnecting linkage.

3,621,888
TOOL FOR COTTON BALE TIES
Arvid I. Ericsson, Fort Lauderdale, Fla., assignor to Signode Corporation
Filed June 9, 1969, Ser. No. 831,388
Int. Cl. B21f *45/00*
U.S. Cl. 140—93.2 **20 Claims**



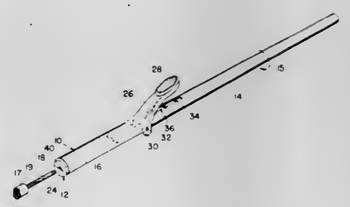
A method and apparatus for providing a plurality of longitudinally spaced integral interlocking means in overlapping upper and lower strap portions to provide a tensioned ligature about an article that does not require extraneous securing means. The method includes the steps of forming a length of strapping material into a loop about the article, gripping the leading end of the strapping material, tensioning the loop about the article, progressively forming interlockable slits in the upper and lower strap portions, severing the upper strap portion from the supply of strapping material, allowing tension in the loop to act upon the upper and lower strap portions so that the slits engage one another, and forming an upwardly struck tab in the lower strap portion adjacent the severed end of the upper strap to prevent disengagement of the interlocking slits. The apparatus includes a ratchet and pawl tensioning mechanism for pulling the strapping material into snug binding engagement with the article, and a rack and pinion actuated linkage structure for progressively shifting a plurality of longitudinally spaced notching elements downwardly into slit-forming engagement with complementarily shaped notching elements of a stationary lower die. The upper strap is severed from the supply of strapping material in response to completion of the strap-slitting operation, and the slitted strap portions are positively stripped from the lower die so that tension in the strap loop will shift the slitted strap portions into interlocking engagement with one another. The separation-preventing tab is formed in the lower strap portion in response to actuation of the mechanism for stripping the slitted strap portions from the lower die.

3,621,889
TOOL JAWS
Laszlo Hidassy, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Nov. 10, 1969, Ser. No. 875,219
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **7 Claims**



The invention is directed to improved sclectively operable tool jaws. The jaws are movably coupled with respect to each other, and are operable to a first, closed, position and a second, open position. In the first closed position the jaws communicate to form a bight, wherein an elongated, substantially U-shaped partially restricted groove longitudinally disposed within a first jaw is aligned with a similar elongated, substantially U-shaped unrestricted groove in a second jaw, providing guiding and forming means for an elongated bundling strap introduced tail end forwardly of the head end within the partially restricted groove of the first jaw and advanced around the bight into the grooved second jaw, the ratio of the radius of curvature of the bight to the thickness of the bundling strap being controlled in such manner as to cause the bundling strap to be partially deformed thereby, and to assume a generally arcuate shape, the tail end portion of the bundling strap curling away from the elongated groove in the second jaw and towards the apertured head end portion which is partially restrained within the elongated groove in the first jaw.

3,621,890
HAND-HELD STRANDED WIRE DRESSING TOOL
Wallace Q. Anderson, East 1203 Gordon, Spokane, Wash.
Filed June 11, 1969, Ser. No. 832,129
Int. Cl. B21f *7/00*
U.S. Cl. 140—123 **8 Claims**

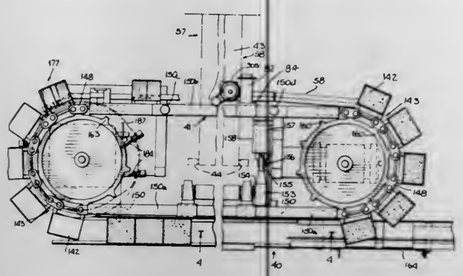


A hand-manipulative tool having a pair of jaws biased to a closed position and manually operable by thumb pressure and the jaws having a channel receptive of the splayed ends of a stranded wire by means of which the strand ends may be closely interwound by twirling the tool.

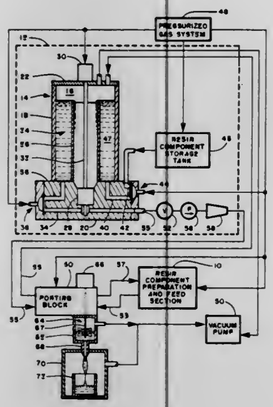
3,621,891
MACHINE AND METHOD FOR TRANSFERRING PREDETERMINED AMOUNTS OF MATERIAL
Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corporation, Fairfield, N.J.
Filed Jan. 27, 1969, Ser. No. 794,083
Int. Cl. B65b *1/36*
U.S. Cl. 141—1 **11 Claims**

An inclined material delivery means is provided and has passing therethrough a plurality of intermediary receptacle means for receiving predetermined amounts of material to subsequently be transferred to a container. The intermediary delivery means is agitated to provide a uniform and precise amount of material and contains on the bottom thereof door members which synchronize movement of the container

therewith in the discharge area. Cutting means are provided to aid in proper filling of the intermediary receptacles as well as air supplies to appropriately direct the material being packaged.



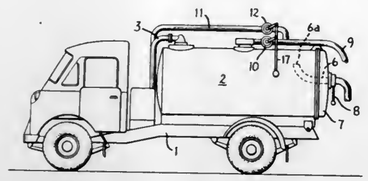
3,621,892
RESIN VACUUM DEGASSING AND DISPENSING SYSTEM AND METHOD
Thomas J. Gillespie, 8212 131st Way North, Seminole, Fla.
Filed Sept. 4, 1969, Ser. No. 855,231
Int. Cl. B65b *31/00*
U.S. Cl. 141—7 **4 Claims**



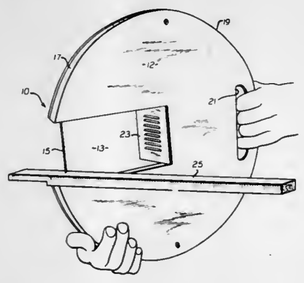
Resin dispensing system including resin vacuum degassing apparatus, a porting mechanism coupled to the degassing apparatus having an outlet and an inlet and interconnecting passageways controlled by diaphragm valves for each resin component, an evacuated mixing chamber coupled to the porting mechanism outlets and to a dispensing nozzle, the dispensing nozzle being coupled to an evacuatable chamber for receiving the mixed resin components.

3,621,893
SUCTION HOSE CLEANING DEVICE FOR FILTH CAR
Minoru Nishimura, and Yasuo Doi, both of Kobe-shi, Japan, assignors to Shin Meiwa Kogyo Kabushiki Kaisha, Kobe-shi, Japan
Filed Sept. 10, 1969, Ser. No. 856,698
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 **3 Claims**

A suction hose of a filth car is associated with a fluid blow pipe having changeover valve means for using fluid discharged under pressure for the purpose of blowing off foreign matter from a clogged portion of the suction hose.

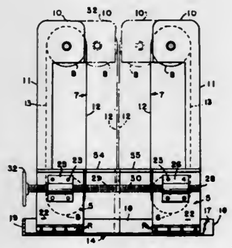


3,621,894
SPIRAL BAND SAW
Eugene J. Niksich, Rego Park, N.Y., assignor to U. S. Plywood-Champion Papers, Inc., New York, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,526
Int. Cl. B27b *13/10*
U.S. Cl. 143—21 A **9 Claims**



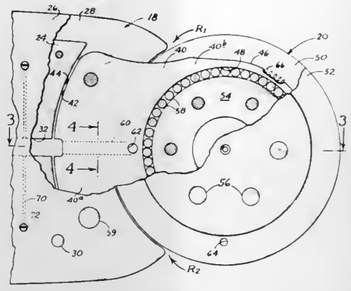
A spiral blade saw which may be used as a hand or bench model and comprising drive means for carrying the blade wherein all turns of the path of movement of the blade are at least at a predetermined minimum turning radius.

3,621,895
MULTIBAND MILL
Harold G. Leidig, 1060 S.E. Gladiola, Grants Pass, Oreg.
Filed Aug. 18, 1969, Ser. No. 850,919
Int. Cl. B27b *15/08*
U.S. Cl. 143—22 **1 Claim**



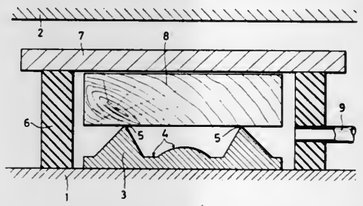
Saw mill apparatus including a plurality of bandsaws cooperatively adjustable relative to each other transversely of the apparatus for cutting successive boards of predetermined thickness from a log firmly supported in its passage through the apparatus. The log is progressively fed to the bandsaws running in the same direction for successive operations to thus utilize the full workload capacity of the apparatus for constant work fed to it.

3,621,896
LUBRICATED CHAIN SAW SUPPORT
Lewis J. Hamilton, 20006 Aqua Drive, Sumner, Wash.
Filed Oct. 27, 1969, Ser. No. 869,686
Int. Cl. B27b *17/12*
U.S. Cl. 143—32 A **5 Claims**



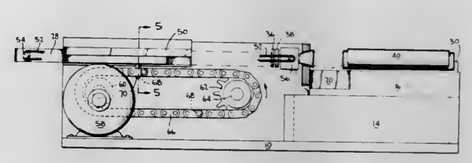
A chain saw bar with a roller for guiding chain over the tip of the bar journaled at the tip end thereof. The bar is laminated and includes a core lamina sandwiched between face laminae, the core lamina being formed to provide a channel extending along the length of the bar for lubricant supplied under pressure. A bearing plate in which the roller is journaled has a portion sandwiched between the face laminae of the bar and a projecting portion which extends beyond the face laminae which journals a hub in the roller. The channel for lubricant in the bar communicates with a passage in the bearing plate, which passage has a discharge end for discharging lubricant on a side of the bearing plate where portions of the roller move over the discharge end.

3,621,897
PROCESS FOR THE IMPROVEMENT OF NATURAL WOOD, PARTICULARLY FOR THE PRODUCTION OF COMPRESSED WOODEN COMPONENTS PROVIDED IF REQUIRED WITH ORNAMENTATION
Luigi Vazzola, and Gottfried Ortner, both of Pordenone, Italy, assignors to Joseph Prugger, Valdaora (Bolzano), Italy, a part interest
Filed Feb. 27, 1970, Ser. No. 15,149
Claims priority, application Italy, Mar. 6, 1969, 13748-A/69
Int. Cl. B27h *1/00*
U.S. Cl. 144—327 **10 Claims**



A process for producing compressed wooden components provided if required with ornamentation, comprising the operations of immersing the natural initial wood in an aqueous bath containing pyridene, then drying the wood to a residual moisture content of 12–16 percent and finally compressing the pretreated wood under the simultaneous action of heat at a temperature of about 180° C. During hot compression the desired ornamentation may be impressed by means of a mold corresponding to the negative of the ornamentation. Vacuum may be applied during this operation. Alternatively the wood pretreated by the water-pyridene bath may be first compressed into a panel with plane faces and this panel may be successively further compressed in a mold for impressing the ornamentation.

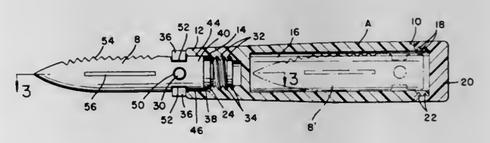
3,621,898
POWER DRIVEN NUTCRACKER
Henry H. Turner, 2702 Techwood Drive, Columbus, Ga.
Filed Jan. 8, 1970, Ser. No. 1,349
Int. Cl. A47j *43/26*
U.S. Cl. 146—12 **9 Claims**



An anvil member and an impact member are guided for independent movement in alignment with each other and provided with relatively adjacent socketed ends for holding between them a nut to be cracked. A hammer is guided for movement in alignment with the impact member and resilient means are provided for urging the hammer into striking engagement with the impact member. For periodically retracting the hammer against such resilient means and releasing it on each cracking stroke, there is provided a sprocket having means for engaging and retracting the hammer throughout a portion of the movement of the sprocket chain and then releasing the hammer to commence its stroke. The anvil member is provided with a longitudinal slot opening through its socketed end and guiding it on a track for movement toward and away from the impact member, the arrangement being such that the end of the track is movable through the slot to clear the socketed end of the anvil as the anvil is retracted.

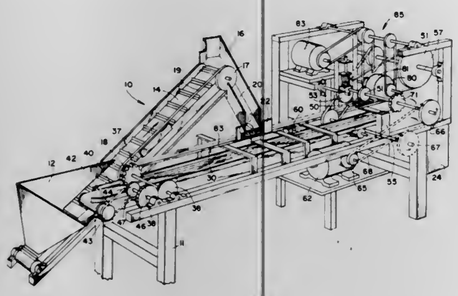
For confining the shell fragments as the nut is cracked, a shield is telescopically disposed on the anvil member for projection toward the impact member to encompass a nut held between the two members.

3,621,899
CONVERTIBLE HAND UTENSIL
Frank M. Hula, 5201 Hamm Ave., Cleveland, Ohio
Filed Oct. 8, 1969, Ser. No. 864,627
Int. Cl. A47j *17/00, 25/00*
U.S. Cl. 146—43 R **6 Claims**



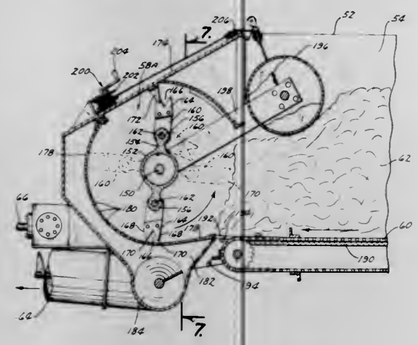
A convertible hand utensil comprising a handle having an internal passageway in communication with the lower end thereof and extending upward therefrom throughout at least a portion of the handle. There is further provided retaining means releasably received in the internal passageway for detachably connecting a variety of implements to the handle. The retaining means has an outer surface and at least one implement locating projection which extends outwardly therefrom. The convertible hand utensil may also include an additional internal passageway which is in communication with the upper end of the handle and extends downward therefrom throughout at least a portion thereof.

3,621,900
APPARATUS FOR AUTOMATICALLY ORIENTING AND TRIMMING VEGETABLES
Walter E. Rood, Ellsworth, Mich., assignor to Michigan Fruit Canners, Inc., a subsidiary of Consolidated Foods Corporation, Benton Harbor, Mich.
Filed July 10, 1969, Ser. No. 840,678
Int. Cl. A23n *15/04*
U.S. Cl. 146—83 **6 Claims**



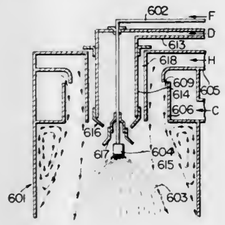
An apparatus for automatically orienting and trimming vegetables comprising a moving receptacle means for receiving the vegetables, means for automatically placing the vegetables onto the moving receptacle, means for automatically orienting the vegetables on the receptacle wherein the vegetables are horizontally disposed such that each end of the vegetable extends beyond the end of the receptacle and means for trimming the extended ends of the vegetables.

3,621,901
LIVESTOCK FEED PROCESSING APPARATUS
John N. Dodgen, and Paul C. Swigger, both of Humboldt, Iowa, assignors to Dodgen Industries, Inc., Humboldt, Iowa
Filed June 3, 1969, Ser. No. 830,013
Int. Cl. A01d *55/18, 55/22*
U.S. Cl. 146—118 **10 Claims**



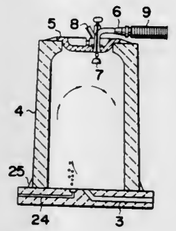
Apparatus for processing animal feed involving a chopper unit in a wagon being fed hay by a conveyor wherein the hay in under compression from a powered roller coordinated in its speed with the speed of the chopper unit. The chopper unit involves one or more rotatable units having blades around its periphery which cooperate with stationary blades in cutting the feed material. One or more pairs of chopper rollers may be provided which turn towards the chopper unit inlet and cooperate with adjacent stationary blades. The material from the wagon may be fed from the chopper unit directly into an apparatus for producing livestock feed pellets having a hammer mill or the like. The chopper unit may also be placed on the machine for producing the pellets. The ground feed prior to being pelletized may be screened by a baffle plate having magnets associated with it for extracting metallic foreign material in the feed. The pellets produced by the pelletizer unit may be sorted by eccentrically operated shaker to separate out the fines. The forward lower end of the shaker being pivotally connected to the frame while the rear raised end is connected to the powered eccentric and may move in random directions.

3,621,902
APPARATUS FOR SPRAY DRYING MILK OR THE LIKE
Katsuto Okada, Tokyo, and Fumio Kato, Kawasaki-shi, both of Japan, assignors to Morinaga Milk Industry Co. Ltd., Tokyo, Japan
Filed Nov. 26, 1969, Ser. No. 880,163
Claims priority, application Japan, Feb. 1, 1969, 44/7085
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 **4 Claims**



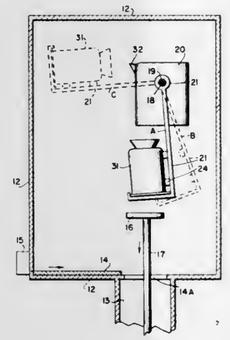
An apparatus for spray drying milk in which drying hot air is blown against a spray of milk sprayed from a nozzle disposed in the upper portion of a drying tower, and at the same time cooled air is introduced into the drying tower so as to surround the flow of hot air so that the portions of the inner walls of the tower which would otherwise be overheated are covered with a layer of cooled air. Further, a first spray of milk in the form of a generally diverging conical sheet is provided in the tower, and simultaneously a second spray is applied to the first spray from its outside in such a manner that the particles of the second spray impinge upon the particles of the first spray at a transient position between a constant-rate drying period and a falling rate drying period of the particles of the first spray, whereby the particles of the second spray are combined with those of the first spray.

3,621,903
METHOD OF BOTTOM CASTING STEEL INGOTS USING LOW VACUUM OF FROM 610 TO 310 MM. HG ABSOLUTE
Yuzuru Doi, and Kozo Yamada, both of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Dec. 26, 1967, Ser. No. 693,376
Claims priority, application Japan, Dec. 26, 1966, 41/84488
Int. Cl. B22d *27/16*
U.S. Cl. 164—65 **4 Claims**



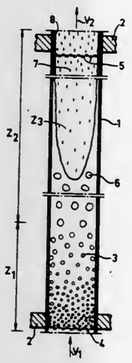
Molten steel is bottom poured into a mold, the internal gas pressure of which is maintained within the range of 610–310 mm. Hg absolute for a major part of the casting period. When the molten steel in the mold reaches a certain height, the mold is sealed against further exhaust of gas. Molten steel is continued to be poured into the sealed mold until the mold is filled, volatile components in the molten steel being thereby prevented from escaping from the sealed mold.

3,621,904
CASTING FURNACE MOLD MECHANISM
William A. Fahlbusch, Arlington Heights, Ill., assignor to Martin Metals Company, Wheeling, Ill.
Filed Apr. 29, 1970, Ser. No. 32,863
Int. Cl. B22d *27/16*
U.S. Cl. 164—256 **4 Claims**



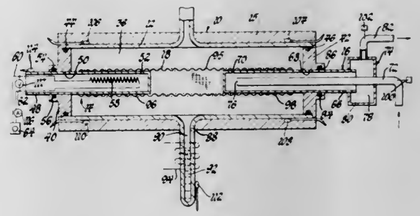
An apparatus for casting, comprising a mold cradle and crucible pivotably but separately mounted to rotate around an axis and releasable means to back the crucible and mold cradle together for unitary movement around the common axis.

3,621,905
METHOD OF IMPROVING THE HEAT TRANSPORT IN A TUBE OF AN EVAPORATOR OR OTHER COOKING APPARATUS
Bengt Hedstrom, Gothenburg, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden
Filed Feb. 3, 1970, Ser. No. 8,189
Claims priority, application Sweden, Feb. 10, 1969, 1763/69
Int. Cl. F28d *13/00*
U.S. Cl. 165—1 **3 Claims**



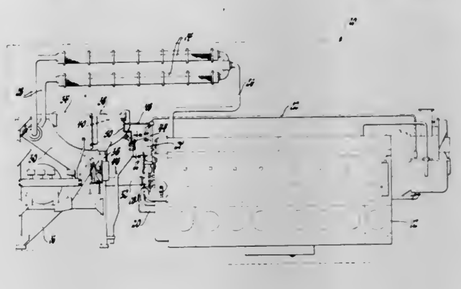
This invention improves the heat transport in a tube of, for example, an evaporator in that the preheating zone for heating a fluid supplied at the lower tube end during its upward flow is shortened by supplying a solid phase of particles to the fluid and maintaining it fluidizing in a particle bed by the upward flow of the fluid.

3,621,906
CONTROL SYSTEM FOR HEAT PIPES
Charles B. Leffert, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 2, 1969, Ser. No. 854,386
Int. Cl. G05d *23/185;* **F28d** *15/00*
U.S. Cl. 165—32 **5 Claims**



In preferred form, a heat pipe joining a heat source and a heat sink through an evacuated control section. A reservoir is located in direct fluid communication with the evacuated control section and has a predetermined quantity of control fluid therein. A heat-pipe wick within the control section has its wetness varied in accordance with changes in the condition of the control fluid to vary the rate of heat transport between the heat source and heat sink by the heat pipe itself; "wetness" hereinafter being taken as the fraction of total interconnected void volume of the wick that is filled with liquid. In a test device heat transport in the "off" state was increased by a factor of approximately 6 in the "on" state.

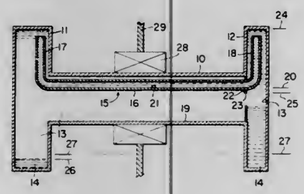
3,621,907
COOLING SYSTEM FOR LOCOMOTIVE ENGINES AND THE LIKE
Max Ephraim, Jr., Evergreen Park; Ludvik F. Koci, La Grange Park, and Humberto Suarez, Forest Park, all of Ill., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,319
Int. Cl. F01p *11/02*
U.S. Cl. 165—51 **6 Claims**



A locomotive cooling system has radiators mounted above the normal coolant level during engine shutdown in the engine and water tank so as to drain the radiators when the engine stops, to avoid the possibility of freezing the water therein. An automatic pressure relief and overflow valve is provided which is open during engine shutdown to drain excess water from the cooling system so as to prevent the retaining of any coolant in the radiators. When the engine is

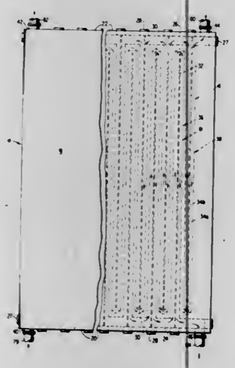
operating, the valve is normally closed by engine lubricating oil pressure to permit normal pressure buildup in the engine cooling system. However, the valve opens to relieve excess pressure in the cooling system. Manual opening means are also provided to relieve system pressure during engine operation.

3,621,908
TRANSPORTING THERMAL ENERGY THROUGH A ROTATING DEVICE
Milton F. Pravda, Baltimore, Md., assignor to Dynatherm Corporation, Cockeysville, Md.
Filed Sept. 4, 1970, Ser. No. 69,729
Int. Cl. F28d *11/02*; **F28f** *5/02*
U.S. Cl. 165—86 **12 Claims**



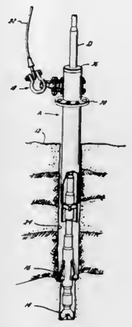
The invention provides for transporting heat through a sealed rotating device. It is of value for cooling rotating elements that are subject to heating, particularly elements that cannot be cooled by conventional means, such as the rotor of an enclosed motor or generator.

3,621,909
HEAT EXCHANGE UNITS AND HEATING SYSTEMS EMPLOYING SUCH UNITS
Horace L. Smith, Jr., 301 Lock Lane, Richmond, Va.
Filed Aug. 4, 1970, Ser. No. 60,855
Int. Cl. F28d *7/02*
U.S. Cl. 165—168 **2 Claims**



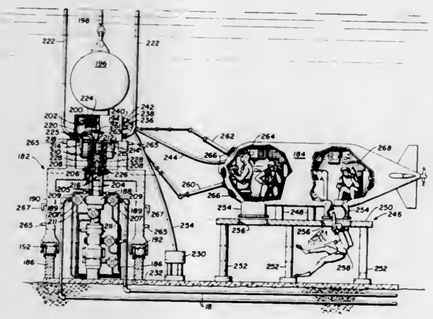
Heat exchange units of the type in which a fluid heat transfer medium is circulated in counterflow relationship through independent flow paths. Heating systems employing such heat exchange units.

3,621,910
METHOD OF AND APPARATUS FOR SETTING AN UNDERWATER STRUCTURE
Lawrence Sanford; Weldon Medders, and Jack Chadderdon, all of Houston, Tex., assignors to A-Z International Tool Company, Houston, Tex.
Filed Apr. 22, 1968, Ser. No. 723,129
Int. Cl. E21b *7/12, 33/035*
U.S. Cl. 166—.5 **7 Claims**



A method of and apparatus for setting an underwater structure in which the structure is lowered on a drill string into the hole as it is being drilled, cement is delivered through the drill string and placed to secure the structure in the hole and the drill string is recovered. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

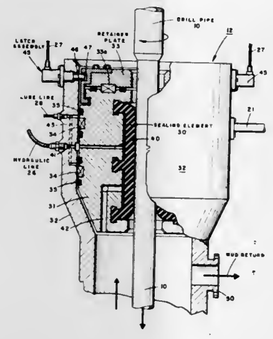
3,621,911
SUBSEA PRODUCTION SYSTEM
Charles Ovid Baker, Garland; Eugene L. Jones, Dallas, Tex., and Warren B. Brooks, New York, N.Y., assignors to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 649,960, June 29, 1971, now abandoned. This application Apr. 1, 1969, Ser. No. 858,209
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **3 Claims**



This specification discloses a subsea system for the production of fluid minerals. The system includes a plurality of underwater wellheads, each having a remotely actuatable valve thereon which in turn has a mechanical valve actuator. Flowlines connect each wellhead with a production satellite which has means therein for testing the production from the wells and for actuating the remotely actuatable valves in response to the certain results of the production testing. An

anchoring means is provided at each wellhead for anchoring a work chamber at the wellhead whereby the mechanical valve actuator on the wellhead valves can be operated from the work chamber.

3,621,912
REMOTELY OPERATED ROTATING WELLHEAD
Lemuel D. Wooddy, Jr., Houston, Tex., and Hubert P. Bezner, Chatsworth, Calif., assignors to Esso Production Research Company
Filed Dec. 10, 1969, Ser. No. 883,726
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **4 Claims**



A remotely operated rotating wellhead having a sealing element made of resilient material and a bearing element. The sealing element which is energized by pressure fits inside of and rotates with the bearing element. A retaining cap is provided with retractable, remotely operated latches to permit replacing the sealing element remotely. The lower end of the rotating wellhead is attached to the upper end of a blowout preventer (BOP) stack through suitable subsea connectors.

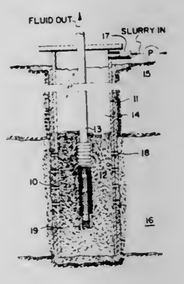
3,621,913
METHOD OF TREATING CLAY-CONTAINING FORMATIONS
William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,373
Int. Cl. E21b *43/22, 43/24, 43/25*
U.S. Cl. 166—272 **5 Claims**

Method of treating underground formations containing clays to increase water permeability employing an aqueous solution of an aluminum salt.

3,621,914
STIMULATION AND SELECTIVE PLUGGING OF PETROLEUM RESERVOIRS
Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company
Continuation-in-part of application Ser. No. 880,390, Nov. 26, 1969. This application Jan. 19, 1970, Ser. No. 4,099
Int. Cl. E21b *43/27*
U.S. Cl. 166—282 **6 Claims**

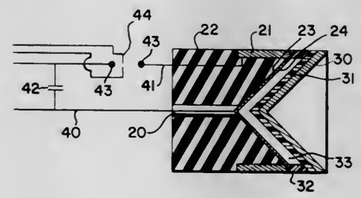
Fractures or highly permeable streaks in a reservoir containing kaolinite are selectively plugged by the introduction of a solution containing hydrazine. The solution attacks the kaolinite-containing particles of the fractures or permeable streaks and decomposes the clay mineral bonds of the rock matrix. The decomposition process causes the walls of the pores to disintegrate and form individual grains of fine clay particles. Subsequent addition of treatment solution transposes the disintegrated particles and lodges them in the exposed pores of the fractures or permeable streaks. Further flow through the treated area is restricted and the reservoir is selectively plugged. Less permeable areas of the reservoir are somewhat stimulated by the kaolinite breakup with the dislodged clay particles from those areas seeking the more permeable channels in the reservoir and further plugging them. The reservoir is thereby both selectively plugged and stimulated by the solution treatment and the reservoir performance is enhanced.

3,621,915
METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A WELL BOREHOLE
Edmond H. Bruist, New Orleans; Tyler W. Hamby, Jr., Metairie, La.; Theodore A. Simon, Houston, and Robert N. Tuttle, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,631
Int. Cl. E21b *43/04*
U.S. Cl. 166—276 **15 Claims**



A method of providing sand control of underground formations penetrated by at least one well borehole by forming an epoxy resin consolidated sand or gravel pack of high compressive strength comprising injecting into a well borehole a slurry of sand that has been coated with a solution of an epoxy-containing resin-forming material and a curing agent dissolved in a polar liquid solvent and suspended in a suitable liquid carrier, such as a hydrocarbon liquid, having a limited solubility and a limited capacity for extracting the polar solvent from the resin-forming material. The curing or polymerization reaction rate of the resin-forming components, under the borehole and formation temperature conditions, is thus controlled so that the final setting of the resin and the consolidation of the gravel pack and adjacent portions of the formation is achieved while the sand or gravel pack is in place in the portion of the well borehole in which it is to be consolidated.

3,621,916
SPARK-TYPE CASING PERFORATOR
Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,726
Int. Cl. E21b *29/02, 43/117*
U.S. Cl. 166—297 **8 Claims**



An electrical spark jet for perforating well casings and formations wherein a shaped spark discharge is used to form a

jet of fluid. The electrodes for the shaped spark discharge comprise a center electrode and an outer cylindrical electrode with an insulator having a cone-shaped indentation being disposed between them. The insulator is coated with a thin conductive film and a cone-shaped metal liner is mounted along but spaced from the conductive film. The liner is coated with an insulation to insure that the spark discharge occurs between the two electrodes and not the metal liner and the conductive film.

The electrical spark jet can also be used to detonate a thin cone of high explosive behind the conical metal liner in order to form a stronger jet without the total explosive effect that would occur if a sufficiently large weight of explosive was used to insure initiation and propagation of the detonation.

3,621,917

METHOD OF EXTINGUISHING LIQUID HYDROCARBON FIRES AND COMPOSITION THEREFOR COMPRISING SILICONE SURFACTANTS

Meyer R. Rosen, Irvington; Samuel Sterman, Chappaqua, and Eric G. Schwarz, Somers, all of N.Y., assignors to Union Carbide Corporation

Filed Apr. 30, 1968, Ser. No. 725,534
Int. Cl. A62c *1/12*; A62d *1/00*
U.S. Cl. 169—1 **29 Claims**

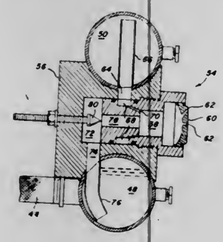
Anionic and/or amphoteric siloxanes in the liquid phase of fire extinguishing foams, with or without other materials as foam promoters, stabilizers or special purpose additives, provide rapid extinguishment of flames, form vapor-securing films over the burning hydrocarbon liquid to prevent reignition upon foam rupture or disintegration, and impart compatibility of the foam with dry chemical extinguishing agents.

3,621,918

METHOD AND APPARATUS FOR SUPPRESSING DUST IN A MINE

Earl M. Damron, 1232 Lions Ave., Morgantown, and Harry E. De Witt, 1509 Morgantown Ave., Fairmont, both of W. Va.

Filed Aug. 14, 1969, Ser. No. 850,074
Int. Cl. B05b *7/00*; A62c *3/00*
U.S. Cl. 169—2 **7 Claims**



Air and water are combined in a vessel and propelled under a controlled balanced pressure through a flexible conduit to a remote location where dust is being created. At this location the admixture of air and water is introduced into a double manifold chamber where the air and water separate. The air exerts a preselected pressure on the water through connecting passageways between the two manifolds. The air and water flow through separate passages into one or more nozzles. The nozzles have a turbulence chamber where the air and water are again admixed under the controlled balanced pressure and the admixture is expelled from the nozzles through a plurality of openings as a fine mist. The mist encapsulates the dust particles and removes the dust particles, including the hazardous particles having a size of 10 microns or less, from the atmosphere.

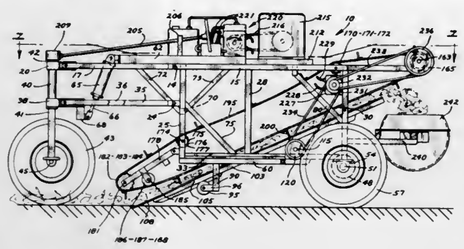
In another embodiment the air and water are propelled separately through flexible conduits under controlled balanced pressures to one or more distributors located remotely from the vessel where the water and air are admixed in a turbulence chamber under the same controlled balanced pressure.

3,621,919

BEACH-CLEANING APPARATUS

Rudolph Olson, Box 448, Braham, Minn.

Filed June 11, 1970, Ser. No. 45,368
Int. Cl. H01d *17/02*
U.S. Cl. 171—120 **3 Claims**



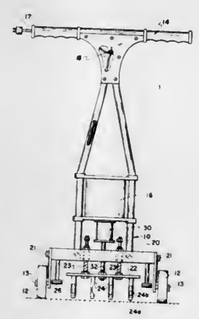
A beach-cleaning apparatus comprising a mobile chassis carrying a plurality of inclined screens, leading elements carried by said screens undercutting the beach surface to pick up beach litter for deposit onto said screens and endless chains with respect to each of said screens, said chains carrying spaced flights and moving the same over said screens to carry said beach litter upwardly of said screens and a receptacle receiving said beach litter discharged from said screens.

3,621,920

LAWN-PERFORATING APPARATUS

William R. Brown, 1415 Thompson Road, Woodburn, Oreg.

Filed Sept. 22, 1970, Ser. No. 74,376
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 **6 Claims**



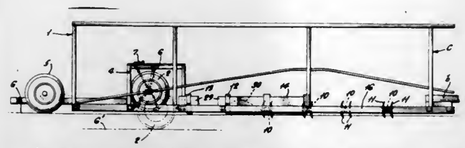
Lawn-aerating apparatus for punching a multiplicity of holes in terrain comprising an electric motor carried on a wheeled frame and coupled to a plurality of spiker rod elements. In a first embodiment the rotary drive cooperates with a cam mechanism, Which is normally decoupled but which engages when pressure is applied against the tips of the spiker rod elements, to vertically reciprocate the rods at relatively high frequency so as to drive them into the ground. In a modified embodiment the spiking elements are in the form of augers which are coupled by a gear arrangement for common rotation by the motor so as to screw them into the ground. In both embodiments the wheels and frame are carried on a spring-biased suspension which assists in the in-and-out motion of the law perforator as it is rolled along the ground punching holes in the terrain.

3,621,921

RACETRACK CUSHION-FORMING APPARATUS

William Wachunas, Strides Farm, Gansevoort, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,562
Int. Cl. A01b *49/02*, *63/18*
U.S. Cl. 172—198 **3 Claims**



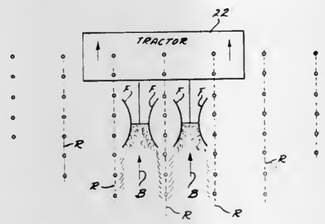
An apparatus which, pursuant to being pulled along the surface of a horse racetrack, performs a loosening and combing action so as to form a uniform cushion layer of loose earth along the track surface.

3,621,922

ROLLING FENDER

Jacob O. Hinken, 321 N. Jackson, Litchfield, Ill.

Filed May 8, 1970, Ser. No. 35,614
Int. Cl. A01b *21/02*, *23/06*
U.S. Cl. 172—555 **1 Claim**



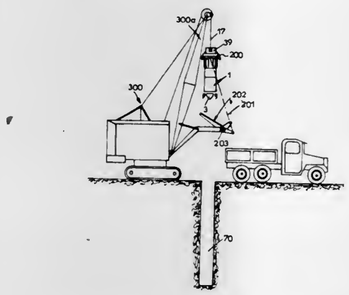
A one-piece rolling fender having a curved central portion with teeth extending outwardly therefrom, each tooth having a concave forward edge and a strengthening rib, which is inclined rearwardly when said tooth contacts the ground, there being a connecting portion between the teeth. This fender shape prevents too much dirt from being thrown up on a plant row by a cultivator, and the fender itself throws the proper amount of dirt up onto a plant row to smoother weeds.

3,621,923

AUTOMATIC BORING GRAB

Pierre Jean-Marie Theodore Allard, 178 Blvd. Francois, Ier, 76 Le Havre, France

Filed Apr. 9, 1970, Ser. No. 26,947
Claims priority, application France, Apr. 28, 1969, 6913500
Int. Cl. B66c *3/02*
U.S. Cl. 175—24 **18 Claims**



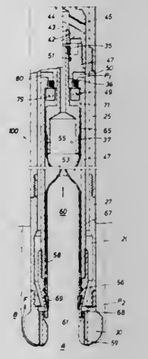
Automatic boring grab comprising a cylindrical body containing a piston slidingly mounted therein and shovels hingedly linked with the end of said piston, whereas said grab is suspended by a single cable controlled by a hoisting machine and comprises setting means controlling the motion of said piston while closing the said shovels as soon as a pull is exerted on said cable, releasing means controlling the opening of said shovels and actuated by stop means freeing the piston, locking means for locking temporarily the shovels in open position, and automatic means for discharging the cuttings during opening of the shovels.

3,621,924

SOFT FORMATION CORE BARREL

Maurice P. Lebourg, 3700 Greenway Plaza Drive Suite 428, Houston, Tex.

Filed Mar. 24, 1970, Ser. No. 22,251
Int. Cl. E21b *9/20*, *25/00*
U.S. Cl. 175—58 **27 Claims**



A core barrel device for producing and retrieving subterrancan cores, particularly from soft or unconsolidated formations, utilizes a fluid-pressure collapsible sleeve above the corer to receive and hold the core material and permit its retrieval in its original subterranean condition. Pressure responsive valves maintain a fluid pressure behind the collapsible sleeve to retain it in the collapsed position until the core is received in the sleeve and also permit fluid behind the sleeve to exhaust as the core enters the sleeve while the sleeve continues to offer lateral pressure support for the core and also remains collapsed above the core. When the coring device is withdrawn, a small amount of core material falls from the lower portion of the core barrel and the lower portion of the sleeve collapses to retain the remainder of the core within the core barrel.

3,621,925

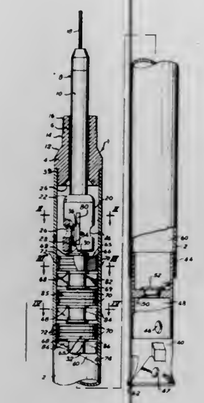
WELL BAILER

John M. Reynolds, Shreveport, La., assignor to The Reynolds Specialty Company Inc., Shreveport, La.

Filed Sept. 25, 1969, Ser. No. 861,078
Int. Cl. E21b *27/00*
U.S. Cl. 175—232 **15 Claims**

A plunger for use in well bailers and drilling tools having a plunger mandrel slidably disposed in the body of the bailer and rigid piston rings on the mandrel. The rings have a smaller outside diameter than the inside diameter of the bailer body and a bore through the center of each ring has a larger diameter than the outside diameter of the mandrel, causing the ring to wobble as it moves through the body of the bailer. Grooves are formed around the outer edge of the

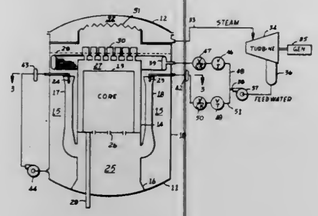
ring to agitate fluid passing the edge of ring. Fins are formed on the mandrel to minimize rotation of the mandrel relative to the body of the bailer.



3,621,926
NUCLEAR REACTOR COOLANT RECIRCULATION SYSTEM

Harold E. Townsend, Campbell, Calif., assignor to General Electric Company

Filed Feb. 13, 1968, Ser. No. 705,039
Int. Cl. G21c *15/24*
U.S. Cl. 176—56 **12 Claims**



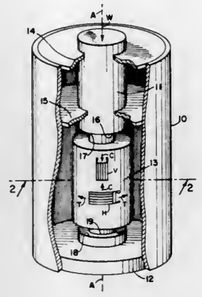
A feedwater augmented jet pump coolant recirculation system for nuclear reactors is disclosed. In this system feedwater is used to drive some of the jet pumps. The majority of the jet pumps are operated at constant flow, while flow control is provided by varying the flow of another part of the feedwater between a feedwater sparger within the pressure vessel and the remaining pumps.

3,621,927
UNITARY LOAD CELL

Alfred Newman Ormond, 11969 E. Rivera Road, Santa Fe Springs, Calif.

Filed Apr. 27, 1970, Ser. No. 31,970
Int. Cl. G01g *3/14*
U.S. Cl. 177—211 **9 Claims**

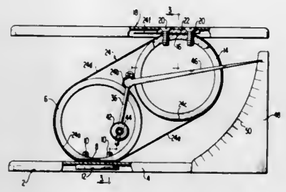
A unitary load cell structure primarily useful for weighing includes a cylindrical casing, a force-transmitting member in an interior end portion of the casing, and a base member secured to the opposite end portion of the casing. A load element with its load-sensitive axis coaxial with the cylindrical casing is disposed within the casing between the force-transmitting member and the base member. Guide means in the form of first and second axially spaced diaphragms secured at their inner central portions to the force-transmitting member at axially spaced points and at their periphery to the cylindrical casing constrain movement of the force-transmitting member to an axial direction so that only an axial component of force applied to the force-transmitting member is transferred to the load element. The load element itself terminates at opposite ends in spherical surface portions which engage concave surface portions of greater radii of curvature at the lower end of the force-transmitting member and an upper central portion of the base respectively so that further isolation of bending moments is realized.



3,621,928
WEIGHING SCALES OF FORCE-BALANCING TYPE

Carleton W. Sprague, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Filed Aug. 13, 1970, Ser. No. 63,505
Int. Cl. G01g *1/02*
U.S. Cl. 177—224 **11 Claims**

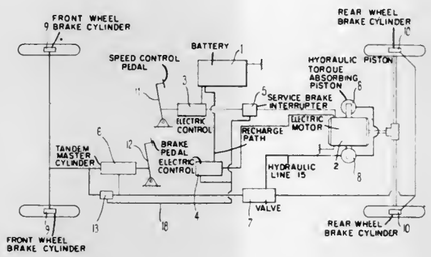


A weighing scale having a platform that moves relative to the base with a movable pointer indicating the weight of an object placed on the platform. A base member and a platform member have opposed cylindrical surfaces which are arranged in parallel relation and are spaced apart from each other by an interposed rolling member. A thin flexible band supports the base member and the platform member for vertical swinging movement relative to the base member. A movable roller is positioned between the opposed cylindrical surfaces and rolls along the surfaces in response to movement of the platform member relative to the base member. A counterweight or counterforce that is attached to the roller applies a countertorque that progressively increases the resistance to displacement of the platform member. A pointer or indicator which is proportionally driven for the torque applied to the roller indicates the weight of the object on the platform when the counterweight or counterforce is balanced. The indicator may be directly attached to the roller or may be driven by intermediate means (mechanical, electrical, hydraulic, pneumatic, etc.) by which the indicated position will be proportional to the applied weight.

3,621,929
BRAKE SYSTEM FOR ELECTRICALLY OPERATED VEHICLES

Heinrich Oberthur, Offenbach-Rumpenheim, and Otto Depenheuer, Bad Homburg, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,605
Claims priority, application Germany, Sept. 28, 1968, P 17 88 077.2
Int. Cl. B60l *7/24*
U.S. Cl. 180—65 R **5 Claims**

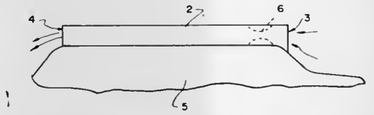


A braking and driving system for electrically operated vehicles including an electric motor for driving the vehicle which may be operated as a generator to provide additional braking and recovery of braking energy by charging the battery. Hydraulic braking on the drive axle is delayed until the maximum level of electromotive braking is reached. This allows the design distribution of braking between the front and rear axles to be maintained while insuring a maximum recovery of braking energy through charging of the battery.

3,621,930
SYSTEM OF ELECTRICITY GENERATION FOR MOTOR-DRIVEN VEHICLES

David D. Dutchak, 2332 West Addison St., Chicago, Ill.

Filed Oct. 22, 1969, Ser. No. 868,472
Int. Cl. B60l *11/18*
U.S. Cl. 180—65 R **1 Claim**



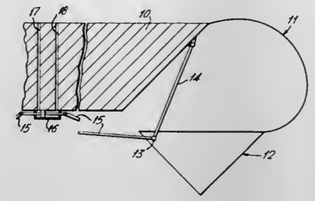
A system of electricity generation for electric motor-driven vehicles consisting of a wind tunnel mounted on an equipped vehicle having open forward and rearward air intake and discharge ends, respectively, the forward open end being flared outwardly constituting an airscoop; plus a Venturi within the air tunnel communicating with the airscoop, and a battery of wind-activated electrically interconnected generators mounted within the tunnel in line communication with its open forward and rearward air intake and discharge ends.

3,621,931
GAS-CUSHION VEHICLES

Rowland D. Hunt, Paulsgrove, Portsmouth, England, assignor to Vosper Limited

Filed Mar. 25, 1969, Ser. No. 810,200
Claims priority, application Great Britain, Mar. 26, 1968, 14,570/68
Int. Cl. B60v *1/00*
U.S. Cl. 180—117 **6 Claims**

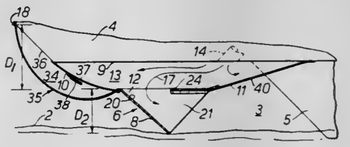
A skirt shift system for a gas-cushion vehicle having a flexible segmented skirt in which movement of the skirt relative to the hull is influenced by the provision of pivotable links secured to the hull and to the inner corners of the segments, and power operated means are connected to the links.



3,621,932
GAS-CUSHION VEHICLES

Edward Gunston Tattersall, Hythe, Southampton; Peter Riddett, Sarisbury Green, Southampton, and Ronald Christopher Fishlock, Totton, Southampton, all of England, assignors to Hovermarine Transport Ltd., Woolston, Southampton, England

Filed May 15, 1969, Ser. No. 824,960
Claims priority, application Great Britain, May 17, 1968, 23,522/68
Int. Cl. B60v *1/04, 1/16*
U.S. Cl. 180—126 **14 Claims**

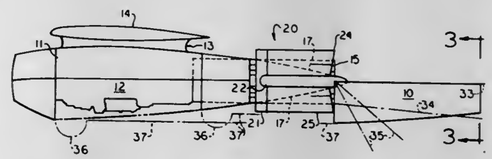


An air-cushion vehicle for operation over water has the front end of the vehicle-supporting cushion contained by a two-stage flexible skirt of inflatable construction. The skirt comprises a row of contiguously disposed flexible members of U-like plan form flexibly suspended beneath the body of the vehicle by inner and outer flexible walls. The outer flexible wall has a rearward rake. The arrangement reduces forces generated due to impact between waves and the vehicle.

3,621,933
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF AN AIRCRAFT JET ENGINE

Burt F. Raynes, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed July 27, 1970, Ser. No. 58,282
Int. Cl. B64d *33/06*; B64c *9/38*; F01n *1/14*
U.S. Cl. 181—33 E **22 Claims**

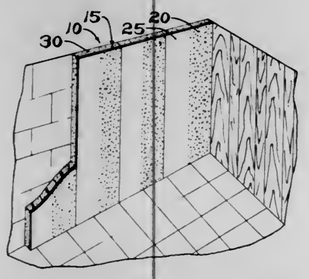


An aircraft jet engine is provided with a semicylindrical reflector/suppressor shield which for takeoff of the aircraft is extended sufficiently downstream of the engine nozzle to intercept the accompanying cone of noise of the jetstream several nozzle diameters aft of the nozzle in the region of the expansion boundary of the jetstream where the noise level is maximum so that such noise which otherwise would be

radiated toward the ground is reflected by the shield to thus substantially reduce the effective perceived noise level at the ground.

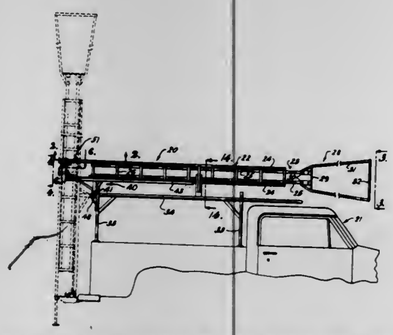
The shield is interrelated structurally and functionally with the engine and nozzle structures so that appropriately configured nozzle and nozzle adjuncts effect stream division, mixing and frequency conversion, ejector action for thrust augmentation at takeoff, and thrust reversal for aircraft braking on landing, all rendered compatible with the operation of the reflector/suppressor shield and the noise abatement provided thereby.

3,621,934
ACOUSTIC WALL COVERINGS
Donald B. Thrasher, Brecksville, Ohio, and Ezra Earl Dennison, Erie, Pa., assignors to The B. F. Goodrich Company, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,179
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **8 Claims**



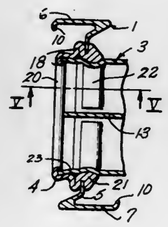
A sound-absorbing wall covering for regulating sound-absorption of a room is made in long sheets or rolls of a flexible laminate consisting of a flexible decorative skin such as vinyl adhered to a soft, porous backing material, preferably a foam polymeric material. Certain areas of the skin contain many very small perforations while the adjoining areas of the skin are imperforate; the perforate-to-imperforate areas typically being in the ratio of 1 to 1, thereby providing in a single sheet, in effect, a multipurpose sound-absorber. After installation, a room may be "fine-tuned" for sound by closing some of the holes in the perforated area.

3,621,935
VEHICLE MOUNTED LADDERLIKE TOWER
John J. Bode, 1923 West 9th St., Hastings, Nebr.
Filed Sept. 2, 1969, Ser. No. 854,649
Int. Cl. E06c *5/04*
U.S. Cl. 182—68 **7 Claims**



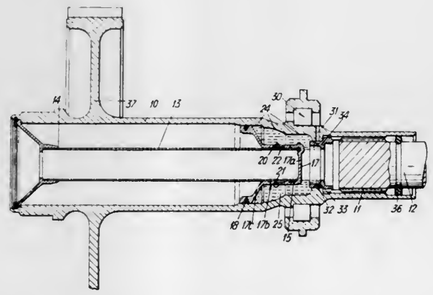
A mobile ladderlike tower on which workmen can ascend to and work at substantial heights above the ground in safety. It has an electrically insulated, partially caged work platform. The tower is for mounting on a pickup truck or other vehicle, and is capable of swinging movement between a horizontal stored carrying position overlying the vehicle and a stabilized upright working position. The tower if made up of telescopic sections for selective extension and retraction and includes appropriate elevating and latching devices for the various conditions of storage and use.

3,621,936
LADDER STRUCTURE
Alfred E. O. Andreassen, Waterloo, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.
Filed Apr. 17, 1970, Ser. No. 29,507
Int. Cl. E06c *7/08*
U.S. Cl. 182—194 **9 Claims**



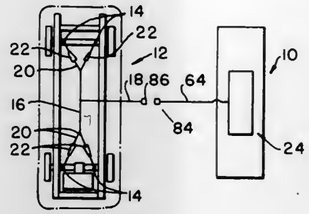
Ladder structure for incorporation in metallic ladders of various types including stepladders and extension ladders among others, staging, bus ducts, etc., and embodying side rail structure, step or rung structure, and connecting means to join the rungs to the side rails.

3,621,937
LUBRICATION SYSTEM
Robert G. Edge, Derby, and Arthur G. Goss, near Derby, both of England, assignors to Rolls-Royce Limited, Derby, Derbyshire, England
Filed Oct. 15, 1969, Ser. No. 866,479
Claims priority, application Great Britain, Oct. 24, 1968, 50,567/68
Int. Cl. F02c *7/06*
U.S. Cl. 184—6.11 **9 Claims**



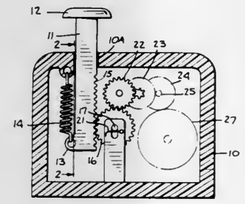
To lubricate the splined connection between a pair of coaxial horizontal shafts, one shaft is hollow and has a lubricant supply conduit therein. One end of this shaft is closed by a cap. Lubricant passes through radial apertures in the shaft and in the cap. A lubricant trap is formed on the shaft. When the speed of rotation of the shaft exceeds a predetermined value, the centrifugal force retains some lubricant in the trap, and below that speed, lubricant spills from the trap to the splines, the cap preventing it from spilling into the hollow shaft.

3,621,938
LUBRICATING SYSTEM FOR VEHICLES
Henry C. Beattie, Marine City, Mich., assignor to Reef-Baker Corporation, Detroit, Mich.
Filed Apr. 7, 1969, Ser. No. 813,858
Int. Cl. F16n *7/14*
U.S. Cl. 184—7 CR **2 Claims**



The lubricating system includes a lubricating station or island having a reservoir for lubricant and a timer-operated pump to lubricate bearings and the like on vehicles such as buses and trucks. Each vehicle has a conduit system which may be connected to the pump and which leads to the points to be lubricated. A metering device is associated with each point to be lubricated to meter the desired amount of lubricant.

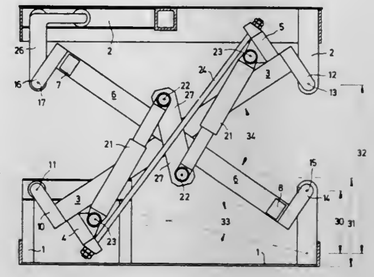
3,621,939
IMPULSE-ACTUATED SPRING MOTOR
David C. Hughes, White Plains, N.Y., assignor to Child Guidance Toys, Inc., Bronx, N.Y.
Filed Jan. 2, 1970, Ser. No. 94
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 **3 Claims**



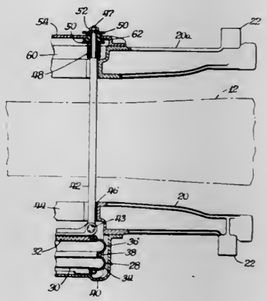
An impulse-actuated spring motor in which a main spring is coupled to a retractable plunger having a rack formed longitudinally thereon, the spring being stretched and subjected to tension when the plunger is physically struck on the free end thereof. The rack engages a spring-biased pinion which is normally coupled to a gear train but is decoupled therefrom during the forward stroke of the plunger resulting from the blow. The return stroke of the plunger is brought about by the tension of the main spring, the pinion being then recoupled to the gear train to operate same.

3,621,940
SCISSOR ACTION HOIST
Alois Lodige, Frankfurter Weg 72, 497 Paderborn, Germany
Filed Nov. 3, 1969, Ser. No. 873,541
Int. Cl. B66b *11/04*
U.S. Cl. 187—18 **7 Claims**

A scissor action hoist having at least one pair of scissor arms joining a platform with a base, and driving means for opening and closing the arms, has at least one member coupled with at least one arm to be under tension when the hoist is under load to prevent bending of that arm.



3,621,941
BRAKE MECHANISM
Bennett Osborn Blout, Berwyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,083
Int. Cl. B61h *13/24, 15/00*
U.S. Cl. 188—52 **6 Claims**

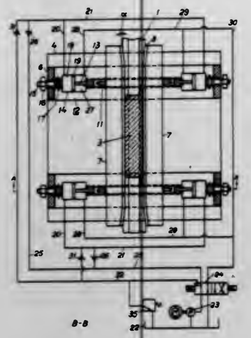


An improved brake mechanism for a railway vehicle truck which may be mounted as shown in the various positions in the drawings and comprises one or more reinforced rubber convolute actuators which replace the standard brake cylinders used in prior art mechanisms. The actuators are without sliding or moving air seals which may be affected by water or ice and require no periodic internal inspection and maintenance.

3,621,942
MARSHALLING YARD RETARDER
Sten Henrik Danieli, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Nov. 21, 1969, Ser. No. 878,804
Claims priority, application Sweden, Nov. 22, 1968, 15,895/1968
Int. Cl. B61k *7/08*
U.S. Cl. 188—62 **10 Claims**

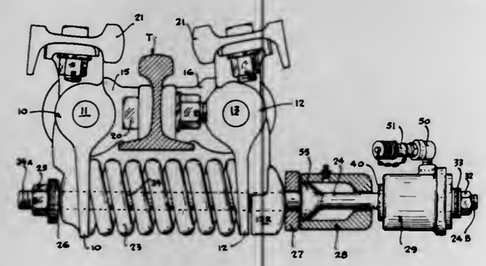
A marshalling yard retarder includes a mechanical braking means with elongated braking members on both sides of the rail movable towards and from the vertical plane of the rail to engage against a wheel rolling on the rail. The braking members are pivoted about horizontal axes and are actuated by hydraulic pistons which are flexibly mounted. The cylinders are supplied by a supply conduit containing a nonreturn valve and a return conduit having a pressure-limiting overflow member which is connected to a storage tank from

which the pressure medium is drawn. There may be two pressure-limiting overflow members set for different pressures,



and a weighing means for selectively connecting these members to the return line.

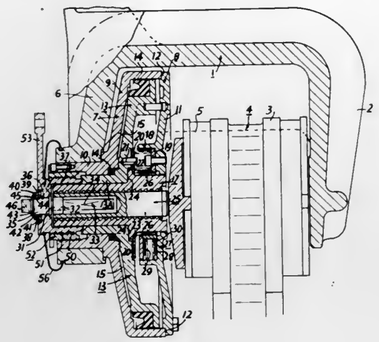
3,621,943
RAILROAD CAR RETARDER
Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.
Filed May 21, 1970, Ser. No. 39,448
Int. Cl. B61k *7/02*
U.S. Cl. 188—62 **3 Claims**



A railroad car retarder having pivoted levers for presenting retarding elements to a car wheel has the levers normally biased to a wheel engaging position by a coil spring. The levers may be actuated to a released position by a fluid-operated cylinder, compressing the spring. Means are interposed between the cylinder and adjacent lever in order to relieve the cylinder of shock when the retarder is restored, as by a car moving in or out of the retarder.

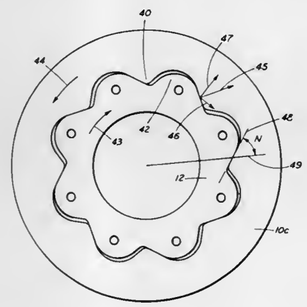
3,621,944
A DISC BRAKE INCLUDING A COMPACT AUTOMATIC SLACK ADJUSTER AND PARKING BRAKE
Keith W. Langley, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England
Filed Oct. 3, 1969, Ser. No. 863,551
Claims priority, application Great Britain, Oct. 23, 1968, 50,220/68
Int. Cl. F16d *55/20, 65/56*
U.S. Cl. 188—71.9 **13 Claims**

A caliper disc brake having a pressure responsive member which acts on a second member which in turn acts on a driven member to actuate the brake discs. The second member also forms a part of both a slack adjuster and a parking brake. As part of the slack adjuster it has helical threads which are engaged by pawls spaced thereabout. As part of the parking brake, it is mounted to be moved axially by a separate actuating element, independently of its movement



by the pressure-responsive means, to act on the driven member to hold the brake against release.

3,621,945
DISC BRAKES
William J. Spry, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,841
Int. Cl. F16d *55/36*
U.S. Cl. 188—71.5 **5 Claims**

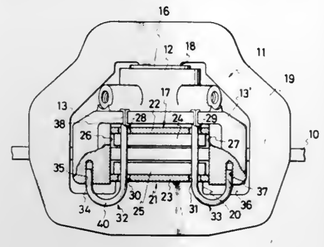


Friction discs for use in multiple disc brakes, e.g., carbon friction discs for use in aircraft brakes, are provided with scalloped perimeters for coaction with driving or restraining elements having similar scalloped perimeters. Both sets of scallops have substantially flat contact surfaces disposed at an angle which optimizes the distribution of force on the friction disc. The friction disc scallops interfit between and engage the coacting element scallops, but are capable of limited expansion and rotary movement between the coacting element scallops.

3,621,946
BRAKE SHOE SUPPORTERS
Yoshinori Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariza , Japan
Filed Dec. 17, 1969, Ser. No. 885,749
Claims priority, application Japan, Dec. 28, 1968, 44/1558
Int. Cl. F16d *65/04*
U.S. Cl. 188—73.6 **5 Claims**

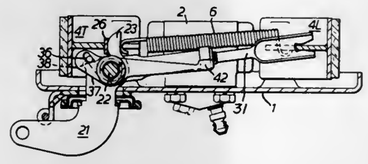
Brake shoe supporting pins for use on a spot-type disk brake which are substantially J-shaped pins and are fixed to

stationary members on opposite sides of the brake disk. The stationary members may be the housing of an operating



cylinder on one side of the brake disk and yoke members extending to the other side of the brake disk.

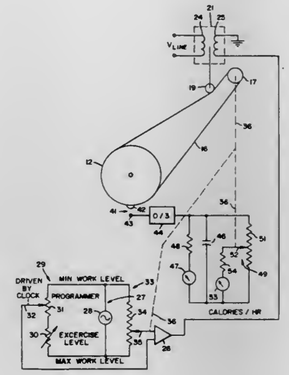
3,621,947
VEHICLE DRUM BRAKES AND ADJUSTING MEANS THEREFOR
Hugh G. Margetts, Tyseley, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed May 12, 1969, Ser. No. 823,616
Claims priority, application Great Britain, May 14, 1968, 22,928/68
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 P **4 Claims**



The invention relates to an arcuate shoe drum brake which comprises a pair of opposed, arcuate brake shoes, movably mounted on a fixed brake structure, power-actuated service brake means for expanding the shoes against the drum, auxiliary, mechanical actuating means including an actuating lever engaging one shoe and a strut for transmitting auxiliary actuating forces to the other shoe. The strut includes relatively rotatable screw-threaded parts so that the strut is adjustable in length to compensate for wear of the brake shoe linings. A pivoted lever effects relative rotation of the strut parts in response to excessive travel of the brake shoes upon brake application by the auxiliary actuating means. A prestressed coil torsion spring is coupled to the pivoted lever and urges the said lever in a direction in response to operation of the actuating lever the spring being designed to yield to avoid over adjustment when high-braking loads are transmitted to the strut.

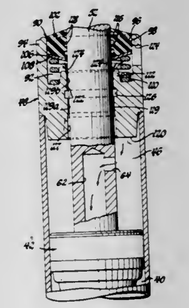
3,621,948
AUTOMATIC FRICTION BRAKING SYSTEM
Keene P. Dimick, Santa Rosa; Anthony J. Iozzi, Moraga, and Earl L. Jackson, San Francisco, all of Calif., assignors to Lifecycle, Inc., Concord, Calif.
Filed June 20, 1969, Ser. No. 834,976
Int. Cl. B60t *13/74*
U.S. Cl. 188—186 **12 Claims**

An automatic friction braking system including a brake wheel with an encircling brake band. The brake band is coupled to a pulley biased in a direction opposite the differential tension in the brake band by a spiral spring. A motor operated cam adjusts the tension in the brake band. A potentiometer is coaxially mounted with the pulley to indicate the degree of rotation of the pulley and thus torque load on the brake wheel and is coupled through a closed loop servosystem to the loading motor. A dual potentiometer is also



provided for indicating the power dissipation of the brake wheel.

3,621,949
MODIFIED ROD GUIDE FOR CUT OFF SHOCK ABSORBER
Byron L. Watson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1969, Ser. No. 862,654
Int. Cl. F16f *9/36*
U.S. Cl. 188—284 **3 Claims**

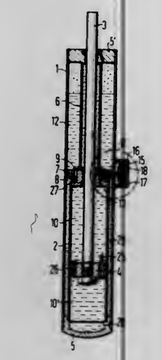


In preferred form, a double direct acting hydraulic shock absorber having a piston rod, a rod guide closing one end of a pressure cylinder and a piston dividing the cylinder into variable volume rebound and compression compartments. The rebound and compression compartments are communicated through an axial rod flow path defined by a side opening in the piston rod, a concentric bore through one end of the piston rod and control valves within the piston. When the rebound chamber is cut off a high-pressure buildup occurs in the cylinder. The rod guide is modified to include an annular high-pressure trap which prevents blowby of such high-pressure fluid past a resilient fluid seal that is operative during normal operation to prevent fluid leakage exteriorly of the unit along the outer periphery of the piston rod.

3,621,950
SHOCK ABSORBER INCLUDING VALVED BYPASS

Dieter Lutz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed July 31, 1969, Ser. No. 846,390
Claims priority, application Germany, Aug. 8, 1968, P 17 75 415.3
Int. Cl. F16f 9/34
U.S. Cl. 188—315 9 Claims

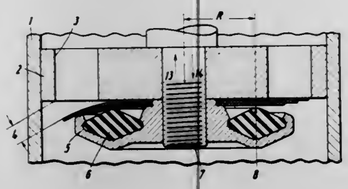


A hydropneumatic shock absorber of the piston-and-cylinder type is equipped with a compensating chamber enclosing a cushion of compressed gas and otherwise filled with liquid which also fills the cylinder. The flow section of a throttling conduit connecting the compensating chamber with the cylinder is controlled by a valve operated by a diaphragm which divides a control chamber into a first portion freely communicating with the compensating chamber and a second portion containing a gas under pressure and a helical compression spring. As the load on the shock absorber increases, the flow section of the throttling conduit is reduced.

3,621,951
THROTTLE VALVE

Leopold Franz Schmid, Pischekstr. 49, Stuttgart-Ost, Germany

Filed Dec. 9, 1969, Ser. No. 883,461
Claims priority, application Germany, Dec. 30, 1968, P 18 17 392.7
Int. Cl. F16f 9/52
U.S. Cl. 188—322 5 Claims

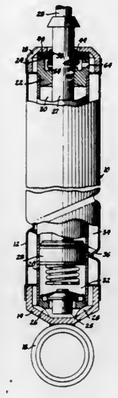


A throttle valve, particularly suited for hydraulic shock absorbers dashpots for motor vehicles, which automatically compensates for a change in the viscosity of the liquid flowing therethrough as a result of a liquid-temperature change. A temperature-responsive expansible ring preferably coacts with resilient valve plates to regulate the flow apertures, and may have either 1° or 2° of freedom of movement in expansion.

3,621,952
SPRING LOADED PISTON ROD SEAL

Paul J. Long, Jr., Dayton, and Joseph P. Pendergast, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1969, Ser. No. 874,327
Int. Cl. F16f 9/36
U.S. Cl. 188—322 1 Claim

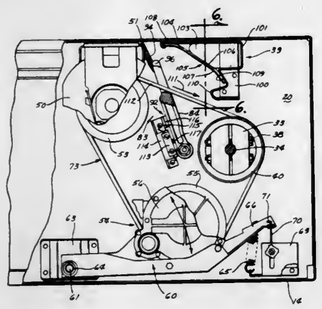


In preferred form, a hydraulic shock absorber piston rod seal of resilient material having an annular collar portion supporting the seal and having radially inwardly projecting end portions on opposite sides of the collar portion which contact the piston rod. One end portion extends axially outward from the shock absorber to prevent the entry of dirt between the piston rod and the seal. The second end portion has a V-shaped cross section adapted to contact the piston rod at a pointed edge to prevent the escape of hydraulic fluid between the piston rod and the seal. An annular garter spring encircles the second end portion to bias the pointed edge of the V-shaped second end portion against the piston rod.

3,621,953
BRAKE-RESPONSIVE MOTOR CONTROL

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 18, 1969, Ser. No. 886,156
Int. Cl. F16d 67/02
U.S. Cl. 192—1 10 Claims

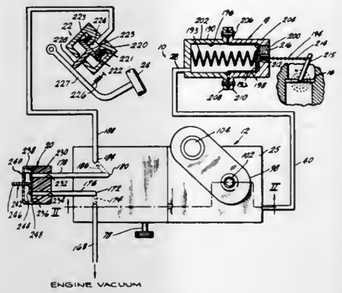


A brake device includes a pivotally mounted arm engageable with a drive belt. The pivotally mounted arm is self actuating for applying a braking drag to the belt responsive to deenergization of the motor. A switch is positioned juxtaposed the brake arm and responsive to movement of the brake arm to the braking position for maintaining the motor deenergized during the braking operation.

3,621,954
SPEED CONTROL SYSTEM

James T. Ligon, 800 South Main, Almont, Mich., and David L. Lang, 182 Birch Hill Drive, Rochester, Mich.

Filed Jan. 22, 1970, Ser. No. 4,981
Int. Cl. F02d 11/08; B60k 31/00
U.S. Cl. 192—3 T 25 Claims

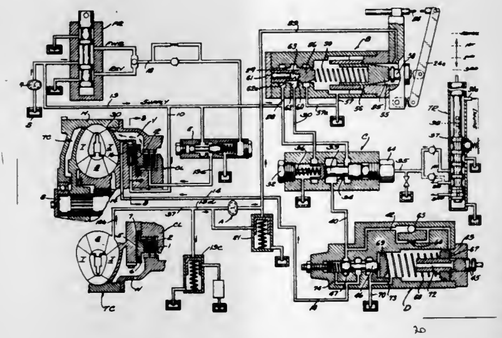


A speed control system effective to maintain the speed of a prime mover substantially constant under varying load conditions in which a control member oscillatable at a rate which is a function of the speed of the prime mover is utilized to modulate and control fluid pressure applied to pressure responsive means actuatable to vary the speed of the prime mover.

3,621,955
TORQUE LIMITING CLUTCH FOR TORQUE CONVERTER CONTROLLED BY SPEED AND TRANSMISSION SELECTOR

James B. Black, Roscoe, and Robert W. Meyer, Pecatonica, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.

Filed Jan. 5, 1970, Ser. No. 708
Int. Cl. B60k 21/04; F16d 39/00
U.S. Cl. 192—3.57 3 Claims

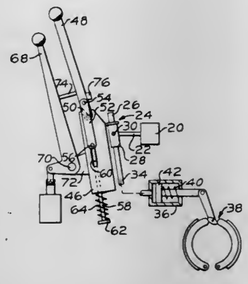


A power transmission including a hydrodynamic torque converter and a modulated clutch, having a hydraulic control system for limiting the amount of torque which is capable of being applied to the wheels of a vehicle or the like. The control system includes an output driven pump which produces a signal flow proportional to its speed, and this signal is conducted to a variable orifice torque limiter valve. The torque limiter valve in turn controls the available fluid pressure which is conducted to the modulatable clutch, which clutch in turn determines the power output. Thus the output speed of the transmission is "read" and through a control system the output speed is controlled to limit the output torque.

3,621,956
PARKING BRAKE AND TRANSMISSION INTERLOCK

David S. Suckow, Decatur, and Larry G. Warren, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 14, 1970, Ser. No. 2,717
Int. Cl. F16h 57/10
U.S. Cl. 192—4 A 3 Claims

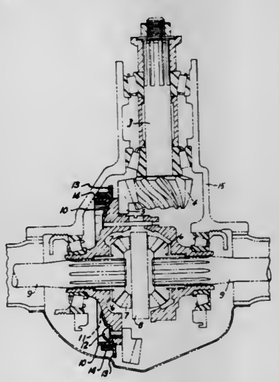


A control system for a vehicle having a parking brake and a transmission is provided with a mechanical lever system and valve arrangement which prevents shifting the transmission into gear when the parking brake is engaged.

3,621,957
AUTOMATIC SAFETY BRAKE FOR AUTOMOTIVE VEHICLES

Laurence L. Howe, 5338 North 22nd Drive, Phoenix, Ariz.

Filed Oct. 31, 1969, Ser. No. 872,807
Int. Cl. F16h 57/10
U.S. Cl. 192—3 R 2 Claims



This invention consists of a brake drum that is riveted or otherwise secured to the case in the differential of an automotive vehicle. The brake drum is encompassed by a brake shoe that is provided with a lining which acts on the aforesaid brake drum when the shoe is tightened by a spring-loaded bolt. When the key of the ignition switch of the vehicle is turned off, the electric current from the ignition switch holds an elliptical cam open by means of a solenoid.

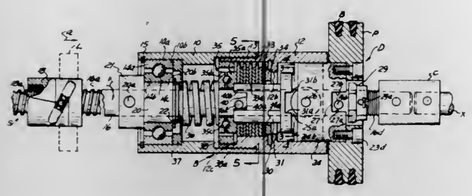
3,621,958
BIDIRECTIONAL NO-BACK UNIT FOR BALL SCREW UTILIZING ROLLER CAMS

Edwin O. Klemm, Saginaw, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Filed Aug. 17, 1970, Ser. No. 64,248
Int. Cl. F16d 67/00
U.S. Cl. 192—8 R 20 Claims

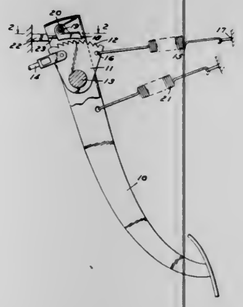
Apparatus comprising a rotatable output member, a rotatable drive member for rotating the output member in either

direction, a releasable brake for substantially preventing rotation of the output member in either direction when it is



not being driven by the drive member, and mechanism operable to release the brake upon a predetermined rotation of the drive member in either direction.

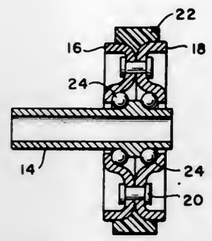
3,621,959
SELF-ADJUSTING CLUTCH RELEASE MECHANISM
Ronald John Gale, Hornchurch, and Ronald Frederick Hale, Billericay, both of England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 8, 1969, Ser. No. 882,950
Claims priority, application Great Britain, Dec. 20, 1968, 60,836/68
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 A **9 Claims**



A self-adjusting clutch release mechanism comprising a clutch pedal normally held against a stop by a return spring. A pawl is pivotally connected to the pedal and engages a ratchet member that is linked to the release lever of a clutch. Displacement of the ratchet member by the pawl when the pedal is moved disengages the clutch. The pawl disengages from the ratchet member when the pedal is held against the stop. A spring connected to the ratchet member takes up any slack in the connection between the ratchet member and the clutch when the pawl is disengaged.

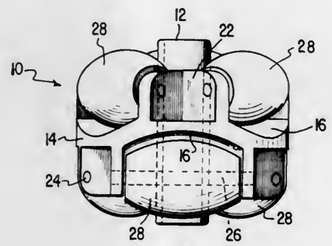
3,621,960
CONVEYOR WITH ROLLERS HAVING TIRES OF HIGH-HYSTERESIS MATERIAL
Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio
Filed Apr. 4, 1969, Ser. No. 808,851 The portion of the term of the patent subsequent to May 13, 1986, has been disclaimed.
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 A **4 Claims**

A gravity conveyor having rollers to retard the speed of the load. Each roller is provided with a tire formed of a urethane polymer having a durometer hardness between about 60 and



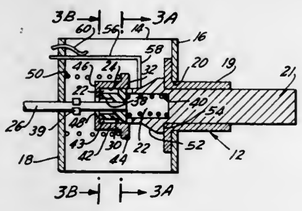
85A. The deformation of the material converts sufficient energy of the load into heat to limit the speed of the load.

3,621,961
UNIVERSAL ROLLER ASSEMBLY
Karl Stumpf, Grethe Str. 1, 4 Dusseldorf, Germany
Filed Oct. 17, 1969, Ser. No. 867,154
Claims priority, application Germany, Mar. 27, 1969, G 69 12 437.4
Int. Cl. B65g *13/00*
U.S. Cl. 193—37 **6 Claims**



A universal roller assembly for use in a universal roller conveyor wherein the center disk is corrugated to provide alternating pockets on opposite sides thereof. Rollers are rotatably mounted to rib means extending along the sides of the pockets and the configuration of each pocket corresponds to the configuration of the roller to fit therewithin.

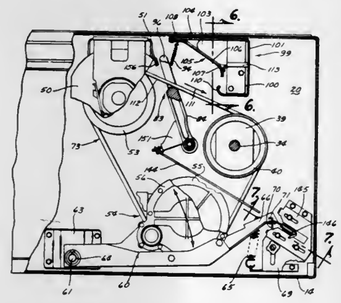
3,621,962
PUSHBUTTON TUNER CLUTCH MECHANISM
Masatsugu Aoki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 17, 1970, Ser. No. 64,198
Claims priority, application Japan, Oct. 23, 1969, 44/100729
Int. Cl. F16d *19/00*
U.S. Cl. 192—95 **9 Claims**



A clutch mechanism for a pushbutton tuner effects operative driving engagement between a depressible adjusting shaft and a tuning shaft, both axially aligned and rotatable in a

housing. The adjusting shaft is accessible externally of the housing and has a housing-enclosed part which is tubular in shape with spaced longitudinally extending grooves in the tube walls. A spring-urged tubular connecting member having spaced protrusions is received within the adjusting member tube part, with the protrusions riding within the grooves, and at a base thereof the tube bore walls are contoured to mate with projections on the tuning shaft upon alignment therewith. A caplike member encloses the tube part open end, and it is spring urged to move the clutch mechanism to its undepressed condition. Upon depression of the adjusting shaft the connecting member is moved toward the projections, and if the projections and contoured walls are not aligned, the connecting member is forced to slide within the tube, compressing the spring active thereon. Upon rotation of the adjusting shaft, the projections and the contoured walls align, and the spring acts on the connecting member so that the projections and walls come into operative driving engagement. Continued rotation of the adjusting shaft in either direction effects adjustment of the tuning shaft without lost motion. Holding means maintains the adjusting shaft in its depressed condition, and disengagement of that holding means permits the second spring to return the adjusting shaft to its undepressed condition.

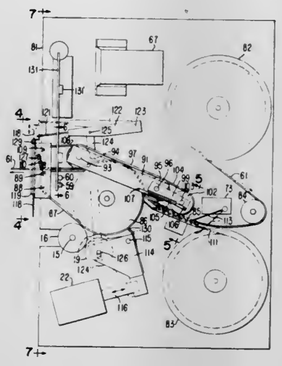
3,621,963
SPINNER CONTROL FOR A LAUNDRY APPLIANCE
Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Dec. 18, 1969, Ser. No. 886,117
Int. Cl. F16d *71/00*
U.S. Cl. 192—136 **17 Claims**



A spinner control system includes a manually actuatable lid latch operable for controlling energization of the motor and actuation of a belt brake. A linkage arrangement is responsive to the lid latch for operating a switch to energize the motor and for moving a brake arm out of engagement with the belt.

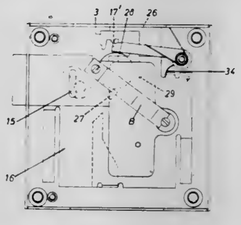
3,621,964
PROGRAMMED MULTIPLE STAMP DISPENSING APPARATUS EMPLOYING OPTICAL ELECTRONIC STAMP COUNTING AND AUXILIARY STAMP ROLL CAPACITY
John B. Riddle, Los Altos Hills; Frederick K. Tanaka, Hayward; Franklin B. Lawrence, Saratoga, and Fred S. Mueller, Sunnyvale, all of Calif., assignors to Micro-Magnetic Industries, Palo Alto, Calif.
Filed Sept. 22, 1969, Ser. No. 859,848
Int. Cl. G07f *11/66*
U.S. Cl. 194—10 **24 Claims**

A coin-activated stamp dispenser apparatus wherein the stamps are driven by a flexible belt drive is described. An auxiliary stamp supply roll is provided, the stamps therefrom being automatically threaded through and dispensed from the dispenser upon depletion of the stamps from a main supply roll. An optical-electronic system is used for both stamp counting and positioning the stamps for cutoff. Electronic counting circuits such as binary counters are used in combination with the optical counter for counting stamps. An electrical program board is utilized for simple and flexible



programming of a plurality of stamp dispenser units to permit various denominations of stamps to be dispensed for various coin values.

3,621,965
COIN-OPERATED LOCK
Heinz Ten Eicken, Heiligenhaus, Germany, assignor to Schlossfabrik Schulte-Schlagbaum AG, Tonisheide, Germany
Filed Sept. 29, 1969, Ser. No. 861,724
Claims priority, application Germany, Apr. 19, 1969, G 69 15 727.3
Int. Cl. G07f *17/14*
U.S. Cl. 194—59 **8 Claims**

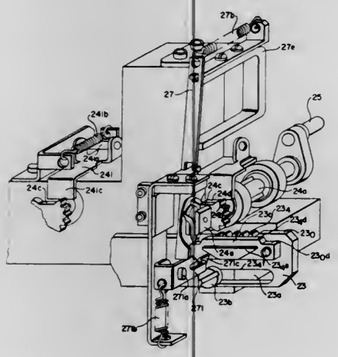


A coin-operated lock which comprises a lockbox including a lock bottom and lockbox sidewalls, as well as a lock cover. A cylinder lock is secured to the lock cover including a cylinder core. The latter carries at its end a closing wing including a driver pin. A locking latch has a driver slot and the latter receives the driver pin. A spring-biased locking ratchet is coordinated to the locking latch, and a coin is adapted to be displaced jointly with the locking latch and to lift the locking ratchet with its edge during the advancement. A locking plate is disposed above the locking ratchet sitting rigidly on the locking latch and cooperates in a tumberlike arrangement with the locking ratchet.

3,621,966
SELECTOR FOR TYPE WHEEL PRINTING MACHINE
Jean-Pierre Murat, Argenteuil, France, assignor to Societe D'Applications Generales D'Electricite Et De Meranique, Paris, France
Filed Feb. 24, 1970, Ser. No. 13,613
Claims priority, application France, Feb. 26, 1969, 69-04887
Int. Cl. B41j *1/46*
U.S. Cl. 197—18 **6 Claims**

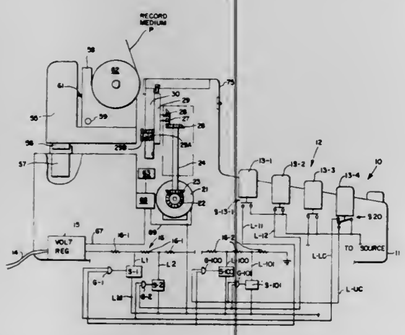
Selectors for a printing machine having a plurality of type-carrying wheels mounted in a printing carriage. A trans-

versing selector selects a particular type wheel out of all the type wheels and a rotary selector selects a particular type out of all the types carried by the selected type wheel. These two selectors comprise a toothed rack, means for imparting to said rack a reciprocating movement, a plurality of pinions toothed around two opposite sectors and untoothed around two sectors interlaced with the previous sectors and engaging with said rack except when one untoothed sector is opposite the rack, a plurality of two arm levers pivotally mounted respectively on said pinions and terminated by a toothed-shaped extension at both ends of the arms thereof, a plurality



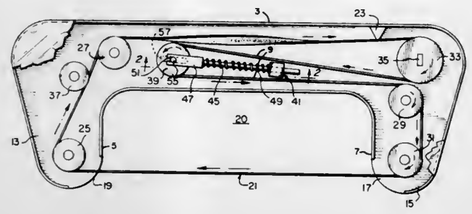
of projections along the rack selectively cooperating with the lever teeth, a plurality of electromagnets respectively associated with said levers, means for selectively placing one of the teeth of the levers on to the path of the rack projections and for selectively allowing the pinions to rotate a half turn and means for converting the discrete rotation angles of the pinions of the rotary selector into a digitalized angular movement for positioning the type-carrying wheels and the discrete rotation angles of the traversing selector into a digitalized rectilinear movement for positioning the printing carriage.

3,621,967
LIQUID EMISSION TYPEWRITER
Irving I. Brown, 34-15 Parsons Blvd., Flushing, N.Y.
Filed May 2, 1969, Ser. No. 821,251
Int. Cl. B41j 1/22
U.S. Cl. 197—18 **9 Claims**



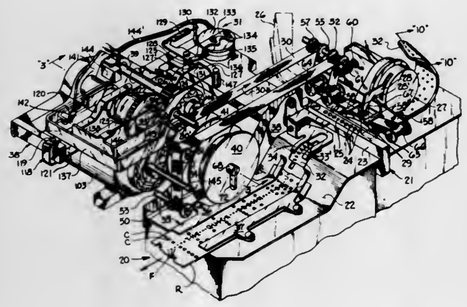
A typewriter is provided which includes a source of liquid under pressure and a wheel carrying character openings on its periphery. A burst of fluid under pressure is caused to pass through an opening adjacent to a liquid discharge outlet after the character-bearing wheel is indexed in conformity with the depression of a typewriter key.

3,621,968
RIBBON CARTRIDGE WITH MOBIUS LOOP IN RIBBON
Nicholas Kondur, Jr., Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed July 15, 1969, Ser. No. 841,749
Int. Cl. B41j 33/14
U.S. Cl. 197—151 **3 Claims**



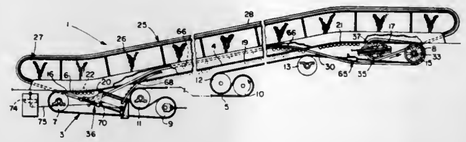
This invention relates to an inking ribbon cartridge for a typing or printing device comprising a case having a flat base and an inked ribbon in the form of an endless belt mounted therein for transport about several parallel aligned rollers. The inking ribbon has a half twist forming a Mobius loop configuration which thereby doubles its effective length. Ink deposits on the ribbon may be replenished by means of an ink pad mounted in contact with the ink ribbon. The ribbon is moved by means of a drive roller which has power coupled to it from the typing or printing machine.

3,621,969
INK RIBBON FEEDING AND REVERSING ASSEMBLY
Paul O. Gotschewski, Glenview, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Dec. 2, 1968, Ser. No. 780,512
Int. Cl. B41j 33/44
U.S. Cl. 197—165 **10 Claims**



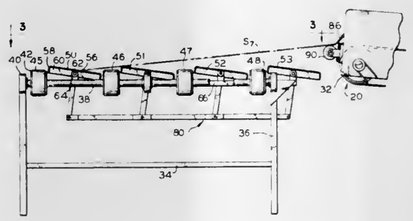
An ink ribbon feeding and reversing assembly for controlling the feeding of an ink ribbon includes a pair of ribbon carriers each of which is drivingly connected to one of a pair of coaxially mounted, selectively rotatable drive spindles. Upon engagement of a clutch with one of the drive spindles, a driving mechanism rotates the one drive spindle, and the ink ribbon is wound onto the ribbon carrier that is connected to the one drive spindle. Once the ink ribbon is completely unwound from the other drive carrier, the clutch is automatically disengaged from the one drive spindle and engages the other drive spindle so that the drive mechanism rotates the other drive spindle, and the ink ribbon is wound onto the other drive carrier.

3,621,970
HANDRAIL DRIVE FOR PASSENGER CONVEYOR
Ernest D. Johnson, Tallmadge, and Kenneth D. Mitchell, Copley, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 13, 1969, Ser. No. 865,723
Int. Cl. B66b 9/12
U.S. Cl. 198—16 **18 Claims**



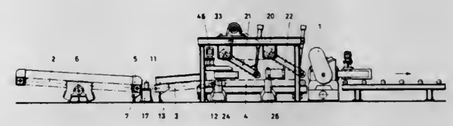
A passenger conveyor system in which the driving force is applied to the handrail by means of a drive sheave mounted on a terminal pulley shaft for the conveyor, and the handrail is maintained under the minimum tension required to produce sufficient drive traction between the handrail and drive sheave for driving the handrail without slippage using a pair of takeup mechanisms, one on each side of the drive sheave. Takeup tension is applied to the handrail only by the takeup mechanism on the slack or exit side of the handrail drive sheave, which varies depending on the direction of rotation of the drive sheave; the takeup mechanism on the tension or entry side is pulled against a stop.

3,621,971
CROSS CONVEYOR FOR WOOD-PROCESSING SYSTEM
Curtice F. Daniels, Sr., S-203 Pacific Ave., Glendale, Oreg., and Curtice F. Daniels, Jr., 1311 N.W. Hawthorne, Grants Pass, Oreg.
Filed May 1, 1969, Ser. No. 820,903
Int. Cl. B65g 47/26, 47/42
U.S. Cl. 198—21 **10 Claims**



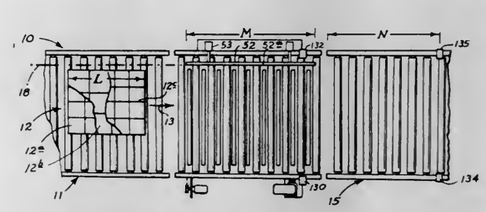
A cross conveyor for conveying strips of material along a path which is transverse to the path along which the strips are delivered to the cross conveyor. The cross conveyor includes a series of parallel but laterally spaced endless conveyor sections alternating with stationary but vertically movable material-support sections. The stationary sections support the strips of material out of contact with the conveyor sections when the strips are first fed to the cross conveyor, but thereafter drop below the level of the conveyor sections to deposit the strips on the conveyor sections without skewing the strips from their prior orientation when delivered to the cross conveyor. The cross conveyor is incorporated in a wood-veneer-processing system including a multideck veneer conveyor-dryer and automatic sequential unloader upstream therefrom, and a sorting conveyor table including automatic stacking apparatus downstream from the cross conveyor.

3,621,972
METHOD AND APPARATUS FOF FEEDING AND GUIDING LOGS TO WOODWORKING MACHINES
Alfred Reuter, Oberkirch Baden, Germany, assignor to Gebruder Linck, Maschinenfabrik Und Eisengieberei, Baden, Germany
Filed June 13, 1969, Ser. No. 833,027
Claims priority, application Germany, Mar. 15, 1969, P 19 13 249.1
Int. Cl. B65g 47/24
U.S. Cl. 198—29 **24 Claims**



Feeding and guiding logs wherein the log is moved longitudinally and engaged on its opposite sides for centering along the axis of the feed path. After centering, the top of the log is engaged and held down in centered position on the feed path. The log may be again centered and held down one or more times to insure proper positioning of the log. Prior to centering, the feed path is comprised of two longitudinally aligned conveyors which may be tilted toward each other, so that when the log is positioned on both of the conveyors, it will contact essentially only two points thereof enabling the log to rotate about is own axis in the event the weight of the log is unevenly distributed. In addition, a lifting and rotating device may be positioned between the conveyors to lift and rotate the log about its axis to insure the centering point of the log is properly positioned with respect to the path of conveyance.

3,621,973
LOAD-HANDLING APPARATUS
Lloyd Carlson, and William E. Herd, both of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.
Filed Sept. 18, 1969, Ser. No. 859,031
Int. Cl. B65g 47/22
U.S. Cl. 198—29 **26 Claims**

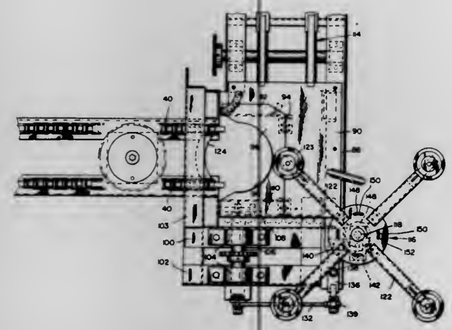


Load-handling apparatus including a conveyor for transporting a load along a substantially horizontal path, and a power-operated shifter for shifting a load laterally on the conveyor. The conveyor includes plural spaced-apart power-driven rollers, and the shifter comprises plural spaced-apart rails which are movable upwardly between the spaces between such rollers and laterally of the path mentioned. Positioned adjacent a side of the conveyor is an upright plate against which a load may be shifted. The shifter also is reversible to accommodate shifting a load away from the upright plate. Control circuitry is provided which inhibits operation of the rollers in the conveyor during operation of the shifter.

3,621,974
CONVEYORS FOR ROTATABLY MOVING CONTAINERS
Elliott Bavers, New York, N.Y., assignor to Rotodyne Manufacturing Corporation, Brooklyn, N.Y.
Filed Oct. 17, 1969, Ser. No. 867,125
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB **14 Claims**

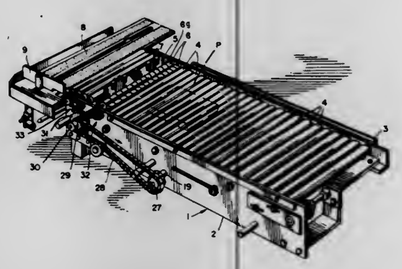
Conveying apparatus for rotatably moving containers and including an endless conveyor mounting spaced, rotatable

container-supporting stands and means for rotating the supporting stands, a magnet set into the container-supporting surface of each stand, and means automatically moving containers onto successive stands, including a platform for supporting containers and having a hinged extension formed with an opening arranged to overlie the path of the stands and means for pushing a container from the platform onto



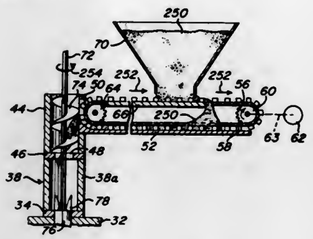
the hinged extension, means lowering the hinged extension to slide a container onto a platform, said extension-lowering means and said container-pushing means synchronized to lower the extension upon movement of a supporting member below said opening and for pushing a container onto the extension while said extension is in level position with the platform.

3,621,975
INDEXING APPARATUS FOR PACKAGE CONVEYOR
Erik O. Vilen, Niles, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.
Filed Jan. 2, 1970, Ser. No. 249
Int. Cl. B65g *47/26, 47/42*
U.S. Cl. 198—34 **17 Claims**



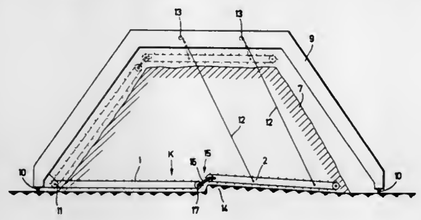
A plurality of packages are moved in a line by a conveyor to a station where some suitable operation is performed thereon, such as being moved by a pusher member to a further station. A gate is interposed in the path of movement of the packages to stop movement thereof temporarily toward the station. Pressure of the package against the gate, moves a part of it into the path of a reciprocating member which removes the gate from the path of the packages to allow the first package in the line to move to the station. This first package is caused to move at an increased rate of speed from the gate to the station to allow the gate to return to its normal position in the path of the next-succeeding package.

3,621,976
APPARATUS FOR TRANSFER OF FLOWABLE MATERIAL FROM A HOPPER
Jesse C. Moore, Fort Recovery, Ohio, assignor to Norman H. Kuhlman, St. Marys, Ohio, a part interest Division of Ser. No. 519,179, Jan. 6, 1966, Pat. No. 3,483,600.
Filed Dec. 4, 1969, Ser. No. 882,032
Int. Cl. B65g *47/18*
U.S. Cl. 198—57 **1 Claim**



Apparatus for transferring or feeding flowable material to a desired location from a container such as a hopper. A pair of shelf members are disposed below the hopper. The shelves are substantially horizontal and arranged one above the other. A pair of spaced-apart chains or other continuous flexible members have crossmembers therebetween. The crossmembers move over the upper shelf in a direction away from the desired location, and then move over the lower shelf in a direction toward the desired location. The upper shelf is shorter in length than the lower shelf so that material moved upon the upper shelf falls therefrom to the lower shelf and is moved by the crossmembers on the lower shelf to the desired location.

3,621,977
MATERIAL-REMOVING SCRAPER WITH AN ARTICULATED BOOM
Gerhard Fischer, Dortmund-Kirchhorde, Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Germany
Filed Oct. 17, 1969, Ser. No. 867,131
Claims priority, application Germany, Oct. 19, 1968, P 18 04 052.3
Int. Cl. B65g *59/00*
U.S. Cl. 198—36 **16 Claims**

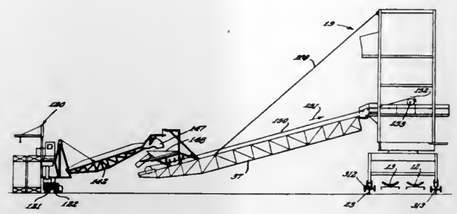


A material-removing scraper with a scraping jib movable up and down by means of an elevating unit which consists of an articulated boom of flexibly jointed boom parts, tiltable relative to each other in a vertical plane, in which one delivers the bulk material to be removed from the pile or dump to the other in the area of the hinge connection. Means forcibly hold the delivery end of the one boom part above the receiving end of the other.

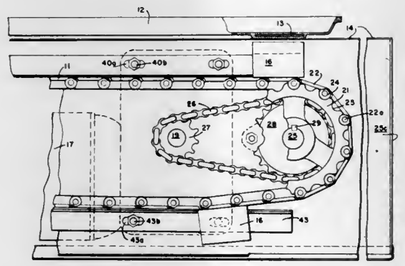
3,621,978
STACKING AND RETRIEVING SYSTEM AND METHOD
Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.
Filed July 1, 1969, Ser. No. 838,284
Int. Cl. B65g *61/00*
U.S. Cl. 198—36 **7 Claims**

A stacking and retrieving system for stockpiles of material wherein a self-propelled retrieving machine cooperates with

the self-propelled stacker in retrieving material, the speed of the stacker being controlled to conform to that of the retrieving machine, while steering of the retrieving machine is controlled for movement parallel to the path of the stacker.



3,621,979
MAGNETIC CONVEYOR SYSTEM
Robert W. Kraeft, 59 Colonial Road, Emerson, N.J.
Filed Dec. 5, 1968, Ser. No. 781,480
Int. Cl. B65g *17/46*
U.S. Cl. 198—41 **1 Claim**



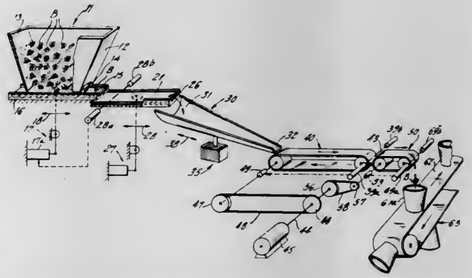
This disclosure pertains to a conveyor system which is primarily designed for use in volume feeding operations where the trays and soiled dishes are returned to the dish room by means of a conveyor, such as schools, hospitals, in-plant feeding and military installations, and in which a magnetic couple is provided between a conveyor and the material to be moved by the conveyor. One element of the magnetic couple is carried by the conveyor and the second element of the couple is mounted on a receptacle in which the material is placed.

3,621,980
CONVEYORS
Hugh L. Folkes, St. Leonard's-On-Sea, England, assignor to The Dunlop Company Limited, London, England
Filed Jan. 26, 1970, Ser. No. 5,490
Claims priority, application Great Britain, Feb. 4, 1969, 6,030/69
Int. Cl. B65g *21/12*
U.S. Cl. 198—110 **10 Claims**



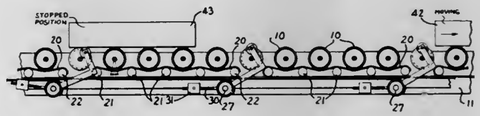
A variable speed conveyor on which passengers or goods are accelerated or decelerated between high-speed zones and low-speed zones, the conveyor comprising pairs of complementary curved elements arranged to slide relative to one another.

3,621,981
AUTOMATIC BOW FEEDING APPARATUS
Philip E. Nimmo, Jr., Wayne, and Richard A. Townsend, Rockaway, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,177
Int. Cl. B65g *43/00, 37/00*
U.S. Cl. 198—40 **10 Claims**



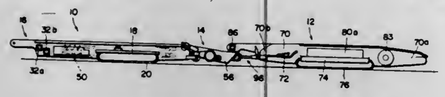
Automatic apparatus for the feeding of soft lightweight ornamental articles, such as bows formed from ribbon, includes a hopper wherein the articles are loaded in random fashion. A primary shuffler constituting the bottom wall of the hopper is reciprocated in a horizontal plane to deliver the articles in a forward direction to a secondary shuffler also reciprocated in a horizontal plane. A first photoelectric device automatically halts reciprocation of the primary shuffler when there is a pileup of articles on the secondary shuffler. The secondary shuffler delivers the articles to the wide-mouthed upper end of a downwardly extending chute having converging sides which terminate in a relatively narrow mouth. A transformer-type vibrator vibrates the chute with very short rapid strokes directed along the longitudinal axis of the chute. Articles tumble from the discharge end of the chute onto a continuous belt transfer conveyor, which delivers the articles to a continuous belt delivery conveyor located adjacent to and in axial alignment with the transfer conveyor. A second photoelectric device deactivates the transfer convcyor whenever there is a pileup of articles at the boundary between the transfer and delivery conveyors. A third photoelectric device deactivates the delivery conveyor each time the latter delivers a predetermined number of articles (one or more) to a loading mechanism, with the delivery conveyor being reactivated in response to the condition of the loading mechanism.

3,621,982
SELF-ENERGIZING BRAKE FOR ROLLER CONVEYORS
Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Hammond and Ermanco Incorporated, Grand Haven, Mich., by said Hammond
Filed Jan. 24, 1969, Ser. No. 793,666
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**



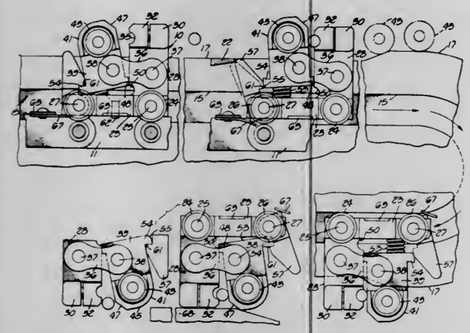
A brake for a zero pressure accumulation roller conveyor is disclosed in which a flexible band is disposed against certain individually powered conveyor rollers to apply a self-energizing frictional braking force upon being tensioned by a downstream triggering device.

3,621,983
CONVEYING APPARATUS
Einar M. Arentzen, and Frank A. Delli-Gatti, Jr., both of Charleroi, Pa., assignors to Lee-Norse Company, Charleroi, Pa.
Continuation-in-part of application Ser. No. 816,170, Apr. 9, 1969, which is a continuation of application Ser. No. 637,738, May 11, 1967, now abandoned. This application Dec. 3, 1969, Ser. No. 881,701
Int. Cl. B65g 15/00, 41/00
U.S. Cl. 198—139 6 Claims



A conveying apparatus comprising an extendible, conveyor unit and a loading unit which is adapted to receive material mined by a continuous miner and supply such mined material to the conveyor unit. The conveyor unit is formed to include a discharge section and a receiving section, detachably connectable to the discharge section, which includes a receiving hopper. The loading unit is detachably connectable to the receiving section of the conveyor unit and adapted for discharging mined material to the hopper thereof.

3,621,984
CLAMPING MECHANISM
Willie K. Grassauer, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Jan. 17, 1969, Ser. No. 792,000
Int. Cl. B65g 17/46
U.S. Cl. 198—179 18 Claims



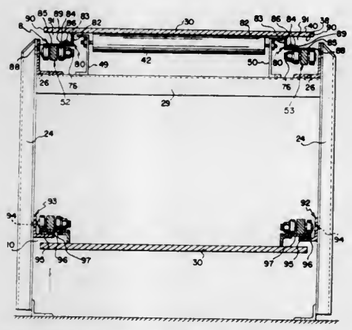
A clamping mechanism automatically adjusts to hold an article with the particular predetermined amount of force desired at each of a plurality of stations to which it is passed by a conveyor system.

3,621,985
CONVEYOR BELT INSTALLATION
Hans Karl Pelzer, Krefeld, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed July 31, 1969, Ser. No. 846,374
Claims priority, application Germany, Aug. 3, 1968, P 17 56 927.6
Int. Cl. B65g 15/08
U.S. Cl. 198—192 4 Claims



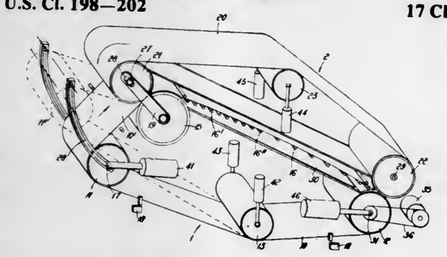
A conveyor belt assembly with garland roller sets in which the garland joints are so designed that at a standstill of the conveyor belt, the lateral rollers of each garland roller set under the influence of gravity are inclined relative to the direction of movement of the conveyor belt, the said incline being at least nearly eliminated by the frictional engagement of the belt with the rollers during the normal conveying speed of said belt.

3,621,986
CONVEYOR APPARATUS
Joseph H. Webb, 26957 Russell Road, and Donald G. Stiles, 29682 West Oakland Road, both of Bay Village, Ohio
Filed May 5, 1969, Ser. No. 821,885
Int. Cl. B65g 15/30
U.S. Cl. 198—195 8 Claims



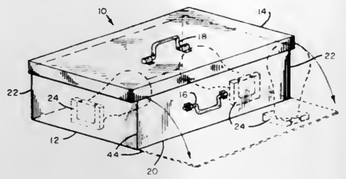
A conveyor apparatus including a frame, a conveyor mounted on the frame and a drive mechanism for moving the conveyor on the frame. The conveyor includes an endless conveyor member having a plurality of slat members disposed in side-by-side relation which provide inner and outer reach portions, a plurality of rotatable members mounted on the frame to rollingly support the outer reach portion and a slide support member is carried by the frame for slidably supporting the inner reach portion. The drive mechanism includes one or more flexible, endless drive elements operably connected to the outer reach portion for moving the conveyor member with respect to the frame.

3,621,987
SYSTEM FOR GUIDING THE TRAVEL OF A BELT SUPPORTED BY A ROTARY DRUM
Robert E. Sherwood, Cincinnati, Ohio, assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Aug. 27, 1969, Ser. No. 853,397
Claims priority, application Germany, Sept. 5, 1968, P 17 81 188.0
Int. Cl. B65g 15/62
U.S. Cl. 198—202 17 Claims



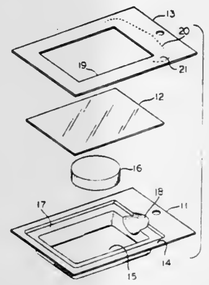
A guidance system for a belt running over a roller or drum in which misalignment of the belt causes a signal which tilts the axis of a supporting drum in a direction to correct the belt alignment. Means are provided for interrupting the signal whereby the drum axis returns to its rest position before reactuation by the signal whereby realignment of the belt is produced by a repetitive pulsation like tilting of the drum axis increasing the tension at one edge of the belt.

3,621,988
WIG CASE
Erika Songer, 4719 South Columbia Place, Tulsa, Okla., and Renee F. Neuwald, 53 East 75th St., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,788
Int. Cl. A45c 11/02
U.S. Cl. 206—8 20 Claims



A carrying case or container for storing and transporting a plurality of wigs, wiglets and the like, on blocks or headforms in a manner for maintaining the wigs in a natural array. The expensive "set" of the wigs, wiglets, and the like are maintained in good order during transportation and storage.

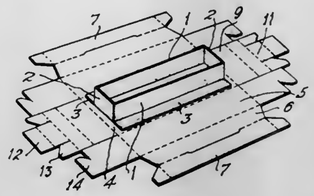
3,621,989
PILFER RESISTANT RECLOSABLE CONTAINER
Jack E. Pregont, Prent Corporation 631 Warding St., Janesville, Wis.
Filed Mar. 9, 1970, Ser. No. 17,495
Int. Cl. B65d 25/00
U.S. Cl. 206—45.31 3 Claims



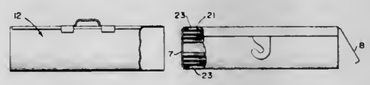
A pilfer-resistant reclosable container comprises a boxlike body member having a peripheral lip provided with a shallow recess which supports the edges of a transparent flat rectangular lid. A flat card provided with a central rectangular window is bonded to the lip of the body member and overlaps the edges of the lid to hold the latter in place. A portion of the card is adapted to be torn away so that the corresponding end of the lid can be grasped and bent through the resulting opening to enable the lid to be slid open.

3,621,990
FOLDING DISPLAY RECEPTACLE
Harold E. Hartman, 6 Chestnut Hill Place, Glen Ridge, N.J.
Filed Apr. 30, 1970, Ser. No. 33,254
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 4 Claims

A folding paper receptacle for displaying an article comprises a blank composed of a plurality of connected sections one of which forms the bottom wall of the receptacle on which is set a reinforcing frame that has fixedly connected side and end panels of such dimensions as to provide a space between them of a length and width approximately corresponding to the length and width of said article. The other sections form the side and end walls and are folded upwardly from said bottom wall and inwardly over the corresponding side panels and end panels of said frame providing each sidewall and each end wall with an inner portion and an outer portion inside and outside the corresponding panel of said frame and connected by a top portion providing an opening for display of the article and said sidewalls and end walls are formed to interlock for enclosing and holding said walls and frame against relative displacement.

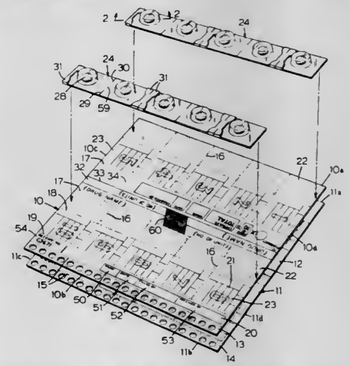


3,621,991
PACKAGE FOR GARMENTS
David Alan Richter, 136 Adams St., Lexington, Mass.
Filed Nov. 18, 1969, Ser. No. 877,800
Int. Cl. B65d 85/18
U.S. Cl. 206—46 AP 1 Claim



A package for garments is formed essentially of two sheets of pliant material which are rolled into a tube so as to fit within a sleeve having a handle for carrying the package. In order to assemble the package, each of the sheets has attached thereto means adapted to be grasped, all of which lie substantially in the same plane as that of the sheet to which it is attached. In this way the package is very compact after assembly and the materials for making the package are very compact prior to assembly. The apparatus for assembling the package coacts with the means adapted to be grasped in such a way that the sheets of pliant material are readily rolled into tubular form with the garment therebetween, thus permitting rapid packaging of garments for use in retail stores or in wholesale stores, for use in transportation of such garments and for related uses.

3,621,992
COMPOSITE-PACKAGING AND CONTROL SYSTEM
John D. Osborne, Richmond Hill, Ontario, and Gordon W. Holmes, Port Credit, Ontario, both of Canada, assignors to Dominion Paper Box Company Limited, Toronto, Ontario, Canada
Filed Apr. 30, 1970, Ser. No. 33,249
Int. Cl. B65d 85/42, 85/56
U.S. Cl. 206—56 AB 16 Claims



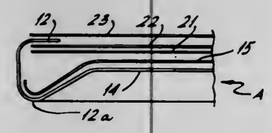
A composite-packaging and control system for articles or compositions of matter and particularly suited for drugs in-

cludes at least upper and lower sheets secured together in overlying relationship. At least a part of the upper sheet is separated into removable strips by lines of weakness, and a packaged drug, for example, is fastened to a part of each strip, the remainder of the strip being for the entry of information. The lower sheet is copy paper onto which any information entered on a strip by pen or pencil, for example, is copied.

3,621,993
FILM PACK STRUCTURE

Richard S. Kampf, Costa Mesa, Calif., and Charles F. Stevenson, Elgin, Ill., assignors to Philco-Ford Corporation, Philadelphia, Pa., by said Kampf

Filed Nov. 19, 1969, Ser. No. 877,901
Int. Cl. B65d *17/16, 85/00;* G03c *3/00*
U.S. Cl. 206—62 R 8 Claims

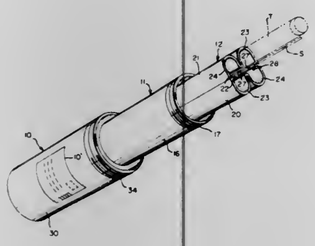


A dental X-ray film pack structure comprising film and an envelope that facilitates removal of the film from the envelope by mechanical means. A film pack is constructed and arranged for support upon a forked blade arranged for insertion into a portion of the envelope adjacent the film-containing portion so that the film may be forced past a closure flap and from the envelope by means of a pusher blade moving between the forked blades. The envelope is mechanically weakened along the line of movement of the pusher blade so that the envelope will tear readily while the film is forced out intact, for delivery to suitable processing means.

3,621,994
LABORATORY SPECIMEN MAILER

Paul A. Brown, Portsmouth, N.H., assignor to Metropolitan Pathology Laboratory, Inc., Teaneck, N.J.

Filed Nov. 25, 1969, Ser. No. 879,735
Int. Cl. B65d *71/00, 81/06*
U.S. Cl. 206—65 R 8 Claims

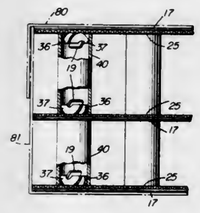


The present invention relates to new and improved, reusable mailer packages specially adapted for the safe transportation to a laboratory of a specimen, e.g., human blood, contained in a plurality of fragile test tubes and a fragile microscope slide, through the mails, regardless of the severity of rough handling to which the specimen mailer may be subjected. The complete mailer assembly comprises nested, elongated cylindrical plastic cups both of which are closed by end caps. The nested cups are disposed and maintained in a predetermined spaced relationship to one another by a cushioning disc spacer fabricated of a suitable resilient material such as expanded plastic foam. Disposed within the inner cylindrical plastic cup is a plastic divider structure which divides the inner cup into four test tube compartments and one microscope slide compartment.

3,621,995
SHIPPING SUPPORT FOR YARN TUBES

Robert H. Francis, Richmond, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,079
Int. Cl. B65d *85/04*
U.S. Cl. 206—65 Y 8 Claims

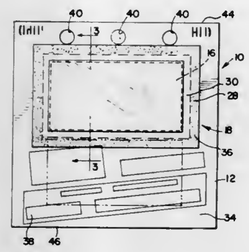


The shipping support of this invention comprises a two-part corrugated board pad containing integral tabs die-cut from each part to form a plurality of interlocking post elements for supporting and positioning tubes of yarn in a spaced relationship during shipment. Each of the tabs are attached to their respective parts along fold lines lying at an angle to the corrugations of the part, and they each include locking slots and faces for retaining the posts in an upright condition. In addition, the invention comprises a novel jig frame for assembling the support pad to its tube supporting condition.

3,621,996
BLISTER CARD PACKAGE

Anthony W. Seyer, New Canaan, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 24, 1969, Ser. No. 869,012
Int. Cl. B65d *73/00*
U.S. Cl. 206—78 B 1 Claim

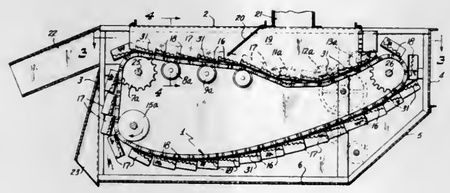


A blister-type card package designed for display on a peg rack, which package is characterized by a flat base-forming card member having an aperture in which a product is positioned, the product being enclosed between a pair of traylike transparent blister-forming members which have peripheral flanges sealed in overlying relation to portions of the base-forming card which extend about the aperture, the one blister member being seated in the aperture so that a portion of the product projects beyond the backface of the card and the other blister member covering a portion of the product which projects beyond the front face of the card. The packages are supplied for mounting on a peg rack with the product accommodating apertures in alternate packages being offset so that the projecting front and back portions of the product in adjacent packages are in nonaligned relation when hung on a peg, enabling a degree of nesting which results in a greater number of packages being accommodated on a peg, and also enabling a plurality of the packages to be packed in nested relation in a shipping container with provision for opening the container so that the packages may be readily placed as a group on the peg rack.

3,621,997
SEPARATOR

Oliver K. Hobbs, Box 1306, Suffolk, Va.

Filed Dec. 8, 1969, Ser. No. 882,857
Int. Cl. B07b *1/10*
U.S. Cl. 209—12 6 Claims

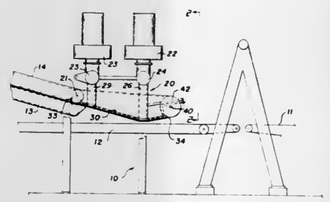


A device for separating bark useful for mulching around plants from undesirable materials mixed therewith such as wood chips, sticks, sawdust and slivers of the cambium layer of a log has an endless conveyor composed essentially of a series of perforated sheet metal sections rigidly secured only at their leading edges to horizontally spaced sprocket chains. The sprocket chains are diverted by idler wheels from a normal elliptical path to provide a conveyor surface having a portion thereof which is substantially vertical and to cause hinging of the sections of the conveyor to improve separation of the components of the mixture.

3,621,998
SHEET GRADER

Victor Prochaska, Haus No. 103, Austria, assignor to Durand Machine Company Ltd., New Westminster, B.C., Canada

Filed Feb. 27, 1970, Ser. No. 14,929
Int. Cl. B07b *13/04*
U.S. Cl. 209—82 9 Claims

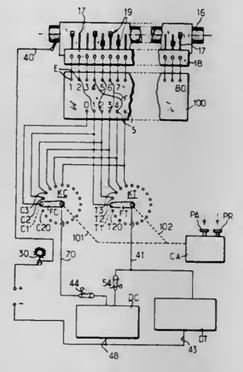


Apparatus for grading sheets such as plywood veneers, according to size in which the sheets are conveyed past a suction head which has two ducts and a channel between them, the ducts being spaced apart in the direction of travel of the sheets. The arrangement is such that oversized sheets cover, at all times while beneath the grader, at least a part of one of the ducts whereas undersize sheets can be covering only the channel so that the oversize sheets are conveyed past the grader while the undersize sheets fall from it.

3,621,999
ARRANGEMENT FOR THE SELECTION OF COLUMNS OF RECORD CARDS

Hilrich J. M. Venker, Heemstede, Netherlands, assignor to Bull General Electric (Nederland) N. V., Amsterdam, Netherlands

Filed Nov. 10, 1969, Ser. No. 875,104
Claims priority, application Netherlands, Nov. 18, 1968, 6816432
Int. Cl. B07c *5/00*
U.S. Cl. 209—110 7 Claims

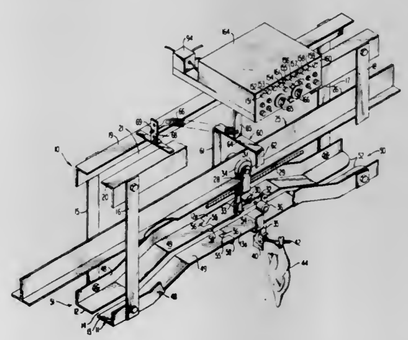


The invention concerns, in a record-card-sorting machine comprising a sorting device and a device for checking the sorting, a column-selecting device comprising a connection panel combined with a system of two coupled stepping switches, the arrangement being such that the members for exploring the card columns are connected on the one hand to the sorting device through the connection panel and one of the said stepping switches, in order to permit sorting of a series of cards in accordance with the data situated in one of their columns, and on the other hand to the device for checking the sorting, through the connection panel and the other stepping switch, in order to permit simultaneous checking that the data situated in the column which has served for the sorting during the preceding passage do in fact succeed one another in a predetermined order.

3,622,000
POULTRY SELECTOR SYSTEM

Hewie D. McClenny, Route 1, Oneonta, Ala.

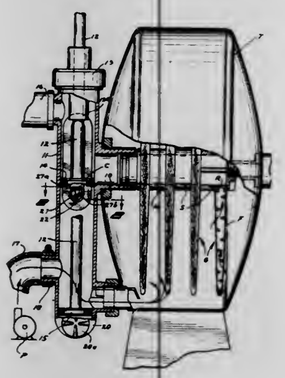
Filed Dec. 1, 1969, Ser. No. 881,249
Int. Cl. B07c *5/20*
U.S. Cl. 209—121 6 Claims



A poultry selector system for removing poultry within a predetermined weight range from a conveyor line. The

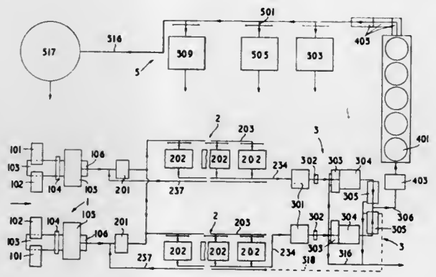
shackles of a poultry conveyor are moved across a supporting track, and a moveable section of the supporting track yields under the weight of each shackle as the shackle travels along the track. The moveable track section is hingedly connected across the stationary track section and opens in a downward direction when a poultry-carrying shackle moves across it. The moveable track section then forms an inclined ramp and guides the shackle back onto the stationary track. An element moveable with the track section is positioned adjacent a line of photosensitive cells and arranged to sequentially block the light entering the photosensitive cells when moving with the moveable track section. One of the photosensitive cells is connected to an ejecting mechanism for removing the poultry from the shackle, while another one of the photosensititve cells energizes a disabling means which disables the poultry-ejecting means, so that the poultry is ejected from the conveyor only when the light is blocked from the first of the two photosensitive cells.

3,622,001
SYSTEM AND DEVICE FOR VISUALLY INDICATING THE DEGREE OF CONTAMINATION OF THE FILTER MEDIA IN FILTRATION APPARATUS
William A. Oden, Temple City, Calif., assignor to Domain Industries, Inc., New Richmond, Wis.
Filed Sept. 12, 1969, Ser. No. 857,367
Int. Cl. B01d *27/10, 29/34*
U.S. Cl. 210—90 **4 Claims**



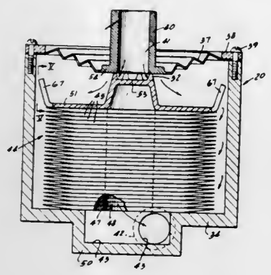
This device provides a visual media for instantly determining the then-filtering capacity of the filter elements or media in a water filtration apparatus. The system includes a bypass channel or chamber disposed in an upstanding position and having freely and slidably mounted therein a movable indicator element having a specific gravity somewhat above that of water. This bypass channel or chamber is connected at its lower end with the liquid or water in a filter tank, which is subjected to pressure imposed by a recirculating pump, and the upper end of said bypass is in communication with the liquid pressure passing through from the collection manifold of the filter apparatus to the return line to the pool or other main repository for the water. When the filter media is in a clean or new condition, the pressure from the upper connection of the bypass will be slightly less than from the tank or bottom connection, and as the filter media becomes impregnated or contaminated or clogged, the collection manifold pressure due to the decline of water flow decreases further while simultaneously the pressure at the lower end of the bypass from the filter tank increases. This differential pressure is responsible for an upwardly escape velocity in the bypass chamber, causing the indicator element proper to rise in a direct relationship to the degree of contamination or clogging.

3,622,002
PLANT FOR PROCESSING OF REFUSE MATERIAL
William Watson Kirk, The Saddlers, Wooton, Quatt, near Bridgnorth, England
Filed May 16, 1968, Ser. No. 735,490
Claims priority, application Great Britain, June 1, 1967, 25,228/67
Int. Cl. B01d *50/00*
U.S. Cl. 210—105 **13 Claims**



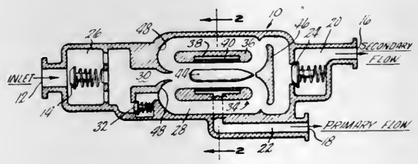
A plant for the processing of domestic refuse material has feeding and shredding means, digester means and separating and grinding means. The feeding and shredding means shred the entire refuse material and feed it without sorting to the digester means. The digester means include at least one digester having a plurality of open cells provided with air and water to support aerobic degradation of the refuse material. Control mean regulate the passage of the material from cell to cell and also regulate the supply of water to the material in the cells to control the moisture content of the material leaving the digester. The separating and grinding means are located after the digester means and are used to remove metal objects form the degraded material and thereupon to reduce the degraded material to fine pulverulent form.

3,622,003
FILTER FOR A WASHING APPLIANCE
James I. Czech, Stevensville, and Clark I. Platt, Benton Harbor, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 3, 1970, Ser. No. 16,108
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 **18 Claims**



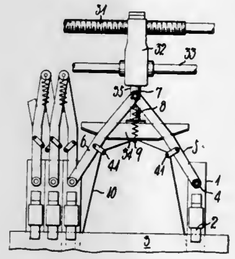
A filter or trap, especially adapted for removing lint and particulate material from wash water in automatic domestic washing machines having wash and drain cycles, comprises a self-contained unit with a stack of centrally apertured filter disks within a housing having a lower end filtering cycle suction outlet communicating with the chamber defined within the stack by the disk apertures. Fluid to be filtered such as wash water delivered to the housing is forced to pass between the disks of the stack to the aperture chamber. To flush the filter, flushing fluid such as water is introduced through the outlet, now serving as a flushing fluid inlet, into the disk stack chamber which causes the disks to separate and be agitated and flush clear of filtered material which is carried off to drain through the inlet, now serving as a drain outlet, through which fluid to be filtered is normally delivered to the housing.

3,622,004
RECIRCULATING WASH FLOW FILTER
Gene A. Meyer, West Simsbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Nov. 6, 1969, Ser. No. 874,624
Int. Cl. B01d *35/22, 29/42*
U.S. Cl. 210—134 **9 Claims**



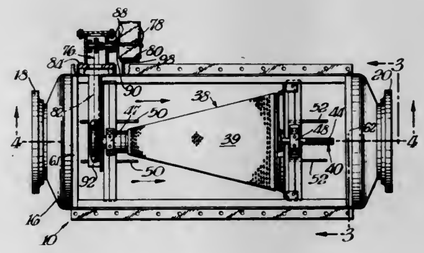
A cylindrical wash flow fuel filter element is mounted in a housing so as to form a flow recirculation path, a portion of which is parallel to the surface of the filter. Fluid enters an inlet and passes through a jet inducer nozzle which accelerates the fluid inducing a flow in the recirculation path. Contaminants are washed away from the surface of the filter and held in suspension by the wash flow in the recirculation path. One of two outlets receives filtered fluid which passes through the filter element. The other outlet communicates with the recirculation path via a pressure responsive shutoff valve. An auxiliary check valve limits the pressure drop across the jet inducer nozzle for high inlet flow conditions. When the pressure responsive shutoff valve is closed, filtered flow equal to that entering the jet inducer emerges radially from the wash flow filter and the contaminant is, for a limited time, stored in the recirculating wash flow path. When the pressure responsive shutoff valve is opened the wash flow passes through the other outlet thereby discharging the stored suspended contaminants.

3,622,005
APPARATUS FOR AUTOMATICALLY SHAKING FILTER CAKE IN A FILTER PRESS
Ken-Ichiro Kurita, Suita, Osaka, Japan, assignor to Kurita Machinery Manufacturing Company, Limited, Nishiku, Osaka, Japan
Filed Dec. 3, 1968, Ser. No. 780,724
Claims priority, application Japan, Nov. 5, 1968, 43/80769
Int. Cl. B01d *25/32*
U.S. Cl. 210—225 **6 Claims**



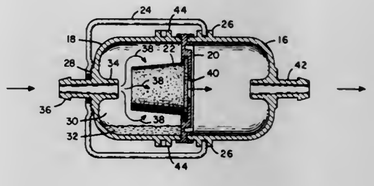
A vibrating means above filter plates is adapted to be moved above a suspended rod hung with a filter cloth which is attached to filter plates. When the plates are moved one by one after the filtering operation, the rod is brought into vibration in operative relationship with the vibration of the filter plates so as to effect the vibration of the cloth when it is brought into an open position between a plate which has been moved and a remaining plate. The filter cake can be shaken from the cloth by the vibration.

3,622,006
SELF-CLEANING STRAINER FOR PIPELINE
Marc M. Brunner, 1277 Dogwood Lane, Huntingdon Valley, Pa.
Filed Oct. 20, 1969, Ser. No. 867,680
Int. Cl. B01d *33/02*
U.S. Cl. 210—355 **17 Claims**



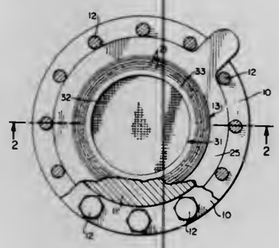
A self-cleaning strainer for a relatively large pipeline has a conical straining element longitudinally mounted in a casing in line with the flow through the pipeline. The straining element is slowly rotated past an adjacent collecting trough to wash debris into it. The straining element can be rotated by various drive means, from either its front or back end, which may utilize a motor, a transmission (such as chain and sprocket or gears) or a propeller rotated by the flow of water through the casing. The propeller may be connected to the straining element through a transmission which allows it to rotate relatively fast while the filter element rotates at a relatively slower speed.

3,622,007
FUEL FILTER
James S. Pappathatos, Burnsville, Minn., assignor to General Metal Products Corp.
Filed July 24, 1969, Ser. No. 844,590
Int. Cl. B01d *35/20*
U.S. Cl. 210—445 **2 Claims**



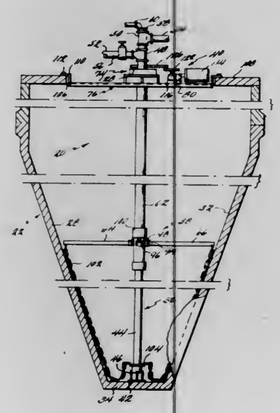
A fuel filter having two easily gripped sediment bowls with a filter element and seal disposed therebetween and wherein each sediment bowl is constructed internally such that a sediment chamber is provided in either the horizontal or vertical position thus providing a filter element which is mountable in any position yet which will still provide proper filtering action. Further, with the use of an adapter, either bowl may be directly attached to a carburetor, thus allowing the novel filter to be used as either an incline filter or a carburetor attached filter.

3,622,008
COMPRESSION GASKET AND SCREEN ASSEMBLY
Nicholas A. Mucci, Pennsauken; John W. Rhine, Turnersville, and Harry J. Wonderland, Lakehurst, all of N.J., assignors to Flexitallic Gasket Company Inc., Camden, N.J.
Filed Dec. 22, 1969, Ser. No. 886,891
Int. Cl. B01d *27/00*
U.S. Cl. 210—445 3 Claims



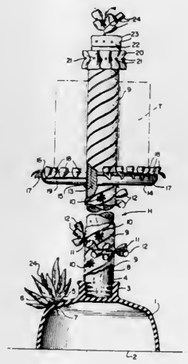
The combination of a compressible gasket having a circumferential groove in its inner periphery with a screen fitting within the inner periphery of the gasket and having a rim disposed in the inner groove. The screen is gripped by the gasket hen the gasket is placed under compression.

3,622,009
MECHANICAL SLUDGE COLLECTOR AND THICKENER
Carl J. Bordner, Rockville, Md., assignor to Defiance Company, Tallevast, Fla., A division of Davis Industries, Inc. Thomasville, Ga.
Filed Oct. 17, 1969, Ser. No. 867,268
Int. Cl. B01d *21/06, 21/18*
U.S. Cl. 210—528 8 Claims



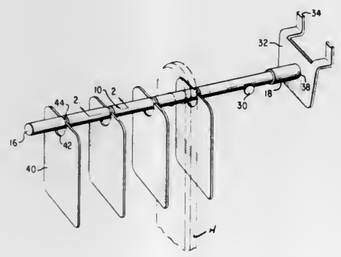
A sludge collector for settling tanks and the like comprises an eductor pipe with a lift pump airline therein and a wiper arm assembly rotatably mounted thereon. The wiper arm assembly comprises normally radially extending wiper arms having chains depending from the outer ends thereof to scrape the walls of the settling tank so that the walls of the settling tank so that the sludge can be removed from the tank by the eductor pipe. A drive means is provided to reciprocate the wiper arms through a specific arc and the arms can be pivoted from their normally horizontal operating position to a substantially vertical position to facilitate removal of the wiper arm assembly from the tank.

3,622,010
PORTABLE ORNAMENTAL TISSUE HOLDER
Marjorie Genevera Renelt, 4321 N. 39th St., Phoenix, Ariz.
Filed Sept. 4, 1969, Ser. No. 855,336
Int. Cl. A47k *10/16*; A47f *7/17*; B65h *19/02*
U.S. Cl. 211—13 R 5 Claims



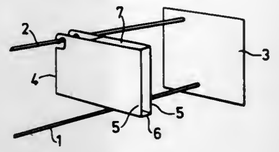
A portable ornamental tissue holder for storing tubular articles such as spare rolls of toilet paper and the like comprising a base supporting an upright standard having affixed adjacent the upper end thereof a tray upon which the spare roll of paper or the like is supported with an end portion of the standard extending through the hollow center of the roll of paper or the like, and means on the outer end of said standard for preventing accidental removal of the stored article therefrom.

3,622,011
THEFT-PROOF DISPLAY FIXTURE
Gerald A. Snow, 106 7th Ave. N.E., Independence, Iowa
Filed Apr. 17, 1970, Ser. No. 29,459
Int. Cl. A47f *7/00*
U.S. Cl. 211—59 7 Claims



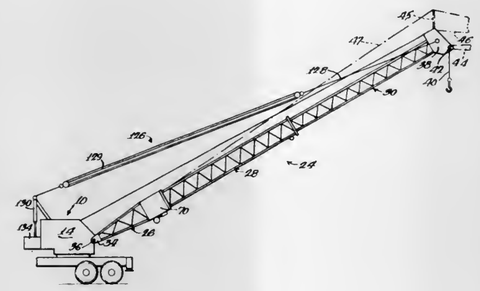
A theft-proof fixture for displaying merchandise capable of being mounted on a conventional pegboard. The fixture includes a barrel within which is slidably mounted a lock rod, the barrel and rod being provided with slots and lock fingers, respectively, for securing and locking in place individual, spaced tabs. Articles of merchandise are slid onto the barrel and disposed between the individual tabs and cannot be removed except upon removal of the tabs in front of it. Twist-type tabs are also provided enabling merchandise to be selectively removed from the display fixture without the necessity of removing merchandise and tabs in front of the desired article.

3,622,012
ARRANGEMENT AT LATERAL-FILING SYSTEM
Axel G. Lundgren, Box 176, Norrkoping, Sweden
Filed Apr. 8, 1969, Ser. No. 814,372
Int. Cl. A47f *3/14, 5/00*
U.S. Cl. 211—126 1 Claim



A lateral-filing system comprising a plurality of boxes with each box being formed entirely of cardboard and including a bottom, a cover, two sidepieces and an end wall with open edge recesses. First and second horizontal, tubular-shaped, carrier members run transverse to the boxes and support them. The second carrier member is located above and rearward with respect to the first carrier member. The boxes are balanced on the first carrier member with an overweight rearwards. The first carrier engages the bottom of each box and the second carrier member abuts the end wall of each box and engages the open edge recesses.

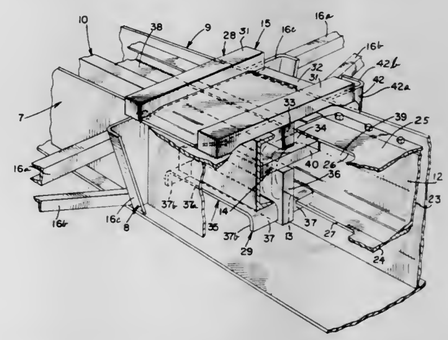
3,622,013
EXTENSIBLE BOOM STRUCTURE
Forrest V. Swanson, Wausau; Gerald P. Lamer, Rothschild, Wis.; Lembit Vaerk, Minneapolis, and John F. Wilkinson, Savage, Minn., assignors to J. I. Case Company
Filed Apr. 29, 1969, Ser. No. 820,121
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 4 Claims



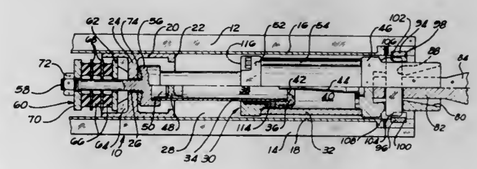
A crane adapted to be mounted on a truck and including an extensible boom formed of at least three telescopically arranged sections, with the inner or proximal section having an open rearward or inner end pivotally mounted on a support. The boom includes intermediate and distal or outer sections that are retractible to a position where the inner end of the intermediate section is located a substantial distance beyond the inner end of the inner section in a transport position to provide a substantially balanced structure.

3,622,014
CUSHION UNIT STOPS FOR A CUSHIONED UNDERFRAME RAILROAD FLAT CAR
Herman A. Aquino, Hobart, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,684
Int. Cl. B61g *9/12, 9/16*
U.S. Cl. 213—8 10 Claims

In a cushioned underframe railroad flat deck car, a fixed through center sill and a sliding insert sill reciprocally disposed within the fixed sill, a pair of upper and lower fore fixed cushion unit key stop means and a pair of upper and lower aft cushion unit key stop means, each of the fixed stop means being attached to the fixed sill with the respective upper fore and aft key stop means including a fore longitudinal member and an aft longitudinal member each suspended from transverse reinforcing means on the top of the fixed sill and each of the lower fixed stop means including antitorque and antibending structure mounting each lower stop means which is in the form of a longitudinally extending lower stop member mountedly attached with the sidewalls of the fixed sill, movable key stop means attached to the cross web of the sliding insert sill and defining an open portion for receiving the cushion unit, said sliding sill key stop means including a pair of longitudinally spaced crossheads on either side of the pocket and attached with a respective portion of the sliding sill cross web, the upper and lower fixed key stop means being vertically spaced from one another to permit horizontal reciprocal movement of the crossheads therebetween, the fixed and movable stop means engaging the cushion unit.

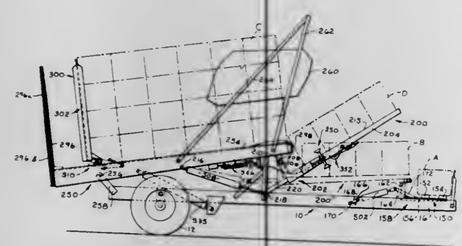


3,622,015
RAILWAY CAR CUSHIONING MECHANISM
Eulas R. Atkinson, Conroe, and Richard G. Powell, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,475
Int. Cl. B61g *9/14*
U.S. Cl. 213—46 13 Claims



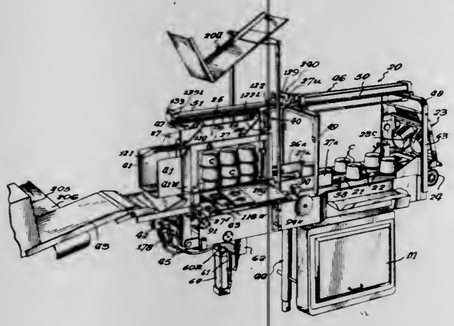
A railway car construction according to the present invention, includes an underframe having a longitudinally disposed center sill that is of hollow construction and has a transverse structural wall spaced from the extremity thereof. An aperture is formed in the transverse structural wall and receives a connecting member of a primary cushioning mechanism disposed within the center sill outwardly of the transverse structural wall. A draft cushioning mechanism is disposed within the center sill inwardly of the transverse structural wall and is secured to the connecting member. The draft cushioning mechanism functions only to cushion draft loads that are applied to the primary cushioning mechanism. Draft stops are retained in assembly with the center sill to limit compression of the draft-cushioning mechanism and to transfer excessive draft forces directly into the center sill structure.

3,622,016
CAM FOR A BALE WAGON ROLLING RACK
Jerry W. Welker, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1969, Ser. No. 828,888
Int. Cl. B65g *57/28, 59/00*
U.S. Cl. 214—6 B 14 Claims



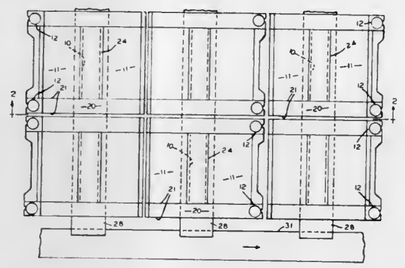
A bale wagon having a bale-supporting bed which is adapted to receive, accumulate and discharge successive bale tiers at one end of the bed, a movable rolling rack which supports successive bale tiers during loading, transport and discharge of the wagon and which will tilt at the one end of the bed during discharge to force the last tiers of bales from the bed. The bale wagon also has fixed support members disposed at the rear of the bed which are laminated for strength and which will support and stabilize the rolling rack when it is moved to its most rearward position on the bed.

3,622,017
CONTROL SYSTEM FOR COLLATING APPARATUS
Martin Meuller, and Bernard Zurhoefer, both of Chicago, Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio
Original application Oct. 23, 1967, Ser. No. 677,098,. Divided and this application Dec. 12, 1969, Ser. No. 889,784
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA 7 Claims



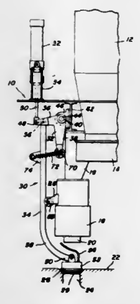
A control unit for an article-collating apparatus having elevator means for shifting a pair of rows of articles from an accumulator position to a storage position, with the control unit including a counter mechanism for each row for determining when a predetermined number of articles are present in each row in the accumulator position and for thereafter actuating the elevator means. Each counter mechanism has a counting ratchet, a row isolating cam and a sequencing cam mounted in ganged relationship on a common shaft, there being a counting element response to each article for actuating the ratchet to step the counter mechanism one position. A row-isolating stop is actuated in response to the presence of a predetermined number of articles in each row, and when the row-isolating stop is actuated, additional articles are prevented from entering the accumulation position. After the predetermined number of articles have accumulated in each row, the elevating mechanism is actuated, and following the completion of the transferring of the rows of articles to the storage position, an actuating mechanism thereby enabling operates each sequencing cam to advance the counter mechanism thereby enabling the counter mechanism to complete a further counting cycle.

3,622,018
APPARATUS FOR PROVIDING MASS FLOW OF STORED MATERIAL
John M. Morris, Louisville, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Oct. 29, 1969, Ser. No. 872,227
Int. Cl. B65g *3/12*
U.S. Cl. 214—10 8 Claims



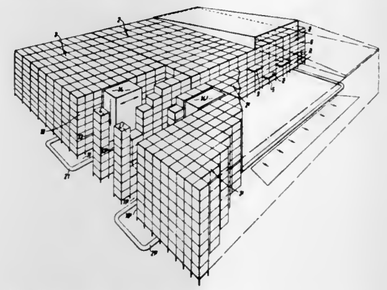
The apparatus is a live bottom for a stockpile, comprising an aligned series of hoppers which are rectangular in plan and are open at the top to receive the base of a stockpile. Each of the aligned hoppers has a bottom discharge opening in the form of a slot extending substantially continuously across the hopper, and has a bottom portion that extends substantially throughout the length of the slot, along at least one side of tee slot, and slopes downward toward the slot. Mechanism is provided for vibrating the hopper to cause material to flow across the downward sloping portion of the hopper into the slot. A conveyor extends below the slot throughout the length of the slot, for receiving material discharged through the slot.

3,622,019
APPARATUS FOR REMOVING AND REPLACING CHARGING HOLE COVERS OF A BYPRODUCT COKE OVEN
Johannes Lorrek, Mulheim, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Oct. 15, 1969, Ser. No. 866,687
Claims priority, application Germany, Nov. 7, 1968, P 18 07 432.3
Int. Cl. C10b *35/00*
U.S. Cl. 214—35 R 10 Claims



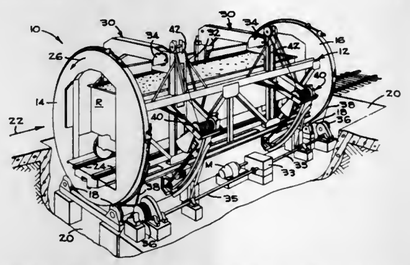
A first lever is pivotally secured to the larry car above the coal discharge chute. A second lever is pivotally connected adjacent one end to an arm potion of the first lever. The second lever depends downwardly from the first lever adjacent the coal discharge chute and has an arcuate intermediate portion that positions the second lever other end portion beneath the discharge chute. An electromagnet is secured to the depending end of the second lever and is arranged to magnetically engage the charging hole cover. The pair of levers are so arranged that pivoting of the first lever first moves the second lever depending end portion with the electromagnet secured thereto in a vertical direction to lift the charging hole cover from the charging hole and thereafter in a lateral direction to move the charging hole cover from beneath the coal discharge chute.

3,622,020
MECHANIZED PALLETIZED STORAGE SYSTEMS
Gabor J. Sarvary, "Wellowdown," The Drive Whinwhistle Road, Wellow, near Romsey, England
Filed Feb. 18, 1969, Ser. No. 800,098
Claims priority, application Great Britain, Feb. 20, 1968, 8,123/68
Int. Cl. B65g *1/00*
U.S. Cl. 214—16.4 A 8 Claims



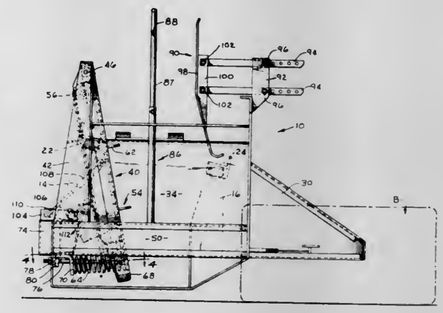
In the present invention there is provided a three-dimensional pallet-storage system wherein goods are stored in pallets at a plurality of different storage levels and in a plurality of rows of storage locations at each level. Pallets are removed from an area of bulk storage by means of a transfer trolley and conveyed to a pallet replenishment area. A picking tower is located adjacent a live store area and has associated therewith a two-directional transfer device capable of removing pallets from the live store, to a point adjacent a handler, transferring the pallet after unloading of the goods in a direction normal to the direction of removal and then moving the pallet in the opposite direction from the removal direction to insert the pallet in an empty row of the live store. The transfer trolley and two-directional transfer device both have at least one cross travel member to effect the transfer of the pallets from one storage location to another.

3,622,021
SAFETY LATCHES FOR ROTARY CAR DUMPER
Donald J. Heath, Lombard; Walter L. Lopatka, Villa Park, and James W. Petrie, Glen Ellyn, all of Ill., assignors to FMC Corporation, San Jose, Calif.
Filed Sept. 19, 1969, Ser. No. 859,419
Int. Cl. B65g *67/54*
U.S. Cl. 214—55 5 Claims



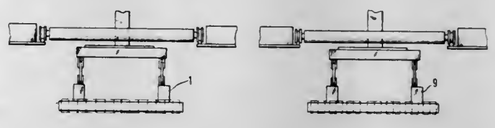
A rotary car dumper which inverts a laden rail car and of the type having clamps to lock it in an invertible cradle is provided with gravity-operated safety latches. In the event the clamp holding mechanisms fail, the safety latches provide positive retention of the clamps so that the car can be safely returned to its upright position.

3,622,022
SPRING BACK BALE LOADER FOR AN AUTOMATIC BALE WAGON
Donald M. Grey, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1969, Ser. No. 828,867
Int. Cl. B60p *1/36*
U.S. Cl. 214—83.36 6 Claims



A bale loader for use on an automatic bale wagon and adapted to pick up bales from the field and lift them onto the wagon, the loader having a normally outwardly biased rear wall which will yield rearwardly as the wall and the bale come into contact during bale loading to absorb shock loads imparted to the moving loader by the stationary bale.

3,622,023
APPARATUS FOR SETTING GREEN BRICKS IN GAPPED ROWS
Dieter Keck, Laggenbeck, Germany, assignor to C. Keller & Co., Laggenbeck, Germany
Filed May 11, 1970, Ser. No. 36,334
Claims priority, application Germany, May 13, 1969, P 19 24 516.0
Int. Cl. B66b *17/00*
U.S. Cl. 214—89 7 Claims

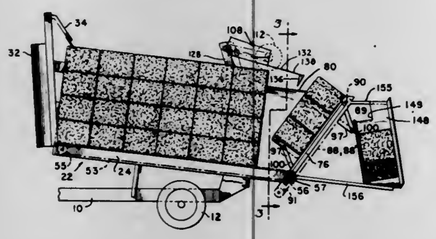


Green molded bricks released from a molding machine are set by a gripper hoist on a slotted platform in continuous columns longitudinal of the slots. Pusher arms pivotally mounted on a carriage under the platform project from the slots and push the columns of molded bricks to a continuous conveyor which travels away from the platform in the direction of slot elongation. The carriage position is sensed by a control cam and switches which operate the drives of the carriage and of the conveyor to produce gaps in the columns of bricks pushed onto the conveyor by the arms. The gapped columns of bricks are transferred by another gripper hoist to a kiln car for firing.

3,622,024
BALE WAGON HAVING SINGLE-BALE-UNLOADING MEANS

Donald M. Grey, Selma; Lee D. Butler, Kingsburg, and Jerry W. Welker, Selma, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Original application May 16, 1968, Ser. No. 729,686, now Patent No. 3,515,291. Divided and this application Feb. 11, 1970, Ser. No. 010,325
Int. Cl. B65g 59/08
U.S. Cl. 214—152 5 Claims

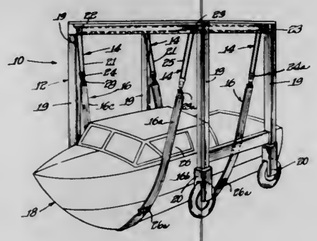


A farm vehicle for carrying stacks of baled hay or the like and including apparatus for unloading the bale stacks one bale at a time.

3,622,025
MOBILE BOAT-HANDLING APPARATUS

Arnold C. Petersen, 123 South Ithca Ave., Sturgeon Bay, Wis.

Filed Dec. 22, 1969, Ser. No. 886,841
Int. Cl. B60p 3/10
U.S. Cl. 214—396 5 Claims



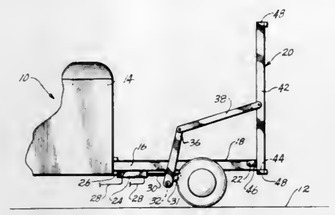
A boat hoist assembly comprises a mobile carriage structure having winch-type hoist assemblies. Slings made up of multiple sections that are connected together by specially arranged pin assemblies are attached to the hoist assemblies forming loops which support the boat.

3,622,026
TRUCK

Harold Tornheim, 430 N. Auburn Ave., Sierra Madre, Calif.

Continuation-in-part of application Ser. No. 749,358, Aug., 1968, now Patent No. 3,522,894. This application Sept. 25, 1969, Ser. No. 861,128
Int. Cl. B60p 1/04
U.S. Cl. 214—501 7 Claims

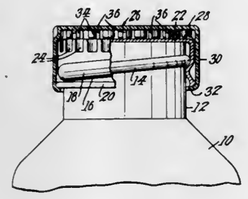
A pickup truck has an inclinable carriage pivotally mounted on the truck chassis. Power means incline the carriage to substantially vertical position. The including means preferably includes a transverse torsion shaft forward the carriage pivot point and a rotatable by hydraulic cylinders. Linkages between the ends of the torsion shaft and the carriage rotate the carriage in response to the rotation to the shaft. In the vertical position, the carriage can, through a variety of coupling means, take on alternatively a variety of attachments to the truck. Generally, the attachments to the truck are such that they, in turn, in taking on freight for transportation, take advantage of the inclinability of the carriage. One attachment is a track and trolley assembly that takes on freight by the inclination of the carriage. Another attachment is an overhead rack that, in its inclined position, a man standing on the ground can load.



3,622,027
SAFETY BOTTLE CLOSURE

Eino J. Maki, Upper Saddle River, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,033
Int. Cl. A61j 1/00; B25d 55/02
U.S. Cl. 215—9 6 Claims

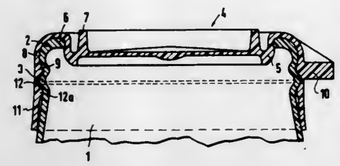


A closure cap generally of the screw-on type having exterior knurls at the periphery thereof, in combination with a safety overcap having complementary interior knurls and including yieldable, resilient interior filaments or pins maintaining the overcap rotarily unengaged with respect to said closure cap, but said knurls engaging upon the application of downward pressure on the safety overcap relative to the closure cap.

3,622,028
CLOSURE CONSTRUCTION

Bernhard Lohrer, Kreuzlingen, Switzerland, assignor to Furstlick Hohensollernsche Huttenverwaltung Laucherthal, Laucherthal, Germany

Filed May 1, 1970, Ser. No. 33,540
Claims priority, application Germany, June 6, 1969, P 19 28 724.2
Int. Cl. B65d 41/22; A45c 00
U.S. Cl. 215—41 8 Claims



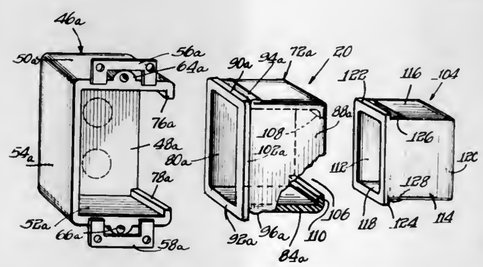
A closure construction includes a container for materials such as bulk materials or liquids such as milk, juice, water, gasoline and the like, having a pouring mouth formed by an inturned flanged top and a neck portion adjacent the mouth which is characterized by the formation of two closely spaced

parallel annular protuberances or corrugations. The container mouth is closed by a cover or cap having a depressed central portion which fits into the opening defined by the flanged top and which has an inner portion which is wider than the flange opening to provide a snap fit. The cap also includes a portion extending around the flange and downwardly in the form of a skirt or side portion along the neck of the container. The lowermost portion of the skirt terminates in an apron of annular form having an inwardly extending bead which engages beneath the lowermost protuberance of the exterior of the container. The upper portion of the skirt includes a bead which engages within the groove formed between the two protuberances and the apron is connected to the upper portion by means of a severable tear strip or weakened area. The cap also includes a projection, or ledge, formed around the exterior which may be engaged by the fingers of a person's hand to force the upper portion of the cap off the top of the container while severing the tear strip and leaving the apron intact on the container. When this occurs the apron will drop down further along the exterior wall of the container and when the cap top cover portion is replaced there is a separation between the top cover portion and the apron which shows that the bottle has already been opened.

3,622,029
ELECTRICAL OUTLET BOX

Gordon K. Ware, Chicago, Ill., assignor to Ware Fuse Corporation, Chicago, Ill.

Filed May 12, 1969, Ser. No. 823,569
Int. Cl. H02g 3/08
U.S. Cl. 220—3.7 9 Claims

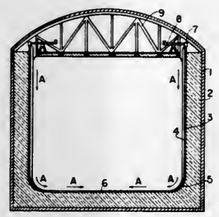


A box including a first portion for receiving electrical outlets, switches, cover plates and the like of standard size and a second portion telescopically associated with the first portion for increasing the interior volume of the box for accommodating electrical wires.

3,622,030
TANK FOR USE IN STORING LOW-TEMPERATURE LIQUEFIED GAS

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company Limited, Tokyo, Japan

Filed Nov. 13, 1969, Ser. No. 876,288
Claims priority, application Japan, Nov. 15, 1968, 43/83397
Int. Cl. B65d 7/22
U.S. Cl. 220—10 1 Claim

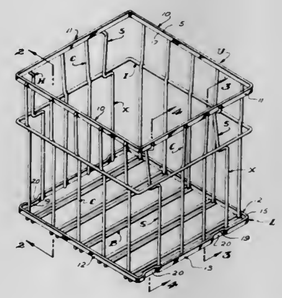


A tank for use in storing low-temperature liquefied gas has an inner vessel composed of a thin film construction suspended from the top wall of an outer vessel, and is constructed so that corrugations vertically formed on the sidewall of said inner vessel may be contracted under the low-temperature loaded condition to approach a smooth configuration in close contact with a heat-insulating layer provided between said outer and inner vessels. At the curved bottom corner of said inner vessel, an increase in length is produced along the outer top part of each corrugation due to the difference in length between the outer top part and inner top part of each corrugation, and said increased length appears as an additional corrugation. To prevent collapse of the additional corrugation, when the vessel is loaded, a part of the heat-insulating layer is eliminated to form a recess for the outer part of the additional corrugation, thereby providing it with a smooth deformation.

3,622,031
STACKING AND NESTING BASKET

Richard E. Wells, 3525 East 16th St., Los Angeles, Calif.

Filed Apr. 9, 1970, Ser. No. 27,024
Int. Cl. B65d 7/20, 21/04
U.S. Cl. 220—19 8 Claims

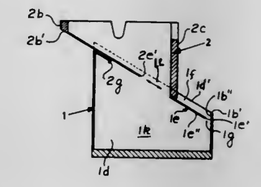


A wire basketlike container construction having no moving parts and which is such that a plurality of said containers can be selectively engaged in vertical stacked and interengaged nested engagement with each other by varying the relative rotative position of adjacent containers 180°; and a construction where an upper frame of one container is engaged about a lower frame of an upper adjacent container when the containers are stacked whereby the containers are restrained from lateral shifting and displacement.

3,622,032
COMBINATION ASHTRAY CONTAINER DEVICE

Paolo Tilche, Via F. Turati 3, Milan, Italy

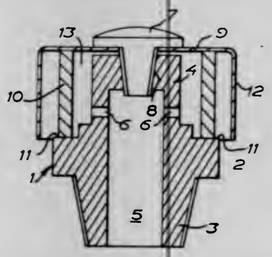
Filed July 2, 1969, Ser. No. 838,527
Claims priority, application Italy, July 6, 1968, 131/544
Int. Cl. B65d 1/24, 43/12
U.S. Cl. 220—20.5 3 Claims



A combination ashtray container device comprising an upper member and a lower member slidably disposed on each other, forming jointly there together a substantially cu-

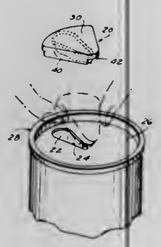
bical body, the two members being slidable along one another along an inclined plane, having openings therein and constituting displaceable portions of said members, the lower member adapted as a container and the upper member alone as an ashtray.

3,622,033
OIL FILLER PLUG WITH VENT PASSAGE
William W. Butler, Hull, England; Harvey Holtby, Hull, England; Graham J. T. Pinder, North Ferriby, England; Sidney J. Moore, Willerby, England, and Bernard Faulkner, deceased, late of Willerby, England (by Violet E. Faulkner, legal representative), assignors to J. H. Fenner & Company Limited, Hull, England
Filed Aug. 27, 1969, Ser. No. 853,390
Claims priority, application Great Britain, Aug. 31, 1968, 41708/68
Int. Cl. B65d 51/16
U.S. Cl. 220—44
6 Claims



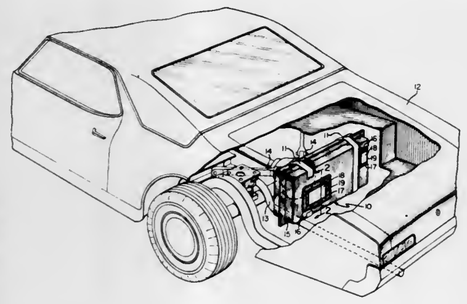
A combined oil filler and breather plug comprising a body adapted for removable attachment to an oil exit port on a machine casing, and ventilating passage means within the body which, when the body is attached to said oil input port, connect the inside of said machine casing to an exit port or ports at the exterior of said body a filter element formed from an interstitial plastics material being located externally of the plug body so as to completely enclose said exit port or ports of the ventilating passage means whereby air passing through the plug to the machine casing must pass through the filter.

3,622,034
CAN-TOP OPENING CLOSURE
Robert S. Lutzker, 40 Franklin Road, Scarsdale, N.Y.; Al Minutillo, 25 Sea Breeze Road, Massapequa, N.Y., and Lawrence D. Lutzker, 40 Franklin Road, Scarsdale, N.Y.
Filed Nov. 4, 1969, Ser. No. 873,841
Int. Cl. B65d 43/10, 39/00, 41/00
U.S. Cl. 220—60
16 Claims



A can-top opening closure is provided with a top wall from which extends downwardly depending legs adapted to engage with the upper surface of the can top adjacent the top opening. Centrally of the top wall is a downwardly depending body having a peripheral shape corresponding to that of the top opening. The body portion is either dimensioned to clear the edge of the can top defining the opening or be in frictional engagement therewith. A sealing lip is spaced downwardly from the top wall, extends outwardly of the body portion and is adapted to be inserted through the top opening and thereafter flexed and biased into sealing engagement with the inner surfaces of the can top adjacent the opening. The closure is provided with surfaces adapted to be engaged for purposes of facilitating the insertion and removal of the closure from the opening. This is also enhanced by the flexible and resilient one-piece, molded construction of the closure. The sealing relationship of the lip is optimized by locating this lip closer to the top wall than the lower edge of the downwardly depending legs which engage with the upper face of the can top thereby creating an upwardly directed biasing force for increasing the sealing pressure between the lip and the inner face of the can top adjacent the opening.

3,622,035
PUNCTURE-RESISTANT FUEL CONTAINER
Charles A. Suter, 130 Hayes Ave., Cuyahoga Falls, Ohio
Filed July 28, 1969, Ser. No. 845,450
Int. Cl. B65d 25/14
U.S. Cl. 220—63 A
6 Claims



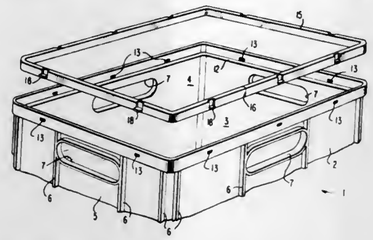
A puncture-resistant fuel container for a vehicle including a rigid supporting structure, a fuel cell of flexible material disposed within the structure, and puncture-resistant members of a nonwoven fibrous material, such as nylon felt, positioned against the cell in at least the puncture prone areas thereof. The puncture-resistant members act to prevent sharp jagged metal objects from penetrating the flexible cell in crash situations.

3,622,036
SUPPORT FOR A DISH
Mathieu Maurits Bongaerts, Bree, Belgium, assignor to Harry Zeiler, Huis ter Heid/Zeist, Netherlands
Filed Sept. 22, 1969, Ser. No. 859,719
Claims priority, application Great Britain, Sept. 30, 1968, 46,359/68
Int. Cl. B65d 7/42
U.S. Cl. 220—70
1 Claim



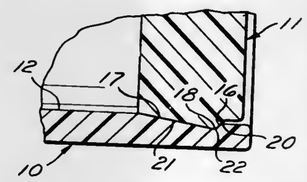
A dish or like container, formed in one piece from a relatively thin sheet of metal or plastics material, said dish being relatively flat and of trapezoidal section, with a peripheral, generally semitoric structure, the opening of which being directed downwardly.

3,622,037
REINFORCED PLASTIC CRATE
Richard F. Gildart, Montebello, Calif., assignor to Rehrig Pacific Company, Los Angeles, Calif.
Filed July 17, 1969, Ser. No. 842,489
Int. Cl. B65d 7/42
U.S. Cl. 220—73
6 Claims



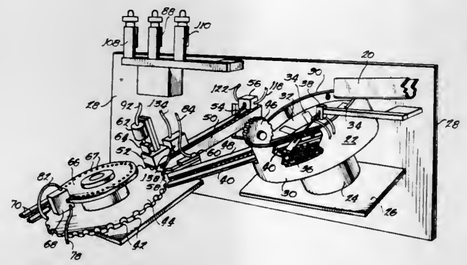
A material handling crate having molded plastic side panels and an open top portion reinforced by an endless steel ring extending around the top of the crate and having an exposed upper surface forming at least a portion of the top surface of the rim of the crate.

3,622,038
SEALED VESSEL
Fred R. Wilhelm, Avon Lake, Ohio, assignor to Airborne Mfg. Co., Cleveland, Ohio
Filed July 17, 1969, Ser. No. 842,658
Int. Cl. B65d 25/54, 53/00
U.S. Cl. 220—82 R
10 Claims



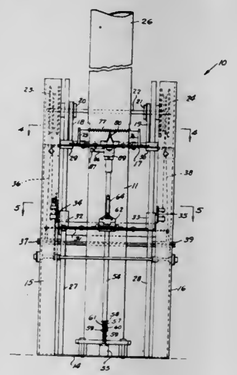
A vessel such as an instrument case, for example, having an opening for access to the interior of the vessel and a closure for the opening adapted to have stressed self-sealing engagement with each other augmented by pressure differentials across the seal to close the vessel against differences in internal and external pressure.

3,622,039
WASHER FEEDER AND ASSEMBLY UNIT
Bert A. Lindstrom, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Filed Sept. 18, 1969, Ser. No. 858,995
Int. Cl. G07f 11/00
U.S. Cl. 221—10
7 Claims



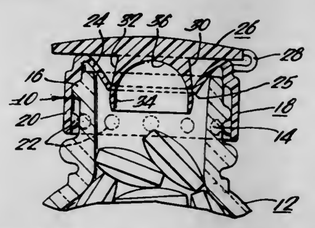
This high-speed apparatus for orientating washers and feeding them to an assembly station for production of captive washer-fastening devices such as captive washer bolts comprises an inclined hopper with a base section having a rotatable annular portion with spaced grooves on the upper rotating surface thereof for receiving and rotationally conveying the washers, and a longitudinally and laterally inclined chute overlying said base section so as to receive washers from the grooves as the grooves align themselves therewith at an upper point in the rotational travel of the grooves, the orientated washers in the chute then being fed to an adjacent mechanism for assembly with bolt blanks, the assembled washers and blanks being conveyed to the starter station of a thread-rolling machine.

3,622,040
CUP-COUNTING AND DISPENSING MACHINE
Theo O. Putnam, Fringer Road, Upperco, Md.
Filed Jan. 9, 1970, Ser. No. 1,762
Int. Cl. B65h 3/32
U.S. Cl. 221—176
11 Claims



A counting and dispensing machine in which nesting cups are stacked on a moveable platform which lowers under the weight of the cups simultaneously raising a counterweight. When the platform reaches its lower most position a second platform is caused to support a new stack of cups at a predetermined cup count above the movable platform while the movable platform is automatically disengaged from the stack of cups permitting them to be dispensed before being returned to an upper position to receive a new stack of cups, by the counterweight. Power for the actuation of the mechanism is derived completely from the weight of the cups with no outside source of power being required. The dispensing and carrying machine is associated with the discharge end of a forming machine and was utilized to provide a predetermined quantity of cups in a single stack for packaging.

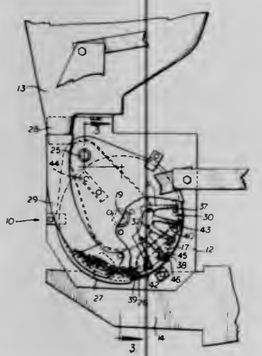
3,622,041
CONTAINER CLOSURE
William K. Borsum, and Adolph W. Borsum, both of 521 Pacific Ave., Solana Beach, Calif.
Filed Apr. 21, 1969, Ser. No. 818,025
Int. Cl. B65h 3/60; B65d 5/72
U.S. Cl. 221—202
11 Claims



A container closure comprising a cap portion including a resilient diaphragm carried by the access opening in the con-

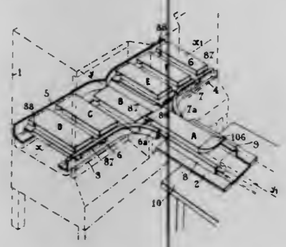
tainer and terminating in an orifice of predetermined configuration and size in the relaxed state to retain articles in the container, a cover member having a dispensing member engageable through said orifice in the diaphragm in the closed position, said dispensing member having a pocket to receive at least one article in the container and being actuatable relative to said cap member to withdraw said one article, and means providing a continuous sealing relationship between said diaphragm and cap portion in the closed position.

3,622,042
PLANTER WITH FLEXIBLE RADIAL SPRING FINGERS FOR SEED SELECTION
Raymond C. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 12, 1970, Ser. No. 2,011
Int. Cl. A01c 7/04
U.S. Cl. 221—219 **6 Claims**



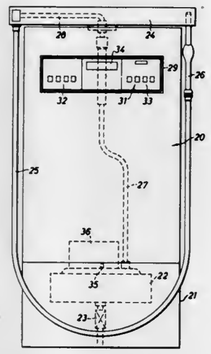
A planter seed-selecting device includes a disc rotatably mounted in a housing with a portion of its periphery received in a seed supply, and having mounted on at least one face thereof radially disposed spring fingers the outer ends of which are engageable with cam means in the housing to cause the fingers to yield axially and receive and, when released, hold a seed therebetween and the face of the disc. After a predetermined rotation of the disc another cam in the housing engages and again causes the fingers to yield axially to release the seed.

3,622,043
AUTOMATIC PRESENTATION STORAGE UNIT WITH MOVEABLE TRAY SYSTEM
Bernard Chotard, 15 rue Georges Legagneux, 72 Le Mans, France
Filed Dec. 30, 1969, Ser. No. 889,184
Int. Cl. B65g 59/00
U.S. Cl. 221—261 **14 Claims**



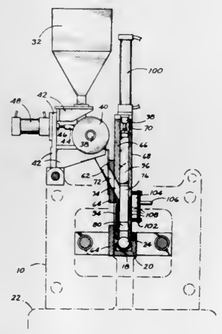
An automatic storage unit with movable trays characterized essentially in that it comprises internally an electric motor, at least one horizontal endless conveyor actuated by said motor, independent parallel trays carried by the upper span of said conveyor, disposed transversely and adapted to carry the objects to be displaced said trays comprising on their lower faces rack means and at their ends coupling members a adapted to cause the mutual coupling of said trays so as to constitute, externally of the storage unit, a continuous row of trays along an output axis extending at right angles to the conveyor's axis.

3,622,044
LIQUID-DISPENSING APPARATUS HAVING PNEUMATICALLY ACTUATED INDICATOR
Frederick Edward John Wilson, Chessington, England, assignor to Avery-Hardoll Limited, Chessington, England
Filed Aug. 19, 1969, Ser. No. 859,235
Claims priority, application Great Britain, Aug. 20, 1968, 39726/68
Int. Cl. B67d 5/30
U.S. Cl. 222—16 **13 Claims**



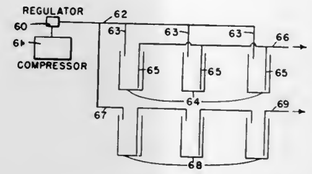
A liquid-dispensing apparatus such as a roadside fuel pump has the indicators for showing the volume of liquid dispensed and/or the price of such liquid controlled by fluid pulses produced by pulse-generating means controlled by a flow meter, the indicators being conveniently driven by fluid jet means. A fluid interlock circuit is also provided to prevent the pump from being operated if the indicators are not properly zeroised, a unit price indicator is wrongly set, or there is a fault in the control system.

3,622,045
APPARATUS FOR FEEDING AND PREHEATING PLASTIC MOLDING RESIN IN PARTICULATE FORM
James E. Delaney, Jr., Hatboro; Robert F. Zecher, Huntingdon Valley, Pa.; William T. LaRose, Sr., Troy, and John F. Trembley, Loudonville, N.Y., assignors to Hull Corporation, Hatboro, Pa. and W. T. LaRose and Associates Inc., Troy, N.Y., part interest to each
Filed Apr. 22, 1969, Ser. No. 818,327
Int. Cl. B67d 5/16
U.S. Cl. 222—71 **4 Claims**



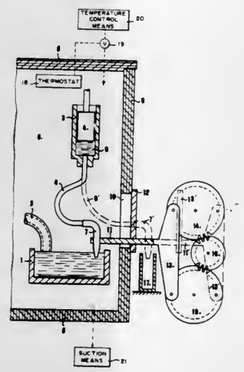
Particles of plastic molding resin are metered in predetermined amount from a hopper to a preheat chamber in which a stuffer blade reciprocates to eject the preheated particles to a transfer tube for delivery to a transfer molding press.

3,622,046
BEVERAGE-DISPENSING APPARATUS HAVING TRANSVERSE AND VERTICAL ROWS OF BOTTLES
Thomas M. Byrne, 6412 Abeson Lane, Madison, Wis.
Continuation-in-part of application Ser. No. 772,995, Nov. 4, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 593,464, Nov. 10, 1966, now Patent No. 3,409,175, dated Nov. 5, 1968. This application Aug. 27, 1969, Ser. No. 857,283
Int. Cl. B67d 5/52
U.S. Cl. 222—136 **18 Claims**



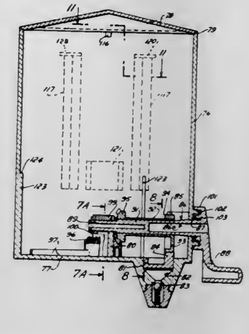
Bottles are supported in transverse and vertical rows clamped to a rack to provide for rapid replacement of bottles, sealed attachment to a dispensing system and introduction of regulated compressed air and withdrawal of contents from the bottles. The bottles may be connected in series or parallel.

3,622,047
LIQUID-DISPENSING APPARATUS INCLUDING A HOUSING AND MOVABLE NOZZLE
Rudolf Oberli, Langenthal, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland
Filed Aug. 7, 1970, Ser. No. 62,057
Claims priority, application Switzerland, Aug. 27, 1969, 12973/69
Int. Cl. B67d 5/62
U.S. Cl. 222—146 C **6 Claims**



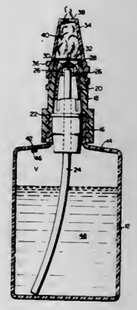
Dispensing apparatus of the type including a dispensing nozzle movable between charging and dispensing positions relative to a liquid supply reservoir and a receptacle, respectively, characterized in that the liquid supply reservoir and the dosage means for charging the nozzle with a quantity of liquid are contained within a protective storage housing. One wall of the housing contains an opening through which the nozzle is displaced from its normal charging position within the housing to the dispensing position relative to a receptacle that is arranged externally of the housing. Temperature-responsive means are provided for maintaining the interior of the housing at a desired storage temperature.

3,622,048
DISPENSER FOR VISCOUS LIQUID AND PASTES
George X. Batlas, 21-26 33rd St., Astoria, N.Y.
Continuation-in-part of application Ser. No. 867,138, Oct. 17, 1969, now abandoned. This application Sept. 2, 1970, Ser. No. 068,816
Int. Cl. B67d 5/06
U.S. Cl. 222—181 **19 Claims**



A vertically disposed cylindrical casing for storage of viscous liquids and pastes has a discharge at the lower edge portion thereof normally sealed by a spring-actuated valve, a recess in alignment with said discharge, and a vertically reciprocating plunger movable in and out of said recess for force feeding of material through the discharge against the action of said spring. The plunger is actuated through a cam means carried by a radially disposed drive shaft extending through the casing wall. The drive shaft through bevel gears also drives a wiper blade, rotatable axially of the casing, with the drive so synchronized that the wiper blade passes over the recess when the plunger is in an upwardly reciprocated position. The drive shaft can pass over said recess, in which event the cam engages a follower which is an integral extension of said plunger, or the drive shaft can be disposed perpendicularly to such first mentioned orientation, in which event the cam engages a follower pivotally supported in the casing and operatively engaging said plunger.

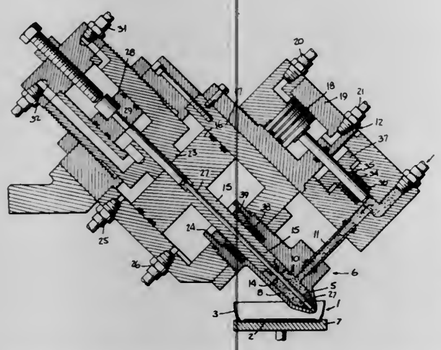
3,622,049
DISPENSING SYSTEM
Robert E. Thompson, Maplewood, N.J., assignor to Shering Corporation, Bloomfield, N.J.
Filed May 5, 1969, Ser. No. 821,572The portion of the term of the patent subsequent to Oct. 10, 1984, has been disclaimed.
Int. Cl. B67d 5/58
U.S. Cl. 222—190 **1 Claim**



A dispenser for dispensing foamable formulations. The liquid is placed in the container portion and exits through a nozzle in the form of a foam. When the walls of the container

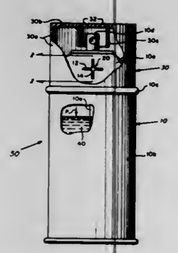
are squeezed, or when a pressurized gas is introduced, air within it and also the liquid is forced upwardly through a porous member and is mixed, thereby producing foam. After each dose or charge has been dispensed, replacement air enters through a vent, with that portion of the foam which is in the nozzle acting as a valve to prevent reentry of the foam into the interior of the dispenser.

3,622,050
METERED COMPOUND APPLYING NOZZLE
Daniel D. Acton, and Orris E. Mumford, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Filed Feb. 13, 1969, Ser. No. 798,892
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 **4 Claims**



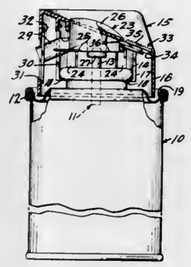
A nozzle for injecting liquid into articles and particularly for injecting relatively viscous liquids including plastisols or other flowable compounds such as are used to form gaskets in hollow closure shells. The nozzle injects a precisely predetermined volume of flowable material at a controlled rate so that a gasket ring or other element may be formed with a precise degree of overlap. The volume is controlled by admitting a predetermined amount of the liquid compound into a charge chamber which is then closed off from the compound source. This charge is then injected through the nozzle orifice by the opening of a control needle a predetermined amount while the compound is forced through the orifice by a discharge piston as it displaces the predetermined volume of compound in the charge chamber.

3,622,051
AEROSOL CAN WITH OVERPRESSURE VENTING AND ENTRAPPING MEANS
Louis Benson, 1075 Old Ford Road, Huntingdon Valley, Pa.
Filed Jan. 13, 1970, Ser. No. 2,522
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **3 Claims**



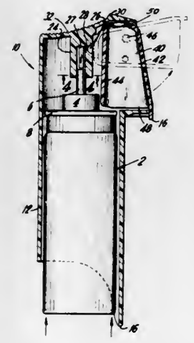
The present invention relates to an improvement in pressurized aerosol-dispensing containers, wherein a pressure-responsive overpressure relief means is strategically located as a structural part of the pressurized envelope and is combined with entrapping means thereon for restraining the violent escape of the dispensed product in the event that overpressure occurs.

3,622,052
CHILDPROOF DISPENSING VALVE ACTUATOR FOR AN AEROSOL CAN
Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Dec. 1, 1969, Ser. No. 881,084
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **3 Claims**



A childproof dispensing valve actuator for an aerosol can. The valve actuator fits on the end of a vertical, tubular valve stem. The valve actuator body protrudes upwardly through a central opening in a can cover and has a horizontal nozzle which aligns with an opening in the side of the cover. The valve is actuated by pressing the actuator body downwardly. A locking slide is carried by a part of the cover adjacent the actuator body and is movable between an "open" position not engaging the actuator body and a "locked" position in which the slide engages in a slot in the actuator body for preventing it from being depressed to actuate the valve.

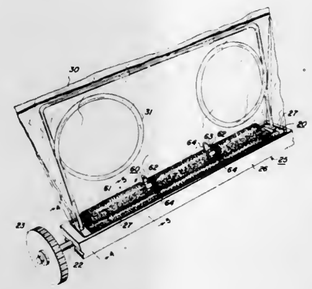
3,622,053
AEROSOL INHALER WITH FLIP-UP NOZZLE
John V. Ryden, Summit, N.J., assignor to Schering Corporation, Bloomfield, N.J.
Filed Dec. 10, 1969, Ser. No. 883,752
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **5 Claims**



A dispenser for dispensing a composition confined, under pressure, in a container having a valve which, when pushed downward toward the container, opens and dispenses the composition, the dispenser comprising a housing having a skirt open at its lower end for receiving the container and a dispensing head, the dispensing head having a valve activator

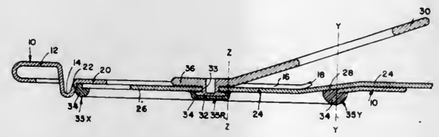
therein including a boss having an opening for engaging and gripping the valve stem on the container for maintaining the container in the dispenser and a nozzle hood pivotally mounted on the dispensing head for receiving a metered amount of medication from the container and mixing such metered amount of medication with the air drawn through such hood by the patient, the nozzle hood including means, when said nozzle hood is closed, for abutting said container and for preventing said container from being moved axially of said dispenser for opening said valve.

3,622,054
TONER DISPENSER IMPROVEMENT
James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,237
Int. Cl. G01f *11/20*
U.S. Cl. 222—414 **4 Claims**



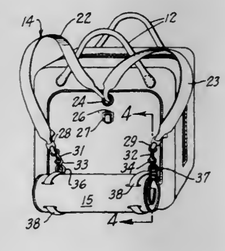
An antibridging roller, having openly spaced, semirigid fibers extending from a central axis is contained within a dispensing apparatus and rotatably supported by a dispensing roller. Partial epicyclic movement of the agglomeration-preventing roller may be effected by rotational movement of the dispensing roller.

3,622,055
CAN END WITH BONDED SEAL SLIDE
Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed Aug. 5, 1970, Ser. No. 61,384
Int. Cl. B65d *47/10*
U.S. Cl. 222—541 **56 Claims**



A can end is disclosed which is provided with a pour opening having a pour width. The pour opening is provided with an entry aperture at one end of the pour opening, the entry aperture having a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intimate contact with the plane of bulge strength. A pressure barrier material seals the intimately contacting can end sealing portion and the slide lapping portion and also seals the intimately contacting plane of bulge strength and the slide sealing portion. The pressure barrier material is bonded to the can end sealing portion with a first predetermined shear strength and to the slide lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull tab has a plane of weakness on one side of the connection to the slide and a pressure portion on the other side of the connection. The pull tab is movable away from the can end about the plane of weakness to cause the pressure portion to break the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing portion now functions as an exit and reclosure slide guide. The pull tab is movable to break the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion and to cause the slide to move through the entry aperture on the pressure barrier material adjacent the plane of bulge strength and on such pressure barrier material as a guide to uncover the pour opening.

3,622,056
CONVERTIBLE SATCHEL
John Edward Droeger, 309 Rutledge St., San Francisco, Calif.
Filed May 7, 1970, Ser. No. 35,339
Int. Cl. A45f *3/00*
U.S. Cl. 224—9 **10 Claims**

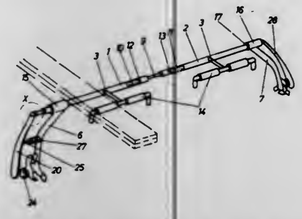


A satchel is made convertible for selective carrying by hand, in the manner of a handgrip or valise, or by supporting it on the back and shoulders in the manner of a knapsack. A substantially rigid frame supports the container or bag portion and has a manually engageable handle and a shoulder strap harness attached thereto. A panel or flap in the covering material of the satchel conceals the strap harness when carrying by hand is intended, and this flap or panel rolls up to provide a resilient cushion engageable with the back of the user when shoulder carrying is intended, the cushion serving to space the lower portion of the frame away from the back of the user. The panel is closed by a slide fastener and straps and buckles are provided to keep the panel in its rolled position. The frame may be made integrally with, or attachable to, the container portion.

3,622,057
LOCKABLE SKI CARRIER FOR MOTOR VEHICLES
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany
Filed Apr. 7, 1969, Ser. No. 814,108
Claims priority, application Germany, Apr. 19, 1968, P 17 55 273.7
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 F **14 Claims**

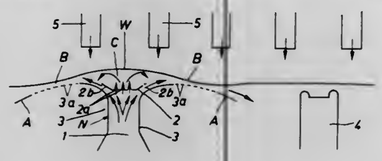
A carrying frame supported in the gutters of the roof of a vehicle and provided with clamps, which can be locked in a clamping position and serve to hold at least two pairs of skis. A crossmember of the carrying frame is rotatably and axially nondisplaceably mounted in the legs of the carrying frame. The clamps are secured to the crossmember of the carrying

frame. The crossmember of the carrying frame is adapted to be locked against rotation by means of a combination lock,



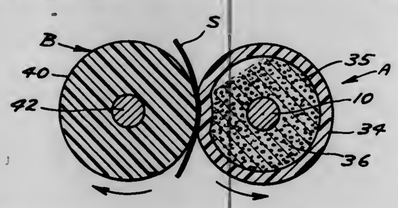
thereby preventing the release of the ski clamps and the unauthorized removal of the skis.

3,622,058
CONTACT-FREE HOLDING OF A WEB OF SHEET MATERIAL GUIDED IN A FLOATING MANNER
Hilmar Vits, Langenfeld (Rhineland), Germany, assignor to Maschinenfabrik VITS GmbH, Langenfeld (Rhineland), Germany
Filed Sept. 25, 1967, Ser. No. 670,128
Claims priority, application Germany, Nov. 23, 1966, M 71746. The portion of the term of the patent subsequent to May 21, 1985, has been disclaimed.
Int. Cl. B65h 17/32; F26b 13/20
U.S. Cl. 226—7 **7 Claims**



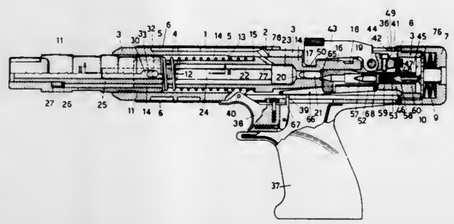
A web of sheet material, such as paper is held free from contact with mechanical supports by providing a floating support system. Nozzles on a support side of the web send air from a blowing chamber through at least one slit-shaped orifice that is set to deliver air to the web at an angle. The wall of the nozzle which faces away from the web is shaped to provide a convex domelike profile, which preferably is perforated to provide a novel effect on suction forces there. There may be two slit-shaped orifices at each nozzle, both set at an angle to the web and shaped as mirror images of each other, both orifices having adjacent perforated domelike profiles. The device and method are applicable to paper driers, multicolor offset and gravure presses, and to climatic treatment of paper.

3,622,059
TRANSPORT ROLLER FOR SHEET MATERIAL
Edward H. Savela, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Continuation-in-part of application Ser. No. 680,775, Nov. 6, 1967, now abandoned. This application Dec. 12, 1969, Ser. No. 884,644
Int. Cl. B65h 17/20, 27/00
U.S. Cl. 226—190 **9 Claims**



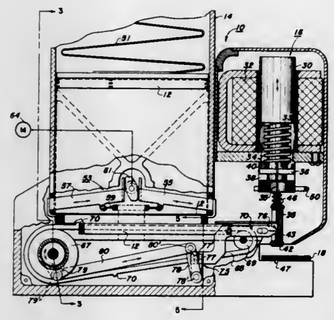
Roller apparatus for transporting sheet material such as photographic film and the like between two adjacent rollers of the apparatus is disclosed. One roller of the apparatus disclosed is a rigid roller and the second is resilient. The second roller includes an elongated substantially rigid shaft and a resilient cylindrical outer member mounted on the shaft. The cylindrical outer member is 60 to 95 percent filled with small spheres which move inside of the resilient roller upon rotation of the resilient roller to maintain a uniform and also light pressure in the nip or pinch area of contact between the two rollers when the rollers are rotatably mounted adjacent each other in bearing mounts.

3,622,060
NAIL-DRIVING GUN
Ugo Gussalli, Brescia, Italy, assignor to Poly Patent Aktiengesellschaft, Schaan, Liechtenstein
Filed May 27, 1970, Ser. No. 40,909
Claims priority, application Italy, May 30, 1969, 17594A/69
Int. Cl. B25c 1/14
U.S. Cl. 227—8 **7 Claims**



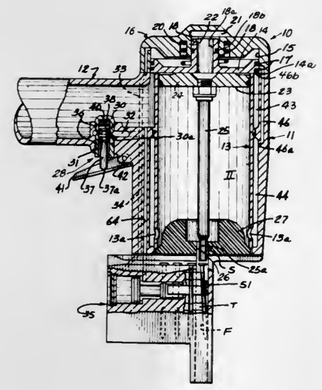
A nail-driving gun is disclosed of the kind in which the propulsive force of a powder cartridge is used to drive a nail or the like into a solid body through the intermediary of a ram actuated by the explosion gases generated by the cartridge. The shortcoming has been experienced in conventional guns of this kind that no adjustability of the mechanisms is provided as a function of the nail length, or of the length through which one desires that the nail can penetrate. A telescopable adjustment member is provided by the invention; and recoil spring and detent and tripping mechanisms are also provided. Shock absorber and momentum-dissipating members are also provided at appropriate places in the gun.

3,622,061
STAPLE FEED AND FASTENING APPARATUS
August Hoyer, Penfield, and Karl E. Liechty, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,514
Int. Cl. B27f 7/24
U.S. Cl. 227—120 **3 Claims**



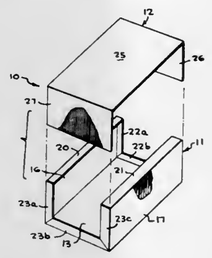
Apparatus for feeding staples in a cartridge form from a magazine storage toward a stapling head assembly which then strips the staples one at a time and drives them into engagement with sheet material so as to cause fastening thereof. A feed mechanism loads each cartridge against a stapling head device before the drive stroke of the head assembly through an energy storage device.

3,622,062
FASTENER-DRIVING APPARATUS
James K. Goode, Jr., Cary, and James A. Whiteside, Rolling Meadows, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.
Filed Mar. 2, 1970, Ser. No. 15,640
Int. Cl. B25c 1/04
U.S. Cl. 227—130 **11 Claims**



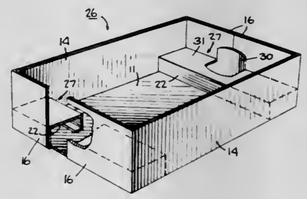
A pneumatically actuated fastener-driving apparatus is provided which utilizes an air pressure system for effecting return of the drive piston to its firing position. An exterior portion of the drive blade is contoured so as to facilitate complete depressurization of the air return chamber prior to initiating the drive stroke of the drive piston. The head of the drive piston carries an adjustable seal which enables a small amount of pressured air to bleed past the piston head during the drive stroke and thereby facilitate pressure buildup in air return chambers so as to effect more rapid return of the drive piston to its firing position.

3,622,063
TWO-BLANK CORRUGATED BOARD CONTAINER
George S. McVeigh, Lynchburg, Va., assignor to McVeigh Engineering Ltd., Lynchburg, Va.
Filed Sept. 5, 1969, Ser. No. 855,576
Int. Cl. B65d 5/34
U.S. Cl. 229—23 R **7 Claims**



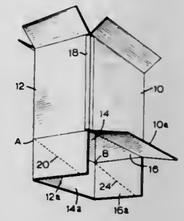
A packaging and shipping case formed of two blanks, each defining a horizontal wall panel and a pair of vertical wall panels foldably connected to the associated horizontal wall panel. One of the blanks also includes transverse securing flaps and lateral securing flaps along its perimeter, the transverse flaps to be secured to opposite edges of the horizontal wall panel of the other blank. The blanks may be formed of corrugated board with their corrugation axes perpendicular to each other, so that the corrugation axes of all vertical wall panels and of the lateral securing flaps joined thereto extend vertically.

3,622,064
CIGAR BOX BLANK
Leewood C. Carter, Warren Township, and Edward K. Mullen, Westfield, both of N.J., assignors to Book Covers, Inc., Newark, N.J.
Filed June 13, 1969, Ser. No. 833,059
Int. Cl. B65d 5/22, 5/50
U.S. Cl. 229—34 HW **4 Claims**



The cigar box blank is of rectangular configuration and is prescored. The tabs at the ends of the side rails are folded so as to define the end wall of the box while the center flaps are either folded to the outside of the tabs or are folded up within the tabs to form a steplike arrangement. The tabs are secured to the center flaps so as to remain in upright position.

3,622,065
LOCK BOTTOM CONTAINER
Sydney T. Butterfill, Dorval, Quebec, Canada, assignor to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas
Filed July 18, 1969, Ser. No. 842,954
Int. Cl. B65d 5/08
U.S. Cl. 229—38 **1 Claim**

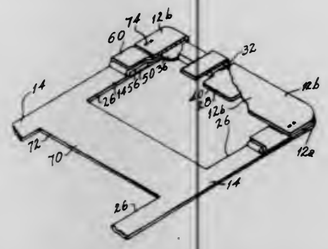


This invention relates to a paperboard container. The feature is the bottom formation which is formed from end flaps that hinge to the sidewalls. Three of the end flaps are interconnected and opposed end flaps are formed with a fold line so that the three interconnected end flaps can be hinged upwardly into an operative position in a flat folded condition. The single end flap is then interleaved with the folded portions of the three interconnected end flaps.

3,622,066
WRAPPER FOR A FRAMED MIRROR AND MIRROR PACKAGE FORMED THEREWITH
Harry M. Saferstein, Teaneck, N.J., assignor to Mechanical Mirror Works, Inc., New York, N.Y.
Filed Aug. 19, 1969, Ser. No. 851,294
Int. Cl. B65d 5/02, 25/00
U.S. Cl. 229—40 **10 Claims**

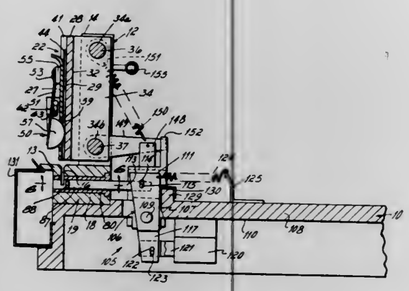
A wrapper for a framed mirror consisting of a unitary ply of paperboard wider and longer than the mirror, leaving

wider margins on two opposed sides than on the others. Portions of the ply connected to the margins are struck out from the ply and folded over on the margins to define the mirror receiving area and to immobilize the mirror reposing



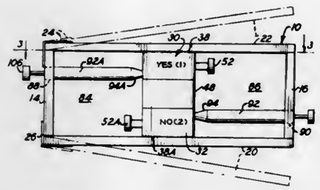
thereon. Portions of the wider margins are folded over the struck out portions connected thereto and the adjacent mirror portions and the struckout portions connected to the narrower margins and are secured to the narrower margins through the struck out portions folded thereover.

3,622,067
DOCUMENT CODER
Thomas R. Bucy, Dayton, and Daniel J. Bandenburg, Cincinnati, both of Ohio, assignors to O. K. Partnership, Cincinnati, Ohio
Filed June 13, 1969, Ser. No. 833,080
Int. Cl. G06k *1/08*
U.S. Cl. 234—48 **3 Claims**



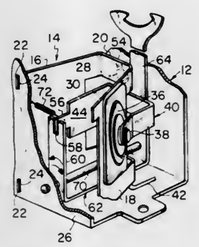
A document coder for selectively removing teeth projecting from the bottom edge of a card, thereby encoding the card, including an elongated horizontally disposed block having a slot in its upper surface for receiving and guiding the tooth-bearing edge of a card to be coded, and having a plurality of transverse horizontally disposed bore which communicate with both the exterior of the block and the card edge guide slot. Also included are a plurality of punch and die assemblies. Each assembly has a tubular bushing which is positioned within one of the transverse bores of the guide block and which is provided with a cross-slot both aligned with the card edge guide slot and communicating with a cylindrical bore formed in the bushing. The assemblies each further include a cylindrical punch slidably positioned within the bushing bore. The punch removes a card tooth registered in the bushing cross-Slot when the punch cutting surface moves relative thereto. In a preferred form, the punch cutting surface makes angles of approximately 75° and 90° with vertical and horizontal planes passing through the punch axis, respectively. Also included in the coder is a spring biased card lock which is secured to a plate which defines a card insertion slot, and which has a gripper biased into the slot through an aperture in the plate for engaging the face of an inserted card and locking it therein. A movably mounted plate positioned in the card slot biases one of the vertical edges of an inserted card in a horizontal direction to properly align the card against a card registration surface located adjacent the other vertical card edge.

3,622,068
VOTE-TALLYING REGISTER
Oliver L. I. Brown, 3 Totoket Road, Quaker Hill, Conn.
Filed Oct. 14, 1970, Ser. No. 80,663
Int. Cl. G07c *13/00*
U.S. Cl. 235—52 **8 Claims**



A mechanical register of the pushbutton type for tallying votes and wherein the register and voting buttons are concealed within a housing, the device to be passed among the voters, each voter selectively actuating one of two pushbuttons to record his vote, and manually operated means on said housing connected with the register for resetting the actuated voting pushbutton before the housing is passed from the first to the second or next voter, and means on said housing operable to disclose the vote tally to a teller.

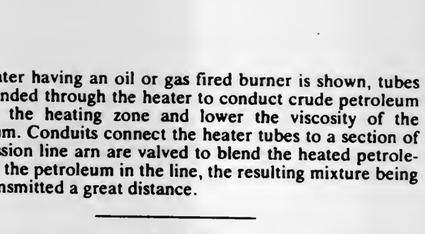
3,622,069
PNEUMATIC COUNTER WITH SPRING RETURN
Peter H. Bauer, Montclair, N.J., assignor to Gamon-Calmet Industries, Inc., Newark, N.J.
Filed Apr. 8, 1970, Ser. No. 26,578
Int. Cl. G06m *1/00*
U.S. Cl. 235—91 F **5 Claims**



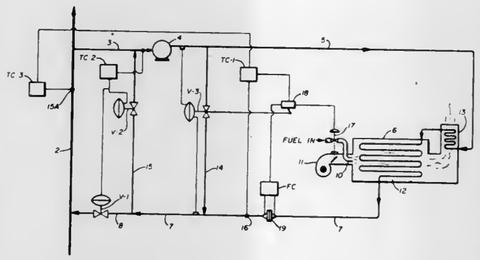
A pneumatic counter is disclosed which comprises a frame; rocker arm supporting means connected to said frame for supporting a rocker arm; a rocker arm pivotally connected to said rocker arm supporting means, with the rocker arm having at least one outstanding portion thereof; expansible chamber means secured between said rocker arm supporting means and the aforementioned outstanding portion of the rocker arm for rotating the rocker arm in a first direction in response to a pneumatic pulse being received by the expansible chamber; biasing means secured at one end to the rocker arm supporting means and at its other end to the rocker arm for rotating the rocker arm in a second direction opposite the first direction upon the discontinuance of the reception of the penumatic pulse by the expansible chamber means; counting means; and actuating means operatively connecting the rocker arm and the counting means for advancing the counting means in response to rotation of the rocker arm.

3,622,070
DUAL VOLUME AIR DISTRIBUTION APPARATUS
Andrew H. Sawyer, Pittsburgh, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Dec. 17, 1969, Ser. No. 885,887
Int. Cl. Go5g *23/13*; **F24f** *11/04*
U.S. Cl. 236—13 **7 Claims**

Apparatus which receives separate streams of hot and cold air and distributes a conditioning stream to a zone of a building which is to be conditioned. Thermostatic means within the zone generates a theremostatic control signal proportional to the instantaneous temperature within the zone. Over a first range of theremostatic control signals, control elements within the apparatus cooperate to discharge the conditioning stream at a constant box flow rate. Over a second range of thermostatic control signals which includes signals beyond the first range, the control elements cooperate to discharge the conditioning stream at flow rates above the constant box flow rate and at a constant temperature.



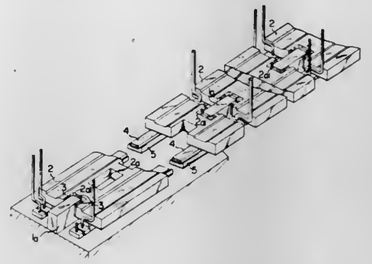
3,622,071
CRUDE PETROLEUM TRANSMISSION SYSTEM
Robert W. Coggins, and Bill S. Burrus, both of Tulsa, Okla., assignors to Combustion Engineering Inc., New York, N.Y.
Filed June 8, 1967, Ser. No. 644,610
Int. Cl. F17d *1/16*
U.S. Cl. 236—24 **4 Claims**



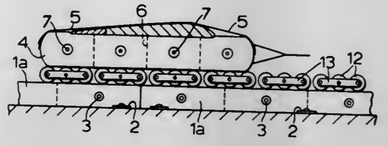
A heater having an oil or gas fired burner is shown, tubes are extended through the heater to conduct crude petroleum through the heating zone and lower the viscosity of the petroleum. Conduits connect the heater tubes to a section of transmission line arn are valved to blend the heated petroleum with the petroleum in the line, the resulting mixture being then transmitted a great distance.

3,622,072
STRUCTURE INSTALLATION METHOD
Kentaro Matsubara, Tokyo-to; Yutaka Satoh, Tokyo-to; Yoshiro Higuchi, Tokyo-to; Shigeru Tamura, Tokyo, and Yasuo Shimizu, Ichikawa-shi, all of Japan, assignors to Nippon Kokuyu Tetsudo, Tokyo-to, Japan
Filed June 16, 1969, Ser. No. 833,406
Claims priority, application Japan, June 20, 1968, 43/42207
Int. Cl. E01b *37/00*
U.S. Cl. 238—1 **5 Claims**

A flexible bag is interposed between a concrete slab bearing track rails and a base structure of a railway road bed, relative to which the slab is temporarily held apart, and then fluid cement mortar is fed into the bag to infate the same and form a pliable, bag-confined mass of mortar which snugly fits the space between the slab and base structue and, upon hardening, forms a strong and firm member whereby the slab is installed on the base structure.

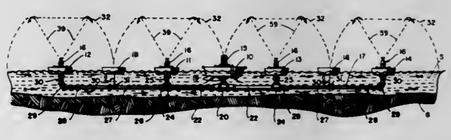


3,622,073
MEANS FOR MOVING HEAVY LOADS
Alexandre J. Cayre, Godalming, England, assignor to RFD-GQ Limited
Filed Nov. 13, 1969, Ser. No. 876,249
Claims priority, application Great Britain, Nov. 18, 1968, 54,673/68
Int. Cl. E01b *23/10*
U.S. Cl. 238—10 R **4 Claims**



Means for moving a heavy load comprising an inflatable support to be placed under an accessible part of the LOAD, a plurality of inflatable track elements to be arranged in abutting end to end relationship to provide an extended length of track over which the support can be dragged to move the load and anchoring means for securing the track element to the ground, the support and the track elements being of a flexible material and capable of expansion from an inoperative deflated condition to an operative extended condition by the admission of pressure fluid thereto.

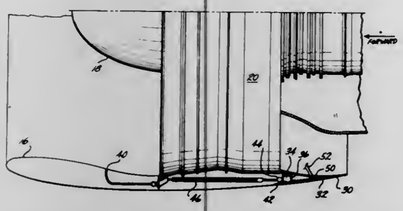
3,622,074
MODULAR FLOATING WATER-COOLING SYSTEM
Paul A. Frohwerk, Fort Worth, Tex., assignor to Ceramic Cooling Tower Company, Fort Worth, Tex.
Continuation-in-part of application Ser. No. 7,901, Feb. 2, 1970, now abandoned. This application May 21, 1970, Ser. No. 039,351
Int. Cl. B05b *17/08*
U.S. Cl. 239—11 **31 Claims**



An evaporative water-cooling system and method for reducing the temperature of heated water in an open flow channel utilizes a plurality of water pump and spray units or modules floating in the channel and anchored at sequential locations therealong. In a preferred embodiment, the modules are identical in design, and each include at least

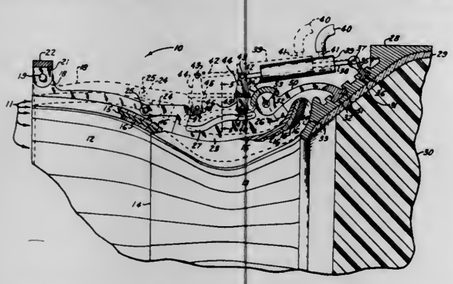
three separate floats, a power-operated water pump supported by one of the floats, at least two sprays supported by others of the floats, and pipes connecting the pump to the sprays. Within each module, the floats are preferably aligned in the direction of flow, the pump float being centered with spray floats upstream and downstream, and the pump intake being located beneath and protected by the overhang of its disk-shaped float. The sprays project water upwardly into the atmosphere for evaporative cooling and return to the channel. The standardized modules can be patterned in flow-direction sequences and cross-channel clusters, providing a predeterminable temperature reduction profile under specified design conditions. The system is adapted for both once-through and closed-loop channels. As water flow rate, channel volume and/or temperature reduction requirements change, the pattern can be altered accordingly, by either down or cross-channel module modifications.

3,622,075
SELF-ACTUATING VARIABLE AREA ACOUSTIC JET ENGINE EXHAUST NOZZLE
Alfred W. Harris, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 16, 1970, Ser. No. 19,604
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.19 **13 Claims**



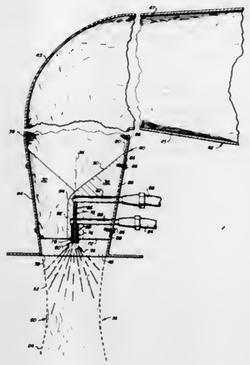
A subsonic aircraft engine variable area nozzle comprising a plurality of pivotally mounted flap means which are essentially pressure balanced such that an aircraft velocity responsive control pressure obtained from the engine cowling structure can be utilized to obtain movement of said flap means into positions giving optimum nozzle exit areas for propulsive efficiency and sound suppression. The velocity responsive control pressures may be obtained from the cowling structure in the engine inlet or from the exterior surface of the nacelle cowling, and are delivered to an expansible control pressure chamber for flap actuation.

3,622,076
VARIABLE AREA NOZZLE
Forrest W. Streeter, Madison, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Jan. 3, 1969, Ser. No. 788,736
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.43 **2 Claims**



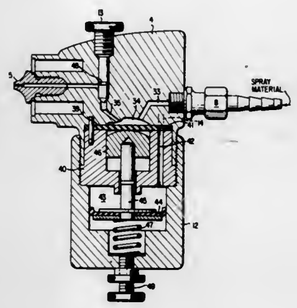
A segmental nozzle having hydraulic actuating systems to move the segments to vary the outer circumference of the nozzle and the throat area of the nozzle to provide thrust modulation of the solid propellant rocket motor to which the segmental nozzle is secured.

3,622,077
APPARATUS FOR AIR-LAYING WET FIBERS
Donald E. Wiegand, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Filed Feb. 1, 1968, Ser. No. 702,364
Int. Cl. B05b *7/06*
U.S. Cl. 239—336 **4 Claims**



In an apparatus for mixing an air-fiber stream with a liquid spray and dispersing the same, the outlet creates a vena contracta in the air-fiber stream and the nozzles for the liquid spray are thin and have steeply sloped upstream edges to prevent "hang-up" of fiber and any resulting clots.

3,622,078
SPRAYING DEVICE FOR PASTELIKE MATERIAL WITH SHUTOFF VALVE MEANS FOR THE MATERIAL
Gunter Gronert, Mettmann, Germany, assignor to Bergische Metallwarenfabrik Dillenberg & Co., KG, Grulten, Germany
Filed May 22, 1970, Ser. No. 39,606
Claims priority, application Germany, May 30, 1970, P 19 27 574.2
Int. Cl. B05b *7/32*
U.S. Cl. 239—337 **8 Claims**

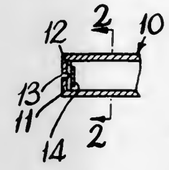


A spray device or gun utilizing compressed air as the carrier for the material to be sprayed, comprising a body having an air passage system connecting the air supply to the air nozzle, and a material passage system connecting the supply of the material to the material nozzle. A pressure-reducing valve is interposed in the air passage system to reduce the

spraying air pressure. A shutoff valve is located in the material passage system to stop or permit flow of material. The shutoff valve is provided with pressure-responsive actuating means, the means being connected to the air passage system whereby when air pressure is present the shutoff valve is kept in its open position. The passages of the material passage system are so arranged that the shutoff valve first closes the passage leading from to the material nozzle means, and thereafter closes the passages leading from the material supply. This closure arrangement maintains the material nozzle and its passage clear from drippings upon air shut off.

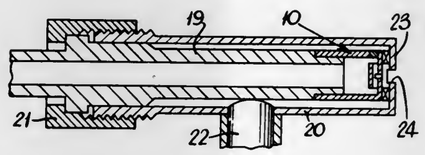
3,622,079
LIQUID SPRAY NOZZLES
Kenneth Greenwood, Cliviger, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 8, 1969, Ser. No. 840,013
Claims priority, application Great Britain, July 9, 1968, 32,736/68
Int. Cl. B05b *1/04*
U.S. Cl. 239—426 **3 Claims**

A liquid spray nozzle is formed from a tubular body which is closed off at one end by an end wall. This wall is formed with internal and external grooves intersecting at the center. A disc is secured to the inside of the end wall to convert the internal groove into a passage opening at both ends into the interior of the body.



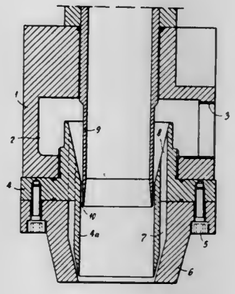
The tubular body is used inside an air casing with nozzles which direct airstreams together in front of the end wall. The nozzle assembly is useful for applications where only very low liquid and air pressures are available.

3,622,080
LIQUID SPRAY NOZZLES
Kenneth Greenwood, Cliviger, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 8, 1969, Ser. No. 840,014
Claims priority, application Great Britain, July 9, 1968, 32,737/68
Int. Cl. B05b *1/04*
U.S. Cl. 239—426 **3 Claims**



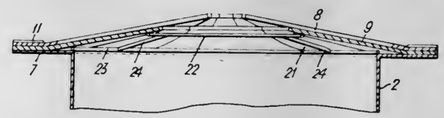
A liquid spray nozzle consists of a tubular body closed at one end by an end wall. The end wall is formed with an internal annular groove defining an island through which a diametral drilling is formed. A slot in the external surface of the end wall intersects the drilling.
The nozzle assembly also includes an air casing which defines air nozzles positioned to create a flat fan-shaped airflow pattern enclosing the flat fan-shaped liquid spray pattern produced by the nozzle assembly.

3,622,081
NOZZLE
William C. Marsh, Marysville, Ohio, assignor to Sciete d'Assistance Technique Pour Produits Nestle S. A.
Filed June 20, 1969, Ser. No. 835,173
Int. Cl. B05b *17/06*
U.S. Cl. 239—427.3 **3 Claims**



A nozzle for agglomerating powdered materials, especially food products, comprises at least two annular steam inlets into a central duct through which the material is passed. Other features of the invention appear in the specification and drawings.

3,622,082
VARIABLE-AREA NOZZLE
Malcolm Tyre, Glasgow, Scotland, assignor to Hall-Thermotank International Limited, London, England
Filed Dec. 8, 1969, Ser. No. 883,189
Claims priority, application Great Britain, Dec. 7, 1968, 58,248/68
Int. Cl. B05b *1/02*
U.S. Cl. 239—535 **8 Claims**

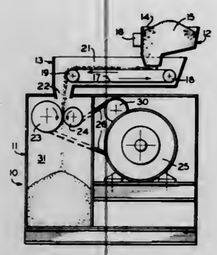


A variable-area nozzle is located in a vent pipe, and has a central aperture of variable area dependent upon the fluid flow through the nozzle. The nozzle includes a flexible diaphragm transverse to the vent pipe and having an annular series of inwardly projecting leaves which are flexible to define a central aperture of variable area dependent upon said flow.

3,622,083
APPARATUS AND METHODS FOR PROCESSING CERAMIC MOLD AND CORE MATERIALS
Herbert Greenewald, Jr., 4296 Braunton Road, Upper Arlington, Ohio
Filed May 18, 1970, Ser. No. 38,105
Int. Cl. B02c *4/02*
U.S. Cl. 241—3 **7 Claims**

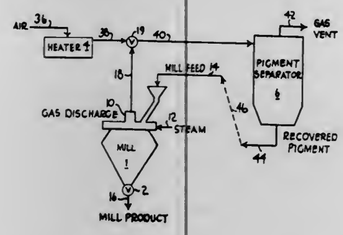
Apparatus for processing ceramic mold and core materials of the type containing ceramic flours, gel binder, and agglomerated gel-bound flour particles utilizes a pair of oppositely rotating, closely spaced rolls having generally cylin-

drical surfaces with high coefficients of friction. The opposed cooperating surfaces of the spaced-apart rolls move in a like



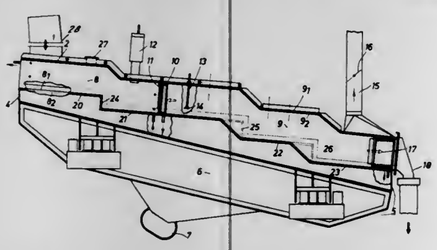
direction but with significantly different velocities to finely divide the agglomerated materials.

3,622,084
FLUID ENERGY STEAM MILL COLLECTION SYSTEM
Joseph Ross, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sept. 10, 1969, Ser. No. 858,254
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **11 Claims**



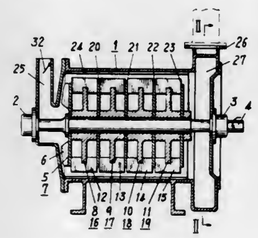
Pigmentary properties of inorganic pigments, particularly pigmentary metal oxides such as titanium dioxide, are enhanced by fluid energy milling with steam. A dry collection system for the fluid energy mill gas discharge stream is proposed.

3,622,085
MANUFACTURE OF SUPERWHITE CEMENTS
Claude Lucien Rivoire, Belo Horizonte Minas Gerais, Brazil, and Raymond Mourros, Le Teil, France, assignors to Societe Anonyme Ciments Lafarge, Paris, France, by said Claude L. Rivoire
Filed July 1, 1969, Ser. No. 838,192
Claims priority, application France, Oct. 28, 1968, 171,666
Int. Cl. B02c *4/44, 21/00, 23/00*
U.S. Cl. 241—41 **3 Claims**



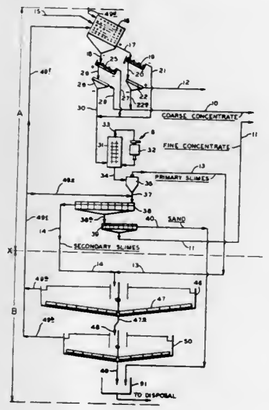
Apparatus in which cement clinker is crushed at a temperature of 1,000° to 1,450° C., is then brought, while passing through a reducing atmosphere for between 1.5 and 6 minutes, down to a temperature in the range 700° to 1,100° C., is then subjected to rapid cooling by the application of atomized water to reduce the temperature to approximately 300° C. while excluding oxygen, and is finally collected in free air, thorough contact with the reducing atmosphere and the subsequent rapid cooling being ensured by carrying out these stages while the clinker is vibrated down an incline from the exit of the crusher to its point of collection in the atmosphere.

3,622,086
PULVERIZER
Takashi Yamagishi, 9-13, 3-chome Sakuragaaka, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan
Filed Oct. 24, 1969, Ser. No. 869,007
Claims priority, application Japan, Oct. 28, 1968, 43/77892
Int. Cl. B02c *13/288, 13/12*
U.S. Cl. 241—43 **5 Claims**



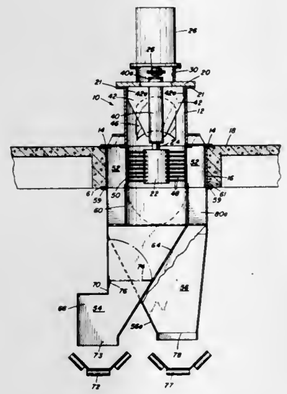
A pulverizer comprising an outer cylindrical casing, a plurality of rotors rotatable concentrically within said casing, said rotors having a number of radially extending blades, and at the downstream end of said rotors a whirl chamber whose entrance diameter is same with the inner diameter of said outer casing; whereby material pulverized by said rotors in the casing is directly carried to said whirl-shaped chamber. This chamber is devoid of additional impellers or obstructions, so that the pulverized material is free to outwardly whirl as it leaves the vicinity of the rotors.

3,622,087
BENEFICIATION OF PHOSPHATE ROCK
Hans H. Oltmann, Danbury, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.
Filed Oct. 24, 1969, Ser. No. 869,141
Int. Cl. B02c *21/00*
U.S. Cl. 241—62 **24 Claims**



A treatment system for the beneficiation of phosphate rock, wherein a first treatment section effects the beneficiation proper producing the coarse and the fine concentrates of phosphate rock separated from the impurities, while a second section handles the disposal of the separated waste material in the form of large volumes of the primary and secondary slimes. The invention minimizes or eliminates the need for large and objectionable lagoon areas to receive the slimes, in that it solves the disposal problem by the provision of a stagewise thickening operation for the slimes, conducted to produce a high-density mixed sludge that is readily disposable, while large volumes of process water are recovered instead of being lost by evaporation from the lagoons.

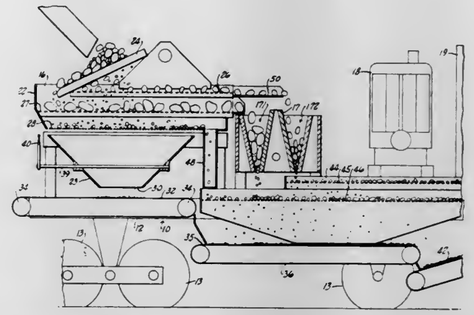
3,622,088
APPARATUS FOR DEPITHING FIBROUS VEGETABLE MATERIALS
Kenneth M. Gunkel, Pan American Industrial Consultants, 322 Main St., Stamford, Conn.
Filed June 20, 1969, Ser. No. 834,957
Int. Cl. B02c *13/18, 13/286, 13/284*
U.S. Cl. 241—74 **9 Claims**



The disclosed depithing apparatus separates fibrous vegetable materials into useful fiber and discardable pith portions for papermaking or the like. The apparatus is vertically constructed to provide gravity feed therethrough for the vegetable materials. Rotating hammers projecting from a rotor break up the materials and centrifugally force the pith through a surrounding screening member. Separate vertically oriented discharge chutes below the rotor convey the separated fiber and pith out of the apparatus, and a baffle is provided to direct the pith into its respective discharge chutes to prevent clogging. Separate embodiments of the apparatus are shown for use in existing sites having limited headroom or insufficient room for full length discharge chutes.

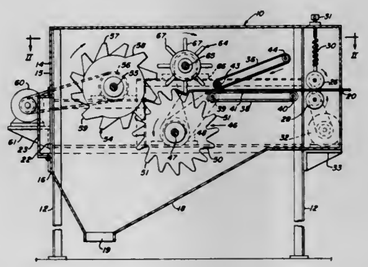
3,622,089
CRUSHING PLANT
John N. Quinn, Madison, Wis., assignor to Johnson Welding & Equipment Co., Inc., Madison, Wis.
Filed Dec. 4, 1969, Ser. No. 882,197
Int. Cl. B02c *23/02*; **B07b** *1/16*
U.S. Cl. 241—75 **5 Claims**

Input material comprised of stone, gravel or other material to be crushed is screened at a receiving station to separate the largest pieces of input material into two different sizes. The largest pieces are fed into an adjacent primary crusher at one of a plurality of zones at which crushing takes place. The second largest pieces are conducted past said first designated crushing zone, in overhead relation thereto, and delivered to crushing means at another zone. Screens located under the crushing means at each crushing zone vibrationally conduct carryover material thereon of larger than finish size to an elevator, from the discharge means of which crushed but still oversize material is fed to crushing means at one of said crushing zones other than said first designated crushing zone. The crushing plant has the customary primary and secondary



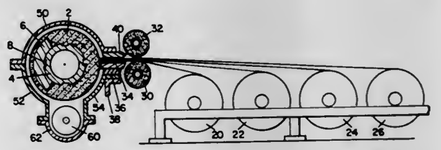
crushers, and either or both of them can be comprised of first and second stage crushing devices.

3,622,090
DISINTEGRATING MACHINE
Arno Jack Liebman, 1819 Shore Drive Shore 218, South Pasadena, Fla.
Original application Feb. 13, 1967, Ser. No. 615,488, now Patent No. 3,529,782, dated Sept. 22, 1970. Divided and this application June 25, 1970, Ser. No. 049,609
Int. Cl. B02c *13/286, 13/10*
U.S. Cl. 241—186 **9 Claims**



A disintegrating machine of the type having overlapping, cooperating primary feed and disintegrating rotors and an auxiliary feed roll rotatable counter to the primary feed rotor for biasing material into support engagement with the feed rotor.

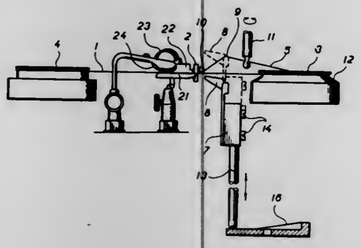
3,622,091
DRY FLUFFING PULP SHEET STOCK
Howard Bidwell, 56 Aldrich St., Granby, Mass.
Continuation-in-part of application Ser. No. 655,190, July 21, 1967, now Patent No. 3,539,315. This application June 18, 1969, Ser. No. 834,326
Int. Cl. B02c *4/18, 4/30, 4/44*
U.S. Cl. 241—222 **1 Claim**



Apparatus for dry fibering pulp sheets fed by feed rollers from plural sheet stock rolls. The fibering apparatus includes

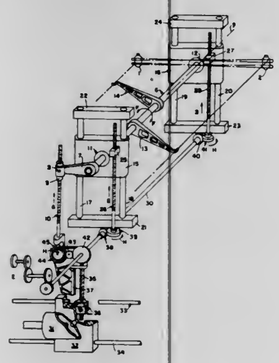
a granular surfaced multisectioned roll having a multiplicity of thin disc-ring sections supported by a driving hollow core. The multisectioned roll cooperates with an adjustable anvil plate located at the point of sheet feed.

3,622,092
DISCRIMINATING DEVICE FOR SHUTTLELESS COIL-WINDING MACHINES OF CLOSED CORES
Frantisek Jagos, Prague, Czechoslovakia, assignor to Tesla, narodni podnik, Praha, Czechoslovakia
Filed Mar. 27, 1970, Ser. No. 23,408
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 **2 Claims**



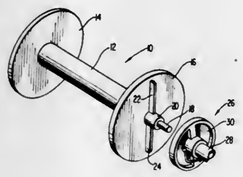
A discriminating device for selecting and assisting in the removal of successive convolutions of wire from a wire bundle drivingly supported on a pair of spaced rollers to dispose one run of the wire bundle through the opening of a toroidal core on which the wire is to be wound. The discriminating device includes an arm defining an upper guide edge extending to a point adjacent to the core but just below the plane of the wire bundle. A cam driven in timed relation to the other components of the device periodically raises the arm to a position wherein the edge thereof moves between the wire strand being wound and the remaining convolutins of the wire bundle to lift the wire stand being applied to the core so that a pickup roller driven in timed relation to the arm elevating cam can pull a fresh loop of wire from the bundle to permit continued winding. The loop of wire passes through tensioning means adjacent to the core as thw wire is wound.

3,622,093
APPARATUS FOR FORMING COP-TYPE WINDINGS
Carlos A. Matas Gabalda, 331, avenue Victor-Hugo, France
Filed Jan. 9, 1969, Ser. No. 789,980
Int. Cl. B65h *54/36*
U.S. Cl. 242—32 **7 Claims**



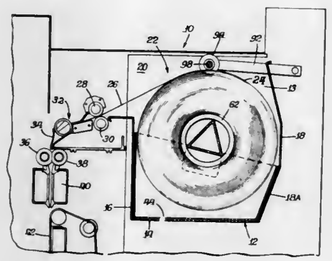
A frame comprising an oscillating shaft with means to gradually move the shaft in a vertical direction thereby providing a method of winding thread on a cop tube without imparting undesirable twist to the yarn.

3,622,094
METHOD AND APPARATUS FOR WINDING LOOM BEAMS
Jack D. Gaskins, Lanett, Ala., assignor to Batson-Cook Company, West Point, Ga.
Filed Oct. 3, 1969, Ser. No. 863,627
Int. Cl. B65h *54/00*
U.S. Cl. 242—54 R **10 Claims**



A combined support and drive assembly and method for winding loom beams with warp threads in uniform fashion. The drive includes a pair of dogs which engage ears on the loom beam and which equalize the driving pressure between them so that a purely torsional force is imparted to the loom beam. The drive assembly also includes a guide which positively locates the driven end of the loom beam so as to assure symmetrical engagement between the dogs and the loom beam ears.

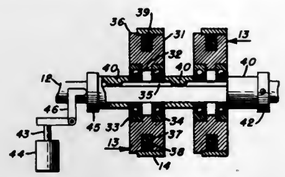
3,622,095
COMBINED SHIPPING PACKAGE AND DISPENSER CONSTRUCTION FOR ROLL SUPPLY OF LIGHT-SENSITIVE MATERIALS
Charles L. Turner, Elgin, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Dec. 8, 1969, Ser. No. 882,901
Int. Cl. B65h *75/02, 19/02*
U.S. Cl. 242—55 **2 Claims**



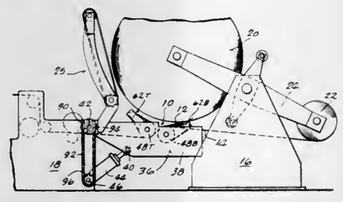
A dispenser for light-sensitive copy paper formed out of inexpensive construction materials such as paperboard to handle roll stock. The dispenser is constructed so as to rotatably mount the roll in a support type of roll enclosure that is also used as a protective package for the roll during shipment and storage. The support body is equipped with a key that matches a keyway in the copy machine housing so that it fits into the machine in only one way to guarantee proper paper direction.

3,622,096
BALL BEARING CORE ADAPTER
Roger W. Young, Upper Montclair, N.J., assignor to John Dusenbery Company, Inc., Clifton, N.J.
Filed May 20, 1969, Ser. No. 826,103
Int. Cl. B65h *19/22, 17/02*
U.S. Cl. 242—56.9 **8 Claims**

A core adapter for supporting a tubular core on a mandrel has a cylindrical body supported on the mandrel by a plurality of ball bearings. The core is secured to the body and the bearings are maintained under axial stress to control the slippage between the body and the mandrel as a tape is wound on the core.

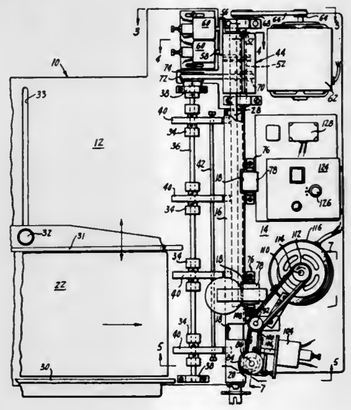


3,622,097
WEB DIRECTIONAL CONTROL APPARATUS FOR BUTT JOINT SPLICER
Ralph A. Maas, Wauwatosa, Wis., assignor to Zerand Corporation, New Berlin, Wis.
Filed Jan. 12, 1970, Ser. No. 2,277
Int. Cl. B65h *19/16*
U.S. Cl. 242—58.4 **12 Claims**



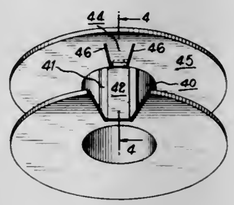
A web directional control apparatus for a universal butt joint splicer including a pair of nip rolls each having a directional belt assembly which is selectively movable to an operative position relative to a web roll to guide the leading edge of the new web into engagement with a running web passing between the nip rolls regardless of the direction of rotation of the new web roll. The nip rolls are mounted for movement with the corresponding directional belt assembly into engagement with the other nip roll.

3,622,098
MACHINE FOR ROLLING FLAT SHEETS
Craig R. Nelson, Green Village, N.J., assignor to Roy A. Nelson, Green Village, N.J.
Filed July 8, 1969, Ser. No. 839,981
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.1 **9 Claims**



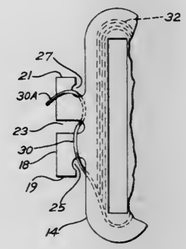
A flat sheet is placed on a bed between guides and moved by feed rollers laterally into a stationary tube through a slot therein. When the sheet enters the tube, it is engaged by backup rollers which feed the sheet around the inside of the tube to wind the sheet, and after the sheet is so wound, the winding rolls become inoperative and the rolled sheet is engaged by another roller of soft rubber to be moved endwise from the tube to be taken off by an operator or ejected into a mailing tube or the like.

3,622,099
PLASTIC RIBBON SPOOL
John W. H. Bishop, Montreal, Quebec, Canada, assignor to Ing. C. Olivetti and C., S.p.A., Ivrea, Italy
Filed June 20, 1969, Ser. No. 835,107
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 **5 Claims**



Plastic ribbon spools in which a tab, foldable from a spool flange, is adapted to pinch and secure one end of an inked ribbon to the spool core and lock in place with the ribbon so secured.

3,622,100
BOBBIN WITH LEAD STRAIN-RELIEVING DEVICE
Thomas J. Wright, Itasca, Ill., assignor to Bel-Tronics Corporation, Addison, Ill.
Filed Sept. 20, 1968, Ser. No. 761,157
Int. Cl. B65h *75/28, 75/36*
U.S. Cl. 242—125.2 **9 Claims**

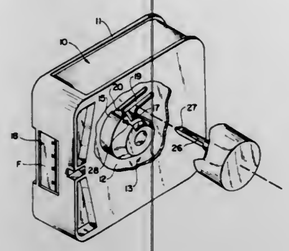


The invention relates to a bobbin having means for securing the wire leading from the bobbin to prevent any strain being placed on the coil wound on the bobbin.

3,622,101
INTEGRAL ANTIBACKUP MECHANISM IN A MOTION PICTURE FILM CARTRIDGE
Robert C. Sutliff; Archie J. Tucker, and Richard L. Bishop, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,077
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—194 **5 Claims**

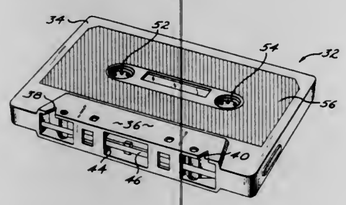
A ratchet mechanism for preventing reverse rotation of a takeup spool in motion picture film cartridges of the type having a partition between supply and takeup chambers. The ratchet mechanism comprises a flexible pawl finger integrally formed as a part of the partition, and a ratchet associated

with a spool for rotation therewith to cooperate with the pawl finger to prevent rotation of the spool in one direction



and permit rotation in the opposite direction for winding up film.

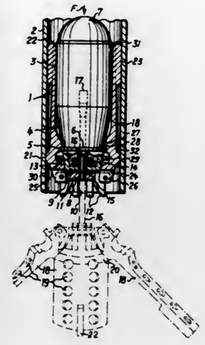
3,622,102
COLOR-CODED CASSETTE
Calvin L. Fox, New York, N.Y., assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Oct. 13, 1969, Ser. No. 865,622
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 **1 Claim**



A magnetic tape recording system including means for color coding to insure proper orientation of a tape cassette during any of its functional placements in either or all of a recording, rewinding or erasing module of the system. At the commencement of most recording operations, the color coding of a cassette used in the system serves to insure the operator's knowledge that the tape is almost totally wound on the feeding spindle of the cassette rather than the takeup spindle. In the rewinding sequence, the color coding of the cassette serves to insure, in most rewinding operations, the operator's knowledge that the spindle upon which the magnetic tape is to be rewound is substantially empty at the commencement of the sequence. During the erasing operation, the color coding of the cassette insures that the operator has knowledge of the tape being totally wound on the bottom spindle in the vertically oriented erasing mechanism.

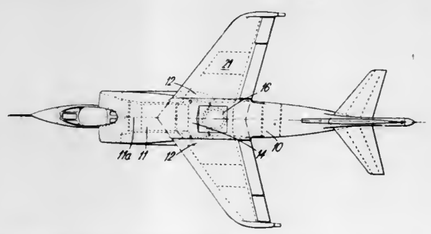
3,622,103
TWISTLESS PROJECTILE WITH LAUNCHING TUBE
Heinrich Meier, Rumlang, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed July 1, 1969, Ser. No. 838,202
Claims priority, application Switzerland, July 11, 1968, 10368/68
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.28 **2 Claims**

Twistless projectile with launching tube having stabilizing, preferably braking, fins pivoted on pins which are arranged perpendicular to the longitudinal axis of the projectile and secured to a support arranged aft of the projectile base, so that the fins can swing from a rest position, in which they project forward, into an action position, in which they project rearward. The fins constitute segments of a hollow rotational body which completely envelops the projectile body in the rest position and at least partially rests against the projectile body. The fins have outward-projecting ridges which together form a closed guide ring sealing against the launching tube. The projectile body tapers in its rear portion



and the fins are provided on the inside with annular shoulders which in the rest position rest rearward against a flange of the tapering portion of the projectile.

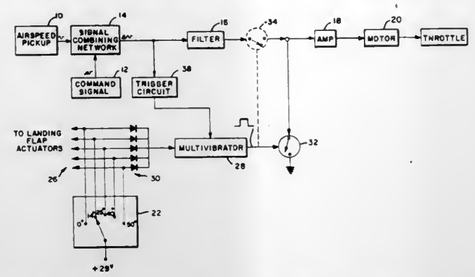
3,622,104
AIRCRAFT
Charles Frederick David Clarke, Walton-on-Thames, and Ralph Spenser Hooper, Ham, both of England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England
Continuation-in-part of application Ser. No. 707,143, Feb. 21, 1968, now abandoned. This application Mar. 19, 1970, Ser. No. 019,550
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 B **5 Claims**



An aircraft engine assembly is provided for a V/STOL aircraft which comprises a longitudinally disposed continuously rated vectored thrust propulsion engine having its jet efflux issuing through two laterally spaced dirigible jet nozzles at its aft end, the positioning in the aircraft being such that when these two dirigible nozzles are down-turned to give lift their combined thrust line is a few inches forward of the aircraft center of gravity. Between the two laterally spaced dirigible nozzles there is mounted substantially vertically a direct lift jet engine the thrust line of which lies a few inches aft of the aircraft center of gravity.

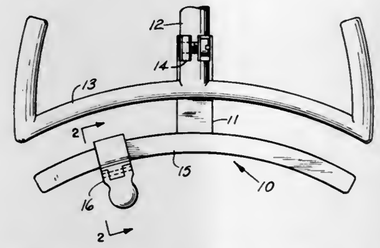
3,622,105
SPEED CONTROLLER FOR AIRCRAFT
Hans-Dieter Buchholz, Oberuhldingen, and Hans-Peter Reerink, Meersburg, both of Germany, assignors to Bodenseewerk Geratetechnik, Ueberlingen/Bodensee, Germany
Filed Apr. 30, 1969, Ser. No. 820,430
Claims priority, application Germany, Oct. 11, 1968, P 18 02 518.8
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **4 Claims**

A speed controller for an aircraft is described, having a servo speed control loop and means for altering the response of the servo controller to an aircraft disturbance for a



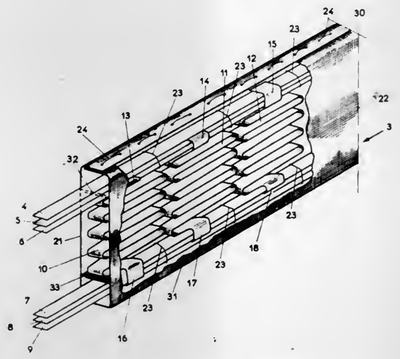
predetermined period of time upon initiation of the disturbance.

3,622,106
CONTROL WHEEL AILERON TRIM
Robert R. Brackett, Route 6, 8825 38th St., Kenosha, Wis.
Filed Apr. 20, 1970, Ser. No. 30,138
Int. Cl. B64c *13/08*
U.S. Cl. 244—83 R **1 Claim**



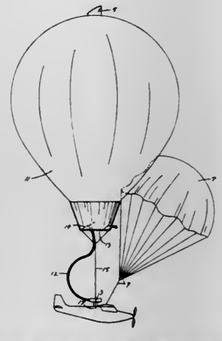
An aileron trim device for small aircraft. This device includes a lead weight which may be placed at any desired position on the control wheel so as to prevent the pilot from having to hold pressure on the wheel when the load is heavier on one side of the craft.

3,622,107
AIRCRAFT STOPPING OR ARRESTING BARRIERS
Jean Paul Bernard, Paris, France, assignor to Aerazur Constructions Aeronautiques, Issy-les-Moulineaux, France
Continuation-in-part of application Ser. No. 680,319, Nov. 3, 1967, now abandoned. This application July 8, 1969, Ser. No. 840,009
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **10 Claims**



A barrier system for arresting an aircraft on a runway comprises a net barrier folded within a bag housed in a narrow trench.

3,622,108
SAFETY DEVICE FOR DISABLED AIRPLANES
George A. Mathewson, 4312 South Salina St., Syracuse, N.Y.
Filed Feb. 27, 1970, Ser. No. 13,808
Int. Cl. B64d *17/80*
U.S. Cl. 244—139 **6 Claims**



The invention is concerned with an emergency system for safely landing disabled aircraft without serious damage to the aircraft or to the occupants thereof. The system preferably includes a parachute connected to the aircraft by a flexible cable and normally housed in a turret from which it may be quickly ejected and deployed in times of emergency to preliminarily reduce both the forward motion and the rate of descent of the aircraft. The system also includes an inflatable envelope or balloon which is flexibly connected to the aircraft and normally stored in a separate turret from which it can be ejected and quickly filled with air and/or a heated gaseous medium as derived from the exhaust of a jet engine or other appropriate source on the aircraft, following sufficient retardation of the rate of descent by the previously deployed parachute to avoid damage to the envelope or balloon. By suitably regulating the flow of the heated gaseous medium and the resulting mixture thereof with the air in the balloon, the rate of descent of the aircraft can be reduced to a safe landing speed which prevents or minimizes impact damage to the aircraft and to the occupants thereof upon impact with the ground under emergency conditions such as may be caused by power failure during flight.

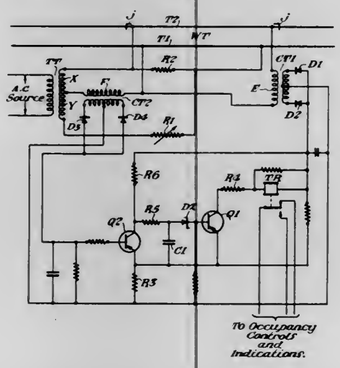
3,622,109
VELOCITY CONTROLLED PARACHUTE STABILIZATION SYSTEM
Gene R. Drew, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 22, 1970, Ser. No. 5,065
Int. Cl. B64d *17/74*
U.S. Cl. 244—147 **5 Claims**



A parachute stabilization system which employs a series of parachutes connected in tandem including a main parachute

and a pair of forward and aft stabilizer chutes. The aft stabilizer chute is stowed within a releasable bag until deployed. A projectable slug propels the bag to a deployed position where the aft stabilizer chute is withdrawn from the bag, the bag and slug separating from the stabilization system and falling free thereof. The aft stabilizer chute is larger in diameter than the forward stabilizer chute to provide increased drag forces at low speed and improve the seat-man mass stabilization. The aft stabilizer chute is connected to the forward stabilizer chute by a draw line which has a preselected tensile strength. The application of a predetermined load on the draw line during high-speed ejections will break the draw line and jettison the aft chute and materially reduce the applied drag force.

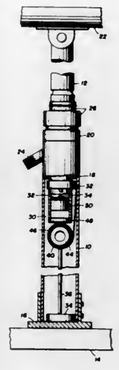
3,622,110
RAILROAD TRACK CIRCUIT
Richard D. Campbell, Harmarville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Dec. 23, 1969, Ser. No. 887,672
Int. Cl. B61l *21/00*
U.S. Cl. 246—40 **10 Claims**



Both portions of a center tapped track transformer secondary winding, a load resistor, and a balancing resistor are connected into a balanced bridge network, with the load resistor also connected across the track section rails. A first control transformer primary winding is connected in parallel with the load resistor and its rectified secondary output is applied to charge a timing capacitor which biases a first transistor to conduction to energize the track relay. The primary winding of a second control transformer is connected across opposite, voltage balanced terminals of the bridge to produce, when a track shunt unbalances the bridge network, a rectified output which is applied to fire a second transistor. When conducting, this second transistor discharges the capacitor, thus turning off the first transistor to deenergize the track relay. Removal of the rail shunt turns off the second transistor and the capacitor recharges over a predetermined timing period. The first transistor again fires when the capacitor charge exceeds a preset level. Reenergization of the track relay is thus delayed to avoid loss of train detection under erratic rail shunting conditions.

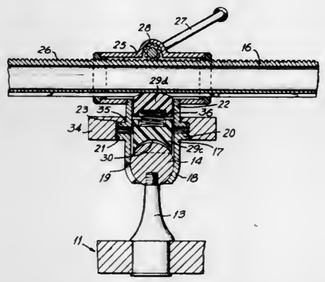
3,622,111
COUNTERBALANCE FOR GYMNASTIC APPARATUS
George P. Nissen, and Harlan J. Kelly, both of Cedar Rapids, Iowa, assignors to Nissen Corporation, Cedar Rapids, Iowa
Continuation of application Ser. No. 668,137, Sept. 15, 1967, now abandoned. This application Dec. 5, 1969, Ser. No. 878,994
Int. Cl. A63b *13/00*
U.S. Cl. 248—162 **13 Claims**

A counterbalance for gymnastic apparatus, such as parallel bars, having one or more upright tubular columns, each of which in turn is provided with a piston telescopically adjustable therewithin. In the preferred forms of the invention, one or more spirally rolled springs of flat spring material are located within each column, the outer ends of the springs being fixed therein so that the spring axes are disposed transversely of the column axis. The lower end of the piston is in continuous contact with one of the springs so that as the



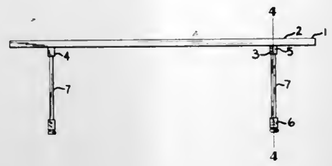
piston is lowered that spring, together with any others, are unrolled thereby and vice versa. The strength of the spring or springs is selected so that it or they alone will maintain the piston at any desired elevation independently of any other mechanism employed for adjusting its elevation or for locking it to the column.

3,622,112
THREE AXES MOUNTING DEVICE
George W. Stroh, P.O. Box 906, Lancaster, Pa.
Filed Nov. 21, 1969, Ser. No. 878,778
Int. Cl. F16m *11/14*
U.S. Cl. 248—181 **7 Claims**



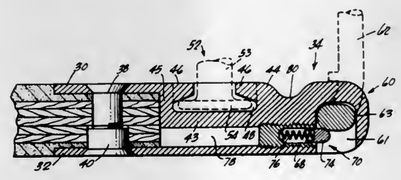
A mounting device for cameras and the like capable of positioning an object at a point about each of three axes substantially through a given point such as a ball or bar mount on a rigid base which comprises a first bearing means adapted to rotate about said given point and to frictionally bear against said given point, a support means for said object movably mounted on said first friction bearing means, second friction bearing means adapted to frictionally bear against said given point and against said support means, and locking means adapted to draw said support means and said first friction bearing means together, whereby said first and said second friction bearing means bear against said given point in a locking relation against rotation about said given point and said second friction bearing means bears against said support means in a locking relation.

3,622,113
FURNITURE SUPPORTING FRAME STRUCTURE
Norvin J. Wehner, Kansas City, Mo., assignor to Cramer Industries, Inc., Kansas City, Kans.
Filed Jan. 2, 1970, Ser. No. 140
Int. Cl. A47b *57/00*
U.S. Cl. 248—188.7 **3 Claims**



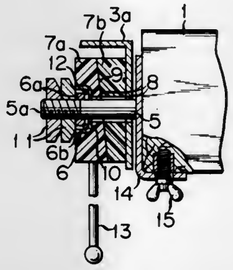
This invention relates to the frame, and particularly the leg structure of articles of furniture, such as tables, desks, chairs, and the like, and consists of securing the tubular frame members and legs together by elongated bolts extending therethrough.

3,622,114
PALLET ASSEMBLY
Kenneth D. McIntire, Jr., Norwalk, Calif., assignor to McDonnell Douglas Corporation
Filed July 1, 1969, Ser. No. 838,059
Int. Cl. B65d *19/00*
U.S. Cl. 248—361 R **4 Claims**



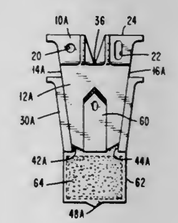
A cargo pallet having a center panel and an edge assembly. The edge assembly comprises a plurality of edge members. Each of the edge members has integrally formed therein a plurality of cargo net securing fittings. The entire cargo pallet is fastened together by removable fastening means to permit ease of replacement.

3,622,115
SUPPORT MECHANISM OF AN ELECTRONIC MUSICAL INSTRUMENT
Hiroshi Tone, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Sept. 22, 1969, Ser. No. 859,899
Claims priority, application Japan, Sept. 25, 1968, 43/82,705
Int. Cl. F16m *13/00*
U.S. Cl. 248—371 **5 Claims**



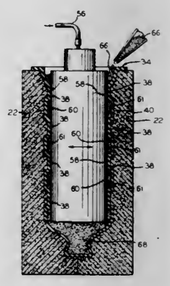
A support mechanism of an electronic musical instrument including a body supported at its both sides by leg frames, comprises a pair of journals provided at the respective sides of said body, angular contact bearings each having an inner race for securing the journal and an outer race, and frictional contact members cooperating each other, one of which is attached to the outer race of said bearing, and the other of which is attached to the leg frame.
The rotation of the frictional contact member attached to the outer race of bearing allows the body of the musical instrument to be frictionally engaged with or disengaged from the leg frame.

3,622,116
NONTILT PICTURE HANGER
Leonard F. Fellows, 65 Commodore Road, Chappaque, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,102
Int. Cl. A47j *7/14*
U.S. Cl. 248—467 **11 Claims**



A tongue member with tapered sides is arranged for attachment to the back surface of a picture to be hung. A bracket member defining a socket for the tongue is arranged for attachment to a picture-supporting surface. The socket has sides tapered at the same angle as the tapered sides of the tongue to engage securely therewith when the tongue is inserted into the socket.

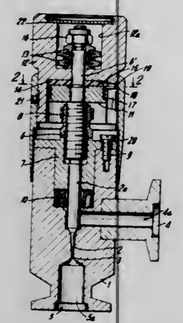
3,622,117
MEANS FOR MANUFACTURING PLASTIC CASTINGS WITH WINDOWS OR OPENINGS FORMED DURING THE CASTING PROCESS
Lester N. Lerman, and Joseph A. Biagioni, both of Chicago, Ill., assignors to Florence Art Company, Inc., Chicago, Ill.
Filed Apr. 1, 1969, Ser. No. 811,771
Int. Cl. B29c *1/04*, *1/12*, *1/14*, *5/00*
U.S. Cl. 249—65 **2 Claims**



A means for manufacturing and producing plastic castings with windows or openings formed in the body of the casting during the casting process, which includes a mold having a hollow interior and an inflatable member positioned in said mold so that portions of the inflatable member are in contact with portions of the inside wall surface of the mold and other portions are not in contact, so that when the plastic material is introduced between the mold and the inflatable member the plastic material will fill and occupy the noncontacting surfaces to form the body of the casting while the contacting surfaces block out the areas for the casting material and form the openings or windows in the body or wall of the casting

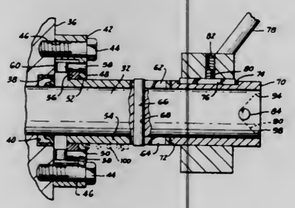
during the casting process so that when the casting is formed the openings or windows are preformed in the body thereof.

3,622,118
VALVE CONSTRUCTION
Walter Schadler, Triesen Nr. 353, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-AG, Balzers, Liechtenstein
Filed Dec. 15, 1969, Ser. No. 885,209
Claims priority, application Switzerland, Dec. 20, 1968, 19492/68
Int. Cl. F16d *23/00, 7/02, 43/20*
U.S. Cl. 251—81 **2 Claims**



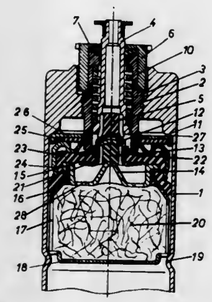
A valve, particularly for controlling gas flow, includes a needle valve which is movable toward and away from engagement with its associated valve seat by a threaded spindle. The spindle is rotated by driving means which is connected thereto through a friction coupling. The driving is effected by means of a handle which is rotatably mounted on an extension of the spindle and which is biased toward engagement with a coupling disc which is mounted on the spindle for rotation therewith. An intermediate plastic disc coupling member disposed between the coupling disc and the rotatable handle provides for the frictional transmission of the torque in dependence upon the setting of the spring means for urging the handle into engagement with the intermediate disc. The coupling arrangement insures that the valve will only be closed with permissible closing pressures which will not be exceeded. In order to provide for a larger driving torque when the valve is moved in an opening direction a coil spring is coupled between the driving member and the coupling disc which is moved to contract and provide tight frictional engagement with the disc in the opening direction only.

3,622,119
MECHANICAL ACTUATOR HAVING LOCKING MECHAMISM
Joseph Paul Weber, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,481
Int. Cl. F16k *35/00*; **G05g** *5/20*
U.S. Cl. 251—96 **13 Claims**



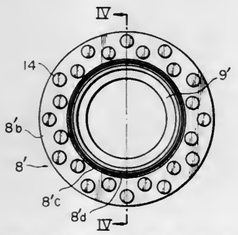
A mechanical actuator for valves and other mechanical devices, according to the present invention, includes a locking mechanism disposed about a rotatable valve-actuating stem that normally maintains the actuator in a locked condition, thereby preventing inadvertent movement of the valve or other mechanical device with which the actuator may be associated. The locking mechanism is unlocked upon predetermined initial rotation of a handwheel or other means for rotating the actuating stem of the mechanical actuator, thereby allowing the actuator to open or close the valve mechanism. Cessation of rotation of the handwheel or overrunning of the actuator that might occur by pressure actuation of the valve will cause automatic relocking of the actuator.

3,622,120
VALVED GAS TANK FOR A GAS-FUELLED LIGHTER
Alfred Racek, Zwerngasse 59, 1170 Vienna, Austria
Filed Nov. 4, 1969, Ser. No. 873,835
Claims priority, application Austria, Nov. 4, 1968, A 10702/68
Int. Cl. F23d *13/04*; **F23g** *2/42*
U.S. Cl. 251—144 **4 Claims**



A gas tank body defines an internal gas chamber. Means are provided which define a gas flow path from said chamber to the outside of said body and comprise an adjusting member, which is adjustable relative to said body and formed with passage means which constitute part of said gas flow path. A compressible pourous throttling member is disposed in said gas flow path and operatively connected to said throttling member and adjustable to control the compression of said throttling member. Sealing means are provided, which seal said adjusting member in said body and comprise a diaphragm extending around said adjusting member, inner gripping means cooperating with said adjusting member to grip said diaphragm, and outer gripping means which grip said diaphragm radially outwardly of said adjusting member.

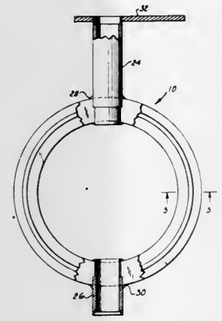
3,622,121
VALVE MECHANISM
Shigeru Watabe, Kariya-shi; Katsushi Nakashima, Aichi-ken, and Tooru Hamada, Kariya-shi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jan. 26, 1970, Ser. No. 5,870
Claims priority, application Japan, Jan. 29, 1969, 44/7654, 44/10482
Int. Cl. F16k *25/00*
U.S. Cl. 251—333 **9 Claims**



A valve mechanism having a rubber valve head member and a cooperating seat member having a passage

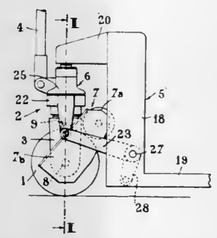
therethrough, either of which is provided on its acting surface with circular ridge means to surround the passage in the seat member for cutting off flow of fluid through the passage. A plurality of wartlike projections may be disposed on one of the members in a circle inside or outside the circular ridge means to define a deformation of the valve head in its operating position and to assist return of the valve head to its rest position. Either or both the circular ridge means or the wartlike projections may be provided on the seat member or the valve head member.

3,622,122
FABRICATED VALVE BODY
George E. Hansen, Elmwood Park, Ill., assignor to Crane Co., Chicago, Ill.
Filed Jan. 29, 1970, Ser. No. 6,814
Int. Cl. F16k *27/00*
U.S. Cl. 251—367 **7 Claims**



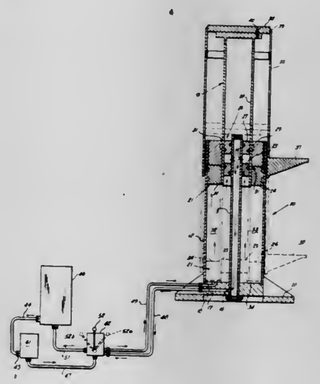
A fabricated hollow body for containing fluids, for use as a valve body or the like, and a method for making the same. The body is fabricated by stacking a plurality of preformed metal stampings to the desired body thickness, securing said stampings, drilling trunnion holes in the body, mounting suitable trunnions therein, and, placing the desired stem mounted closure member in said trunnion.

3,622,123
WALKIE FORKLIFT POWER TRUCK
Andre Le Gloan, Argentan Orne, France, assignor to Societe D'Etudes De Baevets Et D'Applications Technologiquis (S.E.B.A.T.), Paris, France
Filed Apr. 30, 1970, Ser. No. 33,259
Claims priority, application France, May 5, 1969, 6,914,274
Int. Cl. B60p *1/00*
U.S. Cl. 254—2 R **4 Claims**



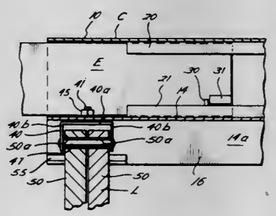
A walkie forklift power truck comprising a driving and steering wheel, a vertically fixed structure incorporating a swiveling support for said driving and steering wheel, a control member connected to said swiveling support, an elevating structure vertically connected to said fixed structure so that said elevating structure can be lifted in relation to said fixed structure, means coacting with said fixed and elevating structure, for lifting said elevating structure, a unit comprising a motor and a reduction gearing for driving said driving and steering wheel from said motor, wherein said motor and reduction gearing are assembled in a manner known per se to constitute a self-contained, detachable, independent, complete unit enclosed in a fluidtight casing adapted to be easily separated, with an output shaft, and wherein said output shaft is trunnioned in said swiveling support and carries the driving wheel so as to drive the latter directly, said motor and reduction gearing unit, which constitutes a floating assembly, being carried only by said wheel and held against rotation by a reaction point positioned on said swiveling support.

3,622,124
HYDRAULIC LIFT JACK
Kenneth R. Sidles, and Dwayne R. Sidles, both of 314 No. 15th St., Estherville, Iowa
Filed May 18, 1970, Ser. No. 38,032
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **4 Claims**



The lift jack has an upright cylinder operatively associated with a lift piston assembly, the full surface area of the underside of which is utilized in the raising of the piston assembly; and only a portion of the surface area of the top side is utilized in the lowering of the piston assembly. With fluid under a constant pressure and volume rate supplied from a single source, the piston assembly is slowly elevated with a maximum lifting pressure and quickly lowered with an appreciably reduced pressure.

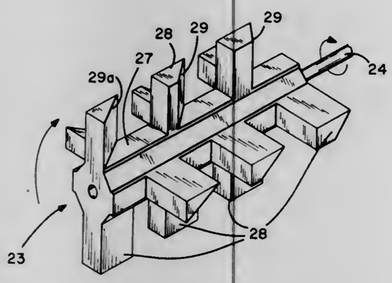
3,622,125
PORTABLE COLLAPSIBLE AND FOLDABLE BARRICADE
Harold C. Powell, Houston, Tex., assignor to O. B. Stanley, Bay City, Tex., a part interest
Filed Jan. 29, 1970, Ser. No. 6,794
Int. Cl. E01f *13/00*
U.S. Cl. 256—64 **2 Claims**



A portable collapsible and foldable barricade capable of being extended and unfolded to a length for substantially fully blocking off a conventional lane of a highway or road

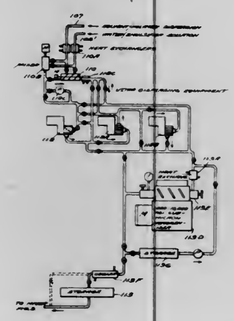
while being collapsible and foldable to a size to fit within the trunk of an ordinary automobile.

3,622,126
MIXING ROTOR FOR PLASTIC GUN
John H. Eberle, El Cajon, Calif., assignor to Eberle Enterprises, San Diego, Calif.
Filed June 16, 1969, Ser. No. 833,617
Int. Cl. B01f 7/04
U.S. Cl. 259—7 **7 Claims**



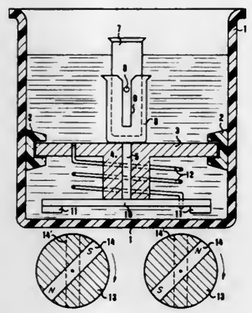
In a gun of the spray gun type for mixing and applying a two-part mixture, such as a plastic and its catalyst, having a mixing chamber that receives at one end thereof controlled or metered amounts of the two ingredients of the mixture from their respective sources of supply and discharges the mixture from an outlet at the other end, the improvement comprising a mixing rotor, with mixing blades extending radially from a central body. The rotor is mounted in the chamber and is rotated continuously while the gun is in use. The upstream sides of the rotor blades are inclined relative to their respective planes of rotation to exert an axial flow impeller type action on the contents of the chamber thereby creating a high degree of turbulence within the chamber that tends to propel the contents back away from the chamber outlet.

3,622,127
AQUEOUS LATICES OF HIGH-POLYMER COMPOSITIONS AND PROCESSES AND MEANS FOR THE PRODUCTION THEREOF
Oliver W. Burke, Jr., P.O. Box 1266, Pompano Beach, Fla.
Continuation-in-part of application Ser. No. 621,997, Mar. 7, 1967, now Patent No. 3,503,917, Continuation-in-part of application Ser. No. 691,823, Dec. 19, 1967, now abandoned. This application Oct. 15, 1968, Ser. No. 767,790
Int. Cl. B01f 7/00
U.S. Cl. 259—7 **2 Claims**



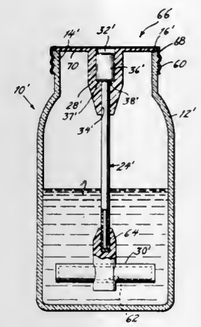
The preparation of aqueous latices from solvent dispersions of elastomers and other high-polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps are disclosed which reduce or eliminate various of these problems; enable the preparation of latices from high-solids, high-viscosity cements as well as from high-solids cements of low molecular weight polymer; enable preparation of latices of grafted or filler-extended or filler-reinforced elastomers; enable preparation of latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer and/or the latex particle size; and enable the preparation of improved latices both dilute and of high-solids contents, which are useful for example for adhesive and film-forming purposes. The process in common with that of related copending applications is characterized, inter alia, by the establishment of a flow of latex through the separating zone and the impingement on said flow of the coalesced latex droplets from the solvent vapor stream in which they are delivered to the separator, and in certain embodiments by the use of particular additive materials. New combinations of steps and of apparatus for performing the same are also disclosed and claimed. The process disclosed is applicable to the production of latices from specified rubbery and nonrubbery polymer compositions, and certain of such latices are new and useful products also claimed herein.

3,622,128
MIXING MEANS FOR LATERALLY CONVEYED RECEPTACLES
Hans Geiser, CH-4914, Bruhlweg 23, Roggwil, Switzerland
Filed Aug. 4, 1970, Ser. No. 60,832
Claims priority, application Switzerland, Aug. 22, 1969, 12744/69
Int. Cl. B01f 11/02
U.S. Cl. 259—56 **10 Claims**



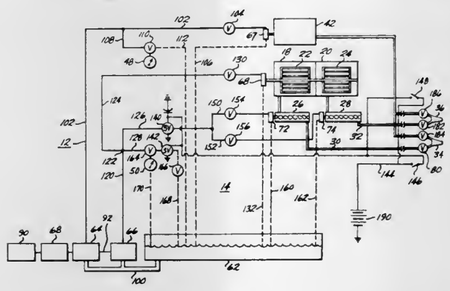
Apparatus for mixing the contents of one or more receptacles during the lateral transport thereof by a horizontal conveyor, characterized by the provision of means for oscillating each receptacle about a vertical axis normal to the longitudinal axis of the conveyor. Each receptacle is carried by an oscillatory unit having receptacle support means and ferromagnetic armature means arranged above and below the conveyor member, respectively, said support and armature means being connected by a vertical axle that extends through a journal opening contained in the conveyor. Rotary drive shaft means mounted beneath and parallel with the conveyor member carry permanent magnet means that cooperate with the armature to effect the desired oscillatory movment of the unit. To maintain the contents at a desired temperature, the conveyor member, the oscillatory unit and at least the lower portion of each receptacle are submerged within temperature-modifying liquid contained in a nonferrous trough beneath which the magnetic drive shaft means are arranged.

3,622,129
MAGNETIC STIRRER APPARATUS
Edward Mazowski, Vineland, N.J., assignor to Bellco Glass Inc., Vineland, N.J.
Filed May 14, 1969, Ser. No. 824,448
Int. Cl. B01f 7/16
U.S. Cl. 259—107 **5 Claims**



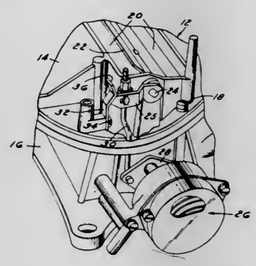
Magnetic stirrer apparatus is disclosed, wherein a shaft extends through the bore of a closure in sealing relation therewith, and a magnetic stirrer bar is rotatably coupled to the closure. In one form of the invention, the stirrer bar is pivoted on the shaft adjacent one end thereof. In another form, the shaft and stirrer bar are pivoted on the closure. Longitudinal adjustment of the shaft in the stopper provides adjustment of the apparatus for use in vessels of various sizes. In one form of the apparatus, the shaft and stirrer bar are wholly encapsulated in chemically inert plastic material, thereby avoiding contamination of stirred matter.

3,622,130
APPARATUS FOR HANDLING AND SPRAYING COATING MATERIAL
Arvid W. Malm, 914 South 48, Tacoma, Wash.
Filed Sept. 18, 1970, Ser. No. 73,368
Int. Cl. B28c 5/06
U.S. Cl. 259—147 **10 Claims**



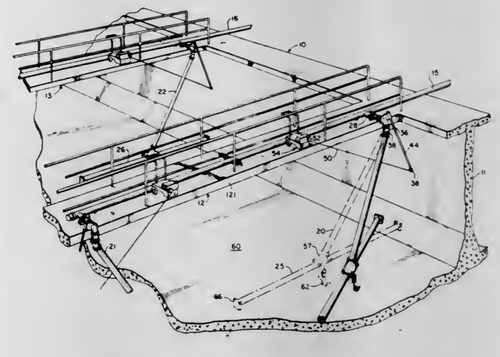
A method and apparatus for mixing, transferring and spraying a cementitious coating material. The apparatus includes a main power source for driving a hydraulic pump, which drives hydraulically a first hydraulic motor for actuating an air pump, a second hydraulic motor for actuating a mixer, and a third and fourth hydraulic motor for actuating impeller pumps. Spray nozzle means are provided with electrical switch means for controlling the transfer of coating material to the nozzle by regulating a hydraulic solenoid valve circuitry between the hydraulic pump and the third and fourth hydraulic motor.

3,622,131
CHOKE PLATE CLOSING RETARDING MEANS FOR A CARBURETOR AUTOMATIC CHOKE
Timothy R. Keenon, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 15, 1969, Ser. No. 885,157
Int. Cl. F02m 1/10
U.S. Cl. 261—39 B **2 Claims**



A choke plate closing retarding means device for a carburetor automatic choke having a thermostatic spring element. A lever arm attached to the choke plate shaft engages a cantilever spring during a portion of lever arm travel which thereby retards initial choke plate closing.

3,622,132
SWING-OUT AERATION APPARATUS WITH LOW-FLOW RESISTANCE
Lawrence James Rawlings, Jr., Bridgeview, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.
Filed Aug. 20, 1969, Ser. No. 851,646
Int. Cl. B01f 3/04
U.S. Cl. 261—124 **3 Claims**

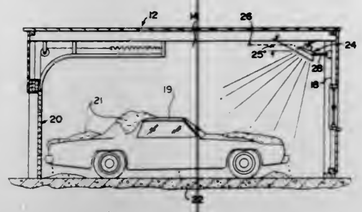


Swing-out air-diffuser assembly requiring only simple lift mechanism, and involving low-pressure drop. A preferred embodiment permits virtually infinite angularity of diffuser in its horizontal, operating plane. Useful in connection with sewage treatment systems.

3,622,133
GARAGE-HEATING SYSTEM
Howard E. Gilbert, Novelty, Ohio, assignor to Van Dorn Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 750,357, Aug. 5, 1968, now abandoned. This application July 20, 1970, Ser. No. 056,627
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A **7 Claims**

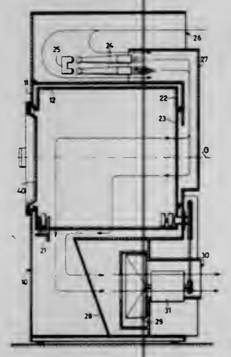
A garage-heating system for use with normally closed garages comprising at least one gas-fired infrared heater

mounted on the ceiling of the garage, the normal infiltration of air through a garage outside wall being sufficient to permit



operation of a gas-fired infrared heater of optimum capacity without the need for special air supply ducts or venting.

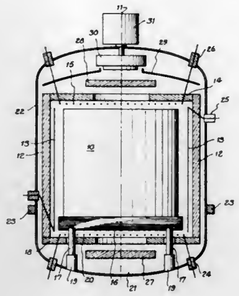
3,622,134
LINEN-DRYING CABINET, MORE PARTICULARLY FOR CLOTHING, LINEN AND THE LIKE
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy
Filed Oct. 28, 1969, Ser. No. 871,829
Claims priority, application Italy, July 19, 1969, 19872A/69
Int. Cl. F27b *7/10*
U.S. Cl. 263—33 B **6 Claims**



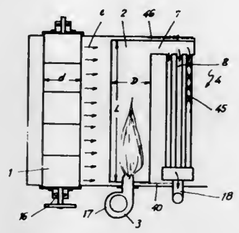
A drying cabinet for articles of apparel, linen and the like is disclosed, which comprises a foraminous drum intended to retain the articles to be dried, said drum being arranged for rotation about its axis which is horizontally disposed; the drum being rotatingly supported by a front set of rollers and a rear set of rollers which frictionally engage portions of the drum periphery. Preferably, the drum is provided with circumferential guiding means to prevent axial displacements thereof. The drum is driven by means of said rear set of rollers which are provided with a knurled sheath of resilient material, the rear set of rollers being actuated by the intermediary of a belt and pully drive which also drives an exhaust means for venting spent hot air from the drying cabinet.
A gas burner and a blower are provided to circulate hot air in the interior of the cabinet and in an axial direction with respect to the drum. The gas burners may be provided with piezoelectric firing means.

3,622,135
VACUUM OVEN FOR EVENLY HEATING WORKPIECES
Fritz Bauer, Roth; Fritz Kalbfleisch, Lieblos, and Fritz Krall, Hanau(Main), all of Germany, assignors to Deutsch Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt (Main), Germany
Filed Oct. 2, 1969, Ser. No. 863,306
Claims priority, application Germany, Oct. 3, 1968, P 18 00 782.4
Int. Cl. F27b *3/02, 5/04*
U.S. Cl. 263—40 **4 Claims**

A vacuum tank contains a chamber formed of heat-insulating walls on which the heating elements are mounted. A workpiece supported in said chamber is evenly heated by applying more heat at the bottom of the chamber to compensate for the heat loss due to the frame on which the workpiece is supported.

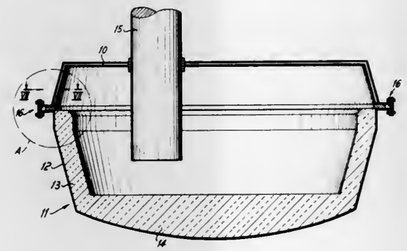


3,622,136
DRIER FOR PARTICULATE OR FIBROUS MATERIAL
Kurt Zenkner, Hertzstr. 12, Ettlingen, Germany
Filed Dec. 4, 1969, Ser. No. 882,261
Claims priority, application Germany, Dec. 4, 1968, P 18 12 584.3
Int. Cl. F27b *3/10;* **F23l** *15/04*
U.S. Cl. 263—40 R **17 Claims**



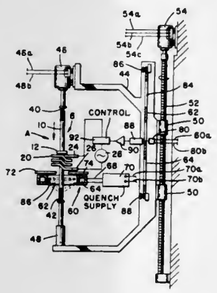
A dryer for particulate or fibrous material includes a flow path in which a fan conveys fresh air. The flow path includes a combustion chamber for producing hot gas and a heat exchanger receiving the hot gas, as well as a drying zone which receives the heated air for drying the material in the zone. The fan is a crossflow fan, including a cylindrical impeller, a curved deflector plate and a turbulence flap. The deflector plate diverges circumferentially from the impeller in the direction of the rotation and encloses the impeller for an angle of about 180°. The tangents to the deflector plate at the circumferential ends enclose an angle less than 90°. The turbulence flap has a surface on the suction side which forms with the impeller circumference a channel widening in the direction of rotation of the impeller, which forms an acute angle with a surface of the flap on the pressure side. The channel provides a partial return current of air to the impeller from the pressure side in a direction substantially tangential to the impeller circumference. The axial length of the impeller is considerably greater than the diameter. The impeller combustion chamber and heat exchanger are contained in a casing of a width corresponding substantially to the length of the impeller. Bearing and drive units for the impeller are located outside the casing.

3,622,137
DEVICE FOR SECURING A FURNACE HEAD TO THE HOUSING OF AN ELECTROTHERMAL FURNACE
Hans Drehsen, Kendenich near Koln; Helmut Ahrens, Kendenich near Koln; Benedikt Georg, Knapsack near Koln, and Kurt Zager, Gleuel near Koln, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany
Filed Dec. 23, 1969, Ser. No. 887,533
Claims priority, application Germany, Dec. 23, 1968, P 18 16 488.0
Int. Cl. F23m *5/00;* **F27d** *1/00*
U.S. Cl. 263—46 **10 Claims**



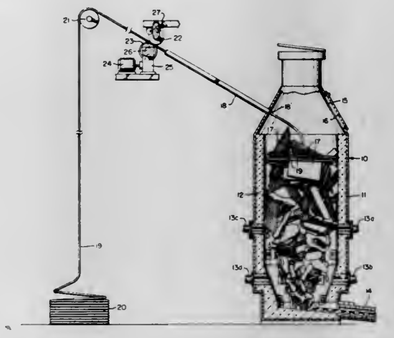
Device for securing a furnace head to the housing of an electrothermal furnace, for example a calcium carbide furnace, wherein the upper rim portion of the furnace housing is arranged to be encircled by a cantilever receiving a layer of insulating bricks to provide support for the water-cooled furnace head. The furnace head is more particularly designed to have a cantilever running parallel to an opposed cantilever fast with the furnace housing, whereby the cantilever secured to the furnace housing and that secured to the furnace head are both arranged to be encircled in a plane common to them by a flange having a ledge secured to it, through interposed insulating material.

3,622,138
CONTROL DEVICE FOR INDUCTION HEATING
Steven P. Kostyal, Chicago, Ill., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Sept. 16, 1969, Ser. No. 858,471
Int. Cl. C21d *1/10*
U.S. Cl. 266—5 E **2 Claims**



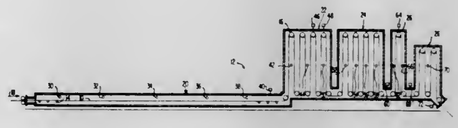
Photocells or other electromagnetic radiation-sensing devices are employed in combination with surface-hardening apparatus, which apparatus comprises an induction unit, a quenching unit, a support for an elongated workpiece and motors for moving and rotating the workpiece through the induction and quenching units, to control any or all functions of the apparatus.

3,622,139
SCRAP ROD FEED SYSTEM
Dale W. Rodolff, Inspiration, Ariz., assignor to Inspiration Consolidated Copper Company, Inspiration, Ariz.
Filed Nov. 14, 1969, Ser. No. 876,673
Int. Cl. C22b *9/00*
U.S. Cl. 266—33 S **2 Claims**



An apparatus is disclosed for efficiently drawing scrap copper rod from a source coil and for guiding the rod into a shaft furnace in which the rod is melted down and for protecting the furnace from harm as additional copper material is fed into the furnace.

3,622,140
CONTINUOUS HEAT TREATING LINE
Crayton H. Schwestka, Michigan City, and Ronald W. Scherer, La Porte, both of Ind., assignors to National Steel Corporation
Filed Jan. 30, 1970, Ser. No. 7,041
Int. Cl. C21d *9/56*
U.S. Cl. 266—3 R **18 Claims**

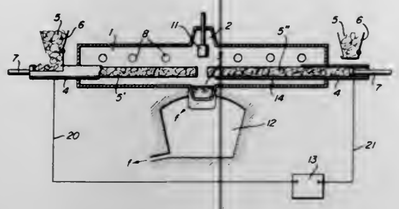


Continuous-strip annealing line includes a plurality of furnace-temperature sensors and a plurality of strip-temperature sensors spaced along the pass line. A device is also provided for sensing strip speed. The temperature and speed sensors are sequentially connected to recording means by a programmer, to produce side-by-side profile records of furnace temperature, strip temperature, and strip speed. The profiles show the conditions undergone by an increment of strip as it traverses the furnace.

3,622,141
CONTINUOUS METAL MELTING METHOD AND FURNACE THEREFOR
Ugo Brusa, via Borgnia 9, Domodossola, Italy
Filed Oct. 16, 1968, Ser. No. 768,099
Claims priority, application Italy, Nov. 3, 1967, 53593 A/67
Int. Cl. C21b *11/10*
U.S. Cl. 266—33 S **3 Claims**

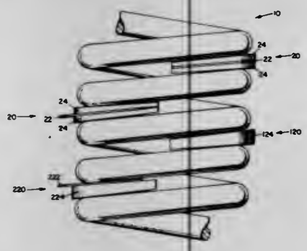
The arc melting process uses no electrode for the melting operation and continuously melts bulks of scrap metal which

have been previously preheated, compressed and fed into a



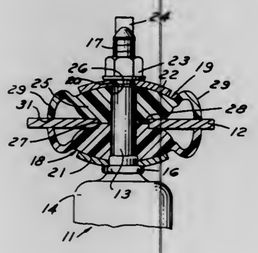
furnace by opposing ends simultaneously.

3,622,142
CUSHIONED COIL SPRING
Angelo Lorio, 161 Bleecker St., Brooklyn, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,315
Int. Cl. F16f *1/12*
U.S. Cl. 267—61 **4 Claims**



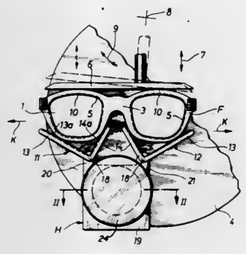
The combination with a coil spring of a semiresilient bumper interposed between adjacent convolutions of the spring, the bumper being wedge shaped and having a large dimension slightly exceeding that of the space between the convolutions for exerting a spreading action thereon.

3,622,143
SELF-SEALING RESILIENT BUSHING
Cornelius W. Van Ranst, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 2, 1970, Ser. No. 7,494
Int. Cl. F16f *1/32*
U.S. Cl. 267—152 **5 Claims**



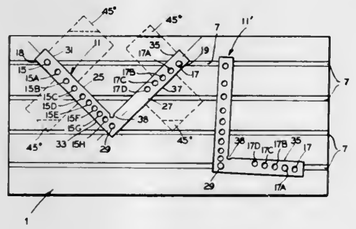
A self-sealing resilient bushing suitable for use in mounting a bayonet end of an automotive shock absorber to a body mounting bracket. The bushing has a flexible flange portion which resiliently engages the body mounting bracket to seal dirt or other foreign matter from the remainder of the bushing.

3,622,144
APPARATUS FOR HOLDING A GLASS MOUNT ON A PLATE-SHAPED SUPPORT
Fritz Kotting, Sturzelberg, Germany, assignor to Firma Wernicke & Co., Dusseldorf-Eller, Germany
Filed Oct. 9, 1969, Ser. No. 865,084
Claims priority, application Germany, Nov. 11, 1968, P 18 07 474.3
Int. Cl. B25b *5/14*
U.S. Cl. 269—104 **7 Claims**



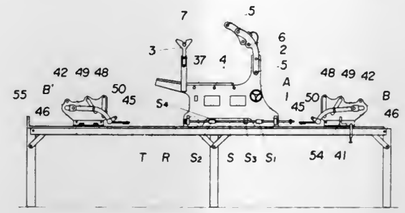
A clamping means for securing a glass frame on a flat circular support. The glass frame is held between a straight bar and two angular retaining means which are pivotally secured to a clamping plate. The clamping plate is adjustable and is clamped to the circular support by a manually operated nut.

3,622,145
WORK-POSITIONING MEMBER
Edwin W. Gibson, 72 Barteau Ave., Blue Point, N.Y.
Filed Apr. 19, 1968, Ser. No. 722,734
Int. Cl. B23g *3/18, 3/00*
U.S. Cl. 269—297 **12 Claims**



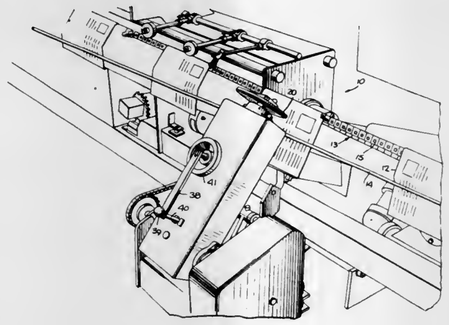
A member for positioning a piece of work in a selected angular position for machining purposes. The member is removably held on a machine table by a pair of locating pins extending from the member into T slots on the table. The member includes a banking surface for positioning a piece of work. The locating pins are positioned on the member so that the banking surface bears a predetermined selected angular relation to the table. During machining, the table moves in a fixed relation to the machine tool and thus, work positioned by the member will be machined at a selected angle. The angle can be adjusted by provision for a plurality of apertures on the member, selected pairs of which may be utilized to adjust the position of the locating pins, and in turn, the position of the banking surface. In the alternative, the angle can be adjusted by providing a plurality of banking surfaces angularly related to each other so that a selected banking surface may be utilized to machine at a selected angle.

3,622,146
CLOTH-FOLDING MACHINE
Shoichi Adachi, 3,3-chome, Oyodocho-Minami, Oyodo-ku, and Shoitiro Kaga, 13,403, Hanaten-cho,, Joto-ku, both of Japan
Filed June 4, 1969, Ser. No. 830,370
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **4 Claims**



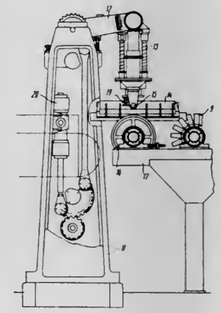
A cloth-folding machine comprises a main folding body and two catchers disposed to the front and rear of the main body. Means for pressing the folded portions of cloth has a pressing member which is adapted to be heated so as to produce a distinct fold line. The main folding body to be reciprocated on a folding table is provided with means for gradually elevating a cloth-folding means in synchronization with the reciprocation. Also provided in the main body is a system for detecting and correcting uneven disposition of cloth edges.

3,622,147
BOOK-CALIPERING MACHINE
Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corp., Cleveland, Ohio
Filed June 18, 1969, Ser. No. 834,322
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 **27 Claims**



The disclosure relates to a calipering machine for detecting the absence of a predetermined number of gathered signatures. The machine includes a driven calipering wheel and an idler calipering wheel. The driven calipering wheel is movably mounted on the machine frame for movement relative thereto independently of movement of the idler calipering wheel. The idler calipering wheel is supported on a first lever which is pivotable with respect to the calipering machine frame and independent of movement of the driven calipering wheel. A second lever located adjacent the first lever is movable in response to movement of the idler calipering wheel relative to the calipering machine frame. Located on an end of the second lever is a gauge block while a pair of gauge block receptacles are located on a third lever which is cyclically movable towards and away from the gauge block. The gauge block is adapted to pass between the gauge block receptacles as long as the predetermined number of signatures form between the calipering wheels. A switch-actuating mechanism located on the third lever is arranged to actuate a switch whenever interference occurs between the gauge block receptacles and the gauge block as a result of the passage of an incorrect number of signatures between the calipering wheels. Apparatus is also disclosed for recording information pertaining to a detected incorrect number of signatures in order that such information can be used to provide at least one signal that will insure that the group of, or incorrect number of, signatures will not be assembled into a book or magazine.

3,622,148
CONVEYOR SYSTEM FOR PRODUCTION OF CORRUGATED SHEETS FROM FIBROCEMENT, PARTICULARLY, ASBESTOSCEMENT
Mark Solomonovich Neifeld, ulitsa Alexeya Tolstogo, 26, kv. 20; Savely Aronovich Monastyrenko, proezd Rysanova, 27, Korpus 2, kv. 38; Pavel Samuilovich Moroz, ulitsa Mneviki, 14, kv. 65; Solomon Abramovich Azimov, I Dmitrovsky proezd, 8, kv. 85; Genrikh Pavlovich Krom, Flotskaya ulitsa, 6, kv. 83, and Vladimir Alexandrovich Voevodsky, Verkhnaya Krasnoselskaya ulitsa, 34, kv. 59, all of, Moscow, U.S.S.R.
Filed Sept. 9, 1968, Ser. No. 758,293
Claims priority, application U.S.S.R., Sept. 12, 1967, 1180502
Int. Cl. B65h *3/08*
U.S. Cl. 271—12 **2 Claims**

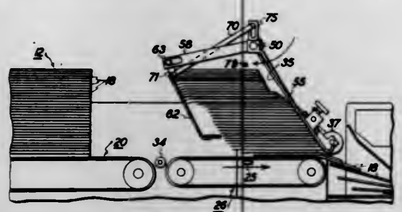


In the production of asbestoscement sheets, the sheets are stacked and transferred one by one to a conveyor by means of a transfer system including a suction head hingedly suspended from a pivotal lever assembly. The suction head is moved by the lever assembly from a position overlying the stack of sheets at which the front end of the topmost sheet is lifted above the stack while the rear end slides therealong as the front end is brought to a position above a roller and is deposited thereon. The roller then conveys the sheet to the subsequent conveyor.

3,622,149
ARTICLE DESTACKING APPARATUS
Albert G. Enskat, Barrington, Ill., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,708
Int. Cl. B65h *3/04*; B65g *59/12*
U.S. Cl. 271—35 **6 Claims**

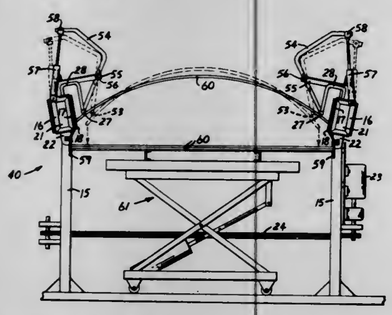
Apparatus for destacking a stack of articles for subsequent handling, the apparatus including a displaceable destack arm arranged to intercept the oversized portion of an article stack; a stack support arm spaced upstream of the destack arm, the stack support arm being normally held out of the path of movement of the article stack; and means responding

to contact of the oversized stack portion with the destack arm to move the stack support arm into supporting position



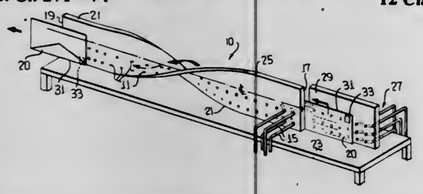
behind the article stack to support the stack during destacking thereof.

3,622,150
SHEET CONVEYING AND STACKING APPARATUS
Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., Lewiston, Idaho
Continuation-in-part of application Ser. No. 773,815, Nov. 6, 1968, now abandoned. This application Oct. 20, 1969, Ser. No. 871,478
Int. Cl. B65h *29/70*
U.S. Cl. 271—68 **13 Claims**



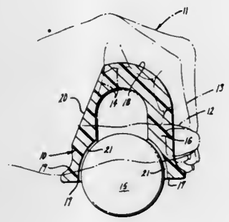
An apparatus and process for handling sheets of resilient materials, particularly veneer. The apparatus includes a feeding device for arching each sheet, a conveying device for the sheets while maintained in an arched configuration and a plurality of release devices located along the conveying device for dropping the sheets into vertical stacks. The conveying apparatus maintains each sheet in an arched configuration transversely across the sheet, maintaining the required rigidity in the sheet without intermediate supports along the conveyor area. The present process of sheet handling involves the steps of transversely arching each sheet, conveying the arched sheets and release of the sheets onto a flat stack.

3,622,151
FLUIDIC LETTER FLIPOVER METHOD AND APPARATUS
Richard J. Range, Silver Spring, and James T. Pfeiffer, Laurel, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.
Filed Feb. 4, 1970, Ser. No. 8,608
Int. Cl. B65h *29/32*; **B65g** *47/24*
U.S. Cl. 271—74 **12 Claims**



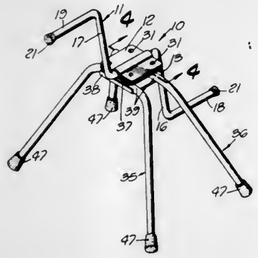
A flipover device for flipping substantially flat articles out-of-plane includes a modified Bernoulli conveyor in which the conveyor surface is twisted out-of-plane in a graduated manner about an axis parallel to a transport path defined along the conveyor surface. Articles received by the conveyor are propelled therealong and attracted thereto by angled air jets issuing from the conveyor surface. The articles follow the surface contour and are thereby rotated out-of-plane. The conveyor may be disposed in a cylindrical guide tube with one longitudinally extending edge of the conveyor being disposed along the central axis of the tube and serving as the axis about which the conveyor surface is twisted. Angled air jets issued into the tube aid in propelling transported articles. The tube also serves to guide rigid articles which might not be capable of conforming to the twisted conveyor surface.

3,622,152
HAND HELD EXERCISE DEVICE
Virgil A. Place, 1405 Palo Alto Office Center, Palo Alto, Calif.
Filed Oct. 30, 1969, Ser. No. 872,555
Int. Cl. A63b *23/00*
U.S. Cl. 272—57 D **2 Claims**



Exercise device for developing coordination, muscle tone, and joint mobility has a single spherical member disposed more than 50 percent of its diameter and in freely rotating engagement within the hemispherical concavity of a concave retaining member. The face surface of the retaining member opposite the concavity is in the form of a projection fitting the palm of a semiflexed human hand. One side surface of the retaining member is flat.

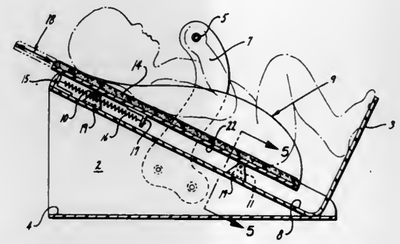
3,622,153
DOUBLE CRANK PORTABLE EXERCISER
John H. Thompson, 124 No. Adams St., Glendale, Calif.
Filed Sept. 2, 1969, Ser. No. 854,516
Int. Cl. A63b *69/16*, *23/04*
U.S. Cl. 272—73 **4 Claims**



Two grooved bearing plates rotatably secure a tubular shaft of a double crank between them. The plates are spaced apart vertically to determine the crank friction load. A lubricant wick lies in one groove in contact with the crankshaft. A

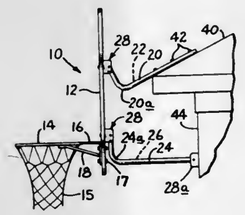
pair of U-shaped legs are held in splayed relationship between top and bottom clamping plates. Elongate fasteners extend through all plates and the legs to unitize the devices.

3,622,154
BABY EXERCISER
Arthur S. Williams, 4044 Hitchcock Road, Concord, Calif.
Filed Apr. 27, 1970, Ser. No. 32,128
Int. Cl. A63b *21/00*, *23/04*
U.S. Cl. 272—58 **10 Claims**



An infant exerciser having a removable cradle spring mounted in a framework on an incline with a footstop and crossbar that allows an infant to exercise his muscles, develop his coordination, and provides a pleasant pastime.

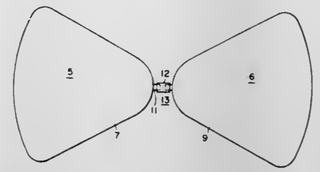
3,622,155
BASKETBALL BACKBOARD SET
James C. Hirsch, Highland Park, Ill., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Mar. 20, 1969, Ser. No. 808,857
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 R **11 Claims**



A basketball backboard set including a backboard for carrying a basketball hoop extending outwardly from a ball receiving surface of the backboard, the hoop being adapted for receiving basketballs therethrough, and universal pivotally adjustable mounting arms for mounting the backboard to any desired surface such as a slanted roof, a vertical wall or a vertical standard by using the same mounting brackets. The mounting arms are secured to the back surface of the backboard so as to be universally pivoted so that the arms will adjust to a multitude of mounting situations to conform to the degree of slope of the particular roof to which the backboard set is mounted as well as being adaptable for mounting on a vertical wall of a building or a vertical standard without the need of extra brackets.

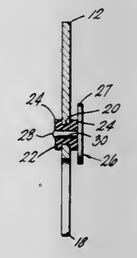
3,622,156
GAME TABLE
Jack H. Pugsley, 1610 S.W. 23rd Ave., Fort Lauderdale, Fla.
Filed May 23, 1969, Ser. No. 827,418
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 **3 Claims**

A game table for games in which a ball is bounced on a table surface wherein the table is formed of two surfaces separated from each other to provide an open space



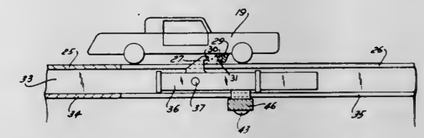
therebetween.

3,622,157
GOLF GREEN REPAIR TOOL AND GOLF BALL MARKER ASSEMBLY
Raymond R. Hatch, Dexter, Mich., assignor to Hatch Stamping Co., Inc., Dexter, Mich.
Filed Feb. 12, 1970, Ser. No. 10,888
Int. Cl. A63b *57/00*
U.S. Cl. 273—32 A **3 Claims**



A golf ball position marker is frictionally connected to a golf green repair tool. The marker includes a thin circular head and an integral elongated stem. The tool includes a flat handle at one end and prongs at the other end. An aperture is provided in the repair tool midway of the ends thereof for frictionally retaining the stem of the marker. The repair tool may be made from plastic or aluminum and, when made from aluminum, the aperture therein may include a resilient grommet. By locating the marker between the end portions of the repair tool, advertising space is provided on the handle end of the repair tool.

3,622,158
RACING TOY HAVING VEHICLE-PROPELLING MEANS
Sidney Tepper, Millburn, and Hyman P. Boydman, Springfield, both of N.J., assignors to Topper Corporation
Original application Oct. 30, 1969, Ser. No. 872,655, now Patent No. 3,545,757. Divided and this application June 18, 1970, Ser. No. 47,487
Int. Cl. A63h *18/14*
U.S. Cl. 273—86 D **8 Claims**



One or more tracks support rollable vehicles each of which moves around the entire track as a result of force applied to it during its movement along a propulsion region. A vehicle-driving member is located beneath, and moves along, each propulsion region in response to movement of a handle operated by a player. The driving member, carries an ele-

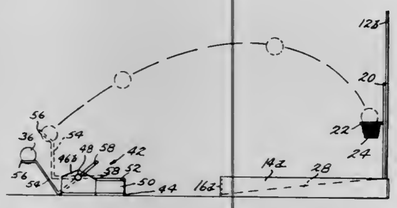
ment, e.g., a pawl, for engaging a depending extension on a vehicle and moving the vehicle on the track propulsion region. The element has a finger projecting forwardly and the vehicle extension has a ledge projecting rearwardly, the finger and ledge interlocking temporarily when the element engages the extension.

3,622,159
TRAINING DEVICE FOR GOLFERS
John Fowle Morton, 2829 Irby Drive, Charlotte, N.C.
Filed Aug. 28, 1969, Ser. No. 853,744
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 **3 Claims**



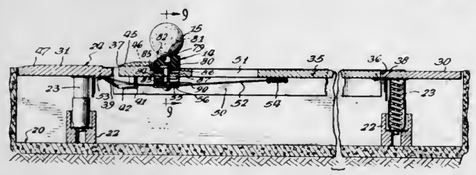
A device is provided for training a player to maintain a fixed head position during the golf swing. The device employs a first element having a head portion formed on an elongated shank that is adapted to be inserted in the ground, and a second element that is apertured for adjustable disposition on the first element shank. In use, the first element shank is inserted in the ground so that the head portion thereon is viewed by a player in alignment with the shank axis when he assumes his stance for a swing, and the second element is adjusted along the shank axis to a disposition at which it is just obscured by the head portion when the latter is viewed from the assumed stance of the player. The first element head portion and the second element are relatively shaped in outline so that parallax and apparent size phenomena allow the second element to remain obscured during the golf swing only as long as a fixed head position is maintained. In particular, one of the outlines, preferably that of the first element head portion, is made oval and the other is made circular to provide the desired relation, and the second element is preferably invested with sharply contrasting surface coloring to provide a readily apparent signal of deviation in head position.

3,622,160
BASKETBALL GAME
William C. Barfield, Box 757, Wilmington, N.C.
Filed Nov. 24, 1969, Ser. No. 879,086
Int. Cl. A63b *65/12*
U.S. Cl. 273—101 **6 Claims**



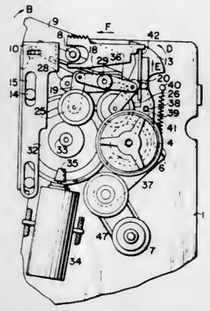
A basketball game and game board construction are described. The game board is mounted in an integrally constructed boxlike container with an end thereof having a length corresponding substantially to the length of the sides of the container so that when said end is folded downwardly, it will form a lid for the container, and when extended upwardly, it will form a backstop for the game ball. The container includes support members which are constructed to angle the game board downwardly proceeding rearwardly from the backboard. A receptacle for receiving the game ball is provided in the game board and means are provided for guiding the game ball into the receptacle. The game ball has printed thereon indicia which indicate scoring and further disposition of the game ball as the game is played. An impeller means is provided for propelling the ball toward the hoop mounted on the backboard, and means are provided for altering the trajectory of the ball. An alternate embodiment is disclosed in which the receptacle in the game board is covered by a barrier element which guides the ball rolling rearwardly to one side or the other of said barrier so that further disposition of the ball may be indicated.

3,622,161
DEVICE FOR PRACTICING GOLF STROKES
Harold Keppen, 5910 Fox Lake Road, McHenry, Ill.
Filed Apr. 10, 1969, Ser. No. 814,971
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **15 Claims**



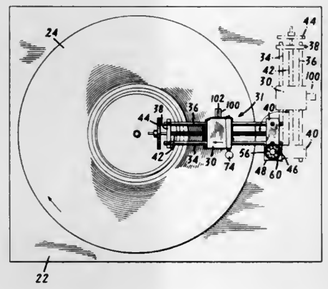
A training device for golfers includes a frame supported on shock-absorbing coil springs. Within the frame is a depressible flap member which has its front end secured to the frame by a hinge and its rear end secured to the frame by a pair of coil springs. The extent to which the flap member is depressed, upon impact by a golf club, is made evident to the golfer by an indicia carrying strip located below the flap member. As the flap member is depressed, the strip moves relative thereto and the indicia thereon may be viewed through a slot in the flap member. Mounted on the rear end of the flap member is a golf ball-supporting element adapted to be moved about a vertical axis, upon impact by a golf club. Longitudinally extending panels on opposite sides of the flap member are adapted to be displaced if impacted by a golf club. Displacements of the various movable members provide an indication of the nature of the golfer's club swing.

3,622,162
CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS
Hisao Ikeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1968, Ser. No. 783,947
Claims priority, application Japan, Feb. 12, 1968, 43/9323, 43/9327, 43/10725, 43/10726
Int. Cl. G11b *15/44*
U.S. Cl. 274—4 C **4 Claims**



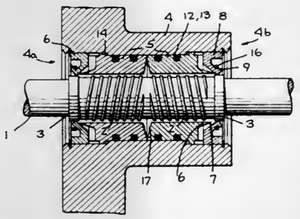
A cassette-type magnetic tape recording and reproducing apparatus wherein secondary operation-switching means is cooperatively associated with primary operation switching means for shifting a tape driving system to a different state of operation, such as a state of recording or reproduction, a state of rewinding or a state of fast forwarding, in such a manner that when said primary operation-switching means is switched to a rewinding position, the state of rewinding and the state of fast forwarding are obtained selectively depending upon the position of said secondary operation-switching means, and which therefore is compact in structure and has the function of a cassette-type tape recorder.

3,622,163
PHONOGRAPH RECORD PLAYER
William S. Bachman, Southport, Conn., assignor to Columbia Broadcasting System, Inc.
Filed Nov. 21, 1969, Ser. No. 878,811
Int. Cl. G11b *3/10, 17/06*
U.S. Cl. 274—13 R **10 Claims**



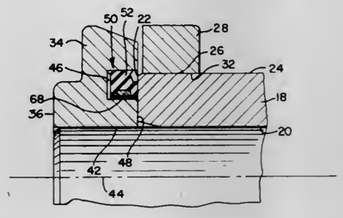
A record player has a phonograph pickup mounted directly on a carriage which is adapted to be propelled radially across a record by drive means including a half-nut on the carriage engageable with an eccentric lead screw. In the event the speed of the carriage differs from the speed of advancement of the pickup stylus, positional disagreement between the pickup and the carriage occurs which is sensed mechanically and acts to disable the carriage drive temporarily to permit the pickup stylus to catch up. In this fashion, the stylus is maintained substantially tangent to the record groove at all times without exerting side pressure on the record groove. So called "fast" runoff grooves at the end of the record cause the stylus to move faster than the carriage. The resulting positional disagreement between the carriage and the stylus is sensed mechanically and actuates mechanism to lift the stylus automatically from the record when playback is completed.

3,622,164
SEAL FOR SHAFTS
Werner Karl Herbert, and Guenther Lehn, both of Stetton, Germany, assignors to Dornier Systems GmbH, Friedrichshafen, Germany
Filed Mar. 30, 1970, Ser. No. 23,775
Claims priority, application Germany, Mar. 28, 1969, P 19 15 934.3
Int. Cl. F16j *15/16*
U.S. Cl. 277—27 **10 Claims**



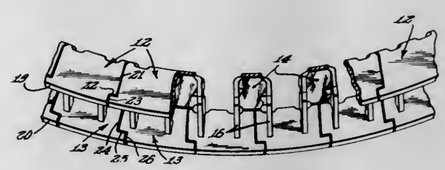
The shaft is sealed by a combination seal which includes a liquid seal for high-shaft speeds and a radial seal for low-shaft speeds or standstill. The liquid seal is effected by the windings on the shaft which directs liquid into the chamber between the two windings. The radial seal is lifted from the shaft by the outward movement of the bushing at high-shaft speeds to avoid damage to the radial seal. The bushing moves under the pressure generated by the liquid seal.

3,622,165
SEAL FOR TRACK PINS AND THE LIKE
Seymour A. Hatch, Oak Park, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.
Filed Apr. 24, 1969, Ser. No. 819,042
Int. Cl. F16j *15/38;* **B62d** *55/08;* **B60s** *1/62*
U.S. Cl. 277—95 **8 Claims**



A seal assembly for use in excluding mud, dirt and the like from an interior space defined by two relatively movable machine elements, comprising a resilient sealing ring having one outwardly facing mounting surface for reception in a machine bore, and a second axially directed end face sealing surface for engaging an oppositely directed, cooperating face of a machine element in a sealing relation. The mounting surface and the sealing surface are axially offset from each other and joined by an at least partially frustoconical body portion so that axially applied thrust tends to deform the seal ring, which is held against axial movement, either radially inwardly or outwardly. A relatively stiff support ring extends around an inner portion of the seal body to prevent inward radial deformation upon the application of the compressive radial loads, so that an end loading force creates a tight seal between the seal ring and the bore. Preferably, the seal body is formed with a recess or reentrant which permits removable reception of the ring therein prior to assembling the elements to apply the axially directed load between an end sealing face on the seal body and a corresponding face on one machine element.

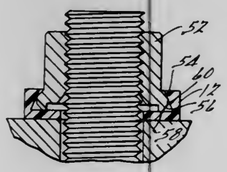
3,622,166
CIRCUMFERENTIALLY EXPANSIBLE PISTON RING
Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio
Filed June 25, 1970, Ser. No. 49,728
Int. Cl. F16j *9/20*
U.S. Cl. 277—138 **7 Claims**



A one-piece channel-type circumferentially expansible oil-control ring for pistons having a spring and reinforcing strut structure isolated from the portions of the ring which contact the piston and the cylinder. The ring has axially separated top and bottom rows of circumferentially separated radially extending segments or crowns held in axially spaced relation and having the crowns or segments of one row connected to circumferentially offset crowns in the other row by inclined legs on the inner periphery and also by reinforcing struts projecting between the rows. The crown, legs, and struts are so

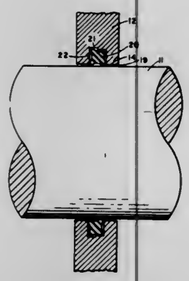
related as to minimize loss of metal strip stock from which the rings are formed and so as to eliminate the necessity for reducing the length of the stock to form the rings. The formation of the rings from the strip stock does not require length reducing folding so that the circumferential length of the finished ring is the same as the axial length of the original strip stock from which the ring was formed.

3,622,167
SEALING FASTENER ASSEMBLY
Arthur E. Velthoven, Warren, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed Feb. 9, 1970, Ser. No. 9,673
Int. Cl. F16j *15/10*, F16b *43/00*
U.S. Cl. 277—166 **6 Claims**



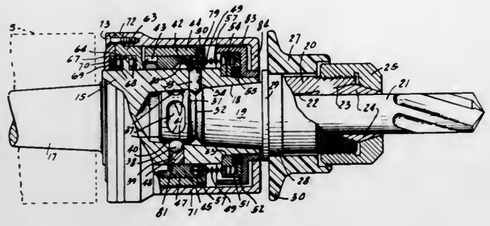
A sealing fastener assembly in which a generally washer-shaped plastic seal is snap fitted over the flange of a threaded metal fastener such as a nut, screw or bolt. When the fastener is tightened, the seal is extruded into engagement with the fastener threads to seal the fastened joint against fluid leakage. In one form of the invention, the outer periphery of the seal is caused to roll upwardly to expose a dissimilarly colored area of the seal and thereby indicate that the fastener has been properly tightened.

3,622,168
ROTARY SHAFT SEAL MEANS
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio
Filed July 16, 1970, Ser. No. 55,383
Int. Cl. F16j *9/02*; F16r *41/00*
U.S. Cl. 277—168 **6 Claims**



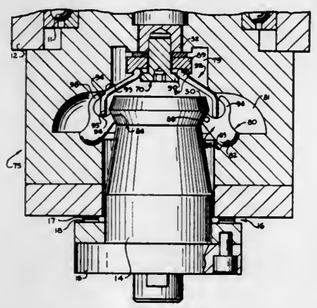
Fluid seal means for a shaft mounted in annular space surrounding the shaft. The fluid seal comprises an O-ring of rubberlike material having substantially a square cross section, defining first and second end sections with each end section having a pair of crown corners. The pair of crown corners on the first end section constitutes a sealing section. The pair of crown corners on the second end section constitutes a non-sealing section.

3,622,169
QUICK-CHANGE TOOL HOLDER
Roland G. Koch, and Allen E. Nickless, both of Frankenmuth, Mich., assignors to Hoadaille Industries, Inc., Buffalo, N.Y.
Filed Sept. 9, 1969, Ser. No. 856,263
Int. Cl. B23b *31/06*
U.S. Cl. 279—1 B **20 Claims**



A quick-change tool holder comprises a rotatably drivable member having an axially outwardly opening socket receptive of a tool adapter stem with means for automatically locking the received stem in the socket, and adapter-releasing means including a part carried normally corotatively by the member and adapted for selective relative rotation thereon to effect release of the stem from the socket.

3,622,170
TOOL-LOCKING MECHANISM
Robert K. Sedgwick, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Original application May 20, 1968, Ser. No. 730,440, now Patent No. 3,533,638. Divided and this application Jan. 7, 1970, Ser. No. 1,237
Int. Cl. B23b *31/10*
U.S. Cl. 279—89 **5 Claims**

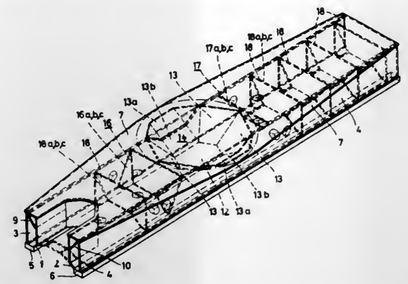


A plurality of latches are utilized within the spindle of a machine tool to pivotally engage a bearing surface on a tool arbor. Within the arbor cavity of the spindle, there is provided an actuator mechanism which is attached to a drawbar operable to effect the movement of the latches into and out of locking position.

3,622,171
HOLLOW FRAME OF THE BOX TYPE, IN PARTICULAR FOR CRANE TRUCKS
Georg Heinrich Gottschalk, Bullach near Nurnberg, Germany, assignor to Dipl.-Ing. Karl Heinz Schmidt, Vorra, Kreis, Hersbruck, Germany
Filed July 30, 1969, Ser. No. 846,184
Claims priority, application Austria, July 31, 1968, A 7474/68
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **6 Claims**
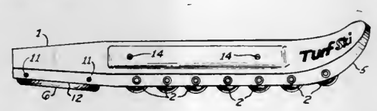
A hollow vehicle frame, especially suited for crane vehicles, which is made of continuous flat longitudinal plates and

transverse bulkheads. The longitudinal plates define a cross-sectional hollow "U" shape frame cavity, concave downwardly. The bulkheads are longitudinally spaced along the frame, have a periphery commensurate in shape to the



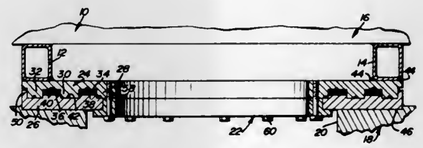
frame cavity and are attached thereto. An open space shaped like an upwardly diverging truncated pyramid is located in the area of a critical cross section, which is the area where the crane boom or other attachments are fixed.

3,622,172
TORSION LAND SKIER
Charles W. Goodwin, West Dover, Vt., assignor to Turf Ski, Inc., Somerville, N.J.
Filed Apr. 9, 1970, Ser. No. 26,883
Int. Cl. A63c *17/06*, *17/14*
U.S. Cl. 280—11.2 **1 Claim**



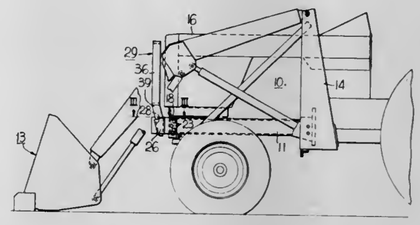
A land skier of a resilient plastic material molded into a shell-shaped substantially like a ski with lateral sides that depend down from an upper skier supporting surface in the shape of an upside down U with a plurality of ball bearing rollers having beveled cylindrical surfaces mounted between the sides of the shell beneath the foot of the skier. The forward end of the shell is curved upwardly like a ski with the foremost roller mounted in the upwardly curved portion and the lower rear edges of the shell taper upwardly toward the rear with a plastic braking surface mounted between the sides of the shell.

3,622,173
FULL TRAILER FIFTH WHEEL WITH GREASE RESERVOIR
Donald W. Hodgson, 1646 10th St., Arcata, Calif.
Continuation-in-part of application Ser. No. 771,263, Oct. 28, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 679,482, Oct. 31, 1967, Pat. No. 3,463,512. This application Oct. 29, 1969, Ser. No. 872,138
Int. Cl. B62d *53/00*
U.S. Cl. 280—125 **5 Claims**



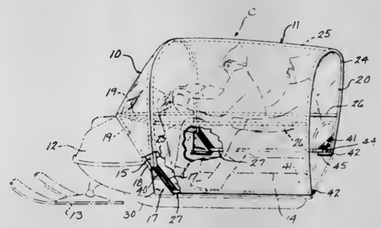
A pair of annular plates for securement to a full trailer frame and the front axle bolster of the frame and including opposing concentric circular grooves and ridges. The ridges formed on one of the plates are nested in the grooves of the other plate and retaining structure is provided for preventing axial separation of the plates. In addition, the bottom surfaces of each of the grooves have circumferentially spaced recesses or relieved areas formed therein and the upper faces of the ridges are also provided with similar circumferentially spaced recesses or relieved areas. The relieved areas in the grooves and ridges are spaced relative to each other in a manner such that they are out of registry when the steerable front wheels of the trailer are positioned in straight-ahead positions and the plates include lubricating passages through which lubricating material may be forced between the opposing axially facing surfaces of the grooves and ridges.

3,622,174
GRILL GUARD
Raymond G. Wakeen, La Crosse, Wis., and Richard G. Moe, La Porte, Ind., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 1, 1970, Ser. No. 24,502
Int. Cl. B60r *11/00*
U.S. Cl. 280—150 F **1 Claim**



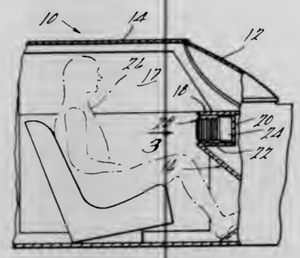
A readily removable or mountable grill guard for a tractor wherein the guard is provided with tapered depending members received within complementary sockets carried by the tractor and such frictional connection between socket and member forming the only connection between tractor and guard.

3,622,175
SAFETY CANOPY FOR SNOWMOBILES
Robert F. Benz, Milwaukee, Wis., and Philip J. Pearson, 5104 N. Lovers Lane Road, Milwaukee, Wis.
Filed Jan. 29, 1970, Ser. No. 6,844
Int. Cl. B62d *33/06*
U.S. Cl. 280—150 R **2 Claims**



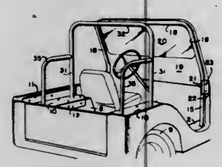
A combination safety canopy and roll bar construction for snowmobiles which has a suitable framework either pivotably or slidably mounted on either side of the snowmobile frame to allow for the ingress and egress of passengers. The framework being integral with a solid transparent shield forming the canopy per se, and acts to contain and provide heat from the engine for the snowmobile occupants. The frame has U-shaped members of sufficient strength and so constructed and arranged as to form roll bars for the protection of the individuals, should the vehicle overturn.

3,622,176
MOTOR VEHICLE INSTRUMENT PANEL ELEMENT
Lawrence C. Byer, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 5, 1970, Ser. No. 8,789
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **5 Claims**



A one-piece, decorative panel adapted to be included in a motor vehicle instrument panel assembly and be positioned between a seated passenger and a confinement or air bag that may be inflated to restrain passenger movement during rapid vehicle deceleration. The panel is formed from deformable plastic material. The surface of the panel adjacent the inflatable confinement has a plurality of grooves formed therein in an H-shaped parting configuration. Upon inflation of the confinement, pressure is exerted on the panel causing the panel to rupture along the parting configuration to form a pair of flaps that are deformed to create a panel aperture through which the confinement may pass to move toward the passenger.

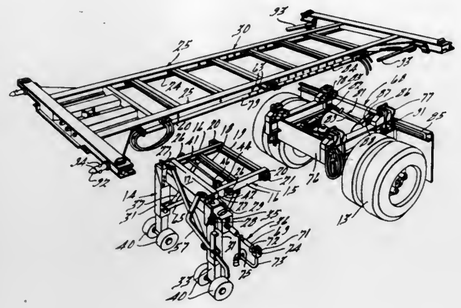
3,622,177
ROLL BAR CAGE FOR VEHICLES
Richard Lee Notestine, 6654 S.E. Flavel St., Portland, Oreg., and Lee F. Coleman, Portland, Oreg.
Filed Oct. 20, 1969, Ser. No. 867,462
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 C **1 Claim**



A framework in the form of spaced-apart roll bars permanently interconnected, reinforced and adapted as a unit for convenient securement to the body of vehicles such as jeeps, sport cars, and the like, having convertible tops, full or half fabric tops. The framework is made of metal pipes all of uniform diameter assembled as a unit by welding or the like to provide a strong, durable, rigid, cagelike frame which together with its manner of securement to the vehicle is such that passengers or occupants of the vehicle will be protected against rollover or other impact forces from any direction.

3,622,178
LONGITUDINALLY MOVABLE LANDING GEAR FOR TRAILERS AND THE LIKE
Keith W. Tantlinger, Grosse Pointe Shores; George Chieger, Birmingham, and Adam D. Sweda, Grosse Pointe Farms, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.
Filed July 9, 1969, Ser. No. 840,328
Int. Cl. B60s *9/00*
U.S. Cl. 280—150.5 **7 Claims**

The landing gear for a container chassis frame is movable to and from ground-engaged position and when the bogies for the wheels are to be shifted to different positions on coupled and uncoupled frames, the landing gear may also be shifted to conform to the new position of the wheels.



3,622,179
OCCUPANT-DRIVEN OPEN WHEEL DEVICE
Winfred C. Pfersick, 1660 Nelson Drive, Santa Clara, Calif.
Continuation-in-part of application Ser. No. 794,843, Jan. 24, 1970, now abandoned. This application July 23, 1970, Ser. No. 57,578
Int. Cl. B62k *1/00*
U.S. Cl. 280—207 **9 Claims**

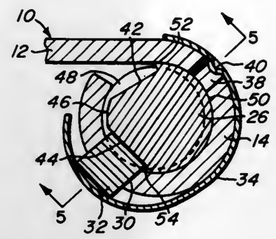


An occupant-driven open gyral wheel has an outwardly curved transverse riding surface and a pair of circular tracks formed by bosses projecting from the inside surface of the open wheel. A pair of foot skates is provided that has skate wheels with concave surfaces for riding on the circular tracks, and has holding means operably connected to the skate wheels to allow the skate wheels to only move backwards with respect to their circular tracks. The foot skates have guide members positioned within alignment slots in the open wheel, and each foot skate has a frame member and a runner member hingedly connected together at their forward ends. The open gyral wheel can be moved forward, steered and braked by the occupant when positioned vertically on the ground.

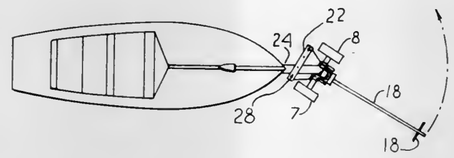
3,622,180
BICYCLE KICKSTAND
Robert F. Humloag, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Mayville, Ky.
Filed Nov. 12, 1969, Ser. No. 875,780
Int. Cl. B62h *1/02*
U.S. Cl. 280—301 **13 Claims**

The kickstand incorporates a supporting leg having a journal portion pressure formed in a single operation to provide

flat seat faces yieldingly engageable by a flat face of a detent member, to provide a superior snap action movement of the leg between operative and inoperative positions.

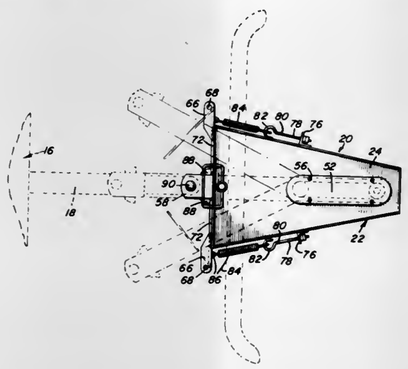


3,622,181
UNIVERSAL BOAT LAUNCHER
Robert D. Smith, 2401 N. 68 St., Scottsdale, Ariz.
Filed July 6, 1970, Ser. No. 52,540
Int. Cl. B62d *53/00*
U.S. Cl. 280—476 **6 Claims**



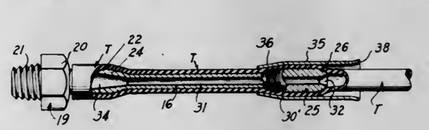
A vehicular device for the safe, efficient and convenient launching of small pleasure boats and the like from soft ground or from dirt ramps. The vehicle comprises a substantially rectangular steel frame, wheels attached thereto, a centrally located steel ball for receiving the boat trailer tongue, guide means for said tongue, and handle means one end of which is adapted to fit into a specially shaped recess in said vehicle, and the other end of which is adapted to provide the manual force and guidance for controlling the launching of the boat.

3,622,182
WIDE-RANGE TOW HITCH
Tony W. Grosse-Rhode, 8233 Keystone Drive, Omaha, Nebr.
Filed Nov. 13, 1969, Ser. No. 876,530
Int. Cl. B60d *1/00*
U.S. Cl. 280—478 A **16 Claims**



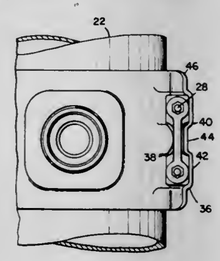
An elongated hitch bar housing having front and rear ends including front longitudinally extending guide means and rear horizontal transverse guide means, respectively. An elongated hitch bar is disposed lengthwise of the housing and including front follower means guidingly engaged with the front guide means and its rear end is longitudinally shiftable relative to and guidingly engaged with the rear guide means for limited horizontal swinging movement to opposite sides of a center position. In addition, the rear end of the housing includes swingable abutment arms pivotally supported at one pair of ends from remote sides of the rear guide means with the other pair of ends thereof projecting toward each other and juxtaposition the opposite sides of the rear end of the bar when the latter is horizontally centered. The other pair of ends of the arms are swingable rearwardly and outwardly away from each other to provide clearance therebetween for horizontal swinging movement of the rear end of the bar as the latter is displaced rearwardly from its forwardmost limit position and the arms are spring biased to generally aligned positions with their free-swinging ends closely opposing the opposite sides of the rear end of the bar.

3,622,183
COUPLING ASSEMBLY FOR FLEXIBLE TUBING
James C. White, P. O. Box 5495, Station B, Greenville, S.C.
Filed Oct. 15, 1969, Ser. No. 866,485
Int. Cl. F16l *33/20*
U.S. Cl. 285—179 **8 Claims**



A tubular coupling for connection with high-pressure or vacuum tubing including a hollow elongate connector member and a locking member slidably received thereon. The elongate connector member includes a bendable reduced-diameter central portion and an enlarged bulbous portion at one end thereof. The locking member is a hollow sleeve tapered at one end to be slidably received along the reduced-diameter central portion of the connector member while the main body thereof is slidably received over the bulbous portion of the connector member. When flexible tubing is inserted over the bulbous portion and reduced-diameter portion of the connector member, the sleeve can be slid over the tubing to clamp the tubing to the connector member and the connector member bent in the reduced-diameter portion to provide a noncollapsible bend in the tubing.

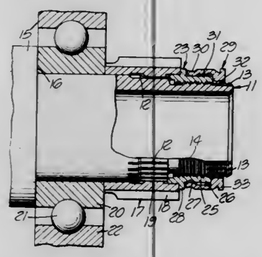
3,622,184
TAPPING SADDLE FOR PLASTIC PIPE
John H. Deasy, San Jose, Calif.; Robert B. Williams, Texarkana, Tex., and Frank E. Turner, San Mateo, Calif., assignors to Smith-Blair Inc., South San Francisco, Calif.
Filed May 14, 1970, Ser. No. 37,099
Int. Cl. F16l *41/00*
U.S. Cl. 285—197 **8 Claims**



A pipe saddle particularly adapted for making a side tap in plastic pipe comprises top and bottom strap members with

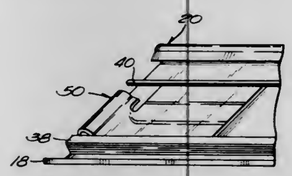
curved back end portions forming recesses for cooperating bar washers that conform to and seat within the recesses. Bolts extend through the bar washers and end portions of the strap members to hold them together around the pipe. The top strap member is formed with an outwardly bulging portion forming a recess around a central opening. A plastic outlet member has a base portion that seats in said recess and an integral annular boss portion that extends through the strap opening. The outlet base portion has an inner surface contour providing space for an annular gasket that seals around a side opening in the plastic pipe aligned with the annular neck of the outlet. The gasket is forced into sealing position around pipe opening when the strap bolts are tightened.

3,622,185
LOCKING ASSEMBLY FOR HIGH-SPEED SHAFTS
Jose Rosan, Sr., San Juan Capistrano; Robert D. Weber, Costa Mesa, and Marvin P. Reece, Dana Point, all of Calif., assignors to Rosan, Inc., Newport Beach, Calif., by said Reece and said Weber
Continuation of application Ser. No. 743,999, July 11, 1968, now abandoned. This application June 2, 1969, Ser. No. 834,199
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 **19 Claims**



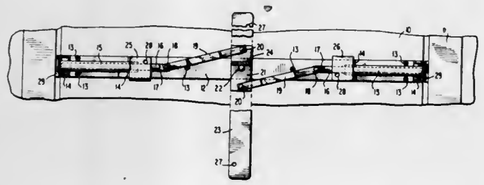
A substantially unitary or integral locking assembly for securely locking members onto a high-speed shaft by a locking nut threadedly engaged with said high-speed shaft and a locking sleeve which is attached to said locking nut by a swaged portion thereof while in simultaneous splined engagement with said locking nut and said high-speed shaft.

3,622,186
CHEVRON CONNECTOR
John F. Newell, Madison; Walter M. Hassenplug, Madison, and Reuben A. Zahler, Verona, all of Wis., assignors to Wehr Corporation, Milwaukee, Wis.
Filed Nov. 26, 1969, Ser. No. 880,027
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36H **2 Claims**



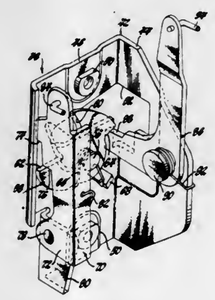
Louver frame segments are joined mechanically by a chevron-shaped connector member which is inserted in restricted passages and extends between abutting frame segments. The legs of the connector member have a compound angular relationship in that they are at an angle to each other in addition to the basic angle attributing the chevron shape. The legs have a nonplanar configuration attributed thereto by upset ribs offset toward like edges of their respective legs. The ribs are flattened in the restricted passages to thereby establish a positive wedge connection between the frame segments and, in being flattened, the ribs of each leg generally expand toward each other to form a hair-line joint between the frame segments.

3,622,187
DOOR SECURITY BOLT ASSEMBLY
William L. Emery, P.O. Box 6058, Corpus Christi, Tex.
Filed July 31, 1970, Ser. No. 59,990
Int. Cl. E05c *1/06, 9/04*
U.S. Cl. 292—36 **8 Claims**



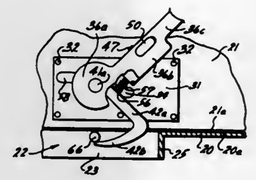
A simplified self-contained high-strength security bolt assembly particularly for the rear and side doors of commercial and industrial establishments, the structure affording security on both sides of the door. The assembly features a main mounting plate or frame which attaches to a door with through bolts, dual bolts which simultaneously engage openings in each side of the jamb, and a sturdy operating linkage which is covered and protected by a handle to prevent tampering when the door is locked.

3,622,188
DOOR-LATCHING ARRANGEMENT
Lester M. Goeman, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 5, 1970, Ser. No. 16,713
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **4 Claims**



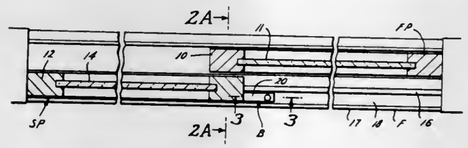
A vehicle door swingable about a vertical axis situated generally at one edge thereof has pivotally mounted therein a bifurcated latch bolt having detent and pull-in shoulders. A detent lever having a pair of detent shoulders thereon is pivotally mounted on the door and engages the detent shoulder of the latch bolt to maintain the latter in either an intermediate latched or a fully latched position. A fixed striker on the vehicle engages and rotates the latch bolt to the intermediate latched position during closing movement of the door and a pull-in lever pivotally mounted on the door is operable to engage the pull-in shoulder on the latch bolt to rotate the latch bolt from the intermediate latched to the fully latched position to thereby forcibly draw the door into the door opening.

3,622,189
ROLL UP TRUCK DOOR LOCK AND LATCH
Ernest Rosehitz, Kansas City; Grady L. Clyma, Kansas City, and Ernest M. Lee, Shawnee Mission, all of Kans., assignors to Roll-O-Matic Chain Company, Kansas City, Mo.
Filed Apr. 30, 1970, Ser. No. 33,317
Int. Cl. E05c *13/02, 3/10*
U.S. Cl. 292—240 **7 Claims**



A self-adjustable latch and lock device for slidable closures, most particularly for the overhead rear door on a truck, adapted for single hand operation in opening and closing the same. Associated with a pivotal hand lever is a hook arm biased by a resilient compression spring to engagement with a keeper post recessed in the sill of a truck floor. A thumb release catch is mounted on the hand lever to retain said lever in a semilock position unless the catch is manually depressed. Additionally, a safety cam latch cooperates with the outer end of the hand lever in a full-lock position to ensure latched engagement and further, may be padlocked to the hand lever for security purposes.

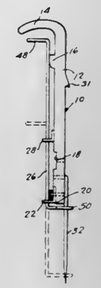
3,622,190
BLOCKING DEVICE FOR LOCKING HORIZONTALLY SLIDING DOORS AND WINDOWS
John L. Mohun, 6215 Fondren Road Apt. 203, Houston, Tex.
Filed June 15, 1970, Ser. No. 46,103
Int. Cl. E05c *19/18*; E05d *13/06*
U.S. Cl. 292—288 **9 Claims**



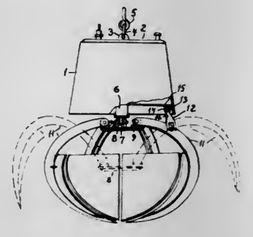
Blocking device for locking sliding doors, windows, and other closures, wherein a removable blocking element having a locking pin therewith is adapted to be mounted with the locking pin in an opening in the lower portion of a frame for a horizontally sliding door or window so that the element blocks the movement of the door or window in the closed position but is completely removable when it is desired to open the door or window, and wherein the removable element and locking pin therewith may be stored inconspicuously on the main closure frame, whereby no obstruction to passage through the open door or window is provided by the blocking device and storage of the blocking device for ready availability for subsequent use is accomplished.

3,622,191
LITTER STICK DEVICE
Elliott Lee Nolley, 419 North Walnut St., Tallulah, La.
Filed Sept. 26, 1969, Ser. No. 861,291
Int. Cl. F41b *13/10*
U.S. Cl. 294—61 **5 Claims**

A litter stick for picking up trash and paper and the like comprising an elongated body member with handle means on the top thereof and a detachable adjustable metal pointed shaft means on the bottom thereof with slide means operatively connected to fork means secured to the body member for sliding parallel to the body member and the adjustable metal pointed shaft to remove trash and the like that has been impaled upon said metal pointed shaft.



3,622,192
MULTIBLADE GRAB
Sven E. Hansen, 4300 Osterled, 20, Holbaek, Denmark
Filed Nov. 10, 1969, Ser. No. 875,367
Claims priority, application Denmark, Oct. 9, 1969, 5,366/69
Int. Cl. B66c *3/04*
U.S. Cl. 294—106 **4 Claims**

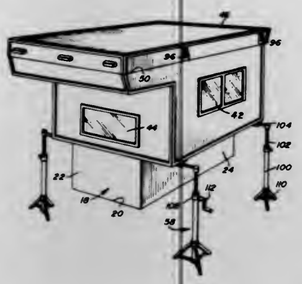


A grapple adapted to be suspended to a hoisting means such as a crane-hook or a wire-block, the said grapple comprises a housing open at the bottom and is provided with a plurality of radially and star-shaped grab blades and an electromagnetically operated valve and a drive mechanism for operating the blades. The drive mechanism consists of an electric motor coupled to a pump arranged to produce operating pressure in a hydraulic cylinder and thus to operate a piston to which is attached a crosshead, each of the grab blades being pivotally attached at one end to the crosshead, and each blade being pivotally mounted on an axle at an intermediate point to an intermediate link each intermediate link being pivotally attached to the housing, so that up-and-down movements of the crosshead closes and opens the grab blades. An inner collar bearing is mounted around the axle, each end of the said collar bearing abutting against sideplates located on each side of the grab blades. The collar is adapted to keep the said sideplates safely spaced from the blade under even very powerful stresses.

3,622,193
COLLAPSIBLE CAMPER
Leo Schmidt, 8500 Second St., Alburquerque, N. Mex.
Filed Oct. 6, 1969, Ser. No. 863,981
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **4 Claims**

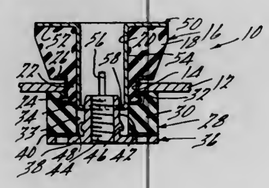
A camper structure having a collapsible roof and adapted to be hauled in a pickup vehicle. The roof includes a top member normally contacting the sidewalls of the camper when minimum clearance is required. A bellows is

peripherally disposed between the top member and sidewalls thereby allowing the raising of the top member in a sealed manner. Telescoping jacks are pivotally mounted to the camper sidewalls and are rotated to contact the ground for



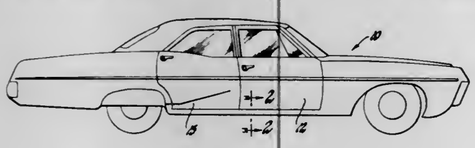
supporting the camper during nonuse when the pickup vehicle slides out from under the camper. The jacks can be rotated to engage the roof and are adjusted so that the roof can be maintained in an elevated condition.

3,622,194
MOTOR VEHICLE BODY MOUNT
William Bryk, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 29, 1969, Ser. No. 888,325
Int. Cl. B62d *27/04*
U.S. Cl. 296—35 R **6 Claims**



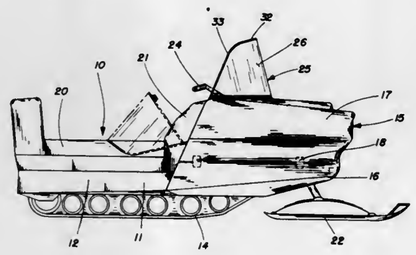
A body mount for connecting a motor vehicle body part to the vehicle frame. A pair of resilient, apertured insulators are positioned on either side of the frame with the insulator apertures in registry with a frame aperture. The configurations of the insulators allow them to be interlocked and held in position for preassembly without the aid of a fixture. Upper and lower retaining elements bear on the outer surfaces of the insulators and each retaining element includes a projection extending into the insulator apertures. Formed on these projections are snap action connectors that become engaged upon the retaining elements being moved toward one another during compression and preloading of the insulators. One of the retaining element projections includes a threaded sleeve portion that receives a bolt that extends from the body part.

3,622,195
VEHICLE FRAME AND BODY CONSTRUCTION
Charles S. Lautenbach, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 22, 1970, Ser. No. 881,304
Int. Cl. B62d *27/04, 21/02*
U.S. Cl. 296—35 R **5 Claims**



A vehicle frame and body construction includes a generally U-shaped upwardly opening sill that has inner and outer sill members. The inner sill member has a vertical base section terminating in upper and lower inwardly extending lateral flanges. The outer sill member has a vertical wall section having an upper outwardly extending lateral flange and having a lower inwardly extending stepped portion including a lower lateral flange secured to the lower lateral flange of the inner sill member. A generally closed rectangular rocker structure is mounted on the vehicle frame and is received within the upwardly opening sill in a spaced relationship. The rocker structure includes a first rocker channel member that has a vertical base section terminating in an upper inwardly extending wall welded to the vehicle floor pan and in a lower inwardly extending wall terminating in a downwardly extending plate flange. A second rocker channel member fits within the first rocker channel member and has a vertical base section terminating in upper and lower walls welded to the walls of the first rocker channel member. A vertical plate has a lower portion welded to the downwardly extending plate flange of the first rocker channel member and an upper inwardly extending flange welded to the vehicle floor pan. A sealing strip extends between the rocker structure and the upper outwardly extending lateral flange of the outer sill member.

3,622,196
WINDSHIELD FOR SNOW VEHICLE
Salvatore S. Sarra, Fond Du Lac, Wis., assignor to Brunswick Corporation, Chicago, Ill.
Filed Jan. 14, 1970, Ser. No. 2,715
Int. Cl. B60j *1/02*
U.S. Cl. 296—90 **13 Claims**

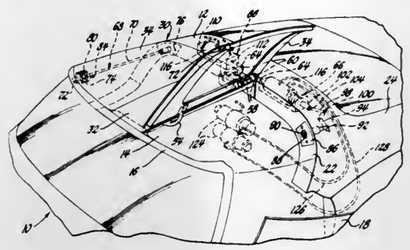


A windshield for a snow vehicle which is pivotable from an operative position into a stowed position on the seat. Arms interconnect the pivot points to the corners of the windshield which allow the corners to drop when the windshield is stowed so that the windshield is substantially within the profile of the cowl.

3,622,197
VEHICLE BODY CLOSURE
Robert A. Vogelei, Lathrup Village; Richard W. Kirkman, Harpenden, England, and Alverson B. Williams, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 25, 1969, Ser. No. 860,907
Int. Cl. B60j *5/04*
U.S. Cl. 296—146 **8 Claims**

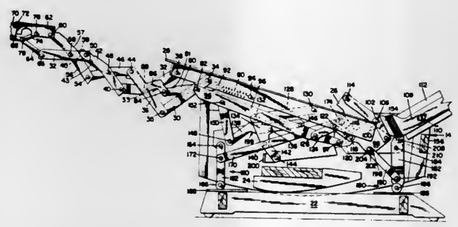
A vehicle body closure includes a base having fore and aft pins to mate with holes in a vehicle body to locate the base in an opening in the vehicle body, a releasable top lock to secure the base to the body, and right and left flipper panels pivotally mounted thereto, with each flipper panel movable between a raised position opening half of the opening and a lowered closed position covering half the opening. A door-controlled body-mounted sequentially operating hydraulic linear actuator includes a spring-biased movable cylinder operably connected to a locking mechanism and a movable piston operably removably connected to a base-mounted raising mechanism through the aft pins to sequentially operate in one direction to unlock and then in the opposite direction to raise a flipper panel in response to differential

fluid pressure and to operate in the one direction to lower the flipper panel and then in the opposite direction to lock it



in response to opposite differential fluid pressure. The base and the flipper panels may also be removed giving a completely open body.

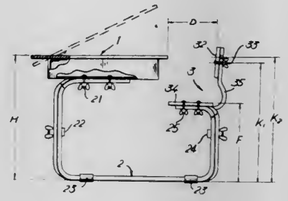
3,622,198
ROCKER/RECLINER CHAIR
Frank M. Re, Holyoke, Mass., assignor to Dual Manufacturing and Engineering, Incorporated, Holyoke, Mass.
Continuation-in-part of application Ser. No. 724,143, Apr. 25, 1968, now Patent No. 3,493,264. This application Dec. 11, 1969, Ser. No. 884,187
Int. Cl. A47c *1/035*
U.S. Cl. 297—84 **15 Claims**



A rocker/recliner chair inclusive of a rocker base, a chassis rockably connected to the base, a body-supporting unit (i.e. a seat and a back) connected to the chassis, a leg rest, and mechanism interconnecting the body-supporting unit and leg rest and chassis for coordinated rocking and reclining motions of the body-supporting unit and extending or retracting of the leg rest and incorporating arresting means engageable with the base in manner such that: (A) the arresting means permit rocking of the chassis and seat and back and leg rest with respect to the base when the chair is in upright position or moving into intermediate reclined position; and (B) the arresting means preclude rocking as the chair assumes intermediate reclined position or is in the intermediate or fully reclined positions or positions therebetween; and (C) the leg rest is variably adjustable in a multiplicity of positions of angularization in the fully reclined position without concomitant movements of the seat and back.

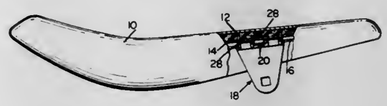
3,622,199
ADJUSTABLE DESK AND CHAIR COMBINATION
Su-Shian Ho, No. 93, Mei Te Street Hsi Lin, Taipei, China /Taiwan
Filed Dec. 12, 1969, Ser. No. 884,465
Int. Cl. A47b *39/00*
U.S. Cl. 297—172 **7 Claims**

An adjustable desk and chair combination which is capable of simultaneously adjusting the elevation of both the desk and the chair and varying the lateral distance between them. The desk includes a frame defined by a base member for receiving fastening members for securing the desk to an adjusting member, and a plurality of side members in a combination with a top member. The adjusting member includes a pair of rigid support members, each having a first horizontal portion, intermediate portions disposed at each end thereof, and second horizontal portions connected to each intermediate portion. Fastening members are secured to the second horizontal members and to the base of the desk set and to the base of the chair respectively. The respective intermediate portions of a pair of rigid support members are pivotally interconnected so that the desk and chair may be adjusted by the scissor action of the adjustable member. The



openings in the base of the desk are arranged so that the lateral distance between the desk and the chair is changed at the same time that the elevations of the desk and chair are adjusted. Thus, the desk is nearest the chair in its lowest position and furthest therefrom in its highest position. The top member is hinged to the frame of the desk by hinges so that the desk top member may rest in recesses in the opposed side members of the desk at a predetermined angle with respect to the horizontal.

3,622,200
CYCLE SADDLE
Martin J. Bird, Norwalk, Ohio, assignor to Persons-Majestic Manufacturing Company, Worcester, Mass.
Filed July 16, 1970, Ser. No. 055,507
Int. Cl. B62j *1/00*
U.S. Cl. 297—195 **1 Claim**

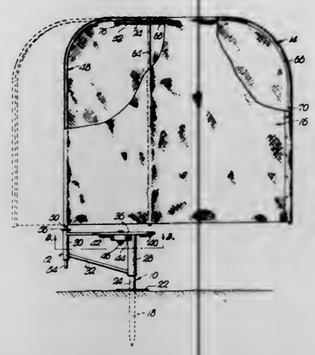


A cycle saddle comprising a baseplate and an insert, and a cover, a saddle post bracket attached to said insert by means of a pair of struck up generally cylindrical members like hollow rivets extending through commensurate apertures in the insert, said members being peened over on the interior of the insert in the areas adjacent the apertures.

3,622,201
PORTABLE BLIND
Theodore Newman Radig, 310 South Union St., Emporia, Kans.
Filed Mar. 25, 1970, Ser. No. 022,412
Int. Cl. A47c *7/62, 7/10;* **A45f** *1/00*
U.S. Cl. 297—217 **9 Claims**

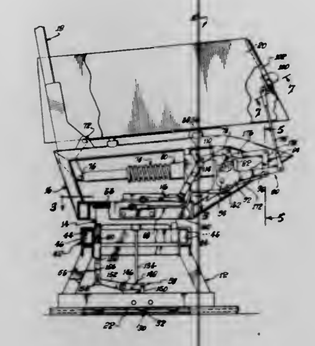
A portable blind for providing concealment and shelter in the field for hunters or observers of wild life is constructed of separable and foldable parts, both to permit quick and convenient assembly under field conditions and to facilitate transportation and storage. The blind includes a user seat, and the seat and cover portions of the blind are adapted for rotation as a unit upon the support structure therefor, to permit quiet and unobtrusive scanning of the surrounding terrain in any direction without the user emerging from the blind, substantially altering his position within the blind, or otherwise creating any undue movement or disturbance that might tend to frighten wild game. The cover portion of the blind, which may be camouflaged, is adapted for immediately and automatically opening from its normal or almost closed con-

dition to an opened condition providing a wide angle field for vision or shooting, whenever a suitable holding means as-



sociated with the elements that support the cover shroud is released by the user.

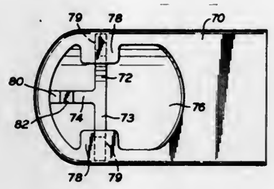
3,622,202
ADJUSTABLE CHAIR AND CONTROL THEREFOR
Vernon C. Brown, 712 Holmby Ave., Los Angeles, Calif.
Filed July 7, 1969, Ser. No. 839,197
Int. Cl. A47c 1/02, 1/06, 3/00
U.S. Cl. 297—344 **9 Claims**



A single control for an adjustable chair for aircraft, or the like. Different embodiments of the chair are capable of different combinations of fore-and-aft linear movement, lateral linear movement, selective directional linear movement, swiveling movement, tilting movement, and the like. The chair includes different locking means for locking it against the different movements, respectively. A single, manually operable control means mechanically connected to the different locking means used in a particular embodiment unlocks all of them so that the chair can be maneuvered into any desired position by the body of a person seated therein. Upon releasing the single control means, all of the locking means automatically relock.

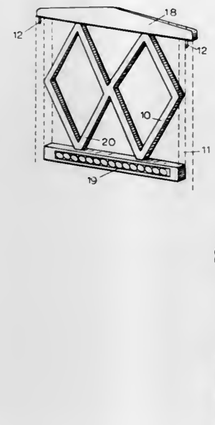
3,622,203
BOOT FOR SEATBELT
Frank W. Steere, Jr., Akron, Ohio, assignor to Steere Enterprises, Inc., Tallmadge, Ohio
Continuation-in-part of application Ser. No. 724,015, Apr. 25, 1968, now abandoned. This application Sept. 2, 1969, Ser. No. 859,242
Int. Cl. A62b 35/60
U.S. Cl. 297—385 **7 Claims**

Means is incorporated to the underside of the boot for a seatbelt, to engage the means which anchors the belt to the floor or other part of a vehicle so that the boot is not easily dislodged from its position covering said anchoring means. This engaging means may be mechanical or magnetic. It may comprise any type of latch means such as a catch, a clamp or the like which engages the bolt or nut or the anchor plate. It may be a push-type fastener which is engaged in an end of



the bolt. If the anchor bolt is threaded up through the floor or other portion of a vehicle, the nut may be incorporated in the boot and engage the bolt in the usual manner. A magnetic plate or means of other shape which holds the boot to the anchoring means may be employed. A variety of other means may be utilized.

3,622,204
CHAIR AND METHOD OF MAKING SAME
William R. Byrd, 4007 Venice Drive, Erie, Pa., and Richard W. Byrd, 2936 West 15th St., Erie, Pa.
Filed Oct. 31, 1968, Ser. No. 772,095
Int. Cl. A47c 3/00, 7/00
U.S. Cl. 297—460 **1 Claim**

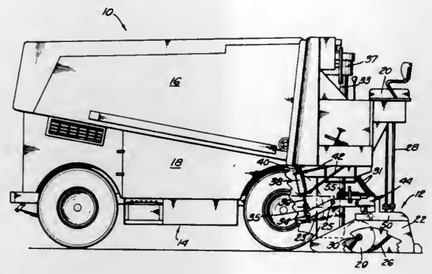


A chair and a method of making a part of the chair from wood and a part of the chair from molded plastic wherein a screw rod or naillike object is molded in place in the chair back thus providing a readily assemblable joint which is assembled in combination with a wood chair.

3,622,205
ICE RINK RESURFACING MACHINE
Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.
Filed June 22, 1970, Ser. No. 48,143
Int. Cl. E01h 5/12
U.S. Cl. 299—24 **8 Claims**

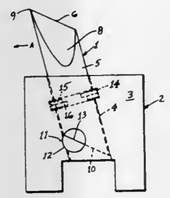
An ice rink resurfacing unit is disposed transversely across the rear of an automotive vehicle and has runners at its ends which run on the ice. The unit is connected to the vehicle by two laterally spaced lift arms, which are pivoted on the vehicle for vertical swinging movement, and connected to the arms is a hydraulic lift cylinder which raises the arms to elevate the unit to transport position. Pivoted on the rear ends of the arms for vertical swinging movement are flexible

joint members, each of which is connected to the resurfacing unit at a point spaced fore-and-aft from the pivot axis. A spring bears against the said member at a point spaced radi-



ally from the pivot axis, exerting a torque on the member, causing it to press the unit downwardly with yielding spring pressure.

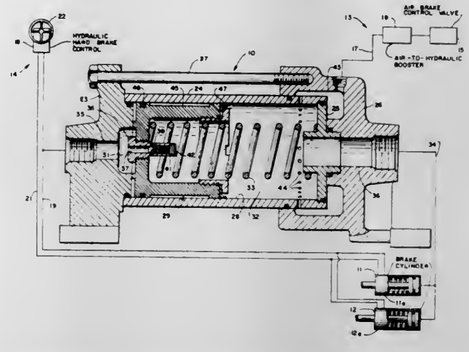
3,622,206
CUTTER BITS AND MEANS FOR MOUNTING THEM
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio
Continuation-in-part of application Ser. No. 753,398, Aug. 19, 1968, now abandoned. This application June 30, 1969, Ser. No. 842,791
Int. Cl. E21c 25/46
U.S. Cl. 299—92 **54 Claims**



Nonrotating cutter bits and mounting means for use on mining, excavating and earth working machines and the like. The cutter bits comprise elongated elements having a shank portion with a cutting tip at at least one end and a gauge-determining abutment surface at at least the other end. The mounting means each comprise a body having a shank receiving perforation, and means in association with the bottom of the perforation having an abutment surface adapted to cooperate with the abutment surface on the cutter bit. Means are provided to frictionally retain the cutter bit shank within the shank receiving perforation, and means are also provided to prevent rotation of the cutter bit within the shank receiving perforation.

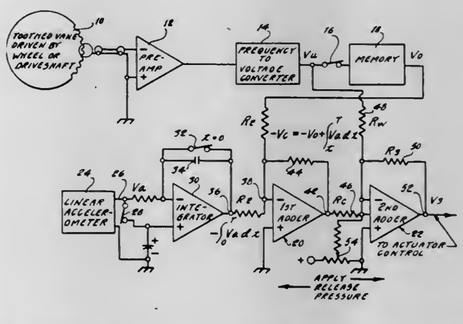
3,622,207
HYDRAULIC TRANSLATING AND VALVING UNIT
Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation
Filed June 25, 1970, Ser. No. 49,851
Int. Cl. B60t 7/10, 17/16
U.S. Cl. 303—13 **6 Claims**

The disclosure concerns hydraulic translating and valving mechanisms particularly suited for use on railway cars to join a single set of hydraulically operated brake cylinders with both handbrake and service brake circuits. Each mechanism affords slack-compensating action to the handbrake, allows either brake to be cycled regardless of whether the other is applied or released, and prevents unintentional release of a



handbrake application as a result of operation of the service brake circuit.

3,622,208
ANALOG CIRCUIT FOR DETECTING DEVIATIONS FROM A PREDETERMINED PERCENTAGE WHEEL SLIP IN AN ANTISKID BRAKE SYSTEM
Allen D. Krugler, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 9, 1970, Ser. No. 1,664
Int. Cl. B60t 8/08, 8/10
U.S. Cl. 303—21 BE **4 Claims**

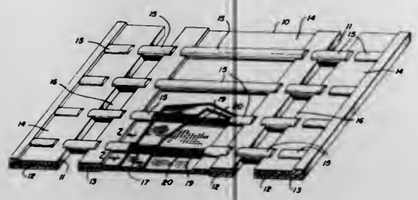


An electronic circuit for detecting the percentage of wheel slip in the brake system of a wheeled vehicle wherein a synthesized vehicle velocity voltage is combined with a memorized voltage produced by a wheel speed pickup device at the instant the vehicle brakes are applied, the resulting signal being modified by the voltage produced by the speed pickup device at any instant during the braking interval thereby resulting in an output signal which may be used by a wheel brake actuator to correct the wheel braking torque whenever the output signal exceeds a value corresponding to a predetermined wheel slip.

3,622,209
VEHICLE DRIVE TRACK
John F. Leyden, Poughkeepsie, N.Y., assignor to Chemical Rubber Products, Inc., Beacon, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,679
Int. Cl. B62d 55/24
U.S. Cl. 305—38 **10 Claims**

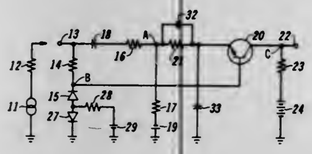
A drive track for vehicles such as snowmobiles comprising a flexible endless belt containing flexible stiffening members composed of wire fabric which maintain the belt in uniform

gripping contact with the ground or snow while simultaneously permitting localized flexibility allowing for uneven ter-



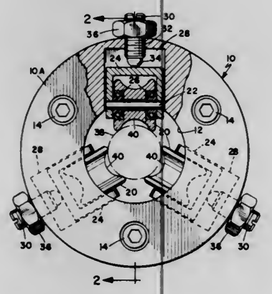
rain and cushioning for concentrated loading caused by immovable or nonyielding objects such as stones or tree stumps.

3,622,210
TRANSFORMERLESS FREQUENCY DOUBLER
William Thelen, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 16, 1970, Ser. No. 89,597
Int. Cl. H03b *19/14*
U.S. Cl. 307—220 **7 Claims**



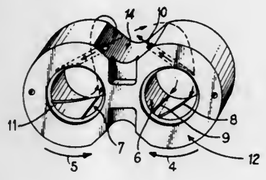
A transformerless frequency doubler with superior high-frequency performance takes the form of a resistive voltage divider connected across the driving source to supply a first wave in the form of a full-wave signal, a half-wave rectifier connected to the driving source to supply a second wave in the form of half cycles of the signal at a magnitude substantially twice the magnitude of the half cycles of the first wave, and a common-base transistor stage connected to combine the two waves in phase opposition across a resistor to provide a full-wave rectified output.

3,622,211
LINEAR ROLLER BEARING UNIT
Robert E. Mitton, 523 Highland Ave., National City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,227
Int. Cl. F16c *29/04*
U.S. Cl. 308—6 **3 Claims**



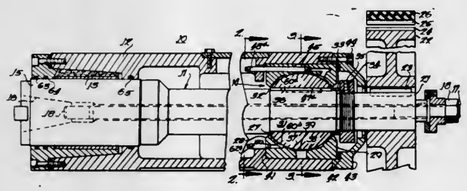
A bearing unit for supporting or riding on a linear member, which is held between multiple rollers mounted in a housing through which the linear member passes. The rollers are rotatable about axes substantially perpendicular to the longitudinal axis of the linear member, and in one form of the unit the rollers are radially adjustable to accommodate linear members of various sizes. For simplicity of manufacture and assembly, the housing is made in two similar halves, which are secured together to contain the rollers.

3,622,212
HYDRODYNAMIC LUBRICATION BEARING
Roger Laumont, Nogent sur Marne, France, assignor to Hydroperfect International
Filed Feb. 18, 1970, Ser. No. 12,215
Claims priority, application France, Feb. 26, 1969, 6904922
Int. Cl. F16c *33/66*
U.S. Cl. 308—78 **7 Claims**



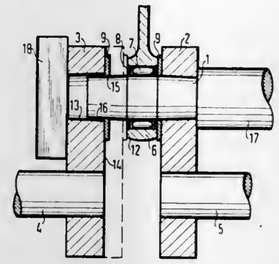
A bearing for a journal lubricated by hydrodynamic lubrication has two helical grooves formed ahead of the load zone of the bearing. One groove has a relatively small pitch angle while the other groove is of greater width and has a much greater pitch angle. Such a bearing arrangement is particularly suitable for supporting stub shafts of gears in high-pressure gear-type pumps and motors.

3,622,213
SPHERICAL HYDROSTATIC BEARING
Rudolph F. Onsrud, 833 Glenayre Drive, Glenview, Ill.
Filed Aug. 28, 1969, Ser. No. 853,810
Int. Cl. F16c *17/16*
U.S. Cl. 308—122 **6 Claims**



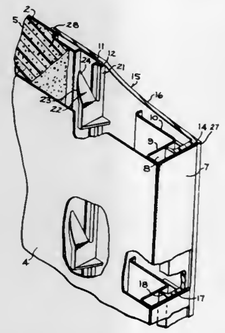
A hydrostatic spherical bearing structure is disclosed wherein a spherical runner is fixedly mounted on a shaft and an enveloping spherical member surrounds the spherical runner with a small clearance and is held in a support or housing. The enveloping spherical member consists of two ring bearing members facing each other. Lubricant under pressure of about 1,500 pounds per square inch is forced to flow into the clearance between the spherical runner and the enveloping surface of the ring bearing members through a series of symmetrically spaced openings in the ring bearing members thereby holding the spherical runner in a central position. Axial or radial deflections caused by corresponding deflections of the shaft of the spherical runner result in increased or balancing pressure being exerted against the spherical runner at the area opposite that where the deflecting force is applied. Under the influence of the balancing pressure, the spherical runner, and thus the shaft, returns to its central position, whether the deflection is radial or axial.

3,622,214
BEARING ARRANGEMENT AND METHOD OF MAKING THE SAME
Hans Durr, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Dec. 2, 1969, Ser. No. 881,541
Claims priority, application Germany, Dec. 17, 1968, P 18 15 037.3
Int. Cl. F16c *3/12*
U.S. Cl. 308—179 **7 Claims**



A connecting rod bearing assembly mainly consisting of a journal member having conically tapering ends fixedly received in conforming bores of respective crank webs and a cylindrical middle portion carrying the bearing ring of the connecting rod. Flat abutment rings are held in area contact with the opposite faces of the webs by a press fit on the journal member. The device is assembled by simultaneously pressing the two abutment rings and the webs from the ends of the journal member toward the middle portion.

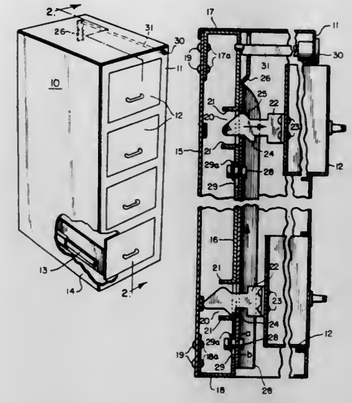
3,622,215
REFRIGERATOR CABINET CONSTRUCTION
Edward H. Roberts, Jeffersontown, Ky., assignor to General Electric Company
Filed Nov. 10, 1969, Ser. No. 875,266
Int. Cl. A47b *81/00*; **F25d** *11/00*; **B65d** *25/18*
U.S. Cl. 312—214 **7 Claims**



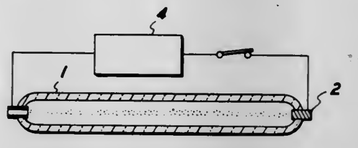
A refrigerator cabinet including a liner having a flange at the front thereof and a shell spaced from the liner and having an inwardly opening channel at the front thereof is provided with a breaker strip comprising an L-shaped anchoring means frictionally received in the channel, and flexible angularly disposed latching elements adapted to ride over and latch the strip onto the liner front edge.

3,622,216
DRAWER INTERLOCKING DEVICE FOR CABINETS
Daniel A. Haunost, Chicago, Ill., assignor to Midwest Folding Products Mfg. Corporation, Chicago, Ill.
Filed May 28, 1970, Ser. No. 41,491
Int. Cl. E05c *15/04*
U.S. Cl. 312—219 **4 Claims**

This invention is directed to the combination of units having superposed slidable drawers, such as cabinets or desks, and having structural means providing a self-locking and unlocking mechanism actuable by the withdrawal of a drawer to lock the remaining drawers against withdrawing movements while the first drawer is withdrawn; to thereby prevent a tipping of the cabinet normally caused by the weight of several drawers being withdrawn at one time.

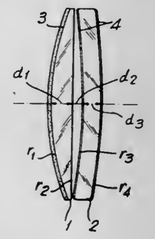


3,622,217
LIGHT PRODUCING SYSTEM
Charles F. Gallo, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 30, 1969, Ser. No. 837,881
Int. Cl. H01j *9/22, 9/38*
U.S. Cl. 316—8 **7 Claims**



A method is provided whereby a high density of metallic atoms may be obtained in the plasma of a flash lamp by deposition of the desired metal substantially uniformly over the inside of an evacuated tube. Applying a pulse of current which vaporizes the metal produces the desired results.

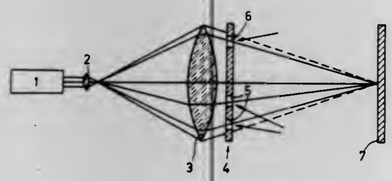
3,622,218
TWO-ELEMENT OBJECTIVE FOR USE IN THE INFRARED RANGE
Hans Gerhard Kruger, Neckarsteinach, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany
Filed Dec. 8, 1969, Ser. No. 882,999
Claims priority, application Germany, Dec. 6, 1968, P 18 13 085.3
Int. Cl. G02b *3/00, 1/00, 9/10*
U.S. Cl. 350—2 **3 Claims**



A two-element objective for operation in the infrared range of 8μ and 14μ is constituted by a convex-concave

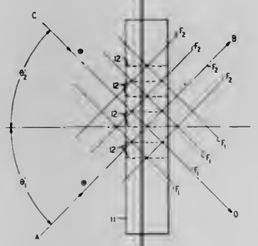
front condensing lens of cesium bromide spaced in front of a rear dispersive lens of polycrystalline zinc sulfide fritted under pressure. The objective has a resolving power of 0.8 milliradians on the optical axis with an aperture ratio of 1:2.5.

3,622,219
METHOD OF PRODUCING HOLOGRAMS WHICH ON RECONSTRUCTION FROM SMALL SIZE IMAGE POINTS
Gunther Groh, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,117
Claims priority, application Germany, Nov. 9, 1968, P 18 08 131.7
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **10 Claims**



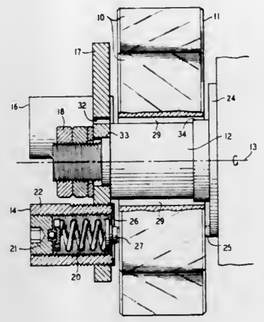
A method of producing a hologram for imaging multiple small sized image points on reconstruction. The hologram is formed by illuminating a recording medium with a converging coherent beam through a diaphragm containing image-forming pinholes considerably larger than the images to be formed and also containing a pinhole of the same shape as the image forming pinholes and acting as a reference source.

3,622,220
HOLOGRAPHIC OPTICAL POLARIZERS AND BEAM SPLITTERS
Herwig W. Kogelnik, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 8, 1969, Ser. No. 864,715
Int. Cl. G02b *5/18, 5/30, 27/28*
U.S. Cl. 350—3.5 **7 Claims**



Holographic optical components such as polarizers and beam splitters are made by the interference of a pair of coherent light beams polarized at 90° to their plane of incidence on a transparent thick holographic medium, and intersecting each other at 90° within the medium.

3,622,221
SPRING STRUCTURE FOR PRODUCING SMALL DISPLACEMENTS
Gunter J. W. Kossyk, Piscataway; Leif Rongved, Summit; John W. Stafford, East Orange, and John W. West, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 4, 1969, Ser. No. 830,393
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **4 Claims**



The polygonal mirror of a light beam scanner is aligned on a shaft by three mounting fixtures, each comprising a stiff spring bearing against one side of the mirror and a relatively soft spring bearing against the opposite side. The soft spring is compressed against the mirror by a bolt. The rotational plane of the mirror is adjusted by threading the bolts toward or away from the mirror.

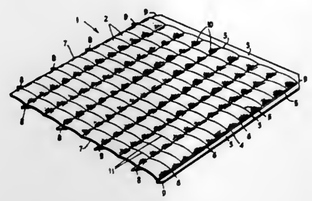
3,622,222
APPARATUS FOR SCANNING PHOTOGRAPHIC NEGATIVES
Claude Edmond Remy, Foret de Vernon; Daniel Francois Kohler, Valence, and Yves Le Branchu, Foret De Vernon, all of France, assignors to Etat Francais Delegation Ministerielle pour L'Armement, Paris, France
Filed Sept. 11, 1970, Ser. No. 71,610
Claims priority, application France, Sept. 11, 1969, 6930868
Int. Cl. G02b *17/06*
U.S. Cl. 350—7 **6 Claims**

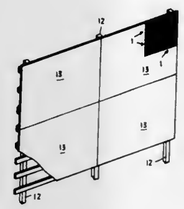


A photographic negative is scanned by coiling the negative on a transparent sleeve and illuminating the negative from within the sleeve by focusing light rays on a rotatable mirror within the sleeve and inclined at an angle of 45° relative to the axis of the sleeve. After the completion of each rotation of the mirror the sleeve is axially displaced for illumination of the next line of the negative.

3,622,223
PROJECTION SCREENS
Gordon R. Brakell, Hunters, Hill, New South Wales, Australia, assignor to Brakell Products Pty. Limited, Leichhardt, New South Wales, Australia
Filed Jan. 16, 1970, Ser. No. 003,471
Int. Cl. G03b *21/60*
U.S. Cl. 350—129 **3 Claims**

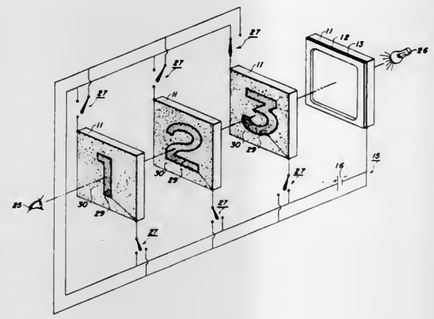
A projection screen suitable for indoor or outdoor use, the screen being installed as a permanent fixture and consisting of individual reflective sheet metal sheets or tiles fixed in overlapping relationship to form the screen to desired width and height dimensions. Each sheet or tile is embossed with





convex reflective surfaces to directionally reflect light from a projection whereby the screen, when formed from a desired number of sheets or tiles, reflects light from a projection within predetermined angles.

3,622,224
LIQUID CRYSTAL ALPHA-NUMERIC ELECTRO-OPTIC IMAGING DEVICE
Joseph J. Wysocki, Webster, and Robert W. Madrid, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 20, 1969, Ser. No. 851,708
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **37 Claims**

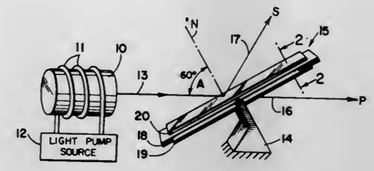


An imaging system having a multiplanar series of alphanumeric images in conjunction with an electro-optic imaging cell suitable for displaying one or more of the images.

3,622,225
SINGLE PLATE LASER BEAM POLARIZER
William W. Buchman, Los Angeles; Samuel J. Holmes, Santa Monica, and Frank J. Woodberry, Inglewood, all of Calif., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,121
Int. Cl. G02b *27/28*
U.S. Cl. 350—152 **7 Claims**

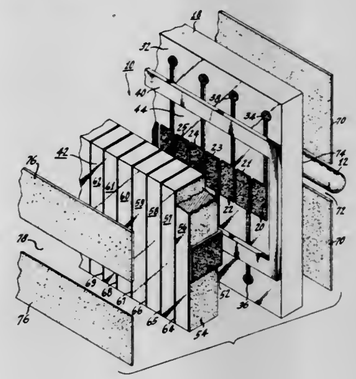
A glass substrate having multilayers of alternately high and low index of refraction materials coated on one surface and

positioned to intercept a laser beam at an angle of incidence of 60° provides a transmission of approximately 99 percent of the beam component whose electrical vector is parallel to the plane of incidence and a reflection of approximately 97 per-



cent of the laser beam component whose electric field vector is perpendicular to the plane of incidence. The efficient polarization achieved by the single plate structure is realized for a specific wavelength of the incident laser light beam.

3,622,226
LIQUID CRYSTAL CELLS IN A LINEAR ARRAY
Dennis Lee Matthies, Princeton, N.J., assignor to RCA Corporation
Filed Nov. 19, 1969, Ser. No. 877,938
Int. Cl. G02f *1/28*; H04n *5/84*
U.S. Cl. 350—160 **2 Claims**

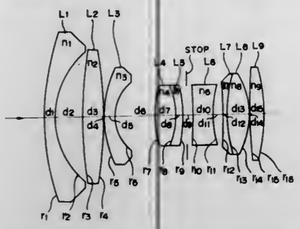


A linear array of individually addressed liquid crystal cells comprises a chamber formed between two light-transmitting plates. A plurality of light-transmitting electrodes are on the surfaces of the plates within the chamber, and the chamber is filled with liquid crystals. The front plate comprises a plurality of light tunnels, at least one tunnel for each cell as defined by a pair of oppositely disposed electrodes. Each tunnel has sides with light-absorbing material thereon. Light-absorbing masks on the front and backplates have slits that are in alignment with the electrodes.

3,622,227
RETROFOCUS-TYPE WIDE-ANGLE CAMERA LENS
Yoshiyuki Shimizu, 1-68, Tamagawa Yohga-machi Setagaya-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 611,206, Dec. 27, 1966, now abandoned. This application Dec. 24, 1969, Ser. No. 888,041
Int. Cl. G02b *9/64*
U.S. Cl. 350—214 **2 Claims**

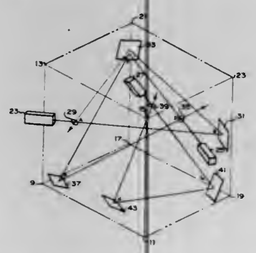
A retrofocus-type wide-angle camera lens is provided in which the back focus is especially long compared to the composite focal length. The lens comprises a front lens group having a negative composite focal length and a rear lens group consisting of a cemented positive lens, a negative single lens, a composite positive meniscus lens, and a single

positive lens. The lens thus provided has an aperture ratio of F/2.8 and a viewing angle of over 80° with various aberra-



tions, coma, curvature of the field and distortion highly corrected.

3,622,228
LIGHT REFLECTION APPARATUS
Rockne Krebs, 1960 Biltmore St., Washington, D.C.
Filed Sept. 24, 1969, Ser. No. 860,726
Int. Cl. G02b *5/08*
U.S. Cl. 350—299 **3 Claims**

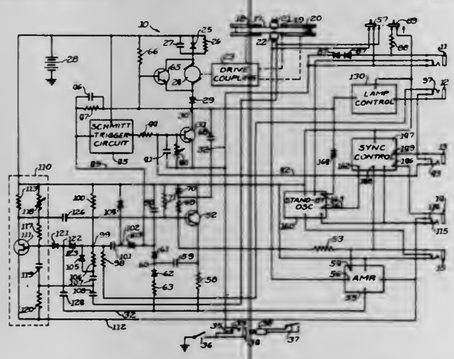


Multiple reflections of a thin beam of light are used to establish imaginary boundaries within physically limited space for displays as well as for forming illusory architectural models having conveniently re-arrangeable boundaries.

ERRATA

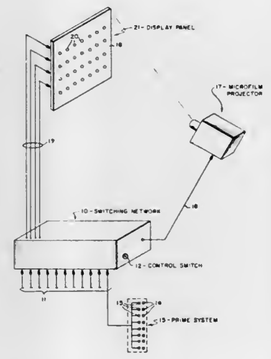
For Classes 350—193, 350—301 and 351—38 see:
Patent Nos. 3,622,231, 3,622,232 and 3,622,233

3,622,229
SOUND REPRODUCING UNIT START-STOP CONTROL CIRCUIT
Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 26, 1970, Ser. No. 5,824
Int. Cl. G03b *31/00*
U.S. Cl. 352—25 **17 Claims**



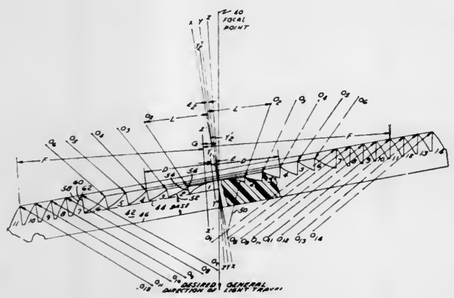
Start-stop control circuit for sound reproducing units arranged to be started by a start signal from a motion picture projector and stopped by stop signals reproduced from a record medium such as a magnetic tape, the stop signals being in the form of trains of pulses. Control means, preferably including a feedback capacitor circuit, are arranged to prevent stopping of drive means of the sound reproducing unit for a certain time interval after starting thereof.

3,622,230
FLEXIBLE MIMIC DISPLAY SYSTEM
Joseph G. Dimmick, 1009 Beech St., Annapolis, Md.
Filed May 19, 1969, Ser. No. 825,703
Int. Cl. G03b *21/00*
U.S. Cl. 353—122 **4 Claims**



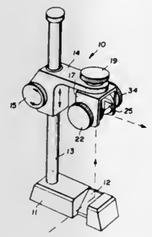
A system for simultaneously displaying on one panel different types of dynamic and static data, wherein for each piece of static data concerning a prime system component that is presented, there exists a piece of dynamic data concerning the same prime system component which is presented in such a manner that said dynamic data is displayed in the same specific location on the panel as the associated piece of static data.

3,622,231
LENS HAVING OPTICS RADIALLY SYMMETRICAL ABOUT DIFFERENT INTERSECTING LINES
Nels L. Hansen, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 3, 1970, Ser. No. 60,487
Int. Cl. G02b *3/08*
U.S. Cl. 350—193 **4 Claims**



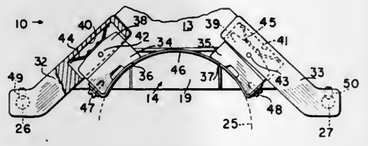
A lens is described which, when in use, transmits light rays emanating from a source thereof mounted in a fixed location with respect to the lens. The lens is made of a light transmitting material and comprises a base portion of uniform thickness having integral therewith a plurality of optics. A central optic is constructed about a line perpendicular to the surface of the base. Each of one or more optics which surround the central optic is radially symmetrical with respect to a line which intersects the line perpendicular to the base and which is at an acute angle therewith. The function of the optics is to efficiently transmit the light rays in a general direction which is not perpendicular to the lens base. This permits the lens to be mounted at an angle which is not perpendicular to the desired direction of light transmittal.

3,622,232
BEAM DIRECTOR
Charles R. Munnerlyn, Fairport, N.Y., assignor to Tropel, Inc., Fairport, N.Y.
Filed July 6, 1970, Ser. No. 52,578
Int. Cl. G02b *5/08*
U.S. Cl. 350—301 **11 Claims**



A beam director has a base with a mirror arranged to reflect the beam upward, and a guide above the base carries a vertically adjustable support arm. A rooftop reflector is arranged on the support arm above the base mirror so that the beam reflected from the base mirror is incident on the rooftop reflector. The horizontal position of the rooftop reflector along a line perpendicular to the ridge line of the reflector is adjustable to translate the beam horizontally without changing its direction angle. Preferably, the rooftop reflector is also rotatable about horizontal and vertical axes for changing the beam direction angle.

3,622,233
HEAD SUPPORT FOR DIAGNOSTIC APPARATUS
Charles H. Blood, Rochester; Stephen K. Bright, Perinton, N.Y.; Kenneth D. Maier, Palm Harbor, Fla., and Lawrence J. Meyers, Ann Arbor, Mich., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,738
Int. Cl. A61b *3/00*; **A61g** *15/00*
U.S. Cl. 351—38 **1 Claim**

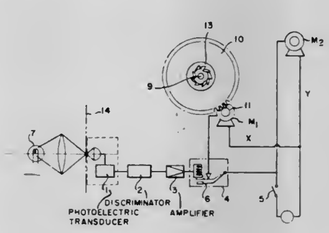


A headrest to be used in diagnostic apparatus such as, for instance, precision eye examining instruments, said apparatus providing a semiflexible abutment for the forehead to prevent forward or sideward movements of the head.

3,622,234
HOT CORROSION RESISTANT SUPERALLOYS
Alan U. Seybolt, Ballston Spa, and James L. Walker, Schenectady, both of N.Y., assignors to General Electric Company
Filed Dec. 29, 1969, Ser. No. 888,983
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 **10 Claims**

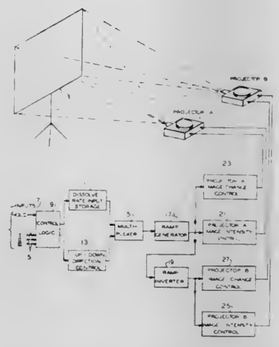
Under certain circumstances of service, nickel-rich and cobalt-rich superalloys are subject to "hot-corrosion" attack. This occurs, for example, when bodies formed from these alloys are operated at elevated temperatures in oxidizing atmospheres in the presence of small amounts of sulfur compounds and salt. It has been found that the presence of a small but effective amount of rare earth oxide in the form of a dispersion of small particles in the alloy effectively reduces this corrosion.

3,622,235
FRAMING ADJUSTMENT DEVICE FOR USE IN PROJECTORS
Masayoshi Yamada, No. 2-36-2, Zempukuji, Suginami-ku, Tokyo-to, Japan
Filed Dec. 17, 1969, Ser. No. 885,763
Int. Cl. G03b *21/50*
U.S. Cl. 352—92 **3 Claims**



A framing adjustment device wherein a framing mark upon film may be optically detected by a photoelectric transducer element so that when the picture is not correctly positioned, the film may be gradually advanced until the picture is correctly positioned, during each intermittent stop of a pulldown drive mechanism of the projector, by means of a motor which is automatically controlled by discriminator which detects a discrepancy between a proper frame position of projecting film and an aperture of the projector.

3,622,236
IMAGE DISPLAY DISSOLVE CONTROL
John R. Novy, Elmhurst, Ill., assignor to Southern Illinois University Foundation, Carbondale, Ill.
Filed Mar. 4, 1970, Ser. No. 16,438
Int. Cl. G03b *21/20*
U.S. Cl. 353—86 **19 Claims**



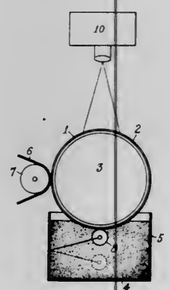
Apparatus controls image intensity and image change timing of images produced by a plurality of image display devices. Included is a voltage integrator which produces at its output a first control voltage the magnitude of which varies as a time integral of a voltage applied to its input. Circuitry is provided which applies to the input of the voltage integrator a substantially constant voltage of a controlled polarity and of a preselected magnitude which represents a preselected image intensity rate of change. An inverter interconnected

with the voltage integrator produces a second control voltage whose magnitude varies as an inverse function of the first control voltage. First and second control circuits are interconnected with the voltage integrator and with the inverter, respectively, for causing image changing and varying image intensity of images produced by a respective image display device in accordance with the respective control voltages. Accordingly, image intensity and image change timing of images displayed by the devices are coordinated to cause smoothly dissolving alternating successive display of images.

ERRATUM

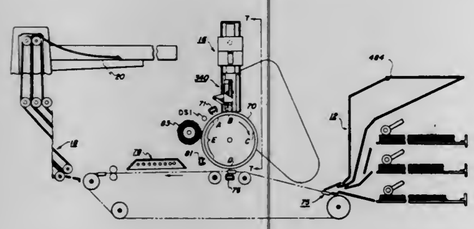
For Class 353—122 see:
Patent No. 3,622,230

3,622,237
ELECTROSTATOGRAPHIC LIGHT SENSITIZED DRUM CLEANING ARRANGEMENT IN WET-TYPE DEVELOPMENT
Fried Walther VonGrabe, Koenigstein, Germany, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 30, 1969, Ser. No. 820,576
Claims priority, application Japan, May 2, 1968, 43/29518
Int. Cl. G03g *15/06*
U.S. Cl. 355—15 **1 Claim**



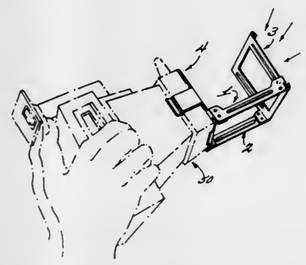
An electrostatographic light sensitized drum cleaning arrangement in wet-type development process wherein a latent image is removed by pressing a rotary body against the surface of the drum whose one portion is immersed in a developing solution.

3,622,238
COPIER MACHINE FEEDING MULTIPLE SIZE COPY SHEETS
Lawrence C. Alman, Jr., and Jack R. Hauber, both of Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 14, 1969, Ser. No. 824,542
Int. Cl. G03b *15/00*
U.S. Cl. 355—50 **6 Claims**



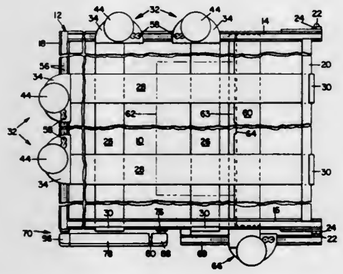
Sheet feed apparatus for an automatic copy machine in which a plurality of tray members support a corresponding stack of sheets. Baffle members arranged at the delivery end of sheet tray members define a common exit path leading toward copy processing stations and feed means associated with each of the stacks engage the topmost sheet of a corresponding stack in response to electrical signals. A control circuit supplies electrical signals to the appropriate sheet feed means to feed automatically a preselected sheet from a one of said stacks toward a common exit path for transport past copy processing stations in accordance with a selected image size to be produced.

3,622,239
PHOTOGRAPHIC COPYING DEVICE
Harmon B. Miller, 1095 West Conway Drive N.W., Atalnta, Ga.
Filed Aug. 26, 1969, Ser. No. 853,009
Int. Cl. G03b *27/62*
U.S. Cl. 355—39 **6 Claims**



A collapsible copy attachment for use with a camera for supporting a photograph to be duplicated in front of the camera lens, the attachment consists of a camera bracket having a supplemental lens carried thereon so that when the camera bracket is attached to the camera the supplemental lens will be positioned in front of the lens of the camera to reduce the effective focal length of the camera lens; a pair of side rail members are pivotally attached at one end to the lower edge of the camera bracket and extend in spaced apart parallel relation to each other; at the other ends of the side rail members a photograph support frame is pivotally attached adjacent its lower side edges; releasable engaging means are provided both for maintaining the camera bracket and photograph support frame in position for use wherein they extend generally perpendicular to the side rail members and for maintaining them in their folded position wherein they lie between the rail members.

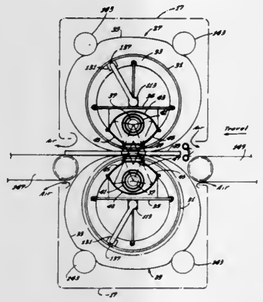
3,622,240
PHOTOGRAPHIC ENLARGING EASEL
Hinsdale Smith, Jr., Suffield, Conn., assignor to Nikor Products Co., Inc., West Springfield, Mass.
Filed Aug. 14, 1969, Ser. No. 849,986
Int. Cl. G03b *27/58*
U.S. Cl. 355—74 **1 Claim**



A photographic enlarging easel has a base which has an open frame pivoted thereto, the frame having pairs of intersecting masking bands slidably related thereto. The masking bands are each moved by rotating a pinion which meshes

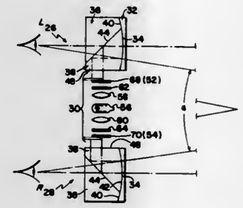
with a rack on the frame. A paper stop is slidably related to the base and is moved by rotating a pinion which meshes with a rack on the base. A spring-loaded telescopic frame elevating assembly pivotally connects between the base and frame for holding the frame in a desired raised position.

3,622,241
ROTARY PHOTOSENSITIVE MATERIAL PRINTER
John L. Dexter, 3715 Friar Lane, Santa Barbara, Calif.
Filed May 21, 1970, Ser. No. 39,257
Int. Cl. G03b *27/10*
U.S. Cl. 355—110 **14 Claims**



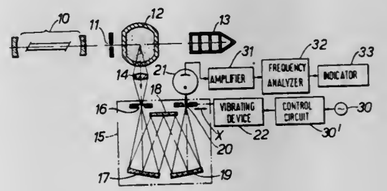
A photosensitive material printer having a pair of water-cooled ultraviolet light sources situated on opposite sides of a workpiece and a pair of negatives which are passed therebetween. The light sources are each positioned within a tubular roller having a rigid translucent inner wall and a pliable translucent pressure outer wall. Air is delivered to the volume between the rigid and the pliable walls so as to maintain firm, fixed contact between the workpiece and the associated negatives. If desired, one or more deflector rollers may be positioned about the periphery of the outer wall to deform it so as to increase the pressure between the rollers and thereby increase the area of contact between the rollers and the workpieces passing therebetween.

3,622,242
STEREOSCOPIC RANGEFINDER WITH MOVABLE RETICLES
Edwin H. Land, and Alfred H. Bellows, both of Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed June 4, 1969, Ser. No. 830,266
Int. Cl. G01c *3/14*
U.S. Cl. 356—12 **2 Claims**



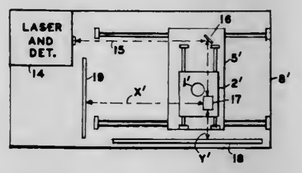
A binocular rangefinder defines a field of view and superimposes thereon a composite stereoscopic virtual image of a pair of dissimilar, stereoscopically related reticles, the image having depthwise extension along a line of sight extending from the observer into the field of view. The apparent position of the image along the line of sight is variable and ranging information is obtainable concerning subjects within the field appearing between far and near limits established by the depthwise extension of the image.

3,622,243
LIGHT SCATTERING SPECTROPHOTOMETER WITH VIBRATING EXIT SLIP
Akiyoshi Wada, Tokyo, Japan, assignor to Shimadzu Seisakusho Ltd., Nakagyo-ku, Kyoto, Japan
Filed Nov. 6, 1969, Ser. No. 874,371
Claims priority, application Japan, Nov. 9, 1968, 43/82078
Int. Cl. G01j *3/44*
U.S. Cl. 356—75 **5 Claims**



A spectrophotometer for measuring Raman and Brillouin spectra of the light scattered from a sample. The spectrophotometer of the invention comprises a monochromatic light source, a sample cell into which the monochromatic light is projected so as to be scattered by the sample, and a monochromator for dispersing the light scattered by the sample. The wavelength of the output light from the monochromator is periodically changed at a predetermined frequency by vibrating the exit slit of the monochromator. The periodically changing output light signal is converted to a corresponding electrical signal, which is Fourier decomposed. The Fourier decomposition makes it possible to distinguish the Raman and Brillouin components of the scattered light from the other components such as the exciting or incident light and stray light.

3,622,244
DUAL AXES INTERFEROMETER
Anwar K. Chitayat, Plainview, N.Y., assignor to OPTOmechanisms, Inc., Plainview, N.Y.
Continuation of application Ser. No. 620,520, Mar. 3, 1967, Continuation-in-part of application Ser. No. 507,919, Mar. 25, 1969, now Patent No. 3,434,787. This application Jan. 29, 1970, Ser. No. 006,711
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **4 Claims**

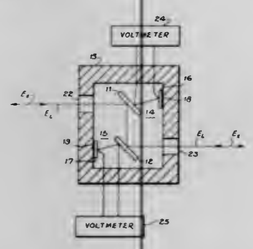


An interferometer device for measuring motion of an instrument along two axes. The instrument such as a microscope or quill is mounted on X- and Y-axes carriages. The heavy laser light source and detectors are mounted on the base of the machine and an interferometer optical block is mounted on one of the carriages. The optical block is quite small and light in weight and does not emit any heat so that it does not cause any mechanical distortion of the carriages.

3,622,245
DOUBLE PLATE CALORIMETER FOR MEASURING THE REFLECTIVITY OF THE PLATES AND THE ENERGY IN A BEAM OF RADIATION

Alvin L. Rasmussen, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce

Filed June 10, 1970, Ser. No. 44,955
Int. Cl. G01j *1/56*, **G01k** *17/00*
U.S. Cl. 356—216 **9 Claims**

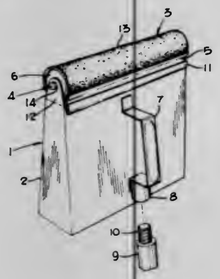


(1) A beam of radiation polarized parallel or perpendicular to the plane of incidence impinges on a first metal plate mirror and is reflected to a second metal plate mirror. A portion of the beam energy is absorbed and converted to heat by the plates. A pair of signals are generated, each having a magnitude dependent upon the level of energy absorbed by the related plate. (2) The beam then impinges on the second plate mirror and is reflected to the first while another pair of signals are generated. The magnitude of each signal is used (3) to calculate the reflectivities of the plates and (4) to calculate the energy in the beam. To evaluate the energy of the quadrature components of a beam of any polarization, the second plate is rotated 90° around the impinging beam as an axis, step 1 is repeated, and the magnitudes of the signals are used to calculate the component energy values.

3,622,246
PAINT ROLLER

Woodrow W. Grooms, 140 Elm Grove, Hazelwood, Mo.

Filed July 25, 1969, Ser. No. 844,856
Int. Cl. B44d *3/28*
U.S. Cl. 401—219 **1 Claim**



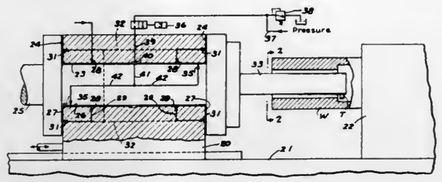
The present invention relates to painting devices comprising a functionally shaped reservoir provided with an aperture therein, a paint dispensing roller operably mounted on said reservoir and disposed near and within said aperture, wiper blades operably mounted on said reservoir and disposed near the peripheral surface of said roller, and handle means.

3,622,247
BORING METHOD

Myron L. Greenberg, 2375 Circle Drive, Union Lake, Mich., and Daniel J. Kolesar, 4455 Sudbury, Warren, Mich.

Filed Apr. 1, 1969, Ser. No. 811,754
Int. Cl. B23b *39/00*, *29/02*
U.S. Cl. 408—147 **6 Claims**

A method and apparatus for finish boring a bore in a workpiece wherein a tool is moved axially and rotated with respect to the bore to take a first cut and is thereafter moved radially outwardly and retracted axially while rotating the

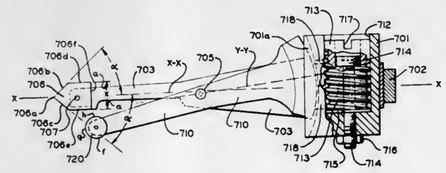


tool relative to the workpiece to provide a finish cut resulting in a finished bore.

3,622,248
ADJUSTABLE DRILLING APPARATUS

David B. Scott, deceased, late of Walton, N.Y.; National Bank and Trust Company of Norwich, executor, 52 South Broad St., Norwich, N.Y., and Dale E. Willhite, executor, 322 Page St., Apt. A-10, Norman, Okla.

Filed Aug. 11, 1969, Ser. No. 871,815
Int. Cl. B23b *51/00*
U.S. Cl. 408—188 **18 Claims**

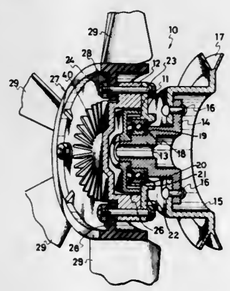


An adjustable drill comprising a rotatable barrel having a first arm rigidly extending therefrom to symmetrically locate a first cutting tool on a drilling axis, a second rigid arm pivotally mounted on the first arm intermediate the barrel and the first cutting tool, with a second cutting tool mounted adjacent one end of the second arm, the other end of the second arm comprising a gear segment which meshes with a worm gear carried inside the barrel, so that rotation of the worm gear varies the angle between the arms and thereby varies the diameter of the hole which is drilled.

3,622,249
FAN ASSEMBLY

Masaharu Hayashi; Shoji Iwata, and Uichiro Kobashi, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi, Pref., Japan

Filed Aug. 13, 1969, Ser. No. 849,658
Claims priority, application Japan, Aug. 18, 1968, 43/70728
Int. Cl. F04d *29/34*
U.S. Cl. 416—204 **7 Claims**



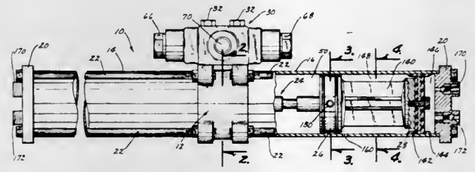
A fan assembly comprises a hub portion and blades made entirely of plastic material, the hub being secured to a driving

member by means of bolts which pass through bolt holes in the hub. A bush inserted in each bolt hole is provided with an outwardly extending flange on each end thereof, one of which acts as a washer to separate the hub portion of the fan assembly from the driving member.

3,622,250
HIGH-PRESSURE PUMP

George D. Conlee, Humboldt, Iowa, assignor to Slifer Manufacturing Co., Inc., Humboldt, Iowa

Filed July 27, 1970, Ser. No. 58,234
Int. Cl. F04b *17/00*; **F01l** *25/08*, *25/02*
U.S. Cl. 417—397 **10 Claims**

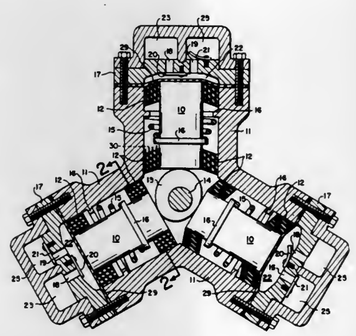


A pump having pistons at opposite ends of the piston rod wherein the piston rod extends through a spool valve body separating the cylinders for the oppositely disposed pistons. A pilot valve body is mounted on the spool valve body and is responsive to reciprocation of the pistons. At the end of a piston stroke the pressure source connected to the pilot valve body is directed into the spool valve body into one of a pair of annular lands on the piston rod and back into an end chamber for the pilot valve element thereby moving the pilot valve element to the opposite end of the pilot valve body in turn reversing the flow of fluid from the pressure source into the piston chambers. At the end of each half cycle this procedure is sequentially followed. The pistons are pivotally connected to the piston rod about axes extending at 90° to each other to permit self-compensation for any misalignment that may exist in the pump structure. The reciprocation of the pilot valve element is dampened by bypassing part of the inlet fluid to the opposite end of the pilot valve element and the pilot valve element is releasably held at one end of the pilot valve body by a magnet.

3,622,251
SEALED PISTON COMPRESSOR OR PUMP

Charles Malcolm Allen, Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed Nov. 12, 1969, Ser. No. 875,802
Int. Cl. F04b *37/00*; **F01b** *19/00*; **F16j** *15/50*
U.S. Cl. 417—471 **8 Claims**

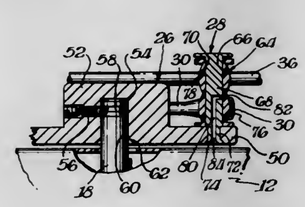


A reciprocating piston compressor or pump in which the pistons are spaced from their housing walls and supported for reciprocation by elastomeric guides or supports that will allow the pistons to reciprocate. A preferred elastomeric support or guide consists of a telescoping metal-elastic belt wound around the piston and bonded to the housing and piston walls. Either the elastomeric guides or separate resilient seals seal the space between the piston walls and the housing so that upon reciprocation fluid may be pumped or compressed from an inlet valve to an outlet valve on one side of the seal and the reciprocating mechanism may be independently lubricated on the other side of the seal.

3,622,252
ROLLER PUMP WITH LUBRICATING CHANNELS FOR ROLLERS

Robert E. Pickup, Norristown, Pa., assignor to Extracorporeal Medical Specialties, Inc.

Filed Apr. 10, 1970, Ser. No. 27,316
Int. Cl. F04b *43/08*, *43/12*, *45/16*
U.S. Cl. 417—477 **3 Claims**

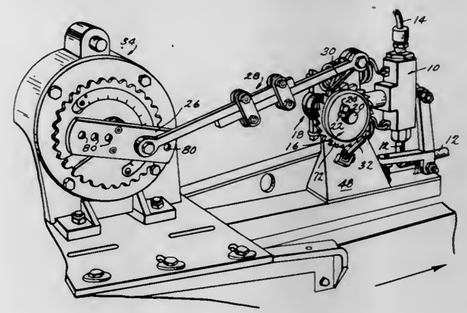


A roller pump of the type having a flexible tubular pumping chamber continuously and successively depressed unidirectionally by traveling rollers wherein means is provided for directing cleaning and/or lubricating fluids to the bearing surfaces of the rollers to reduce wear and unnecessary "drag" on the tubular pumping chamber and insure that the longitudinal tension in the tubular chamber does not exceed a value which prevents lateral flexure and causes pumping action to continue rather than "by-pass" when a resistance of predetermined magnitude is encountered.

3,622,253
PUMPING DEVICE FOR APPLYING LIQUID MARKINGS

Donelson B. Horton, Madison, and Shelby E. Shelton, Huntsville, both of Ala., assignors to John Blue Company, a Division of Subscription Television, Inc., New York, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,352
Int. Cl. F04b *49/00*
U.S. Cl. 417—223 **15 Claims**

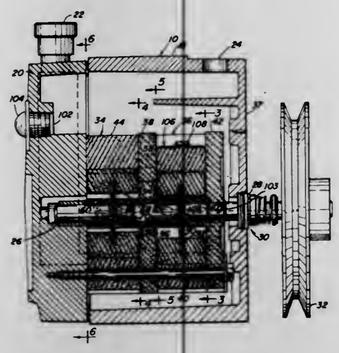


Agricultural spray equipment is provided with a pumping device which intermittently dispenses a liquid for marking the location of spray application. The pumping device includes two cranking mechanisms for reciprocating a piston relative to a chamber through which liquid can be metered and pumped. Provision is made for adjusting the quantity of liquid pumped and the frequency of intermittent dispensing. Also, the pumping device is provided with a safeguard which prevents damage to the device in the event that equipment becomes clogged and a high-fluid pressure is built up in the pumping device.

3,622,254
PUMP

Joseph A. LeBlanc, Jr., Chicago, Ill., assignor to Precision Scientific Co., Chicago, Ill.

Filed June 20, 1969, Ser. No. 835,132
Int. Cl. F04f 1/00, 5/46
U.S. Cl. 418—96 10 Claims

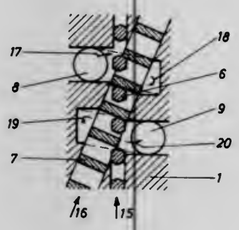


An improved pump construction may be achieved by forming one or more of the major components of the pump from sintered metal. A two-stage rotary vane-type vacuum pump, for example, may advantageously employ sintered metal stators, rotors, vanes, and end plates and sintered metal separator plate. Moreover, an inherently "leaky" valve may be provided for the outlet of the second stage of the pump by placing a resiliently mounted, normally closed sintered metal valve plate over the outlet.

3,622,255
PUMP

Gavril T. Lusztig assignor to Gavril T. Lusztig, 80 Lupton Lane, Apt. 1C, Haledon, N.J.

Filed Aug. 7, 1969, Ser. No. 848,225
Int. Cl. F01c 1/08; F04c 1/04, 17/04
U.S. Cl. 418—195 10 Claims

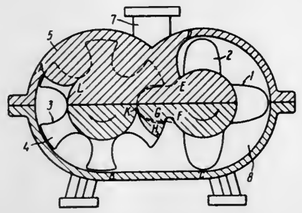


Pump, comprising a casing, pumping teeth solid with a pumping wheel, sealing teeth solid with a sealing wheel, the pumping teeth and the sealing teeth moving in annular spaces which are separated along a portion of their length and do intersect along another portion of their length; part of that contour of the sealing teeth and that surface of the disc or ring of the pumping wheel which effect the sealing between the suction zone and the pressure zone being parts of two substantially spherical surfaces with common center and substantially equal radii; and the arrangement of the pumping wheel and sealing wheel being such that their respective axis do intersect in the center of the spherical surfaces described above.

3,622,256
SCREW-ROTOR MACHINE

Alexandr Ivanovich Borisoglebsky, Drezdenskaya, ulitsa, 42, kv. 74; Boris Lazarevich Grinpress, Tikhoretsky prospekt, 20, kv. 20; Ivan Akimovich Sakun, Krasnoputilovskaya ulitsa, 12, kv. 44; Jury Iosifovich Dimentov, Budapeshtskaya ulitsa, 38, korpus 2 kv. 89; Valentin Nikolaevich Pyankov, Leningradskoi oblasti, ulitsa Leningtadskaya, 61, kv. 51; Moisei Fishelevich Vainshtein, Nevsky prospekt, 27, kv. 15, and Rafkhat Izmailovich Khasanov, prospekt Engelsa, 73, kv. 2, all of Leningrad, U.S.S.R.

Filed Oct. 14, 1969, Ser. No. 866,222
Int. Cl. F01c 1/16; F04c 1/10, 17/12
U.S. Cl. 418—201 3 Claims

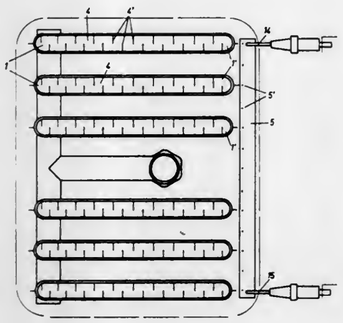


A rotary screw-type machine in which the inlet port is made in the casing at one end face of the rotary screws while the outlet port is made in the casing at the other end face of these rotary screws, in which case the sections of the port contours follow the arc of the addendum and dedendum circles of the teeth of the screws and the profiles of the teeth, while at the zone of contact of the teeth of the screws they follow the line of engagement of these teeth.

3,622,257
IGNITER FACILITY

George Hein, Huckeswagen, and Hans Meier, Remscheid, both of Germany, assignors to John. Vaillant KG., Remscheid, Germany

Filed Mar. 31, 1970, Ser. No. 24,160
Claims priority, application Germany, Apr. 2, 1969, P 19 16 884.4
Int. Cl. F23q 9/08
U.S. Cl. 431—51 7 Claims



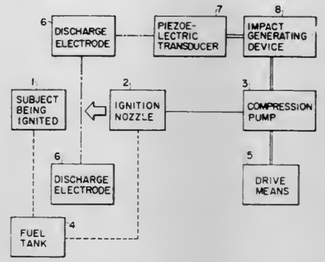
A main gas burner has a plurality of parallel rows of individual burners. An igniter burner tube extends normal to said rows and has an igniter flame port at each of said rows. An electrical igniter is at one end of the igniter tube to commence the propagation of flame and an electronic flame detector is at the other end of the tube. Controls are provided between the detector and the gas valves for the burners.

3,622,258
IGNITION SYSTEM FOR PETROLEUM BURNING INSTRUMENT

Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Japan

Filed Mar. 9, 1970, Ser. No. 17,377
Claims priority, application Japan, June 14, 1969, 44/56382
Int. Cl. F23q 3/00
U.S. Cl. 431—255 20 Claims

An ignition system for petroleum burning instruments is provided which comprises an ignition nozzle for injecting an ignitable fuel towards a subject being ignited, an air compression pump for supplying compressed air to the nozzle to operate the nozzle, and a pair of discharge electrodes arranged in front of the nozzle in opposite relation to each other. The pair of electrodes form an airgap thereacross through which a jet flow of the ignitable fuel passes, and are connected across a piezoelectric transducer for inducing a spark, by discharge, across the airgap to thereby ignite the ignitable fuel in response to the actuation of the transducer.



The transducer is mechanically impacted by separate means in response to a predetermined operative position of the pump.

CHEMICAL

3,622,259
USE OF UREA AND N-METHYLOL COMPOUNDS IN MINERAL DYEING OF FABRIC

Carl Hamalainen, Metairie; Hubert H. St. Mard, New Orleans; Albert S. Cooper, Jr., Metairie, and Wilson A. Reeves, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed June 24, 1970, Ser. No. 049,549
Int. Cl. D06p 1/78; D06m 13/38; D06p 5/00
U.S. Cl. 8—18 6 Claims

A practical mineral dyeing process for imparting to cellulosic textiles the qualities of improved dimensional stability, resistance to actinic degradation, and resistance to microbial degradation is produced. The textiles are simultaneously mineral dyed and treated with N-methylol resin and urea mixtures to minimize the tendering of the textiles which is generally associated with the use of metal chlorides upon overdrying.

3,622,260
PROCESS FOR IMPROVING THE HEAT AND ACID RESISTANCE OF CELLULOSE-CONTAINING MATERIALS

Heinrich Seibert, Leverkusen; Peter Hoffmann, Cologne-Stammheim; Ivar Ugi, Leverkusen-Schlebusch; Werner Herzog, Vaihingen, and Karl Kemmner, Unterenzingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 4, 1968, Ser. No. 695,580
Claims priority, application Germany, Jan. 7, 1967, F 51195
Int. Cl. D06m 13/12, 13/38, 13/54
U.S. Cl. 8—116.2 3 Claims

An amino compound containing at least one primary amino group, a carbonyl compound containing at least one aldehyde or keto group and an isonitrile compound are applied to a cellulosic material and reacted thereon. The cellulosic material so modified has increased resistance to degradation from heat and acids and is suitable as an insulator in electrical devices.

3,622,261
BUFFERED ALDEHYDE FIXATION COMPOSITION

James F. Cotton, Columbus, Ga.; John W. Reed, Shawmut, and Water C. Monk, both of Fairfax, Ala., assignors to West Point-Pepperell, Inc., West Point, Gs

Filed Sept. 16, 1968, Ser. No. 762,366
Int. Cl. D06m 13/34, 13/40
U.S. Cl. 8—116.4 26 Claims

The process of fixing formaldehyde on cellulose or a cellulose ester with the aid of a carbamate and using glycolic acid in the catalyst system is improved by including a buffering agent. Preferably there is also included a hexitol as a scavenger for unreacted formaldehyde.

3,622,262
METHOD FOR WASHING PREFERENTIALLY CELLULOSIC PULP

Nils Gustav Leffler, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Saudsvall, Sweden

Filed Apr. 11, 1968, Ser. No. 720,717
Claims priority, application Sweden, Apr. 13, 1967, 5183/67
Int. Cl. D21c 9/00
U.S. Cl. 8—156 8 Claims

Washing pulp is effected in apparatus wherein the washing liquid is forced through a perforate wall into and through a body of the pulp and into a collecting space for the washing liquid. To prevent clogging of the perforate wall, the influx of treatment liquid into the collecting space is interrupted at suitable intervals, the interruption being produced by pressure variations induced by a vibrator operating in the liquid.

3,622,263
PROCESS FOR THE DYEING OF POLYAMIDE TEXTILES WITH METAL PHTHALOCYANINE DYESTUFFS

Manfred Groll, Cologne-Stammheim; Hans-Samuel Bien, Burscheid, and Ernst-Robert Fritze, Cologne-Flittard, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 5, 1968, Ser. No. 742,487
Claims priority, application Germany, July 13, 1967, F 52943
Int. Cl. D06p 3/24
U.S. Cl. 8—178 9 Claims

The process for dyeing synthetic super polyamides with metal phthalocyanine sulfonic acids wherein the improvement comprises applying a phthalocyanine containing 2–3 sulfonic acid groups in the 4- or 5-position of their benzene nuclei to provide dyeings of improved light-fastness.

3,622,264
FIBER BLENDS OF POLYOLEFIN WITH POLYVINYLPYRIDINES OR QUINOLINES WITH AND WITHOUT A POLYETHYLENE OXIDE AND ACID AND DISPERSE DYE VARIEGATED DYEING THEREOF

Charles N. Brown, Columbia, S.C., and Andor Schwarcz, Pompton Lakes, N.J., assignors to Uniroyal, Inc., New York, N.Y.

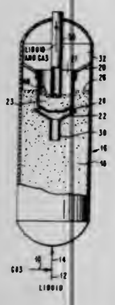
Filed June 13, 1968, Ser. No. 736,555
Int. Cl. D06p 3/82
U.S. Cl. 8—21 23 Claims

This invention relates to a process for dyeing fabrics and textile articles made from polyolefin fibers or two-color or multicolor patterns using a mixture of different classes of dyes in a single dyebath, which may optionally contain an anionic and nonionic surfactant.

3,622,265
PHASE SEPARATION OF A GAS-LIQUID-SOLID MIXTURE

Carl L. Weber, Washington Crossing, Pa.; Ronald H. Wolk, Lawrence Township, Mercer County, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed June 14, 1968, Ser. No. 737,156
Int. Cl. C01g *1/00*; **C10g** *13/18, 23/06*
U.S. Cl. 23—1 F **2 Claims**



A method for improved separation of liquids, gases and particulate solid materials in a liquid gas contacting process wherein a liquid feed and gas usually hydrogen are passed upwardly through a bed composed of a particulate contact agent, the velocity of the gas and the liquid being such that the particles are put in a state of random motion and the volume of the bed is expanded over its static volume and wherein an area of high liquid gas and liquid turbulence and mixing is created and wherein liquid effluent and gaseous effluents are removed from the contact zone. The method consists of effecting essentially complete disengagement of the gas from the mixture of particulate solids and liquid. The gas-free liquid-solid mixture is then introduced to a zone of relatively low turbulence and liquid is then removed from this zone at a rate whose lineal velocity is less than the settling velocity of the solid, thereby allowing substantial settling of the solid and resulting in the removal of a clarified liquid. The disengaged gaseous effluent may then be removed separately or recombined and removed with the liquid effluent. Apparatus for efficiently carrying out this process are described.

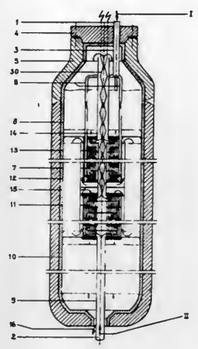
3,622,266
METHOD AND APPARATUS FOR REACTION HEAT RECOVERY IN CATALYTIC HIGH-PRESSURE SYNTHESIS, PARTICULARLY IN AMMONIA AND METHANOL SYNTHESIS

Helmut Laukel, Dortmund-Berghofen, Germany, assignor to -Friedrich Uhde GmbH, Dortmund, Germany

Filed Apr. 9, 1969, Ser. No. 814,747
Claims priority, application Germany, Apr. 13, 1968, P 17 67 230.9
Int. Cl. C01c *1/04*; **B01j** *9/04*; **C07c** *29/16*
U.S. Cl. 23—1 E **6 Claims**

Method and apparatus for the recovery of reaction heat in a catalytic high-pressure synthesis process- particularly ammonia and methanol synthesis- the total flow or reactant gas being heat-exchanged against the reaction gas from the bottom catalyst layer. This flow of preheated reactant gas is subsequently divided into two streams for further heating and for reducing the temperature of the reaction gas from the top and central catalyst layers. These streams pass through the heat exchanger arranged downstream of the top and central catalyst layer, respectively.

The apparatus comprises a reactor which contains three catalyst layers arranged one above the other and two gas to gas heat exchangers arranged in the center of the central catalyst layer. These heat exchangers are connected between the catalyst layers with respect to the tube-side flow of the reaction gas: The entire flow of reaction gas passes alternately through successive catalyst layers and heat exchangers. The shell-side passes of the gas to gas heat exchangers are connected in parallel so that the entire flow of reactant gas to

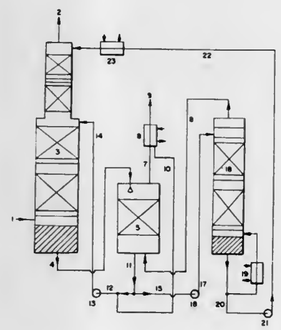


be heated further is distributed to these passes. The two gas streams are recombined after leaving the heat exchangers.

3,622,267
PROCESS FOR REMOVING CARBON DIOXIDE FROM GAS MIXTURES

Ernst Bartholome, Heidelberg; Hans Wilhelm Schmidt, Mannheim, and Juergen Friebe, Wachenheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Jan. 19, 1970, Ser. No. 003,779
Claims priority, application Germany, Jan. 22, 1969, P 19 03 065.0
Int. Cl. B01d *53/00*
U.S. Cl. 23—2 R **3 Claims**



Separation of carbon dioxide and hydrogen sulfide from gases by scrubbing the gases with a 2.5 to 4.5 molar aqueous solution of methydiethanolamine at a temperature of from 70° to 110° C. From 0.1 to 0.4 mole of monomethylmonoethanolamine is also added to the solution for the removal of any carbonyl sulfide.

3,622,268
METHOD FOR RECOVERY OF METALLIC CATIONS

Takeo Wada, and Kazuo Okada, both of Suita, Japan, assignors to Takeda Chemical Industries Ltd., Osaka, Japan

Filed Mar. 19, 1969, Ser. No. 808,493
Claims priority, application Japan, Mar. 20, 1968, 43/18136
Int. Cl. C01b *59/00*
U.S. Cl. 23—22 **7 Claims**

A method for recovery of metallic cations whereby a zeolitic material represented by the formula

$$M_xH_{3-x}[(Al_yFe_{1-y})_4(P_lAs_{1-l})_3O_{16}] \cdot zH_2O$$

wherein M represents a univalent or a ½-bivalent cation and x, y, z and l are numerical values of $0 \leq x \leq 5$, $0 \leq y \leq 1$, $z \leq 9$ and $0 \leq l \leq 1$, respectively; is contacted with a solution containing metallic cations, whereby the cations represented by M are exchanged by the desired metallic cation, and the zeolitic material is washed with an acid to recover the metallic cations.

3,622,269
PROCESS FOR RECOVERING PURE AQUEOUS SOLUTION OF FERRIC CHLORIDE AND AQUEOUS SOLUTION OF METAL CHLORIDES FREE OF FERRIC CHLORIDE

Toshio Yamamura; Yuichi Omote; Shiro Sato, and Tomochika Hiyama, all of Shibukawa-shi, Gunma, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan

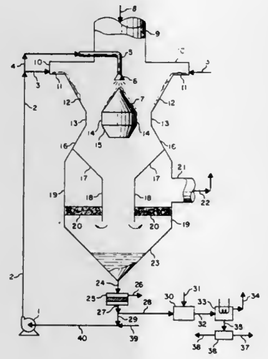
Filed Sept. 15, 1969, Ser. No. 858,173
Claims priority, application Japan, Sept. 19, 1968, 43/67838
Int. Cl. C01g *49/10*
U.S. Cl. 23—87 R **5 Claims**

An aqueous solution of metal chlorides is subjected to liquid-liquid contact with an alkyl, aryl or aralkyl ketone or ether having four to 10 carbon atoms so that the ferric chloride is transferred to the organic ketone or ether extractant phase and the remaining metal chlorides remain in the aqueous phase. The extractant phase is contacted with water to transfer the ferric chloride into a second aqueous phase.

3,622,270
REMOVAL OF SULFUR DIOXIDE FROM GAS STREAMS

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 014,948
Int. Cl. C01f *5/42*; **C01b** *17/56*
U.S. Cl. 23—129 **5 Claims**



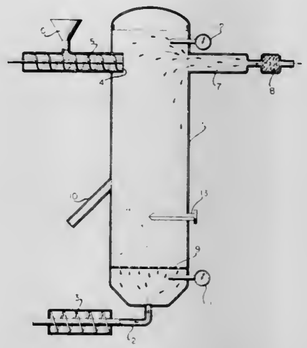
Sulfur dioxide is scrubbed from a gas stream, such as a waste or flue gas, using an aqueous scrubbing solution containing dissolved magnesium sulfite and magnesium bisulfite, which is divided into two portions. A first portion is sprayed centrally downwards into a vertically oriented venturi passage through which the gas stream is passed in a downwards direction, and a second portion of the scrubbing solution flows downwards on the inner surface of the converging section of the venturi. Improved scrubbing efficiency is attained with low liquid to gas flow rates.

3,622,271
PROCESS FOR PRODUCING ALUMINA OF LOW RESIDUAL NITRATE CONTENT FROM BASIC ALUMINUM NITRATES

Donald H. Kelly, Gladstone, and Charles P. Bruen, Basking Ridge, both of N.J., assignors to Reynolds Metals Company

Filed Nov. 21, 1968, Ser. No. 777,777
Int. Cl. C01f *7/02, 7/66*
U.S. Cl. 23—142 **1 Claim**

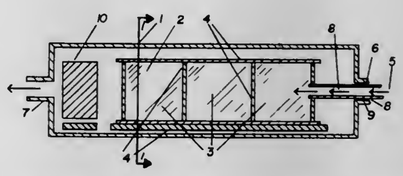
Process for preparing a precalcined alumina of low residual nitrate content, suitable for calcining to alpha alumina, which comprises maintaining a basic aluminum nitrate prepared by heating molten aluminum nitrate nonahydrate to a temperature above its decomposition temperature but not above 230° C. under superatmospheric pressure, while removing gaseous nitric acid decomposition products, until between 45 percent and about 60 percent of the HNO_3 of the aluminum nitrate nonahydrate has been removed, followed by reduction of said pressure to at least as low as atmospheric pressure, said basic aluminum nitrate being of controlled free alumina content and in particulate form in a fluidized bed at temperatures of at least about 470° C. for a period sufficient to reduce the residual N_2O_5 content to a value of not more than about 0.02 mole or N_2O_5 per mole of alumina, Al_2O_3.



3,622,272
METHOD OF GROWING SILICON CARBIDE WHISKERS

James J. Shyne, Caldwell, and John V. Milewski, Saddle Brook, both of N.J., assignors to General Technologies Corporation, Reston, Va.

Filed Apr. 1, 1968, Ser. No. 717,530
Int. Cl. C01b *31/36*; **B01j** *17/32, 1/00*
U.S. Cl. 23—208 **9 Claims**



A method of growing silicon carbide whiskers of high quality and in high yield involves reacting a gas mixture of about 80–95 percent by volume hydrogen, 0.4–4 percent by volume hydrocarbon gas, 0.3–15 percent by volume carbon monoxide and 3–10 percent by volume inert carrier gas in a vapor atmosphere of silicon monoxide at an elevated temperature. The product is principally long-length, hairlike silicon carbide whiskers of high quality, and in high yield.

3,622,273
METHOD FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAMS

Melvin L. Roberts, Woodridge; Carl E. Johnson, Glen Ellyn, and Richard C. Miller, La Grange Park, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

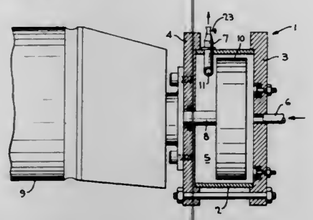
Filed Feb. 6, 1970, Ser. No. 009,430
Int. Cl. C01b *17/04*
U.S. Cl. 23—225 R **13 Claims**

A method for removing hydrogen sulfide from gaseous streams by contacting the gaseous stream with an absorbing solution of from 0.005 to 20 percent of a ferric ion complex, from 25.0 to 99.945 percent water, from 0.05 to 10.0 percent of a buffering agent, and from 0 to 74.945 percent of a water-soluble, organic solvent selected from the group consisting of dimethyl formamide and dimethyl sulfoxide.

3,622,274
METHOD FOR COMPARATIVE STUDIES OF A METAL S CORROSION RESISTANCE AND APPARATUS AS AN AID TO THESE INVESTIGATIONS

George Richardson, and Bengt Algers, both of Abygatan 9, Molndal, Sweden

Filed July 8, 1968, Ser. No. 743,102
Claims priority, application Sweden, July 17, 1967, 10587/67
Int. Cl. G01n *17/00*
U.S. Cl. 23—230 C 7 Claims



For rapid information about the resistance to corrosion of a metal body or about the formation of a protective coating thereon, a number of test specimens are located in a stream of corrosive agent in such a manner that the flow velocity of the agent is different past each specimen. The specimens are in turn connected to an electric circuit in such a manner that they may be individually disconnected therefrom and connected to a measuring instrument which records the galvanic current between the specimen in question and the remaining specimens, the magnitude of the current being a function of the corrosive action at that particular specimen.

3,622,275
FLAME PHOTOMETRIC METHOD FOR ANALYZING BODY FLUIDS

John J. J. Staunton, 310 Wesley Ave., Oak Park, Ill., and Reid H. Curtis, 20 East Harrison St., Lombard, Ill.

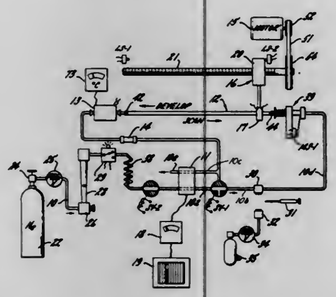
Filed Mar. 14, 1969, Ser. No. 807,413
Int. Cl. G01n *33/16, 21/58*
U.S. Cl. 23—230 PC 3 Claims

Method for determining sodium, potassium and calcium simultaneously in blood serum by flame photometry using a single dilution of the serum sample. By suitable choice of dilution and by using a novel set of emission wavelengths both linearity and sensitivity are achieved to a degree previously undemonstrated. As a result, direct digitally displayed readout of all three blood metals becomes practical for the first time.

3,622,276
CHROMATOGRAPHY SYSTEM

Eero O. A. Haabti, Helsinki, and Ilmari P. Jaakonmaki, Turku, both of Finland, assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed May 6, 1969, Ser. No. 822,233
Claims priority, application Finland, Oct. 15, 1968, 2911/68
Int. Cl. G01n *31/08, 31/12*
U.S. Cl. 23—230 R 35 Claims



Apparatus and method for particular use in thin layer chromatography (TLC). The chromatogram is developed on the inside of a tubular conduit internally coated with the combination of an adsorbent and a reactant or a catalyst capable of decomposing adsorbed compounds to gaseous products at elevated temperature. For the analysis, carrier gas is passed through the conduit and heat is applied to a selected zone. The zone is then moved along the conduit to decompose chromatographically resolved compounds, thereby changing the composition of the carrier gas stream. This composition change is determined as a measure of the composition of the chromatographically resolved mixture.

3,622,277
METHOD FOR DETERMINING SULFATE CONCENTRATION

Charles A. Noll, Philadelphia, Pa., and Louis J. Stefanelli, Pennsauken, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

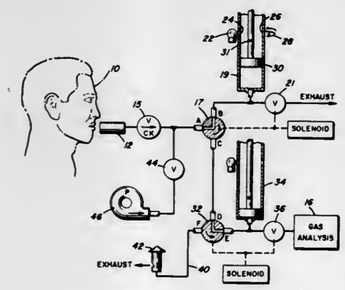
Filed Dec. 29, 1969, Ser. No. 888,970
Int. Cl. G01n *31/02, 31/22*
U.S. Cl. 23—230 R 8 Claims

Method for determining the sulfate ion concentration of an aqueous solution. The mechanism of the method resides in the use of a chelate of a metal which under acidic conditions dissociates to release metal ions which will react with the sulfate ion present to produce a colloidal metal sulfate precipitate. In order to ensure that the free chelant does not precipitate or react to form a precipitate, there is also added to the solution a quantity of a metal compound, the metal of which will replace the original metal of the chelate to form a water soluble second chelate. The turbidity or color density of the aqueous solution is measured and compared to the color density values obtained for solutions containing known quantities of sulfate precipitate of the same metal.

3,622,278
METHOD AND MEANS FOR BREATH ANALYSIS

William E. Elzinga, Simpsonville; William M. Kaufman, Chevy Chase, and Frederick B. Lobbin, Columbia, all of Md. assignor to Hittman Associates, Inc., Columbia, Md.

Filed Apr. 21, 1969, Ser. No. 817,928
Int. Cl. G01n *33/16*
U.S. Cl. 23—232 R 14 Claims



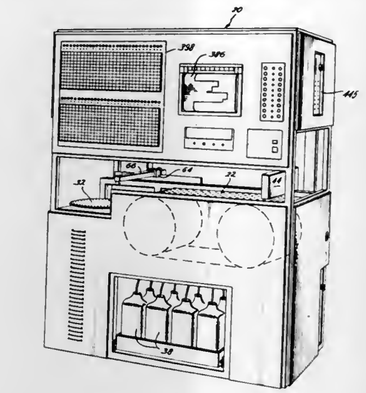
A method and means for measuring and analyzing the composition of alveolar air for determining the volatile constituents in blood. The method and apparatus of the present invention automatically eliminate the inclusion of air from the "dead air" spaces of the respiratory tract and thereby avoid dilution of the alveolar air, such dilution leading to inaccurate measurement of the relative concentration of the chemical constituent being examined.

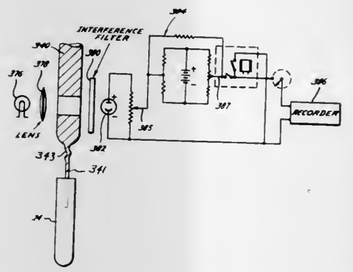
3,622,279
AUTOMATIC CHEMICAL TESTING APPARATUS

John J. Moran, Houston, Tex., assignor to Hycel Inc., Houston, Tex.

Filed June 14, 1968, Ser. No. 737,065
Int. Cl. G01n *21/00, 1/14*
U.S. Cl. 23—253 R 6 Claims

A discretionary automated chemical testing apparatus for conducting multiple chemical tests on a plurality of samples. A loop conveyor carrying rows of tubes along various stations at which steps in chemical testing is performed with a sample dispensing assembly picking up and dispensing a test sample in the tubes, reagent dispensing assembly metering desired amounts of reagents at the proper station, heating means at the stations as required for the chemical test being



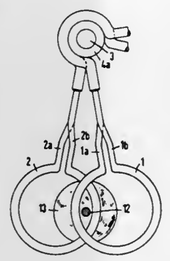


performed, a testing assembly analyzing the results, tube cleaning and drying means preparing the tubes for reuse, and control means selectively controlling the sequential and multiple analysis.

3,622,280
ADJUSTABLE HEATING DEVICE FOR CRUCIBLE-FREE ZONE MELTING A CRYSTALLINE ROD

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Apr. 26, 1968, Ser. No. 724,528
Claims priority, application Germany, Apr. 29, 1967, S 109660
Int. Cl. B01j *17/10;* H05b *5/18*
U.S. Cl. 23—273 SP 4 Claims

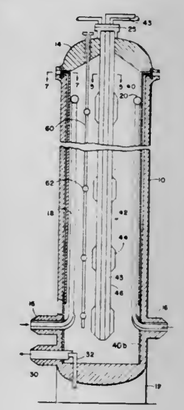


Device for crucible-free zone melting a crystalline rod, particularly a semiconductor rod, includes two induction heating coils annularly surrounding the crystalline rod, and driving means for adjusting the position of the induction heating coils relative to one another in a direction transverse to the rod axis. Method of using the device includes relatively moving the induction heating coils away from one another transversely to the rod axis at the junction of a seed crystal with one end of the rod so as to fuse the seed crystal to the rod, relatively moving the induction heating coils on the one hand and the rod on the other hand along the axis of the rod and simultaneously relatively displacing the induction heating coils gradually toward one another in a direction transverse to the rod axis in conformity with an outwardly flaring conical portion of the rod extending from the seed crystal, until the induction heating coils substantially coaxially surround the main cylindrical portion of the rod.

3,622,281
HIGH-TEMPERATURE REACTION VESSEL

John D. Milligan, Little Silver, and Franklin D. Hoffert, Mountainside, both of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,350
Int. Cl. B01j *3/02*
U.S. Cl. 23—290 7 Claims

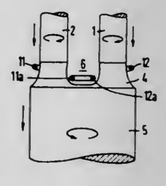


A high-temperature, high-pressure vapor phase reactor for chemical conversions requiring a quench to maintain the reaction temperature substantially isothermal, which is capable of easy field assembly and additionally allows for differential of expansion.

3,622,282
METHOD FOR PRODUCING A MONOCRYSTALLINE ROD BY CRUCIBLE-FREE FLOATING ZONE MELTING

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

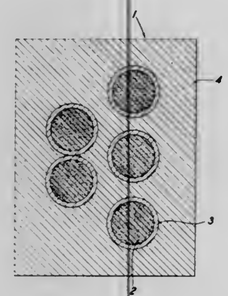
Filed Dec. 19, 1967, Ser. No. 691,778
Claims priority, application Germany, Dec. 30, 1966, S 107671
Int. Cl. B01j *17/18, 17/10*
U.S. Cl. 23—301 SP 7 Claims



Method for producing a monocrystalline rod, such as a semiconductor rod, by crucible-free zone melting includes

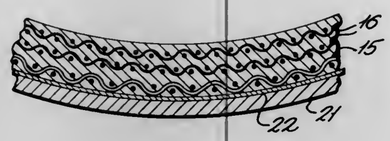
heating to melting temperature and end of at least two supply rod portions of given material supplied at spaced locations to a melting zone of the material, and additionally heating the melting zone with at least one additional heat source disposed within the space between the supply rod portions being supplied to the melting zone.

3,622,283
TIN-CARBON FIBER COMPOSITES
Raymond V. Sara, North Olmsted, Ohio, assignor to Union Carbide Corporation
Filed May 17, 1967, Ser. No. 639,153
Int. Cl. B32b *15/02, 15/04, 15/14*
U.S. Cl. 29—183.5 **16 Claims**



Low-density, high-strength tin base composites are provided by coating carbon fibers with a metallic coupling agent and then bonding them together, preferably in a parallel or aligned manner, by means of a tin or tin base alloy matrix. Such composites are characterized by physical properties which are much superior to those evidenced by the matrix material alone and find utility in applications where the chemical properties of tin are desired but its use is prohibited or limited due to its poor physical properties.

3,622,284
ELECTRODEPOSITION OF METAL OVER LARGE NONCONDUCTING SURFACES
Siegfried G. Bart, Montclair, N.J., assignor to Bart Manufacturing Corporation, Newark, N.J.
Filed Feb. 29, 1968, Ser. No. 709,354
Int. Cl. B23p *3/20;* **C23b** *7/02, 5/60*
U.S. Cl. 29—191.4 **15 Claims**

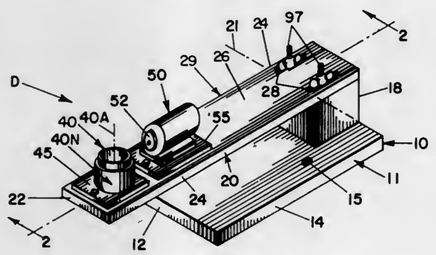


A method of electrodepositing metal on a large nonconducting surface involving the use of nonconductive surface having an exposed network of interconnecting electrical conductors. Methods of electroforming and electroplating involving the use of such a surface. A method of making an electroforming mold and an electrodeposition form with such a surface. An electroforming mold and an electrodeposition form with such a surface. An electroplated article having a base containing such a surface. A method of making a foraminous metal article utilizing such a surface.

3,622,285
COMPOSITE WIRE OR THE LIKE
Charles E. Hayes, North Attleboro, Mass., assignor to Leach & Garner Company
Filed Dec. 8, 1969, Ser. No. 883,262
Int. Cl. B32b *15/02*
U.S. Cl. 29—199 **5 Claims**

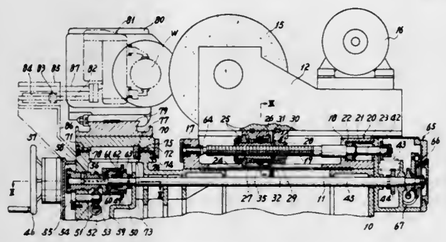
An elongated article usually in the form of a wire having a core of beryllium copper which is completely surrounded in cross section or clad by an alloy containing a plurality of metals with gold having the greatest percentage and particularly adapted for electrical purposes. In some cases there may be a barrier between the core and the outer cladding to prevent migration between the cladding and the core.

3,622,286
VIBRATORY APPARATUS FOR WORKING PARTICULATE SOLIDS
Lloyd E. Gaddy, 1219 North Corona, Colorado Springs, Colo.
Filed July 13, 1970, Ser. No. 054,321
Int. Cl. B24b *31/06*
U.S. Cl. 51—7 **11 Claims**



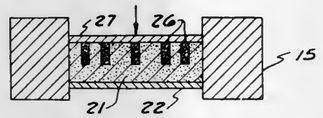
A vibratory apparatus for grinding, polishing, and doing similar work upon loosely disposed batches of mineral pebbles, a collection of geometrically similar metallic pieces, or other particulate solid substances. The vibratory apparatus comprises an elongate shelf member including a cantilever portion extending longitudinally from a stationary lateral node, a receptacle adapted to receive a batch of particulate solids and associated with the cantilever portion, means for rapidly twistably vibrating the cantilever as in alternating directions about the cantilever-axis at progressively decreasing amplitudes toward the node, and means for adjusting the amplitudes and frequencies of said twistable vibrations.

3,622,287
NUMERICALLY CONTROLLED GRINDING MACHINE WITH A SIZING DEVICE
Mikishi Kurimoto, Nagoya; Hiroyasu Takegawa, Kriya, and Sadamu Kato, Aichi-ken, all of Japan, assignors to Toyoda Koki Kabrishiki Kaisha, Aichi-ken, Japan
Filed June 19, 1970, Ser. No. 047,665
Claims priority, application Japan, June 26, 1969, 44/50789
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 R **6 Claims**



A grinding machine is provided with a sizing device for providing a sizing signal which controls a hydraulic actuator to feed a wheel slide. A sizing point of the sizing signal is shifted to be preset in accordance with numerical information of a desired finish dimension of a workpiece before grinding. In accordance with the numerical information, simultaneously it is compensated in an original position of the wheel slide relative to the workpiece by a servomotor so that the vacant space between a grinding wheel and the workpiece may be maintained constant when the grinding wheel has been advanced by its hydraulic actuator to the rapid feed end of its feed stroke.

3,622,288
METHOD FOR THE PRODUCTION OF BONDED ABRASIVE DISC WHEELS
Charles V. Rue, Tiffin, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 13, 1969, Ser. No. 790,745
Int. Cl. B24b *1/00*
U.S. Cl. 51—295 **4 Claims**

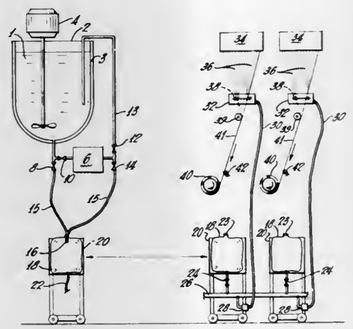


A method is provided for producing bonded abrasive disc wheels with surface discontinuities therein having a uniform density throughout. The surface discontinuities are produced on the upper surface of an abrasive mixture by projecting means from beneath the mixture and then inverting the mixture.

3,622,289
GLASS FEEDER MADE OF PT-RH-MO HIGH TEMPERATURE-HIGH STRENGTH ALLOY
James H. Hansen, and Ralph W. Getz, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation
Filed Dec. 12, 1969, Ser. No. 884,689
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 **4 Claims**

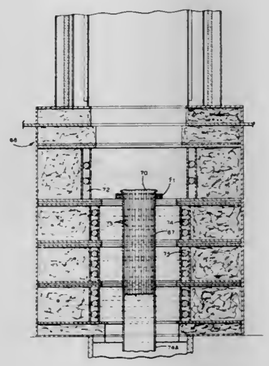
This invention pertains to a glass feeder fabricated from an alloy containing 14–79 percent platinum, 20–85 percent rhodium and 0.01–10 percent molybdenum in which said molybdenum is present in an amount sufficient to increase the ductility of the alloy. This invention also pertains to a composite feeder comprising different platinum-rhodium and molybdenum alloys wherein the molybdenum content of these alloys are in an amount sufficient to maintain the resistivities of the alloys at the same magnitude when the feeder is in use at high temperatures.

3,622,290
METHOD OF MAKING, SUPPLYING AND APPLYING CHEMICAL TREATMENT TO GLASS FIBERS
Jerome P. Klink, and Charles R. Morrison, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation
Filed Nov. 4, 1968, Ser. No. 773,027
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **3 Claims**



A new and improved method for preparing and applying sheer thinning gel to glass fibers wherein the improvement comprises introducing the treatments, after preparation, into closed collapsible containers, controllably advancing the treatments to an application zone, and applying the treatments uniformly to the glass fibers.

3,622,291
TUBE UNITING WITH END FRACTURES
Horst G. Fleck, San Antonio, Tex.; Martin Rome, Princeton, and Joseph M. Wixted, Princeton Junction, N.J., assignors to Weston Instruments, Inc., Newark, N.J.
Filed June 3, 1969, Ser. No. 830,007
Int. Cl. C03c *23/20;* **C03b** *21/00*
U.S. Cl. 65—4 **1 Claim**

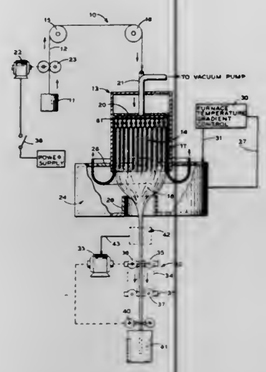


An illustrative embodiment of the invention is directed to method and apparatus for manufacturing microchannel devices. Typically, the individual glass tubes in a hexagonal bundle are sealed on one end to individual hangers from which they are suspended vertically in a furnace. A vacuum is drawn within the furnace so that the inner surfaces of the tubes, exposed to atmospheric pressure, will not collapse during heating and drawing. At temperature, the bundle is drawn and elongates under the controlled forces applied through a modified Atwood's machine to reduce the bundle cross section by a ratio of about 50 to 1. The elongated bundle is cut into lengths as it is drawn, and these individual lengths are stacked together within a tube of glass that has a higher melting point than the glass in the drawn lengths.
The channels are once more sealed and the assemblies are subjected to a secondary fusion process prior to slicing into thin discs. The annular glass rings are removed from the discs and the microstructures are placed in a molten wax bath in order to fill the channels with wax before grinding and polishing. After grinding and polishing, the wax is removed.

3,622,292
TUBE UNITING WITH FUSION BARRIER
Horst G. Fleck, San Antonio, Tex., assignor to Weston Instruments, Inc., Newark, N.J.
Filed June 3, 1969, Ser. No. 830,008
Int. Cl. C03c *23/20;* **C03b** *39/00*
U.S. Cl. 65—4 **1 Claim**

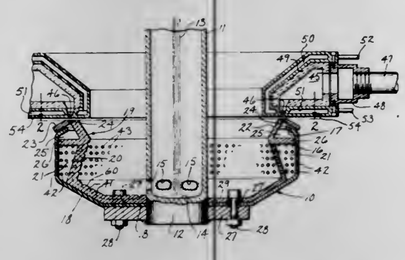
The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Army. An illustrative embodiment of the invention is directed to method and apparatus for manufacturing microchannel devices. Typically, individual glass tubes are suspended vertically in a furnace. A vacuum is drawn within the furnace so that the inner surfaces of the tubes, exposed to atmospheric pressure, will not collapse during heating and drawing. At temperature, the bundle is drawn in order to elongate and reduce the bundle cross section by a ratio of about 50 to 1. The elongated bundle is cut into lengths that are stacked together within a tube of glass that has a higher melting point than the glass in the drawn lengths.
The channels are once more sealed and the adjacent hexagonal lengths are subjected to a secondary fusion process

prior to slicing into thin discs. To prevent the inner lengths from cracking during cooling, the inner surface of the tube is



treated with a fusion inhibiting compound (e.g., boron nitride).

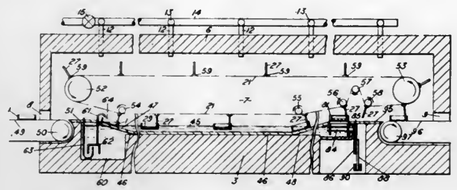
3,622,293
APPARATUS FOR MANUFACTURING GLASS FIBERS
Miles S. Firnhaber, 2648 Glen Cove Parkway, Pewaukee, Wis.
Filed Dec. 10, 1968, Ser. No. 782,635
Int. Cl. C03b *37/04*
U.S. Cl. 65—14 **1 Claim**



There is a cup-shaped rotor to receive molten glass and there is a lining for the rim portion and bottom of the rotor, the rim portion of the lining being apertured and spaced from an apertured rim portion of the rotor, there being an annular partition subdividing the annular space into an outer annular hot gas chamber and an inner annular molten glass-receiving chamber, said hot gas chamber having openings to receive hot gases from a burner during rotation of the rotor, and said lining being formed principally of lapped sector-shaped segments.

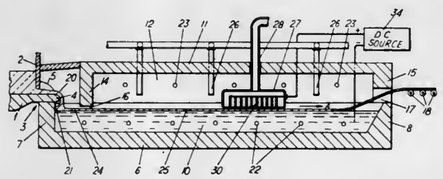
3,622,294
METHOD AND APPARATUS FOR PRODUCING COATED FLAT GLASS
David Gordon Loukes, Prescot; Albert Sidney Robinson, Southport, and Jack Lawrenson, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed June 6, 1969, Ser. No. 831,074
Claims priority, application Great Britain, June 10, 1968, 27,564/68
Int. Cl. C03c *17/00*; **C03b** *23/00*
U.S. Cl. 65—30 **9 Claims**

A hollow glass article having predetermined characteristics, e.g. weathering, electrical conductivity, solar heat rejection, is produced by supporting the article, when hot, on a bath of molten metal, placing an electrically conductive material in the article, and passing a regulated electric cur-



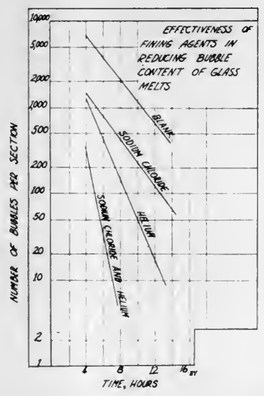
rent through the glass to impart electrolytically the desired surface characteristic to the glass.

3,622,295
METHOD AND APPARATUS FOR PRODUCING COATED FLAT GLASS
David Gordon Loukes, and William Ramsey Maltman, both of Prescot, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed July 7, 1969, Ser. No. 839,248
Claims priority, application Great Britain, July 15, 1968, 33,676/68
Int. Cl. C03c *17/00*; **C03b** *23/00*
U.S. Cl. 65—30 **13 Claims**



A concentration of elemental metal is built up in a glass surface by subjecting the glass, at a suitable elevated temperature, to ion exchange and ion reduction treatments alternately. The ion exchange may be effected electrolytically or by vapor deposition, and the ion reduction may be effected by exposing the glass surface to a reducing atmosphere.

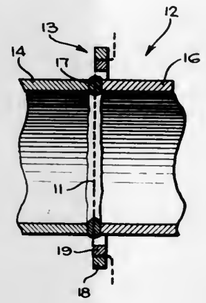
3,622,296
METHOD OF FINING GLASS
Walter M. Buehl, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 29, 1966, Ser. No. 575,603
Int. Cl. C03b *5/16*,
U.S. Cl. 65—32 **8 Claims**



A method of fining glass melts by fusing a glass composition in an atmosphere in which helium is substantially absent,

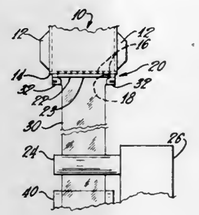
passing gaseous helium into the molten glass such that the helium diffuses through the glass and into the seeds whereby the seeds become expanded, and permitting the expanded seeds to rise through the molten glass and become eliminated at the surface.

3,622,297
METHOD OF FUSION SEALING WIRE GIRD IN TUBE
Victor G. Johanson, La Mesa, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed Mar. 13, 1970, Ser. No. 019,154
Int. Cl. C03c *27/00, 29/00*
U.S. Cl. 65—42 **5 Claims**



A method is described for mounting a grid within a glass tube wherein the grid is held during assembly in a taut condition, such as by a mounting frame, and is secured between two sections of the tube by glass frit. Also described is an electron tube in which a grid is mounted in such a manner.

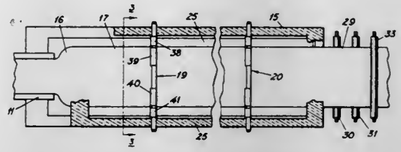
3,622,298
METHOD AND APPARATUS FOR MANUFACTURING GLASS FILMS
George R. Machlan, and Craig L. Thom, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation
Filed Aug. 13, 1969, Ser. No. 849,765
Int. Cl. C03b *17/00*
U.S. Cl. 65—91 **10 Claims**



Method and apparatus for producing a thin sheet of thermoplastic material employing a container for holding a supply of the material where one of the container walls possesses openings through which the thermoplastic material leaves the container and using a reservoir region with an elongated outlet in communication with the openings. The material flows from the elongated outlet as a thin relatively wide stream and is attenuated into a thin sheet.

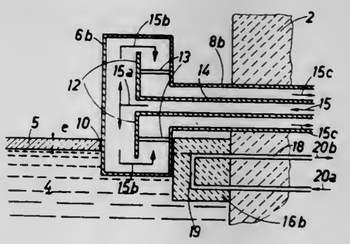
3,622,299
FLOAT GLASS METHOD AND APPARATUS FOR CONTROLLING TEMPERATURE
Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Glass Company, Toledo, Ohio
Filed June 26, 1968, Ser. No. 740,193
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **7 Claims**

This application discloses a method of selectively controlling, regulating and/or varying the temperature of a moving, glass ribbon and/or of the molten metal bath in a float glass apparatus, which involves the use of a cooling member, extending across the float chamber and provided with an in-



sulating sleeve or sleeves slideable thereon, and the selective positioning of said sleeves to reduce the cooling action of the member in selected areas along the length thereof.

3,622,300
FLOAT GLASS APPARATUS WITH LATERAL GUIDES
Gustave Javaux, Brussels, Belgium, assignor to Glaverbel, S.A., Watermael, Boitsfort, Belgium
Filed May 20, 1968, Ser. No. 730,285
Claims priority, application Belgium, May 25, 1967, P 540
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R **10 Claims**



An arrangement for controlling the edges of a float glass ribbon in apparatus in which the ribbon floats along a molten bath between two longitudinal walls and in which rotary discs are provided along the edges of the ribbon for rotation about their axes in a plane parallel to the lateral edges of the ribbon, the edges of the ribbon being controlled by the provision of guide pieces disposed between the rotary discs and the longitudinal walls for preventing laterally drifting glass from coming in contact with the longitudinal walls and for urging this glass back toward the main portion of the ribbon, the guide pieces being arranged so that the glass will not adhere thereto.

ERRATA

For Classes 62—229 and 71—29 see:
Patent Nos. 3,622,305 and 3,622,575

3,622,301
TREATMENT OF NICKEL CONTAINING MATERIAL TO REMOVE MOLYBDENUM
Ernest Mehl; Bauke Weizenbach, and Paul Kawulka, all of Fort Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada
Filed Jan. 9, 1970, Ser. No. 001,898
Int. Cl. C22b *3/00, 49/00*
U.S. Cl. 75—3 **5 Claims**

A process for treating molybdenum contaminated nickel, iron and sulfur containing mattes, intermediates and residues to remove the molybdenum. The material in finely divided form is mixed with alkali and water and pelletized. The pellets are then roasted in air to convert the molybdenum into soluble alkali molybdate which is then leached from pellets with water.

3,622,302
METHOD FOR REMOVING ARSENIC FROM METALS OR ALLOYS

Noboru Hayashi, Amagasaki-shi; Hidemi Kaida, Kakogawa-shi, and Teruo Takatsuki, Nishinomiya-shi, all of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

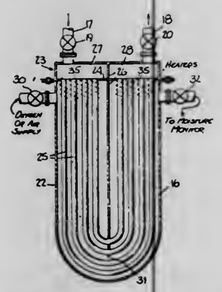
Filed Feb. 17, 1969, Ser. No. 799,927
Claims priority, application Japan, Feb. 15, 1968, 43/9751
Int. Cl. C21c *7/04*; C22b *23/00*
U.S. Cl. 75—58 13 Claims

Arsenic contained in ferronickel, pig iron, steel or crude nickel is effectively removed by adding at least one of calcium material, magnesium material and carbon material to the molten metal. Examples of the calcium material are Ca–Si, CaC_2, etc.; those of the magnesium material are Si–Mg, MgF_2, etc. and those of the carbon material are cokes powder, charcoal powder, etc.

3,622,303
METHOD FOR REMOVING HYDROGEN FROM LIQUID ALKALI METALS AND THE LIKE

Eugene F. Hill, Southfield, Mich., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.

Filed May 23, 1966, Ser. No. 552,317
Int. Cl. C22b *27/00*
U.S. Cl. 75—66 7 Claims

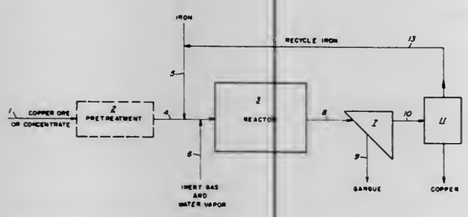


1. Method of removing hydrogen from liquid alkali metals which comprises: allowing such hydrogen to diffuse from such liquid metal at an elevated temperature through a bimetal barrier comprised of a first layer of metal selected from the group consisting of iron, nickel, tantalum and columbium and their alloys, which metal layer is in intimate contact with the liquid metal and a second layer of metal selected from the group consisting of palladium and platinum and alloys thereof, which second layer is in intimate contact with a gas containing oxygen, said first layer of metal providing resistance to corrosive attack on the barrier by the liquid metal, and said second layer of metal providing a catalytic action to convert the diffused hydrogen to H_2O.

3,622,304
FERROTHERMIC EXTRACTION OF COPPER

Sanaa E. Khalafalla, Minneapolis; Larry A. Haas, Burnsville, and Howard W. Kilau, St. Paul, all of Minn., assignors to The United States of America as represented by the Secretary of the Interior

Filed Mar. 3, 1970, Ser. No. 16,206
Int. Cl. C22b *15/14*
U.S. Cl. 75—72 9 Claims

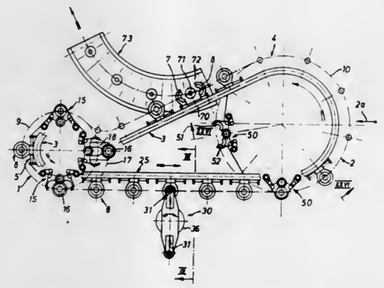


Metallic copper is extracted from nonsulfidic copper minerals by means of a solid state cementation technique in which metallic iron is reacted with copper minerals at temperatures above about 500° C.

3,622,305
MACHINE FOR THE PRODUCTION OF CONTAINERS OR THE LIKE OF VITREOUS MATERIAL

Kurt Becker, Obernkirchen, Germany, assignor to Herman Heye, Obernkirchen, Germany

Filed Mar. 26, 1968, Ser. No. 716,196
Claims priority, application Germany, Apr. 1, 1967, H 62338
Int. Cl. C03b *9/00*, *11/06*
U.S. Cl. 65—229 21 Claims

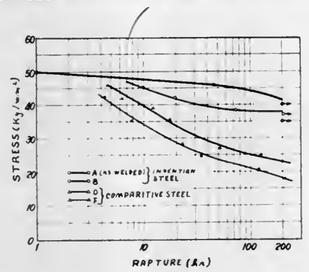


A press-and-blow container making machine wherein one of two rotary tables supports a set of blank molds receiving gobs from a gob feed and the other rotary table supports a set of blow molds serving to convert parisons obtained from the blank molds into finished containers. An endless flexible conveyor carries neck rings which transport parisons from the first table, past a preliminary treating unit and on to the blow molds. The neck rings also transport finished containers away from the blow molds.

3,622,306
CORROSION RESISTING LOW ALLOY STEEL

Masayuki Tanimura, Yokohama-shi; Elhachiro Sunami, Yokohama-shi, and Toshio Nakazawa, Kawasaki-shi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1969, Ser. No. 814,276
Claims priority, application Japan, Apr. 8, 1968, 43/22809
U.S. Cl. 75—125 2 Claims



Corrosion resisting low alloy steel having stress-corrosion cracking resistability, good weldability and higher strength under some kind of environment containing H_2S and the like, which is chiefly composed of Cu–Cr–Al system constituents without addition of strengthening elements such as Ti, Nb, V and the like.

3,622,307
PRECIPITATION-HARDENABLE CHROMIUM-NICKEL STAINLESS STEEL

William C. Clarke, Jr., Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 15, 1968, Ser. No. 729,419
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 R 15 Claims

Martensitic precipitation-hardenable chromium-nickel stainless steel of high-impact strength. The steel comprises about 10 percent to 17 percent chromium, about 3.7 percent to 10 percent nickel, with or without about 2.5 percent to 5 percent copper, 0.01 percent to 0.06 percent carbon, manganese not exceeding 0.50 percent, silicon not exceeding 0.15 percent, phosphorus not exceeding 0.30 percent, sulphur not exceeding 0.020 percent, nitrogen not exceeding 0.025 percent, with or without columbium up to about 0.25 percent and with or without titanium up to about 0.15 percent, and remainder substantially all iron. Where the chromium content exceeds 13 percent and copper is present in the amount of about 2.5 percent to 5 percent, at least three of the four ingredients manganese, silicon, sulphur and nitrogen are further limited: the manganese to 0.30 percent max., silicon 0.10 percent max. and each of sulphur and nitrogen 0.010 percent max.

3,622,308
HAFNIUM BASE ALLOY (IRIDIUM)

Vernon L. Hill, Niles, and Harry R. Nichols, Chicago, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,357
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 7 Claims

Hafnium base alloy containing between about 15 and about 35 weight percent tantalum and between about 2 and about 20 weight percent iridium. The alloy may also contain aluminum, silicon or chromium as additional alloying agents.

3,622,309
HAFNIUM BASE ALLOY (BORON)

Vernon L. Hill, Niles, and Harry R. Nichols, Chicago, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,397
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 7 Claims

Hafnium tantalum alloy containing about 15 and about 35 weight percent tantalum, between about 0.03 and about 2.0 weight percent boron, and at least one additional alloying agent selected from chromium, silicon and aluminum.

3,622,310
PROCESS OF PREPARING NOBLE METAL MATERIALS HAVING IMPROVED HIGH TEMPERATURE STRENGTH PROPERTIES

Gerhard Reinacher, Hanau(Main), and Gerhard Zwingmann, Bruchkobel, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Jan. 17, 1969, Ser. No. 792,110
Claims priority, application Germany, Jan. 20, 1968, P 16 08 255.6
Int. Cl. G22c *5/00*
U.S. Cl. 75—165 15 Claims

The high temperature strength properties of noble metals, particularly platinum are improved by adding an element having an affinity for oxygen, preferably zirconium, and heating either (1) at 800° to 1,200° C. or (2) stepwise heating at 300° to 800° C. followed by heating at 800° to 1,400° C.

3,622,311
METHOD OF PREPARATION OF ALLOYS WITH A BASE OF MAGNESIUM-ZIRCONIUM FOR IMPROVING THE MECHANICAL PROPERTIES OF THESE ALLOYS AT HIGH TEMPERATURES

Rene Lucien, Neuilly-sur-Seine, and Emile Tetart, Basses Pyrenees, both of France, assignors to Messier, Paris, France

Filed June 27, 1968, Ser. No. 740,718
Claims priority, application France, July 5, 1967, 113,109
Int. Cl. C22c *23/00*
U.S. Cl. 75—168 10 Claims

A method of preparation of alloys with a base of magnesium-zirconium, in which the zirconium is introduced into the alloys in the form of a mother alloy Zr-Mg in the presence of a flux having a high content of potassium salts, especially potassium chloride and/or potassium fluoride, associated if required with other alkali and alkaline-earth salts, the potassium salts representing at least 60 percent and preferably between 70 and 90 percent by weight of the salts introduced into the molten bath, said salts also representing between 7 and 12 percent by weight of the molten metal. A purifying flux is employed representing between 2 and 4 percent by weight of the molten metal, and manganese is introduced into the molten alloy in the form of manganese chloride.

3,622,312
METHOD FOR REJUVENATING REFRACTORY ARTICLES

Cressie E. Holcombe, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

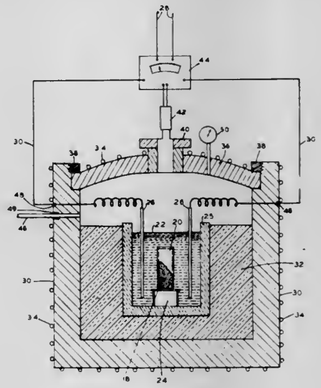
Filed July 23, 1969, Ser. No. 844,202
Int. Cl. B22f *7/08*
U.S. Cl. 75—224 4 Claims

Refractory metal products damaged by oxidation are restored to their original condition by heating the damaged products in a reducing atmosphere to a temperature adequate to successively reduce the oxide to the metal and sinter the metal.

3,622,313
HOT ISOSTATIC PRESSING USING A VITREOUS CONTAINER

Charles J. Havel, 162 Proctor Blvd., Utica, N.Y.

Continuation-in-part of application Ser. No. 636,700, May 8, 1967. This application Feb. 28, 1968, Ser. No. 734,822
Int. Cl. B22f *3/14*
U.S. Cl. 75—226 11 Claims



Hot compacting of metallic powders in a vitreous evacuated container of a predetermined shape corresponding to the shape of the densified object desired by subjecting the container to a temperature sufficient to render the container plastic and the contents densifiable, by the application of external pressure upon the container walls.

3,622,314
SYSTEM FOR REPULSION DEVELOPMENT IN ELECTROPHOTOGRAPHY

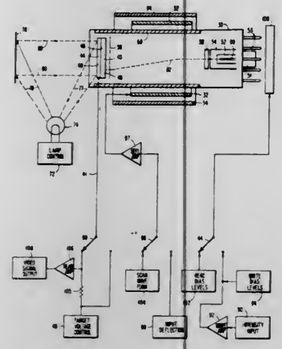
Yasuo Tamai; Seiji Matsumoto; Masamichi Soto, and Satoru Honjo, all of Saitama, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed July 1, 1968, Ser. No. 741,519
Claims priority, application Japan, July 1, 1967, 42/42253
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 1 Claim

System for developing electrostatic images by repulsion development to allow full development of areas bearing uniform charge. An insulating developing electrode bearing charge controlled electrostatically to decay at the same rate as charge from the latent image is placed adjacent to the latent image bearing surface, and both are spaced a uniform distance from a conductor. This allows the electric field

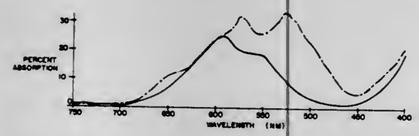
produced to become zero in that part to which no particles are to adhere.

3,622,315
PHOTOERASABLE SCAN CONVERTER
John W. Brookman, Saratoga; John B. Murphy, and Zack D. Reynolds, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 14, 1968, Ser. No. 775,861
Int. Cl. G03g ; H04n 5/76; H01j 31/48
U.S. Cl. 96—1 R 14 Claims



A photoerasable scan converter is described for converting digital and/or optical input to a raster signal output for storage in a buffer and subsequent monitoring. In combined image mode, a charge pattern representing a first image is painted on the photoconductive target of a Vidicon tube by an electron beam in directed-beam mode. A modification or modulation of a charge pattern representing a second image is provided on the target by exposing said screen to the second image through an optical system. The combined images, or charge patterns, are read out by electron beam scanning in raster mode. Any remanent charge on the target is erased by discharging with a short, high intensity flash of light. Similarly, a single image from either optical exposure or electron beam painting may be read out and erased.

3,622,316
PHOTORESPONSIVE ARTICLES COMPRISING MULTILAYER SPECTRAL SENSITIZATION SYSTEMS
George R. Bird, Concord, and Alan E. Rosenoff, Waltham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 401,677, Oct. 5, 1964, now abandoned. This application Mar. 4, 1969, Ser. No. 804,254
Int. Cl. G03g 5/08; G03c 1/28
U.S. Cl. 96—1.7 16 Claims



Photoresponse of a given photosensitive medium is enhanced by utilizing a spectral sensitization system which comprises a layer of a cyanine spectral sensitizing dye to said photosensitive medium and, superposed thereover, at least one layer of an energy absorbing and transmitting material which possesses a higher intrinsic energy absorption frequency than the energy absorption frequency of the immediately preceding layer, and an intrinsic energy transmitting frequency which overlaps the energy absorption frequency of the next preceding layer, thereby providing a radiationless circuit capable of transmitting photon-excitation-derived energy to said photosensitive medium.

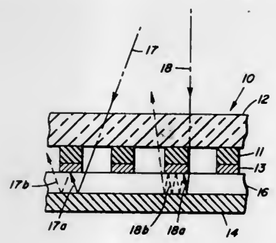
3,622,317
PHOTORESPONSIVE ARTICLES COMPRISING PSEUDO-POLYMERIC SPECTRAL SENSITIZATION SYSTEMS
George R. Bird, Concord, and Alan E. Rosenoff, Waltham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 438,124, Mar. 8, 1965, now abandoned. This application Apr. 16, 1969, Ser. No. 816,800
Int. Cl. G03g 5/08; G03c 1/28
U.S. Cl. 96—1.7 24 Claims

Photoresponse of a given photosensitive element is enhanced by utilizing a spectral sensitization system adsorbed to said photosensitive element, said system comprising a layer of spectral sensitizing dye material comprising non-repetitive segments, each of said segments more distal from said photosensitive element than the preceding segment possessing a higher intrinsic energy absorption frequency range than the energy absorption frequency range of the immediately preceding segment, and an intrinsic energy transmitting frequency range which overlaps the energy absorption frequency range of the next preceding segment thereby providing a radiationless circuit capable of transmitting photon-excitation-derived energy to said photosensitive element.

3,622,318
PHOTOGRAPHIC MATERIALS AND PROCESSES
Francis J. Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 20, 1970, Ser. No. 021,469
Int. Cl. G03c 7/00, 5/44, 1/84
U.S. Cl. 96—22 24 Claims

Light-sensitive photographic silver halide emulsions and elements are provided which feature converted-halide silver halide grains in which the halide consists of at least 50 mole percent bromide and up to 10 mole percent iodide, any remaining halide being chloride; the surface of said grains being chemically sensitized; and, said silver halide grains having contiguous thereto a photographic color coupler. Processes for producing photographic color images are also provided wherein emulsions and elements of the type described above, after exposure, are reacted with an aromatic primary amino color developing agent to form a dye image.

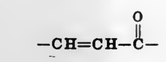
3,622,319
NONREFLECTING PHOTOMASKS AND METHODS OF MAKING SAME
Donald Jex Sharp, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 20, 1966, Ser. No. 593,610
Int. Cl. G03c 5/04
U.S. Cl. 96—27 1 Claim



A nonreflecting photomask comprises a pattern of an anodized, film-forming material on a transparent substrate. The thickness of the anodic oxide is chosen such that when the mask is employed in selectively exposing a photoresist-coated body to light (by placing the oxide against the photoresist), destructive interference prevents light reflected from the body to the oxide from being re-reflected to the photoresist. Thus, undesirable exposure of masked portions of the photoresist is precluded.

3,622,320
THERMOGRAPHIC PROCESSES AND ELEMENTS UTILIZING PHOTOCROSSLINKABLE POLYESTERS
Frank D. Allen, deceased, late of Rochester, N.Y. (by Mona Armstrong Allen, executrix) Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
and a continuation-in-part of 595,998, Nov. 21, 1966, now abandoned. This application Feb. 29, 1968, Ser. No. 709,496
Int. Cl. G03c 11/12
U.S. Cl. 96—28 20 Claims

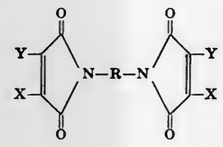
Photocrosslinkable polyesters prepared with 50 mole percent of at least one diol moiety and 50 mole percent of at least two hydroxy-free dicarboxylic acid moieties, about 5 to 45 mole percent, based on the polyester, of the dicarboxylic acid moieties containing a light-sensitive grouping having the formula



are useful in a wide variety of photothermographic elements.

3,622,321
PHOTODIMERIZATION AND PHOTOPOLYMERIZATION OF BIS-MALEIMIDES
Georges Joseph Smets, Heverlee, and Frans Carolus De Schuijver, Leuven, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Nov. 10, 1969, Ser. No. 875,571
Claims priority, application Great Britain, Dec. 24, 1968, 61,434/68
Int. Cl. G03c 1/70
U.S. Cl. 96—35.1 8 Claims

A photographic element comprising a support having a coating comprising a polymer of styrene and a bis-maleimide of the formula:



wherein:
R represents an alkylene group comprising one to 12 carbon atoms, a $-CH_2-Z-CH_2-$ group or an arylene group, Z being O, S or NH, and X and Y represent hydrogen, chlorine, or methyl, and the process of making the photographic element is described.

3,622,322
PHOTOGRAPHIC METHOD FOR PRODUCING A METALLIC PATTERN WITH A METAL RESINATE
Frederick W. Brill, Lancaster, Pa., assignor to RCA Corporation
Filed Sept. 11, 1968, Ser. No. 759,232
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 5 Claims

To produce a metallic pattern on a surface: (1) coat the surface with a photosensitive coating comprised of an organic photoresist and a substantially transparent metal resinate, (2) expose the coating to a pattern of light, (3) develop the coating to produce a metal resinate pattern, (4) and then heat the pattern to convert the metal resinate pattern to a pattern of metal.

3,622,323
PROCESS OF PRODUCING A RELIEF CONTOUR EFFECT FOR TOPOGRAPHIC MAPS
Alfred M. Fraser, 12012 Dewey Road, Silver Spring, Md.
Filed Dec. 3, 1969, Ser. No. 881,675
Int. Cl. G03c 5/04
U.S. Cl. 96—41 5 Claims

A photomechanical process of producing a relief contour effect for topographical maps by means of using a positive transparency form of the topographical map, a negative transparency form produced therefrom, a positive mask transparency prepared for a portion of the map contour lines, a negative mask transparency produced therefrom, a three-ply overlay of the negative transparency positive mask-positive transparency assembled and a positive print obtained therefrom, a three-ply overlay of the negative transparency negative mask-positive transparency assembled and a negative print obtained therefrom, and a final print prepared from both the positive and negative prints.

3,622,324
PHOTOGRAPHIC EXPOSURE UNDER CONDITIONS TO IMPROVE SENSITIVITY OF PHOTOGRAPHIC EMULSIONS
William C. Lewis, and Thomas J. James, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed June 13, 1968, Ser. No. 736,650
Int. Cl. G03c 5/32, 5/04
U.S. Cl. 96—45.2 5 Claims

Under high vacuum, a photographic silver halide layer is evacuated of oxygen and moisture. For photographic exposures made under these conditions low-intensity reciprocity failure and dye desensitization of the silver halide are found to be substantially reduced or eliminated. This permits higher speeds with low-intensity exposures and permits greater spectral sensitization with dyes that ordinarily have a desensitization effect.

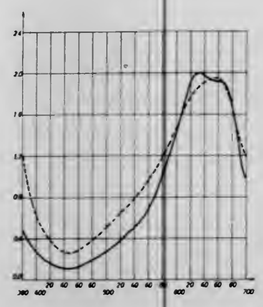
3,622,325
DIAZOTYPE PHOTOGRAPHIC COPYING MATERIAL ADAPTED FOR WET DEVELOPMENT AND FOR PRODUCING COPIED IMAGE IN BLACK COLOR
Shigeaki Toshida, Kanagawa, Prefecture, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 7, 1968, Ser. No. 711,205
Int. Cl. G03c 5/34, 1/58, 1/54
U.S. Cl. 96—49 2 Claims

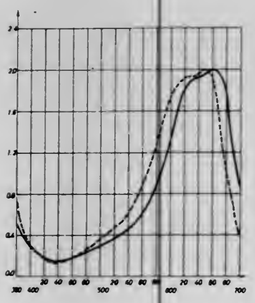
A two-component diazotype photographic copying material for wet development and having a light-sensitive layer which contains at least one light-sensitive aromatic diazo compound and also contains at least one each of the three kinds of coupling components which are adapted to form a blue dye, a bluish-violet dye and a yellow dye, respectively, when said coupling components are made to react with said diazo compound, is capable of providing a copied image in a very clear black color when developed with an alkaline aqueous solution containing no coupling component.

3,622,326
DIAZOTYPE LIGHT-SENSITIVE COPYING PAPERS INTENDED FOR WET DEVELOPMENT AND FOR USE IN THE PREPARATION OF INTERMEDIATES
Shigeaki Yoshida, Kanagawa, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 20, 1968, Ser. No. 714,425
Int. Cl. G03c 5/34, 1/58, 1/54
U.S. Cl. 96—49 3 Claims

A diazo-type copying paper which is prepared by coating, on a light-transmitting base, a light-sensitive composite containing a diazonium compound obtained from 1-amino-4-dialkylamino-monochloro benzene and also containing a coupling component consisting of 2-alkyl-5-alkyl-4-morpholino-methyl-phenol, provides an excellent intermediate copy when developed according to the wet development process.

3,622,327
PROCESS FOR PREPARING COLOR IMAGES
Jan Jaeken, Hove; Wilhelmus Janssens, Aarschot, and Marc Godfried Mennens, Wilrijk, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Feb. 4, 1970, Ser. No. 008,525
Claims priority, application Great Britain, Feb. 4, 1969, 5,979/69
Int. Cl. G03c 5/50
U.S. Cl. 96—54 12 Claims





Color development in the presence of oxidatively coupling quinolone sulphonylhydrazone couplers to improve the absorption characteristics of the cyan dyes produced and reduce the undesirable blue fog in the cyan dye layer.

3,622,328
PROCESS FOR PRODUCING PHOTOGRAPHIC COLOR IMAGES
Robert J. Pollet, Berchem; Raphael K. Van Poucke, Berchem, and Arthur Henri De Cat, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Apr. 4, 1968, Ser. No. 719,243
Claims priority, application Great Britain, Apr. 11, 1967, 16,456/67
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—55 14 Claims
2-equivalent couplers for forming cyan dye images in color photography of the naphthol type and characterized by a sulfonyl or sulfinyl group in the coupling position are provided. Such couplers have the inherent advantages of 2-equivalent color couplers and, additionally, a high degree of reactivity, little or no tendency to produce stains by nonimagewise coupling and have all of the desirable attributes of prior art cyan-forming couplers.

3,622,329
PHOTOGRAPHIC SILVER HALIDE EMULSIONS WITH INCREASED SENSITIVITY
Harald Huckstadt, Cologne-Stammheim; Wilhelm Saleck, Schildgen, Bergisch; August Randolph, Leverkusen, and Edwin Ranz, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 26, 1969, Ser. No. 802,654
Claims priority, application Germany, Apr. 26, 1968, P 17 72 292.8
Int. Cl. G03c 1/28, 5/24
U.S. Cl. 96—65 8 Claims
Photographic silver halide emulsions having increased sensitivity, containing as a chemical sensitizer, an S-alkyl-dithianium salt and a process for developing photographic silver halide emulsions in the presence of such a salt.

3,622,330
LITHOGRAPHIC DEVELOPER CONTAINING AN ANIONIC FATTY ALCOHOL SULFATE AND A NONIONIC POLYETHYLENE OXIDE SURFACTANT
George Devasia Valiaveedan, Freehold Township, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 19, 1969, Ser. No. 889,864
Int. Cl. G03c 5/30
U.S. Cl. 96—66 7 Claims
An aqueous photolithographic developer comprising a hydroquinone or a substituted hydroquinone developing agent, an anionic fatty alcohol sulfate and a nonionic polyethylene oxide surfactant in combination with conventional developer adjuvants, e.g., antifoggants, buffers, preservatives, etc.

3,622,331
POLYCARBONATE-CINNAMATE PHOTOPOLYMER
Daniel C. Thomas, Covina, Calif., assignor to Lithoplate, Inc., Covina, Calif.
Filed June 23, 1969, Ser. No. 835,788
Int. Cl. C08g 17/13
U.S. Cl. 96—68 4 Claims
A polycarbonate resin is reacted with a cinnamoylating agent such as cinnamoyl chloride to produce a novel photopolymer, a polycarbonate-cinnamate resin. The photopolymers are useful for making photoresist plates and presensitized negative-working printing plates.

3,622,332
PHOTOGRAPHIC PROCESS WITH IMPROVED ACTIVATOR COMPOSITION
John R. Kane, Piffard, N.Y., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 19, 1968, Ser. No. 722,551
Int. Cl. G03c 5/30
U.S. Cl. 96—66.3 16 Claims
An improved photographic process for developing a photographic element having a silver halide emulsion layer with silver halide developing agents disposed therein or contiguous thereto as a separate layer comprising (1) exposing said photographic element and (2) applying to the exposed element an alkaline activator composition containing a small amount of a thiosulfate, preferably an alkali or alkaline earth metal or ammonium thiosulfate, having a concentration of from 2 to 20 grams per liter. It is believed that the thiosulfate causes unexposed silver halide to dissolve and plate on the image area simultaneously with chemical development, thereby creating a blue-black image tone of increased maximum density and sharpness.

3,622,333
EPOXY RESIN VEHICLE FOR VESICULAR FILM
Oswald James Cope, Santa Cruz, Calif., assignor to Microx Corporation, Santa Clara, Calif.
Filed Oct. 15, 1969, Ser. No. 866,753
Int. Cl. G03c 1/52, 1/60
U.S. Cl. 96—75 6 Claims
Vehicle for vesicular film having improved image stability particulary at higher temperatures as well as improved stability of the vehicle itself at higher temperatures and in integrity of its chemical structure. The vesiculating agent is carried in a thermoplastic linear polyhydroxyether polymer of an epihalohydrin such as epichlorohydrin and a dihydric phenol such as 2,2'-bis(p-hydroxyphenyl) propane.

3,622,334
PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS CONTAINING HETEROCYCLIC NITROGEN-CONTAINING COMPOUNDS
Robert Bartholomew Hurley, Matawan, and Sam Lazarus, Englishtown, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 31, 1969, Ser. No. 889,742
Int. Cl. G03c 1/70
U.S. Cl. 96—83 9 Claims
A photopolymer resist composition comprising (A) an ethylenically unsaturated compound containing at least one polymerizable ethylenic group (CH_2 C) capable of forming a high polymer by photoinitiated addition polymerization; (B) a thermoplastic organic polymer binder and (C) a photoactivatable addition polymerization initiator provides improved adhesion to a solid support in aqueous plating solutions when the composition includes a small amount of a compound having the formula

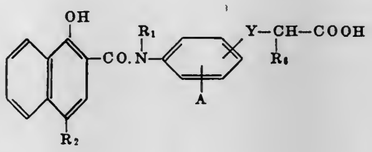


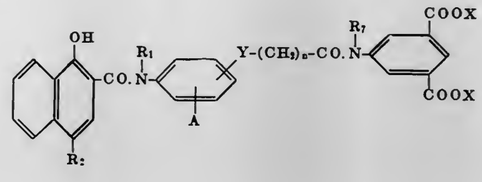
where R is substituted or unsubstituted ortho arylene, X is CH_2, NH, S, O, or Se; Z is N or C—Y, where Y is H, NH_2, halogen, alkyl.

3,622,335
COPOLYMERS OF AN ALPHA ACRYLONITRILE AND A STYRENE USED AS VEHICLES IN VESICULAR MATERIALS
Norman Thomas Notley, Box 462, Sierra Madre, Calif.
Filed Jan. 13, 1970, Ser. No. 002,981
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—91 9 Claims
This invention is directed to a light-sensitive vesicular imaging composition comprising a sensitizer which liberates gas on irradiation and a binder which is essentially a copolymer of an alpha alkyl acrylonitrile with a styrene-type comonomer, including styrene per se and alpha and aryl substituted styrenes. The composition is coated as a thin film, carefully dried and may be conditioned with a hot water treatment or otherwise prenucleated to secure an imaging medium of superior qualities. After irradiation of this novel composition with a pattern of actinic radiation, gas released in the selected areas may be developed by overall heating to a visible record.

3,622,336
VESICULAR LIGHT-SENSITIVE MATERIALS COMPRISING A COPOLYMER OF CHLOROACRYLONITRILE AND METHACRYLONITRILE
Norman Thomas Notley, Box 402, Sierra Madre, Calif.
Filed Jan. 27, 1970, Ser. No. 006,321
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—91 6 Claims
This invention is directed to a light-sensitive vesicular imaging composition comprising a sensitizer which liberates gas on irradiation and a binder which is essentially a copolymer of alpha-chloroacrylonitrile and alpha-methacrylonitrile. The composition is coated as a thin film, carefully dried and prenucleated to secure an imaging medium of generally superior qualities and of particularly high photosensitivity. After irradiation with a pattern of actinic radiation, gas release in the selected areas may be developed by overall heating to a visible record.

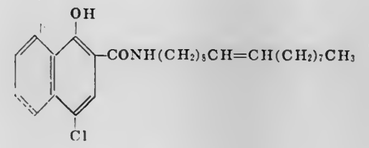
3,622,337
CYAN COLOR FORMERS FOR COLOR PHOTOGRAPHY
Alex P. Altavilla, Johnson City; Walter Hoffstadt, Vestal, and Emil Rauch, Port Dickinson, all of N.Y., assignors to GAF Corporation, New York, N.Y.
Filed Aug. 2, 1968, Ser. No. 749,650
Int. Cl. G03c 1/40
U.S. Cl. 96—100 16 Claims
Light-sensitive silver halide photographic emulsions containing a nondiffusing cyan coupler having one of the following formulas:





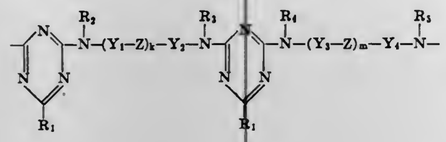
wherein R_1 is H or alkyl; R_2 is H, halogen or SO_3X, X being H or a water-solubilizing cation; A is an electron-releasing group; Y is -O- or $—CH_2—$; R_6 is H or carboxyphenylene; R_7 is an alkyl group of one to 18 carbon atoms, and *n* is an integer from one to three.

3,622,338
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSIONS
Keiji Kasai, and Yosinobu Nakagawa, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 862,643
Claims priority, application Japan, Sept. 25, 1968, 43/68766
Int. Cl. G03c 1/40
U.S. Cl. 96—100 1 Claim
Improved light-sensitive silver halide color-photographic emulsions contain a protected cyan coupler having improved solubility in coupler solvents and represented by the formula



3,622,339
POLYMERIC ANTIFOGGANT CONTAINING AT LEAST FOUR TRIAZINE RINGS
Fumihiko Nishio; Nobuo Yamamoto, and Jun Hayashi, all of Minami-Ashigara Machi, Ashigara-Kamigun Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha
Filed July 8, 1968, Ser. No. 743,007
Claims priority, application Japan, July 7, 1967, 42/43765
Int. Cl. G03c 1/34, 1/72
U.S. Cl. 96—109 8 Claims
A photographic silver halide light-sensitive element illustrating a marked reduction in fog which has a layer which

contains a compound having a repeating unit represented by the following formula:



The specific moieties symbolically represented in the above formula are defined in the specification. The active antifoggant illustrated above may be incorporated into a silver halide emulsion layer, a protective layer and in intermediate layer or the like.

3,622,340

4-THIOURACIL COMPOUNDS AS FOG INHIBITORS

Robert W. Lamon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,744
Int. Cl. G03c 1/34; C07d 5/18
U.S. Cl. 96—109 **18 Claims**

4-Thiouracil compounds, including novel 4-thiouracil compounds, are prepared by reacting ammonia or primary amine with novel adducts of an alkoxycarbonyl isothiocyanate and a tertiary enamine. The 4-thiouracil compounds are useful photographic fog inhibitors.

3,622,341

ZINC OXIDE AND TITANIUM OXIDE SENSITIZED BY AZO DYES

Wndell Maurice Lee, Trenton, N.J., assignor to RCA Corporation

Filed Aug. 1, 1969, Ser. No. 846,942
Int. Cl. G03g 5/02, 5/08
U.S. Cl. 96—1.6 **5 Claims**

A spectrally sensitized electrophotographic recording element includes a photoconductive layer that comprises a zinc oxide and/or titanium dioxide photoconductor in a film-forming resin and a small quantity of at least one azo dye that has either an o,o'-dihydroxy or an o-amino-o'-hydroxy azo structure.

3,622,342

PROCESS FOR PREPARATION OF MILK CRUMB COMPOSITIONS

Irving I. Rusoff, Park Ridge, N.J., assignor to Nabisco, Inc.

Filed Sept. 11, 1969, Ser. No. 857,236
Int. Cl. A23g 1/00
U.S. Cl. 99—23 **8 Claims**

A process for the preparation of milk crumb compositions comprising dry blending of a sweetening agent, milk solids and chocolate liquor and extrusion of the mixture followed by cooling and comminution of the extrudate.

3,622,343

EMULSIONS OF FLAVORING OILS AND PROCESS FOR MAKING SAME

Mohammad H. Anwar, Tappan, and Marvin Calderon, Queens, both of N.Y., assignors to Pepsico, Inc., Long Island City, N.Y.

Filed Dec. 12, 1963, Ser. No. 329,968
Int. Cl. A23l 1/22, 1/00
U.S. Cl. 99—78 **12 Claims**

Caramel is used as an emulsifying agent in preparing an aqueous emulsion of a water insoluble flavoring oil. The emulsion is utilized in preparing flavored beverage syrups and flavored beverages.

3,622,344

SOPHOROSIDE ESTERS IN PREPARED FOOD PRODUCTS

Robert P. Allingham, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,863
Int. Cl. A21d 2/16; A23l 1/00, 1/24
U.S. Cl. 99—80 R **11 Claims**

Sophoroside alkyl esters of certain C_{16} to C_{18} monohydroxy fatty acids, wherein the alkyl groups contain from two to about 18 carbons, show highly desirable effects in improving the properties and general eating characteristics of starch-based and animal or vegetable fat emulsion-based food products at levels between about 0.01 and about 3 percent by weight on an as consumed basis.

3,622,345

PROPYLENE GLYCOL MONOESTER EMULSIFIER-CONTAINING SHORTENINGS AND CAKE MIXES CONTAINING THE SAME

Monoj K. Gupta, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 876,114, Nov. 12, 1969, now abandoned. This application June 9, 1971, Ser. No. 147,310
Int. Cl. A23d 5/00; A21d 13/08
U.S. Cl. 99—94 **14 Claims**

Particular emulsifier-containing shortenings are suitable for use in cake mixes which are shelf stable and which can be utilized to provide high-specific volume, good grain structure, excellent eating quality cakes. These shortenings have a relatively high-solids content at room temperature, a relatively low-solids content at mouth temperature and some solids content at the highest temperatures encountered during storage. The shortenings comprise a propylene glycol monoester emulsifier with a particular ratio of fatty acid ester chains to provide high specific volume cakes.

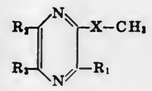
3,622,346

PYRAZINE DERIVATIVES AS NUTLIKE FLAVORING AGENTS AND METHOD OF USE

Max Winter, Petit-Lancy, Geneva, Switzerland, assignor to Firmenich & Cie, Geneva, Switzerland

Continuation-in-part of application Ser. No. 661,485, June 26, 1967, now abandoned, Original application Feb. 21, 1964, Ser. No. 346,420, now Patent No. 3,328,402. Divided and this application Sept. 17, 1968, Ser. No. 760,341
Int. Cl. A23l 1/22
U.S. Cl. 99—140 R **20 Claims**

A flavoring agent, a method for imparting to foodstuffs and beverages the flavor and taste similar to that of roasted hazelnuts, peanuts or almonds by adding thereto at least one compound of the group consisting of A and B, A compounds being represented by the formula



wherein X represents a member selected from the group consisting of oxygen and sulfur and one of the symbols R_1, R_2 and R_3 represents a methyl radical, the other two representing hydrogen; B compound being 2-ethoxy-3-methylpyrazine.

3,622,347

TREATMENT OF SHRIMP TO REMOVE NONEDIBLE PARTS

Otto T. Aepli, Southgate, and Ray W. Schultz, Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 25, 1969, Ser. No. 802,260
Int. Cl. A22c 29/00
U.S. Cl. 99—111 **5 Claims**

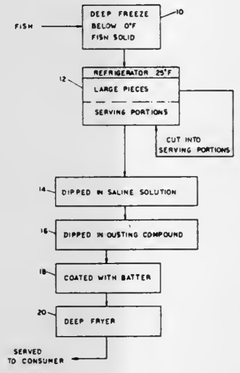
Nonedible parts of shrimp are removed by immersing shrimp in an aqueous solution containing hypochlorite ions or caustic soda.

3,622,348

FISH PREPARATION METHOD

Denis J. Malin, Columbus, Ohio, assignor to Arthur Treacher's Fish & Chips, Inc., Columbus, Ohio

Filed July 16, 1969, Ser. No. 842,260
Int. Cl. A22c 25/00
U.S. Cl. 99—111 **2 Claims**



Uncooked fish, initially frozen below 0° F. is stored for at least 8 hours in an unopened refrigerator which is maintained at approximately 25° F. and the temperature of the fish is thus raised to 25° F. When the fish temperature becomes approximately uniformly 25° F., the fish attains an intermediate consistency which is characterized by the fish having neither the soft fleshy consistency of completely thawed fish nor the solid hard consistency of completely frozen fish. While at this intermediate consistency, the fish may conveniently be and is cut into serving portions, dipped in a saline solution, coated with granulated rice, and then coated with a batter, all without loss of flavor. With the fish still remaining substantially at approximately 25° F., it is inserted in a hot cooking oil for deep frying and permitted to sink in the oil. The fish will rise and float in the cooking oil after it has been properly cooked. It therefore is removed from the cooking oil substantially immediately after it rises and floats.

3,622,349

HONEY-MALT FLAVOR MATERIAL AND PROCESS OF PREPARATION

William A. Mitchell, Lincoln Park, N.J., and Howard D. Stahl, Tarrytown, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,496
Int. Cl. A23l 1/22, 1/04
U.S. Cl. 99—140 R **5 Claims**

Low-calorie food flavoring and texture enhancing material prepared by drum drying an aqueous solution of low jelly grade pectin and artificial sweeteners.

3,622,350

PROCESS OF COATING TABLE SALT

Paul A. Hammes, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 12, 1969, Ser. No. 823,992
Int. Cl. A23l 1/22
U.S. Cl. 99—143 **1 Claim**

Table salt and like small particulate food materials are enclosed in a coating of ethylcellulose having a viscosity of 4 to 50 and an ethyoxyl content of 45.5 to 49.5 percent, the coating serving to protect the coated material from water but being removable or made permeable in gastrointestinal fluids.

3,622,351

TERTIARY-BUTYLHYDROPEROXIDE AS A BACTERICIDE FOR THE PRESERVATION OF FISH

John J. Cavallo, Anaheim, and Robert A. Reynolds, Santa Ana, both of Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Apr. 1, 1969, Ser. No. 812,337
Int. Cl. A23b 3/00, 3/06
U.S. Cl. 99—158 **5 Claims**

A process for using t-butylhydroperoxide for the control of bacterial growth on fish is disclosed.

3,622,352

EDIBLE COMPOSITIONS AND METHOD FOR COATING THEM

Frank L. Daylor, Jr., Richmond, Va., assignor to Philip Morris, Incorporated, Richmond, Va.

Filed Apr. 30, 1970, Ser. No. 33,483
Int. Cl. A23g 3/30; A23l 1/26
U.S. Cl. 99—166 **10 Claims**

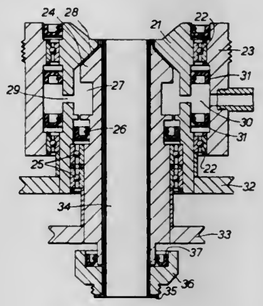
The use of an alcohol solution of a desired flavoring acid such as citric acid to be applied to a sugar-coated core such as chewing gum, nuts, dragees, or confections. The alcohol is evaporated off, leaving the acid flavoring agent as a coating. Thereafter, an additional layer of sugar, shellac, or other similar substance may be applied to the acid-covered core.

3,622,353

SAUSAGE PREPARATION PROCESS

Noel James Bradshaw, Sharnbrook, and Kenneth William Taylor, Higham Ferrers, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed June 17, 1969, Ser. No. 834,009
Claims priority, application Great Britain, June 18, 1969, 28,919/68
Int. Cl. A23b 1/10
U.S. Cl. 99—169 **5 Claims**



Collagen-coated food products, particularly sausages, are prepared by extruding the collagen in tubular form upon the foodstuff and then setting it, one or both surfaces of the collagen being subjected during extrusion to frictional forces

acting about the axis of extrusion. Such forces are conveniently applied by contrarotation of the inner and outer members of the die which is forming the collagen tube, the foodstuff being extruded simultaneously with the collagen through an axial bore in the inner member of the die.

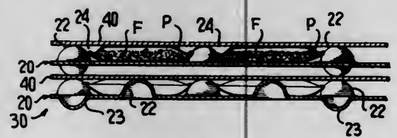
3,622,354
EDIBLE COMPOSITION AND AEROSOL PACKAGE CONTAINING THE SAME
George Bernard Diamond, Glen Gardner, N.J.
Continuation-in-part of application Ser. No. 502,439, Oct. 22, 1965, now abandoned. This application July 29, 1968, Ser. No. 748,187
Int. Cl. A23g *1/00*
U.S. Cl. 99—189 **5 Claims**

The invention relates to syrups whose viscosity has been reduced to such a degree that they not only can be discharged from a valved pressurized container through a standard nozzle as distinguished from the special small diameter nozzle made necessary by known higher viscosity syrups, in the form of a high-velocity stream into a portable liquid, but will allow a sufficiently high sugar content to render the mix self-sterilizing.

3,622,355
AGGLOMERATED DEHYDRATED POTATO PRODUCT AND PROCESS
Roderick G. Beck, and Mounir A. Shatila, both of Blackfoot, Idaho, assignors to American Potato Company, San Francisco, Calif.
Filed Apr. 7, 1969, Ser. No. 814,519
Int. Cl. A23b *7/02, 7/03*
U.S. Cl. 99—207 **3 Claims**

An agglomerate of dehydrated potato particles that is reconstitutable without agitation to form a substantially homogenous dough even when disposed as a consolidated mass. The reconstituted potato dough exhibits uniform cohesive characteristics that allow for ready division into shapes suitable for french frying.

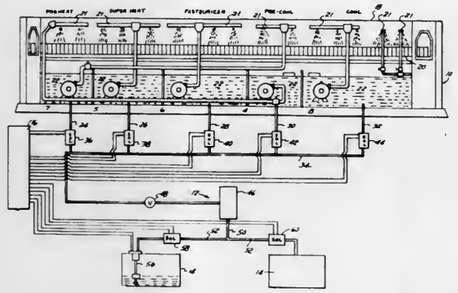
3,622,356
AUTOMATIC RETORT RACK SYSTEM FOR FLEXIBLE PACKAGES
Florren E. Long, La Grange, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,457
Int. Cl. A23l *3/10*
U.S. Cl. 99—214 **6 Claims**



This disclosure relates to the thermal processing of foods in flexible packages. A rack is provided for supporting a plurality of packages during the processing. The rack is comprised of a plurality of spaced parallel plates, alternate ones of which are in the form of trays having bumps stamped in one side to form compartments for positioning the packages. The rack is disposed horizontally while the packages are loaded therein and then rotated to a vertical position preliminary to processing.

3,622,357
AUTOMATIC FEED SYSTEM FOR TREATING BREWERY PASTEURIZER WATER
Hjalmar A. Tillman, Southgate, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed July 20, 1970, Ser. No. 56,292
Int. Cl. B65b *55/06*
U.S. Cl. 99—249 **10 Claims**

Brewery pasteurizing waters are automatically treated with chemical compounds, such as slimecides, water conditioners, corrosion inhibitors, and the like according to the present invention. The reservoirs from the pasteurizing waters communicate with sources of the chemical compounds through



suitable apparatus capable of delivering the chemicals thereat. Valve means operatively connected to timing means open and close in predetermined sequence to permit delivery of the chemical compounds to the reservoirs.

3,622,358
CERAMIC DIELECTRIC COMPOSITIONS
Tsundehiko Yoshioka; Hishashi Sato, and Naoki Suda, all of Akita-ken, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1968, Ser. No. 778,415
Claims priority, application Japan, Aug. 29, 1968, 43/61465
Int. Cl. C04b *35/46*
U.S. Cl. 106—39 R **1 Claim**

The ceramic dielectric materials of the present invention consist of a ternary solid solution $CaTiO_3$-$PbTiO_3$-La_2O_3·$2TiO_2$ and $CaTiSiO_5$, a part of which forms a solid solution with the said ternary system. The said ceramic materials are suitable as temperature compensating capacitors.

3,622,359
FLUORINE OPAL GLASSES
Leslie F. Pither, Maumee, and Paul J. Sauve, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc.
Filed July 9, 1969, Ser. No. 840,470
Int. Cl. C03c *3/04*
U.S. Cl. 106—54 **6 Claims**

Borosilicate opal glasses comprising fluorine and certain glass-forming oxides that have properties suitable for making opal glass items on conventional glass forming machinery. These glasses are substantially free of lithia and alkaline earth metal oxides.

3,622,360
RAMMING MIXES
Andrew B. Swanson, Chicago, and Rudolph T. Loher, Clarendon Hills, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed Feb. 24, 1970, Ser. No. 13,531
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **4 Claims**

An alumina-phosphoric acid ramming mix has extended shelf life imparted thereto by coating the alumina particles with an inhibitor selected from the group consisting of nitrilotriacetic acid and ethylenediamine-tetraacetic acid, the inhibitor preventing premature reaction between the alumina and phosphoric acid.

3,622,361
PRODUCTION OF INSULATING COATINGS BY SPRAYING
John Denis Pennington, Bolton, and William Ian Hay Winning, Yarm-on-Tees, both of England, assignors to Tac Construction Materials Ltd.
Filed Mar. 29, 1968, Ser. No. 717,418
Claims priority, application Great Britain, Mar. 29, 1967, 14,318/67
Int. Cl. C04b *31/06, 31/44*
U.S. Cl. 106—93 **8 Claims**

Compositions for forming insulating coatings by spraying mineral wool and fiber, cement or other binder and water are based on mineral wool, and include mineral oil and a surface-active agent or a cellulose ether.

3,622,362
ALCOHOL SOLUBLE CELLULOSE PROPIONATE ESTER
Charles H. Coney; Thomas J. Thompson, and Chester A. Bruner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 8, 1968, Ser. No. 766,001
Int. Cl. C08b ; C09j *3/04*
U.S. Cl. 106—169 **3 Claims**

Cellulose propionate compositions having a propionyl content of from about 37 to about 44 percent by weight, a free hydroxylcontent from about 3.5 to about 8 percent by weight and an ASTM D–1343 viscosity of from about 0.02 to about 50 seconds, have been found to be soluble in hydrous ethanol at 70° F. These compositions are especially useful in ink formulations.

3,622,363
REDUCTION OF ALKALI IN CEMENT PRODUCTION
Edward M. Van Dornick, 9400 Whitmore St., El Monte, Calif.
Filed May 26, 1969, Ser. No. 827,592
Int. Cl. C04b *7/36*
U.S. Cl. 106—100 **9 Claims**

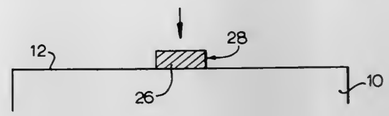
Hydraulic cements, including Portland cements, are produced to be alkali-free by calcination of finely ground raw mix fed to a columnar reaction zone wherein the reactants are fluidized by the introduction of air and fuel, the reaction zone gaseous effluent containing volatilized alkali being subjected to quench cooling to a temperature at which the alkali desublimes and becomes separable from the gas.

3,622,364
COLOR FORMER FOR PRESSURE SENSITIVE RECORDING PAPER AND PROCESS FOR PRODUCING SAME
Yujiro Sugahara, Tokyo; Kaichiro Miyazawa, Tsuruoka-shi; Tadahisa Nakazawa, Niigata-ken, and Masahiro Maeno, Niigata-ken, all of Japan, assignors to Kabushiki Kaisha Mizusawa Kagaku Kogyo, Higashi-ku, Osaka, Japan
Filed Nov. 12, 1968, Ser. No. 775,126
Int. Cl. C08h *17/06*; C09c *1/42*
U.S. Cl. 106—288 B **5 Claims**

A color former for pressure sensitive recording paper which comprises a member selected from the group consisting of acid-treated dioctahedral montmorillonite clay minerals and mixtures of said minerals with natural dioctahedral montmorillonite clay minerals and a process for producing the same.

3,622,365
PROCESS OF FORMING AN ARSENIC SULFIDE MASK
William I. Lehrer, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.
Filed Apr. 18, 1968, Ser. No. 722,281
Int. Cl. B44d *1/52, 1/02*
U.S. Cl. 117—5.5 **9 Claims**

A process for forming masks employed in the manufacture of devices by photofabrication wherein arsenic sulfide is employed as one of the masking or lifting materials. Arsenic sulfide is soluble in solutions such as ammonia water while other masking or lifing materials which may be employed in such processes are soluble in acids or organic solutions. The ar-



senic sulfide when melted forms a razor sharp edge that can be superior to that of the original master mask.

3,622,366
ENCAPSULATION METHOD
Loyd W. Piester, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Aug. 6, 1969, Ser. No. 848,097
Int. Cl. C07c *51/50*; B44d *5/12*
U.S. Cl. 117—16 **14 Claims**

Encapsulation is effected by freezing an aqueous composition of the material to be encapsulated and thereafter contacting frozen particles with a hydratable salt. The frozen particles are sized prior to contact with the hydratable salt. Water provided from the frozen particles and hydratable salt are reacted to form the encapsulating coating of hydrated salt.

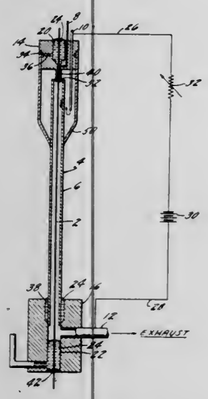
3,622,367
CONTACT DEPOSITION OF PLATINUM AND OTHER METALS
Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 647,221, June 19, 1967, now abandoned. This application Mar. 24, 1970, Ser. No. 022,362
Int. Cl. C23c *17/02*
U.S. Cl. 117—37 R **23 Claims**

A method is provided for the deposition of a metal on a substrate. The substrate has active surfaces and deposition is effected by mixing the substrate with a solution containing an alcohol and a metal pi-complex having at least one ligand in the form of an organic group containing at least one carbon-to-carbon multiple bond. The metal pi-complex decomposes on the active surfaces, thereby depositing the elemental metal on the active surfaces.

3,622,368
METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGES BY UTILIZING COUPLING REACTION
Zenjiro Okuno, and Shuuiti Miyabe, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 12, 1968, Ser. No. 751,758
Claims priority, application Japan, Aug. 27, 1967, 42/53850
Int. Cl. G03g *13/10, 9/04*
U.S. Cl. 117—37 LE **5 Claims**

A method for developing an electrostatic latent image into a visible image by utilizing a coupling reaction, said method comprising immersing a recording or a copying material such as an electrostatic recording material or an electrophotographic copying material carrying an electrostatic latent image in a liquid developer comprising a carrier liquid consisting of a paraffinic hydrocarbon having a high-electric resistance of not lower than $10^9\Omega$. cm and a low-dielectric constant of not greater than 3 and a diazo compound or toner (charged particles) dispersed in said carrier liquid and having its polarity regulated by a polarity regulating agent consisting of a synthetic resin, and thereafter bringing the resulting recording or copying material into contact with a vapor of a coupler adapted to form an azo dye by reaction with said diazo compound or by contact with an aqueous solution containing such a coupler, whereby forming a visible image on the surface of said recording or copying material.

3,622,369
PROCESS FOR FORMING STOICHIOMETRIC SILICON CARBIDE COATINGS AND FILAMENTS
Malcolm Basche, West Hartford, and Urban E. Kuntz, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 24, 1967, Ser. No. 618,512
Int. Cl. B41m *5/24*
U.S. Cl. 117—46 CG **1 Claim**



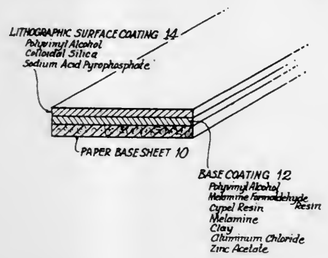
A process whereby stoichiometric silicon carbide is chemically deposited on a resistively heated wire from a reactant gas mixture including methyldichlorosilane and hydrogen together with a carbonizing gas such as methane.

3,622,370
METHOD OF AND SOLUTION FOR ACCELERATING ACTIVATION OF PLASTIC SUBSTRATES IN ELECTROLESS METAL PLATING SYSTEM
Eugene D. D'Ottavio, Thomaston, and John J. Grunwald, New Haven, both of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.
Filed Apr. 7, 1969, Ser. No. 814,180
Int. Cl. B44d *1/092*; **C23c** *3/02*
U.S. Cl. 117—47 A **12 Claims**
A method is disclosed for accelerating the activation of a polymeric plastic substrate in a chemical plating process incorporating a preliminary chromic acid etch involving immersing the substrate in an acidic dilute palladium chloride solution following activation, and rejuvenating that accelerating solution with periodic additions of stannous ions sufficient to reduce hexavalent chromium contamination carried over from the preliminary chromic acid etch to a prescribed maximum level without incurring substantial precipitation of palladium in the accelerating solution.

3,622,371
REINFORCEMENT OF STRUCTURES WITH COATINGS OF GLASS FIBERS AND RESIN
Clayton R. Sparks, Pittsburg, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1968, Ser. No. 762,610
Int. Cl. C23f *15/00*; **B44d** *1/34*
U.S. Cl. 117—49 **3 Claims**
Industrial equipment such as tanks, rotating drum granulators and driers, prilling towers and metal storage bins are lined with a glass fiber reinforced resin coating bonded to a surface which has been sandblasted in an overall pattern covering less than one-third of the total area. The combination of pattern sandblasting with high adhesion and ductility of the resin coating reduces sandblasting costs and increases resistance of the structure to vibration and bending stresses.

3,622,372
PROCESS FOR MANUFACTURING BULKY FABRICS
Haruo Ishida, Hirakata-shi, and Kiyoshi Otaka, Hyogo-ken, both of Japan, assignors to Daiwa Chemical Industries Ltd., Osaka-shi, Japan
Filed Dec. 26, 1968, Ser. No. 787,237
Claims priority, application Japan, Dec. 29, 1967, 42/84829
Int. Cl. B44d *1/44*
U.S. Cl. 117—62 **2 Claims**
A process for producing a bulky fabric which comprises impregnating a fabric with a bound water-containing metal salt, heating the impregnated fabric to expand said metal salt contained in the fabric, heat-setting the resultant fabric and washing with water the resultant fabric to remove the expanded metal salt; said bound water-containing metal salt being expandable by the emission of its own bound water when heated at a temperature of from 100° C. to a second order transition temperature of the fiber to produce the expanded metal salt soluble in water but not melting or decomposing at a temperature applied in said heat-setting step.

3,622,373
PLANOGRAPHIC PRINTING PLATE
William H. Page, and Henry P. Williams, both of Appleton, Wis., assignors to Appleton Coated Paper Company, Appleton, Wis.
Filed Jan. 21, 1969, Ser. No. 792,485
Int. Cl. B41m *1/06*
U.S. Cl. 117—76 R **20 Claims**



A planographic printing plate formed of a base sheet having the combination of an outer lithographic surface coating and a base or barrier coating immediately underlying the lithographic surface coating in which the surface coating is formulated of polyvinyl alcohol and a filler and containing a phosphate of ammonia or a monovalent metal and in which the underlying base coating is formulated of polyvinyl alcohol, filler and insolubilizing agent in the form of a melamine formaldehyde resin and containing water soluble polyvalent metal salts.

3,622,374
DIFFUSION COATING OF FERROUS ARTICLES
Earl Grant Pike, Rochester, N.Y., assignor to Ritter Praulder Corporation, Rochester, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,158
Int. Cl. C23c *9/02*
U.S. Cl. 117—107.2 P **15 Claims**
Improved diffusion coatings on ferrous articles are achieved using pack diffusion techniques when both a source of silicon and boron are present in the pack composition. The silicon comprises from about 1 percent to about 7 percent by weight of the pack composition, and the boron comprises from about 0.5 percent to about 4 percent by weight of the pack composition. Diffusion coatings having a thickness on the order of 30 mils and greater are obtained.

3,622,375
HEAT-SEALABLE ORIENTED POLYPROPYLENE FILM
Markus Siebel, Mainz; Gerhard Buchheister, Wiesbaden-Biebrich, and Horst Gebler, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Nov. 25, 1968, Ser. No. 778,747
Claims priority, application Germany, Nov. 27, 1967, K 64020
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 H **4 Claims**
This invention relates to an oriented polyolefin film having a heat-sealable layer of a thermoplastic polymer thereon in which the polyolefin film is a mixture of 1 to 15 percent by weight, preferably 2 to 8 percent, of polyethylene, and 85 to 99 percent by weight, preferably 92 to 98 percent, of polypropylene.

3,622,376
TiO_2 IN POLY (ARYLENE SULFIDE) FOR COATING COMPOSITION
Dale O. Tieszen, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Aug. 15, 1968, Ser. No. 752,809
Int. Cl. B44d *1/36*; **B32b** *15/08*
U.S. Cl. 117—132 B **12 Claims**



Normally solid poly(arylene sulfide) containing about 0.5 to about 50 weight percent TiO_2 is applied to a substrate to form a leveled coating without pinholes which is intimately bonded to the substrate. Preferably, the polymer-TiO_2 mixture is applied as a slurry in a carrier liquid such as ethylene glycol, methyl alcohol, water, toluene, and the like, or mixtures thereof, and thereafter heated to form a coating.

3,622,377
PROCESS FOR APPLYING COPPER 8-QUINOLINOLATE TO CELLULOSICS FROM SOLVENT SYSTEM
Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Aug. 27, 1969, Ser. No. 853,536
Int. Cl. A61l *13/00*; **C09d** *5/14*
U.S. Cl. 117—138.5 **7 Claims**
Copper 8-quinolinolate was dissolved in acetic acid-xylene solvent mixtures and applied at room temperature (25° C.) to cotton fabrics by pad-dry-cure method to produce treated fabrics with excellent fungicidal properties from the in situ deposition of the fungicide in fine particle size for better uniformity and penetration of treatment.

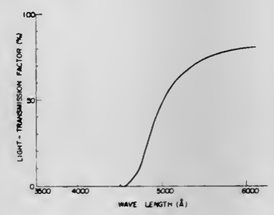
3,622,378
FIBERS WITH ANIONIC-CATIONIC FINISH
Thomas J. Proffitt, Jr., Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 9, 1968, Ser. No. 751,345
Int. Cl. C09k *3/16*; **D06m** *3/16, 3/30*
U.S. Cl. 117—138.8 N **1 Claim**
A textile fiber having a finish coating of compatibilized cationic and anionic components comprising from 0.06 percent to about 3 percent by weight of the fiber, said coating comprising a mixture of (a) an organic anionic surfactant containing at least one alkyl or alkenyl group having from eight to 20 carbon atoms; (b) an organic cationic nitrogen containing surfactant having at least one long chain alkyl or alkenyl group of eight to about 20 carbon atoms; and (c) a compatibilizing quantity of an organic amphoteric nitrogen containing surfactant having at least one alkyl or alkenyl group of eight to 20 carbon atoms.

3,622,379
PROCESS FOR CLEANING SHELLS OF MARINE CREATURES
Gottlieb Bernhard Fehmerling, Bridgeton, N.J., assignor to Ocean Research Corporation, Bridgeton, N.J.
Filed Aug. 8, 1968, Ser. No. 751,064
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **11 Claims**
A method of treating shells of marine creatures after conventional removal of the marine creatures from the shell to remove all remaining material capable of sustaining microorganism growth and to produce a shiny natural appearing surface comprising: contacting the shells with an aqueous solution of 0.05–2.5 percent by weight of an acid capable of forming a substantially insoluble calcium salt upon the surface of the shell, included in the group of such acids are phosphoric, citric, tartaric, malic, lactic, fluoric, and fumaric, reacting the acid with the calcium in the form present in the natural shell and present on the surface of the shell at a temperature which may be about 175°–212° F. and for a time which may be about 5–300 minutes to form a coating of an insoluble calcium salt on the surface of the shell, rinsing the shell so coated, contacting the coated shells with an aqueous solution of 0.05–2.5 percent by weight of an alkali capable of forming a substantially insoluble calcium salt upon the surface of the coated shell, the alkali being an alkali metal salt of weak acids such as carbonic, phosphoric, tartaric, citric, propionic, malic, formic, and acetic and preferably may be one of the sodium carbonates or sodium phosphates, reacting the alkali with the calcium which forms a part of the coated shell at a temperature which may be about 175°–212° F. for a time between about 5–300 minutes to form an additional coating of an insoluble calcium salt on the shell, rinsing the coated shell and drying.

A shell of a marine creature having a glossy smooth surface having removed therefrom all material capable of supporting the microorganism growth and having an insoluble coating of an essentially molecular thickness of at least one insoluble calcium salt such as the calcium salt of phosphoric, citric, tartaric, malic, fumaric, propionic, acetic, or the like acids which also produce an insoluble calcium salt, preferably such coating may be a calcium carbonate or a calcium phosphate or mixtures of both.

3,622,380
COLORING SOLUTION AND USE THEREOF
Fredrick D. Williams, Hancock, Mich., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 18, 1969, Ser. No. 800,294
Int. Cl. B44d *3/48*
U.S. Cl. 117—116 UE **10 Claims**
Coloring of porous material by means of an aqueous solution of furfuryl alcohol, a catalyst selected from a compound of iron, nickel, cobalt, copper, zinc and cadmium, and a complexing agent. Specifically, inexpensive elm veneer is colored to resemble the more expensive walnut.

3,622,381
METHOD FOR THE PREPARATION OF A ZINC OXIDE FILM
Masaru Ohnishi; Sumiaki Ibuki, and Michio Yoshizawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 22, 1969, Ser. No. 860,440
Claims priority, application Japan, Oct. 25, 1968, 43/77798
Int. Cl. C23c *13/04*
U.S. Cl. 117—201 **6 Claims**
This invention relates to a method for the preparation of a zinc oxide by oxidizing a zinc selenide film. In detail, this invention relats to a method for the preparation of a zinc oxide

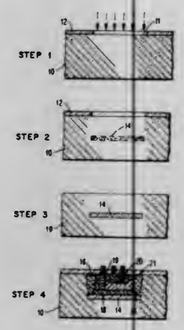


film by vapordepositing zinc selenide as an evaporating source in place of zinc oxide to produce a zinc selenide film and then oxidizing said zinc selenide film.

3,622,382
SEMICONDUCTOR ISOLATION STRUCTURE AND METHOD OF PRODUCING

Karl Brack, Baden, Wurttemberg, Germany; Edward F. Gorey, Beacon, and Guenther H. Schwuttke, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1969, Ser. No. 821,908
Int. Cl. B44d *1/18*; H01l *7/14*
U.S. Cl. 117—201 **9 Claims**



A monocrystalline semiconductor body provided with a subsurface insulating layer. The layer is produced by bombarding the body with ions such as nitrogen, oxygen and carbon, for a time sufficient to produce a dense layer of embedded ions and at an energy level sufficient to result in ion penetration to the desired subsurface depth. The body is subsequently heated to a temperature sufficient to react the embedded ions with ions of the semiconductor body to produce an insulating layer.

3,622,383
WELDING ELECTRODE

Paul E. Dane, Troy, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

Original application Dec. 8, 1966, Ser. No. 600,276, now Patent No. 3,478,552, Continuation-in-part of application Ser. No. 255,528, Feb. 1, 1963, now abandoned. Divided and this application Aug. 18, 1969, Ser. No. 871,515
Int. Cl. B23k *35/36*, C23f *17/00*
U.S. Cl. 117—202 **1 Claim**

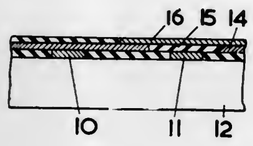
A continuous feeding ferrous-welding electrode is formed by initially coating a mild steel wire with a lime solution, applying a substantially dry-soap-lubricating compound to coat the surface of the wire, drawing the wire to reduce its diameter with a portion of the sodium soap being impregnated within the surface pores of the wire, applying a liquid lubricating solution to the wire, and further drawing the wire to reduce its diameter with a portion of the lubricating solution also being impregnated into the surface pores of the wire to provide a rust and corrosion resistant electrode having improved feeding and welding characteristics.

3,622,384
MICROELECTRONIC CIRCUITS AND PROCESSES FOR MAKING THEM

Norman Davey, and Geoffrey Roger Loasby, both of Newbury, England, assignors to National Research Development Corporation, London, England

Filed Sept. 3, 1969, Ser. No. 854,934
Claims priority, application Great Britain, Sept. 5, 1968, 42,380/68
Int. Cl. B44d *1/18*, *1/14*
U.S. Cl. 117—212 **12 Claims**

In a process for making a multilayer microelectronic circuit by successive screen-printing operations, at least one layer of the circuit is formed by screen printing a first conductor pattern of conductor material and a first insulating pattern of insulating material, the insulating pattern being substantially complementary to the conductor pattern so that inked areas of the insulating pattern adjoin but do not overlap inked areas of the conductor pattern and together the conductor pattern and the insulator pattern present a substantially flat surface for receiving further screen-printed patterns to form the microelectronic circuit. A second insulating

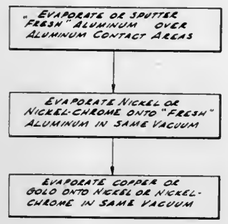


layer may be formed with a pattern of apertures where through-connections to the first conductor pattern are required, and these apertures filled with conductive material and a second conductor pattern printed over the second insulating layer in a single operation. An aperture may be provided in every pattern of every layer to form a recess in which a semiconductor chip can be mounted.

3,622,385
METHOD OF PROVIDING FLIP-CHIP DEVICES WITH SOLDERABLE CONNECTIONS

Fritz W. Stork, Kappmannsgrund, Germany, assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 19, 1968, Ser. No. 746,190
Int. Cl. B44d *1/14*, *1/18*
U.S. Cl. 117—217 **3 Claims**



Method of providing flip-chip devices having aluminum connection means with solderable connections by applying "-fresh" aluminum on the existing aluminum means and then in the same vacuum depositing nickel or nickel-chrome on the "fresh" aluminum and a solderable metal (copper or gold) onto the nickel (or nickel-chrome).

3,622,386
METHOD OF MAKING MAGNETIC RECORDING DISCS

Robert E. Larsen, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

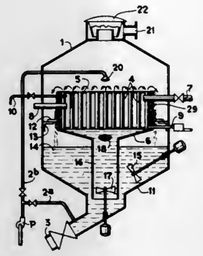
Filed Aug. 8, 1968, Ser. No. 751,052
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 **6 Claims**

A method of making magnetic recording discs including adding to a fluid mixture of magnetic particles and binder resin between 1 and 10 weight percent of abrasive particles which have a hardness of at least seven and a particle size between 50 and 100 percent of the thickness of the magnetic recording layer to be made with the mixture. Preferably, the method is carried out in two stages with the magnetic particles and at least part of the resin binder extensively milled to homogeniety in a first step with the abrasive particles mixed into the mixture in a second mixing step.

3,622,387
EVAPORATOR OR COOKING APPARATUS

Albert Rene Grandadam, Saint-Maur, France, assignor to S.I.C.E.R. Societe Industrielle & Commerciale D'Etudes & De Realisations, Attortville, France

Filed June 26, 1969, Ser. No. 836,846
Claims priority, application France, June 26, 1968, 156,613
Int. Cl. C13f *1/02*; C13g *1/02*; B01d *9/00*
U.S. Cl. 127—16 **25 Claims**

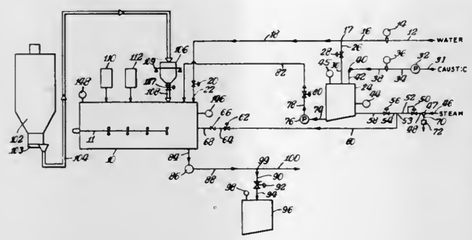


Evaporator for a product such as a sugar syrup of the type having an inner heating nest. The nest is vertically spaced from the base of the evaporator vessel and is contained in a compartment which communicates with the product inlet and also communicates, by way of a product overflow means, with a lower zone of the vessel. Means put the lower part of the compartment in communication with said lower zone. A device causes the product to pass from said lower zone through the compartment.

3,622,388
APPARATUS FOR THE PREPARATION OF A STARCH CORRUGATING ADHESIVE

Robert Carl Larson, Pilot Mount, Iowa, assignor to CPC International Inc.

Continuation-in-part of 529,692, Feb. 24, 1966, now abandoned. This application July 24, 1968, Ser. No. 747,145
Int. Cl. C13l *1/08*
U.S. Cl. 127—23 **9 Claims**



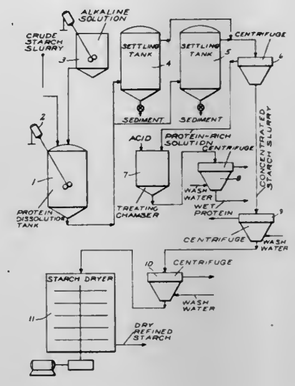
Apparatus for preparing a single starch component corrugating adhesive. An aqueous slurry of starch is treated with caustic under controlled temperature conditions, so as to produce a partially swollen starch corrugating adhesive mixture. Swelling of the starch granules is terminated at a preselected viscosity by the addition of a material such as alum, boric acid, ice, other acid material or the like.

3,622,389
PROCESSING OF SAPONARIA VACCARIA SEED

Donald L. Breisford, and Kenneth J. Goering, both of Bozeman, Mont., assignors to Montana Agricultural Research Corporation, Bozeman, Mont.

Filed May 20, 1970, Ser. No. 38,993
Int. Cl. C13l *1/02*
U.S. Cl. 127—67 **7 Claims**

Saponaria vaccaria seed is dehulled and degermed to form a crude starch. The crude starch from this seed, in the form of an aqueous slurry, is then treated to dissolve the protein matrix, thereby releasing insoluble pigment impurities. The pigment impurities separate from the resulting solution by



gravity (i.e., flotation and sedimentation). Suspended starch granules are then separated from the protein-containing solution and thereafter refined.

3,622,390
PROCESS FOR IMPROVING CAPACITORS

Ronald W. Hevey, Piscataway, N.J., and Elbert Erskine Hopkins, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1969, Ser. No. 800,286
Int. Cl. B08b *3/00*
U.S. Cl. 134—2 **3 Claims**

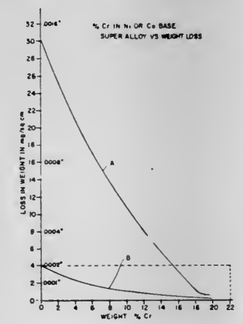
The treatment of electrode foils with aerated water at a temperature of about 10° to 125° C. for several minutes to an hour, followed by drying, to decrease the failure rate of wound capacitors under voltage stress.

3,622,391
PROCESS OF STRIPPING ALUMINIDE COATING FROM COBALT AND NICKEL BASE ALLOYS

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Company, Wilmington, Del.

Filed Apr. 4, 1969, Ser. No. 813,672. The portion of the term of the patent subsequent to July 28, 1986, has been disclaimed.
Int. Cl. C23g *1/12*
U.S. Cl. 134—3 **10 Claims**

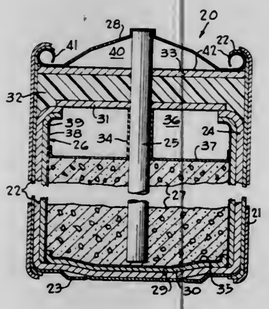
An improved stripping process for removing as produced aluminide coatings and exposed aluminide coatings from



cobalt base and nickel base superalloys, using ½ to 5 percent of hydrofluoric acid or an acid fluoride having at least one

mole of hydrofluoric acid, 3 to 20 percent of nitric acid and water, permissibly including a low foaming or nonfoaming wetting agent. The temperature of treatment is 50° to 115° F., preferably 60° to 100° F. for a time of at least 15 minutes. The treating solution can incorporate a thickening agent and a solubilizing agent for the thickening agent so as to produce a paste, and the paste can be applied locally for selective stripping.

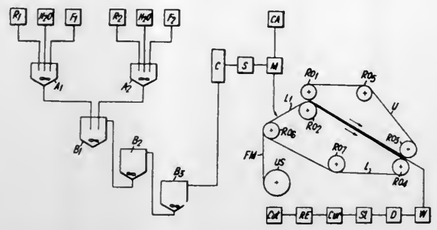
3,622,392
ORGANIC DEPOLARIZED CELL CONSTRUCTION
Duane M. Larsen, and Mark J. Terlecke, both of Madison, Wis., assignors to ESB Incorporated
Filed Nov. 1, 1968, Ser. No. 772,774
Int. Cl. H01m 43/02
U.S. Cl. 136—30 **7 Claims**



A cell having an outward appearance similar to a conventional primary LeClanche cell but having certain internal structural features that render the cell rechargeable, including an organic depolarizer, insulating means about the portion of the carbon rod located in the cell airspace, laminated separator means about substantially the entire inner wall of the negative electrode can, laminated insulating means along the interior bottom of the negative electrode can, and a vent washer located on top of the cell sealant enabling gases formed in the cell interior to escape to the atmosphere. A one-piece plastic closure has also been developed which eliminates the need for the cell sealant and serves as an insulator about the portion of the carbon rod locatd in the airspace as well as incorporating means to vent gases from the cell, thereby eliminating the separate vent washer.

3,622,393
CONTINUOUS PROCESS FOR MANUFACTURING MICROPOROUS BATTERY SEPARATORS AND BATTERY SEPARATORS MADE THEREBY
Robert E. Sherwood, Westport, Conn., and Erhard Decker, Hamburg, Germany, assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Mar. 11, 1969, Ser. No. 806,265
Claims priority, application Germany, Mar. 12, 1968, P 16 17 803.9
Int. Cl. H01m 3/00
U.S. Cl. 136—148 **4 Claims**

Battery separators are formed continuously by placing an aqueous phenolaldehyde resin precursor solution onto a sloped steel or polyfluorocarbon pressure belt which moves upward to a point where it meets another superposed pressure belt of the same material, heating the solution, as it passes through the space between the synchronously moving belts, at a temperature sufficient to cause gellation without loss of water, drying the resulting water-containing sheet after it leaves the confined belt area, curing, and cutting the dry sheet to desired specifications. The resin precursor solu-

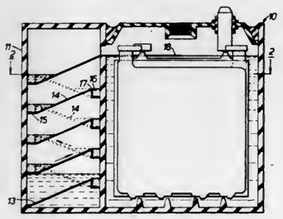


tion preferably contains resorcinol as well as a thermoplastic resin dispersion. Fillers and fibers may be incorporated.

3,622,394
AN ELECTROLYTE-MATRIX MATERIAL FOR USE IN MOLTEN CARBONATE FUEL CELLS
Mohendra S. Bawa; Henry R. Kroeger, and James K. Trultt, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 23, 1966, Ser. No. 596,449
Int. Cl. H01m 9/00
U.S. Cl. 136—153 **4 Claims**

This invention relates to fuel cells. More particularly it relates to an electrolyte-matrix material and the process of making the same for use in high-temperature molten carbonate fuel cells.

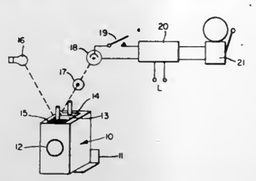
3,622,395
ELECTRIC STORAGE BATTERY TOPPING UP MEANS
Charles James Bushrod, Manchester; Patrick Ewart McKellen, Manchester, and Eric W. E. Micklethwalt, London, all of England, assignors to Electric Power Storage Limited, Clifton Junction, Swinton, Manchester, England
Filed Oct. 7, 1969, Ser. No. 864,393
Claims priority, application Great Britain, Oct. 10, 1968, 48,132/68
Int. Cl. H01m 7/00
U.S. Cl. 136—162 **7 Claims**



A topping up device for an electric storage battery comprises a series of ramps, or an inclined pipe, for automatically topping up the cells by raising liquid from a reservoir alongside the cells when the battery is accelerated.

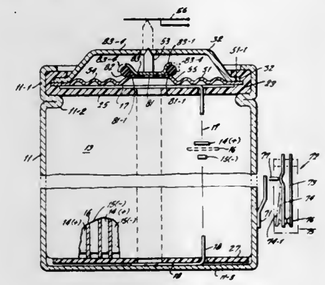
3,622,396
METHOD FOR DETECTING MISPOSITIONED PARTS
Angelo Fernandez, Bridgeport, Conn., and Robert G. McKelvey, Willowick, Ohio, assignors to ESB Incorporated
Filed Feb. 19, 1970, Ser. No. 12,703
Int. Cl. H01m 39/00
U.S. Cl. 136—176 **12 Claims**

A method for detecting mispositioned parts in assemblies of parts wherein the orientation of one of the parts of an assembly of parts is to be controlled relative to at least one other part in the assembly of parts. The method includes applying a light-reflective-marking pigment to a part whose orientation is to be controlled. The marking pigment is applied to the part at a time when its orientation is known and prior to its assembly with at least one other part of the assembly of parts. An examination of assembled parts is made by a light-sensing device, and by the response of the light-sensing device to the presence or absence of light reflected



from the marking pigment, mispositioned parts in the assembly of parts are detected.
In particular, the method disclosed is applicable to checking the orientation of storage battery cell elements in their containers.

3,622,397
FAST RECHARGEABLE SEALED NICKEL-CADMIUM BATTERY CELLS COMBINED WITH EXCESS PRESSURE AND TEMPERATURE CONTROLS
Louis Belove, Ardsley, N.Y., assignor to Sonotone Corporation, Elmsford, N.Y.
Continuation-in-part of application Ser. No. 712,525, Mar. 12, 1968, now abandoned. This application Aug. 7, 1968, Ser. No. 750,796
Int. Cl. H01m 1/06, 31/04
U.S. Cl. 136—178 **19 Claims**

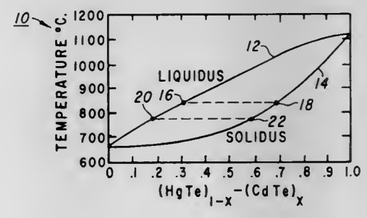


In a normally sealed battery cell of the type designed for fast recharging a protection arrangement is provided to safeguard against battery damage resulting from excess pressure or temperature. A pressure-responsive switch cuts off the charging current upon reaching of predetermined pressure level. A temperature-responsive switch may also be provided to limit the charging current upon the attainment of a specific high temperature. There is also disclosed a pressure-responsive vent to permit the release of excess pressure built up beyond a maximum danger level. The vent may be of the resealable type to reseal the battery after the release of the extremely high pressure built up. The vent being located on the same wall section as the pressure-responsive switching means. In another example, the pressure release vent is located at a casing portion other than the deflectable wall section.

3,622,398
SEALED TYPE STORAGE BATTERY
Satoshi Sekido, Kadoma-shi; Minoru Yamashita, Hirakata-shi, and Masao Matsumoto, Neyagawa-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan
Filed Aug. 1, 1969, Ser. No. 846,706
Claims priority, application Japan, Oct. 4, 1968, 43/72660
Int. Cl. H01m 1/08
U.S. Cl. 136—179 **5 Claims**

A new type of enclosed storage battery which comprises a (gas phase) catalyst capable of combining oxygen and hydrogen into water, an oxygen supply unit for automatically supplementing oxygen shortage and a solid electrolyte, and which is cheap in price, easy to handle, large in capacity and long in service life.

3,622,399
METHOD FOR PREPARING SINGLE CRYSTAL PSEUDOBINARY ALLOYS
Rowland E. Johnson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 31, 1968, Ser. No. 788,171
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 148—1.6 **11 Claims**



A method for producing homogeneous single crystal ingots of pseudobinary alloys having high-crystal perfection by rapidly quenching a homogeneous liquid mixture of the desired constituents to produce a homogeneous polycrystalline ingot, then very slowly passing the polycrystalline ingot through a thermal gradient unitl the ingot is at a maximum temperature just below the solidus termperature of the alloy, thus causing the grain boundaries to migrate through the ingot as a result of directional solid-state recrystallization, then slowly coolng the ingot.

3,622,400
THERMAL-COATED BOOMS FOR SPACECRAFT
Michael Lauriente, Clarksville, and Ernst R. Pemsel, Jr., Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 3, 1968, Ser. No. 742,191
Int. Cl. C23f 1/02; E04b 12/18
U.S. Cl. 148—6.14 **13 Claims**

A spacecraft boom having improved resistance to thermally induced bending forces resulting from solar radiation is disclosed, comprising a beryllium containing copper base alloy having a highly absorbent coating disposed on the interior and a highly reflective coating on the exterior. A process is disclosed for manufacturing such booms including a coating, milling, forming and heat treating to obtain the finished product.
The invention described herein was made in the performance of work under a NASA contract and is subject to the provisions of Section 305 of the National Aeronautics and Space Act of 1958 Public Law 85-568 (72 Stat. 435; 42 U.S.C. 2457).

3,622,401
CHEMICAL TREATMENT OF METAL
John Edmund McCullough, Bronx, N.Y., and Francis Clyde Rauch, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Jan. 20, 1970, Ser. No. 4,398
Int. Cl. C23t 7/08
U.S. Cl. 148—6.15 R **10 Claims**

A method for preparing metal surfaces for receipt of a coating such as a paint or adhesive (whereby increased coating adhesion and corrosion resistance is achieved) and the treated metal per se, are disclosed. The method comprises contacting the metal surface with various hydroxyalkyl phosphine oxide derivatives.

3,622,402
EROSION-CORROSION RESISTANT COATING
Sanford Baranow, Woodbridge, and Richard B. Andrews, Milford, both of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Feb. 4, 1969, Ser. No. 796,566
Int. Cl. C23c *11/04*, *9/04*
U.S. Cl. 148—6.35 4 Claims

A process for improving the erosion resistance and corrosion resistance of steel articles which comprises boronizing said articles and thereafter coating said boronized articles with chromium under conditions such that the chromium combines with the boron to produce an article bearing a coating containing a boride rich in chromium on the surface of said article.

3,622,403
PRODUCTION OF METAL TUBING WITH ROUGH INNER SURFACES
Fred W. French, II, Morris, Conn., assignor to Noranda Metal Industries, Inc., Newtown, Conn.
Filed Oct. 22, 1968, Ser. No. 769,746
Int. Cl. C22f *1/08*; C21d *9/08*
U.S. Cl. 148—11.5 6 Claims

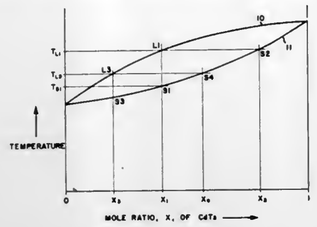
Metal tubing having inner surfaces of a controlled roughness of a sand-grained type consistency are characterized by (1) the same or only a slightly higher resistance to flow, (2) a higher heat-transfer coefficient and (3) a higher energy ratio (which is defined as the ratio of thermal energy transmitted to mechanical energy expended) when compared to smooth tubing having the same internal diameter. To produce metal tubing having this controlled roughness, the tubing is overannealed to produce excessive grain growth of the metal and is then radially inwardly deformed to force the grains adjacent the inner surface into alignment in a generally inwardly direction thereby resulting in the desired roughening of the inner surfaces of the tubing. The degree of roughness is determined by the extent of overannealing and inward deformation.

3,622,404
METHOD AND APPARATUS FOR STRESS RELIEVING A WORKPIECE BY VIBRATION
Leonard E. Thompson, 961 N. W. Dale Ave., Portland, Oreg.
Filed Feb. 19, 1969, Ser. No. 800,666
Int. Cl. C21d *1/04*
U.S. Cl. 148—12.9 8 Claims

A method of stress relieving a workpiece by vibrating the workpiece in the frequency range of each resonant peak corresponding to each portion of the workpiece to be stress relieved and maintaining the vibration in the frequency range of each selected resonant peak while the amplitude of the peak increases, the power necessary to produce the peak decreases, and the frequency range decreases until the power necessary to produce the amplitude has substantially stabilized. An apparatus for carrying out the method including a vibrator, an accelerometer and an electric control and monitoring circuit comprising means for indicating the frequency and the amplitude of the vibration impressed on the workpiece and the power needed to produce the amplitude.

3,622,405
METHOD FOR REDUCING COMPOSITIONAL GRADIENTS IN $Hg_{1-x}Cd_xTe$
Joseph L. Schmit, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 22, 1970, Ser. No. 048,361
Int. Cl. C22f *1/16*
U.S. Cl. 148—13 2 Claims

Compositional gradients in a body of $Hg_{1-x}Cd_xTe$ can be removed by annealing the body at a temperature which is greater than the solidus temperature and less than the

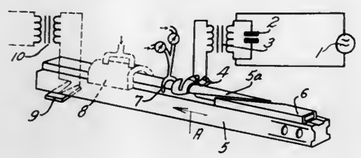


liquidus temperature for the average composition of the body.

3,622,406
DISPERSOID TITANIUM AND TITANIUM-BASE ALLOYS
Milton B. Vordahl, Henderson, Nev., assignor to Titanium Metals Corporation of America, New York, N.Y.
and a continuation-in-part of 558,589, June 20, 1966, now Patent No. 3,379,522. This application Mar. 5, 1968, Ser. No. 710,631
Int. Cl. C22c *15/00*, *31/04*
U.S. Cl. 148—32 11 Claims

As a new article of manufacture a base metal of the group titanium and titanium base alloys containing a dispersoid of the group consisting of thorium, boron, rare earth elements having an atomic number of 57–71, and elements of groups IIIb and IIIc of the periodic table of elements, which are substantially insoluble in solid titanium but soluble in molten titanium, and combinations and compounds thereof, preferably in proportions of about 0.1 to 6 percent by weight of the total, and wherein said dispersoid is preferably dispersed in a particle size of several microns and under, said article being characterized by high-elevated temperature creep strength.

3,622,407
METHOD FOR ELECTRICAL INDUCTION, HEAT TREATMENT FOR RAILROAD SWITCHES (RAIL TONGUES, CROSSINGS, WING RAILS)
Grigore Niculescu, Bucharest; Traian Ghimbasean, Bucharest; Eugen Dumitrescu, Bucharest, and Nicolae Ionescu, Buzau, all of Romania, assignors to Institutul de Cercetari Tehnologice Pentru Constructii de Masini, Bucharest, Romania
Filed June 28, 1968, Ser. No. 741,166
Claims priority, application Romania, June 29, 1967, 54158
Int. Cl. C21d *1/00*
U.S. Cl. 148—146 6 Claims



A railroad-switch component of irregular cross section is moved through an induction-heating station along with a nonmagnetic conductive body. This body fits the nonuniform switch component complementarily to give the two an overall uniform cross section at least over the significant portion of the rail or tongue, so that they can be moved at a uniform speed and heated with a uniform flux to surface harden the top of the switch component for example. Subsequently the two are quenched and the bottom of the rail component is heated.

3,622,408
WATER-BEARING EXPLOSIVES THICKENED WITH A PARTIALLY HYDROLYZED ACRYLAMIDE POLYMER
William M. Lyerly, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Original application Aug. 18, 1966, Ser. No. 573,206, Pat. No. 3,355,336. Divided and this application Nov. 15, 1967, Ser. No. 683,127 Int. Cl. C06b *1/00*
U.S. Cl. 149—109 1 Claim

Water-bearing explosives thickened with polyacrylamide containing at least 10 percent by weight of carboxylate (-COO-) moieties and having a molecular weight of about from 3 to 15 million.

3,622,409
METHOD OF PRODUCING MAGNETIC ALLOYS AND NOVEL PRODUCT
Thomas H. McCunn, Lower Burrell, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed June 2, 1969, Ser. No. 829,783
Int. Cl. H01f *1/14*, *1/16*; C22c *19/00*
U.S. Cl. 148—122 4 Claims

Described herein is a method of processing an alloy of iron, cobalt, and at least one of vanadium, chromium, molybdenum, and tungsten to develop a novel product having an improved combination of magnetic properties and strength. The method involves continuously annealing the alloy so as to produce an average grain size of ASTM 012 or finer.

3,622,410
METHOD OF FABRICATING FILM RESISTORS
Willis J. Carlson, Fridley, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Dec. 18, 1969, Ser. No. 886,228
Int. Cl. H01l *7/00*
U.S. Cl. 156—17 5 Claims

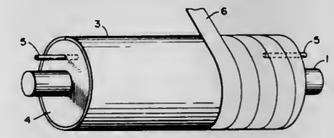


A method of fabricating film resistors on a substrate in order to avoid the unsatisfactory result of unwanted chemical etching of the film resistor material. A film of nichrome is sputtered over a substrate. Nitrogen is then sputtered over the layer of nichrome, resulting in a film of nickel nitride over the nitride film forming three layers of film, the first being a nichrome film applied directly to the substrate, the next being a nickel nitride film and finally a nickel film. The nickel film is then selectively etched by a conventional etching process, in order to form ohmic contacts and calibrate the precise resistance desired as a result of the combination of nickel and nichrome. The assembly is heated to the necessary temperature in a prescribed atmosphere to decompose the nickel nitride, leaving only nickel and nichrome on the substrate.

3,622,411
METHOD OF MANUFACTURING AN ELONGATED COMPOSITE DIFFRACTION GRATING
Kiyozo Koshiishi, No. 1758, Aza-Wada Tama-Machi, Minami-Tama-Gun, Tokyo, Japan
Filed Aug. 22, 1967, Ser. No. 662,433
Claims priority, application Japan, Aug. 26, 1966, 41/55796
Int. Cl. G01b *11/00*
U.S. Cl. 156—64 8 Claims

An economical method of manufacturing an elongated composite diffraction grating in mass production with the aid of a combination of a plurality of steps comprises replicating from a master diffraction grating a number of replica diffraction gratings, clamping the replica diffraction gratings in a jig with one of them being made stationary while the other is made adjustable so as to bring it into coincidence with the stationary one in direction and phase, and mechanically securing or cementing the gratings together.

3,622,412
METHOD OF COVERING VOLUME-COMPRESSIBLE ARTICLES
William C. Ross, Winchester; Nathaniel M. Edmands, Jr., Lynn, and Frederick E. Heinemann, Canton, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Nov. 4, 1969, Ser. No. 873,788
Int. Cl. B32b *31/26*
U.S. Cl. 156—87 6 Claims



Volume-compressible products such as printing, coating, and impression rolls are made by enclosing a porous volume-compressible layer formed on a rigid core with an impermeable layer of heat-flowable resilient polymeric material. The assembly is wrapped with a nonshrinking tape, or may be placed in a mold. Vents plugged with a substance having a predetermined melting point are inserted in the porous layer, and lead to the atmosphere. Pressure to cause the polymeric coating layer to flow and consolidate is developed by heating the assembly. Cure, if necessary, is effected by elevating the temperature. At the higher temperature, the plugs melt and open the vent passages, thus avoiding collapse and wrinkling when the product cools.

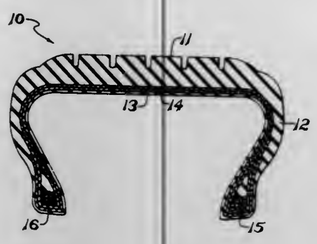
3,622,413
METHOD OF MAKING PREFORMED MATS
Silvio Tasca, Lungo Po Macchiavelli 29, Turin, Italy
Filed Dec. 11, 1968, Ser. No. 783,132
Claims priority, application Italy, Dec. 11, 1967, 54063
Int. Cl. B32b *31/14*
U.S. Cl. 156—93 7 Claims

Preformed mats such as automobile floor mats are produced from a bat of loose fibers through which stitches are sewn along a plurality of courses, to hold the fibers together or to tack them to a backing such as a sheet of thermoplastic material, and so as to leave the bat readily expansible in all directions. The bat is then impregnated with a thermosetting resin and molded to shape at the polymerization temperature of the resin. The resulting mat tends to retain its molded shape.

3,622,414
METHOD OF MAKING A PNEUMATIC TIRE
John F. Heimovics, Jr., Stow, and James Sidles, West Richfield, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Original application Dec. 26, 1967, Ser. No. 693,510, now Patent No. 3,545,012. Divided and this application Mar. 9, 1970, Ser. No. 17,384
Int. Cl. B29h *17/20*, *17/28*
U.S. Cl. 156—128 R 5 Claims

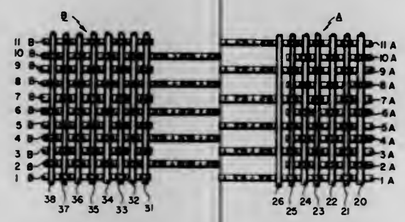
The method of making a pneumatic tire with reinforcing cords of stretchable material embedded therein, the cords having initially a low-tensile modulus and upon elongation a predetermined and limited amount abruptly changing to a substantially higher tensile modulus. The uncured carcass is fabricated in flat band form on a building drum with a drum

set less than that required for a conventional tire of like final size. The uncured carcass is then removed from the drum,



shaped to partial toroidal configuration and vulcanized. The tire expands to full toroidal configuration upon inflation.

3,622,415
PAPERMAKING FABRIC SEAM AND METHOD OF MAKING THE SAME
Laurence D. Kunsman, Willoughby, Ohio, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio
Filed Dec. 22, 1967, Ser. No. 692,798
Int. Cl. D04h *3/12*
U.S. Cl. 156—158 **24 Claims**

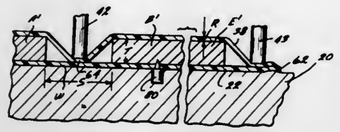


A Fourdrinier papermaking belt having porous fabric comprising warp and weft strands and having a porous seam of polymeric filaments and a method of making such seam by interconnecting the end portions of the fabric together to form an endless belt. The method including cutting the warps back into complementary patterns and removing the weft strands from the cut area. Laying a first polymeric replacement weft strand over certain of the exposed warp pickets and moving the adjacent end portions together so that other of the warp pickets ride over the first replacement strand and into abutment with the corresponding cut warps of the other end portion. A plurality of other polymeric replacement weft strands are then woven across respective of the exposed warp pickets to complete the seam area, whereafter, the warp joints are bonded together and the warp and weft strands are bonded to each other at their areas of contact to provide the porous seam.

3,622,416
METHOD OF MAKING REINFORCED VINYL FABRIC
Jack P. Brandt, Stoughton, Wis., assignor to Uniroyal, Inc., New York, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,132
Int. Cl. B32b *5/00*
U.S. Cl. 156—178 **17 Claims**

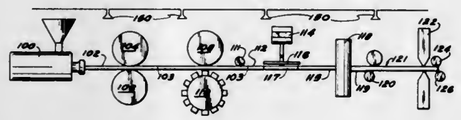
A reinforced vinyl resin fabric is made using a reinforcing material, such as nylon, which ordinarily exhibits a high degree of thermal contraction at normal vinyl plastisol fusion temperatures, without creating discontinutities in the vinyl resin coating, by first casting a layer of vinyl plastisol on a support web, applying the reinforcing material and raising the temperature of the plastisol to the gelation stage and teen removing the support web prior to raising the temperature of the coated fabric to the fusion temperature.

3,622,417
METHOD OF FORMING MULTI-PLY HINGED ARTICLE
George G. Gray, Jr., 820 Green St., 6A Willow Court, Iselin, N.J.
Filed July 23, 1969, Ser. No. 843,995
Int. Cl. B32b *31/06*
U.S. Cl. 156—213 **6 Claims**



A method for manufacturing toy cases and other articles with hinged sections, wherein the articles are constructed of a pair of vinyl layers with a layer of stiff cardboard between them. The method includes placing a female die, or locating plate, on a first vinyl sheet, placing a sheet of cardboard on the locating plate, the cardboard being pre-slit to facilitate punching, and moving a male die through the cardboard sheet and locating plate to punch out areas of the cardboard and move them against the vinyl sheet. Thereafter, a second vinyl sheet is placed on top of the pieces of cardboard which have been punched out, and the opposite layers of vinyl are joined together at regions between the pieces of cardboard.

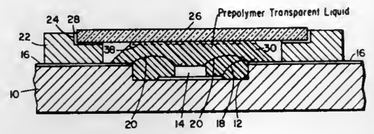
3,622,418
DRAWER MANUFACTURING METHOD
William Horace Black, 3060 Pharr Court N.W., Atlanta, Ga., and Clarence Edward Pittman, 2479 Peachtree Road N.E., Atlanta, Ga.
Original application Dec. 27, 1966, Ser. No. 604,717, now Patent No. 3,462,208, Continuation of application Ser. No. 834,352, June 18, 1969, now abandoned. Divided and this application June 16, 1970, Ser. No. 48,899
Int. Cl. B29c *17/02*; **B29d** *15/00*
U.S. Cl. 156—217 **5 Claims**



Method of producing drawer forms by extruding a sheet of plastic, the edges of which are notches at spaced intervals with substantially rectangular open sided opposed pairs of notches; the sheet is then successively cut transversely between each pair of notches to provide drawer blanks, the edge portions of which are bent from the plane of the bottom, and abutting side and back edges are welded together. In the method, calendering rollers produced reinforcing ribs on one of the plastic surfaces and a wood grain effect on the other.

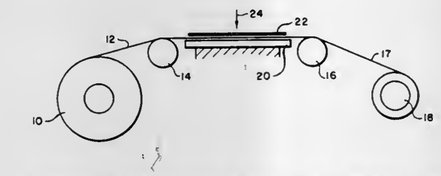
3,622,419
METHOD OF PACKAGING AN OPTOELECTRICAL DEVICE
Arnold Tempe London, and Karel J. Brouwers, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 8, 1969, Ser. No. 864,785
Int. Cl. H05k *5/06*
U.S. Cl. 156—242 **4 Claims**

In packaging an optoelectrical device, liquid silicone which can be cured to become a transparent flexible polymer substance having an index of refraction close to that of a solid transparent cover plate is disposed between the light sensitive



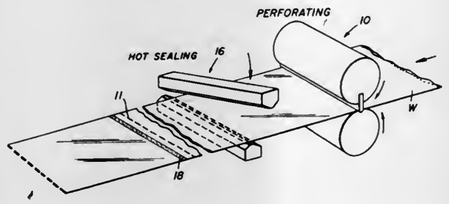
side of the device and a surface of the cover plate and in good optical coupling therewith.

3,622,420
METHOD OF MAKING A MAGNETIC RECORDING TAPE WITH LAMINATED LEADER
Austin A. Knox, White Plains, N.Y., assignor to Dict-O-Tape Inc., Brooklyn, N.Y.
Filed May 1, 1968, Ser. No. 725,835
Int. Cl. B32b *31/00*
U.S. Cl. 156—271 **7 Claims**



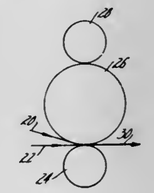
A method for producing an improved magnetic recording tape (17, FIG. 1) comprising bonding the entire length of a reinforcing tape 22 to a portion of magnetic tape which is to serve as an end portion of the finished tape to thereby provide a reinforced laminated leader.

3,622,421
METHOD FOR FORMING BAGS FROM THERMOPLASTIC TUBING
Roy B. Cook, Newark, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.
Original application Feb. 27, 1967, Ser. No. 618,703, now Patent No. 3,506,523. Divided and this application Nov. 7, 1969, Ser. No. 874,825
Int. Cl. B32b *31/20*
U.S. Cl. 156—290 **6 Claims**



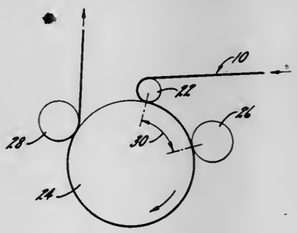
A bag-fabricating method and a machine for carrying out the same wherein a plastic tubing in flattened continuous web form is supported on a rotatably mounted drum having vacuum means for gripping the web at points spaced circumferentially about the drum, with transverse sealing members and associated members for shifting a portion of the web between the gripping points so as to provide web areas which are free of tension and in which transverse seals are formed with the sealed areas being subsequently held away from the sealing members while it is advanced through a cooling zone after which the sealed web is delivered from the drum.

3,622,422
PROCESS FOR PRODUCING A NONWOVEN FABRIC
Nicholas S. Newman, West Newton, Mass., assignor to The Kendall Company, Boston, Mass.
Continuation-in-part of application Ser. No. 563,238, July 6, 1966, now abandoned , Continuation-in-part of application Ser. No. 530,734, Feb. 28, 1966, now abandoned , Continuation-in-part of application Ser. No. 514,079, Dec. 15, 1965, now abandoned. This application Oct. 2, 1969, Ser. No. 863,273
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **1 Claim**



A major portion by weight of an unbonded fibrous fleece is combined by heat and pressure with a minor portion of a thermoplastic film to form soft, conformable, air-permeable nonwoven fabrics suitable for use as disposable clothing.

3,622,423
PROCESS OF FORMING A REINFORCED NONWOVEN LAMINATE CONTAINING PLASTISOL ADHESIVE
Thomas A. Hadley, Hendersonville, N.C., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 22, 1970, Ser. No. 30,842
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **10 Claims**

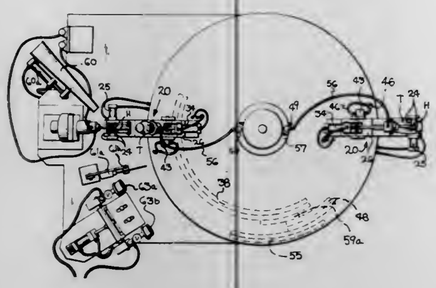


A process is described for forming a nonwoven laminate having outer plies of cellulose wadding and an inner reinforcing means having disposed on either side thereof a plastisol adhesive. Plastisol penetration into the cellulose wadding webs as well as plastisol fusion is accomplished by passing the laminate over the peripheral surface of a drum heated to a temperature above the fusion point of the plastisol adhesive, and subjecting the laminate to calendering while it is in contact with the heated drum.

3,622,424
MACHINE FOR UNITING GLASS PARTS
John R. Mechel, Maumee, Ohio, assignor to Owens-Illinois, Inc.
Filed Aug. 29, 1969, Ser. No. 854,156
Int. Cl. B32b *31/20*; **C09j** *5/06*
U.S. Cl. 156—499 **10 Claims**

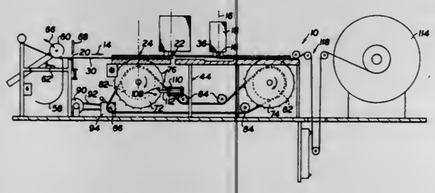
This is a substantially completely automatic rotary machine comprising a horizontal rotatable index table carrying an annular series of identical heads, each including a chuck or holder for a glass tumbler and a chuck or holder for a handle, medallion or the like which is to be epoxy-resin welded to the tumbler. The tumblers are held on the chucks by vacuum, while the handles or medallions are positively supported nearby and, incident to indexing of the table, are

brought in succession to a station at which a measured amount (a drop or two) of epoxy-resin is deposited upon a selected area, or so-called "button" of such handles, preparatory to bringing the tumblers in a preheated condition into firm contact with the resin-coated area of preheated handles, or medallions. Following such initial interengagement of these parts they are so held firmly together during succeeding



indexing of the table so as to effect at least initial "curing." Detecting elements are so positioned in advance of the epoxy-resin dispenser that they must be actuated by both a tumbler and a handle in the same head in order to effect delivery of resin to a selected part of the handle. Thus, resin delivery is effected only if a handle is about to arrive at the dispensing station accompanied by a companion tumbler to which is desired to weld the handle.

3,622,425
FILM STRIP HANDLING AND SPLICING APPARATUS
Michael Savarick, 218 Somerset Drive, Hewlett, N.Y.
Filed Sept. 18, 1969, Ser. No. 859,138
Int. Cl. B31f *5/06*; **B65h** *19/18*
U.S. Cl. 156—505 **4 Claims**



An apparatus for splicing smaller film strips end-to-end so as to produce a single, elongated strip which is more convenient and advantageous for continuous, economical film development. With minimal hand operations, successive film strips are trimmed, advanced to a splicing station, and joined to each other along abutting adjacent ends. The foregoing mode of operation is achieved without contact which would adversely effect the undeveloped film and, because of nominal hand operations, is able to be practiced in a darkened environment which does not expose the film.

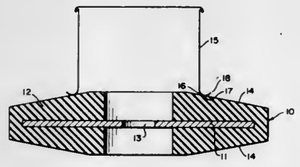
3,622,426
LEIS, GARLANDS AND THE LIKE
Libert Kuulelilunalilo O'Sullivan, 1239 Ulupii St., Kailua, Hawaii, and Libert Amori O'Sullivan, 2040 C, 9th Ave., Honolulu, Hawaii
Filed June 20, 1969, Ser. No. 835,203
Int. Cl. A41d *25/02*; **A44c** *25/00*
U.S. Cl. 161—7 **2 Claims**

Means and steps for making a lei from elongated strips of flexible material such as ribbons and the like. It involves the



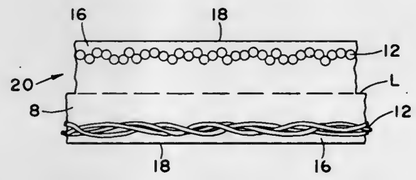
formation of laced mats and means to limit expansion of the lei.

3,622,427
PAD FOR TESTING THE SEAL OF A CAN
Andrew J. Kelly, West Roxbury, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Apr. 28, 1970, Ser. No. 32,587
Int. Cl. G01m *3/02*; **B32b** *3/00, 15/06*
U.S. Cl. 161—42 **3 Claims**



Sealing pads adapted to seal the open ends of cans while being tested on can body testing machines are formed of polychloroprene (neoprene), colloidal silica, and a plasticizer for the polychloroprene. Pads giving about 460,000 ends before failure result if the proportions of silica lie between 7 and 35 parts per hundred calculated on the weight of the polychloroprene, and if at the same time the weight of the plasticizer calculated on the same basis lies between 30 and 53 parts.

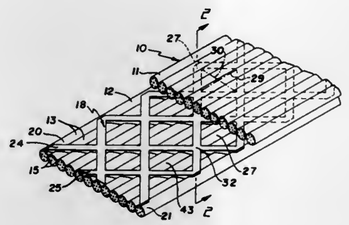
3,622,428
STAPLE FIBER REINFORCED THERMOPLASTIC FILM
James E. Robinson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 16, 1968, Ser. No. 729,585
Int. Cl. B32b *5/08, 5/12*
U.S. Cl. 161—59 **13 Claims**



A film-staple fiber combination in which material of the film serves as a binder for the staple fibers of the web imparting strength to the web so that the web serves to reinforce the film. A method of combining the film and staple fiber web, neither of which by itself has significant strength, into a unitary product of high tensile, low caliber, great flexibility and toughness with a high degree of tear resistance and similar desirable physical characteristics for industrial use is provided. The product may be calendered for smoothness,

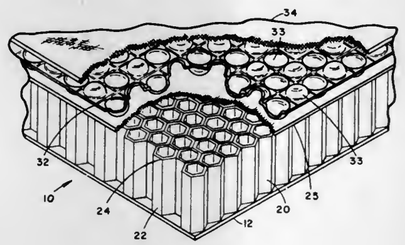
embossed to desired textures or to provide breathability, pigmented for opacity, appearance and printing purposes, and is useful in conjunction with mechanical fasteners as in tarpaulins, tents, industrial covers and garment fabrics in the nature of rainwear, protective clothing and the like.

3,622,429
SYNTHETIC STRAP
James A. Kippan, 440 Brooksbank Ave., North Vancouver, British Columbia, Canada
Filed Nov. 25, 1968, Ser. No. 778,483
Int. Cl. B32b *5/12*
U.S. Cl. 161—60 **14 Claims**



Synthetic strapping made up of two layers of synthetic filament yarns with a bonding band formed of compatible synthetic material located between these layers and fusion bonded to the surfaces of the yarns with which the band is in contact, some of the band material extending into spaces between the yarns and into spaces between the filaments of the individual yarn.

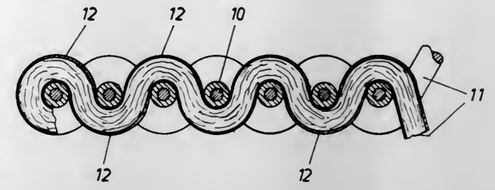
3,622,430
DIMPLED SHEET STRUCTURAL LAMINATE
Peter L. Jurisich, 5225 Bindewald Drive, Torrance, Calif.
Filed Nov. 24, 1969, Ser. No. 879,273
Int. Cl. B32b *3/12*
U.S. Cl. 161—68 **8 Claims**



A structural laminate comprising two outer and one inner reinforced resin sheets having major surfaces in overlying relationship, wherein one of said outer sheets and said inner sheet sandwiches a honeycomb or cellular core structure with said inner sheet also serving to sandwich a dimpled or relieved sheet with the other outer sheet.

3,622,431
ELASTIC WOVEN FABRIC
Christian H. Turcksin, No. 69a, Bachstrasse, Detmold, Lippe, Germany
Filed Apr. 3, 1968, Ser. No. 718,420
Claims priority, application Austria, Nov. 23, 1967, A 10601/67
Int. Cl. D03d *15/08, 17/00*; **F16a** *1/04*
U.S. Cl. 161—77 **1 Claim**

An elastic-woven fabric is provided which is both longitudinally and laterally stretchable and comprises an elastically stretchable warp and a weft consisting of unprocessed cellulose threads, said elastic fabric being impregnated with a



partly cured liquid latex and fully vulcanized after impregnation.

3,622,432
FLEXIBLE IONIZING RADIATION SHIELD BARRIERS
John D. McCluer, Charlotte, N.C., and Robert C. Roy, East Longmeadow, Mass., assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 364,010, Apr. 30, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 230,983, Oct. 16, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 93,159, Mar. 3, 1961, now Patent No. 3,253,947. This application Feb. 1, 1967, Ser. No. 622,859
Int. Cl. G21f *1/10, 3/02*; **B32b** *5/30*
U.S. Cl. 161—87 **9 Claims**



Flexible ionizing radiation shield barriers which comprise a heavily lead-loaded elastomeric layer adhering to a fabric base, thereby forming a thick heavy flexible material useful in shielding against radiation. The lead loading comprises at least 55 percent by total weight of the material, and is comprised of lead particles of, at most, 200 mesh.

3,622,433
DOUBLE WELT STRIP
Edward L. Clark, Wellington Drive, Bedford, Va.
Filed Jan. 8, 1968, Ser. No. 696,339
Int. Cl. B32b *3/04, 3/02*
U.S. Cl. 161—101 **5 Claims**



A double or single welt for use in the upholstered furniture and other industries, as well as a method and an apparatus for making such welts. The double welt comprises an elongated strip of textile or other material with its longitudinal edges folded or rolled inwardly toward each other to form two tubes, into which cords are preferably introduced, the outer surface of each infolded edge portion engaging the inner surface of the unfolded central portion of the strip and being permanently secured thereto as by adhesive, the cords being free to move longitudinally within the strip material. The single welt may be formed by slitting a double welt made

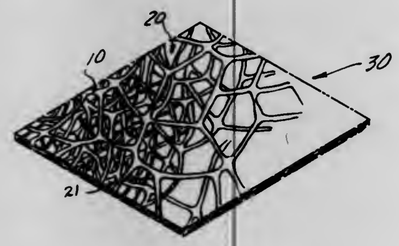
as stated, or by forming a single fold or tube from a narrower strip of material, utilizing essentially the same method of folding or rolling the material upon itself, inserting a cord if desired, and securing the outer surface of the folded material to the inner surface of the unfolded material. An apparatus suitable for performing the stated method comprises a folder mechanism, an adhesive applying means, and means for advancing the material (and cords if used) through said mechanism and past said adhesive applying means.

3,622,434
CREPED FIBER-FILM COMBINATION AND PROCESS THEREFOR
Nicholas S. Newman, West Newton, Mass., assignor to The Kendall Company, Boston, Mass.
Continuation-in-part of application Ser. No. 655,881, July 25, 1967, now abandoned. This application June 3, 1970, Ser. No. 42,924
Int. Cl. B32b *3/28*
U.S. Cl. 161—128 **7 Claims**



A lightweight fibrous fleece is prepared, containing a sufficient proportion of heat-retractable fibers to make the fleece potentially capable of shrinking 20 percent or more in area if heated without restraint. The fleece as prepared is bonded to a soft film which does not shrink to any great extent when heated under conditions which would cause the fleece to shrink. The bonding of fleece to film is done under restraint, not allowing shrinkage. Subsequently the fleece-film combination is heated without restraint. The heat-retractable fibers shrink, creating a pebbled or creped texture on both faces of the combination.

3,622,435
INTERBONDED COMPRESSED POLYURETHANE FOAM MATERIAL AND METHOD OF MAKING SAME
Arthur F. Cacella, 16 Hillwood Road, East Brunswick, N.J.
Filed Nov. 3, 1967, Ser. No. 680,504
Int. Cl. B32b *5/18*
U.S. Cl. 161—157 **9 Claims**

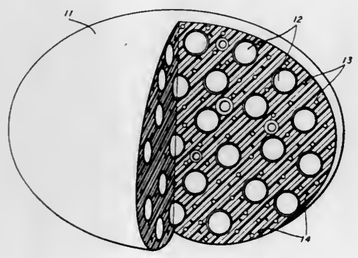


A permeable polyurethane sheet structure is formed by impregnating a skeletal polyurethane foam, such as a reticulated open cell foam, with a cross-linking agent, such as a polyisocyanate, having defined characteristics and compressing said foam with heat and pressure.

3,622,436
HIGH TEMPERATURE SEAL
John N. Johnson, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 18, 1970, Ser. No. 38,206
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 **5 Claims**

A rubbing contact fluid seal, particularly suitable for use in a gas turbine engine rotary regenerator, comprising a reticulate metal facing layer bonded to a base member and adapted for rubbing contact with the regenerator, the facing layer having disposed in the pores thereof a seal material consisting of, by weight, 53 to 67% $NiFe_2O_4$, 3 to 18% ZnO and 28 to 32% sodium silicate which material is bonded in and to the facing layer by curing at 500° F.

3,622,437
COMPOSITE BUOYANCY MATERIAL
Edward C. Hobaica, Mystic, Conn., and Sidney D. Cook, Warwick, R.I., assignors to General Dynamics Corporation, New York, N.Y.
Filed May 9, 1969, Ser. No. 823,270
Int. Cl. B63b *43/00*
U.S. Cl. 161—168 **9 Claims**



A buoyancy material is provided having hollow spheres made of a thermoplastic resin, encased in a matrix of syntactic foam. The spheres may be of a single diameter or of two or more diameters, each being one-seventh the diameter of the next larger.

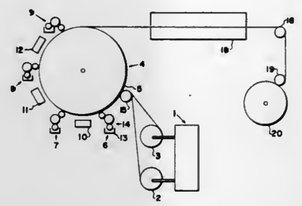
3,622,438
THERMOPLASTIC COATED FILAMENTARY MEMBER
David H. Esler; Frank J. Hormuth; Jack C. Corcoran, and Jerry M. Markley, all of Grand Rapids, Mich., assignors to Sackner Products, Inc., Grand Rapids, Mich.
Filed Nov. 17, 1967, Ser. No. 683,821
Int. Cl. D02g *3/36*
U.S. Cl. 161—175 **9 Claims**

This disclosure relates to a thermoplastic adhesive coated yarn or filament employed in the manufacture of boxing for upholstery and the like. The yarn or filament contains a uniform coating of a thermoplastic material which has sufficiently high viscosity to prevent the thermoplastic material from bleeding through the fabric to which it adheres at ordinary temperatures, and with viscosity low enough to permit coating of the filament or yarn uniformly at coating temperatures and such that a suffucient degree of melting will take place at the application temperature for the sticking of the thermoplastic adhesive to the boxing fabric.

In a preferred embodiment of the invention, a rayon filament is coated with a layer of a polymer or ethylene, preferably an ethylene-butene-l copolymer, the copolymer has a molecular weight of less than 10,000, has dissolved therein and organic acid ester which produces a composition having a viscosity at 300° of 100,000 to 200,000 c.p.s., and a viscosity at 350° of less than 8,500 c.p.s. The preferred organic acid ester is ethyl palmitate.

3,622,439
OXYGEN IMPERMEABLE FILM LAMINATE
Stanley Manne, South Holland, and Myron S. Beyer, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.
Continuation-in-part of application Ser. No. 658,764, Aug. 7, 1967. This application May 23, 1968, Ser. No. 731,563
Int. Cl. B32b *27/30, 27/38, 27/40*
U.S. Cl. 161—184 **5 Claims**

Impermeable plastic film laminates for use in the packaging of food products and other materials are formed by adhesive lamination of polyethylene or other plastic films to plastic films such as nylon, polyester, cellophane, polypropylene, polyehtylene, polyvinyl chloride, etc., by adhesive lamination with an oxygen and moisture vapor impermeable saran-containing adhesive, the adhesive preferably including a polymeric polyisocyanate. The polyehtylene portion of the laminate provides for heat sealability of the resulting film laminate. The nylon, polyester, cellophane, polypropylene, etc., film gives flex strength, abrasion resistance, gloss, vacuum formability, etc., to the film laminate. The saran adhesive gives an impermeable film laminate upon curing. In the manufacture of the film laminate, a pressure



sensitive but curable saran adhesive is applied to one of the plies of the film laminate on an ordinary plastic film coater or printing press and the two film combined and rolled up on a windup reel. The pressure applied to the film laminate in the windup reel is the laminating force applied to the film and the film laminate is cured simply by being stored under pressure of being wound on the rolls. After curing of the saran adhesive, the plastic film plies cannot be easily separated.

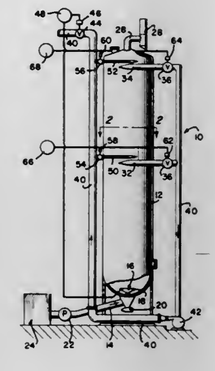
3,622,440
VITREOUS AND ORGANIC RESIN LAMINATES HAVING LOW-TEMPERATURE UTILITY
Robert Howard Snedeker, Piscataway; Kenneth Thomas Garty, Somerville, and Frank Joseph Skiermont, Bound Brook, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed June 24, 1969, Ser. No. 835,933
Int. Cl. B32b *17/10, 27/30*
U.S. Cl. 161—193 **16 Claims**



Laminates are prepared with an adhesive which comprises ethylene-vinyl acetate copolymer, a source of free radicals and an organic compound source of silicon.

3,622,441
MULTIPLE DISCHARGE STOCK TREATMENT APPARATUS AND METHOD
Joseph K. Perkins, Atlanta, Ga., assignor to Improved Machinery Inc., Nashua, N.H.
Filed Oct. 7, 1969, Ser. No. 864,339
Int. Cl. D21c *3/26*
U.S. Cl. 162—17 **22 Claims**

Stock treatment apparatus particularly suited for the bleaching of fibrous material such as pulp by chemicals such as chlorine or the hydrosulfides, comprising a generally upright elongated reaction vessel which is supplied inlet stock at its lower end. The vessel is provided with tangential outlets or stock discharge conduits arranged to discharge treated stock at locations spaced vertically from each other and above the vessel lower end; and above each outlet at least one tangential liquid supply conduit is connected to the vessel for supplying treated stock, extracted chemicals or other liquid thereto. The outlets and liquid supply conduits are provided with valves operable to permit alternative employment of each outlet and its respective vertically adjacent liquid supply conduit such that, by selective operation of the valves, the elevation at which treated stock is discharged from the vessel is variable to vary the period of retention of



stock in the vessel. Also, a method for stock treatment through the employment of such an apparatus.

3,622,442
NON-WOVEN FIBROUS WEBS BONDED WITH CROSS-LINKED ETHYLENE/CARBOXYLIC ACID COPOLYMERS AND METHODS OF MAKING SAME
Joseph Edward Reardon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 852,092, Aug. 21, 1969, now abandoned. This application June 17, 1970, Ser. No. 47,110
Int. Cl. B32b *27/30, 27/38, 27/42*
U.S. Cl. 161—184 **10 Claims**

Nonwoven fibrous webs bonded with a cross-linked and partially neutralized ethylene/alpha, beta-ethylenically unsaturated carboxylic acid copolymer are provided which possess high tensile strength and stiffness without substantial loss of these properties after repeated washing or drycleaning. The copolymer comprises about 55 to 97 percent by weight ethylene and about 3 to 45 percent by weight of the alpha, beta-ethylenically unsaturated carboxylic acid (methacrylic acid), about 0 to 75 percent of the acid groups neutralized. Cross-linking of the copolymer occurs with about 1 to 25 percent by weight, based on the weight of copolymer, of an epoxy resin or an amino-formaldehyde resin preferably cured at 180° C. for 1 minute. The copolymer imparts the improved properties to the nonwoven web whereas the cross-linking resin gives durability.

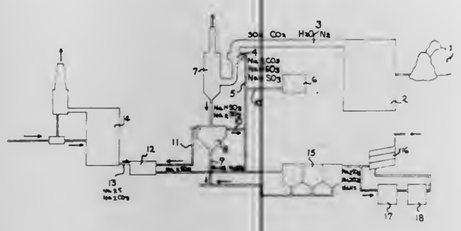
ERRATUM

For Class 162—17 see:
Patent No. 3,622,441

3,622,443
CHEMICAL RECOVERY SYSTEM FOR USE IN A PULPING PROCESS
Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Mar. 4, 1970, Ser. No. 16,294
Int. Cl. D21c *11/02*
U.S. Cl. 162—36 **2 Claims**

A method for the utilization and recovery of sodium and sulfur values used in pulping processes which method includes contacting a first portion of a bisulfite sulfite solution with the smelt product of the recovery furnace with a resultant solution after clarification that can be employed as a cooking liquor. The bisulfite sulfite solution is produced by scrubbing sulfur dioxide with a sodium carbonate solution

having a molar concentration of from 0.1 to 1.0. The second portion of the bisulfite sulfite solution has a molar ratio of 4



to 1 and a pH of about 6.8 to 7.0 and is recycled and combined with the sodium carbonate scrubbing solution.

3,622,444
PULP BLEACHING PROCESS
Douglas Haig Andrews, Beloeil, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada
Filed Mar. 25, 1970, Ser. No. 22,681
Claims priority, application Canada, Apr. 14, 1969, 048671
Int. Cl. D21c *3/18, 3/26, 3/02*
U.S. Cl. 162—85 **9 Claims**

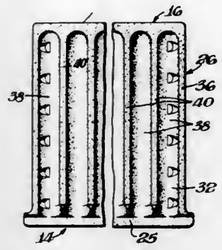
A process for bleaching sulfate or sulfite wood pulp having as the first three steps; chlorination, caustic extraction and chlorination; the pulp in the chlorination steps being pretreated with ammonia or an ammonium salt. Additional process steps may follow. The process provides wood pulp bleached to a high-brightness level at relatively low chemical cost while avoiding severe degradation of the pulp.

3,622,445
GLASS-FIBER WEBS EMPLOYING GLASS FIBERS WITH DIAMETERS OF3–15 MICRONS
August Pieter Louis Heidweiler, Apeldoorn, Netherlands, assignor to Koninklijke Papierfabriken Van Gelder Zonen N.V., Amsterdam, Netherlands
Filed May 16, 1968, Ser. No. 729,578
Claims priority, application Netherlands, May 18, 1967, 67/06889
Int. Cl. D21f *5/18*
U.S. Cl. 162—145 **10 Claims**

Glass-fiber webs having a low weight per square meter and superior strength characteristics are made by preparing a homogeneous suspension of fibers of a glass selected from the group of C and E glasses, having a diameter of 3–15 microns, and fibers of a material selected from the group consisting of the polyesters, polyamides and polyvinyl chloride, in water, the weight ratio between the glass fibers on the one hand and the organic fibers on the other ranging from 10:1 to 1:1, bringing said suspension onto a moving screen cloth, removing the excess of water with about 5–50 percent of a binder being added somewhere during the process, and drying the fiber mat provided with a binder by heating.

3,622,446
METHOD OF MAKING A POCKET-TYPE FILTER AND PRODUCT
Paul D. Burnham, Waterville, Maine, assignor to Keyes Fibre Company, Waterville, Maine
Continuation-in-part of application Ser. No. 701,895, Jan. 31, 1968, now abandoned. This application Dec. 30, 1969, Ser. No. 889,091
Int. Cl. D21h *5/12*
U.S. Cl. 162—146 **16 Claims**

An aqueous slurry is prepared which contains no substantial amount of phenol thermoset resin but has up to 30 percent wood pulp; 20–65 percent by weight of either olefin, acrylic, modacrylic, or vinylchloride-vinyl acetate copolymer fibers; and a balance of either rayon, polyester, polyamide, fiberglass, asbestos or a mixture of any two or more. Flame retardants may also be added. The slurry is suction molded to

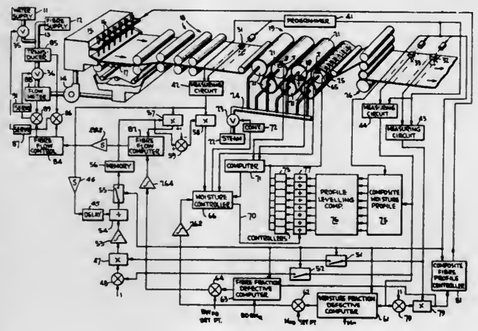


produce a pocket-shaped filter for removing contaminants from streams of gas.

3,622,447
PROCESS FOR THE MANUFACTURE OF BONDED FIBER SHEETS
Willem J. van der Geer, Oosterbeek, and Popke Wietsma, Arnhem, both of Netherlands, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Apr. 10, 1970, Ser. No. 27,419
Int. Cl. D21h *3/40*
U.S. Cl. 162—168 **8 Claims**

The invention relates to a process for the manufacture of bonded fiber sheets, by which process an aqueous polymer latex is mixed, in the presence of a thickening agent, with a coagulant for the latex, followed by mixing with fibers, after which the resulting suspension of fibers and coagulated latex particles is in a usual manner formed into a bonded sheet. The term "polymer latex" is meant to include here both latices of synthetic and/or natural rubbers in a narrower sense and a dispersion in water of a coagulable polymer such as polyvinyl chloride and copolymers thereof.

3,622,448
SYSTEM AND METHOD OF PROCESS CONTROL, PARTICULARLY PAPERMAKING PROCESSES IN RESPONSE TO FRACTION DEFECTIVE MEASUREMENTS
William L. Adams, Dublin; Michael P. Grant, Columbus, and Richard W. Hickman, Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation
Filed Feb. 16, 1968, Ser. No. 706,059
Int. Cl. D21f *5/06*
U.S. Cl. 162—198 **16 Claims**



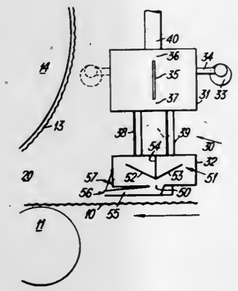
Disclosed are a system for and method of controlling processes of paper sheet manufacture. In response to basis weight signals at the process wet and dry ends, as well as a moisture signal from the dry end, a proportionality constant indicative of the sheet fiber fraction at the wet end is computed. The proportionality constant is combined with the wet

end basis weight output to indicate fiber content at the dry end and control fiber flowing into the papermaking headbox. Control of fiber flow into the headbox and moisture removed by the drying sections is respectively in response to indications of the amount of fiber and moisture at the dry end being less than defective limits. For moisture, the amount of moisture values above a reject limit for moisture is compared with a set point for the amount of moisture values above the reject limit. For fiber content, the amount of fiber values below a reject limit for fiber is compared with a set point for the amount of fiber values below the reject limit. Any difference between the actual amount and the set point will initiate corrective action. The dryers are controlled by wet end moisture and dry end composite profile moisture. The dryers are controlled so that the inherent lag of steam units therein is compensated by heat supplied by trim dryers, having fast response times. To derive instantaneous values of average wet end basis weight, the wet end gauge is normally single-pointed and only periodically scanned across the sheet.

3,622,449
METHOD OF FORMING A CONTINUOUS WEB OF UNIFORM THICKNESS BY APPLYING RECIPROCATING ACTION TO CELLULOSIC FIBROUS STOCK IN A HEADBOX
Emile A. Cambron, Hudson, Quebec, Canada, assignor to Domtar Limited, Montreal, Quebec, Canada
Filed Nov. 21, 1968, Ser. No. 777,710
Claims priority, application Canada, Oct. 21, 1968, 33,147
Int. Cl. D21f *11/02*
U.S. Cl. 162—216 **2 Claims**

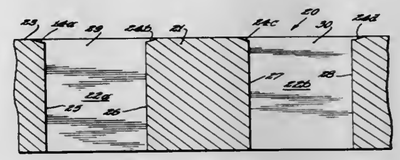
The present invention relates to a method for forming a continuous web of substantially fibre-containing stock having a consistency in the range of about 6 to 35 percent by applying a reciprocating action to the stock in a headbox to advance the stock onto a forming surface, said reciprocating action providing substantially the sole means causing said stock to flow from said headbox.

3,622,450
PAPERMAKING FLOW BOX
Brian William Attwood, Hanham, near Bristol, and Harold George Curry, Hambrook, near Bristol, both of England, assignors to St. Anne's Board Mill Company, Limited, Bristol, England
Filed June 4, 1969, Ser. No. 830,421
Claims priority, application Great Britain, July 4, 1968, 31,974/68
Int. Cl. D21f *1/06*
U.S. Cl. 162—339 **12 Claims**



A flow box for a papermaking machine including an explosion chamber having a stock inlet and stock outlet positioned on opposite sides of the explosion chamber, each of overall cross section less than the transverse cross section of the explosion chamber at the inlet and outlet. A baffle plate, having oppositely extending free ends, disposed transversely of the direction of flow of stock from inlet to outlet, divides the explosion chamber into two subchambers which are defined by two restricted passages formed between the free ends of the baffle plate and the walls of the explosion chamber. The explosion chamber creates turbulence and mixing of stock flowing therethrough without streaming thereof.

3,622,451
SUCTION BOX COVER WITH A SURFACE WHICH MERGES WITH HOLES THEREIN BY CONCAVELY FORMED INTERMEDIATE SURFACES
Alvin C. Roecker, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Nov. 12, 1968, Ser. No. 774,768
Int. Cl. D21f *1/48*
U.S. Cl. 162—374 **2 Claims**



A suction box for a papermaking machine wherein the holes through the suction box cover include, at least the leading and trailing edges thereof, concave edges which prevent wear of the forming wire and prevent rewetting of the paper web.

3,622,452
PROCESS FOR PRODUCING INOSINE BY FERMENTATION
Katsunobu Tanaka, Machida-shi; Kazuo Ohshima, Tokyo, and Yoh Tokoru, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Feb. 13, 1968, Ser. No. 705,015
Claims priority, application Japan, Feb. 14, 1967, 42/8987
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **5 Claims**

A process for producing inosine by fermentation which comprises culturing a hydrocarbon-assimilating micro-organism capable of producing inosine under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source. Exemplary micro-organisms which may be employed include *Brevibacterium ketoglutamicum*, *Arthrobacter paraffineus*, and *Corynebacterium hydrocarboclastus*.

3,622,453
PROCESS FOR PRODUCING L-THREONINE
Katsumi Akeyama, and Katsuya Nasu, both of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Sept. 9, 1968, Ser. No. 758,592
Claims priority, application Japan, Sept. 12, 1967, 42/58132
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **17 Claims**

A process for producing L-threonine by fermentation which comprises culturing a micro-organism capable of producing L-threonine under aerobic aqueous in an equeous nutrient medium containing an antibiotic, for example, streptomycin. The addition of the antibiotic makes it possible to accumulate large yields of L-threonine in the culture liquor and prevents the conversion and disappearance thereof.

3,622,454
PROCESS FOR THE PREPARATION OF DEXTROSE USING ALPHA AMYLASE
Leonard Keay, Florissant, Mo., assignor to Monsanto Company, Saint Louis, Mo.
Filed Aug. 29, 1969, Ser. No. 854,299
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 **6 Claims**

Dextrose solutions having high dextrose content (in excess of about 85 percent dextrose weight based on the weight of the dry substance in the solution) are obtained by treating an

aqueous starch solution with alpha amylase derived from the organism *Bacillus subtilis* var. *amylosacchariticus*.

3,622,455
PROCESS FOR THE PRODUCTION OF CITRIC ACID BY FERMENTATION
Hiroshi Iizuka; Junichi Shimizu; Kazumitsu Ishii, and Yoshikazu Nakajima, all of Tokyo, Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1968, Ser. No. 777,483
Claims priority, application Japan, Dec. 19, 1967, 42/80915
Int. Cl. C12d *1/04*
U.S. Cl. 195—37 **10 Claims**

A process for the production of citric acid or its salts, which comprises culturing a microbial strain known as *Candida oleophila* under aerobic conditions in a culture medium containing assimilable carbohydrates, suitable neutralizing agents capable of neutralizing the citric acid so produced, and various inorganic and organic metabolites, thus producing a major amount of citrate, and recovering the citrate from the culture broth.

3,622,456
PROCESS FOR PRODUCING MANNITOL BY FERMENTATION
Hiroshi Onishi, and Toshiyuki Suzuki, both of Noda-shi, Japan, assignors to Noda Institute for Scientific Research, Noda-shi, Japan
Filed July 16, 1969, Ser. No. 842,346
Claims priority, application Japan, July 26, 1968, 43/52482
Int. Cl. C12c *1/00*
U.S. Cl. 195—37 **8 Claims**

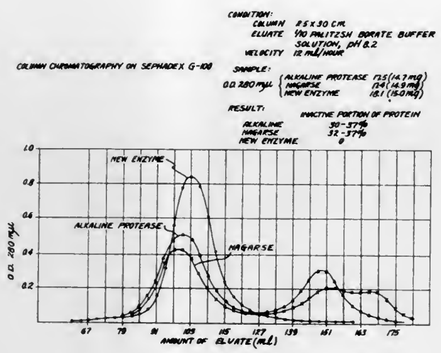
Mannitol is prepared by aerobically cultivating microorganisms belonging to *Torulopsis* in a culture medium containing D-glucose, maltose, glycerol and/or xylitol as a main carbon source and then recovering the mannitol produced. The microorganism is *Torulopsis mannitefaciens* ATCC 20221.

3,622,457
PROCESS FOR PREPARING 5-(AMINOALKYLAMINO)-6 (OR 7)-HALO-8-QUINOLINE METHANOLS
Emery W. Dennis, Albany, and David Rosi, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,722
Claims priority, application Great Britain, Dec. 9, 1968, 58,462/68
Int. Cl. C12d *1/00*
U.S. Cl. 195—51 R **4 Claims**

5-(aminoalkylamino)-6(or 7)-halo-8-quinolinemethanols, having schistosomacidal activity, are prepared by subjecting the correspoonding 6(or 7)-halo-5-(aminoalkylamino)-8-methylquinoline to the fermentative enzymatic action of a micro-organism capable of effecting oxidation of the 8-methyl group to 8-hydroxymethyl, said micro-organism being of an order selected of the group consisting of Moniliales, Mucorales, Sphaeriaelses, Sphaeropsidales, Melanconiales and Actinomycetales.

3,622,458
PRODUCTION OF A NEW PROTEASE
Sawao Murao, Sakai, Japan, assignor to Sanraku - Ocean Co., Ltd., Tokyo, Japan
Filed Sept. 29, 1969, Ser. No. 861,911
Claims priority, application Japan, Oct. 2, 1968, 43/71084
Int. Cl. C07g *7/028*
U.S. Cl. 195—62 **10 Claims**

A new, peptide-forming type of alkaline protease which is characteristically different from any similar commercial product in substrate specificity, decomposition pattern, amino acid composition, elementary analysis and other physicochemical properties, and which has the greatest enzymatic activity between pH 11.0 and 11.7. The invention includes a method of preparing said enzyme by cultivating *Bacillus subtilis var sakainensis* (ATCC 21394), and by purifying the crude enzyme preparation obtained therefrom at a larger yield in comparison with other commercially available proteases, in crystal form, by a very simplified method.



3,622,459
METHOD OF PREPARING A PROTEOLYTIC ENZYME BY FERMENTATION
Kojo Mitsugi; Yoshiteru Hirose; Masami Hoshino; Sadanobu Tobe, and Kohei Hashimoto, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Jan. 27, 1970, Ser. No. 6,277
Claims priority, application Japan, May 2, 1969, 44/34235
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **3 Claims**

Cettain strains of *Bacillus subtilis* are capable of growing in otherwise conventional media containing chelating agents such as sodium tripolyphosphate, sodium nitrilotriacetate, or sodium ethylenediaminetetraacetate and produce alkaline protease when cultured on ordinary culture media. The protease produced does not lose its effectiveness in hot detergent solutions also containing the aforementioned chelating agents.

3,622,460
PROCESS FOR PRODUCING A LARGE AMOUNT OF ISOAMYLASE
Kazuo Masuda, Okayam-shi, Okayama; Masakazu Mitsuhashi, Okayama-shi, Okayama; Mamoru Hirao, Setocho, Akaiwa-gun, Okayama; Yoshinori Sato, Okayama-shi, Okayama, and Kaname Sugimoto, Okayama-shi, Okayama, all of Japan, assignors to Hayashibara Co., Okayama-shi, Okayama, Japan
Filed May 31, 1968, Ser. No. 733,325
Claims priority, application Japan, June 1, 1967, 42/34468
Int. Cl. C12d *13/00*
U.S. Cl. 195—66 R **2 Claims**

According to the present invention, a strain of *Aerobacter aerogenes* is engaged in a preliminary culture upon a streak culture and then one platinum loop of the resulting seed culture is inoculated into a liquid medium sterilized as usual, which medium contains ammonium salt as a nitrogen source and liquefied starch as a carbon source, and is cultured under the condition of pH 5–8 to produce a large amount of isoamylase.

3,622,461
PROCESS FOR THE EXTRACTION OF L-ASPARAGINASE
Otto Wagner, Wuppertal-Elberfeld; Klaus Bauer, Wuppertal-Elberfeld; Wilfried Kaufmann, Wuppertal-Vohwinkel; Erich Rauenbusch, Wuppertal-Elberfeld; Alfred Arens, Wuppertal-Elberfeld, and Eckart Irion, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 26, 1968, Ser. No. 787,195
Claims priority, application Germany, May 6, 1968, P 17 67 390.4, P 17 67 498.5
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 A **4 Claims**

From a culture of *E. coli* the bacterial mass is flocculated by addition of an organic base or a salt thereof having an amino function and a molecular weight above 1,000. The flocculated cells are centrifuged, resuspended in water and precipitated by a water-miscible solvent, such as acetone. The cells which are simultaneously opened by the previous step are centrifuged away and again resuspended in water, whereby the enzyme is extracted from the cells. By addition of the organic base, mentioned above, to the suspension, the extracted cells, nucleic acids and ballast proteins are precipitated and are removed by centrifugation. The L-asparaginase is precipitated from the cell-free solution by addition of acetone.

3,622,462
PROCESS FOR MANUFACTURE OF AN ENZYME PREPARATION
Per Staffan Delin; Bertil Ake Ekstrom; Lars Solve Nathorst-Westfelt; Berndt Olof Harald Sjoberg, and Karl Hugo Thelin, all of Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
Filed Feb. 17, 1969, Ser. No. 799,983
Claims priority, application Great Britain, Feb. 15, 1968, 7,544/68
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 **11 Claims**

An improved process for the large-scale production of penicillin acylase wherein the purified, cell-free enzyme is prepared by fermenting an E. coli cell strain and separating the intracellular enzyme under controlled temperature from the culture fluid by the rapid expulsion of the cell material into water through a peripheral slit from an applied pressure of at least 500 p.s.i., but not exceeding 3,000 p.s.i. The cell material is then stirred in the aqueous solution to dissolve the enzyme which is isolated as a purified acylase capable of transferring the side chain of a natural penicillin, especially benzylpenicillin, to accomplish the formation of 6-aminopenicillanic acid by enzymatic degradation. Upon acylation of the 6-aminopenicillanic acid hypo-allergenic penicillins are obtained.

3,622,463
PRODUCTION OF EXTRACELLULAR GLUCOSE ISOMERASE BY STREPTOMYCES
Hiroshi Iizuka, Tokyo; Yaichi Ayukawa, Tokyo; Mikio Suekane, Saitama, and Mutsuo Kanno, Tokyo, all of Japan, assignors to CPC International Inc.
Continuation of application Ser. No. 666,979, Sept. 11, 1967, now abandoned. This application Aug. 11, 1969, Ser. No. 850,333
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **10 Claims**

Covers a glucose isomerase enzyme preparation having extracellular enzyme activity. Also covers a method of producing the above enzyme preparation, particularly by employing a mixture of starch and xylose as a suitable carbon source in a culture medium and by utilizing a Streptomyces species as the organism capable of producing this enzyme preparation. In addition, covers a method of isomerizing glucose to fructose by contacting glucose with the above enzyme preparation.

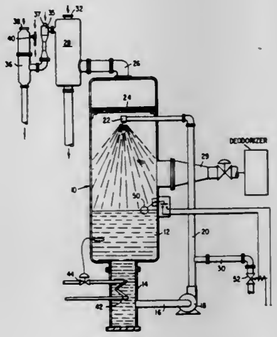
3,622,464
PREPARATION OF (—) (CIS-1,2 EPOXYPROPYL) PHOSPHONIC ACID
Edward O. Stapley, Metuchen, and Marion Jackson, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 14, 1969, Ser. No. 791,172
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 **4 Claims**

Increased yields of the antibiotic (—) (cis-1,2-epoxypropyl)-phosphonic acid are obtained by the addition of a source of citrate to fermentation media composed of complex organic and/or chemically defined nutrients. The antibiotic which is produced by growing newly found strains of Streptomyces on suitable fermentation media is active against both gram-positive and gram-negative bacteria.

3,622,465
PROTEIN FROM NORMAL HYDROCARBONS
Gerald Orgel, Highland Park; Edward W. Pietrusza, Morristown, and George G. Joris, Madison, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 10, 1967, Ser. No. 622,243
Int. Cl. A23j *1/00*; C12d *13/06*
U.S. Cl. 195—96 **9 Claims**

A process for the biosynthesis of protein wherein the micro-organism *Arthrobacter simplex* is cultivated under submerged aerobic conditions in an aqueous culture medium containing a C_3 to C_{18} straight chain hydrocarbon as the principal source of assimilable carbon and energy, an assimilable source of nitrogen and essential inorganic salts and the organism growth is thereafter separated from said culture medium.

3,622,466
METHOD OF RECOVERING WATER-FREE FATTY ACID DISTILLATES BY SELECTIVE CONDENSATION
Richard W. West, Irwin, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 3, 1969, Ser. No. 813,386
Int. Cl. B01d *3/34, 5/00*
U.S. Cl. 203—1 **3 Claims**



A method of recovering a condensable fluid such as fatty acids, created by the deodorization of vegatable oils from a vaporous mixture containing the fatty acid as a constituent which involves spraying the fatty acid in liquid form into direct heat transfer relation with the vaporous mixture in a vessel subject to an equilibrium condition enabling condensation of the fatty acid vapors only.

3,622,467
PROCESS FOR THE RECOVERY AND PURIFICATION OF ALKYL METHACRYLATE

Alden E. Blood; Max Statman, and Glenn L. Phillips, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

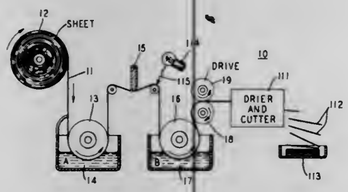
Filed Oct. 16, 1967, Ser. No. 675,348
Int. Cl. B01d 3/10
U.S. Cl. 203—75 9 Claims

A process for recovering alkyl methacrylates from reactor effluent obtained from the hydrogen iodide hydrate catalyzed oxidative dehydrogenation of alkyl isobutyrates, wherein the reactor effluent contains isobutyric acid in an amount of at least 20 weight percent based on the alkyl methacrylate. The isobutyric acid serves as a polymerization inhibitor which allows distillation of the alkyl methacrylate at atmospheric pressure. Also, the low-boiling coproducts can be recycled to the reactor with unreacted alkyl isobutyrate without producing additional undesirable side products.

3,622,468
HIGH-SPEED ELECTROLYTIC PRINTING INCLUDING IMAGE INTENSIFICATION

Dennis R. Turner, Chatham Township, Morris County, and Catherine Wolowodiuk, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 21, 1969, Ser. No. 878,815
Int. Cl. B21h 1/20; G01d 15/06; B32b 15/00
U.S. Cl. 204—2 11 Claims



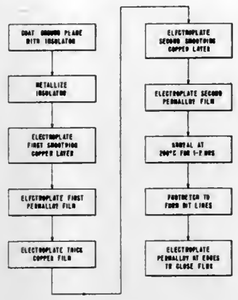
In order to derive prints from electrical signals at speeds which are required by modern information transmission, a latent image is produced on a moving recording sheet by the electrolytic dissolution of a metal such as silver from an array of anodes onto the sheet. The latent image is subsequently intensified and made visible by the deposition of additional metal on the metal image particles from a solution. Because of the small amount of catalyst such as silver needed on the sheet to develop the image, the erosion of the anodes is relatively slow. The production of one 8½×11 inch sheet of printed matter every 2 seconds is well within the capabilities of the process.

3,622,469
METHOD FOR EDGE-PLATING COUPLED FILM DEVICES

Gene S. Alberts, Essex Junction, Vt., and James M. Brownlow, Crompound, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 10, 1968, Ser. No. 743,736
Int. Cl. C23b 5/48, 5/32, 5/34
U.S. Cl. 204—15 7 Claims

An improved method of edge-plating large coupled film memories is disclosed. The improvement resides in the edge-plating step in which an etched coupled film device is immersed in a nickel-iron or nickel-iron-copper plating bath comprising K_2CO_3 0.0 moles to 0.00362 moles; NaK tartrate 0.0248 moles to 0.0532 moles; $NiCl_2 \cdot 6H_2O$ 0.084 moles to 0.211 moles; $FeSO_4 \cdot 7H_2O$ 0.0054 moles to 0.0211 moles; $CuSO_4 \cdot 5H_{86}O$ 0.0006 moles to 0.002 moles; saccharin as a 10 percent solution 0.10 g. to 0.06 g.; H_2O to make 1 liter; and having a pH of from 3.9 to 5.8. The magnetic edge film is plated by a pulse plating technique in which the current pulses have a duration of about 6 seconds, the solution is

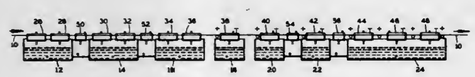


stirred for about 4 seconds and the pulse remains off for about 24 seconds before starting the next current pulse.

3,622,470
CONTINUOUS PLATING METHOD

Lawrence P. Gowman, Marlette, Mich., assignor to Wire & Strip Platers, Inc., Marlette, Mich.

Filed May 21, 1969, Ser. No. 826,381
Int. Cl. C23b 5/50, 5/62
U.S. Cl. 204—33 3 Claims

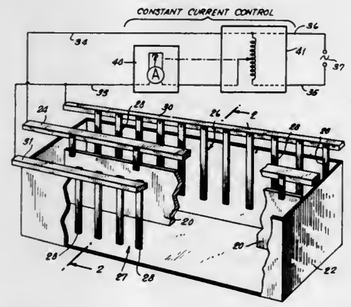


A method of continuously plating aluminum wire or strip stock. The stock passes through an alkaline etch bath, an acid oxidizing bath, a conditioner bath containing tin, and a bronze-plating bath in which bronze is plated on the aluminum. The conditions of concentration, temperature, and solution movement are all controlled so as to achieve continuous plating of bronze while feeding the stock at a relatively high speed. Following the bronze plating, further plating and/or drawing steps may be carried out.

3,622,471
PRODUCTION OF INORGANICALLY COLORED COATINGS ON ALUMINUM

William Ernest Cooke, and Paul John Sajben, both of, Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed July 2, 1968, Ser. No. 742,000
Int. Cl. C23b 5/50, 5/68
U.S. Cl. 204—35 N 15 Claims

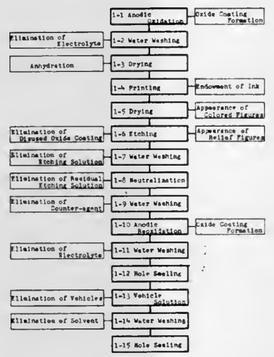


In procedure and apparatus where inorganically colored coatings on aluminum are produced by first anodizing the aluminum articles and then treating such anodically coated aluminum with alternating current in an acidic bath containing metal ions for producing a colored deposit in the coating, the alternating current treatment is effected between an anodized aluminum workload and a plurality of electrode elements constituting a counterelectrode, which are distributed along a region that faces the workload, e.g. elements of the same metal as the ions in the bath, the distribution and spacing of the elements being of a described nature such as to improve the desired results and to facilitate control. With substantially uniform alternating current density over the anodized aluminum in the above manner, control of operation is further facilitated by maintaining a selected current value condition or conditions for corresponding current density control, preferably such that the color obtained is determinable in accordance with duration of the treatment.

3,622,472
METHOD OF SELECTIVELY DYEING AND ETCHING ANODIZED ALUMINUM

Masanori Izumikawa, Urawa-shi, Japan, assignor to Yoshitaka Katayama, Tokyo, Japan

Filed Mar. 28, 1969, Ser. No. 811,369
Claims priority, application Japan, Mar. 14, 1969, 44/19354
Int. Cl. C23f 5/04
U.S. Cl. 204—35 N 7 Claims



This method involves etching of parts, except for portions corresponding to desired figures, by steeping the parts in etching solution after anodic oxidation of aluminium and printing figures on its surface. This is very useful in presenting colored relief figures on the surface of aluminium and forming figure patterns of aluminium on the surface of acid- and alkali-proof materials.

3,622,473
METHOD OF PROVIDING ALUMINUM SURFACES WITH COATINGS

Toshiyuki Ohta, and Hisashi Takao, both of Kobe-shi, Japan, assignors to Honny Chemicals Co., Ltd., Nagata-Ku Kobe, Japan

Continuation-in-part of application Ser. No. 494,885, Oct. 11, 1965, now abandoned. This application Sept. 25, 1969, Ser. No. 861,181
Claims priority, application Japan, Oct. 15, 1964, 39/58326
Int. Cl. C23f 17/00, 9/02, 13/00
U.S. Cl. 204—38 A 7 Claims

Aluminum articles are produced with a surface coating of high-durability by first electrolytically oxidizing the article in an acidic anodizing bath and after water washing, depositing the article in an aqueous dispersion, emulsion or solution of a thermosetting resin and passing a current through said article as the anode to cause electrodeposition of resin particles in the oxidized porous surface. The article is then heated to cure the resinous film.

3,622,474
ELECTRODEPOSITION OF OSMIUM

Lawrence Greenspan, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

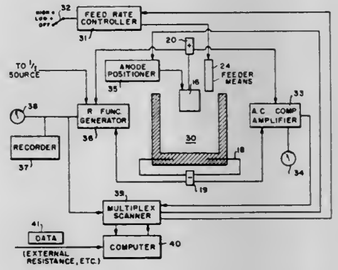
Filed July 18, 1969, Ser. No. 843,174
Int. Cl. C23b 5/24
U.S. Cl. 204—47 14 Claims

An electrolytic bath is provided from which osmium is electroplated. The bath is comprised of an aqueous alkaline solution having dissolved therein an octavalent osmium compound and an alkali metal salt of sulfamic acid.

3,622,475
REDUCTION CELL CONTROL SYSTEM

Harry T. Shiver, and William E. Campbell, both of Portland, Oreg., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of application Ser. No. 400,059, Sept. 29, 1964, now abandoned. This application Aug. 21, 1968, Ser. No. 769,434
Int. Cl. C22d 3/12, 3/02
U.S. Cl. 204—67 31 Claims



Method of operating (and apparatus including) an electrolytic cell for the production of aluminum, in which provision is made for monitoring the cell resistance, producing feed control signals responsive to cell resistance changes, and regulating the feeding of alumina into the bath in accordance with such signals.

3,622,476
CATHODIC PROCESS FOR THE PREPARATION OF TETRAALKYL LEAD COMPOUNDS

Kang Yang; James D. Reedy, and William H. Harwood, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 9, 1969, Ser. No. 865,175
Int. Cl. C07b 29/06; C07f 7/26
U.S. Cl. 204—72 5 Claims

A process for the cathodic alkylation of lead using ethyl chloride, methyl chloride, or mixture thereof as an alkylating agent and iodide ion as an electrochemical catalyst with a liquid-liquid junction of propylene carbonate and water wherein propylene carbonate is in the catholyte and water is in the anolyte.

3,622,477
SYNTHESIS OF N:N'-DISUBSTITUTED BIPYRIDYLIUM SALTS

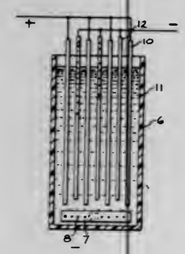
John Edward Colchester, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 5, 1969, Ser. No. 804,651
Claims priority, application Great Britain, Mar. 15, 1968, 12,644/68
Int. Cl. C07b 29/06; C07d 31/02
U.S. Cl. 204—73 14 Claims

There is provided a process for the production of 1,1'-disubstituted-4,4'-bipyridylium salts which comprises reducing

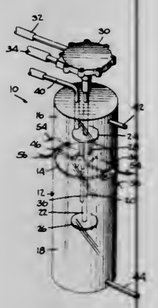
an N-substituted 4-cyanobipyridinium salt electrolytically or by means of a reducing agent under conditions whereby free cyanide ions are removed from the reaction medium as they are liberated, for example by carrying out the reduction in the presence of a cyanide ion sequestering agent.

3,622,478
CONTINUOUS REGENERATION OF FERRIC SULFATE PICKLING BATH
Stanley J. Beyer, Louisville, Ky., assignor to General Electric Company
Filed Nov. 14, 1960, Ser. No. 876,836
Int. Cl. B01k *1/00*; **C23b** *1/04*; **B01k** *3/00*
U.S. Cl. 204—130 **18 Claims**



An electrolytic process for regenerating a ferric sulfate pickling liquor by continually circulating the liquor from an operating pickling tank through an electrolytic cell to oxidize some of the ferrous ions to ferric ions. The cell is operated under conditions such that all regenerated products can be returned to the pickling tank.

3,622,479
METHOD FOR THE CONTINUOUS ELECTROLYTIC PRODUCTION OF CHLORINE FOR THE STERILIZATION OF WATER
Frank L. Schneider, Port Washington, N.Y., assignor to Albert Young, Miami, Fla., a part interest
Original application June 4, 1969, Ser. No. 830,273. Divided and this application Mar. 4, 1970, Ser. No. 019,138
Int. Cl. B01k *1/00, 3/00*
U.S. Cl. 204—149 **3 Claims**



An apparatus for continuous electrolytic production of chlorine in sterilize water, comprising a nonconductive housing divided into an upper chamber and a lower chamber, a motor-turned shaft disposed through both chambers provided with a rotative disc for each chamber, a syphon affording liquid communication between the chambers, electrodes disposed in the upper chamber, a water inlet line disposed over the upper disc, the syphon outlet disposed over the lower disc, a gas exhuast line in the upper chamber and a water outlet line at the base of the lower chamber. The method of electrolyzing an electrically conductive solution by fragmentizing it before it reaches the electrodes, gathering the drops back into solution in the presence of the electrodes, refragmentizing the solution on leaving the electrodes and regathering the drops into solution.

3,622,480
METHOD OF INCREASING THE CONCENTRATION OF OYXGEN-18 IN AN OXYGEN-CONTAINING COMPOUND
Everett R. Johnson, Chevy Chase, Md.; Edwin N. Ladov, Maple Shade, N.J., and Earl W. Holtzscheiter, Jr., College Park, Md., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 4, 1969, Ser. No. 874,030
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 **3 Claims**

A method of producing oxygen-18 enriched compounds comprising irradiating a compound containing an oxyganion with high energy radiation in the presence of a gas containing oxygen-18.

3,622,481
METHOD OF PRODUCING COMPOUNDS ENRICHED IN OXYGEN-18
Everett R. Johnson, Chevy Chase, Md., and Edwin N. Ladov, Maple Shade, N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 4, 1969, Ser. No. 874,031
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 **5 Claims**

A method of increasing the oyxgen-18 concentration in a compound containing oxygen and nitrogen comprising irradiating KNO_3 with high energy radiation until at least 10 mole percent of said KNO_3 is decomposed into KNO_2 and oyxgen and separating the resulting oxygen-18 enriched KNO_2 from the KNO_3.

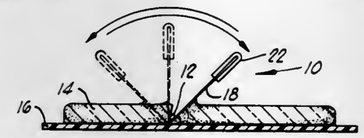
3,622,482
POLYMERIC COMPOSITIONS STABILIZED & PHOTOSENSITIZED BY SUBSTITUTED & UNSUBSTITUTED ACYLARYLESTERS OF ORGANIC MONOCARBOXYLIC ACIDS
David John Trecker, South Charleston; Henry Octave Colomb, Jr., South Charleston, and Michael Ray Sandner, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Filed July 16, 1969, Ser. No. 842,335
Int. Cl. C08d *1/00*; **C08f** *1/16, 45/58*
U.S. Cl. 204—159.14 **10 Claims**

Polymer compositions containing a minor amount of a photosensitizer-stabilizer are disclosed. The photosensitizer-stabilizer serves both to sensitize or accelerate the cross-linking on irradiation and then to stabilize the polymer against further cross-linking or degradation after the cross-linking reaction has been completed. The useful compounds are the substituted and unsubstituted acylaryl esters of organic monocarboxylic acids, such as 4-acetylphenyl benzoate, 2-acetyl-4-methylphenyl acetate, 2-acetyl-4-methylphenyl benzoate, etc. The polymer compositions can be used as protective coatings, fibers, films, for production of extruded and molded articles and those utilities in which polymers are customarily used.

3,622,483
ELECTRICAL DEPOSITION OF MATERIAL
Robert Paul Randall, Uxbridge, Middlesex, and Henry Kenneth Beale, Pinner, Middlesex, both of England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England
Filed Nov. 7, 1968, Ser. No. 774,035
Claims priority, application Great Britain, Nov. 8, 1967, 50,821/67
Int. Cl. B01k *5/00*
U.S. Cl. 204—181 **7 Claims**

Insulating particles are deposited on an insulating support bearing a conductive film by positioning it between an anode and cathode in an electrically conducting solution so that it faces the anode, but without electrical connection with the anode or cathode, connecting the conductive film to a conductive part in sight of the cathode and establishing a potential difference between the cathode and anode.

3,622,484
SAMPLE PLACING METHOD
Leo P. Cawley, 550 N. Hillside, Wichita, Kans.
Filed Feb. 9, 1970, Ser. No. 9,625
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 **4 Claims**

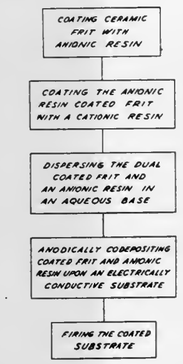


This invention is a method of inserting serum specimen into a stabilizing media gel as used in preparing samples for electrophoresis and immunoelectrophoresis processes. More particularly, the method of this invention comprises placing the serum specimen on the edge of a blade, inserting the blade into the stabilizing media gel, thereby removing the serum from the blade and depositing the serum in the stabilizing media gel in the formed slit, and removing the blade from the gel.

3,622,485
ELECTRODEPOSITION
Robert A. Preece, and William G. Topham, both of Liverpool, England, assignors to Goodlass Wall and Company Ltd., Speke Liverpool, England
Filed Mar. 7, 1969, Ser. No. 806,780
Claims priority, application Great Britain, Mar. 9, 1968, 11,612/68
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **8 Claims**

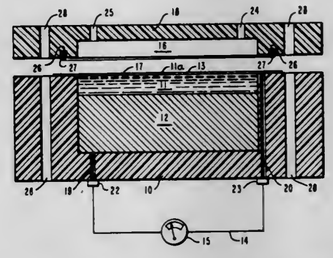
The electrophoretic deposition technique of a film of resin on a metal object from an aqueous dispersion of the resin using alternating current is improved by using an aluminum electrode and particularly one of commerically pure aluminum.

3,622,486
ANODIC DEPOSITION OF FRIT IN DUAL ENVELOPE
George E. F. Brewer, Novi, and Robert A. Swider, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 12, 1969, Ser. No. 884,446
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **1 Claim**



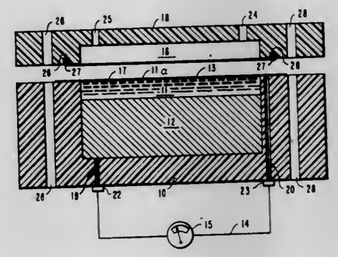
An improved method is provided for electrodepositing particulate ceramic frit upon an electrically conductive substrate which comprises enveloping the frit particles in a double envelope consisting of an inner coating of anionic resin and an outer coating of cationic resin, forming an aqueous dispersion of the thus-coated frit and an anionic binder resin, and anodically depositing the coated frit and the anionic binder resin upon the substrate. The coated substrate can then be fired to volatilize and drive off all resinous material and convert the electrodeposited frit particles into a continuous film.

3,622,487
APPARATUS FOR MEASURING NITROGEN OXIDE CONCENTRATIONS
Ramesh Chand, and Manuel Shaw, both of Los Angeles, Calif., assignors to Dynasciences Corporation, Los Angeles, Calif.
Filed Sept. 9, 1968, Ser. No. 758,351
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **6 Claims**



Nitrogen oxide concentrations present in a gaseous mixture are rapidly and continuously monitored by measuring the current passing between an inert metallic sensing electrode and a counter electrode which electrodes are in contact with an aqueous electrolyte solution and at which sensing electrode the oxides are electrooxidized. The sensing electrode is composed of an inert metal, whereas the counter electrode is composed of an electroactive material which is capable of being electrochemically reduced when electrically interconnected with the sensing presence in the presence of the aqueous electrolyte solution.

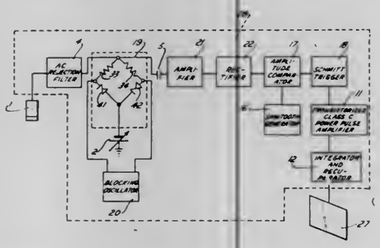
3,622,488
APPARATUS FOR MEASURING SULFUR DIOXIDE CONCENTRATIONS
Ramesh Chand, and Manuel Shaw, both of Los Angeles, Calif., assignors to Dynasciences Corporation, Los Angeles, Calif.
Filed Sept. 9, 1968, Ser. No. 758,527
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **8 Claims**



Sulfur dioxide concentrations present in a gaseous mixture are rapidly and continuously monitored by measuring the current passing between an inert metallic sensing electrode and a counter electrode which electrodes are in contact with an aqueous electrolyte solution and at which sensing electrode sulfur dioxide is electrooxidized. The sensing electrode is composed of an inert metal whereas the counter electrode

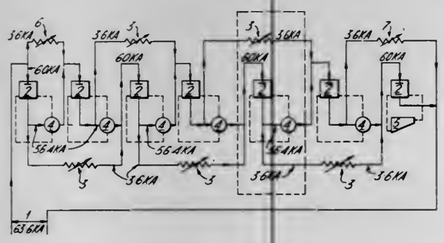
is composed of an electroactive material which is capable of being electrochemically reduced when electrically interconnected with the sensing electrode in the presence of the aqueous electrolyte solution.

3,622,489
CATHODIC PROTECTION SYSTEM
Valeriu Dumitrescu, Bucharest; Dan Ciulin, Bucharest, and Paun Constantin, Plotesti, all of Romania, assignors to Institutual De Cercetari Si Proiectari Pentru Industria Extractiva De Titei Si Gaze
Continuation-in-part of application Ser. No. 401,476, Oct. 5, 1964, now abandoned. This application Sept. 25, 1968, Ser. No. 763,055
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **5 Claims**



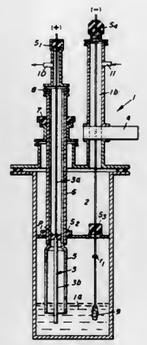
An impressed-current cathodic protection system for use with a relatively high impedance electrolyte such as moist earth employs Zener diodes operated below their breakdown voltage to establish a high input impedance for the circuitry that controls the current output to the system anode. The latter output is obtained by integrating and recuperating a sequence of high frequency, high duty factor pulses that are modulated in duration in accordance with the deviation of the output of a reference half-cell, which senses the potential on the object to be protected, from a desired potential indicative of the desired protection level.

3,622,490
ELECTRICAL CIRCUIT
Michael James Lockett, Goostrey, Holmes Chapel, England, assignor to Murgatroyd's Salt and Chemical Company Limited, Elworth, Sandbach, England
Filed Mar. 20, 1969, Ser. No. 808,789
Claims priority, application Great Britain, Mar. 29, 1968, 15,347/68
Int. Cl. C22d *1/04*; B01k *3/00*
U.S. Cl. 204—220 **3 Claims**



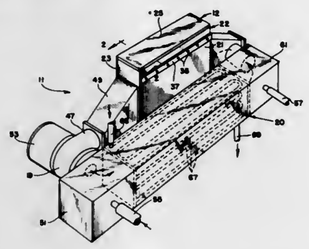
The invention is an electrical circuit comprising a source of DC power, a plurality of electrolytic cells in which mercury is used as the cathode, and a plurality of fuel cells. The electrolytic cells and fuel cells are connected alternately and electrically in series and a shunt is provided from the cathode of each of the electrolytic cells to the anode of the next but one electrolytic cell. Amalgam produced in the electrolytic cells is used as fuel in the fuel cells to reduce total energy requirements.

3,622,491
ELECTROLYTIC APPARATUS FOR MOLTEN SALT ELECTROLYSIS
Morton M. Wong, Reno, and George M. Marginez, Henderson, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior
Filed Apr. 23, 1969, Ser. No. 818,508
Int. Cl. B01k *3/00*; C22d *3/02*
U.S. Cl. 204—225 **8 Claims**



In an electrolytic cell a vertically movable hood is provided to capture corrosive gases evolving from the molten electrolyte at the anode. The hood is electrically conductive and can be lowered into the electrolyte and connected up as an anode which surrounds the cathode, or the hood can be completely removed from the electrolyte during, for example, an electrorefining operation.

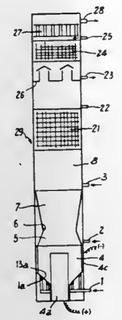
3,622,492
OZONE GENERATOR
Layton C. Kinney, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.
Filed Dec. 18, 1968, Ser. No. 784,822
Int. Cl. C22d *7/08*
U.S. Cl. 204—322 **7 Claims**



To provide a compact ozone generator, films of polymeric material are employed as dielectrics in combination with flat, planar electrodes to produce ozone by silient electrical discharge in an oxygen containing gas stream. The electrodes and dielectrics are cooled by the gas stream which is recycled across the electrodes and dielectrics and through an external heat exchanger.

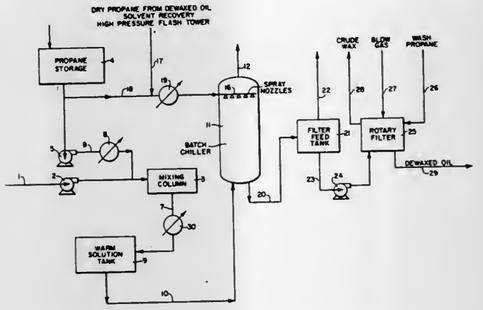
3,622,493
USE OF PLASMA TORCH TO PROMOTE CHEMICAL REACTIONS
Francois A. Crusco, 9, Sente des Ruelles, 78 Villiers-Saint-Frederic, France
Filed Dec. 30, 1968, Ser. No. 787,770
Claims priority, application France, Jan. 8, 1968, 135,164
Dec. 13, 1968, 178, 161
Int. Cl. C22d *7/08*
U.S. Cl. 204—323 **5 Claims**

Chemical reactions, particularly the production of acetylene, are achieved by mixing a hydrocarbon material with a gas-carrying plasma torch issued from an electric arc, and allowing them to react in gaseous phase under a superatmospheric pressure under high turbulence. Preferably the



gases thus formed are quenched and washed with liquid hydrocarbons in such a way that washing liquid refluxes into the zone in which the reaction takes place.

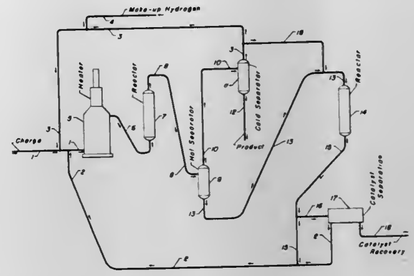
3,622,494
SPRAYING COLD MAKEUP PROPANE INTO VAPOR SPACE OF DEWAXING CHILLER
James D. Bushnell, Berkeley Heights; Richard K. Neeld, Plainfield, and Roy J. Lamm, Chester, all of N.J., assignors to Esso Research and Engineering Company
Filed Apr. 1, 1970, Ser. No. 24,529
Int. Cl. C01g *43/08*
U.S. Cl. 208—35 **5 Claims**



Cold makeup liquid normally gaseous dewaxing solvent is introduced directly into the chiller of a dewaxing plant by spraying it into the vapor space of the chiller in droplets having a size between 1,000 and 6,000 microns, which are rapidly heated by the ascending solvent vapors from the liquid solvent in the chiller thus preventing shock chilling.

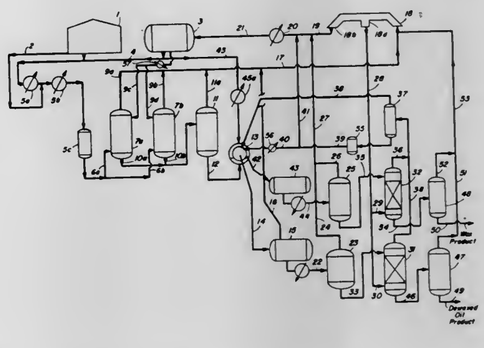
3,622,495
MULTIPLE-STAGE SLURRY PROCESSING FOR BLACK OIL CONVERSION
John G. Gatsis, Des Plaines, and William K. T. Gleim, Island Lake, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 22, 1970, Ser. No. 4,807
Int. Cl. B01j *11/74*; C10g *13/06, 23/16*
U.S. Cl. 208—59 **6 Claims**

A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes, metallic contaminants and excessive quantities of sulfurous compounds. The slurry constitutes the charge stock, hydrogen and from about 1.0 percent to about 25.0 percent by weight of finely divided catalyst particles. The charge stock is converted by processing the slurry in at least two individual reaction zones having separation facilities therebetween. That portion of the first reaction zone product effluent containing the catalyst particles and unconverted



nondistillables is processed in a succeeding reaction zone. At least the major portion of the product effluent from the succeeding reaction zone is recycled to combine with the fesh feed charge stock. Preferred catalysts are the unsupported sulfides of the metals from Groups V-B, VI-B and VIII.

3,622,496
LOW-POUR DEWAXING PROCESS UTILIZING DUAL SOLVENTS
Frank A. Biribauer, Cranford; James D. Bushnell, Berkeley Heights, and Richard E. Winsor, Fanwood, all of N.J., assignors to Esso Research and Engineering Company
Filed Dec. 4, 1969, Ser. No. 882,025
Int. Cl. C01g *43/08*
U.S. Cl. 208—35 **12 Claims**



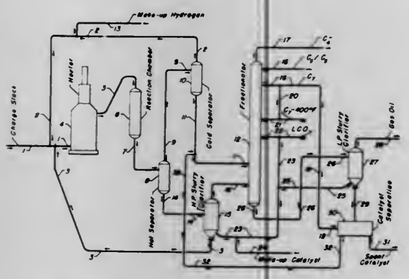
An improved process for dewaxing petroleum oil stocks. A dual solvent consisting of an autorefrigerant and a wax antisolvent is employed to chill the petroleum oil and precipitate out the wax. The autorefrigerant is used to strip the wax antisolvent from both the precipitated wax and the dewaxed oil and may be used additionally as blow gas for the filters.

3,622,497
SLURRY PROCESS USING VANADIUM SULFIDE FOR CONVERTING HYDROCARBONACEOUS BLACK OIL
William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 22, 1970, Ser. No. 5,091
Int. Cl. B01j *11/74*; C10g *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**

A catalytic slurry process for hydrorefining a hydrocarbonaceous charge stock containing hydrocarbon-insoluble asphaltenes. The process is effected in slurry fashion with the

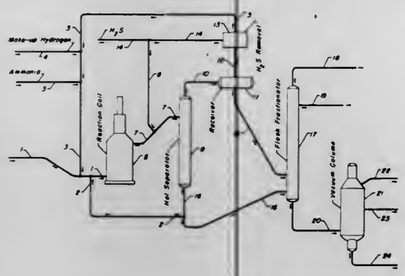
charge stock being admixed with a phenolic solution of a tetravalent vanadium salt. The slurry is reacted at conditions including a temperature above about 225° C. and a pressure greater than about 500 p.s.i.g., and in the presence of hydrogen and hydrogen sulfide.

3,622,498
SLURRY PROCESSING FOR BLACK OIL CONVERSION
Frank Stolfa, Park Ridge, and Laurence O. Stine, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 22, 1970, Ser. No. 4,909
Int. Cl. B01j *11/74*; **C10g** *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**



A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes and metallic contaminants. The slurry constitutes the charge stock, hydrogen, a portion of the previously produced product effluent and from about 1.0 to about 25.0 percent by weight of finely divided catalyst particles. Preferred catalysts are the unsupported sulfides of the metals from Groups V-B, VI-B and VIII. A series of product separation steps facilitates catalyst circulation, catalyst withdrawal, and recovery of a substantially catalyst-free product.

3,622,499
CATALYTIC SLURRY PROCESS FOR BLACK OIL CONVERSION WITH HYDROGEN AND AMMONIA
Laurence O. Stine, Western Springs, and Frank Stolfa, Park Ridge, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 22, 1970, Ser. No. 4,806
Int. Cl. B01j *11/74*; **C10g** *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**

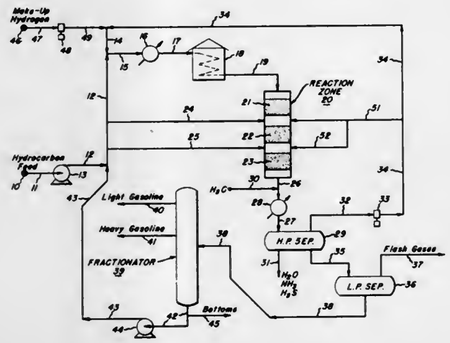


A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes and metallic contaminants. The slurry constitutes charge stock, hydrogen, from about 1.0 to about 25.0 percent by weight of finely divided catalyst particles and, in a preferred embodiment, a portion of the previously produced product effluent. Preferred catalysts are the unsupported sulfides of the metals from Groups V-B, VI-B and VIII. Prior to an initial separation, hydrogen sulfide is commingled with the product effluent in order to convert the metals contained therein to the sulfides thereof.

3,622,500
HYDROGENATION OF HYDROCARBONS WITH CATALYTIC MICROSPHERES
Seymour B. Alpert, Princeton; Michael C. Chervenak, Pennington, and Ronald H. Wolk, Lawrence Township, Mercer County, all of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.
Filed Apr. 21, 1970, Ser. No. 30,431
Int. Cl. C10g *13/02, 13/18*
U.S. Cl. 208—111 **5 Claims**

Hydrocarbon fractions boiling below 975° F. are obtained by hydrocracking heavy hydrocarbon oils, containing 40–100 percent by volume of hydrocarbon fractions boiling above 975° F., in the liquid state in the presence of ebullated catalytic macroporous microspheres. These microspheres are smaller than 60 mesh (U.S. Standard) and larger than 325 mesh. They have a pore volume of at least 0.10 cc./g. in pores larger than 250 Angstroms (A) and at least 0.30 cc./g. in pores less than 250 A. The macroporous, microspheres have an average size such that 80 weight percent fall within a narrow size range and are ebullated by the upward flow of oil and hydrogen through the reactor during hydroconversion. The pore volume of the microspheres is critical as there must be a penetration of the hydrocarbon oil into the catalyst for at least a 3 percent gain in weight.

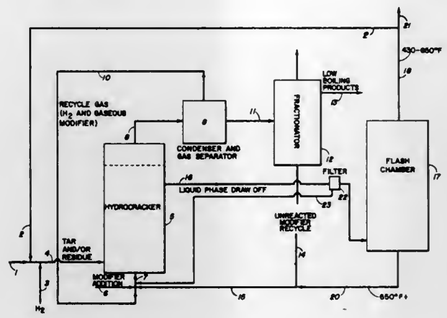
3,622,501
CATALYST AND HYDROCARBON PROCESSES EMPLOYING SAME
Ralph J. Bertolacini, Chesterton, and Louis C. Gutberlet, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 815,063
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **14 Claims**



The catalyst comprises Group VIA and Group VIII metals and/or their compounds and an acidic support comprising large-pore crystalline aluminosilicate material and a large-pore-diameter alumina having a surface area within the range of about 150 to about 500 square meters per gram and an average pore diameter within the range of about 80 to about 200 Angstroms. Preferred Group VIA metals are molybdenum and tungsten. Preferred Group VIII metals are cobalt and nickel. The preferred large-pore crystalline aluminosilicate material is ultrastable, large-pore crystalline aluminosilicate material.

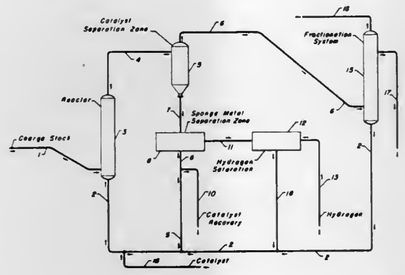
The processes are hydrocarbon conversion processes, a typical example of which is a hydrocracking process. The hydrocracking process comprises contacting in a hydrocracking reaction zone under hydrocracking conditions and in the presence of hydrogen petroleum hydrocarbon fractions with the catalyst of the present invention.

3,622,502
CRACKING HYDROCARBON RESIDUA
Ralph B. Mason, Denham Springs, and Glen P. Hamner, Baton Rouge, both of La., assignors to Esso Research and Engineering Company
Filed July 11, 1969, Ser. No. 840,985
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 **10 Claims**



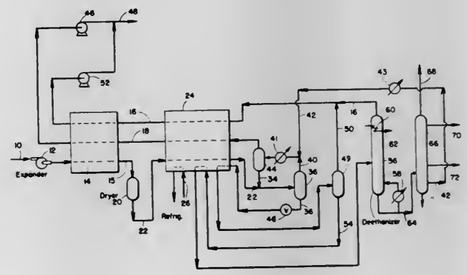
Hydrocarbon residua boiling mostly 1,000° F. and above are catalytically hydrocracked under liquid phase conditions and novel recycle ratios to obtain a product which is predominantly an aromatic gas oil which is eminently suitable either as a solvent or as feed to commercial hydrocracking operations. Although the upper boiling limit of this gas oil may be in the range of 600°–800° F., the process is illustrated with separation into fractions boiling 650° F.– and 650° F.+. An amount of the low-boiling and high-boiling fractions are recycled so that the feed mixture to the reaction zone contains 20 percent of the low-boiling fraction, 40 percent of the high-boiling fraction, and 40 percent of fresh feed while the high-boiling fraction is recycled to extinction at a rate such that the amount present in the feed mixture to the reactor is equal to the amount in the product. 1–25 percent of an acyclic hydrocarbon modifier is added to the reaction mixture to act as a free radical acceptor under such conditions that is has a residence time of 1 hour or less as compared to 1 to 6 hours for the residua-recycle mixture.

3,622,503
HYDROGEN TRANSFER AGENTS FOR SLURRY PROCESSING OF HYDROCARBONACEOUS BLACK OILS
Rudolf H. Hausler, Rolling Meadows, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Mar. 2, 1970, Ser. No. 15,666
Int. Cl. C10g *23/02, 23/06*
U.S. Cl. 208—215 **12 Claims**



Asphaltene-containing hydrocarbonaceous black oils are hydrogenated in a slurry process utilizing a hydrogen transfer agent. The transfer agent constitutes a finely divided sponge metal, saturated with hydrogen at elevated pressure, and admixed with the charge stock to form a reactive slurry. Preferred sponge metals include titanium, zirconium, vanadium, tungsten and nickel. In a specific embodiment, the reactive slurry also contains a hydrorefining catalyst of an unsupported sulfide of a Group V-B metal.

3,622,504
SEPARATION OF HEAVIER HYDROCARBONS FROM NATURAL GAS
Albert Strum, Flushing, N.Y., assignor to Hydrocarbon Research, Inc., New York, N.Y.
Filed Jan. 10, 1969, Ser. No. 790,211
Int. Cl. C10g *5/00*
U.S. Cl. 208—340 **3 Claims**

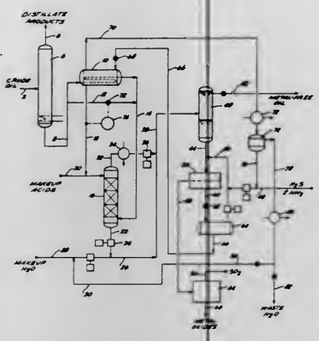


A method for separating heavier hydrocarbon components of a normally gaseous mixture, e.g., natural gas, from a relatively more volatile component, e.g., methane is accomplished by cooling the gas under pressure to effect condensation, adding to the cooled feed a small amount of heavier hydrocarbons, flash separating the mixture, e.g., in a first flash drum, adding to the separated gas phase a small amount of heavier hydrocarbons, and again flash separating the mixture, e.g., in an auxiliary flash drum. Desirably, the heavier hydrocarbons added to the feed gas before the first separation may be the liquid recovered from the auxiliary flash separation. The liquid recovered from the first and auxiliary flash separations is desirably chilled and subjected to a second flash separation at lower pressure to volatilize most of the lighter component, e.g., methane, recovered in the liquid with the heavier components. The liquid resulting from the second flash separation may then be fractionated into such components as ethane, propane, butane and gasoline. The methane-containing gasiform phases from the auxiliary and second flash separations are desirably combined with the fractionated ethane and supplied as the treated natural gas product.

3,622,505
DEMETALLIZATION OF RESIDUAL OILS WITH POLYPHOSPHORIC ACIDS
George L. Tilley, and Donald C. Young, both of Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Dec. 24, 1969, Ser. No. 887,991
Int. Cl. C10g *17/00*
U.S. Cl. 208—252 **12 Claims**

Crude oil residua containing normally incident organometallic impurities, e.g., vanadium and nickel porphyrins, are subjected to extraction with anhydrous liquid polyphosphoric acid at elevated temperatures, whereby the metals in the oil are extracted into the acid phase in the form

of metal chelates of the linear polyphosphoric acids. In a cyclic process, the extracted metals are recovered as sulfides

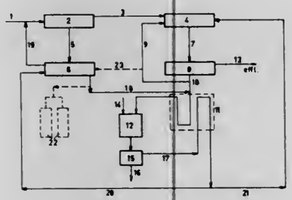


by precipitation with H_2S, and the regenerated polyphosphoric acid is recycled.

3,622,506
REGENERATION OF CRYSTALLINE ALUMINOSILICATES
Armand J. de Rosset, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 710,786, Mar. 6, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 449,282, Apr. 19, 1965, now abandoned.
This application June 27, 1969, Ser. No. 837,315
Int. Cl. C07c 7/12
U.S. Cl. 208—310 **9 Claims**

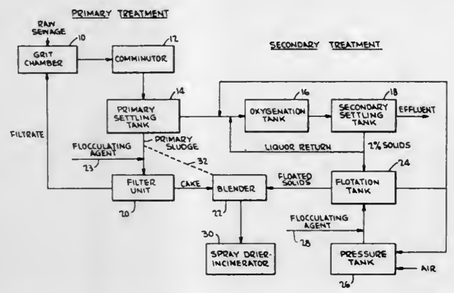
A method for effecting the regeneration of crystalline aluminosilicates which have become deactivated in an adsorption process as a result of the retention therein of high molecular weight polar organic contaminants. Conditions of temperature and pressure are controlled such that regeneration is effected in a liquid-phase system. A mixed liquid regenerant of water and an organic solvent having molecular dimensions such that said organic solvent is not adsorbed within the pores of the adsorbent is employed. The flow rate of the liquid regenerant is controlled to maintain the contacting temperature below a level of about 150° C.

3,622,507
ACTIVATED SLUDGE PROCESSING
Aale Pasveer, The Hague, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van De Volksgezonheid, The Hague, Netherlands
Filed July 17, 1970, Ser. No. 55,917
Claims priority, application Netherlands, July 23, 1969, 6,911,263
Int. Cl. C02c 1/02
U.S. Cl. 210—6 **4 Claims**



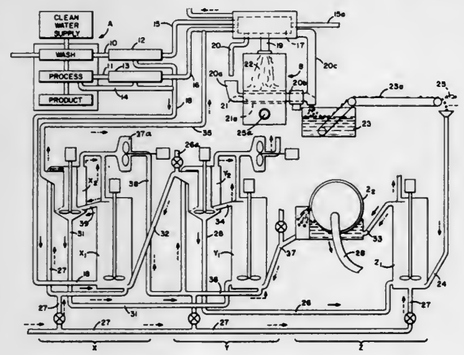
A method is shown for partly decomposing the surplus "activated sludge" from sewage purification plants.
The activated sludge is made alkaline and heat treated between 90° and 180° C. An easily separable residue is separated and the remaining solution containing a large part of the decomposed organic matter of the original sludge is recycled into the activated sludge process.
A treatment plant is described more in detail.

3,622,508
SLUDGE DISPOSAL
Thomas R. Komline, Gladstone, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.
Filed Aug. 19, 1970, Ser. No. 65,185
Int. Cl. C02c 3/00
U.S. Cl. 210—9 **8 Claims**



Sewage is subjected in sequence to primary and secondary treatment to derive separately therefrom a primary sludge formed of heavier solids and a secondary sludge formed of relatively lighter solids. The primary sludge is concentrated by filtering to form a comparatively dry filter cake, and the secondary sludge is delivered into a flotation tank, together with a pressurized solution of air and water, so that air bubbles released incident to the reduction of pressure attach to the agglomerated sludge particles and float them to the surface of the body of liquid within the tank. The floating blanket of sludge is removed from the tank and blended with the filter cake to form a substantially homogeneous liquid slurry which is then spray-dried and incinerated.

3,622,509
MECHANISM AND METHOD FOR A CHAR-RECYCLING COUNTERFLOW WATER CLARIFIER
Amos J. Shaler, 708 W. Park Ave., State College, Pa., and Daniel C. McLean, Elm Street, Lemont, Pa.
Filed July 24, 1969, Ser. No. 844,311
Int. Cl. B01d 15/02, 15/06
U.S. Cl. 210—32 **13 Claims**



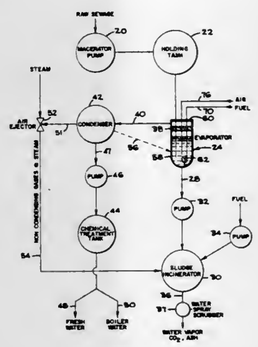
Solid, combustible waste material, all or part of which may comprise particles removed from polluted water, is divided

into two portions, one of which portions is burned in a thermal converter having a char-forming passage therein, while the other portion is formed into char in the char-forming passage. The char thus formed is mixed with the polluted water and the water-char mixture is agitated, preferably by gases from the thermal converter and char-forming passage, to cause adsorption by the char of pollutants in the water and agitating gases. The clarified water is separated from the spent char with its adsorbed load of pollutants, and the spent char is returned to the thermal converter for selective inclusion in a repetition of the foregoing cycle.

3,622,510
RECOVERY OF PROTEINACEOUS MATERIAL FROM WASTE EFFLUENTS
Vincent F. Felicetta, and Robert O. Peacock, both of Bellingham, Wash., assignors to Georgia Pacific Corporation, Portland, Oreg.
Filed Sept. 11, 1968, Ser. No. 759,206
Int. Cl. C02c 5/02
U.S. Cl. 210—54 **10 Claims**

The recovery of proteinaceous material from aqueous plant effluents by treating the effluent with a low molecular weight lignosulfonate.

3,622,511
SEWAGE TREATMENT SYSTEM
James J. Pizzo, and Malcolm F. McNeil, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Sept. 14, 1970, Ser. No. 71,710
Int. Cl. C02c 1/00
U.S. Cl. 210—62 **8 Claims**



A compact mechanical system for treating sewage in which the raw sewage is macerated and supplied to an evaporator that employs a submersible burner wherein some of the sewage is burned and the solids concentration is increased. Steam is driven off and recovered as water for reuse while the concentrated sludge is incinerated.

3,622,512
GREASE COMPOSITIONS OF POLYOL ALIPHATIC ESTERS
John B. Christian, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed May 6, 1969, Ser. No. 822,309
Int. Cl. C10m 7/36, 7/24
U.S. Cl. 252—21 **5 Claims**

Grease compositions comprising (1) as a base fluid a polyol aliphatic ester and (2) as a thickener finely divided sodium montmorillonite clay. The clay may be used as the sole thickener or it may be used in combination with a finely divided fluorinated ethylenepropylene copolymer. Also, molybdenum disulfide or antimony dialkyldithiocarbamate may be added to the compositions. The compositions have both good wear characteristics and good extreme pressure characteristics at temperatures in the −65° F. to 350° F. range. The grease compositions are useful in heavily loaded airframe bearings, screw jack actuators, journal bearings, and in other applications where there is sliding, rolling, oscillating, or other forms of motion where wear and extreme pressure are factors.

3,622,513
OIL BASE FLUID COMPOSITION
George Miller, Houston, Tex., assignor to Oil Base, Inc., Houston, Tex.
Filed May 10, 1968, Ser. No. 728,331
Int. Cl. C10m 1/10, 1/24, 1/16
U.S. Cl. 252—8.5 M **4 Claims**

An oil base drilling fluid having very low oil fluid loss even under extreme conditions of borehole temperature and pressure contains a primary weight material comprising barium sulfate or the like and a small amount of a secondary weight material comprising inert particulate material having a particle size less than about 3 microns. Inert metallic oxides such as iron oxide and titanium dioxide are suitable secondary weighting materials.

3,622,514
IMIDO POLYPHENYL OXIDES AND LUBRICANTS CONTAINING SAME
Joseph John Dickert, Jr., Lower Makefield Township, Bucks County, Pa., and Israel Joel Heilweil, Princeton Township, Mercer County, N.J., assignors to Mobil Oil Corporation
Filed Sept. 12, 1969, Ser. No. 857,591
Int. Cl. C10m 1/42, 1/36
U.S. Cl. 252—47.5 **9 Claims**

This invention provides compounds having a diphenyl ether or a polyphenyl ether moiety between terminal imide structures, as well as lubricant compositions containing same. The new compounds impart extreme pressure, detergency, and antioxidant properties to the lubricant.

3,622,515
ELECTROPHOTOGRAPHIC LIQUID DEVELOPER HAVING A PROTEOLYTIC ENZYME
Yasuo Tamai; Seiichi Taguchi, and Satoru Honjo, all of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 25, 1969, Ser. No. 819,324
Claims priority, application Japan, Apr. 25, 1968, 43/27900
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 **5 Claims**

An electrophotographic liquid developer useful in converting an electrostatic latent image formed on an insulating surface into a visible or material image, comprising a nonpolar, highly insulating carrier liquid and a toner powder which contains therein or absorbs a finely divided proteolytic enzyme, or consists of a finely divided proteolytic enzyme, having a suitable polarity of charge dispersed in said carrier liquid.

3,622,516
BUILT-SOAP MANUFACTURING PROCESS
Chung Yu Shen, St. Louis, Mo.; Norman Earl Stahlheber, Columbia, Ill., and Ronald E. Walters, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 6, 1967, Ser. No. 673,290
Int. Cl. C11d 9/14, 11/00, 13/00
U.S. Cl. 252—109 **1 Claim**

A process for manufacturing a built soap product comprising saponifying fatty acids or glycerides in the presence of

water and excess caustic and adding to the resulting mixture an amount of alkali metal trimetaphosphate sufficient to react with the excess caustic and thereafter drying the mixutre to produce a detergent product which is substantially free of caustic and which contains soap and tripolyphosphate.

3,622,517
SYNTHETIC DETERGENT COMPOSITIONS
Charles J. Norton, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Mar. 6, 1968, Ser. No. 710,777
Int. Cl. C11d *1/12*
U.S. Cl. 252—554 **6 Claims**

A synthetic detergent composition having particular utility in the making of synthetic detergent bars comprising a major proportion of primary alkane sulfonates derived predominantly from alpha-olefins containing from 11 to 20 carbon atoms, especially 18 to 20 carbon atoms, and minor amounts, each, of the following: (a) at least one water-soluble inorganic salt, (b) a plasticizing and/or binding agent such as a higher molecular weight alcohol, a higher molecular weight fatty acid, or a polyhydric alcohol, or mixtures thereof, and (c) a mineral oil which is substantially free of alkanes containing less than 17 carbon atoms. The mineral oil component most advantageously is obtained from the unreacted alkanes carried over from the sulfitation of the alpha-olefins.

3,622,518
WATER-IN-OIL INVERT EMULSIONS
James G. Atherton, Roselle, and Harold C. Nemeth, Chicago, both of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.
Filed Sept. 27, 1968, Ser. No. 763,379
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 **10 Claims**

Invert emulsions containing arylaliphatic acid salts of alkoxylated arylaliphatic amines.

3,622,519
GASOLINE, DIESEL FUEL OR ANTIKNOCK FLUIDS CONTAINING AN EXHAUST EMISSION REDUCING ADDITIVE
Henry G. Braxton, Jr., Franklin Village, Mich., assignor to Ethyl Corporation, New York, N.Y.
Original application Feb. 27, 1967, Ser. No. 619,003, now Patent No. 3,547,958. Divided and this application Mar. 13, 1970, Ser. No. 19,465
Int. Cl. C09k *3/00*; C10l *1/18*
U.S. Cl. 252—386 **16 Claims**

Mono- and di-alkanoates, aralkanoates and benzoates of benzylidene bisphenols reduce combustion chamber deposit formation and exhaust hydrocarbon emission increase of internal combustion engines.

3,622,520
REGENERATION OF A COKE-DEACTIVATED CATALYST COMPRISING A COMBINATION OF PLATINUM, RHENIUM, HALOGEN AND SULFUR WITH AN ALUMINA CARRIER MATERIAL
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 805,380, Mar. 7, 1969. This application July 23, 1969, Ser. No. 844,200
Int. Cl. C10g *35/06*; B01j *11/02*
U.S. Cl. 252—415 **12 Claims**

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a rhenium component, a halogen component, and a sulfur component with an alumina carrier material and which has been deactivated by deposition of carbonaceous material thereon during a previous contacting with a hydrocarbon charge stock at hydrocarbon conversion conditions, is regenerated by the sequential steps of: (1) stripping the sulfur therefrom by contacting with a first gaseous mixture comprising hydrogen, H_2O, and HCl; (2) purging hydrogen from contact with the catalyst with an inert gas stream; (3) burning carbon from the resulting catalyst at a relatively low temperature with a substantially sulfur-free second gaseous mixture containing relatively small amounts of oxygen, H_2O, and HCl; (4) treating the resulting catalyst with the second gaseous mixture at a relatively high temperature; (5) purging oxygen from contact with the catalyst with an inert gas stream; and (6) reducing the resulting catalyst by contacting with a substantially sulfur-free third gaseous mixture comprising hydrogen, H_2O, and HCl. Key feature of the subject regeneration method involves the use of both H_2O and HCl in the gaseous mixtures used in the four major steps thereof (i.e., steps (1), (3), (4), and (6)). Furthermore, in all of these steps the mole ratio of H_2O to HCl in the gas streams is maintained at a value selected from the range of about 20:1 to about 100:1.

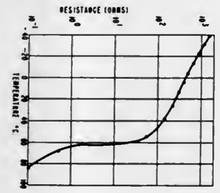
3,622,521
OLEFIN POLYMERIZATION WITH CHROMIUM AND TITANIUM-CONTAINING COMPOUNDS
John P. Hogan, and Donald R. Witt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Aug. 21, 1967, Ser. No. 661,846
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 252—430 **9 Claims**

Catalyst formed by first adding to a support a chromium-containing compound using an aqueous medium and then adding a titanium-containing compound using a nonaqueous medium.

3,622,522
POLYMERIZATION CATALYST
Bertalan Horvath, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 8, 1968, Ser. No. 727,706
Int. Cl. C08d *3/04, 3/08*
U.S. Cl. 252—430 **7 Claims**

A catalyst is formed by combining a support material with (1) a chromium-containing compound such as chromium trioxide and (2) at least one of a gallium-containing compound such as gallium isopropoxide, and a tin-containing compound such as tin isopropoxide, and then activating the catalyst by heating at a temperature of at least 1,700° F. Polymers such as polyethylene formed using the catalyst of this invention have a narrow molecular weight distribution.

3,622,523
AIR FIREABLE COMPOSITIONS CONTAINING VANADIUM OXIDE AND BORON, AND DEVICES THEREFROM
Rajnikant B. Amin, and Lewis C. Hoffman, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 30, 1969, Ser. No. 872,594
Int. Cl. H01b *1/02*; B44d *1/20*
U.S. Cl. 252—514 **13 Claims**



Screen printable, air fireable compositions comprising a vanadium glass, boron, and as optional components, noble metal and/or a low melting inorganic binder, wherein the glass contains 5–55 percent vanadium metal content. Various electronic devices are readily made from these compositions. A unique feature of the devices is their sensitivity to voltage as well as temperature. Consequently, the fired compositions are particularly useful wherever switching devices are needed, e.g., as transient suppressors in electronic equipment.

3,622,524
COMPOSITIONS OF EPOXY RESINS CURED WITH ORGANOTIN COMPOUNDS
Mark Markovitz, and Leo S. Kohn, both of Schenectady, N.Y., assignors to General Electric Company
Filed Sept. 3, 1968, Ser. No. 757,168
Int. Cl. C08g *30/10*
U.S. Cl. 260—2 EC **5 Claims**

Epoxy resins cured with organotin compounds provide electrical insulation which is characterized by good dissipation factor, high-heat distortion temperature and good corona resistance.

3,622,525
POLYIMIDES AND POLYIMIDE PRECURSORS
Gerald W. Miller, Pittsburgh, Pa., assignor to Mobay Chemical Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 584,645, Oct. 6, 1966, now Patent No. 3,489,696. This application Jan. 26, 1967, Ser. No. 611,815
Int. Cl. C08g *22/44, 22/00*
U.S. Cl. 260—2.5 R **9 Claims**

Compounds of the class of diaryl sulfones having at least one pair of vicinal carboxylic acid groups on at least one of the aryl groups are reacted with isocyanate to prepare imides and polyimides.

3,622,526
WATER VAPOR PERMEABLE POROUS SHEET STRUCTURES AND PROCESS THEREFOR
Bruno Zorn, Cologne-Flittard, and Harald Oertel, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 7, 1967, Ser. No. 688,692
Claims priority, application Germany, Dec. 13, 1966, F 50915
Int. Cl. C08g *22/44, 51/08, 53/08*
U.S. Cl. 260—2.5 AK **6 Claims**

Water-permeable porous sheet structures are prepared by adding an inorganic filler which has a shaken volume of from 3 to 20 cc. per gram into a solution of a polyurethane urea and then treating the polyurethane-urea solution with a nonsolvent which is miscible with the solvent and shaping the solution to form a water-permeable porous sheet structure with removal of the solvent and the nonsolvent.

3,622,527
MICROPOROUS SHEET AND A PROCESS FOR THE PRODUCTION THEREOF
Dieter Dieterich, Leverkusen; Artur Reischl, Leverkusen, and Harro Witt, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 22, 1968, Ser. No. 723,306
Claims priority, application Germany, Apr. 28, 1967, F522761VC/39B
Int. Cl. B29d *27/04, 27/08*; C08g *22/00, 22/44*
U.S. Cl. 260—2.5 AY **13 Claims**

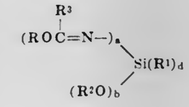
Microporous sheets or molded articles, permeable to water vapor are prepared from sedimenting and redispersible aqueous polyurethanes. The dispersions are in microgel form, the particles having an average minimum diameter of from 2 to 500 microns, preferably 8 to 100 microns. A second component binds the microgel together without impairing the microporosity. The products of the invention are useful as artificial leather in the preparation of raincoats, handbags, belts, shoes, upholstery and also as vibration and sound-damping materials.

3,622,528
POLYETHYLENIMINE FATTY ACID EPICHLOROHYDRIN PRODUCT
Juan Longoria, III, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 13, 1968, Ser. No. 736,556
Int. Cl. C08g *33/08*
U.S. Cl. 260—18 **9 Claims**

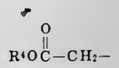
An improved polyethylenimine adduct for cellulosic products is prepared by condensing polyethylenimine with 0.05–0.4 mole of a C_{12}—C_{22} fatty acid and thereafter capping the residual free amino groups by reaction in aqueous solution at 0°–50° C. with epichlorohydrin. The resulting product is an effective softener, sizing agent, and wet-strength additive for paper and other cellulosic products with superior color stability and increased resistance to yellowing.

3,622,529
RTV SILICONE COMPOSITION CONTAINING AN IMIDATOSILANE
Milton L. Evans, Schenectady, N.Y., assignor to General Electric Company
Filed Mar. 14, 1969, Ser. No. 807,417
Int. Cl. C08f *21/04*
U.S. Cl. 260—18 S **23 Claims**

Composition stable under substantially anhydrous conditions and curable to the solid, elastic state in the presence of moisture which comprises a silanol chain-stopped polydiorganosiloxane in which the organo groups are selected from the group consisting of hydrocarbyl, halohydrocarbyl and cyanoalkyl and an imidatosilane of the formula



wherein R^1 is an organic radical of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl and cyanoalkyl, R. and R^2 are each organic radicals of not more than 18 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl and alkoxyhydrocarbyl, R^3 is an organic radical of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl, alkoxyhydrocarbyl, dialkylamino and



wherein R^4 is an organic radical selected from the group consisting of aliphatic hydrocarbyl, aliphatic halohydrocarbyl, aliphatic nitrohydrocarbyl, and



wherein R^5 and R^6 are each aliphatic hydrocarbyl, *a* is an integer of 2 to 4, inclusive, *b* is an integer of 0 to 2, inclusive, *d* is an integer of 0 to 1, and the sum of *a*, *b* and *d* is 4.

3,622,530
TEXTILE FIBERS, FILMS, SHAPED ARTICLES AND THE LIKE PARTICULARLY STABLE TO HEAT, LIGHT AND AGEING

Millo Branchesi, Terni, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 4, 1968, Ser. No. 709,907
Claims priority, application Italy, Mar. 7, 1967, 13,414 A/67
Int. Cl. C08f *45/58, 45/60, 45/62*
U.S. Cl. 260—23 S 7 Claims

Stabilized poly-alpha-olefin compositions comprising polymer and up to 5 percent by weight thereof of stabilizing mixture of:

a. a thioester derived from thiodipropionic acid or from bis-β-hydroxyethyl sulfide (thiodiglycol);

b. a phosphite having the formula:



wherein X is oxygen or sulfur and R, R′, R″ are the same or different radicals selected from the group consisting of unsubstituted or hydroxy substituted alkyl, aryl and alkylaryl radicals;

c. a phenolic antioxidizing agent;

d. an organotin compound;

e. a metallic soap, selected from the group consisting of the stearates of Ca, Mg and the like; and optionally a basic nitrogen containing polymer.

3,622,531
STABLE AQUEOUS VINYL ACETATE POLYMER EMULSIONS AND PROCESS FOR PREPARING SAME

Alio J. Buselli, Livingston; Charles E. Blades, Berkeley Heights; Louise Speers Croix, Summit, N.J., and Sidney Ariemma, Fishkill, N.Y., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of application Ser. No. 583,623, May 9, 1956, now abandoned. This application Dec. 28, 1961, Ser. No. 162,981
Int. Cl. C08f *1/13, 3/56*
U.S. Cl. 260—29.6 21 Claims

There are disclosed vinyl ester polymer emulsions containing at least two nonionic, polyoxyethylene condensate emulsifying agents, at least one of which is relatively hydrophillic and at least one of which is relatively hydrophobic. Prior to polymerization the monomer emulsion is homogenized, preferably in contact with an emulsion polymerization catalyst. The hydrophillic, nonionic emulsifying agents have a cloud point above about 190° F. while the hydrophobic, nonionic emulsifying agents have a cloud point between about 80° and 160° F. The cloud points are determined in a 1 percent aqueous solution.

3,622,532
CROSS-LINKABLE HOMO- AND COPOLYMERS

Gunter Kolb, Cologne, Stammheim, and Gerhard Balle, Cologne, Flittard, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 13, 1969, Ser. No. 824,306
Claims priority, application Germany, June 7, 1968, P 17 70 592.9
Int. Cl. C08f *37/14, 37/04, 37/00*
U.S. Cl. 260—29.6 H 2 Claims

Cross-linked homopolymers and copolymers based on α, β-unsaturated acylaminomethylene carbamic acid esters, their utility as binders for pigments, fleeces and textile materials, as paper auxiliaries and as coating agents and process of producing the same by radical polymerization.

3,622,533
POLYACRYLAMIDE GELS CONTAINING LATENT THERMAL DEGRADATION INHIBITOR

Michael Niall Desmond O'Connor, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 664,247, Aug. 30, 1967, now abandoned. This application Nov. 21, 1969, Ser. No. 878,883
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 N 11 Claims

Cyanamide, guanidine, succinimide, and urea inhibit the cross-linking of polyacrylamide without inhibiting the reaction or reactions by which monomeric acrylamide is converted to nontoxic form when aqueous gels containing a final polymer predominately or wholly composed of acrylamide residues and containing a final polymerization catalyst is heated at temperatures above 70° C. until apparently dry.

3,622,534
GELLED ELASTOMER COMPOSITIONS

Robert D. Timmons, Tinley Park, and Roy J. Betty, Jr., Chicago, both of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

Filed June 27, 1968, Ser. No. 740,786
Int. Cl. C08d *9/00*
U.S. Cl. 260—32.8 A 16 Claims

Thickened elastomer compositions comprising a synthetic elastomer such as butyl or neoprene rubber, elastomeric solvent such as textile spirits and a di-substituted urea such as that formed by the in situ reaction of a long chain aliphatic amine and isocyanate, which are useful as rubber adhesives, sealants, and coatings.

3,622,535
PROCESS FOR PREPARING MINERAL REINFORCED POLYLACTAM COMPOSITIONS

Robert Z. Greenley, St. Louis, and Jerry M. Sugerman, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 27, 1969, Ser. No. 794,386
Int. Cl. C08g *20/18, 51/04;* C09c *3/00*
U.S. Cl. 260—37 N 15 Claims

Improved lactam slurries containing a major amount of a mineral reinforcing agent suitable for conversion to a reinforced polylactam composition by the initiated, anionic polymerization process and essentially containing an effective amount of from about 0.1 to about 1.0 weight percent, based on the mineral, of an adduct prepared by the reaction of (1) a higher alkylbenzenesulfonic acid, wherein the alkyl group contains from nine to 15 carbon atoms, with (2) an ω-aminoalkylenetrialkoxysilane, wherein the alkylene group contains from two to 10 carbon atoms and each of the alkoxy groups contain from one to three carbon atoms. The presence of said adduct acts as a fluidifying agent to provide a lower viscosity slurry at a given mineral concentration enabling better filling of molds in the cast-polymerization process and/or permitting the use of slurry compositions with higher mineral concentrations with processing equipment operating near the upper limit of prior art mineral concentration for any particular mineral-lactam composition.

3,622,536
EXOTHERMIC HOT TOPS

Ronald W. Ruddle, Rocky River, and Michael Yendrek, Cleveland, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Oct. 17, 1968, Ser. No. 768,554
Int. Cl. C08g *51/10;* C08k *1/14*
U.S. Cl. 260—38 4 Claims

A composition for lining the inner surface of a casting mould for casting metal or of a hot top for such a mould which comprises ballmill dust, a fluoride, a binder resin and a specific combination of inorganic fibers.

3,622,537
STABILIZED CARBONIZABLE COMPOSITIONS

Donald G. Needham, and George R. Hill, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Mar. 10, 1969, Ser. No. 805,854
Int. Cl. C08f *45/08, 45/56*
U.S. Cl. 260—41 B 8 Claims

Polymeric compositions containing minor amounts of antioxidant, UV stabilizers and carbon black are rendered tracking resistant (breakdown under high voltage) by incorporating a metal oxide pigment and, optionally, magnesium oxide.

3,622,538
STABILIZED PIGMENTED POLYCARBONATE RESIN

David R. Green, Mt. Vernon, Ind., assignor to General Electric Company

Filed Aug. 19, 1969, Ser. No. 851,439
Int. Cl. C08f *51/58*
U.S. Cl. 260—45.95 4 Claims

An aromatic polycarbonate composition that is color stable, which composition consists of an aromatic polycarbonate resin having in admixture therewith 0.01–0.1 weight percent of an organic phosphite and 0.001–0.05 weight percent of glycerol, all of which are based on the weight of the aromatic polycarbonate resin.

3,622,539
STABILIZED POLYOLEFIN RESIN COMPOSITIONS

Donald E. Paul, Boxboro, and Richard A. Hebert, Chelmsford, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Feb. 24, 1969, Ser. No. 801,784
Int. Cl. C08f
U.S. Cl. 260—45.75 R 7 Claims

This disclosure relates to the use of certain homogeneous chromium-oxide containing titanium dioxide reaction products as ultraviolet stabilizers for polyolefins.

3,622,540
METHOD OF CURING EPOXY RESINS USING N-(AMINOALKYL)-LACTAMS OR DIAZA-BICYCLO-ALKENES

Sei Hashimoto; Keizo Nakatani, and Shoji Suzuki, all of Kyoto, Japan, assignors to San-Abbott Limited, Kyoto, Japan

Filed June 12, 1969, Ser. No. 832,858
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 8 Claims

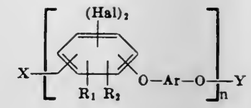
This invention relates to the method of hardening an epoxy resin containing 1,2-epoxy group in the presence of an N-(aminoalkyl)-lactam.

3,622,541
HALOGEN-CONTAINING, HIGH-MOLECULAR, SOLUBLE, THERMOPLASTIC POLYARYL POLYETHERS

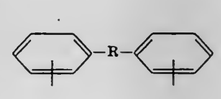
Gerhard Darsow, Krefeld-Uerdingen; Ludwig Bottenbruch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 9, 1969, Ser. No. 823,493
Claims priority, application Germany, June 7, 1968, P 17 70 593.0The portion of the term of the patent subsequent to Nov. 6, 1970, has been disclaimed.
Int. Cl. C08g *23/00*
U.S. Cl. 260—61 9 Claims

The invention relates to new halogen-containing, high-molecular, soluble, thermoplastic polyaryl polyethers of the formula (I)



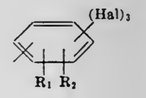
in which R_1 and R_2 denote hydrogen or identical or different alkyl or alkoxy radicals with one to four carbon atoms; Hal is fluorine, chlorine or bromine; Ar is an unsubstituted or substituted phenylene, naphthylene, diphenylene or polynuclear bivalent aromatic radical of the formula (II)



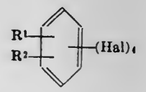
where R denotes a bivalent aliphatic, cycloaliphatic or araliphatic radical with one to eight carbon atoms or —O—, —S—, —SO—, —SO_2—or —CO—, X denotes a halogen atom or the radical

—O —Ar —OH,

Y denotes a hydrogen atom or the radical



and *n* denotes an integer from about 3 to about 200. These new polyethers are produced by reacting molar amounts of a tetrahalobenzene or of several tetrahalobenzenes of the formula (III)



and of a bisphenolate or of several bisphenolates of the formula (IV)

Me —O —Ar —O —Me

in which Me denotes an alkali metal, in a polar organic solvent at temperatures between about 80° C. and about 180° C.

3,622,542
METHOD OF PRODUCING POLYURETHANES

H. Robert Klouman, Timonium, and Henry Gould, Pikesville, both of Md., assignors to Alcolac Chemical Corporation, Baltimore, Md.

Filed Apr. 2, 1969, Ser. No. 812,889
Int. Cl. C08g *22/36, 22/44*
U.S. Cl. 260—77.5 AC 5 Claims

Polyurethane elastomers and flexible and rigid polyurethane foams of improved physical characteristics are obtained by employing N,N′-tetramethyl-2-hydroxy-1,3-diamino propane as catalyst in reactions involving organic compounds containing one or more hydroxyl groups with organic compounds containing one or more hydroxyl groups with organic compounds containing one or more reactive groups of the formula—NCY in which Y is either oxygen or sulfur.

3,622,543
POLYAMIDES CONTAINING METAL SALT OF PYRIMIDINE OR TRIAZINE COMPOUND

John David Garforth, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 9, 1969, Ser. No. 790,159
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 R 6 Claims

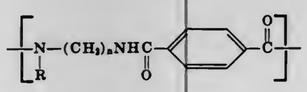
Fiber-forming polyamides having an increased affinity for Basic Dyestuffs which are obtained by polymerizing polyamide forming components in the presence of a triazine or pyrimidine compound which contains at least one atom or group which is capable of reacting with amino groups present in the polyamide forming compounds, and which also contains at least one sulfonated arylamino group.

3,622,544
POLYTEREPHTHALAMIDES OF N-ARYL-SUBSTITUTED SHORT CHAIN DIAMINES

John Richard Caldwell, and George Joseph O'Neill, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,537
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 11 Claims

Linear terephthalamide polymers having high tensile modulus composed of recurring units having the structural formula:



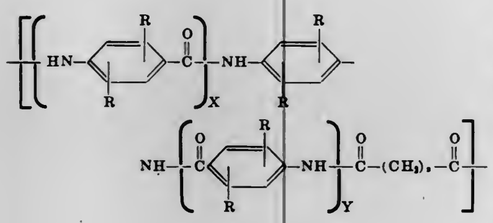
wherein *n* is 2 or 3 and R is aryl.

3,622,545
HIGH MOLECULAR WEIGHT AROMATIC-ALIPHATIC ORDERED COPOLYAMIDES

Veronika Foldi, Wilmington, Del., and Joseph C. Shivers, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1969, Ser. No. 876,988
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 13 Claims

High molecular weight aromatic-aliphatic ordered copolyamides consisting essentially of repeating structural units corresponding to the formula



wherein X and Y are individually selected positive integers and the sum of X+Y is an integer within the range of 4 to 24, inclusive, Z is an integer from 2 to 12, inclusive, and each R is individually selected from the group consisting of hydrogen and a monovalent radical replacement for hydrogen on nuclear carbon which is nonreactive in polyamidation reactions, are prepared. These copolyamides are useful in the preparation of shaped articles (e.g., fibers and films).

3,622,546
UNSATURATED ESTERS OF POLYMERS AND THEIR PREPARATION

Fritz Engelhardt, Frankfurt-Fechenheim; Hanswilli von Brachel, Offenbach, and Wilhelm Kunze, Frankfurt-Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Filed June 3, 1968, Ser. No. 734,176
Claims priority, application Germany, June 3, 1967, C 42530
Int. Cl. C08f *3/64, 3/66, 19/10*
U.S. Cl. 260—78.5 7 Claims

An allyl or methallyl ester of a carboxyl-containing polymer is prepared by reacting a polymer containing carboxyl groups, in the form of an alkali metal salt, with an alkenyl halide in the presence of a cuprous salt catalyst.

3,622,547
VULCANIZATION SYSTEM FOR ACRYLATE ELASTOMERS (TRITHIOCYANURIC ACID AND DITHIOCARBAMIC ACID DERIVATIVES)

Nicholas P. Ermidis, West New York, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 29, 1969, Ser. No. 872,010
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 P 9 Claims

A vulcanizable acrylic elastomer composition having chlorine or epoxy groups contains as a vulcanization system trithiocyanuric acid and a dithiocarbamic acid derivative. 2,2'-dithio-bis(benzothiazole) is included when maximum scorch protection is desired.

3,622,548
POLYMERS AND CATALYST COMPOSITIONS

Hans Emde; Kurt Benedikter, and Peter Hegenberg, all of Marl, Germany, assignors to Chemische Werke Huels A.G., Marl, Germany

Filed Sept. 1, 1967, Ser. No. 664,908
Claims priority, application Germany, Sept. 2, 1966, C 40009
Int. Cl. C08f *1/56, 15/04*
U.S. Cl. 260—80.78 15 Claims

Readily vulcanizable ethylene-olefin copolymers having a desired molecular weight range are produced on the basis of a Ziegler catalyst activated by a perchlorocrotonic acid halide or ester.

3,622,549
VULCANIZATION OF FLUOROELASTOMERS

William John Keller, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 536,641, Mar. 23, 1966, now abandoned. This application Aug. 27, 1969, Ser. No. 853,529
Int. Cl. C08f *27/08*
U.S. Cl. 260—80.77 11 Claims

Process for vulcanizing fluoroelastomers by heating the elastomer in the presence of a secondary monoamine and an aromatic polyamine or aromatic polyol. Vulcanizates with outstanding physical properties are obtained from this reasonably rapid, low-scorch curing process.

3,622,550
COPOLYMERS OF ALPHA PINENE AND CERTAIN SUBSTITUTED BUTADIENES AND PROCESS OF PREPARATION

Anargiros Pete Patellis, Rostraver Township, Westmoreland County, and John F. Holohan, Jr., Mount Lebanon Township, Allegheny, both of Pa., assignors to Pennsylvania Industrial Chemical Corporation

Filed Oct. 31, 1969, Ser. No. 873,126
Int. Cl. C08d *3/06, 3/10*
U.S. Cl. 260—82.1 5 Claims

A process for producing resinous copolymers of alpha pinene and certain substituted butadienes which comprises contacting a mixture of monomers of alpha pinene and a substituted butadiene selected from the group consisting of isoprene and piperylene with a cocatalyst consisting essentially of aluminum chloride and an organosilicon compound

in an inert diluent. The copolymers are characterized by a high softening point, good resistance to color degradation by heat and the ability to impart cohesive strength in coating and adhesive applications.

3,622,551
COPOLYMERS FROM PARA TERTIARY BUTYL STYRENE AND A DIOLEFIN AND METHOD FOR PRODUCING SAME

Bernard J. Davis, Pass Christian, Miss., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,526
Int. Cl. C08d *3/02*; C08f *19/06*
U.S. Cl. 260—84.1 16 Claims

Copolymers are prepared from a diolefin and para tertiary butyl styrene in the presence of a Friedel-Crafts catalyst at 10°–90° C. The diolefin may be isoprene, piperylene and cyclopentadiene in a concentration ranging from about 95 percent to about 5 percent based upon the weight of the monomers. Resins thus produced are essentially colorless and have excellent color stability and show outstanding qualities when used in pressure sensitive adhesive systems.

3,622,552
PROCESS FOR PRODUCING CRYSTALLINE OLEFIN POLYMERS AND CATALYST COMPOSITIONS THEREFOR

Junichi Fukuda; Kijuro Tashiro; Michio Koga; Toshio Hori; Heikichiro Ogawa; Ellichi Takeshita, and Katsuo Akaiwa, all of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 543,535, Apr. 19, 1966, now abandoned. This application Oct. 3, 1969, Ser. No. 866,082 Claims priority, application Japan, Apr. 27, 1965, 40/24656, Mar. 2, 1966 41/12740
Int. Cl. C08f *1/56, 3/10*; B01j *11/84*
U.S. Cl. 260—88.2 3 Claims

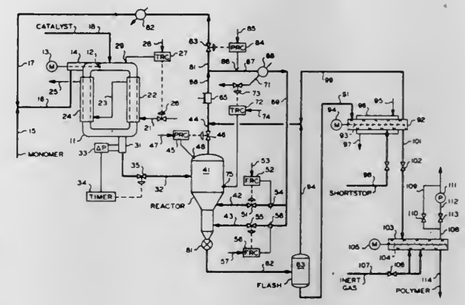
Polymerization of olefins and catalyst therefor, said catalyst comprising polymerizing at least one member selected from the group consisting of ethylene, propylene, butene-1 and styrene in the presence of a catalyst composition comprising (1) an organoaluminum compound having the formula, AlR_2X wherein R represents a hydrocarbon residue selected from the group consisting of alkyl, aryl, aralkyl, alkaryl and cycloalkyl groups and X represents a halogen atoms selected from the group consisting of chlorine, bromine and iodine, (2) a halide of a transition metal of Groups IV, V and VI of the Periodic Table of the Elements, and (3) an aliphatic carboxylic ester having a side chain on a carbon atom in a α-position to the ester carbon atom, the molar proportion of said organoaluminum compound, said halide of transition metal and said aliphatic carboxylic ester being 10–0.5 : 1 : 0.01–1.

3,622,553
AGITATED REACTOR AND GAS FLUIDIZED BED REACTOR IN SERIES FOR POLYMERIZATION OF VINYL CHLORIDE

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 18, 1967, Ser. No. 691,609
Int. Cl. C08f *3/30, 1/04*
U.S. Cl. 260—92.8 5 Claims

Vinyl chloride, alone or with a suitable comonomer, is continuously polymerized under liquid phase bulk conditions in an agitated reactor to a solid polymer content about 15 percent. A portion of the reaction effluent is continuously or periodically withdrawn from the agitated reactor and flushed into a fluidized bed reactor wherein vaporous vinyl chloride is employed as the fluidizing gas. Vinyl chloride gas is withdrawn and at least a portion thereof reintroduced into the fluidized reactor as the fluidizing gas. The excess vinyl chloride gas can be condensed and recycled to the agitated reactor. A polymer stream is withdrawn and passed through a monomer recovery system which can include a wash tower, a



flash tank, drying conveyors and inert gas and/or vacuum strippers.

3,622,554
PRODUCTION OF CROSS-LINKED POLYETHYLENE FLOCK

Erich Behr, Troisdorf, and Rolf Beckmann, Seigburg, both of Germany, assignors to Veba-Chemie AG, Gelsenkirchen, Buer, Germany

Filed Feb. 9, 1967, Ser. No. 614,823
Claims priority, application Germany, Feb. 14, 1966, D 49359
Int. Cl. C08f *47/10*
U.S. Cl. 260—2.5 6 Claims

Production of cross-linked polyethylene flock by introducing a cross-linking agent and polyethylene into a zone under pressure and under a temperature sufficiently high to support cross-linking of the polyethylene and then abruptly releasing the pressure whereby a cross-linked polyethylene flocculent material is formed.

3,622,555
METHOD FOR PRODUCING LOW BULK DENSITY, FREE-FLOWING POLYMER POWDERS

Raymand A. Rothenbury, and Richard W. Ford, both of Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed June 2, 1969, Ser. No. 829,805
Int. Cl. C08d *5/00*; C08f *1/88, 47/02*
U.S. Cl. 260—94.9 12 Claims

Free-flowing powders of normally solid, thermoplastic organic polymers, e.g., polyethylene, having decreased bulk densities are prepared by (1) dispersing a particulate form of the thermoplastic polymer in a nonsolvent liquid medium containing a nonionic wetting agent, (2) heating the resulting dispersion to a temperature from about 10° C. below the Vicat softening point to about the Vicat softening point of the polymer while subjecting the dispersion to agitation and (3) cooling the dispersion under continued agitation. Such powers are useful in flame spraying, fluid-bed coating and the like.

3,622,556
PREPARING LIGHT-COLORED PROTEIN ISOLATE FROM SUNFLOWER MEAL BY ALKALI EXTRACTION UNDER AN INERT GAS BLANKET FOLLOWED BY MEMBRANE ULTRAFILTRATION

David E. O'Connor, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 8, 1969, Ser. No. 856,195
Int. Cl. A23j *1/14*
U.S. Cl. 260—123.5 7 Claims

Light-colored protein is recovered from sunflower meal by alkali extracting the meal under an inert gas blanket to form a solid spent meal phase and a liquid extract phase separating

the phases, and acid precipitating protein from the extract phase. In another and preferred embodiment, the extract directly after it is separated from the spent meal in the separation step is subjected to membrane ultrafiltration to remove green color-forming precursors and to form a retentate which does not contain these precursors, and protein is recovered from the retentate. The isolated protein is suitable for use as a protein supplement additive for food products without imparting to the food products an unappetizing color.

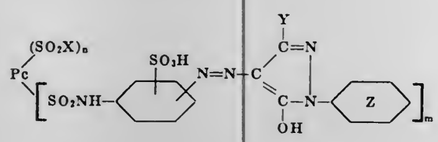
3,622,557

WATER-SOLUBLE PYRAZOLONE AZO DYESTUFFS DERIVED FROM PHTHALOCYANINE

Andre Louis Sailer, and Pierre Frank, both of Saint Clair du Rhone, France, assignors to Ugine Kuhlmann, Paris, France

Filed May 15, 1968, Ser. No. 729,368
Claims priority, application France, May 17, 1967, 106,642
Int. Cl. C09b *45/48*; **D06p** *1/10*
U.S. Cl. 260—147 **3 Claims**

Dyestuffs of the formula:



in which Pc represents the copper phthalocyanine residue, X represents an -OH or -NH-alkyl-OH group, Y represents a methyl or carboxyl group, the benezene ring Z may be substituted by at least one halogen atom or alkyl or sulpho group, *m* represents an integer from 1 to 4, and *n* represents an integer from 0 to 3, the sum *m+n* being equal to 4, and the possible substitutents of the ring Z may be the same or different when *m* is equal to or greater than 2. These dyestuffs are suitable for the dyeing of animal fibers, for example, leather in bright shades ranging from green to blue and the colorations are very uniform and remarkably fast to light, washing and solvents.

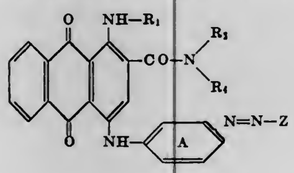
3,622,558

DIFFICULTLY WATER-SOLUBLE ANTHRAQUINONE DYESTUFFS

Hans Peter Kolliker, Munchenstein, and Mario Christen, Reinach, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Original application Feb. 20, 1967, Ser. No. 617,060, now Patent No. 3,541,182. Divided and this application July 24, 1969, Ser. No. 860,457
Int. Cl. C09b *1/42, 29/08, 43/12*
U.S. Cl. 260—152 **8 Claims**

Dyestuffs free from salt-forming, water-solubilizing groups which dissociate acid in water which are of the formula



wherein

R_1 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, hydroxy-lower alkyl, alkenyl of at most four carbon atoms, cyclohexyl or benzyl, and

R_4 represents hydrogen, lower alkyl, hydroxy-lower alkyl or R_3 and R_4 taken together with the nitrogen atom to which they are linked, represent pyrrolidino, piperidino or morpholino,

Z represents phenyl or phenyl monosubstituted by chlorine, bromine, fluorine, nitro, lower alkyl, lower alkoxy, hydroxy-lower alkyl, lower alkoxy-carbonyl, lower alkyl-sulfonyl or lower alkyl-sulfonyloxy,

and ring A bears no further substituents or is further monosubstituted by methyl, methoxy or chlorine, are particularly suited for the dyeing of hydrophobic organic fiber materials, especially polyethylene glycol terephthalate fibers but also other polyester fibers and synthetic polyamide and polyacrylonitrile fibers. The dyeings on polyethylene glycol terephthalate have great color strength and excellent fastness to sublimation and light.

3,622,559

METHOD FOR PRODUCING PECTINS HAVING HIGH RESISTANCE TO BREAKAGE AND HIGH CAPABILITY FOR GELLING IN THE PRESENCE OF CALCIUM

Raidon R. Wiles, and Christian J. B. Smit, both of Corona, Calif., assignors to Sunkist Growers Inc., Los Angeles, Calif.

Filed Nov. 1, 1967, Ser. No. 679,714
Int. Cl. C08b *19/02*
U.S. Cl. 260—209.5 **13 Claims**

The invention involves the production of pectins, especially from citrus peel, and produced for use in gels where strong resistance to breakage and substantial freedom from weeping are desired. While such pectins are produceable from some other fruits such as apples, and also from beets, these pectins are preferably obtained from citrus peels such as lemon and orange peels. Chemically, the structure is generally conceived as being made up of long chains of anhydro-galacturonic acid units. The carboxyl groups of the galacturonic acid units are either free, present in the form of a salt, an acid amide, or a methyl ester, somewhat as indicated in FIG. 2.

3,622,560

PREPARATION OF KETAL SUGARS

Nathan Chadwick Hindley, Welwyn Garden City; Michael James O'Leary, Digswell, Welwyn, England, and Niklaus Haider, Oberwill, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 3, 1969, Ser. No. 816,875
Claims priority, application Great Britain, Feb. 4, 1969, 5,861/69
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **15 Claims**

Preparation of ketal sugars from sugars utilizing ferric chloride and ferric bromide as a catalyst.

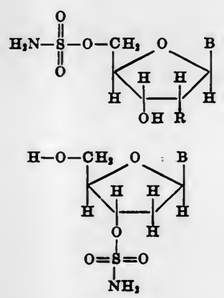
3,622,561

NUCLEOSIDE SUGAR ESTERS OF SULFAMIC ACID AND METHOD FOR PREPARATION OF THE SAME

Morris J. Robins; Roland K. Robins, and Dennis A. Shuman, all of Salt Lake City, Utah, assignors to University of Utah

Filed Aug. 18, 1969, Ser. No. 851,041
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R **6 Claims**

Novel nucleoside sugar esters of sulfamic acid having the formula



where R is selected from the group consisting of hydrogen and hydroxyl and B is a nucleic acid base selected from the group consisting of adenine, hypoxanthine, guanine, cystosine, uracil, and thymine and a method for preparing the esters. The esters are useful as antibacterial, antitrypanosamal, and, in vitro anticancer agents.

3,622,562

NOVEL CROSS-LINKED DERIVATIVES OF MACROMOLECULAR ANHYDRO-GLUCOSIDES

Dohannes Muetgeert, Delft, Netherlands, assignor to Vasco Industries Corp., New York, N.Y.

Filed June 3, 1968, Ser. No. 733,807
Claims priority, application Netherlands, May 30, 1967, 6707457
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **33 Claims**

Starch products that absorb water in many times their volume to form gels having improved stability to electrolytes and provided by reacting finely divided starch with dichloroacetic acid or a salt thereof, or with both this reactant and mono-chloro-acetic acid or a salt thereof. The product contains anhydroglucose units cross-linked together by ether linkages of carboxyalkylene ether bridges.

3,622,563

AMPHOTERIC STARCH

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Continuation-in-part of application Ser. No. 597,561, Nov. 29, 1966, now abandoned. This application Apr. 14, 1969, Ser. No. 816,100
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R **15 Claims**

Amphoteric starch which contains both basic (e.g., tertiary amino or cyanamide) and acidic (e.g., sulfonic or carboxylic) groups linked to the starch molecule and which is especially useful for sizing mixed fibers in the form of threads or yarns, such as mixtures of polyester fibers and cotton fibers. The products also have other advantages. For example, they can be dyed with both acid and basic dyes.

3,622,564

SYNTHESIS OF GLYCOSE HYDROCARBON SULFONATE SURFACTANTS

Edmund T. Kittleman, and Roy A. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 3, 1969, Ser. No. 788,950
Int. Cl. C07c *69/32*
U.S. Cl. 260—234 R **11 Claims**

Glycose hydrocarbonsulfonates useful as surfactants are prepared by reacting a glycose with a hydrocarbonsulfonyl halide in the presence of a tertiary amine.

3,622,565

DIBENZAZEPINE DERIVATIVES AND THEIR PREPARATION

Jean Clement Louis Fouche, Hauts-de-Seine, and Claude Georges Alexandre Gueremy, Val-de-Marne, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Jan. 17, 1968, Ser. No. 698,436
Claims priority, application France, Jan. 18, 1967, 91,646
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D **11 Claims**

The invention provides new 10-amino-10,11-dihydrodibenzo[b,f]eazepine derivatives and their salts which are useful as antidepressants, analgesics, anticonvulsants and tranquillizers.

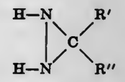
3,622,566

METHOD FOR PREPARING DIAZA-CYLOPROPANES

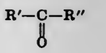
George Huck, and Siegfried Paulsen, both of Dortmund-Eving, Germany, assignors to Bergwerksverband G.m.b.H., Essen, Germany

Continuation of application Ser. No. 843,579, Sept. 30, 1959, now abandoned. This application Mar. 3, 1969, Ser. No. 803,646
Int. Cl. C07d *45/00*
U.S. Cl. 260—239 AA **7 Claims**

A process for the production of compounds of the formula:



wherein R′ is hydrogen or an alkyl group of one–five carbon atoms and R″ is an alkyl group of one–five carbon atoms or phenyl; and R′ and R″ when taken together with the carbon atoms of the diazapropane form cyclohexyl, said process comprising reacting chlorine and an excess of ammonia, the ammonia being present in a volume ratio of between 1:4 and 1:50, with a liquid carbonyl compound of the formula



whercin R′ and R″ are as defined above.

3,622,567

NORCAMPHANE DERIVATIVES

Raj Kumer Razdan, Belmont, Mass., assignor to Arthur D. Little Inc., Cambridge, Mass.

Filed May 13, 1968, Ser. No. 728,819
Int. Cl. C07d *23/06*
U.S. Cl. 260—239 E **3 Claims**

New norcamphane derivatives bearing at the 3-position a 2-hydroxyethylamino, 2-haloethylamino, ethyleneimino, or cyclopropylmethylamino group, having useful hypotensive activity, and prepared, respectively, by alkylation of 3-amino-2,2,3-trimethylnorcamphane with ethylene oxide; halogenation of the resulting 3-(2-hydroxyethylamino)-2,2,3-trimethylnorcamphane; cyclization, in the presence of alkali, of the resulting 3-(2-haloethylamino)-2,2,3-trimethylnorcamphane; or acylation of 3-amino-2,2,3-trimethylnorcamphane with a cyclopropylcarbonyl halide and alkali metal aluminum hydride reduction of the resulting 3-cyclopropylcarbonylamino-2,2,3-trimethylnorcamphane.

3,622,568

OXDIAZOLYL AND THIADIAZOLYL PENICILLINS

Peter Bamberg, Enhorna, and Berndt Olof Harald Sjoberg, Sodertalje, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed June 25, 1969, Ser. No. 836,616
Claims priority, application Great Britain, July 9, 1968, 32,634/68
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **7 Claims**

Penicillins containing a substituted or unsubstituted oxdiazolylmethyl or thiadiazolyl group in the side chain are disclosed. The compounds are of value as antibacterial agents, as nutritional supplements in animal feeds as agents for treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, in the treatment of infectious diseases caused by micro-organisms.

3,622,569
6-(2-ARYL-3-AZIDO-AND-3-AMINO-METHYL-ISOCROTONAMIDO)PENICILLANIC ACIDS

Raymond Urgel Lemieux; Rintje Raap; Clinton Gordon Chin, and Ronald George Micetich, all of Alberta, Canada, assignors to R & L Molecular Research, Ltd., Edmonton, Alberta, Canada

Filed Aug. 5, 1969, Ser. No. 847,744
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **27 Claims**

6-(2-Aryl-3-azido- and 3-amino-methyl-isocrotonamido)penicillanic acids are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative organisms. For example, 6-(3-aminomethyl-2-phenylisocrotonamido)penicillanic acid is prepared by catalytic hydrogenation (Pd-C) of potassium 6-(3-azidomethyl-2-phenylisocrotonamido)penicillanate which in turn is prepared by reaction of 6-aminopenicillanic acid with 3-aizdomethyl-2-phenylisocrotonyl chloride.

3,622,570
DIHALOMETHANO-STEROIDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed May 28, 1969, Ser. No. 828,739
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **12 Claims**

The compounds are estratriene derivatives containing a 6,7-dihalomethano function. The compounds are useful as hypocholesteremics.

3,622,571
VINYL-SUBSTITUTED PHTHALANS

Francis Joseph McEvoy, Pearl River, N.Y., and George Rodger Allen, Jr., Old Tappan, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 747,832, July 26, 1968, now abandoned. This application Aug. 8, 1969, Ser. No. 848,685
Int. Cl. C07d *5/32*
U.S. Cl. 260—240 D **8 Claims**

Organic compounds of the class vinyl substituted phthalans are preared chemically from the corresponding vinyl isobenzofurylium compounds. The novel compounds are useful for their antidepressant activity.

3,622,572
PROCESS FOR PRODUCING MORPHOLINOALKYL BENZOTHIAZINONES AND RELATED COMPOUNDS

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,346
Int. Cl. C07d *93/12, 87/42*
U.S. Cl. 260—243 R **6 Claims**

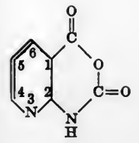
Basically substituted benzothiazinones, benzoxazinones, dihydroquinolinones and benzazepinones are obtained in greatly improved yield and with simplified isolation procedures when the basic side chain is introduced using dimethylsulfoxide as the reaction medium.

3,622,573
3-AZAISATOIC ANHYDRIDE

George F. Schlaudecker, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of application Ser. No. 663,199, Aug. 13, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 510,034, Nov. 26, 1965, now abandoned. This application July 17, 1968, Ser. No. 745,366
Int. Cl. C07d *39/00*
U.S. Cl. 260—244 R **1 Claim**

A heterocyclic compound of the formula



for which the trivial designation 3-azaisatoic anhydride is suggested, and a method for the production thereof.

The method includes reacting, in an aqueous solution and at a temperature below 40° C., quinolinimide, a substantially equimolecular proportion of sodium hydroxide, and about one mole of sodium hypochlorite per mole of quinolinimide, and, for maximum yield, subsequently adjusting the pH to a predetermined level.

3,622,574
N-(MORPHOLINO ALKYL)-BENZO[B]THIOPHENE-2-CARBOXAMIDES

William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 747,805, July 26, 1968, now abandoned. This application May 23, 1969, Ser. No. 827,131
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 **9 Claims**

The preparation of N-(morpholinoalkyl)benzo[b]thiophene-2-carboxamides from benzo[b]thiophene-2-carboxamides by reaction with an alkylenediamine, is described. The compounds are also prepared by other methods such as from benzo[b]thiophene-2-carbonyl chlorides by reaction with an alkylenediamine. The products are useful as depressants and antidepressants.

3,622,575
FERTILIZERS

Brian Michael John Ellul, and Douglas Charles Harper, both of Ipswitch, England, assignors to Fisons Limited, Felixstowe, England

Filed Sept. 16, 1968, Ser. No. 760,064
Claims priority, application Great Britain, Sept. 20, 1967, 42,806/67
Int. Cl. C05b *15/00*
U.S. Cl. 71—29 **4 Claims**

A granular fertilizer containing urea and a potassium metaphosphate of the general formula $(KPO_3)_nM$, where n is a figure in the range 10 to 200 and M is an inorganic compound introduced to control the value of n. Examples of this inorganic compound are calcium chloride, ferric oxide and phosphate rock, etc. The present invention also provides for a process of producing such a fertilizer composition.

3,622,576
2-TERTIARYAMINO OR PYRIDYL ALKYL-4,6 DIPHENYL-3 PYRIDAZONES

Jacques Baetz, La Garenne-Colombes, France, assignor to Seperic

Filed May 6, 1968, Ser. No. 726,749
Claims priority, application Great Britain, May 19, 1967, 23,462/67
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 **6 Claims**

The new diphenyl-pyridazones are 4,6-di-(phenyl or substituted phenyl)-pyridaz-3-ones substituted at 2-position by a

dialkylaminoalkyl group or an alkyl group substituted with a heterocycle containing a nitrogen atom. They are useful as psychotropic and analgesic drugs.

3,622,577
TRIMERIZATION OF ORGANIC ISOCYANATES

Charles John Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 588,302, Oct. 21, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 358,937, Apr. 10, 1964, now abandoned. This application Nov. 8, 1968, Ser. No. 774,493
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS **16 Claims**

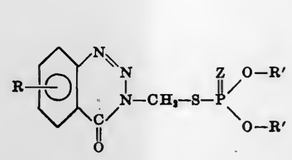
A process for trimerizing organic isocyanates by mixing said isocyanates with a complex of a basic alkali metal salt and a macrocyclic polyether.

3,622,578
SUBSTITUTED S-((4-OXO-1,2,3-BENZOTRIAZIN-3(4H)-YL)METHYL) PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES

Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 1, 1969, Ser. No. 812,288
Int. Cl. C07d *55/08*
U.S. Cl. 260—248 AS **7 Claims**

Alkylthio-, alkylsulfinyl- and alkylsulfonyl-substituted S-((4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl) phosphorothioates and phosphorodithioates of the formula



and methods employing and compositions comprising these substituted phosphorothioates and substituted phosphorodithioates for controlling parasites, especially arthropod pests such as insects and arachnids. In the above and succeeding formulas in the present specification and claims, Z represents oxygen or sulfur; R represents loweralkylthio, loweralkylsulfinyl or loweralkylsulfonyl; and each R′ independently represents loweralkyl.

3,622,579
DERIVATIVES OF 2-ANILINO-1,3-DIAZACYCLOPENTENE-(2)

Helmut Stahle, Ingelheim, Rhine; Herbert Koppe, Ingelheim, Rhine; Karl Zeile, Ingelheim, Rhine; Wolfgang Hoecke, Budenheim, Rhine, and Hans-Wolfgang Samtleben, Ingelheim, Rhine, all of Germany, assignors to Boehringer Ingelheim G.m.b.H, Ingelheim, Rhine, Germany

Continuation of application Ser. No. 801,863, Feb. 24, 1969, now abandoned , which is a continuation of application Ser. No. 583,424, Sept. 30, 1966, now abandoned. This application Aug. 28, 1969, Ser. No. 854,034
Int. Cl. C07d *49/34*
U.S. Cl. 260—253 **2 Claims**

The compounds are 2-(disubstituted-anilino)-1,3-diazacyclopentenes-(2) and acid addition salts thereof, useful as hypotensives in warm-blooded animals.

3,622,580
PIPERAZINO-ACETYLAMINO-9-FLUORENONES AND-ANTHRAQUINONES

Otto Hromatka, Vienna XIX; Maximilian Knollmuller, Vienna III, and Kurt A. Maier, Vienna XIX, all of Austria, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

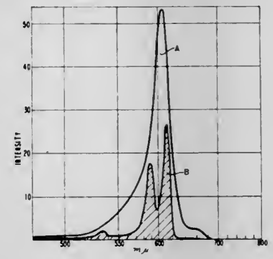
Filed Mar. 25, 1969, Ser. No. 810,344
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **7 Claims**

1-[(4-Methyl-1-piperazinyl)-acetylamino]-9-fluorenones and-anthraquinones optionally substituted in the 4-position by chlorine, bromine, hydroxy or nitro have antipyretic activity. They are generally prepared by reaction of a 1-(α-haloacetylamino)-9-fluorenone or-anthraquinone with N-methylpiperazine.

3,622,581
PERINONES

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1969, Ser. No. 795,506
Int. Cl. C07d *57/02*
U.S. Cl. 260—282 **2 Claims**



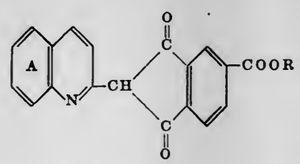
10,22-dioxodibenzimidazo (1, 2-b : 1′, 2′-b′) dibenzo (de: d′ e′)-p-dioxino (2, 3-g : 5, 6-g′) diisoquinolines and isomers are prepared, being useful as luminescent materials or phosphors.

3,622,582
DISPERSE QUINOPHTHALONE DYES CONTAINING A CARBOXYLIC ESTER GROUP

Ernst Schefczik, Ludwigshafen, Rhine, Germany, assignor to Badische Anilini & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed May 22, 1968, Ser. No. 731,309
Claims priority, application Germany, May 23, 1967, P 15 69 671.6
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **7 Claims**

Quinophthalone-5(6)-carboxylic ester dyes, which are particularly useful for dyeing polyester and synthetic polyamide textile material, said dyes having the formula:



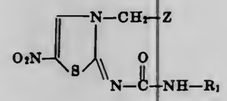
(I)

in which R denotes a linear or branched hydroxyalkyl radical having four to eight carbon atoms and in which the ring A may bear, as substituents, halogen atoms and/or alkyl groups or alkoxy groups.

3,622,583
YELLOW DYES OF THE PHTALIMIDOQUINOPHTHALONE SERIES
Johannes Dehnert, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed July 22, 1969, Ser. No. 843,776
Claims priority, application Germany, July 24, 1968, P 17 70 960.3
Int. Cl. C07d 33/48
U.S. Cl. 260—287 R 2 Claims
New yellow phthalimidoquinophthalones containing halogen which are outstandingly suitable as pigment dyes.

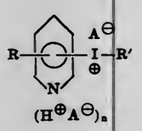
3,622,584
CERTAIN 1-PYRIDYL 2-MERCAPTO-IMIDAZOLE DERIVATIVES
Karl J. Doebel, Ossining, N.Y., and Andre R. Gagneux, Basel, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.
Continuation-in-part of application Ser. No. 204,643, June 1962, abandoned, which is a continuation-in-part of application Ser. No. 500,245, Oct. 21, 1965, abandoned. This application Apr. 17, 1968, Ser. No. 721,929
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 G 4 Claims
The compounds are of the class of substituted 2-mercaptoimidazole derivatives which have antiinflammatory utility. Illustrative examples are 1-(4-fluorophenyl)-5-methyl-2-mercaptoimidazole and 1-methyl-5-phenyl-2-mercaptoimidazole.

3,622,585
CERTAIN 5-NITRO-4-THIAZOLIN-3-YLIDENEUREA COMPOUNDS
Leslie M. Werbel, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed May 14, 1969, Ser. No. 824,680
Int. Cl. C07d 31/50, 91/26
U.S. Cl. 260—294.8 D 6 Claims
5-Nitro-4-thiazolin-2-ylideneurea compounds having the formula



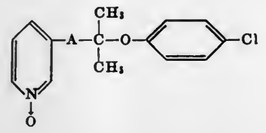
where R_1 is alkyl or allyl and Z represents a heterocyclic group, such as thienyl, pyridyl, furyl, thiazolyl, and isoxazolyl, as well as these same groups substituted once or twice with methyl; and their production by reacting a 5-nitro-2-thiazolylurea with an appropriate organic halide in the presence of a base. The compounds are useful as schistosomacides and trichomonacides.

3,622,586
PYRIDYLIODONIUM SALTS
Zdravko Jezic, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 21, 1969, Ser. No. 826,727
Int. Cl. C07d 31/44, 31/48
U.S. Cl. 260—295 S 8 Claims
Pyridyliodonium salts corresponding to the formula



wherein R represents hydrogen, a lower alkyl, an acetamido, a chloro or a bromo group, R′ represents naphthyl, thienyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, phenylphenyl, phenoxyphenyl, di-substituted phenyl in which the substituents are lower alkyl or lower alkoxy, A represents fluoride, chloride, bromide, iodide, trifluoroacetate, trichloroacetate, lower alkanoate, nitrate, acid sulfate, or tetrafluoroborate and *n* is an integer from 0 to 1. The compounds are useful as antimicrobials for the inhibition and control of the growth of bacterial and fungal organisms.

3,622,587
CERTAIN 3-PYRIDYLMETHYL-2-(P-CHLORO PHENOXY)-2-METHYL PROPIONATE-N-OXIDES AND DERIVATIVES THEREOF
Lars Anders Fritz Carlson, Bromma; Berndt Olof Harald Sjoberg, Sodertalje; Nils Erik Stjernstrom, Sodertalje, and Ake John Erik Helgstrand, Enborna, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
Filed Mar. 17, 1969, Ser. No. 807,948
Claims priority, application Great Britain, Mar. 25, 1968, 13,687/68
Int. Cl. C07d 31/34, 31/36
U.S. Cl. 260—295.5 R 3 Claims
Compounds represented by the formula:



wherein A is a bivalent radical selected from the group consisting of —$COOCH_2$— and —CH_2OOC—, and therapeutically acceptable salts thereof.

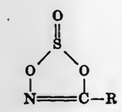
3,622,588
CERTAIN SUBSTITUTED TERPHENYL-AXYALKYL AMINES AND DERIVATIVES THEREOF
Rudolf G. Griot, Basel-Stadt, Switzerland, assignor to Sandoz-Wander, Inc.
Continuation-in-part of application Ser. No. 725,172, Apr. 29, 1968, now abandoned. This application Apr. 3, 1969, Ser. No. 813,301
Int. Cl. C07c 93/06
U.S. Cl. 260—296 20 Claims
This invention relates to ω-aminoalkoxy substituted terphenyls and N-oxides thereof useful as hypolipidemics, and to processes for preparation of such compounds involving key intermediates which include, for example: (1) substituted tercyclic-ols; or (2) p-(ω-aminoalkoxy) phenyl derivatives of various compounds which are, for example, cyclosubstituted-2-cyclohexen-1-ols, cyclo-substituted-cyclohexenes or cyclohexen-dienes; or (3) α-(m-terphenyl-4-yloxy) lower aliphatic monocarbocylic acids.

3,622,589
PROCESS FOR PRODUCING PYRIDOXINE-4,5-CYCLICMONOPHOSPHATE
Masao Tanaka, Tokyo-to, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha (Kyowa Hakko Kogyo Co., Ltd.), Tokyo-to, Japan
Filed Feb. 18, 1969, Ser. No. 800,241
Claims priority, application Japan, Feb. 27, 1968, 43/11953
Int. Cl. C07d 31/28
U.S. Cl. 260—297 10 Claims
A process is provided for preparing pyridoxine-4,5-cyclicmonophosphate and salts thereof by phosphorylating a

derivative of 1,5-dihydro-8-methylpyrido [3, 4, *e*], [1, 3] dioxepin f9-ol or derivative or salt thereof. Pyridoxine-4,5-cyclicmonophosphate is useful as an intermediate in the preparation of pyridoxal-5-phosphate as pyridoxine-5-phosphate.

3,622,590
CERTAIN PERFLUOROALKYL POLYOXYALKYLENE QUATERNARY AMMONIUM SALTS AND DERIVATIVES THEREOF
John Thomas Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.
Filed Apr. 4, 1969, Ser. No. 813,725
Int. Cl. C07d 31/28
U.S. Cl. 260—297 R 8 Claims
Fluorinated halomethyl ethers and the quaternary salts thereof, which are useful as stain repellents, have the formulas:
$R_f(CH_2)_n(OR)_mOCH_2X$ and $[R_f(CH_2)_n(OR)_mOCH_2A]^+X^-$
wherein R_f is perfluoroalkyl of four to 16 carbon atoms, R is alkylene of two to three carbon atoms, X is halogen of the group chlorine or bromine, A is the residue of a tertiary nitrogenous base, *n* is an integer of one to 12 and *m* is an integer of one to four.

3,622,591
CERTAIN 5-ARYL-1,3,2,4-DIOXATHIAZOLE-2-OXIDES
Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company
Continuation-in-part of application Ser. No. 662,891, Aug. 24, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 502,348, Oct. 22, 1965, now abandoned. This application May 6, 1970, Ser. No. 37,365
Int. Cl. C07d 95/00
U.S. Cl. 260—301 10 Claims
Compounds of the formula



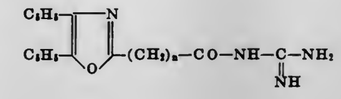
wherein R is an aromatic hydrocarbon radical of 1 to 3 aromatic rings which can be substituted with, for instance, halogen, nitro, or alkoxy, e.g., methoxy, groups. The compounds can be made by reacting the corresponding hydroxamic acids and thionyl chloride. The compounds are useful as, inter alia, isocyanate generators and have the advantage over conventional aromatic isocyanates in that they can be easily handled and stored.

3,622,592
PYRROLO [2,1-B]BENZOTHIAZOLES
Stanley C. Bell, Penn Valley, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Mar. 4, 1968, Ser. No. 709,873
Int. Cl. C07d 91/44, 99/10
U.S. Cl. 260—304 8 Claims
This invention is concerned with 1,2,3,3a-tetrahydro-1-iminopyrrolo[2,1-b]benzothiazoles and 3,3a-dihydropyrrolo[2,1-b]benzothiazol-1(2H)-ones which are pharmacologically active as central nervous system depressants.

3,622,593
1,1-DIMETHYL-3-(ISOTHIAZOL-5-YL)UREA
Gert P. Volpp, Princeton, N.J., and Luc R. Vannoorbeeck, Gasport, N.Y., assignors to FMC Corporation, New York, N.Y.
Filed Aug. 9, 1967, Ser. No. 659,312
Int. Cl. C07d 91/12
U.S. Cl. 260—306.8 R 1 Claim
A new chemical compound, of the formula 1,1-dimethyl-3-(isothiazol-5-yl)urea, has selective pre- and post-emergence herbicidal activity. The synthesis of this compound is described, and its utility is exemplified in both pre-emergence and post-emergence applications.

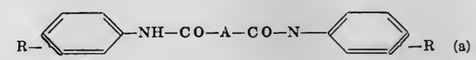
3,622,594
CHLOROPHENOXYACETYLOXAZOLIDONE HERBICIDES AND PREPARATION THEREOF
Edwin D. Little, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Aug. 27, 1968, Ser. No. 755,743
Int. Cl. C07d 85/28
U.S. Cl. 260—307 C 1 Claim
3-(Chlorophenoxyacetyl)-2-oxazolidones are prepared by reacting a 2-oxazolidone with a chlorinated phenoxyacetyl chloride. When the oxazolidone is unsubstituted in the 5-position, presence of an acid acceptor is helpful to improve yield. The products are useful as herbicides.

3,622,595
OXAZOLE N-AMIDINO-CARBOXYAMIDES WITH NATRIURETIC ACTION
Enzo Marchetti, Rome, Italy, assignor to Instituto Farmacologico Serono S.p.A., Rome, Italy
Filed Jan. 28, 1969, Ser. No. 794,788
Claims priority, application Italy, Jan. 31, 1968, 12243 A/68
Int. Cl. C07d 85/44
U.S. Cl. 260—307 R 4 Claims
The invention relates to the synthesis and the pharmacological activity, particularly the natriuretic activity, of novel acyl-guanidine compounds. The new compounds are of the formula



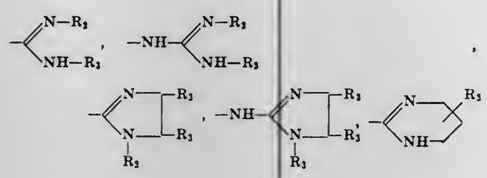
wherein *n* represents the numbers 0, 1 or 2.

3,622,596
CARBANILIDE COMPOUNDS
Rudolf Fischer, Kehrsatz, near Berne, and Rudolf Hirt, Muri, near Berne, both of Switzerland, assignors to Dr. A. Wander, S.A., Berne, Switzerland
Continuation-in-part of application Ser. No. 263,395, Mar. 7, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 144,294, Oct. 11, 1961, now abandoned. This application Oct. 23, 1967, Ser. No. 677,031 Claims priority, application Switzerland, Oct. 14, 1960, 11, 547/60, Mar. 9, 1962, 2880/62
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 17 Claims
Carbanilide compounds which exhibit tuberculostatic, trypanocidal, antibabesial, antileukaemic and herbicidal properties, and which have the following formula:



wherein A stands for m- or p-phenylene, R_1-substituted m- or p-phenylene, m- or p-phenyleneamino, m- or p-phenylenediamino R_1-substituted m- or p-phenylenediamino, p-styrylene, p-phenylenedivinylene, vinylenedi-p-phenylene, or m- or p-pyridylene, R_1 denoting halogen, amino, nitro, hydroxy, lower alkyl, lower alkoxy, lower alkylthio, lower al-

kanoyl amino, or lower mono- or dialkylaminocarbonyl; and R are the same or different residues of one of the formulas:



R_2 denoting hydrogen, alkyl having from one to five carbon atoms, or alkoxyalkyl having from one to five carbon atoms, and R_3 being the same or different members of the group consisting of hydrogen, methyl, and ethyl; and (b) the therapeutically acceptable acid addition salts of (a).

3,622,597
METHOD OF PREPARING THIIRANES FROM MERCAPTOALCOHOLS
Jon E. Fletcher, and Rodney A. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Sept. 13, 1968, Ser. No. 759,775
Int. Cl. C07d *59/00*; C11d *7/34*
U.S. Cl. 260—327 E **16 Claims**
The method comprises continuously adding mercaptoalcohols to a heated solution of a dehydration catalyst dissolved in a liquid diluent. The diluent and catalyst are of low volatility at the reaction temperature. The thiirane is continuously removed from the reaction mixture.

3,622,598
PRODUCTION OF SULFOLANE
James L. Willis, Borger, Tex., assignor to Phillips Petroleum Company
Filed Nov. 21, 1966, Ser. No. 595,902
Int. Cl. C07d *63/04*; C01d *5/00*; C01f *11/46*
U.S. Cl. 260—332.1 **8 Claims**
A sulfolane compound is prepared by reacting sulfur dioxide with an unsaturated organic compound containing two or more ethylenic linkages, in the absence of a solvent, to produce a molten sulfolene compound, introducing the molten sulfolene compound into a suitable hydrogenation solvent, pulling a vacuum on the resulting solution to remove a portion of the sulfur dioxide contained therein, adding hydrogen peroxide to the solution to convert any remaining sulfur dioxide to sulfur trioxide, adding aqueous caustic to the thus treated solution to convert the sulfur trioxide to a sulfate salt to substantially prevent the prolonged existence of sulfuric acid, filtering the solution to remove any insoluble salts and/or polymer, and subjecting the filtrate to hydrogenation conditions to convert the sulfolene compound to the corresponding sulfolane compound.

3,622,599
PROCESS FOR THE PREPARATION OF N,N-DI-LOWER ALKYL-1-PHENYL-3-PHTHALANMETHYLAMINES AND INTERMEDIATES OBTAINED IN THE SYNTHESIS
Francis J. Petracek, Agoura, and Nobuyuki Sugisaka, Canoga Park, both of Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.
Filed Nov. 29, 1968, Ser. No. 780,169
Int. Cl. C07d *5/34*
U.S. Cl. 260—346.2 **2 Claims**
A process for the preparation of N,N-di-lower alkyl-1-phenyl-3-phthalanmethylamines comprising the conversion of a 1-phenyl-3-phthalancarboxylic acid to its corresponding acid halide, treatment of the acid halide to form the corresponding amide and then reducing the carbonyl group of the amide substituent to yield the N,N-di-lower alkyl-1-phenyl-3-phthalanmethylamine final product and the N,N-di-lower alkyl-1-phenyl-3-phthalancarboxamide intermediate obtained in the synthesis.

3,622,600
METHOD FOR PREPARING COLOR STABLE MALEIC ANHYDRIDE
Jack Bernard Feder, Dumont, N.J., assignor to Halcon International Inc.
Filed Feb. 24, 1969, Ser. No. 801,835
Int. Cl. C07c *57/14*
U.S. Cl. 260—346.8 **6 Claims**
This invention relates to a method for preparing color stable maleic anhydride by passing molten maleic anhydride through a bed of alkali sulfates or halides.

3,622,601
FLUORINATED EPOXIDE
James W. Dale, Winchester, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.
Filed Feb. 17, 1969, Ser. No. 802,741
Int. Cl. C07c *19/08*; C07d *1/06*
U.S. Cl. 260—348.5 R **9 Claims**
Method of producing a perfluorinated 1,2-epoxide comprising contacting a perfluorinated olefin with oxygen difluoride. The perfluorinated epoxides can be used to produce polymers which are useful lubricants.

3,622,602
STEREOSPECIFIC REDUCTION OF 3-KETO STEROIDS
Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Filed Feb. 28, 1969, Ser. No. 803,445
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **8 Claims**
The reduction of 17α-ethynyl-17β-hydroxyestr-4-en-3-one with the reducing agent produced from an alkali metal hydride and a tertiary carbinol containing at least five carbon atoms results in selective production of the 3β-hydroxy epimer in excellent yield.

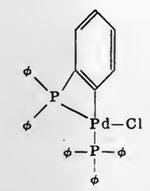
3,622,603
REDUCING AGENTS FOR PHOTOGRAPHIC PROCESSES
Stanley M. Bloom, Waban, and Paul S. Huyffer, Lynnfield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Original application July 24, 1967, Ser. No. 655,324, now Patent No. 3,482,971, dated Dec. 2, 1969. Divided and this application Sept. 16, 1968, Ser. No. 810,047
Int. Cl. C07c *143/74*, *143/78*
U.S. Cl. 260—397.7 **6 Claims**
This invention relates to novel immobile reducing agents which, upon oxidation, auto-react intramolecularly in such a way as to form a new heterocyclic ring.

3,622,604
SYNTHETIC POLYAMIDES OF A DIMERIC FATTY ACID, A LOWER ALIPHATIC CARBOXYLIC ACID ETHYLENE DIAMINE, AND A CO-DIAMINE
Manfred Drawert, Werne a.d. Lippe, and Eugen Griebsch, Unna, both of Germany, assignors to Schering AG, Berlin, Germany
Continuation-in-part of application Ser. No. 527,107, Feb. 14, 1966, now abandoned, and a continuation-in-part of 495,319, Oct. 12, 1965, now abandoned. This application Apr. 9, 1969, Ser. No. 815,279. Claims priority, application Germany, Oct. 15, 1964, Sch 35965, Feb. 19, 1965 Sch 36782, Mar. 26, 1965, Sch 36782
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 **10 Claims**
Synthetic polyamides, useful as binders in the formulation of printing inks, formed between a dimeric fatty acid, an unsubstituted lower aliphatic monocarboxylic acid, ethylene diamine, and certain aromatic, cycloaliphatic, and other aliphatic diamines, including aliphatic ether diamines; methods for preparing such polyamides.

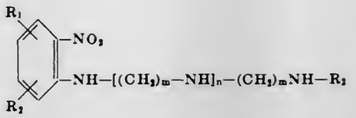
3,622,605
PROCESS FOR PREPARING HYDROXYCARBOXYLIC ACID ESTERS
Koene De Jong, and Bastiaan Van der Ven, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Mar. 18, 1969, Ser. No. 808,356
Claims priority, application Great Britain, Mar. 21, 1968, 13776/68
Int. Cl. C11c *3/02*
U.S. Cl. 260—410.6 **15 Claims**
Aliphatic δ-hydroxy carboxylic acid esters, for instance δ-hydroxydecanoic and -dodecanoic glycerides, which are flavoring agents for fatty foodstuffs, are prepared by the acid-catalysed reaction of a δ-lactone with a polyhydric alcohol until at least 80 percent of the ester present at equilibrium in the esterification reaction has been formed, and removal of acid catalyst before 10 percent of lactone polymer is formed.

3,622,606
PREPARATION OF COMPLEX TRANSITION METAL SUBHALIDES
Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Dec. 29, 1967, Ser. No. 694,410
Int. Cl. C07f
U.S. Cl. 260—429 R **8 Claims**
Processes are described for the preparation of complex transition metal subhalides by the reaction of an elemental halogen with an arene complex of a transition metal in the zero valence state. Extraction of such reaction mixture with an inert organic solvent for the reactants, which is a nonsolvent for the subhalide, is shown to produce a high-purity product. The use of such subhalides in conjunction with an aluminum alkyl reducing agent as a polymerization catalyst is likewise described.

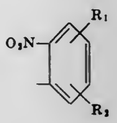
3,622,607
PALLADIUM CHELATES HAVING A PALLADIUM-CARBON BOND
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 3, 1969, Ser. No. 873,641
Int. Cl. C07c *11/26*
U.S. Cl. 260—429 R **10 Claims**
A palladium chelate comprising palladium and a halide, alkanoate, or hydroxyl in a 4- or 5-membered ring with an aromatic biphyllic ligand. The chelate is an active catalyst in hydrocarboxylation reactions and demonstrates high selectivity for the production of straight-chain products. A typical chelate with chloride and triphenylphosphine is:



3,622,608
NITRO ANILINO-POLYALKYLENE POLYAMINES AND THE SALTS THEREOF
Gustav Schafer, and Norbert Ottaw, both of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany
Continuation-in-part of application Ser. No. 588,291, Oct. 21, 1966, now abandoned. This application July 22, 1969, Ser. No. 843,820
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **6 Claims**
Compounds of the formula and their salts



in which R_1 and R_2 each represents hydrogen or chloro, m represents an integer 2 or 3 and n represents an integer 1, 2, 3, or 4, R_3 represents hydrogen or



wherein R_1 and R_2 each is defined as above.

3,622,609
METHOD OF PREPARING 1,3-BIS/HYDROXYALKYL(ARYL)/-TETRAORGANODISILOXANES
Vladimir Florovich Mironov, ul. Gubkina, 4, kv. 13, and Vadim Lvovich Kozlikov, Novye Cheremushki, Korpus 19, kv. 15, both of Moscow, U.S.S.R.
Filed Aug. 21, 1968, Ser. No. 754,449
Claims priority, application U.S.S.R., Aug. 23, 1967, 1182274
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E **13 Claims**
Carbofunctional diols of the disiloxane series are prepared by reacting organohalosilanes with unsaturated alcohols in the presence of a tertiary amine as hydrogen chloride acceptor, and in an organic solvent medium, subjecting the resultant alkenyloxydiorganosilanes to polymerization in the presence of a hydrosilylation catalyst, boiling the mixture of siloxyalkanes thus obtained with an alkaline solution, and thereafter separating the desired product.

3,622,610
SULFONATE ESTERS OF GALLIC ACID DERIVATIVES
Werner Hausermann, Allschwil; Ado Kaiser, Neu-Frenkendorf, and Marcel Scheer, Basel, all of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.
Filed Jan. 16, 1969, Ser. No. 791,793
Claims priority, application Switzerland, Feb. 9, 1968, 1972/68
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 P **12 Claims**
3,5-Bis-(benzyloxy)-4-methoxy-benzoic acid alkyl esters, are prepared, for example, from the corresponding 3,4,5-tris-(substituted-sulfonyloxy)-benzoic acid alkyl ester. The end products are useful in the preparation of 3,5-dihydroxy-4-methoxy-phenylalanines having hypotensive activity.

3,622,611
PROCESS FOR THE PREPARATION OF TRIORGANOPEROXYBORANES
Noel Crenne, and Jean-Claude Brunie, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
Continuation of application Ser. No. 543,016, Apr. 18, 1966, now abandoned. This application May 19, 1969, Ser. No. 828,088
Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R **10 Claims**
Tri(organoperoxy)boranes are prepared by the reaction of organic hydroperoxides with alkyl orthoborates at not above 90° C., in a molar ratio of at least 5:1, or 0.4:1 to 2:1 when

an inert solvent is present. The products may be used to oxidize aromatic compounds to phenols.

3,622,612
PROCESS FOR THE PRODUCTION OF NEOPENTYLGLYCOL-CARBOXYLIC ACID-CARBONIC ACID MIXED ESTERS

Erwin Muller, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 28, 1968, Ser. No. 732,512
Claims priority, application Germany, July 12, 1967, F 52930
Int. Cl. C07c *69/00*; C08g *17/13*, *17/18*
U.S. Cl. 260—463 **5 Claims**

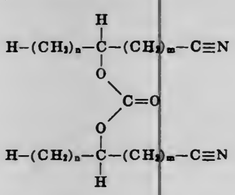
Process for producing neopentylglycol-carboxylic acid-carbonic acid mixed esters by transesterifying a diaryl carbonate with a neopentylglycol-carboxylic acid semiester at a temperature of from about 180° to about 220° C. and the utility of such products in the production of lacquers and resins and plastics.

3,622,613
CARBONATE ESTERS OF HYDROXY SUBSTITUTED FATTY NITRILES

Robert C. Kuder, Excelsior, Minn., and Marwan R. Kamal, Dhahran, Saudi Arabia, assignors to General Mills, Inc.

Filed Apr. 25, 1969, Ser. No. 819,438
Int. Cl. C07c *121/34*, *119/04*; C08g *22/18*
U.S. Cl. 260—463 **8 Claims**

Carbonate dinitriles of the formula:



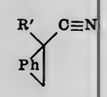
where *n* is 5 to 20, *m* is 0 to 15 and the sum of *n* and *m* is 14 to 20. Diamines and diisocyanates derived therefrom with the latter being useful for preparing polymers.

3,622,614
1-CYANO-BENZOCYCLOBUTENES

Erwin Friedrich Jenny, Rieben, and Karl Schenker, Basel, both of Switzerland, assignors to CIBA Corporation, New York, N.Y.

Original application Mar. 18, 1966, Ser. No. 535,368, now Patent No. 3,377,347, Continuation-in-part of application Ser. No. 297,675, July 25, 1968, now abandoned. Divided and this application Nov. 3, 1967, Ser. No. 680,350
Int. Cl. C07c *87/02*, *121/64*
U.S. Cl. 260—465 **5 Claims**

Compounds of the formula



in which Ph represents a substituted orthophenylene radical and R′ hydrogen or a substituted or unsubstituted alkyl radical, for example 1-cyano-benzocyclobutene. Use: intermediates for the preparation of the corresponding 1-(aminomethyl)benzocyclobutenes which possess analgesic, particularly antimorphine activity and also antitussive activity.

3,622,615
N² -(P-TOLYLSULFONYL)-L-ARGININE ESTERS

Ernest D. Nicolaides, and Richard E. Maxwell, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Nov. 6, 1968, Ser. No. 773,973
Int. Cl. C07c *143/78*
U.S. Cl. 260—470 **6 Claims**

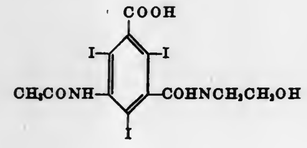
Pharmaceutical compositions containing as an active ingredient an N²-(p-tolylsulfonyl)-L-arginine ester or a salt thereof, methods for the use of the N²-(p-tolylsulfonyl)-L-arginine esters and salts thereof as agents that potentiate the action of urokinase in lysing blood clots; and the isopropyl, sec-butyl, and 2-isopropoxyethyl esters of N²-(p-tolylsulfonyl)-L-arginine and salts thereof and their production by reacting N²-(p-tolylsulfonyl)-L-arginine with 2-propanol, 2-butanol, and 2-isopropoxyethanol, respectively, in the presence of a strong acid.

3,622,616
NEW BENZOIC ACID DERIVATIVES

Michel Guerbet, Paris, and Guy Tilly, Drancy, both of France, assignors to Laboratories Andre Guerbet, Saint Ouen, France

Filed Nov. 27, 1967, Ser. No. 685,847
Claims priority, application France, July 10, 1967, 113715
Int. Cl. C07c *103/32*
U.S. Cl. 260—471 R **1 Claim**

2,4,6-triiodo-3-(N-hydroxy ⁻ethylcarbamyl)-5-acetylamino benzoic acid of formula



is useful as a radiographic opacifier.

3,622,617
UREIDOPHENYL PHENYL CARBAMATES

Hermann Windel, Frankenthal, Pfalz, and Adolf Fischer, Mutterstadt, Pfalz, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed May 21, 1968, Ser. No. 730,893
Claims priority, application Germany, May 31, 1967, B 92798
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **2 Claims**

Substituted ureidophenyl phenyl carbamates and the use of said compounds for controlling unwanted plant growth.

3,622,618
HYDROXYPHENYL URETHANES

Max Duennenberger, Frenkendorf, and Max Schellenbaum, Muttenz, both of Switzerland, assignors to CIBA Limited, Basel, Switzerland

Filed July 3, 1969, Ser. No. 742,173
Claims priority, application Switzerland, July 11, 1967, 9948/67
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **8 Claims**

Urethanes consisting of a 2-hydroxy-1,1′-diphenyl ketone having an R–NH–CO–O– group in 4-position and wherein R e.g. represents an alkyl or an aryl radical. These urethanes are useful as stabilizers for organic material and above all as agents for combatting harmful micro-organisms.

3,622,619
BIPHENYL COMPOUNDS

Erwin F. Schoenewaldt, Watchung; George G. Hazen, Westfield, and Richard F. Shuman, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 31, 1968, Ser. No. 748,923
Int. Cl. C07c *69/78*, *69/14*, *65/04*
U.S. Cl. 260—476 C **2 Claims**

The invention relates to novel intermediates particularly 4-benzoyloxy-4′-(fluorosulfonyl) or (fluoro)biphenyl, which compounds are used to prepare 5-(4-fluorophenyl)salicylic acids and derivatives thereof which latter compounds are antiinflammatory agents.

3,622,620
METHOD OF MAKING VINYL ACETATE

Shigeki Horiie, Tokyo; Chiyuki Fujii, Kanagawa-ken; Atsuhiro Ihara, Tokyo; Hideo Nedachi, Tokyo, and Takeo Shinada, Kanagawa-ken, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 645,894, June 14, 1967, now abandoned. This application Oct. 27, 1969, Ser. No. 869,932
Int. Cl. C07c *69/24*
U.S. Cl. 260—497 A **8 Claims**

Manufacture of vinyl acetate by reacting ethylene with acetic acid and oxygen in the presence of a platinum group catalyst is improved by increasing catalytic reaction with a promotor, namely, a vanadyl salt of chloroacetic, fluoroacetic or sulfonic acids.

3,622,621
2-ALKYL-N-ARYL-3-ARYLIMINO-1-CYCLOPENTEN-1-YLAMINE SALTS

Robert B. Garland, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 18, 1967, Ser. No. 691,126
Int. Cl. C07c *87/50*
U.S. Cl. 260—501.2 **5 Claims**

Preparation of the captioned compounds—for example, 2-methyl-N-phenyl-2-phenylimino-1-cyclopenten-1-ylamine p-toluenesulfonate—and their valuable biological properties—including antimicrobial activity in respect of protozoa such as *Tetrahymena gelleii*, bacteria such as *Diplococcus pneumoniae*, fungi such as *Trychophyton mentagrophytes*, and algae such as *Chlorella vulgaris;* anti-hypercholesterolemic activity; and the capacity to inhibit dicotyledonous seed germination—are disclosed.

3,622,622
α-[P-(DIMETHYLAMINOALKOXY) PHENYL]-α′-NITRO-4-METHOXYSTILBENE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Horace A. DeWald, Ann Arbor, Mich., assignor to Parke Davis & Company, Detroit, Mich.

Filed Nov. 3, 1967, Ser. No. 680,322
Int. Cl. C07c *93/06*, *93/08*
U.S. Cl. 260—501.18 **6 Claims**

α- p-[3-(Dimethylamino)propoxy]phenyl -α′-nitro-4-methoxystilbene and α- p-[4-(dimethylamino)butoxy]phenyl -α′-nitro-4-methoxystilbene and acid-addition and quaternary ammonium salts thereof, useful as pharmacological agents that exhibit antiprogestational, hypocholesteremic, and antifertility activity; and their production by (a) reacting a 1-[p-(dimethylaminoalkoxy)phenyl]-1-(p-methoxyphenyl)-2-phenyl-ethanol compound or a α-[p-(dimethylaminoalkoxy)phenyl]-4-methoxystilbene compound with nitric acid, (b) reacting an α-[p-(dimethylaminoalkoxy)phenyl]-4-methoxystilbene compound with a lower alkanoyl nitrate and then heating the intermediate 1-(p-methoxyphenyl)-1-alkanoyloxy-1-[p-(dimethylaminoalkoxy)phenyl]-2-nitro-2-phenylethane compound with a strong acid, (c) reacting a 1-[p-(dimethylaminoalkoxy)phenyl]g8-1-(p-methoxyphenyl)-2-nitro-2-phenylethane compound with a dehydrogenating agent, (d) reacting a metallated salt derivative of α-(p-hydroxyphenyl)-α′-nitro-4-methoxystilbene with a N,N-dimethyl-3-halopropylamine or a N,N-dimethyl-4-halobutylamine, and (e) reacting a α-[p-(haloalkoxy)phenyl]-α′-nitro-4-methoxystilbene compound with dimethylamine.

3,622,623
1-SUBSTITUTED INDENYL-3-ALIPHATIC ACIDS AND ESTERS

Tsung-Ying Shen, Westfield, and Bruce O. Linn, Somerville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 28, 1968, Ser. No. 755,798
Int. Cl. C07c *145/00*, *147/06*
U.S. Cl. 260—515 **5 Claims**

1-aralkylidene and aralkenylidene indenyl-3-aliphatic acids and their esters and amides are used as anti-inflammatory agents. They are prepared by the condensation of the corresponding 1-indenone with an aralkyl or aralkenyl aldehyde under basic conditions.

3,622,624
PROCESS FOR THE PRODUCTION OF ADIPIC ACID

Yael Arad, Tel-Aviv; Moshe Levy, Rehovot, and David Vofsi, Rehovot, all of Israel, assignors to UCB (Union Chimique-Chemische Bedrijven), Drogenbos, Belgium

Filed July 18, 1968, Ser. No. 745,712
Claims priority, application Israel, July 21, 1967, 28373
Int. Cl. C07c *51/00*, *55/14*
U.S. Cl. 260—537 R **4 Claims**

Adipic acid can be produced in a good yield and with only a small production of propionic acid by carrying out the alkali metal amalgam hydrodimerization of acrylic acid in dimethyl sulfoxide preferably admixed with water.

3,622,625
N-SULFAMOYL-P-TOLUENSULFONAMIDE

Milton Wolf, West Chester, and John H. Sellstedt, St. Davids, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 10, 1968, Ser. No. 735,560
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 N **1 Claim**

This invention is concerned with sulfamoyl substituted sulfonamides which have demonstrated pharmacological activity as central nervous system depressants.

3,622,626
N-ACYLATED PERFLUOROALKANESULFONAMIDES

George G. I. Moore, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1968, Ser. No. 784,877
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F **4 Claims**

This invention relates to certain N-acyl aliphatic sulfonamides and salts thereof which are active as herbicides. Many of the compounds of this invention are also physiologically active as diuretics and/or anticonvulsants. Processes for the preparation of the compounds and compositions for horticultural use containing these compounds are described.

3,622,627
4-DEDIMETHYLAMINATETRACYCLINE AND 5A, 6-ANHYDRO DERIVATIVES THEREOF

Robert K. Blackwood, Gales Ferry, and Charles R. Stephens, Jr., East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y. continuation-in-part of Ser. No. 360,435, Apr. 16, 1964, abandoned, which is a continuation-in-part of Ser. No. 247,874, Dec. 28, 1962, abandoned

Filed Sept. 13, 1967, Ser. No. 667,357
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 AT **5 Claims**

4-Dedimethylaminotetracyclines and the corresponding 5a,6-anhydroderivatives having an oxo, hydroxy, substituted imino, amino or substituted amino group other than dimethylamino at the C-4-position useful as antimicrobial agents. The 4-oxo-4-dedimethylaminotetracyclines are prepared by oxidation of tetracyclines with a hydrocarbon dicarboxylic acid haloimide and then converted by reduction to the corresponding 4-hydroxy compounds or by reaction with a primary amine to 4-substituted imino derivatives. The latter compounds are reduced to 4-amino derivatives which are reductively methylated or alkylated to 4-substituted-4-dedimethylaminotetracyclines. Dehydration of the tetracycline compounds affords the corresponding 5a,6-anhydro compounds.

3,622,628
AMINOPOLYCYCLODECANES
Robert John Stedman, Paoli, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
Original application Oct. 11, 1965, Ser. No. 494,881, now Patent No. 3,456,008. Divided and this application Feb. 28, 1969, Ser. No. 813,384
Int. Cl. D07c 87/40; A61k 27/00
U.S. Cl. 260—563 P 3 Claims

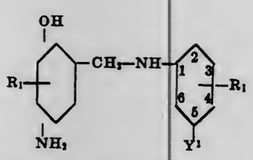
1-Amino and aminomethylpentacyclo [6.2.0.0^{2,7}.0^{4,10}.0^{5,9}]-decanes, 3-amino and aminomethyltetracyclo [5.3.0.0^{2,6}.0^{4,9}]-decanes, and 1-amino and aminomethyltetracyclo [5.2.0.0^{2,6}.0b4,9]nonanes are prepared starting fro tetrachlorocyclopentadienone cyclic ethylene ketal and 1,4-cyclohexadiene and proceeding with ring-closure, hydrolysis and Favorskii reactions. The products are antivirals.

3,622,629
N-(HYDROXY-AMINOBENZYL)-3-HYDROXY-ANILINE COMPOUNDS
Laszlo Lugosy, Frankfurt am Main, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 663,494, Aug. 28, 1967. This application June 19, 1968, Ser. No. 738,109
Int. Cl. C07c 91/28, 91/42; F23l 17/02
U.S. Cl. 260—570 AB 7 Claims

Developer-coupler compounds having within the same molecule a p-aminophenol nucleus capable of developing a silver halide image and a separate dye forming nucleus capable of dye-coupling in situ during development of latent silver halide images to form a colored dye, e.g., a quinoneimine or azomethine dye image. The silver image and the dye image provide a combined image of high total maximum density with a minimum of initial silver halide. The p-aminophenol developer nucleus and coupler nucleus of the molecule are linked through a position ortho to the hydroxyl group of said p-aminophenol nucleus through a radical



wherein a free bond attached to CH_2 N are attached to cyclic carbon atoms. A representative and preferred compound has the formula



wherein the rings are benzene rings, R_1 is H, alkyl or one-four carbons, Cl, Br, or —COOH, and Y′ is —OH or —NH_2, and at least one of the coupling positions 2 and 4 is a free coupling position. Bis compounds containing a nuclei, as recited, are comprehended. The developer-coupler compounds are useful also in radiation-sensitive silver halide layers.

3,622,630
10-AMINOALKYL-9,10-DIHYDROANTHRACENES
Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 631,584, Apr. 18, 1967, now abandoned, Continuation-in-part of application Ser. No. 526,975, Feb. 14, 1966, now abandoned. This application July 3, 1968, Ser. No. 742,171
Int. Cl. C07d 87/28
U.S. Cl. 260—570. TC 24 Claims

10-Aminoalkyl-9,10-dihydroanthracenes wherein the nucleus is substituted by halogen, lower alkyl, trifluoromethyl, lower alkylthio, lower alkylsulfonyl or N,N-dimethyl-sulfamyl and the amino group may be mono or dialkyl substituted as well as a monocyclic heterocyclic amino moiety are tranquilizers. Corresponding 9-lower alkyl or 9-phenyl derivatives also have utility as antidepressants. Compounds are generally prepared by reaction of a 10-bromoalkyl-anthracene with an appropriate amine followed by reduction to the 9,10-dihydroanthracene.

9-Substituted-10-aminoalkyl-9,10-dihydroanthracenes which are not benzo ring substituted have antidepressant activity with no tranquilizing activity. These compounds are generally prepared by alkylation of the 9,10-dihydroanthracene with an aminoalkyl halide.

3,622,631
17β-HYDROXY-10,17αβ-DIMETHYL-D-HOMO-C-NOR-13α-GON-4-EN-3-ONE AND CONGENERS
William F. Johns, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Continuation-in-part of application Ser. No. 545,582, Apr. 27, 1966, now abandoned. This application Apr. 25, 1968, Ser. No. 724,249
Int. Cl. C07c 49/30, 49/48
U.S. Cl. 260—586 H 18 Claims

Preparation of 17β-hydroxy-10,17αβ-dimethyl-D-homo-C-nor-13α-gon-4-en-3-one and congeners, and their capacity to block the effect of DCA on urinary sodium and potassium, are disclosed.

3,622,632
NOVEL 2-ARYL-1,3-INDANDIONES AND 2-ARYL-2,3-DIHYDROBENZ [F] INDENE-1,3-DIONES
Gerald F. Holland, Old Lyme, and Joseph G. Lombardino, Miantic, both of Conn., assignors to Pfizer Inc.
Filed Aug. 29, 1968, Ser. No. 756,324
Int. Cl. C07c 49/80
U.S. Cl. 260—590 4 Claims

Novel 2-aryl-1,3-indandiones and 2-aryl-2,3-dihydrobenz [f] indene-1,3-diones and their use in lowering the blood lipid level in mammals.

3,622,633
TRIHYDROCARBYL-9-[2,6,6-TRIMETHYL-1-CYCLOHEXEN-1-YL]-3,7-DIMETHYL-2,6,8-NONATRIEN-4YENE PHOSPHONIUM HALIDES
Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Original application July 11, 1968, Ser. No. 743,979, Original application Dec. 4, 1964, Ser. No. 416,128, now Patent No. 3,408,414, dated Oct. 29, 1968. Divided and this application July 16, 1970, Ser. No. 55,582
Int. Cl. C07f 9/06; C07c 13/20
U.S. Cl. 260—606.5 F 2 Claims

This invention relates to trihydrocarbyl-9-[2,6,6-trimethyl-1-cyclohexen-1-yl]-3,7-dimethyl-2,6,8 nonatrien-4-yne phosphonium halides which are useful as intermediates in the preparation of trans-beta-carotene.

3,622,634
HALOGENATED ALKENYL SULFIDES
Pierre Legendre, De Fonval, France, assignor to Societe Nationale des Petroles D'Aquitaine, Courbevoie, France
Filed July 29, 1968, Ser. No. 748,230
Claims priority, application France, Aug. 1, 1967, 116438
Int. Cl. C07c 149/10, 149/34
U.S. Cl. 260—609 A 5 Claims

Bis (haloalkenyl) sulfides are prepared by the reaction of a stoichiometric excess of alkaline earth or alkali metal sulfide with an alkenyl halide.

3,622,635
PROCESS FOR THE PRODUCTION OF OXYGEN-CONTAINING FLUORO COMPOUNDS
Franco Gozzo, Saronno (Varese), and Venanzio Oprandi, Bergamo, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Continuation-in-part of application Ser. No. 642,326, May 31, 1967. This application Sept. 6, 1968, Ser. No. 758,134
Int. Cl. C07c 43/30
U.S. Cl. 260—615 A 6 Claims

Process for producing polyoxyperfluoromethylene polymers, carbonylfluoride and C_2F_4O wherein tetrafluoroethylene is reacted with molecular oxygen in the presence of ozone in a liquid reaction medium from the group of fluorinated and chlorofluorinated organic compounds at a temperature between substantially 10° and 40° C. and at an absolute pressure between substantially 700 and 800 mm./Hg.; the molar ratio C_2F_4 : O_2 ranges between substantially 1 and 2.5 (preferably 1.5 to 2) and the molar ratio C_2F_4 : O_3 ranges between substantially 10 and 500 (preferably 100 to 400).

3,622,636
M- AND P-ISOPROPENYLPHENYL-DIMETHYLCARBINOL
Heinrich Krimm, Krefeld-Bockum; Hans-Josef Buysch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 28, 1968, Ser. No. 732,511
Claims priority, application Germany, July 1, 1967, F 52840
Int. Cl. C07c 33/06
U.S. Cl. 260—618 1 Claim

Meta and para-isopropenylphenyl-dimethylcarbinols and a process for producing them by partial catalytic dehydration of the corresponding meta or para-bis-carbinol, or by recovery of the desired product in statu nascendi by specific extraction or distillation thereof.

3,622,637
METHOD OF PRODUCING 2,2′-METHYLENE BIS(3,4,6-TRICHLOROPHENOL)
Thomas F. Cleary, Summit, N.J., assignor to Centerchem, Inc., New York, N.Y.
Filed Feb. 10, 1969, Ser. No. 798,145
Int. Cl. C07c 39/16
U.S. Cl. 260—619 10 Claims

This invention is directed to a method of producing 2,2′-methylene bis (3, 4, 6-trichlorophenol), commonly known as hexachlorophene, in which (1) 1 mol of 2, 4, 5-trichlorophenol is reacted with 1 mol of formaldehyde, in a solvent, and under the influence of an acid catalyst to form 1 mol of a trichlorophenyl hemiformal; (2) another mol of 2, 4, 5-trichlorophenol is reacted with chlorosulfonic acid, in the presence or absence of a solvent, to form 1 mol of a trichlorophenyl ester of sulfuric acid; and (3) 1 mol of each of the products from steps (1) and (2) are reacted, in the presence of a solvent, to form one mol of hexachlorophene.

3,622,638
PREPARATION OF ORTHO-METHYL-SUBSTITUTED PHENOLS
Henry C. Chitwood, and Benjamin T. Freure, both of Charleston, W. Va., assignors to Union Carbide Corporation
Filed May 10, 1966, Ser. No. 548,869
Int. Cl. C07c 39/06
U.S. Cl. 260—621 H 17 Claims

It has been discovered that ortho-methyl-substituted phenols can be produced by the reaction of hydrogen, carbon monoxide or a carbon-monoxide-producing substance and a methyl acceptor under specified reaction conditions and in the presence of a catalyst selected from the group consisting of methyl and platinum group metals. By deliberate adjustment of the reaction conditions ortho-methyl-substituted phenols can be produced to the substantial exclusion of its other isomers, namely meta- and para-methyl-substituted phenols.

3,622,639
PROCESS FOR PREPARING HALOGENATED COMPOUNDS
Charles Carmen Cumbo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 677,768, Oct. 24, 1967, now abandoned, Continuation-in-part of application Ser. No. 712,598, Mar. 13, 1968, now abandoned. This application June 6, 1968, Ser. No. 734,870
Int. Cl. C07c 25/04, 25/18
U.S. Cl. 260—649 DP 8 Claims

Aryl chlorides are prepared by contacting at elevated temperatures phosgene, carbon tetrachloride or a mixture of phosphgene and carbon tetrachloride and an aryl sulfonic acid, an alkali or alkaline earth metal arylsulfonate or any arylsulfonyl chloride. For example 4,4′-dichlorobiphenyl can be prepared by heating 4,4′-biphenyldisulfonic acid with at least two moles of phosgene or carbon tetrachloride per mole of the disulfonic acid to 250°C.

3,622,640
AROMATIC BROMINATION PROCESS
Edward C. Taylor, Princeton, N.J., and Alexander McKillop, Norwich, England, assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.
Filed Oct. 8, 1968, Ser. No. 766,002
Int. Cl. C07c 25/04
U.S. Cl. 260—650 R 4 Claims

Aromatic substrates such as benzene, substituted benzenes, naphthalenes, substituted naphthalenes, anthracene, phenanthrene, fluorene, biphenylene, and terphenyl are brominated to give pure monobromo products by reaction with bromine in the presence of thallic acetate.

3,622,641
DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS
James Walter Crary, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 28, 1968, Ser. No. 712,897
Int. Cl. C07c 21/20
U.S. Cl. 260—655 9 Claims

Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of cyclic polyether to split off hydrogen halide.

3,622,642
POLYHALOGENALKANES
Charles Ferdinand Huebner, Chatham; Renat Herbert Mizzoni, Long Valley, and William Richard Schearer, Chatham, all of N.J., assignors to CIBA Corporation
Filed May 8, 1968, Ser. No. 727,657
Int. Cl. C07c 17/08
U.S. Cl. 260—658 R 3 Claims

Methallyl dichlorides or their homologs are reacted with hydrogen bromide in the presence of a peroxide, to yield 2-bromomethyl-1,3-dichloropropane or its homologs, which are valuable biocides and intermediates.

3,622,643
OXYCHLORINATION OF ETHYLENE AND VINYL CHLORIDE MIXTURES
Guy DuCrest, Martigues; Gerard Benaroya, Bois-Colombes, and Francois Laines, Martigues, all of France, assignors to Produits Chimiquis Pechiney-Saint-Gobain, Paris, France
Filed May 20, 1968, Ser. No. 730,609
Claims priority, application France, May 19, 1967, 106972
Int. Cl. C07c 17/02, 17/04
U.S. Cl. 260—658 R 15 Claims

A process for oxychlorination to produce a reaction product containing significant amounts of 1,1,2-trichloroethane and 1,1,2,2-tetrachloroethane in addition to 1,2-dichloroethane by oxychlorination of a mixture of ethylene and vinyl chloride with a fixed bed catalyst.

3,622,644
OLIGOMERIZATION OF OLEFINS USING A RHENIUM COMPLEX CATALYST SYSTEM
Donald H. Kubicek, and Edmund T. Kittleman, both of Bartlesville, Okla., assignors to Phillips Petroleum
Filed Nov. 25, 1968, Ser. No. 778,795
Int. Cl. C07c 3/10
U.S. Cl. 260—666 A 10 Claims

Olefins are oligomerized by contacting the olefin with a homogeneous rhenium complex catalyst in combination with an organoaluminum adjuvant. Additionally, olefins are oligomerized by contact with a heterogeneous catalyst prepared by depositing upon a suitable solid support the homogeneous combination mentioned above.

3,622,645
CONVERSION OF BENZENE TO CYCLOHEXANE IN THE PRESENCE OF A CATALYST OF SMALL PARTICLE SIZE

Norman L. Carr, Allison Park, and Allen E. Somers, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 034,408
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 **11 Claims**

A process for the production of substantially pure cyclohexane from a mixture of benzene, cyclohexane and hydrogen in the presence of a hydrogenation catalyst. The product purity is improved and particularly the contamination of the product by the production of undesirable normal paraffins is reduced when utilizing hydrogenation catalyst particles of not more than one-tenth inch in diameter. A preferred embodiment of the process utilizes relatively smaller catalyst particles in the last zone of a plurality of reaction zones.

3,622,646
PROCESS FOR CRACKING CYCLOOLEFINS

Lionel T. Wolford, and Ralph Levine, both of Freehold, N.J., assignors to Cities Service Company

Filed June 11, 1969, Ser. No. 832,479
Int. Cl. C07c *11/12*
U.S. Cl. 260—680 C **14 Claims**

Processes are described for the production of alpha, omega-alkadienes by subjecting cycloalkenes to thermal cracking in the presence of an ammonia or amine regulator. The presence of such regulator is shown to inhibit secondary reactions which produce byproducts having boiling points close to that of the desired alpha, omega-alkadiene, thus facilitating the recovery of high-purity diene by distillation.

3,622,647
MANUFACTURE OF ALKENE FROM ALKANE VIA BORON ESTERS

Matthew A. McMahon, and Alfred Arkell, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,199
Int. Cl. C07c *1/20*; C07b *3/00*; C07f *5/04*
U.S. Cl. 260—682 **7 Claims**

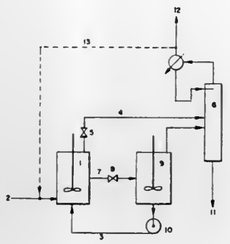
Manufacture of alkene from alkane, said alkene of an equal number of carbons as its alkane precursor, comprising contacting alkane with oxygen in the presence of a boric acid at an elevated temperature, spearating the resultant alkylborate esters from the reaction product, pyrolyzing said alkylborates in an inert atmosphere, preferably in the presence of a methanol or trimethylborate and recovering the formed alkene from the pyrolysis mixture, said recovery preferably including contacting said formed alkene with silica gel.

3,622,648
DIMERIZATION OF OLEFINS

Karl Schloemer, Ludwigshafen am Rhine; Hugo Kroeper, Heidelberg, and Hans-Martin Weitz, Frankenthal Upper Palatinate, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed May 17, 1968, Ser. No. 729,987
Claims priority, application Germany, May 27, 1967, P 16 18 168.3
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 **9 Claims**

An improved process for the dimerization of olefins in the presence of alkali metal catalysts at 60° to 200° C. and at atmospheric pressure up to 300 atmospheres, catalysts being used which have been derived from an alkali metal and an organic compound containing one or more than one carbonyl group. The process is particularly suitable for effective and selective dimerization of propylene to 4-methylpenctene-1.



Some of the dimers obtained are suitable as antiknock additives and for the production of polymers.

3,622,649
DIMERIZATION OF PROPYLENE TO 2,3-DIMETHYLBUTENES

Harold E. Swift, Gibsonia, and Ching-Yong Wu, O'Hara Township, Allegheny County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 15, 1969, Ser. No. 850,642
Int. Cl. C07c *3/18*
U.S. Cl. 260—683.15 **9 Claims**

Propylene is converted to a mixture of C_6 olefins with high efficiency, usually over 70 percent, to 2,3-dimethylbutenes using a highly specific catalyst system and a highly specific solvent at a temperature less than about 10° C. The catalyst system comprises $NiCl_2$, triisopropylphosphine and an aluminum alkyl chloride or dichloride. The solvent is a dichlorinated benzene.

3,622,650
RUBBER REINFORCING COMPOSITIONS

Gregor Berstein, Newton, and Bram B. Boonstra, Sharon, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Feb. 4, 1969, Ser. No. 796,541
Int. Cl. C08l *17/08*; C08c *11/10*, *11/18*
U.S. Cl. 260—763 **12 Claims**

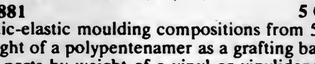
Superior rubber reinforcing compositions comprising mixtures of carbon black and silica are provided by fluid energy milling of the combined ingredients. Among other attributes the resulting reinforcing composition display improved cut growth resistance characteristics in natural rubber formulations.

3,622,651
NOVEL POLYMER HAVING PENDENT ESTER GROUPS FOR LOW TEMPERATURE BAKE COATINGS

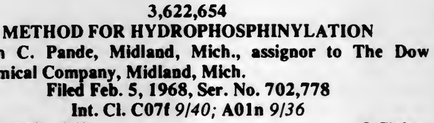
Joseph Anthony Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 811,196, Mar. 27, 1969, now abandoned. This application Dec. 1, 1969, Ser. No. 881,278
Int. Cl. C08f *15/34*
U.S. Cl. 260—856 **22 Claims**

A novel polymer useful for forming coating compositions and a process for making this polymer are the subjects of this invention; the novel polymer has a backbone of polymerized ethylenically unsaturated monomers and has attached directly to its backbone ester groups of the following structure



and



or an isomer thereof, wherein R^1, R^2 and R^3 are hydrocarbon radicals; this novel polymer is particularly useful in forming high quality coating compositions which can be baked into tough, durable films at a relatively low temperature.

3,622,652
EPDM POLYMERS MODIFIED BY GRAFT POLYMERIZATION

Parviz Hamed, Cuyahoga Falls, and Everett T. McDonel, Brecksville, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of application Ser. No. 491,409, Sept. 29, 1965, now abandoned. This application Dec. 19, 1967, Ser. No. 691,718
Int. Cl. C08f *1/04*, *15/00*
U.S. Cl. 260—878 R **1 Claim**

Alkyl acrylates and methacrylates are graft polymerized onto ethylene-propylene-diene rubbery elastomers as a backbone. The graft polymers are sulfur curable and have superior abrasion resistance compared to nongrafted ethylene-propylene-diene elastomers.

3,622,653
GRAFTS OF VINYL OR VINYLIDENE MONOMERS ONTO POLYMERIZED CYCLOPENTENE

Herbert Schuster, Cologne-Stammheim; Karl Nutzel, Opladen; Karl Dinges, Odenthal, and Harry Rohr, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1969, Ser. No. 803,416
Claims priority, application Germany, Mar. 13, 1968, P 17 20 802.5
Int. Cl. C08f *15/40*, *19/18*
U.S. Cl. 260—881 **5 Claims**

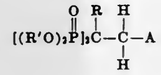
Thermoplastic-elastic moulding compositions from 5 to 50 percent by weight of a polypentenamer as a grafting base and from 95 to 50 parts by weight of a vinyl or vinylidene compound and a process for producing these compositions by graft polymerizing the vinyl or vinylidene compound in the presence of the polypentenamer e.g. in emulsified form.

3,622,654
METHOD FOR HYDROPHOSPHINYLATION

Kailash C. Pande, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 5, 1968, Ser. No. 702,778
Int. Cl. C07f *9/40*; A01n *9/36*
U.S. Cl. 260—969 **8 Claims**

Activated alkenes or alkynes are hydrophosphinylated by a method comprising reacting an activated alkene or alkyne with a trialkyl phosphite in the presence of an ammonium halide so as to produce phosphonates useful in resin production. Some new phosphonates are also produced by this process which have the formula



where R is hydrogen, alkyl having up to six carbon atoms or phenyl; R′ is alkyl having up to twelve carbon atoms; and A is an electron-withdrawing substituent. These phosphonates have biological activity.

3,622,655
AQUEOUS SLURRY PROCESS FOR DRYING OF SOLVENT WET DOUBLE BASE SMOKELESS POWDER

John O. Bonyata, Mountain Lakes, and Lynn G. Rohrbaugh, Lake Hopatcong, both of N.J., assignors to Hercules Incorporated, Wilmington, Del.

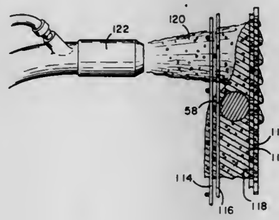
Filed Apr. 14, 1969, Ser. No. 816,022
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 **9 Claims**

A process for rapid drying of solvent-wet double-base smokeless powder is provided in which most of the solvent entrapped in the double-base powder particles manufactured by the conventional solvent process is extracted from the powder into the aqueous phase of an aqueous slurry of the powder. The solvent-extracted smokeless powder is then dried employing rapid-drying techniques with no substantial loss of energetic plasticizer.

3,622,656
METHOD OF MANUFACTURING REINFORCED WALL STRUCTURE

David B. Dewey, Jr., Rancho Sante Fe, and Norman W. Schofield, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed May 26, 1969, Ser. No. 827,636
Int. Cl. B28b *19/00*, *23/02*; E04b *1/16*
U.S. Cl. 264—35 **5 Claims**



A large buoy construction of relatively thin wall composite material, which walls are integrally formed and interconnected by a reinforcing matrix frame comprising reinforcing members sandwiched between layers of screens, to which the cement-type material can be applied by use of power equipment in a rapid application and thorough penetration into the matrix to accomplish onsite formless molding of integral, unitary structures having complex shapes and junctions.

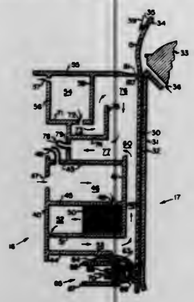
3,622,657
METHOD FOR FORMING AND COOLING THERMOPLASTIC FILM

Howard C. North, Westfield, N.J., and Charles W. Williamson, Seabrook, Tex., assignors to Esso Research and Engineering Company

Filed Sept. 24, 1969, Ser. No. 860,610
Int. Cl. B29c *17/00*, *25/00*
U.S. Cl. 264—89 **8 Claims**

A method for forming and cooling thermoplastic film. The film is extruded downwardly in a molten condition and passed through a cooling cell containing a cooling liquid. A first stream of cooling liquid is passed in contact with lower part of the film at a high velocity in countercurrent turbulent flow. A second stream of cooling fluid is passed in contact with the upper part of the film at a low velocity in cocurrent laminar flow. The first and second streams are withdrawn from a transistion zone adjacent to the surface of the film at a medial point of the film. The film may be in tubular form

and passed over a cooling mandrel positioned within the cooling cell. Cooling air is passed upwardly through the in-



side of the film to expand the film and prevent condensation of volatiles on the mandrel.

3,622,658
METHOD OF TREATING ACRYLONITRILE SYNTHETIC FIBER

Kazumi Nakagawa; Keitaro Shimoda, and Keijiro Kuratani, all of Saidaiji, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Continuation of application Ser. No. 588,282, Oct. 21, 1966, now abandoned. This application Sept. 11, 1969, Ser. No. 857,653
Int. Cl. D01f 7/00; D06p 5/00
U.S. Cl. 264—182 **1 Claim**

A method of treating acrylonitrile synthetic fibers which involves preparing a solution of acrylonitrile polymer containing $-SO_3M$ or $-OSO_3M$ and at least 80 percent by weight of acrylonitrile in said polymer which is dissolved in an aqueous solution of the salt of thiocyanic acid, wet spinning said solution in water of a dilute aqueous thiocyanate solution, treating said fiber with an aqueous solution of the inorganic salt of alkali metal atoms or an ammonium salt at a pH of 2.2 to 4.0 to combine from 75 to 95 percent of said groups in the fiber with the alkali metal atoms or ammonium ions, and finally washing said fiber with water.

3,622,659
THERMAL GRADIENT METHOD FOR MAKING THERMOPLASTIC MATRICES

John Sonia, Califon; John B. Wheeler, III, Somerville; Thomas E. Hayes, Highland Park, and Robert B. Petrochko, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 721,942, Apr. 17, 1968, now abandoned. This application Feb. 17, 1969, Ser. No. 799,942
Int. Cl. B29d 17/00; B29c 1/04
U.S. Cl. 264—220 **8 Claims**

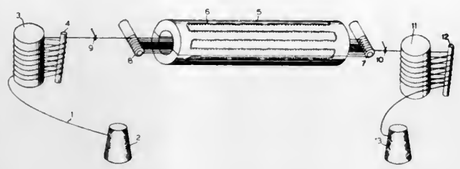
An improved process for making thermoplastic matrices wherein a thermal gradient is established between the molding interface and the back of a thermoplastic matrix blank whereby the viscosity at the molding interface is high enough to resist flow into the original and the temperature at the back is sufficiently high to permit flow of molten thermoplastic.

3,622,660
MULTI-STAGE DRAWING PROCESS FOR POLYBENZIMIDAZOLE STRAND MATERIAL

George F. Ecker, 1857 Shiff Court, Toms River, N.J., and Thomas Carl Bohrer, 67 Canoe Broad Way, Summit, N.J.

Continuation-in-part of application Ser. No. 520,743, Jan. 14, 1966, now abandoned. This application Oct. 23, 1968, Ser. No. 769,862
Int. Cl. D02j 1/22
U.S. Cl. 264—290 R **11 Claims**

Foamable polybenzimidazole fiber or yarn is hot drawn without foaming at a draw ratio above about 1.5:1 and at a drawing speed in excess of about 20 meters per minute in a drawing zone wherein the fiber is radiantly heated and wherein the draw is effected on at least two passes through



the zone, the drawn on any one pass being less than about 1.5:1.

3,622,661
ORAL PREPARATIONS

William James King, River Edge, N.J., and Glendon Richard Miller, Wichita, Kans., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 751,352, Aug. 9, 1968, now abandoned. This application July 13, 1970, Ser. No. 54,594
Int. Cl. A61r 7/16
U.S. Cl. 424—50 **9 Claims**

Oral preparation containing dextranase and as binder, Irish moss or gum tragacanth.

3,622,662
STABLE DENTAL CREAM

Francis D. Roberts, W. Millington, and James Norfleet, Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 818,059
Int. Cl. A61r 7/16
U.S. Cl. 424—54 **16 Claims**

Dental cream containing polishing agent, benzyl alcohol and clove or mint flavor. Zinc oxide, zinc phosphate, or alkali metal phosphate having a pK_a of at least 7 in water at 25° C. (such as trisodium phosphate), is present to stabilize and prevent separation of the cream.

3,622,663
PURIFICATION OF VIRUSES ON TREATED CALCIUM DIHYDROGEN ORTHOPHOSPHATE MONOHYDRATE ADSORBENT

Milton Lapidus, Rosemont, Pa., assignor to American Home Products Corporation, New York, N.Y.

Original application June 13, 1968, Ser. No. 736,561, now Patent No. 3,509,070, which is a continuation-in-part of application Ser. No. 497,540, Oct. 18, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 396,726, Sept. 15, 1964, now abandoned. Divided and this application Feb. 11, 1970, Ser. No. 10,644
Int. Cl. A61r 27/00; B01j 11/82; C01b 25/32
U.S. Cl. 424—89 **5 Claims**

This invention relates to an alkali treated calcium dihydrogen orthophosphate monohydrate adsorbent. Further, it concerns an alkali and trimetaphosphate treated calcium dihydrogen orthophosphate monohydrate adsorbent. Still further, it relates to the processes for the preparation of these adsorbents and to their use in virus purification.

3,622,664
TREATMENT OF INFECTIOUS KERATITIS IN ANIMALS WITH SODIUM ARSENITE

John A. Brown, 909 N. Alameda, Las Cruces, N. Mex.

Filed Nov. 21, 1968, Ser. No. 777,872
Int. Cl. A61k 27/00
U.S. Cl. 424—133 **17 Claims**

Animals, particularly livestock such as cattle and sheep, having infectious keratitis (commonly known as pink-eye) are treated by administering internally, either by intramuscular injection or orally, effective amounts of sodium arsenite. When administered orally the sodium arsenite can be admixed with the animals' salt supply or feed and when provided to the animals on a regular basis is effective in preventing infection by the disease.

3,622,665
PROCESS FOR TREATING GRAM-NEGATIVE BACTERIAL DISEASES WITH PENTAKIS [N-SULFOMETHYL] CIRCULIN OR SALT THEREOF

Alexander D. Argoudelis, Portage, and Joseph E. Grady, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich. Continuation-in-part of Ser. No. 687,488, Dec. 4, 1967, which is a continuation-in-part of application Ser. No. 427,957, Jan. 25, 1965, now abandoned.

This application July 2, 1969, Ser. No. 838,645
Int. Cl. A61k 27/00
U.S. Cl. 424—177 **6 Claims**

Pentakis[N-(sulfomethyl)]circulin and its pharmacologically acceptable cationic salts consisting of sodium, potassium, lithium, ammonium, triethylamine, N-ethylpyridine and procaine, prepared in unit dosage form in combination with a pharmaceutical carrier for systemic, local and topical administration to animals animals and mammals, including avian species for treatment of diseases caused by gram-negative organisms.

3,622,666
METHODS FOR TREATING BACTERIAL INFECTIONS WITH PHRENOSIN

Elton S. Cook, Cincinnati, Ohio, and Norbert J. Berberich, Jr., Covington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

Filed Mar. 4, 1968, Ser. No. 709,937
Int. Cl. A61k 27/00
U.S. Cl. 424—180 **5 Claims**

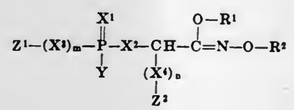
A variety of substances are reported which alter host resistance to cocci bacterial infections. Nevertheless drugs which induce a high degree of resistance to these infections when administered prophylactically are not in wide use. Drugs which confer immunity to these infections for more than a week after administration are virtually unknown. Antimicrobials have been found which are effective in inducing resistance to infections due to cocci when administered prophylactically.

3,622,667
NEW NEMATOCIDAL COMPOSITIONS

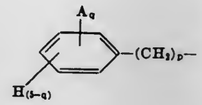
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 13, 1969, Ser. No. 799,115
Int. Cl. A01n 9/36
U.S. Cl. 424—211 **8 Claims**

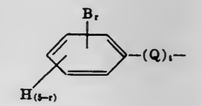
This invention discloses nematocidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to nematodes, a compound of the formula



wherein R^1 and R^2 are alkyl; X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; m and n are each integers from 0 to 1; Z^1 is selected from the froup consisting of alkyl, alkenyl and



wherein A is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, q is an integer from 0 to 5, and p is an integer from 0 to 3; Z^2 is selected from the group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is 0; and Y is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and



wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, r is an integer from 0 to 5, Q is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and t is an integer from 0 to 1. This invention further discloses a method for control of nematodes which comprises contacting said nematodes with a nematocidal composition comprising a inert carrier and, in a quantity toxic to nematodes, a compound as described above.

3,622,668
METHOD OF PROMOTING SCAR-FREE HEALING OF SKIN LACERATIONS

Joe B. Moss, 8405 Emmet, Omaha, Nebr., and Clifford F. Moss, deceased, late of Moville, Iowa (by Joe B. Moss, assignee)

Continuation of application Ser. No. 704,982, Feb. 2, 1968, now abandoned, which is a continuation of application Ser. No. 390,751, Aug. 19, 1964, now abandoned. This application Aug. 27, 1969, Ser. No. 857,617
Int. Cl. A61r 15/02
U.S. Cl. 424—237 **2 Claims**

This invention relates to medications for and the treatment of skin lacerations. In particular, this invention relates to a novel medication that may be applied as an abluent lotion directly upon lacerated skin tissue of wounded animals so as to promote scar-free healing thereof.

3,622,669
5β-TAUROCHOLENIC ACIDS AND 5β-TAUROCHOLADIENIC ACIDS IN COMPOSITIONS FOR REDUCING THE CONCENTRATION OF CHOLESTEROL AND LIADS IN BLOOD SERUM

Arthur A. Patchett, Cranford, and John Hannah, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 23, 1967, Ser. No. 677,080
Int. Cl. A61k 27/00
U.S. Cl. 424—238 **2 Claims**

5β-Taurocholenic acids wherein the double bond may be either in the 22-position of the aliphatic chain or within the

cholane ring; and 5β-taurocholadienic acids wherein one double bond is in the 22-position of the chain and the second is within the cholane nucleus; and the salts, esters and amide derivatives thereof. The products are hypocholesterolemics and hypolipemics which have utility in the treatment of conditions associated with blood lipid deposition.

The choice of a suitable method for preparing the final products depends largely upon the type of unsaturation in the final product; however, each route bears in common the terminal step of treating a 5β-cholenic acid with an alkyl haloformate in the presence of a base followed by the reaction of the mixed anhydride intermediate thus formed with taurine in a basic medium to yield a 5β-taurocholenic acid salt or 5β-taurocholadienic acid salt and, if desired, the salt thus obtained may then be converted to its free acid, ester or amide by conventional means.

3,622,670

METHOD OF INDUCING OVULATION

Richard A. Edgren, Berwyn, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,447
Int. Cl. A61k *17/06*
U.S. Cl. 424—238 **4 Claims**

Compositions comprising 13-alkyl-16α-hydroxy-3,17-dioxygenated-gona-1,3,5(10)-trienes, especially 13-ethylgona-1,3,5(10)-triene-3,16α,17β-triol, and a carrier are useful to induce ovulation in warm-blooded anovulatory vertebrates after administration.

3,622,671

SUBSTITUTED 3-HYDRAZINO PYRIDAZINES AS HYPOTENSIVES

Paul L. Anderson, Denville; William J. Houlihan, Mountain Lakes, and Robert E. Manning, Mountain Lakes, all of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 24, 1969, Ser. No. 809,944
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **3 Claims**

Certain 4-amino-6-chloro-3-hydrazino pyridazines have been found to be useful as hypotensives.

3,622,672

SYNERGISTIC MIXTURE OF 5-METHYL 7-BROMO 8-HYDROXY QUINOLINE AND N-DODECYL SULPHATE OF 5-METHYL 8-HYDROXY QUINOLINE

Eugene Leroi; Albert Beaufour, and Gerard Beaufour, all of Paris, France, assignors to Societe D'Etudes De Produits Chimiques, Issy-les-Moulineaux, France

Continuation-in-part of Ser. No. 342,776, Feb. 5, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 660,064, Aug. 11, 1967, now abandoned. This application Jan. 30, 1969, Ser. No. 801,228
Int. Cl. A61k *27/00*
U.S. Cl. 424—258 **1 Claim**

A mixture of n-dodecyl sulfate of 5-methyl-8-hydroxy quinoline alone and 5-methyl-7-bromo-8-hydroxy quinoline as a pharmaceutically active material for administering bacteriostatic, parasiticidic or fungistatic dosage to living bodies.

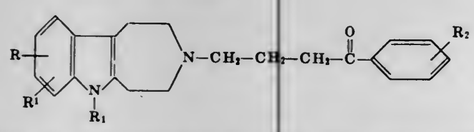
3,622,673

4-(1,4,5,6-TETRAHYDROZEPINO 4,5-B INDOL-3(2H)-YL-BUTYROPHENON COMPOSITIONS AND PROCESS OF TREATMENT MENTAL OR EMOTIONAL DISORDERS

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 14, 1968, Ser. No. 775,957
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **5 Claims**

Compounds of the formula



and the pharmacologically acceptable acid addition salts thereof wherein R and R' are hydrogen or methoxy; R_1 is hydrogen or methyl; and R_2 is fluorine prepared in unit dosage form for oral, rectal or parenteral administration having tranquilizing, antipsychotic, sedative, anticonvulsant, antiemetic and anorexigenic activity and a process for treating mental and emotional disorders by administering the foregoing compositions at a dosage of from 0.5 to 50 mg./kg./day.

3,622,674

ANTICOCCIDIAL ACTIVITY OF METAL CHELATES OF SUBSTITUTES BIS-THIOSEMICARBAZONES OF CYCLIC 1,2-DIKETONES

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Original application Aug. 30, 1967, Ser. No. 671,527, which is a division of application Ser. No. 407,212, Oct. 28, 1964, now Patent No. 3,382,266, dated May 7, 1968. Divided and this application May 6, 1969, Ser. No. 822,301
Int. Cl. A61k *27/00*
U.S. Cl. 424—289 **4 Claims**

Substituted bis-thiosemicarbazones of cyclic 1,2-diketones and metal chelates thereof effective in the control and treatment of coccidiosis.

3,622,675

ANOREXIGENIC COMPOSITION AND METHOD

Herbert Koppe; Gerhard Ludwig, and Karl Zeille, all of Ingelheim/Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Original application Mar. 24, 1965, Ser. No. 442,539, now abandoned. Divided and this application Apr. 28, 1969, Ser. No. 819,939
Int. Cl. A61k *27/00*
U.S. Cl. 424—304 **2 Claims**

Anorexigenic compositions comprising a 1-phenyl-2-(lower alkyl-amino)-lower alkanone-(1) or a nontoxic acid addition salt thereof aS an active ingredient, and a method of curbing the appetite of warmblooded animals therewith.

3,622,676

SMOKING SUPPRESSION

Constance Anthony D'Alonzo, Wilmington, Del., assignor to William Anthony Drucker, Washington, Conn. and Howard Ira Maibach, Kentfield, Calif., part interest to each

Continuation-in-part of application Ser. No. 236,414, Nov. 8, 1962, now abandoned , Continuation-in-part of application Ser. No. 342,227, Feb. 3, 1964. This application Nov. 20, 1968, Ser. No. 777,461
Int. Cl. A61k *27/00*
U.S. Cl. 424—325 **3 Claims**

A method of treating the habit of tobacco smoking by suppressing the pleasure associated with the taste of smoke is disclosed in which a bis-(B-di-lower alkylaminoethyl) disulfide composition is administered over a period of several days to generate a feeling of distaste and discomfort when smoking.

3,622,677

COMPRESSED TABLETS CONTAINING COMPACTED STARCH AS BINDER-DISINTEGRANT INGREDIENT

Rolland W. P. Short, and Frank Verbanac, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of application Ser. No. 646,496, June 16, 1967, now abandoned. This application July 7, 1969, Ser. No. 839,590
Int. Cl. A61j *3/10*
U.S. Cl. 424—361 **8 Claims**

A directly compressed tablet containing as a binder-disintegrant ingredient, a partially cold-water soluble, cold-water swelling starch material derived from compacted granular starch, e.g. compacted native corn starch. The compacted granular starch is a superficially dry, free-flowing powder in which the starch is in the form of a mixture of birefringent granules and nonbirefringent fragments of granules, in which some aggregates of granules and fragments are present. The use of the starch binder-disintegrant ingredient allows active ingredients, e.g. pharmaceuticals, to be tabletted by direct compression.

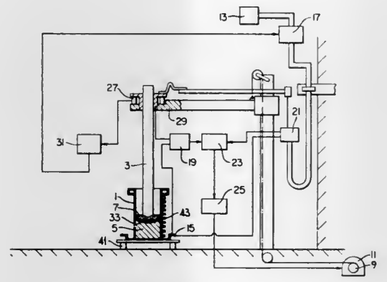
ELECTRICAL

3,622,678

ELECTRODE FEED ARRANGEMENTS

Alec George Allen, Sutton Coldfield, England, assignor to Associated Electrical Industries Limited, London, England

Filed May 14, 1969, Ser. No. 824,608
Claims priority, application Great Britain, May 14, 1968, 22,855/68
Int. Cl. F27d *11/10*; **H05b** *3/60*
U.S. Cl. 13—13 **10 Claims**



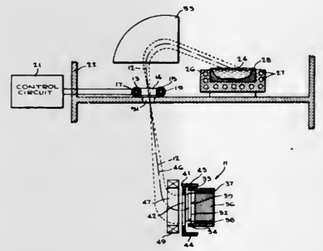
An arrangement for controlling the electro-slag process of producing ingots in which the actual growth of the ingot is compared with a required growth and a difference signal produced and utilized to vary the applied voltage so that the electrode is consumed at a rate which will give the required growth of the ingot.

3,622,679

HEATING SYSTEM FOR ELECTRON BEAM FURNACE

Kurt D. Kennedy, Berkeley, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,522
Int. Cl. H05b *5/14*
U.S. Cl. 13—31 **5 Claims**



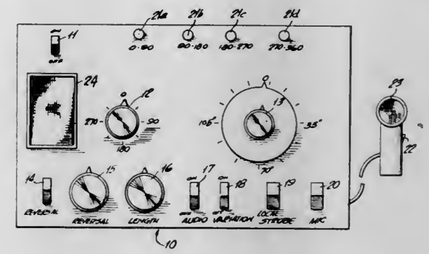
An electron beam furnace heating system is described comprising an electron beam gun and four solenoidal coils positioned to deflect the electron beam in a predetermined manner onto a target being heated. The solenoidal coils define a quadrangular space through which the beam passes and are energized such that oppositely disposed ones of the coils produce magnetic fields with lines of force in their cores extending in the same direction. By varying the current through the coils, the electron beam may be deflected in different directions and by different amounts to thereby control the position of impact of the electron beam on the target being heated.

3,622,680

DOPPLER RADIO DIRECTION FINDING, TESTING AND TEACHING DEVICE

Joseph Palmieri, 505 Gibbs Pond Road, Lake Ronkonkoma, Long Island, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,311
Int. Cl. G01s *7/40*
U.S. Cl. 35—10.4 **7 Claims**



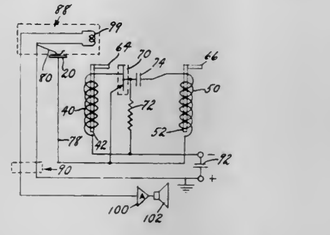
An auxiliary device for the testing of doppler radio direction finding equipment may also simulate various navigational situations on that equipment for the purpose of instruction. The testing and instructional device operates from an internal timing circuit of the equipment and is synchronized with it.

3,622,681

ELECTRONIC MUSICAL INSTRUMENT EMPLOYING FREE-BEAM ELECTROMECHANICAL RESONATORS AND A HAND-HELD BATON

Alvin S. Hopping, Nolan's Point, Lake Hopatcong, N.J.

Filed May 2, 1969, Ser. No. 821,226
Int. Cl. G10h *3/00*, *3/08*
U.S. Cl. 84—1.01 **4 Claims**



An electronic musical instrument in which the output of free-beam electromechanical tone generators is coupled from a keyboard to an amplifier by a hand-held baton which is contacted with the keyboard to select the desired tone.

ERRATUM

For Class 165—9 see:
Patent No. 3,622,737

3,622,682

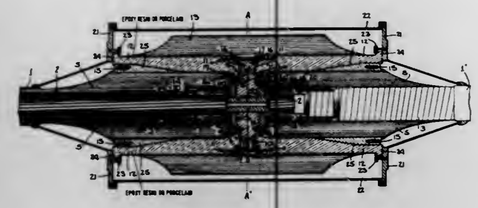
STOP JOINT FOR HIGH-VOLTAGE, OIL-FILLED CABLE

Vittorio Buroni, Milan, Italy, assignor to Industrie Pirelli S.p.A.

Filed Sept. 11, 1970, Ser. No. 71,604
Claims priority, application Italy, Sept. 18, 1969, 22184 A/69
Int. Cl. H02g *15/24*
U.S. Cl. 174—22 R **14 Claims**

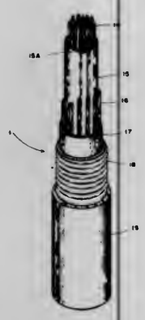
A stop joint for joining together a pair of high-voltage oil-filled electrical power cables, and comprising a locking

mechanism for securing together the ends of the cable conductors and further comprising a rigid insulator which interconnects the conductors where they are joined, to the outer casing of the cables thereby to absorb the mechanical stresses caused by heating and cooling of the conductors. The locking mechanism comprises a pair of circular discs



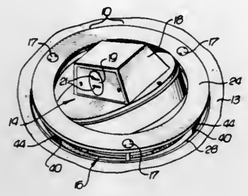
having sleeves fitted to the respective cable conductors and circumferential protuberances about the edge of the periphery of each disc. These protuberances define a circumferential projection when the discs are together. A ring which can be dissembled is provided about the discs and the ring contains an internal groove which accommodates the projection and holds the discs together.

3,622,683
TELEPHONE CABLE WITH IMPROVED CROSSTALK PROPERTIES
Walter L. Roberts, Hickory, and Frederic N. Wilkenloh, Conover, both of N.C., assignors to Superior Continental Corporation, Hickory, N.C.
Filed Nov. 22, 1968, Ser. No. 778,073
Int. Cl. H01b *11/08*
U.S. Cl. 174—36 **37 Claims**



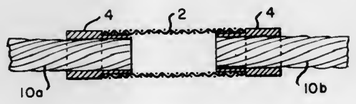
Disclosed herein is an economical telephone cable structure and method of making same, such cable structure possessing improved crosstalk properties. A plurality of insulated electrical conductors (pairs), of an otherwise conventional telephone cable design are divided into at least two portions by plastic-coated metal foil strip or tape. Measurements between pairs, divided by this plastic-coated metal foil, of unwanted energy transferred from one conductor to another by means of mutual inductive, capacity, or conductive coupling (crosstalk), shows greatly improved properties over undivided cable pairs or divided cable pairs of prior art. By dividing electrical conductor telephone pairs within a telephone cable structure with plastic-coated metal foil, the crosstalk properties are so vastly improved that a greater spacing between repeaters can be designed into a telephone cable system, as compared to a cable system employing prior art divided or undivided cable pairs.

3,622,684
ROTATABLE FLOOR RECEPTACLE MOUNTING UNIT
Paul R. Press, Whittier, Calif., assignor to C. W. Cole & Co. Inc., El Monte, Calif.
Filed Oct. 15, 1970, Ser. No. 81,014
Int. Cl. H02g *3/08*
U.S. Cl. 174—48 **9 Claims**



A rotatable floor receptacle mounting unit is provided that includes an electrical receptacle mount that is pivotally supported within an opening in a mounting ring so that electrical receptacles thereon can be rotated to either an exposed position or a concealed position in a recess in the floor. An adjustable seal ring is coupled to form the upper annular surface of the mounting ring. When the seal ring is fastened to the mounting ring flush with the level of the floor, the inner peripheral surface thereof overlaps an annular shoulder formed on the periphery of the mount to enable a sealing gasket to be compressingly engaged therebetween. When it is desired to flip over the receptacle mount the seal ring is released and raised to provide sufficient clearance for enabling the mount to be swung on its pivotal support past the inner peripheral surface of the seal ring. The seal ring is then again lowered and fastened flush with the level of the floor to seal the mount in its new position.

3,622,685
FLEXIBLE ELECTRIC CONNECTOR
Robert R. Crowl, R.D. #4, Box 48-B, Belle Vernon, Pa.
Filed Mar. 25, 1970, Ser. No. 22,498
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **2 Claims**



A connector for use in making a mechanical and an electrical connection between the ends of insulated cable. The connector has a flexible sleeve formed from a series of interwoven wires and a pair of collars attached to each end of the sleeve. The ends of the conductive elements to be spliced are passed into the collars and the collars are crimped about the conductive elements to form the connection.

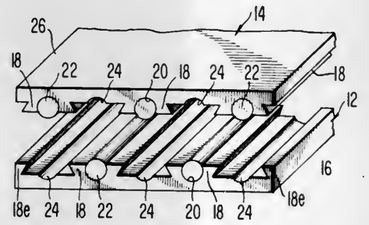
3,622,686
CONDUIT FOR HOUSING A PLURALITY OF ELECTRIC WIRES AND ASSOCIATED CONNECTORS
Edward A. Neirinck, Mt. Clemens, Mich., and Ralph L. Johnson, Cape Coral, Fla., assignors to General Motors Corporation, Detroit, Mich.
Filed May 12, 1970, Ser. No. 36,654
Int. Cl. H02g *3/04*
U.S. Cl. 174—97 **4 Claims**

A casement and protective device for the wires employed in a motor vehicle which device includes at least two compartments. One of the compartments being adapted to contain all of the original wiring and having openings therein for the removal of selected wires, and a second compartment integral with the first compartment and having means therein for receiving the removed or replaced wires, the entire



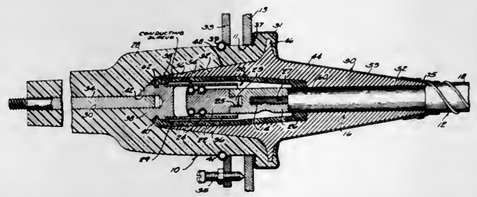
device being made of electrically nonconductive material whereby shorting out of the wires is minimized.

3,622,687
MULTICONDUCTOR COMPOSITE BELT AND METHOD OF FABRICATING IT
Frederic C. Doughty, Valley Forge, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 12, 1970, Ser. No. 79,860
Int. Cl. H01b *7/04*
U.S. Cl. 174—117 F **5 Claims**



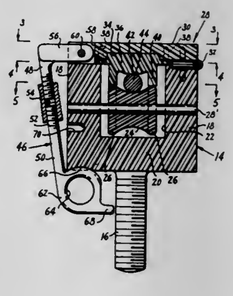
A composite electrical cable in the form of a belt, constructed by interlocking two half belts.

3,622,688
CABLE LEAD BUSHING
Edwin A. Link, Waukesha, and Edward L. Sankey, New Berlin, both of Wis., assignors to RTE Corporation, Waukesha, Wis.
Filed Dec. 2, 1969, Ser. No. 881,504
Int. Cl. H01b *17/26*
U.S. Cl. 174—142 **6 Claims**



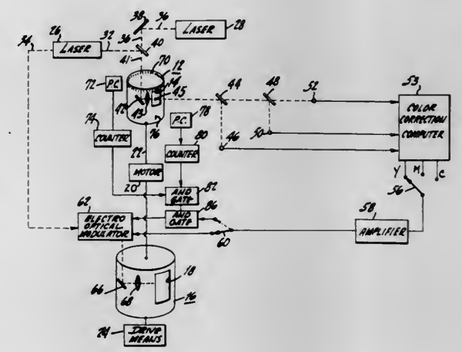
A composite bushing for terminating a high-voltage cable which has an electrical conductor, cable insulation and a semiconductive shield. The bushing including an electrically conductive assembly adapted to be electrically connected to the conductor. A sleeve of electrically insulating elastomeric material surrounding the assembly in a spaced relation thereto and extending outwardly from one end thereof, said outwardly extending portion having a passage adapted to sealingly engage the exposed cable insulation. A rigid dielectric housing bonded to the portion of the length of said sleeve around said assembly and to a portion of said assembly, an inner sleeve of electrically conductive elastomeric material provided within said nonconductive elastomeric sleeve and having a length sufficient to bridge the space between the assembly and the nonconductive sleeve. The electrically conductive sleeve having a reduced diameter section at each end to engage the assembly at one end and the cable insulation at the other end.

3,622,689
LOCKING INSULATOR
James R. Sparks, 6730 Hedge Ave., Sacramento, Calif.
Filed Mar. 13, 1970, Ser. No. 19,405
Int. Cl. H01b *17/16*
U.S. Cl. 174—168 **9 Claims**



An insulating body is provided with a space therein in which is arranged a roller over which the cable is adapted to be moved to be pulled taut, whereupon a clamping device is movable downwardly and clamped in position and exerts a force on both the cable and the roller to prevent any longitudinal movement of the cable or rotational movement of the roller.

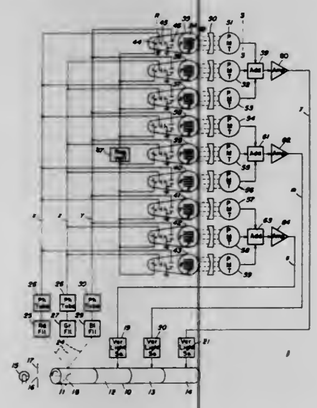
3,622,690
ELECTRONIC SCANNER UTILIZING A LASER FOR THE SIMULTANEOUS SCANNING AND REPRODUCING OF IMAGES
Arthur W. Stephens, Hightstown, N.J., and John J. Walsh, Yardley, Pa., assignors to RCA Corporation
Filed Sept. 26, 1968, Ser. No. 762,785
Int. Cl. H04n *1/46*
U.S. Cl. 178—5.2 R **8 Claims**



An electronic color scanner scans original patterns such as photographs, pictures, etc. to provide a plurality of photographic film color separation negatives (or positives) of the

original pattern. The color separations are subsequently processed into printing plates for printing color reproductions of the original pattern. The scanner utilizes a laser that simultaneously functions to scan the original pattern as well as to provide the light for producing the color separations. The laser reproducing light is also modulated to produce pulses having sizes corresponding to the tones in the original pattern so as to provide screened color separations of the original pattern.

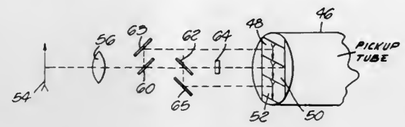
3,622,691
HIGH-SPEED LIGHT-RESPONSIVE TRANSFORM COMPUTER FOR A LIGHT-SENSITIVE PRINTING SYSTEM
John L. Dailey, 83 Parkridge Drive, Pittsford, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,627
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.2 A **21 Claims**



A light-responsive printing system including a spot of white light scanning a member having red, green and blue colors varying in densities to reflect corresponding light rays therefrom for conversion into corresponding voltages; light-sensitive elements; sources of additional white light variable to intensity in response to other voltage to shine the latter white light onto the respective elements to represent thereon the densities of printing inks of magenta, yellow and cyan colors required to duplicate the densities of the red, green and blue light, respectively, of the member as scanned; and a high-speed light-responsive transform computer for producing the other voltages, comrpising: three transforms one for each of the printing inks, each transform including three groups of cathode-ray tubes, each having three tubes; three groups of photographic films, each group containing three films; each film of each group mounted in proximity of the screen of each tube in each tube group and containing a multiplicity of discrete areas encoded with successively predetermined different degrees of light transparencies in such manner that a summation of the areas of different degrees of light transparencies in each transform film group represents one of the other voltages; and photosensor circuits light coupled to the transform films of the respective transform film groups for translating the light of varying intensities transmitted therethrough into the other voltages.

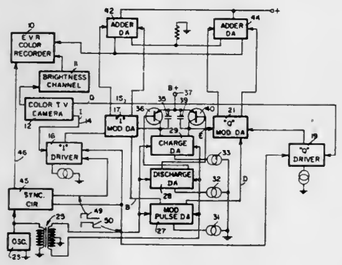
3,622,692
SEQUENTIAL COLOR TELEVISION SYSTEM
Kenneth D. Stephens, Jr., Salt Lake City, Utah, assignor to Alberto R. Esteves, Hato Rey, San Juan, P.R.
Continuation-in-part of application Ser. No. 593,756, Nov. 14, 1966, now abandoned. This application Feb. 10, 1969, Ser. No. 804,733
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.2 R **47 Claims**

There is disclosed herein a color television system, including method and apparatus, wherein a polychromatic image is separated into color components and applied to a conventional camera black and white pickup tube. The information from the camera is transmitted in any conventional way, by cable or antenna, to one or more television display devices (receivers or monitors) employing a conventional color cathode-ray tube therein. In order to properly synchronize the operation of the camera and the display devices, a particular vertical scan rate frequency ratio, such as one to three, between the camera and display device is used. In one



embodiment, the camera may be modified to have a 20 hertz vertical scan, and operate in conjunction with a conventional color television receiver or monitor. In another embodiment, the camera operates at its usual vertical scan rate of 60 hertz, or a lower scan rate, and is used with a receiver or monitor which has been modified to have a vertical scan rate three times that of the camera. Various embodiments are disclosed for cameras and display devices, as well as gating, encoding and decoding systems, and systems for duty cycle extension, and arrangements for color enhancement.

3,622,693
MODULATOR CIRCUIT HAVING UTILITY IN VIDEO RECORDING
Robert R. Del Ciello, Elmwood Park, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed May 18, 1970, Ser. No. 38,015
Int. Cl. H04n *5/76;* **H04j** *3/00*
U.S. Cl. 178—5.4 CD **10 Claims**

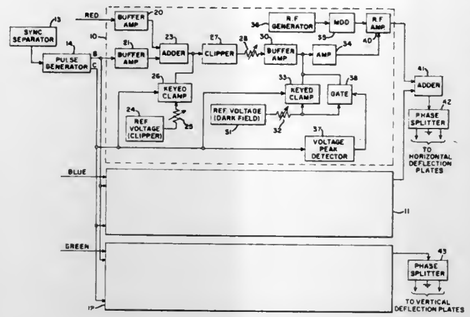


A color signal modulator encodes or modulates two channels of color signal information as pulse-width modulated, time-division-multiplexed pulses to produce an input signal for an electronic video-recording (EVR) system. At predetermined intervals, a phase-synchronizing sequence is provided by modulation of the pulse widths of the two channels in the form of maximum width modulation in one channel, alternating with no information in the other channel, the pattern being repeated a preestablished number of times.

3,622,694
VIDEO SIGNAL PROCESSOR FOR A LIGHT VALVE
Thomas P. L. Liu, Liverpool, N.Y., assignor to General Electric Company
Filed Mar. 12, 1970, Ser. No. 18,963
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 BD **5 Claims**

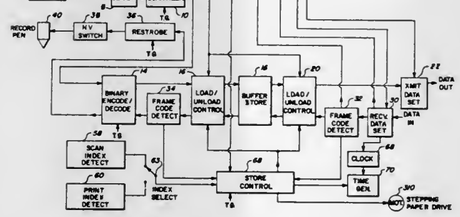
Conversion of a conventional video signal at a receiver into a signal capable of controlling formation of optical diffraction gratings with a stable black level in a light valve is accomplished by clamping the video signal to a reference amplitude level and clipping the portion of video signal below the video black level. The clipped video signal is then

clamped to a dark field reference voltage representing the black portions of the image being projected. The clipped



video signal thus clamped is amplitude modulated onto a radio frequency carrier which is applied to electron beam deflection apparatus of the light valve.

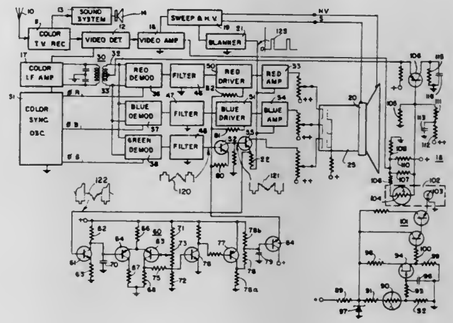
3,622,695
FACSIMILE SYSTEM HAVING INCREMENTAL STEPPING PAPER DRIVE ASSEMBLY
Robert H. Rugaber, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 7, 1968, Ser. No. 765,511
Int. Cl. H04n *3/30, 7/12*
U.S. Cl. 178—6 **12 Claims**



A facsimile communication system including an incremental stepping paper drive assembly for advancing a document or the like past a scanning station. In combination with a binary digit encoder and buffer storage unit, the incremental stepping paper drive assembly is activated and interrupted in accordance with the amount of information detected, encoded and stored in order to maintain maximum information transmission over a limited bandwidth transmission medium.

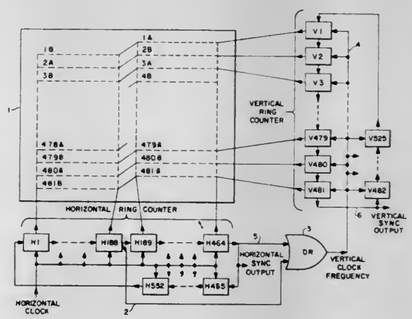
3,622,696
AUTOMATIC CONTRAST CONTROL FOR A TELEVISION RECEIVER
Ernest C. Macintyre, Jr., Woodridge, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 1, 1969, Ser. No. 811,886
Int. Cl. H04n *5/58*
U.S. Cl. 178—7.5 DC **7 Claims**

A color television receiver using direct demodulation of the color and brightness signals supplies the output of the video amplifier stage through an automatic contrast control circuit including first and second light dependent resistors. The first light dependent resistor is subjected to the ambient light surrounding the receiver and operates in a voltage divider to provide a varying voltage in accordance with variations of the ambient light level. The output of the voltage divider is supplied through an integrating circuit to the base of a field effect transistor, the output of which is utilized to drive a lamp in an isolator package in which the second light dependent resistor is located. Variations of the light emanating from the lamp cause variations in the resistance of the second light dependent resistor, which is placed in series with the output of the video amplifier to variably attenuate the signals obtained therefrom to provide automatic contrast control.



In addition, there is disclosed an automatic brightness control circuit using a differential clipper one input to which supplied with a reference voltage and the other input to which is derived from the output of the green final amplifier stage to cause a comparison of the blackest-going signal during each trace interval. The output of the differential clipper is supplied to a second integrating circuit, the outpt of which is used to vary the DC operating level of the green, blue and red driver amplifiers to form a closed loop control system. Thus, the blackest level of the signal passing through the green amplifier stage is chosen as black for the brightness control circuit and the black level of the receiver is automatically adjusted accordingly.

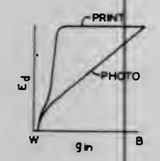
3,622,697
SOLID-STATE SCANNING ARRAY FOR INTERLACED SIGNALS
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 739,288, June 24, 1968, now abandoned. This application July 20, 1970, Ser. No. 56,658
Int. Cl. H04n *3/14;* **H04g** *3/68*
U.S. Cl. 178—7.7 **18 Claims**



Apparatus for producing an interlaced scan of a matrix of discrete elements. The elements are arranged in vertical columns and horizontal rows, coincidentally addressed by

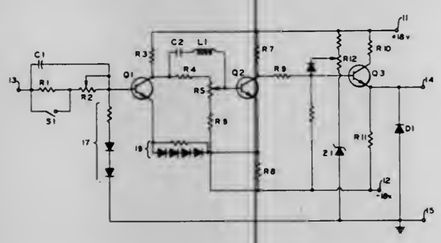
vertical and horizontal ring counters. The horizontal address connections are divided into two groups, for the right half and left half of the display. Each left-half line is connected to a vertically displaced right-half line and the vertical ring counter is incremented at the beginning and at the center of each line scan, which produces an interlaced scan. During retrace intervals the ring counters step without connecting scanning elements, and additional logic circuitry produces standard blanking and synchronizing pulse signals.

3,622,698
FACSIMILE SYSTEM WITH SELECTIVE CONTRAST CONTROL
William E. Richeson, Jr., and Robert H. Dreisbach, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed Mar. 3, 1969, Ser. No. 803,612
Int. Cl. H03k *3/295*; H04m *11/08*; H04n *1/40*
U.S. Cl. 178—6 **24 Claims**



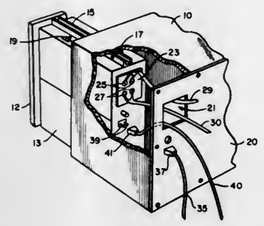
The quality of pictures and printed documents reproduced in a facsimile receiver is improved by the use of circuits in both the transmitter and receiver. These circuits provide a more linear overall response of the system when picutres are transmitted, a high contrast black on white response when printed matter is transmitted and in general provide for better quality reproductions of documents, while maintaining compatibility when operating between old and new machines. The approach is to provide a circuit at the transmitter which can be switched according to whether the documents scanned are primarily photo or printed in nature and to provide a circuit at the receiver to develop the desired copy qualities when operating under various circumstances.

3,622,699
FACSIMILE SYSTEM WITH PREEMPHASIS VARIED BY SIGNAL RATE
William E. Richeson, Jr., Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Continuation-in-part of application Ser. No. 803,612, Mar. 3, 1969. This application May 16, 1969, Ser. No. 825,230
Int. Cl. H04n *1/40*
U.S. Cl. 178—6 **3 Claims**



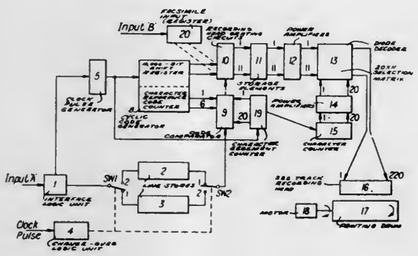
An improved facsimile system capable of either yielding improved quality copy at the prior art transmission speed or of yielding copy of quality comparable to the prior art machine in a reduced period of transmission time is disclosed. These improvement result from a modified gray-scale signal circuit at the transmitter which has its gray-scale transfer function-time dependent along with an improved receiver circuit which has a gray-scale time-dependent transfer function. These modifications cause both transmitter and receiver to tend to saturate at lower signal levels for rapidly changing gray-scale inputs.

3,622,700
TELEVISION RECEIVER WITH PROVISION FOR FACILITATING SERVICEABILITY
Frederick J. Goetz, Jr., Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 17, 1970, Ser. No. 73,090
Int. Cl. H01j *29/02*
U.S. Cl. 178—7.9 **5 Claims**



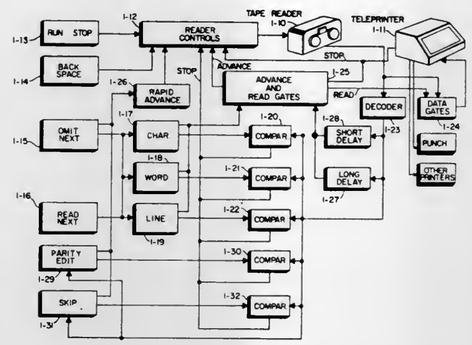
In a television receiver of the type having an electronic chasis mounted on a movable drawer for movement from an operating position located within the television cabinet to a servicing position by pulling the chassis forward through an opening to the front of the cabinet, an opening in the back of the cabinet is provided adjacent the powerline cord interlock to permit a serviceman to reach through the opening to connect a powerline cord to the chassis with the chassis in the forward position after the powerline cord interlock has been opened by movement of the chassis to the servicing position.

3,622,701
CHARACTER GENERATION SYSTEM
Gerald Marvin Gardner, Saffron Walden, England, assignor to Standard Telephones and Cables Limited, London, England
Filed July 31, 1969, Ser. No. 846,564
Claims priority, application Great Britain, Aug. 15, 1968, 39,006/68
Int. Cl. H04l *15/34*
U.S. Cl. 178—30 **23 Claims**



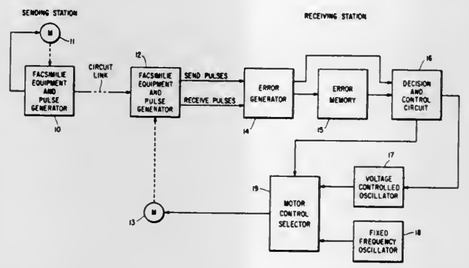
A character generation system for use with high-speed printing/display apparatus. A cyclic code generator is provided which includes electrical delay means such as an N-stage shift register for cyclically generating, in synchronism with the application of the character data to the system, an N-bit serial code representative of the characters in the system's repertoire. Means are provided for selecting the pertinent portions of the N-bit serial code corresponding to the received data and directing same to character forming means during each cycle of the generator. Further provision is made for variable character and word spacing.

3,622,702
TAPE READER AND CONTROL SYSTEM
John J. Larew, and Paul J. Moran, both of Waynesboro, Va., assignors to General Electric Company
Filed Jan. 8, 1969, Ser. No. 789,841
Int. Cl. H04l *17/12*
U.S. Cl. 178—17 R **28 Claims**



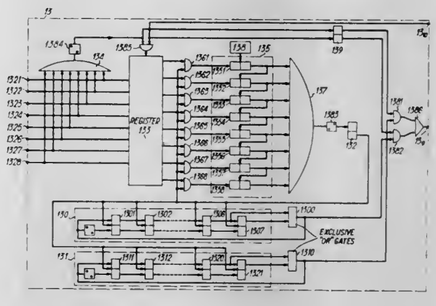
A system providing for improved local and remote control over operation of a tape reader. The controls being operative to selectively initiate and automatically terminate both the reading and omission of data, with the omission operations being effected at a higher rate than the reading operations. These controls also being operative to automatically inhibit reading operations for various time intervals when the unit is supplying a teleprinter and particular mechanical commands are being executed by the teleprinter.

3,622,703
ELECTRONIC SYNCHRONIZING SYSTEM EMPLOYING PLURAL SWITCHED OSCILLATORS
Luther W. Ricketts, Jr., and Richard E. Sweenie, both of Urbana, Ill., assignors to The Magnavox Company, Fort Wayne, Ind.
Continuation of application Ser. No. 661,394, Aug. 17, 1967, now abandoned. This application Apr. 29, 1970, Ser. No. 33,034
Int. Cl. H04n *1/36*
U.S. Cl. 178—69.5 F **14 Claims**



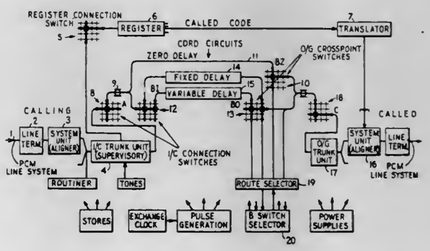
The rotational speed and position of one synchronous motor is synchronized with the rotational speed and position of another synchronous motor by electronically comparing the time occurrence of respective pulses produced by each motor. The time occurrence of pulses from the one motor relative to pulses from the other motor is used to speed up or slow down the one motor until its speed and position are synchronized with the speed and position of the other motor. When the one motor is synchronized with the other motor, the one motor may then have its speed controlled by fixed means.

3,622,704
VOCODER SPEECH TRANSMISSION SYSTEM
Gilbert M. Ferrieu, 7, rue du Clos Sourdry, Blevres, and Jean-Michel Person, rue du Parc Saint-Jacques, Perros-Guireo, both of France
Filed Dec. 15, 1969, Ser. No. 884,813
Claims priority, application France, Dec. 16, 1968, 178,469
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **4 Claims**



A channel vocoder speech transmission system including at the transmitter station a pitch detector circuit producing pitch marker pulses having a repetition period equal to the fundamental pitch period T of the speech to be transmitted, a pitch marker pulse sorter for eliminating spurious pitch marker pulses whose repetition period differs from said fundamental pitch period by a predetermined percentage of the fundamental pitch period and means for coding into PCM signals the pitch period and, at the receiver station, a speech synthesizer and an excitation signal generator including two shift registers having unequal numbers M and N of stages with M <N, two exclusive OR gates respectively associated with the shift registers, with inputs connected to the last and last but one stages of the shift registers and an output connected to the first stage thereof. These shift registers and OR gates form two generators of maximal length linear binary sequences. The shift registers are controlled by shifting pulses having a repetition period equal to $T/(2^M-1)$.

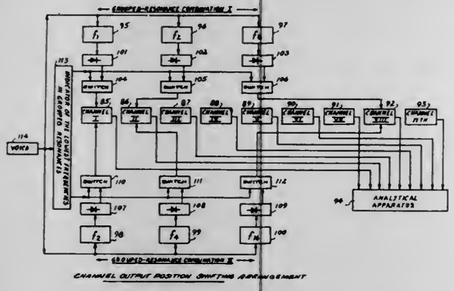
3,622,705
TELECOMMUNICATION SWITCHING SYSTEMS
Winston Theodore Duerdoth, Ruislip; Charles Joseph Hughes, London; John Frederick Hesketh, Greenford; John Roy Jarvis, St. Albans; Martin Reed, Watford; William Desmond Morton, Rickmansworth; William George Tilston Jones, London; Frank Trevor Ball, East Barnet, and Norman Thorogood Thurlow, London, all of England, assignors to Her Majesty's Postmaster General, London, England
Filed Dec. 10, 1968, Ser. No. 782,541
Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **8 Claims**



A time division multiplex communication switching system employing pulse code modulation in which a connection

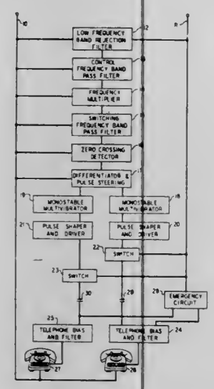
between any two channels is effected by connecting the first channel to all available paths through the system, such paths incorporating time delays of different values including zero, and comparing at the output of the paths the time positions of the first channel and the time position of the second channel and selecting a path having a time position coincident with that of the second channel.

3,622,706
PHONETIC SOUND RECOGNITION APPARATUS FOR ALL VOICES
Meguer Kalfaian, 962 Hyperion Ave., Los Angeles, Calif.
Filed Apr. 29, 1969, Ser. No. 828,067
Int. Cl. G10l *1/00*
U.S. Cl. 179—15 A **10 Claims**



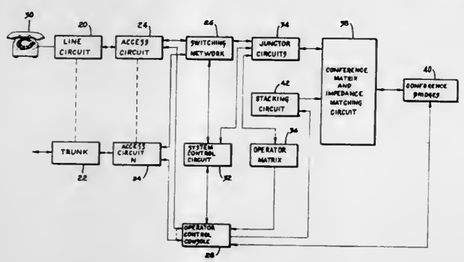
A phonetic sound analyzing system in which groups of resonance peaks which have specific frequency and amplitude ratios are selected from a frequency region above the glottal pitch and vocal cord fundamental frequencies and are representative of phonetic information.

3,622,707
MULTIPLE CHANNEL SUBSCRIBER LOOP
John J. Golembeski, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 3, 1969, Ser. No. 854,873
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BP **3 Claims**



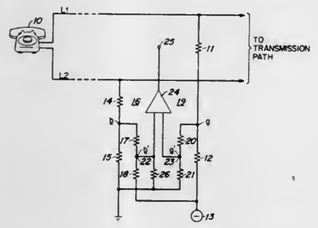
A time division multiplex system for use with subscriber stations utilizes a pilot tone to control switches which connect subscribers to the common line during designated portions of each cycle. The pilot tone taken from the line is changed in frequency before being used to control subscriber connection time to eliminate problems of feedback and crosstalk. Further, each subscriber station set is powered by the subscriber's power during normal operation to further improve crosstalk performance. Service is maintained, however, if any subscriber's power fails by reverting to line power and party line operation for the duration of the power failure. Private line service is automatically returned when subscriber power reappears.

3,622,708
CONFERENCE CIRCUIT
John H. Guenther, Rochester, and Klaus Gueldenpfennig, Penfield, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed May 25, 1970, Ser. No. 40,254
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **14 Claims**



A plurality of junctor circuits having four wire ports are adapted to be connected by a switching matrix to any of a plurality of conference bridges. The switching matrix includes an impedance balance circuit so that the load applied to the conference bridge remains substantially constant regardless of the number of junctor circuits connected to any one conference bridge. Each junctor circuit includes a sidetone suppression circuit for its return signal received from a connected conference bridge. A stacking circuit is also connected to the switching matrix so that the various separate conference connections can be readily interconnected into common conference connections and later disconnected keeping the separate conference connections intact.

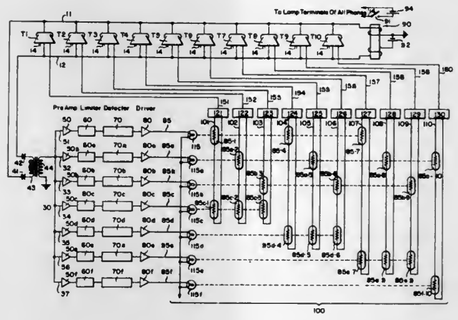
3,622,709
SUPERVISORY CIRCUIT FOR TELEPHONE LINES
Garold S. Tjaden, Westmont, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 5, 1969, Ser. No. 847,581
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 F **10 Claims**



A supervisory detection circuit of monitoring the operative state of communication lines in a telephone system in whidh a pair of voltage dividers are cross-connected across the battery feed resistors, the output of the dividers being applied to the inputs of a differential amplifier. The amplifier is adjusted and the divider resistor vaLues selected so that the amplifier output is low when the voltage difference between the two

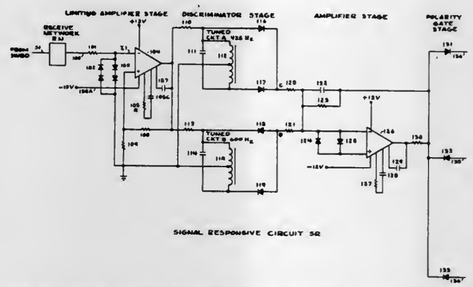
divider outputs is of a particular range of magnitudes and polarity and is high when the voltage difference is of the opposite polarity and of a second range of magnitudes.

3,622,710
INTERCOM CONVERTER FOR USE WITH OFFICE TONE-CONTROLLED TELEPHONE SYSTEM
Gordon R. Tothill, Chatham, Ontario, Canada, assignor to Electro Dynamics & Telecon Limited, Chatham, Ontario, Canada
Filed Dec. 20, 1968, Ser. No. 785,640
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 UF **1 Claim**



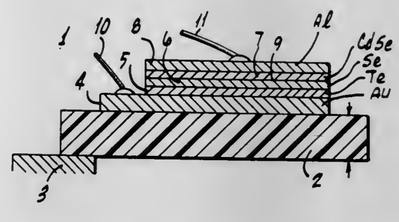
A converter for converting a system of office tone-controlled telephones to enable the use of tone pushbuttons in the placing of inside calls. A series of tone detectors are provided, two of which are responsive to the two frequency components of a tone for lighting lamps in a matrix which act upon photoresistors in coded combinations in the matrix ouput lines, the output lines being coupled to the ringers in the respective telephones in the system. Means are provided for lighting indicator lamps in each of the telephones when an inside call is placed so that the other users of the system will be alerted not to place any inside call until the current call has been completed.

3,622,711
TONE DETECTOR
William H. Blashfield, Galion, Ohio, assignor to North Electric Company, Galion, Ohio
Filed Aug. 25, 1969, Ser. No. 852,676
Int. Cl. H04m *1/50*; **H04q** *9/12*
U.S. Cl. 179—84 VF **13 Claims**



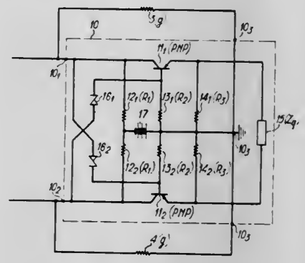
An electronic tone detector circuit for each line in a portable multiline military telephone set which communicates with a switchboard, said tone detector circuit being arranged to detect priority and nonpriority ringing tones and busy tone without responding to speech or random noise. The tone detector circuit includes an incoming limiting amplifier stage which feeds a discriminator stage. The output of the discriminator stage is conducted via a polarity gate stage to three parallel circuits, which provide logic signals over three paths (priority, nonpriority, and busy) to succeeding circuitry in said multiline set to enable said circuitry to effect corresponding visual and audible signals and control of telephonic connections as required.

3,622,712
DEVICE EMPLOYING SELENIUM-SEMICONDUCTOR HETEROJUNCTION
Robert Milton Moore, Skillman, and Charles John Busanovich, Pinceton, both of N.J., assignors to RCA Corporation
Continuation-in-part of application Ser. No. 740,265, June 26, 1968, now abandoned. This application Aug. 29, 1969, Ser. No. 854,163
Int. Cl. H04r *21/04*; **H01l** *3/04*, *7/08*
U.S. Cl. 179—100.41K **14 Claims**



A semiconductor device comprising contiguous layers of crystalline selenium and cadmium selenide with a P-N heterojunction therebetween disposed on a high work function electrode. A thin tellurium film is disposed between the electrode and the selenium layer, and acts as a buffer to provide compatibility between the selenium crystalline structure and the structure of the underlaying electrode.
When employed as a stress-sensitive transducer, the device is disposed on a flexible substrate. The device may also be employed as a thin-film diode.

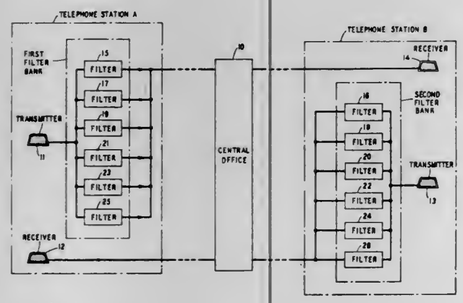
3,622,713
THREE-TERMINAL ELECTRONIC DIFFERENTIAL COUPLER FOR TELEPHONE CIRCUITS
Henri F. Lassaigne, 13 Residence du Parc de Courcelles, Gif-sur-Yvette, and Serge A. Jeanclaude, 14 Avenue Jean Jaures, Villeneuve-la-Garenne, both of France
Filed May 25, 1970, Ser. No. 39,955
Claims priority, application France, June 5, 1969, 69 18546
Int. Cl. H04b *3/16*; **H04m** *1/60*
U.S. Cl. 179—170 NC **8 Claims**



A three terminal electronic differential coupler adapted to replace a hybrid coil in a three-circuit telephone system, in which a first and a second of said terminals are at a variable potential, while the third terminal is at ground potential. A first one of said circuits having a given impedance is connected between said first and second terminals, while the second and third circuits, each having an impedance substantially equal to one-fourth of said given impedance, are

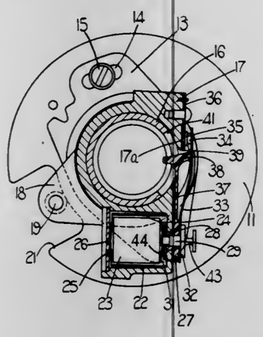
respectively connected between said first and third terminals and said second and third terminals. A ground symmetrical impedance substantially equal to the negative of said given impedance is produced between said first and second terminals by means of a suitable electronic circuit. The arrangement makes its possible to transmit signals from said first circuit to both said second and third circuits, without transmitting signals between said second and third circuits.

3,622,714
TELEPHONIC TRANSMISSION USING COMPLEMENTARY COMB FILTERS
David A. Berkley, Red Bank, and Jeofry S. Courtney-Pratt, Locust, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 2, 1969, Ser. No. 854,712
Int. Cl. H04m *9/08*
U.S. Cl. 179—170.2 **4 Claims**



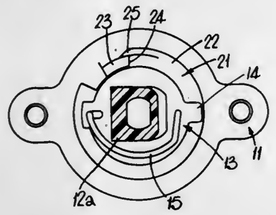
This disclosure describes a system for assuring circuit stability in a telephonic link having substantial acoustic coupling at stations therein, as well as eliminating remote end echo in such circuits. The system uses complementary comb filter banks in which the passband center frequencies are selected to reduce the incidences of harmonic relations among the passband at any one of the filter banks. The system is adapted also to the reduction of electrical circuit echo.

3,622,715
CAM-OPERATED PERIODIC SWITCH ASSEMBLY WITH IMPROVED CAMSHAFT SLEEVE AND INDEPENDENT CAM FOLLOWER
Norman Alfred Jukes, 16 Norman Road, Walsall, Staffordshire, England
Filed Apr. 21, 1970, Ser. No. 30,559
Claims priority, application Great Britain, June 12, 1969, 29,751/69
Int. Cl. H01h *19/62*
U.S. Cl. 200—30 **4 Claims**



A contact-breaker assembly for use in ignition distributor includes, an annular baseplate arranged to be secured within the casing of an ignition distributor with the camshaft of the distributor extending through the hole in the baseplate and a second plate mounted for pivotal movement on the baseplate, and including a hollow bearing sleeve surrounding the camshaft and spaced therefrom. A body surrounds the bearing sleeve and is journaled for angular movement thereon about the axis of the sleeve, a fixed contact being secured to the body, and a cam follower being engageable with the camshaft, in use, through apertures in the body and the sleeve. A movable contact is resiliently urged into engagement with the fixed contact and is movable out of engagement with the fixed contact by by the cam follower in response to rotation of the camshaft relative to the cam follower.

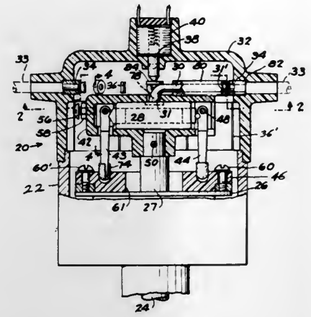
3,622,716
IGNITION SWITCH WITH PLATE-LATCHING MEANS PREVENTING MOVEMENT FROM ON TO START ONCE STARTED
Derek Rushton, Accrington, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Mar. 11, 1970, Ser. No. 18,632
Claims priority, application Great Britain, Mar. 17, 1969, 13,790/69
Int. Cl. H01h *21/50, 27/06*
U.S. Cl. 200—42 R **4 Claims**

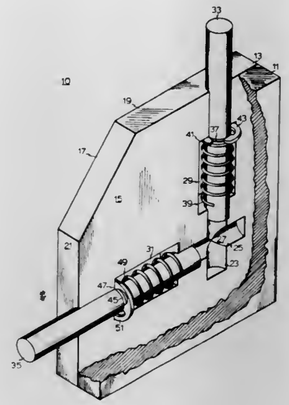


An ignition switch includes a casing and a rotor mounted for rotation within the casing from a stable first position to a stable second position and from the stable second position to an unstable third position from which it is resiliently urged back to the stable second position. An arcuate cam track is provided on the inner surface of the casing and includes surfaces which extend generally at right angles to the axis of rotation of the rotor. A latch member is rotatable with the rotor and includes a finger which extends radially into engagement with the cam track, a resilient member acting on the latch member urging the finger into engagement with the cam track and being capable of urging the finger radially outwardly when the finger is moved radially inwardly by the cam track during rotation of the rotor. The arrangement for the finger and the cam track is such that the rotor is prevented from movement from its second position to its third position unless the preceding movement of the rotor was from its first position to its second position.

3,622,717
PIEZOELECTRIC DISTRIBUTOR WITH IMPROVED CONTACT INSULATIVE SHIELDING STRUCTURE
Lawrence E. Hoover, Detroit, Mich., assignor to Anthony Tramontozzi, Detroit, Mich., a part interest
Filed July 7, 1969, Ser. No. 839,445
Int. Cl. H01h *19/00, 19/62*
U.S. Cl. 200—23 **4 Claims**

A piezoelectric generator and distributor unit for a spark ignition internal-combustion engine in which a piezoelectric element is mounted in a body carried by a rotor shaft for rotation therewith. Two lever arms are pivoted on the body and engage opposed ends of the element. A plate with a cam track is fixed with respect to the rotor and engages the lower ends of the levers so that rotation of the rotor and body causes the levers alternately to compress and release the element which develops a charge at a high potential in response to being stressed by the levers. A central rotor terminal and terminals in a distributor cap provide a conductive path for transmitting charges from the unit. These terminals are surrounded by heat and electrically insulating tubes which extend beyond the ends of the terminals to provide a shield which eliminates the corona and premature arcing problems of high-voltage switching in this type of distributor.





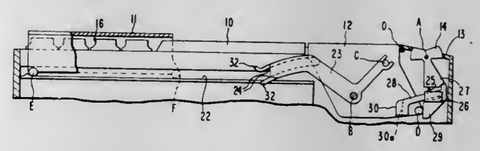
3,622,718
SAFETY DEVICES FOR STARTER MOTORS OF INTERNAL-COMBUSTION ENGINES
Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe D'Exploitation Des Brevets Neiman, Neuilly-sur-Seine (Hauts de Seine), France
Filed Jan. 29, 1970, Ser. No. 6,716
Claims priority, application France, Jan. 30, 1969, 6901858
Int. Cl. H01h *27/06*
U.S. Cl. 200—44 **7 Claims**

Safety device for preventing the actuation of an electric starter motor of an internal-combustion engine already running and providing a source of low pressure, this device comprising a key-operated safety-lock body, with or without a disc-shaped cam member for controlling an antitheft device and rigid with a member controlling the rotor of a rotary switch provided with terminal pins for connecting said switch to electric circuits to be controlled, including the energizing switch of said starter motor, wherein said lock body has formed therein a chamber connected to said source of low pressure of the engine and a member movable in said chamber and responsive on the one hand to the action of said low pressure and on the other hand to that of a resilient reaction member, said movable member being associated with said lock with a view to prevent said switch from closing the energizing circuit of said starter motor when the engine is running, and to permit the action of said switch with respect to said starter motor when the engine is inoperative.

3,622,719
MECHANICAL INTERLOCK
Sherman G. Thomas, Floyd, Va., assignor to General Electric Company
Filed Mar. 27, 1970, Ser. No. 23,364
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 C **4 Claims**

A mechanical interlock for preventing the operation of more than one of a pair of electrical contactors. The interlock includes for operation by each contactor a spring-biased plunger operable within a cylindrical cavity, no more than one plunger being operable at a time since the cavities through which the plungers operate obstruct each other just beyond the contactor deenergized position of each plunger.

3,622,720
CALCULATOR KEYBOARD COVER INTERLOCK WITH A DISPLAY COVER AND SWITCH
William A. Allen, Berkeley, Calif., assignor to SCM Corporation, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,111
Int. Cl. H01h *9/22, 3/16*
U.S. Cl. 200—50 A **16 Claims**

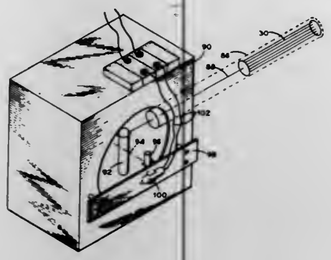


An electronic calculator comprising an input keyboad panel, an output display panel, and first and second cover means mounted for movement between positions covering and positions uncovering the panels. The calculator further comprises a calculator power switch mounted for movement between power-on and power-off positions. Means are provided for setting the power switch in the power-on position when the cover means are moved to their uncovering positions, and for setting the power switch in the power-off position when the cover means are moved to their covering positions. Means are also provide to permit manual movement of the power switch between its power-on and its power-off positions when the cover means are located in their uncovering positions. means are further provided for inhibitig manual movement of the power switch from its power-off to its power-on position when the cover means are located in their covering positions.

3,622,721
CONTROL DEVICE FOR ACTIVATING A SWITCH
William Hodes, Rahway, and Edward Studley, North Plainfield, both of N.J., assignors to American Standard Inc., New York, N.Y.
Filed Nov. 1, 1965, Ser. No. 505,921
Int. Cl. H01h *36/00;* **Bold** *15/04*
U.S. Cl. 200—61.04 **5 Claims**

A control device for activating a switch is disclosed. This device comprises a contractile sensing element sensitive to

the concentration of ions in a body of water. The switch is activated in response to a predetermined change in the

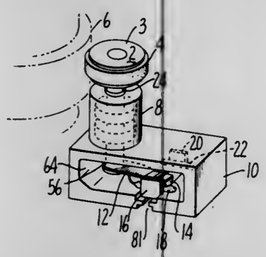


length of the contractile sensing element. The device is especially useful in initiating regeneration of water-softener devices.

3,622,722
STEERING MEMBER REVERSAL SWITCH

Earl L. Jackson, San Francisco, and Werner Sepper, Concord, both of Calif., assignors to Life Technology, Inc., Concord, Calif.

Filed Apr. 20, 1970, Ser. No. 30,198
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.39 **9 Claims**

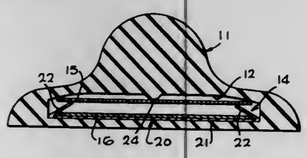


A rim-driven wheel engages a rotatable vehicle steering member. Motion is amplified by a planetary bearing assembly and applied to a lever arm through a clutch assembly. The free end of the arm carries a magnet that actuates magnetically actuated reed switches that are located adjacent to arm stops. Clockwise rotation of the steering member results in closure of one-reed switch; counterclockwise rotation results in closure of the other reed switch.

3,622,723
LINEAR SWITCH

Gustave Fischel, 1064 S. Halt Ave., Los Angeles, Calif.

Filed Jan. 22, 1970, Ser. No. 5,027
Int. Cl. H01h *13/16*
U.S. Cl. 200—86 R **2 Claims**

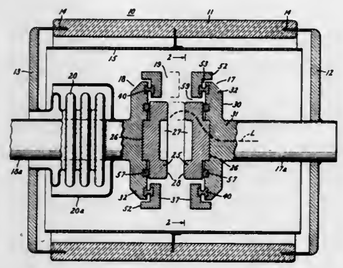


A linear switch having a pair of elongated superposed metal strip conductors enclosed in a resilient nonconductive casing with a nonconductive strip on the outer side of one of the conductors having inturned springy flanges extending between the strip conductors and normally holding the same in spaced relation.

3,622,724
VACUUM-TYPE CIRCUIT INTERRUPTER HAVING CONTACTS WITH IMPROVED ARC-REVOLVING MEANS

Joseph C. Sofianek, Broomall, Pa., assignor to General Electric Company

Filed Feb. 24, 1970, Ser. No. 13,429
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **13 Claims**

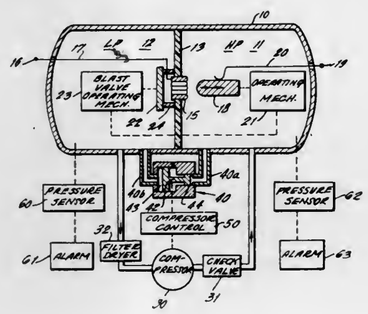


Discloses a vacuum-type circuit interrupter in which the contacts are constructed to revolve any arc located between the contacts. Each contact is a disc-shaped member divided into a plurality of circumferentially spaced segments, each comprising a radially extending body portion and a leg portion at the radially outer end of the body portion extending periphery of the disc-shaped member. Each leg portion is provided with an arc-running extension that extends peripherally of the disc-shaped member and overlaps the adjacent segment on the side of the adjacent segment facing the other contact.

3,622,725
PRESSURE CONTROLLER FOR GAS CIRCUIT BREAKER

Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Feb. 24, 1970, Ser. No. 13,311
Int. Cl. H01h *33/80*
U.S. Cl. 200—148 E **11 Claims**

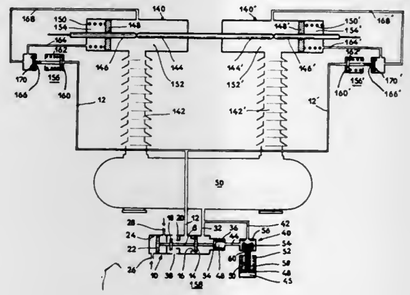


The pressures of a low-pressure and high-pressure region of a two-pressure gas circuit breaker are applied to pistons carried on a common rod so that the pistons and rod move to a predetermined position when the pressure difference between the two pressure regions is below a given value. The motion of the rod turns on a compressor which operates until a desired pressure ratio is obtained.

3,622,726
GAS BLAST CIRCUIT BREAKER WITH CONTACT CLOSING LOW PRESSURE RESPONSIVE SAFETY DEVICE

Gerard Billon, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Rue Henri, Tarze, Grenoble, France

Continuation-in-part of application Ser. No. 708,661, Feb. 27, 1968, now abandoned. This application Feb. 11, 1970, Ser. No. 10,581
Claims priority, application France, Mar. 23, 1967, 100,127
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 B **6 Claims**

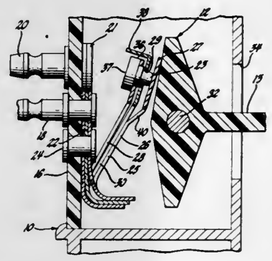


A gas blast circuit breaker having a safety device which causes the positive closing of the contacts of the opened circuit breaker according to the normal closing cycle and the locking of the closed contacts when an abnormal pressure drop occurs below the value of the pressure necessary to maintain the contacts in their opened position.

3,622,727
DOUBLE POLE SWITCH

Dale W. Pigeon, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1969, Ser. No. 881,206
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 **1 Claim**

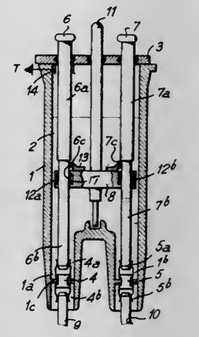


The invention relates to double pole contact switches for use on automobile electrically operated systems such as the doors, windows and seats and, more particularly, to double pole contact switches wherein each contact set of the movable contact carrier is made up of a plurality of laminated sheet metal blades, with one blade having a movable contact, and a second blade having an independently movable arcing contact. The arcing contact is arranged and constructed to contact a stationary contact prior to electrical contact being made with the stationary contact by the movable contact. The function of the arcing contact is to extinguish or dissipate any contact arcing that may occur across the movable contact and stationary contact to prevent contact pitting.

3,622,728
HIGH-VOLTAGE CIRCUIT BREAKING DEVICES, NOTABLY FOR A SHIELDED-TYPE PREFABRICATED ELECTRIC STATION

Yves Bokshorn, Villiers-sur-Marne, and Jean-Pierre H. Boudiak, Gagny, both of France, assignors to COQ-France, Pantin, France

Filed Feb. 12, 1970, Ser. No. 10,794
Claims priority, application France, Dec. 9, 1969, 6942447
Int. Cl. H01h *31/24*
U.S. Cl. 200—163 **8 Claims**



Electric breaker device for high-voltage wiring system, which comprises a casing of electrically insulating material closed by a metal cover, a pair of movable contact rods per phase, adapted to be moved vertically by means of a mechanism, said rods having their upper portions made of electrically insulating material or of an externally insulated conducting material and conducting lower portions, said conducting portions of said rods being interconnected by a conducting bridge, a pair of contact members each connected to a conductor, such as a cable head or bar, and adapted to be each connected to the other rod in one of their positions, and a ground circuit, characterized in that a third contact member connected to said ground circuit is disposed in the vicinity of the upper portion of said casing, said third contact member being electrically connected to one of said conductors, such as a cable head, through said conducting bridge and at least one of said rods in the grounding condition of the device. The actuating mechanism includes two seperate control members, actuation of one control rod raising and lowering both contact rods simultaneously, and actuation of the other control rod raising and lowering only one of the contact rods.

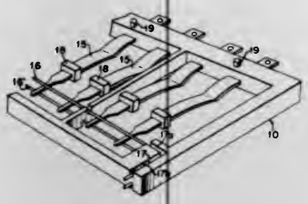
3,622,729
KEY SWITCH DEVICE FOR ELECTRONIC MUSICAL INSTRUMENTS

Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha Hamamatsu-shi, Shijuoka-ken, Japan

Filed July 23, 1970, Ser. No. 57,447
Claims priority, application Japan, July 25, 1969, July 25, 1969, July 25, 1969, July 25, 1969, Aug. 19, 1969, Aug. 19, 1969; 44/70474, 44/70475, 44/70476, 44/70477, 44/78200, 44/78201
Int. Cl. H01h *9/00*
U.S. Cl. 200—166 J **12 Claims**

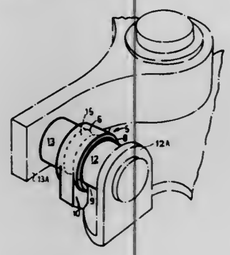
A key switch device for an electronic musical instrument having a frame body made, for example, of plastics material having at least one longitudinal member and a pair of spaced lateral members extending at right angles to the longitudinal member. A plurality of movable contact members fixed to the longitudinal member and arranged in a juxtaposed relationship. At least one elongated fixed contact member fitted at both ends thereof to the lateral members, and extending transversely of the movable contact members. Actuators provided for the respective movable contact members, whereby

the relative position of the movable and fixed contact members can be easily secured. By superposing a plurality of key



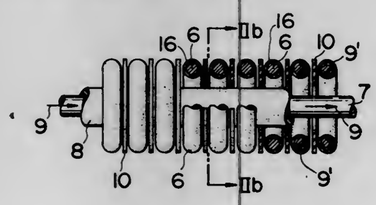
switch devices of the same construction, a multiple contact key switch may be readily obtained.

3,622,730
CONTACT BREAKER POINTS SHIELDING MEANS
William Henry Steele, Milperra, Australia, assignor to Victa Limited, New South Wales, Australia
Filed Nov. 16, 1970, Ser. No. 89,556
Claims priority, application Australia, Nov. 17, 1969, 63922/69
Int. Cl. H01h *9/02*
U.S. Cl. 220—168 H **9 Claims**



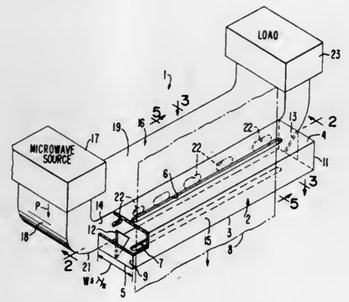
An electrically insulated, resilient cylindrical sleeve gapped on one side to clip over adjacent ends of the contact breaker points of a magneto to enclose the working airgap and exclude fouling particles and matter therefrom. Peripheral enlargements adjacent the gap displacing the center of gravity towards the gapped portion of the sleeve to ensure that this portion remains beneath the points with changes in attitutde of the magneto to permit escape of stray particles and matter.

3,622,731
FLEXIBLE HEAT-GENERATING DEVICE
Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Kitaku, Osaka, Japan
Filed June 11, 1970, Ser. No. 45,282
Claims priority, application Japan, July 4, 1969, 44/52916
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.49 **5 Claims**



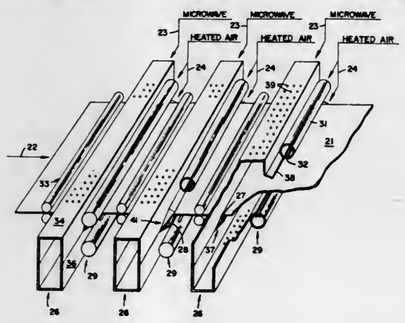
A flexible heat-generating device is constructed by stringing a great number of mutually independent ferromagnetic rings around an insulated conductor line, and heat is generated by the secondary eddy current loss induced upon said rings when an AC current is applied to said conductor line.

3,622,732
MICROWAVE APPLICATOR WITH DISTRIBUTED FEED TO A RESONATOR
Norman H. Williams, San Francisco, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 14, 1970, Ser. No. 2,697
Int. Cl. H05p *9/06, 5/00*
U.S. Cl. 219—10.55 **12 Claims**



A microwave applicator is disclosed which employs an elongated hollow resonator dimensioned to be cut off for the dominant waveguide mode at the frequency of the applicator. A hollow waveguide feed extends along and adjacent the resonator and includes a distributed coupling means providing a distributed wave energy feed path from the waveguide to the resonator. The distributed coupling means is arranged for exciting a transverse TEM mode in the resonator to produce standing wave microwave electric fields in the plane of a relatively thin elongated treatment zone within the resonator. The resonator includes a pair of elongated openings in registration with the treatment zone for passage of thin webs of material through the treatment zone. The distributed coupling means is preferably arranged to provide an increasing coefficient of coupling taken in the direction of power flow through the feed waveguide. Thus, the power is distributed to the resonator uniformly.

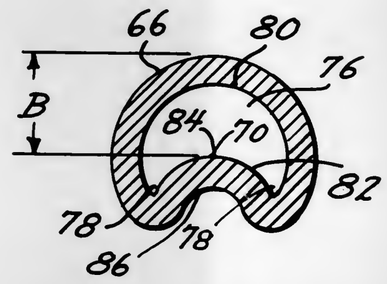
3,622,733
METHOD AND APPARATUS FOR DRYING SHEET MATERIALS
Franklin J. Smith, Diablo, and Klaus Silbermann, Danville, both of Calif., assignors to Cryodry Corporation, San Ramon, Calif.
Original application Nov. 14, 1967, Ser. No. 682,903. Divided and this application Jan. 28, 1970, Ser. No. 6,499
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **7 Claims**



Wood veneers or other flat materials are passed through successive sections of energized meander waveguides and

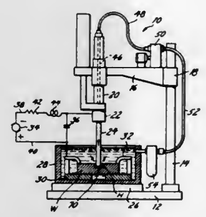
through jets of heated air from air knives situated between the waveguide sections to effect a very rapid drying action in which relatively moist areas are dried more strongly than dryer areas to produce a finished product of uniform moisture content. The waveguide and air knife structure is disposed within an electrical conductor walled, thermally insulated cabinet with continuous feed conveyor means and an air recirculation system in an arrangement which optimizes operating efficiency and convenience.

3,622,734
NONTREPANNING ROTARY ELECTRODE FOR ELECTROEROSION OF METALS
Albert Bruce Mainwaring, Phoenixville, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.
Filed Apr. 20, 1970, Ser. No. 29,877
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 E **5 Claims**



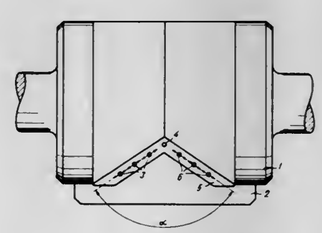
A rotary electrode for electroerosion of metals to form blind or deep through holes in which the dielectric fluid bore or conduit, at least at the operative end of the electrode, is of crescent shape in cross section having cusps extending beyond the central axis of the electrode to prevent the formation of a central plug or core due to trepanning as the electrode is rotated during the electroerosion operation, the bore at its widest cross-sectional area extending up to the central axis of the electrode as a maximum.

3,622,735
NONTREPANNING NONROTARY ELECTRODE FOR ELECTROEROSION OF METALS
Albert Bruce Mainwaring, Phoenixville, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.
Continuation-in-part of application Ser. No. 29,876, Apr. 20, 1970. This application July 15, 1970, Ser. No. 55,208
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 E **14 Claims**



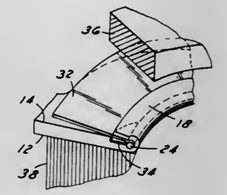
An electrode for forming holes in metal workpieces by electroerosion in which a solid helical member is secured in a substantially cylindrical tubular outer member to provide helical through passages for the dielectric fluid which change and appear to rotate around the central axis of the electrode as the active end of the electrode is consumed so that substantially no buildup of a central plug in the workpiece occurs due to trepanning. The invention also includes electroerosion apparatus and an electroerosion method using the nontrepanning electrode.

3,622,736
ARRANGEMENT FOR DEPOSITING A METALLIC LAYER USING THE ELECTROSLAG METHOD ON THE CIRCUMFERENCE OF HORIZONTAL CYLINDRICAL BODIES
Pavel Blaskovitz, Bratislava, and Jiri Borda, Cesky Tesin, both of Czechoslovakia, assignors to Vyskumny ustav Zvaracsky, Bratislava, Czechoslovakia
Filed Feb. 20, 1970, Ser. No. 12,966
Claims priority, application Czechoslovakia, Feb. 21, 1969, 1232/69
Int. Cl. B23k *9/18, 25/00, 9/12*
U.S. Cl. 219—73 **2 Claims**



An arrangement for depositing a metallic layer by the electroslag method on the circumference of cylindrical bodies disposed with their longitudinal axis horizontal, particularly of calibrating rolls of rolling machines having a V-shaped profile; in order to prevent cracks of the deposited layer, stable welding electrodes are provided in the apex part of the profile, and mobile electrodes performing an oscillating movement within the welding gap are arranged at both sides of the stable electrode.

3,622,737
FOIL SEAL FOR GAS TURBINE REGENERATOR
John J. Trudeau, deceased, late of Detroit, Mich. (by Margaret L. Trudeau, administratrix, 8237 Bramwell, Detroit, Mich. 48239)
Filed June 1, 1970, Ser. No. 42,363
Int. Cl. F16j *15/32*
U.S. Cl. 165—9 **2 Claims**

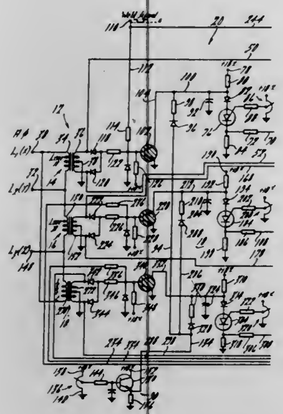


A flexible foil is inserted loosely in a slot formed in the housing side of a shoe-type seal for a rotating regenerator. Tabs attached to each end of the foil bear against the shoe and prevent the foil from sliding longitudinally out of the groove. The slot preferably is formed by folding a projecting ledge of the shoe along one longitudinal edge toward an inclined surface of the shoe. A circular wire can be inserted in the folded joint to produce a slot having a substantially uniform width throughout its entire depth.

3,622,738
MULTIPHASE CONTROL CIRCUIT

George O'Neal, Jr., Detroit, Mich., assignor to Weltronic Company, Southfield, Mich.

Filed Mar. 9, 1970, Ser. No. 17,474
Int. Cl. B23k *11/24*
U.S. Cl. 219—114 21 Claims

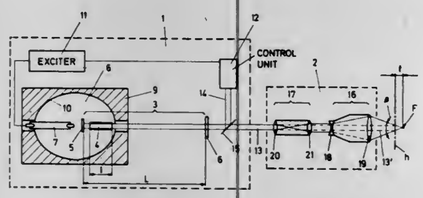


A heat control system for controlling the firing of the control elements, i.e., power-controlled rectifiers, in a welding system utilizing a single-control potentiometer to control the firing angle of each phase in a three-phase power supply system, the circuit including a synchronizing circuit which is adapted to reproduce the weld signal occurring in the first phase for the second and third phases to exactly reproduce the firing angle in the second and third phases irrespective of the relative phase angle of the second and third phases with respect to the first phase.

3,622,739
DEVICE FOR THE PRODUCTION OF A LASER BEAM FOR DRILLING WATCH JEWELS

Jurg Steffen, Zurich, Switzerland, assignor to Institut Fur Angewandte Physik Der Universitat Bern and Pierres Holding S. A., Bern, Switzerland and Biel, Switzerland

Filed Feb. 18, 1970, Ser. No. 12,166
Claims priority, application Switzerland, Feb. 27, 1969, 2968/69
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L 10 Claims

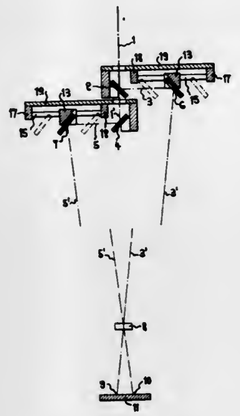


A laser beam is produced for drilling watch jewels by a resonator and a focusing lens system. The resonator comprises a rod of active material mounted between two planer reflectors and energized by a pulse light source, the spacing between the reflectors being at least 10 times greater than the length of the rod.

3,622,740
APPARATUS FOR TREATING WORKPIECES BY LASER ENERGY

Pierre E. Ravussin, Lausanne, and Robert Capua, Prilly, both of Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Lausanne and ALCYON, Electronique et Physique SA, Renens, Switzerland

Filed Mar. 25, 1970, Ser. No. 22,497
Claims priority, application Switzerland, Apr. 1, 1969, 4950/69
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L 5 Claims

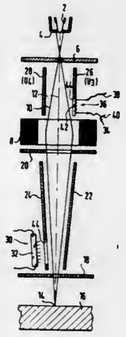


A device for substantially increasing the efficiency, output and quality when treating workpieces by means of laser energy, particularly when welding or boring workpieces, wherein the laser beam from one single laser source is subdivided into a number of individual beams for simultaneously treating a number of places of one or more workpieces.

3,622,741
ELECTRON-BEAM-PROCESSING MACHINE HAVING MEANS FOR DEFLECTING IMPURITIES FROM THE PATH OF THE ELECTRON BEAM

Karl-Heinz Steigerwald, Haderunstr. 1a, Munich, 55, Germany

Filed Aug. 5, 1970, Ser. No. 61,302
Claims priority, application Germany, Aug. 6, 1969, P 19 40 056.7
Int. Cl. B23k *15/00*; H01j *37/26*
U.S. Cl. 219—121 EB 29 Claims

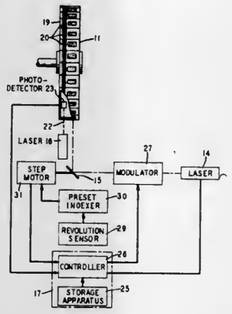


Apparatus in electron-beam-processing machines for keeping the path of the working beam free of impurities, the apparatus having a screening device associated with the working beam for catching impurities, comprising an ionization device acting in the region of the working beam path, and a deflecting device effective in the region of the said beam path to produce a deflecting field for electrically charged particles, the ionization device being so formed that it acts with an ionization probability greater than that of the working beam on atom-sized or larger particles, the deflecting device exerting a sufficient deflecting action on such electrically charged particles, which move at substantially thermal speeds as to remove these particles from the path of the working beam.

3,622,742
LASER MACHINING METHOD AND APPARATUS

Melvin Irwin Cohen, Berkeley Heights; Walter Werner Weick, Somerville, and John Wesley West, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 27, 1970, Ser. No. 40,914
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L 6 Claims

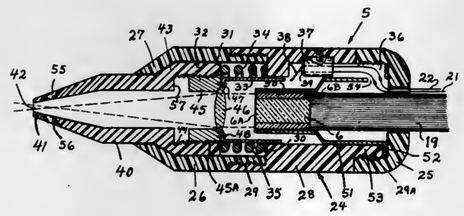


Thin film integrated circuits are formed by coating insulative substrates with conductive film and mounting them on the periphery of a rotating drum. As the drum rotates, a switched laser machines the circuit pattern by vaporizing parts of the metal film of successive substrates. Light from another laser is directed through a mask on the drum circumference and controls modulation of the machining laser.

3,622,743
LASER ERASER AND MICROWELDER

Hrand M. Muncheryan, 1735 Morningside, Orange, Calif.

Filed Apr. 28, 1969, Ser. No. 819,557
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LA 14 Claims

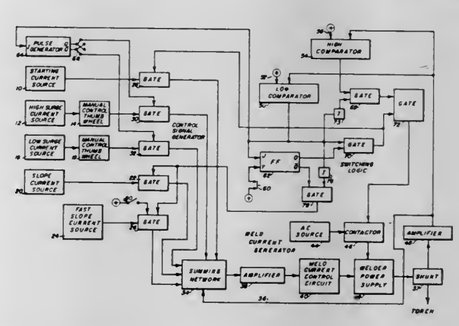


A laser eraser and microwelder capable of operating with a pulsed or continuous-wave laser radiation is described. The device comprises a laser generator, a miniaturized electric power supply unit and a laser working head connected to the power supply unit through a flexible lasing fiber optics accompanied by an electric cable. The lasing fiber optics is optically coupled to said laser generator for generating and transmitting a laser radiation to the laser working head, and the cable conducts the laser triggering current to the laser generator through a triggering switch located in the laser working head. As an eraser, the device utilizes a defocused laser beam to erase an error character by vaporizing it from written matter and can be used either on a desk top or on a typewritter by attaching the power supply unit to the side of the typewriter housing. As a microwelder, the device utilizes a focused laser beam to weld miniaturized parts, components, and circuit leads. Radiation safety is achieved by providing a safety means in the laser working head which must be placed on the workpiece and manipulated before the triggering switch can be actuated to energize said laser generator.

3,622,744
ARC-WELDING SYSTEM

David C. Main, North Stonington; Petros T. Petrides, Norwich; Rodney R. Cordeiro, Stonington, and Charles L. Gordon, East Lyme, all of Conn., assignors to General Dynamics Corporation, New York, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,182
Int. Cl. D23k *9/10*
U.S. Cl. 219—131 R 11 Claims

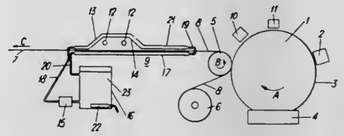


A saturable reactor welding power supply is controlled by a closed loop control system so as to provide arc current which surges periodically between manually selectable predetermined low-current and high-current values. The current is maintained at the high-current value and the low-current value for predetermined times. Switching logic automatically starts the arc at a proper preselected current and automatically decreases the arc current, finally shutting off the supply when a control switch is actuated.

3,622,745
THERMAL BONDING MEANS FOR ELECTROGRAPHIC APPARATUS

Stanley Carden Shepard, Old Harlow, England, assignor to Standard Telephones and Cables Limited, London, England

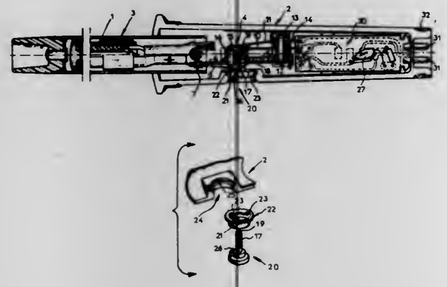
Filed Nov. 14, 1969, Ser. No. 876,816
Claims priority, application Great Britain, Jan. 16, 1969, 2,558/69
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 10 Claims



Thermal bonding means with reduced power requirements for fixing powder particles to a web of paper in electrographic apparatus. The thermal bonding means utilize the direct application of infrared heat to the paper and in addition provide indirect heating by means which utilize the

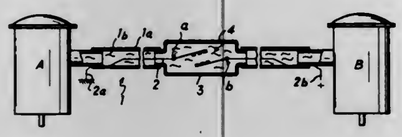
waste heat from the infrared application. The indirect means absorb the waste heat initially and reapply it so as to heat the paper and powder particles before and during the direct application of infrared heat.

3,622,746
ELECTRICAL CURLING IRONS
Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France
Filed Mar. 19, 1970, Ser. No. 20,933
Claims priority, application France, July 30, 1969, 6926075
Int. Cl. A45d *1/04, 1/28*; H05b *1/02*
U.S. Cl. 219—225 **2 Claims**



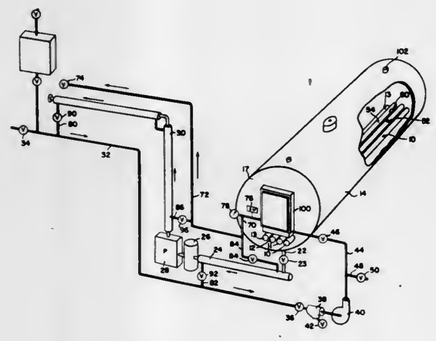
The electrical curling tongs comprise a thermostat which is manually adjustable by a knob embedded in a recess provided in the tongs handle. The handle recess includes indentations adapted to mesh with corresponding indentations provided at the periphery of a ring interposed between the knob and the recess for presetting the temperature range of the tongs. The ring includes internal stops and the knob also comprises stop means so that, upon rotating the knob within the ring, the rotary motion of the knob controlling the heating temperature is limited.

3,622,747
HYDRAULIC TRANSMISSION SYSTEMS
Pierre Cibie, Paris, France, assignor to Projecteurs Cibie, Bobigny, France
Filed July 9, 1969, Ser. No. 840,334
Claims priority, application France, July 22, 1968, 160,050
Int. Cl. F24h *1/10*
U.S. Cl. 219—307 **3 Claims**



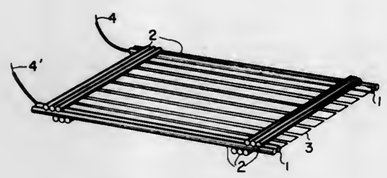
A hydraulic transmission circuit includes an electric-heating circuit within it. The heating circuit includes a heating wire and a temperature-responsive switch for opening and closing the heating circuit in response to the temperature of the hydraulic liquid. The switch may comprise bimetallic strips having magnets which attract each other at the ends of the strips carrying the switch contacts.

3,622,748
ELECTRIC HEATING SYSTEM FOR ASPHALT EQUIPMENT
William W. Sellers, c/o The Sellers Company, Inc., 396 E. Church Road, King of Prussia, Pa.
Filed Apr. 1, 1966, Ser. No. 539,348
Int. Cl. H05b *3/82*; F24h *1/00*
U.S. Cl. 219—326 **10 Claims**



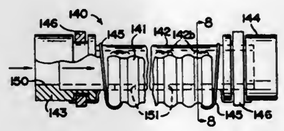
A tank-heating system for fluids, such as asphalt, in which an electric tank-heating means extends generally horizontally within the tank for producing heat which is absorbed by the contents of the tank. A conduit provides a flow path for the flow of a second fluid, such as oil, to be heated by the contents of the tank. The conduit extends within the tank and is positioned in the region above the proximate to the tank-heating means so that the fluid passing through the conduit is in effective heat exchange relationship to the tank-heating means and the contents of the tank in the region. A second electric heating means is associated with the conduit for applying heat directly to the fluid flowing through the conduit. The tank-heating means, the conduit and the second heating means are structurally interconnected so as to form a unitary assembly for installation within the tank as a single unit.

3,622,749
CONDUCTION HEATER
Shigeo Kuwayama, and Syozo Takeuchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed Feb. 18, 1970, Ser. No. 12,312
Claims priority, application Japan, Feb. 26, 1969, 17116
Int. Cl. H05b *1/00*
U.S. Cl. 219—354 **3 Claims**



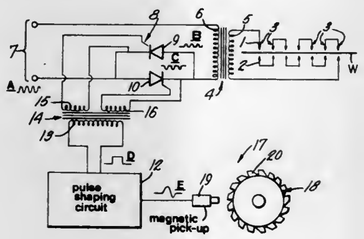
A heater consists of a number of glass tubes arranged in parallel and in contact with one another. Some of the glass tubes have a metallic rod or tube therein and are interposed among other glass tubes carrying a heating strip therein.

3,622,750
HEATING ELEMENT AND PACKAGING MACHINE EQUIPPED THEREWITH
Ridley Watts, Jr., Cleveland, Ohio, assignor to The American Packaging Corporation
Filed May 3, 1968, Ser. No. 726,513
Int. Cl. H05b *3/10*; B65b *31/00*; F24h *3/04*
U.S. Cl. 219—377 **18 Claims**



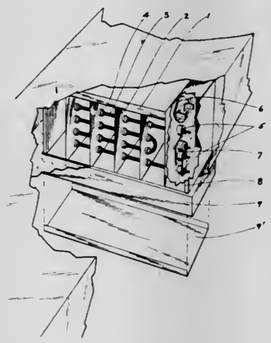
A skin-packaging machine has a plurality of heaters which are connected in series during product loading portions of a cycle and are connected in series-parallel for the heating part of the cycle. The heaters each includes a tubular quartz core which support a Nichrome resistance heating element. In one form, the element comprises a thin ribbon corrugated transversely of its length with the ribbon wound in loose convolutions around the core so that it is free to expand and contract. In another form, a ribbonlike heating element is corrugated transversely of its length and circularly bent about a longitudinal axis to define a generally C-shaped cross section. The open side of the C-shaped ribbon is of smaller extent that the diametric extent of the core. The core extends within the element and the edges of the C-shaped ribbon engage the core. Because of the corrugated configuration of the heating element, physical contact between the core and element is minimized. Apparatus for directing air into heat-transfer relationship with the heating element may be provided. The air-directing apparatus may include means for passing air through the core. The interior of the core may have a radiant heat-absorbing coating to aid in heating the air passing therethrough. Alternatively, a reflector may be provided within the core to reflect incident radiation back to the heating element.

3,622,751
METHOD AND APPARATUS FOR ELECTRICALLY PERFORATING SHEET OR WEB MATERIAL
Rene Larive, and Richard L. C. Knight, both of Grand'Mere, Quebec, Canada, assignors to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas
Filed June 12, 1969, Ser. No. 832,592
Int. Cl. H05b *7/18*
U.S. Cl. 219—384 **13 Claims**



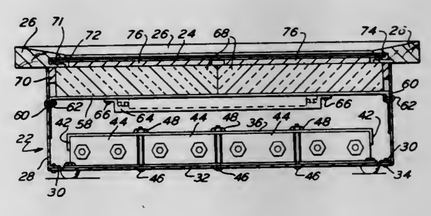
A method and apparatus for perforating a web or sheet of material by passing a plurality of sparks through the web, with the first spark forming the perforation and the remaining sparks enlarging the perforation, and controlling the number of sparks to control the size of the perforation.

3,622,752
ELECTRICAL HEATING APPARATUS WITH A SIDE-POSITIONED IN-DUCT TERMINAL BOX AND A BOTTOM-POSITIONED CONTROL BOX
Jerome F. Brasch, c/o Sidney B. King P.O. Box 6825, Brentwood, Mo.
Filed Nov. 24, 1969, Ser. No. 879,309
Int. Cl. F24h *3/04*; H05b *3/06*
U.S. Cl. 219—375 **2 Claims**



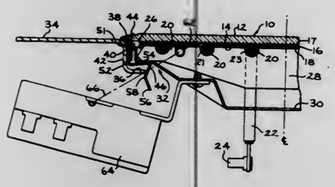
A space heater of the slip-in type adapted for use in a ductwork system has a housing unit including a frame supporting at least one electric-resistance-heating element having a pair of terminals. A bottom-positioned control box containing heating element controls is attached to and positioned at the outside of the housing unit. An enclosed side-positioned, terminal box containing the resistance-heating element terminals and wiring connecting the terminals to the controls in the control box is attached to and positioned within the housing unit substantially at right angles to the control box. The housing unit, the control box and the terminal box are so dimensioned relative to the ductwork system that when the space heater is installed within the ductwork, both the housing unit and the terminal box are recessed within the ductwork while the control box is positioned outside and at the bottom thereof. The terminal box contains thermal cutouts operatively connected to the heating element.

3,622,753
PORTABLE HEAT-MAINTAINING AND WARMING FOOD TRAY
Ruth F. Lax, 164 E. 81st St., New York, N.Y., and Frank Kahn, Abington, Pa., assignor to said Lax, by said Kahn
Filed Aug. 14, 1970, Ser. No. 63,793
Int. Cl. H05b *3/68*
U.S. Cl. 219—452 **11 Claims**



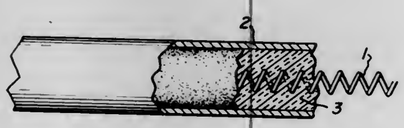
A heat-maintaining and warming food tray is provided having a self-contained power source. The device includes a heatable plate to the underside of which a plurality of strips of heating tape are secured. The power source comprises rechargeable batteries which are connected to the heating tape via switching means. The switching means disconnect the strips from the power source when the output voltage of the battery falls below a predetermined voltage.

3,622,754
GLASS PLATE SURFACE HEATING UNIT WITH EVEN TEMPERATURE DISTRIBUTION
Bohdan Hurko, Louisville, Ky., assignor to General Electric Company
Filed July 24, 1970, Ser. No. 58,110
Int. Cl. H05b *3/68*
U.S. Cl. 219—462 **10 Claims**



A glass-ceramic plate surface heating unit having a heat spreader plate of high thermal conductivity bearing against the underside of the glass to create an even temperature distribution. Means are provided to hold the spreader plate firmly against the glass plate. A metal-sheathed heating element of high watts density is attached to the underside of the heat spreader plate. Reinforcing means are present beneath the spreader plate to prevent warpage. A temperature-limiting means is combined with the heat spreader plate to limit the maximum temperature to which the glass ceramic plate is exposed. The heat spreader plate is grounded to provide a safety precaution since the glass ceramic plate becomes more electrically conductive at higher temperatures.

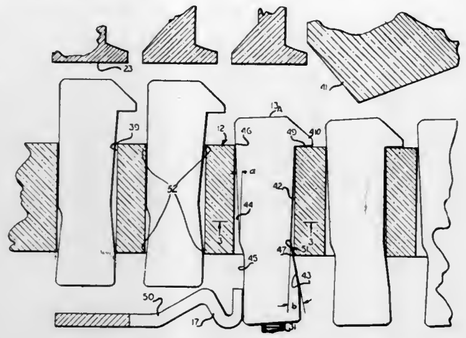
3,622,755
TUBULAR HEATING ELEMENTS AND MAGNESIA INSULATION THEREFOR AND METHOD OF PRODUCTION
Willem Vedder, Latham, N.Y., assignor to General Electric Company
Filed Mar. 21, 1969, Ser. No. 809,149
Int. Cl. H01c *1/02*; **H05b** *3/10, 3/44*
U.S. Cl. 219—544 **8 Claims**



The compaction density and thermal conductivity of granular, fused magnesia used as thermally conducting electrical insulation in tubular, electrical resistance elements is substantially improved by controlled surface hydroxylation of the magnesia powder before compacting it in a heating element in the usual manner.

3,622,756
PIN CARRIAGE FOR ADDING AND CALCULATING MACHINES
Richard E. Busch, La Puente, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed Feb. 9, 1970, Ser. No. 9,656
Int. Cl. G06c *29/00*
U.S. Cl. 235—60 R **5 Claims**

A pin carriage for adding and calculating machines embodying settable escapement pins for stepping the carriage, the pins each having a camming edge which cams the carriage in a retrograde direction upon movement of the pin from a carriage-arresting position, in engagement with an arresting element, to a nonarresting position. This produces a detenting action of the pin which is in arresting location without requiring the usual individual pin detents.



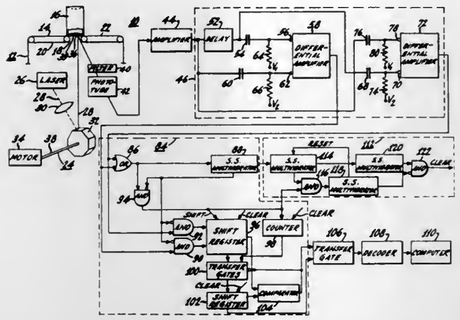
3,622,757
APPARATUS FOR ELECTRICALLY RESPONDING TO SURFACE DEVIATIONS ON A MOVING MEDIUM
Paul R. Hoffman, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sept. 25, 1969, Ser. No. 860,964
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 D **5 Claims**

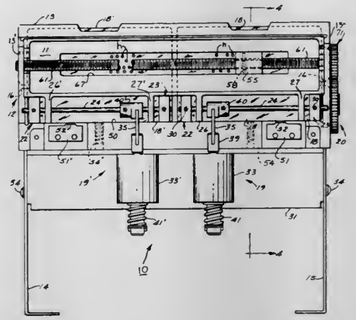


An apparatus for electrically responding to indicia in the form of surface deviations or perforations on a moving medium having a magnetic flux source that periodically activates in response to the indicia on the medium, thereby periodically inhibiting electrical pulses that are induced by another flux source at a predetermined rate in an electrical conductor, resulting in the conductor having an induced electrical output corresponding to the indicia on the medium.

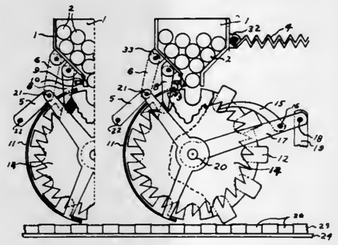
3,622,758
ARTICLE LABELING AND IDENTIFICATION SYSTEM
Joseph F. Schanne, Cheltenham, Pa., assignor to RCA Corporation
Continuation of application Ser. No. 740,624, June 27, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,075
Int. Cl. G06k *5/00*
U.S. Cl. 235—61.11 E **13 Claims**

Binary coded designator labels are affixed to articles to identify them. The articles are optically scanned to detect the binary codes on the labels and the binary codes are decoded to provide automatic reading and recognition of the articles. Circuits are included for discriminating against signals produced in response to dirt or defects in the optically scanned surface.





3,622,759
PELLET CODE SETUP, TRANSFER AND DECODING DEVICE
Edward James Fitzell, Birkenfeld, Oreg.
Filed June 30, 1969, Ser. No. 838,374
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 B **7 Claims**

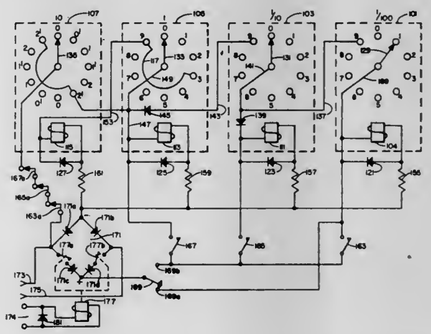


A pellet setup and transfer device. A cylinder is mounted for rotation about its longitudinal axis and has a plurality of pellet-receiving recesses in its surface. A pellet supply provides pellets to the recesses as desired. As the cylinder rotates, the pellets are rotated to a discharge point, being retained on the cylinder during rotation by a cover. The pellets are discharged into holes in an endless belt. Rods pass through the endless belt holes, and with respect to those holes in which pellets are situated the rods cause the pellets to push against actuating rods thereby moving them, while with respect to those holes in which no pellets are situated rods enter the actuating rods, thereby leaving them stationary.

3,622,760
ENCODER MEMBER READER
Calvin L. Chumley, Glendale, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 11, 1969, Ser. No. 884,266
Int. Cl. G06K *7/00*
U.S. Cl. 235—61.11 E **8 Claims**

A device for reading an encoded card is disclosed which includes a chamber for receiving a card encoded by a predetermined pattern of holes, a radiant energy source including a plurality of light source elements, and a radiant energy detector including a plurality of light-sensitive elements, both of which are synchronously moved by screws across opposite sides of the card to effect scanning and produce signals responsive to the particular code and provide information corresponding to the code. The screws are driven by motor-driven gears, and the direction of rotation is reversed by an axially movable rod with a cam surface that positively operates a motor reversing switch.

3,622,761
VARIABLE RADIX COUNTER CIRCUIT WITH AUTOMATIC RESET TO ZERO
John A. Haase, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Jan. 7, 1970, Ser. No. 1,112
Int. Cl. H03k *21/36, 21/02*
U.S. Cl. 235—92 PE **6 Claims**

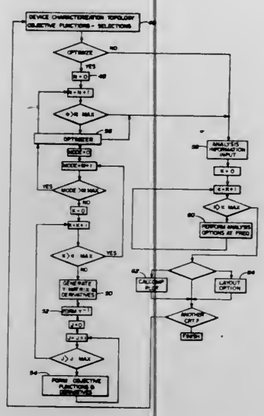


A mixed radix counting device which provides automatic restoration to the zero state of the counting device upon reaching a predetermined maximum count. The counting device uses rectification means as a full-wave rectifier during counting and as a half-wave rectifier during restoration.

3,622,762
CIRCUIT DESIGN BY AN AUTOMATED DATA PROCESSING MACHINE
Lester W. Dyer, Plano; Theodore W. Houston, Richardson, and Gary J. Policky, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 11, 1969, Ser. No. 833,892
Int. Cl. G06f *15/56*
U.S. Cl. 235—150 **31 Claims**

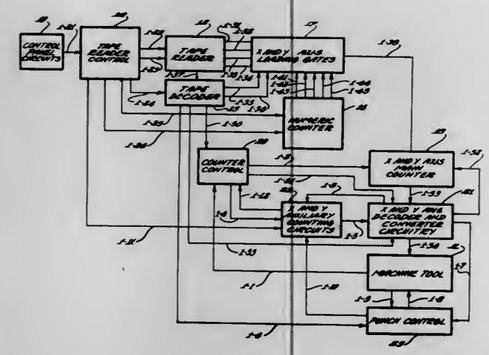
Using representations of circuit topologies and initial values of all elements, a circuit design may be modified by an automated data processing machine to improve operation for at least one performance characteristic by changing design variables. A desired circuit topology is selected and the initial values for all the circuit elements are coded and stored in the data processor. In addition, the desired performance characteristic is also selected and coded. Using coded input infor-

mation, the data processor generates and stores a representation of a continuous analytical objective function. In the operation of the data processor, a value of the objective function is generated and stored. This value is dependent



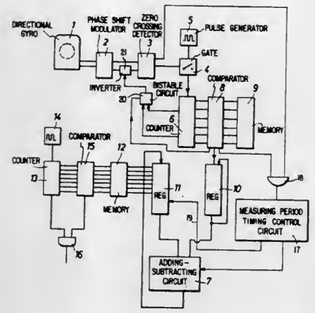
upon the sum of a power function of the difference between an actual performance and a specified performance characteristic. To obtain a specified performance characteristic for a given circuit topology, the value of the objective function is improved.

3,622,763
INCREMENTAL NUMERICAL CONTROL
Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed July 8, 1969, Ser. No. 839,971
Int. Cl. G05b *19/42*
U.S. Cl. 235—151.11 **9 Claims**



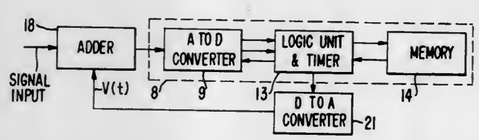
A numerical control system having a main counter for registering successive displacement commands and for counting down to zero as the load reaches the commanded end position wherein an auxiliary counter maintains the load at such end position during reading of a new command into the main counter. A zero crossing network for controlling the drive circuits and the main counter can accommodate unlimited overshoot and oscillation of the load relative to the end point. Position decoding logic directly energizes the summing input of an operational amplifier with the analog signals controlling slowdown and positioning.

3,622,764
METHOD OF DETERMINING THE DRIFT OF A GYROCOMPASS
Horst Brendes, Walldorf; Waltraud Bar, Bruchsal, and Egon Funk, Nussloch, all of Germany, assignors to Teldix GmbH, Heidelberg, Germany
Filed Aug. 18, 1970, Ser. No. 64,783
Claims priority, application Germany, Aug. 23, 1969, P 19 43 026.3
Int. Cl. G06g *7/78*
U.S. Cl. 235—151.3 **15 Claims**



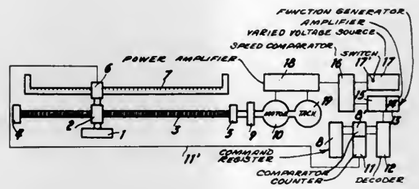
The drift of a directional gyro with a stationary gyro carrier is determined by making a plurality N of measurements of the alignment angle α of the gimbal bearing the gyro rotor with respect to a reference axis determined by the position of the gyro carrier at equal time intervals within a predetermined period of time, producing electrical value signals, preferably pulse sequences, proportional to the measured angular values, and adding the electrical signals to provide a sum which is a measure of the gyro drift. If the alignment angle α_0 at the beginning of the measuring periot T is other than zero, the sum is modified to provide compensation for the initial alignment angle α_0.

3,622,765
METHOD AND APPARATUS FOR ENSEMBLE AVERAGING REPETITIVE SIGNALS
Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed June 27, 1969, Ser. No. 837,021
Int. Cl. G06f *7/38*; G06j *1/00*
U.S. Cl. 235—151.3 **10 Claims**



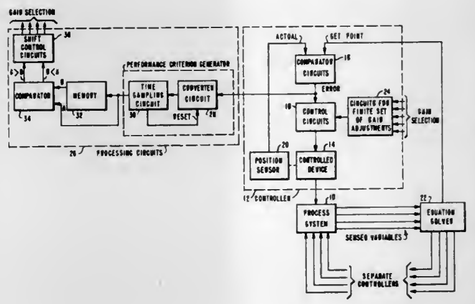
A spectrometer or similar device is scanned repetitively to produce a series of repetitive output signals either of analog or digital form. Each output signal includes an ensemble of time-displaced components and is identical to the other output signals except for noise. The series of output signals is ensemble averaged (time averaged) by an ensambled-averaging digital computer which scans each output signal of the series and samples each output signal at a plurality of sampling points at the same relative position in each output ensemble. Digital data for each sampling point is accumulated in a separate channel of the memory to improve the signal-to-noise ratio. An extra bit is added into the sampled data for each sampling point, such added bit being less than the least significant bit to be stored in the memory. The accumulation of added bits of each sampling point, over a series of scans, adds to zero to some number which is the same for each sampling point, whereby the digitization error is reduced.

3,622,766
DEVICE FOR ACCURATE POSITIONING OF MOVABLE MEMBERS ON A MACHINE TOOL
Robert David, Paris, France, assignor to Societe Anonyme Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique, Alcatel, Paris, France
Filed Jan. 24, 1969, Ser. No. 793,710
Claims priority, application France, Jan. 25, 1968, 137686
Int. Cl. G05b *19/38*
U.S. Cl. 235—151.11 **8 Claims**



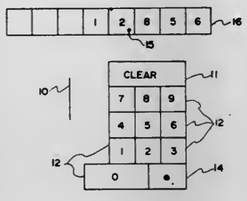
The invention relates to a device for accurate positioning of movable members. To that effect, the member is driven into a position with accurate coordinates, the path of the member, being compounded in several elements whereby the first of them can be run at a maximum speed and the following at lower and lower speeds, so that when the displacement stops, the member occupies the accurate coordinates, and the quick and accurate positioning of the member is actuated according to a predetermined program.

3,622,767
ADAPTIVE CONTROL SYSTEM AND METHOD
Richard W. Koepcke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 16, 1967, Ser. No. 609,415
Int. Cl. G06f *15/46*; G05b *13/02*
U.S. Cl. 235—150.1 **8 Claims**



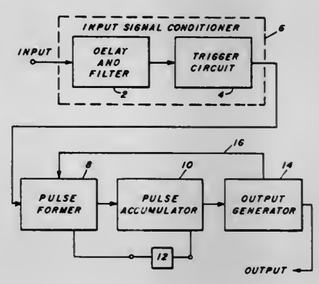
A control system of the adaptive type in which the applicable control law is chosen from a finite set of possibilities, with changes between the control laws being effected dependent upon the relative changes in system performance, without relation to external performance standards. As performance varies, comparisons between successive values for the chosen criteria are continually made and the system shifts between individual control laws within the available set of control laws to tend toward optimum performance for the conditions under which the system is then operating.

3,622,768
DUAL KEY DEPRESSION FOR DECIMAL POSITION SELECTION
John C. Clark, Oakland; Han Kuijsten, Oakland, and Werner Schaer, Santa Clara, all of Calif., assignors to SCM Corporation
Filed Aug. 28, 1969, Ser. No. 853,738
Int. Cl. G06f *13/00*
U.S. Cl. 235—160 **27 Claims**



Depression of a register clear key concurrently with depression of a digit key for purposes of selection of the decimal point position in a calculating machine without decimal point selection dials, levers, etc. is disclosed.

3,622,769
ANALOG-TYPE RESISTANCE PROGRAMMABLE COUNTER
Peter A. Lajoie, Chelmsford, Mass., and Jack W. Skinner, New Kensington, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Oct. 1, 1969, Ser. No. 862,717
Int. Cl. G06g *7/06*, *7/18*
U.S. Cl. 235—183 **9 Claims**

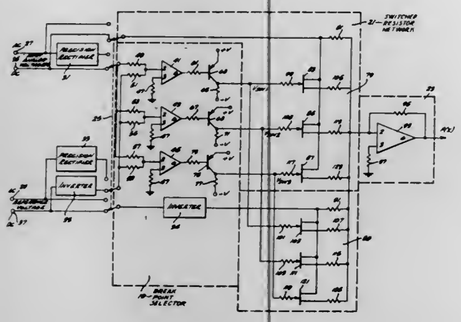


An electric analog counter which in its basic assembly includes a pulse former, a pluse accumulator and an output generator wherein the pulse accumulator includes an external variable program resistor whose value is preselected to control the rate of accumulation of an electric charge in said accumulator thereby varying the number of pulses, or counts, necessary for the pulse accumulator to trigger the output generator which signals the completion of the counting event. In a preferred embodiment a delay and filter section and a trigger section are incorporated within a input signal conditioner which preconditions the inputs to cause the counter respond only to input signal counts and not to extraneous noise signals.

3,622,770
STRAIGHT LINE SEGMENT FUNCTION GENERATOR
Roger H. Edelson, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 21, 1968, Ser. No. 754,442
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **13 Claims**

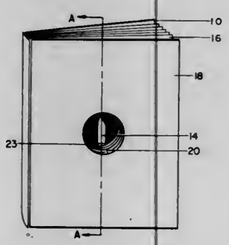
A system for converting a variable AC or DC input analog voltage into an output voltage which approximates a desired mathematical AC function of the analog voltage with straight

line segments. In response to a change in the amplitude of the analog voltage, the output levels of a plurality of switch control circuits are selectively changed between first and second voltage levels to enable a switched resistor network to selectively switch a plurality of associated resistance



branches in or out of an amplifier circuit, and thereby vary the gain of the amplifier circuit to produce an output, composed of straight line segments, which varies approximately in accordance with the desired AC function of the input analog voltage.

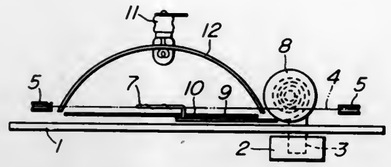
3,622,771
ILLUMINATED BOOK
Charles Franc, 221 East 70 St., New York, N.Y.
Filed Dec. 2, 1969, Ser. No. 881,554
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **3 Claims**



A book has a rear page or cover with an exposed battery-powered lamp. All of the other pages have aligned cutout regions exposing the lamp.

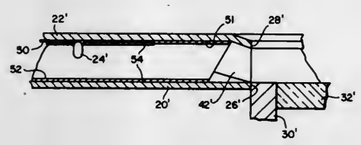
3,622,772
DIAL DEVICE
Kazuhiro Koiso, Osaka; Tadato Ozima, Hirakata-shi; Hanji Takahashi, Suita-shi; Soji Takada, Hirakata-shi; Akira Asai, Hirakata-shi, and Toru Kokuwa, Neyagawa-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 2, 1968, Ser. No. 780,453
Claims priority, application Japan, Dec. 8, 1967, 43/103873
Int. Cl. G01d *13/06, 11/28*
U.S. Cl. 240—2.1 **7 Claims**

A dial device for radio receivers and other communication apparatus, which is simplified in construction, employing a band indicator plate which eclipses a display window in



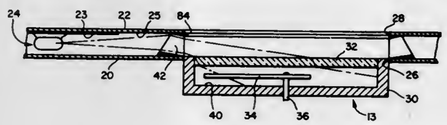
direct proportion to the dial adjustment, thereby producing a clear indication of the dial setting.

3,622,773
LIGHTING SYSTEM FOR INSTRUMENTS
Norman J. Schuster, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,927
Int. Cl. B60q *3/04*
U.S. Cl. 240—8.16 **6 Claims**



A lighting system being useful for aircraft instrument panels is disclosed. The system includes a light source located between two surfaces which are coated with a flocking material to prevent light reflection from the surfaces. The light is transmitted through a refractor before impinging upon an instrument.

3,622,774
LIGHT SYSTEM FOR INSTRUMENTS
Norman J. Schuster, Woodland Hills, Calif.; Donald L. Ort, Brookside, N.J., and Gus D. Sams, San Gabriel, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,928
Int. Cl. B60q *3/04*
U.S. Cl. 240—8.16 **5 Claims**

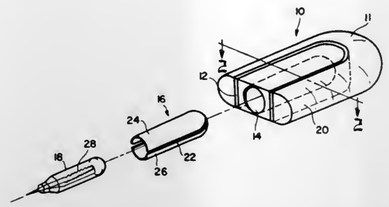


A lighting system for aircraft instrument panels including a light source generally surrounded by a reflector which directs light through a polarizing sheet and a collimating lens. The light is then transmitted through a refractor before impinging upon an instrument on the panel.

3,622,775
APPARATUS FOR DIRECTING AND POLARIZING LIGHT AND METHOD OF MAKING SAME
Donald L. Ort, Brookside, N.J., and Kenneth R. Carter, Woodland Hills, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,891
Int. Cl. F21
U.S. Cl. 240—9.5 **8 Claims**

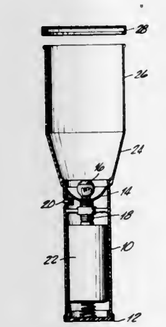
An apparatus for directing and polarizing light comprising a unitary molded clear plastic support having an opening for

a light bulb and a reflector placed about the bulb and having a sheet of polarizing material positioned about the opening in the plastic support so as to polarize the light from the bulb. A lens is formed in the periphery of the plastic support for colli-



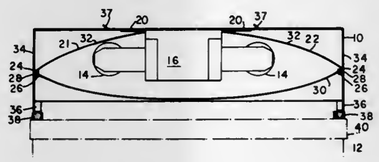
mating the light from the bulb. The method of making the apparatus comprises the steps of providing a mold, placing a polaroid sheet in proper position, introducing a hardenable resin, removing the molded piece and inserting a reflector and bulb into the molded piece.

3,622,776
AUCTION LIGHT
Guy Loyd Wyrick, Box 108, Chester, Okla.
Filed Aug. 17, 1970, Ser. No. 64,245
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.6 **4 Claims**



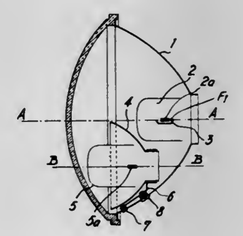
A battery-powered flashlightlike device adapted, when manually actuated, to produce a light beam viewable by a desired individual and by few if any others even when the user is located among a large group of people.

3,622,777
AQUARIUM LIGHTING FIXTURE
Robert J. Bovio, Lowell, Mass., assignor to Sylvania Electric Products, Inc.
Filed Apr. 1, 1969, Ser. No. 812,065
Int. Cl. F21v *31/00*
U.S. Cl. 240—26 **1 Claim**



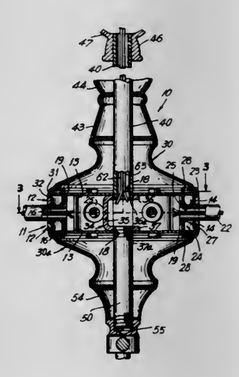
An aquarium lighting fixture incorporated into a cover that is positioned above the tank portion of the aquarium. The cover fixture includes a lamp and reflector which are protected by a snapin acrylic shield from spray caused by the water cycling apparatus of the tank. The cover fixture is spaced from the metal frame of the tank by insulator pads that also provide protection from accidental electrical shock.

3,622,778
VEHICLE HEADLAMP WITH TWO LIGHT SOURCES
Pierre Cibie, Paris, France, assignor to Projecteurs Cibie, Bobigny, France
Filed Dec. 4, 1968, Ser. No. 780,978
Claims priority, application France, Dec. 19, 1967, 132,870
Int. Cl. F21v *7/00, 7/06*
U.S. Cl. 240—41.35 R **2 Claims**



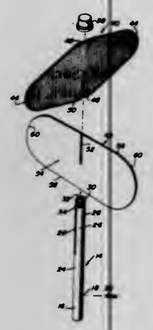
A main parabolic reflector has an iodine lamp located slightly in front of the reflector focal point. A masking element below the lamp defines a plane below which no light from the lamp strikes the reflector. An auxiliary reflector having an aperture substantially one half that of the main reflector has a second iodine lamp at its focal point. The vertical axis of the auxiliary reflector is spaced from the vertical axis of the main reflector, and the aperture of the auxiliary reflector is tangent to the plane defined by the mask.

3,622,779
LIGHTING FIXTURES
Herbert Lagin, 31 Deer Park Road, Great Neck, N.Y.
Filed Jan. 13, 1969, Ser. No. 790,688
Int. Cl. F21s *1/06*
U.S. Cl. 240—78 CF **12 Claims**



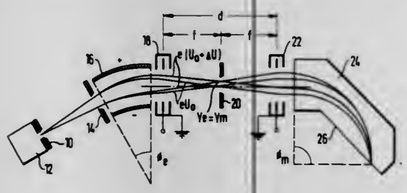
This lighting fixture is a knockdown construction which can be finally assembled in situ. Parts are preassembled. The lamp carrying arms can be shipped wired, prior to assembly with the junction casing and are easily assembled with the junction casing in such way that the arms are locked and cannot move out of fixed position. The locking device consists of adapters fixed on the end portions of the arms. Tabs on the adapters fit into slots in the casing to lock the adapters against rotation.

3,622,780
RAILWAY SWITCH TARGET
Willie R. McCain, P.O. Box 456, Fort Pierce, Fla.
Filed Jan. 15, 1970, Ser. No. 3,027
Int. Cl. B61l *5/14*
U.S. Cl. 246—476 **3 Claims**



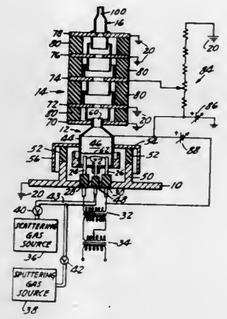
A knockdown-type target which can be readily packaged for handling and sale and which can be easily assembled for quick installation atop the turnable shaft of a stationary railway switch stand. It comprises a rod which provides a spindle whose upper end is provided with circumferentially spaced keeper slots for the slotted interconnected right angularly disposed distinguishably colored target blades. The upper screw threaded terminal of the spindle is provided with a cap-nut which maintains the replaceable blades in their set positions.

3,622,781
MASS SPECTROGRAPH WITH DOUBLE FOCUSING
Helmut Liebl, Eching, Germany, assignor to Institut fur Plasmaphysik G.m.b.H., Garching, Germany
Filed Apr. 29, 1970, Ser. No. 32,931
Claims priority, application Germany, July 30, 1969, P 19 38 770.3
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 ME **10 Claims**



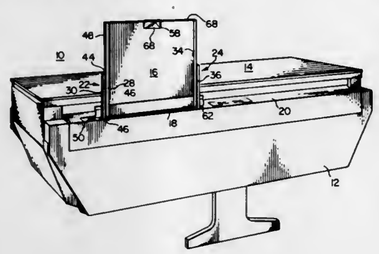
To provide for improved energy output and image resolution of Mattauch-Herzog type mass spectrographs, a beam-imaging means, which may be a separate electronic lens, or part of the electric field sector deflection arrangement suitably energized, is located in advance of the beam energy aperture, by a distance such that the exit slit of the ion source is imaged in the plane of the beam energy aperture. A second electronic lens is arranged between the beam energy aperture and the magnetic field sector deflection arrangement, of similar focal length, and arranged to image the target plane of the mass spectrograph at the same plane of the beam energy limiting means, so that the image focused thereon by the first imaging arrangement is received and focused on the target plane by the second electronic lens; the magnetic field sector deflection arrangement is rotated with respect to the electric field sector deflection arrangement by 180° to compensate for the effects of the lenses. The presence of the lenses permits independent adjustment of dispersion angles and energy band width of the ion beams.

3,622,782
BLOCKING APPARATUS AND METHOD UTILIZING A LOW-ENERGY ION BEAM
David P. Smith, Hudson, Wis., and James W. Salo, Cottage Grove Village, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 16, 1968, Ser. No. 775,565
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 **13 Claims**



Apparatus and method for producing a blocking pattern of the crystalline structure of a solid surface using a low-energy ion beam is shown wherein the low-energy ion beam is focused to a predetermined cross section and directed by an extended bored member onto a predetermined area of the solid surface at an angle greater than 5° and less than 90° enabling the ions to be scattered from the solid surface to produce a projected blocking pattern which impinges upon a fluorescent screen positioned substantially parallel to and spaced a predetermined distance from the solid surface for producing as a visual image the projected blocking pattern representing the crystalline structure of the solid surface. The extended bored member also collimates the focused ion beam into a smaller predetermined cross section and produces secondary electrons while collimating the focused beam to thereby produce a cloud of electrons which neutralize any charge at the solid surface produced by incidence of the collimated ion beam.

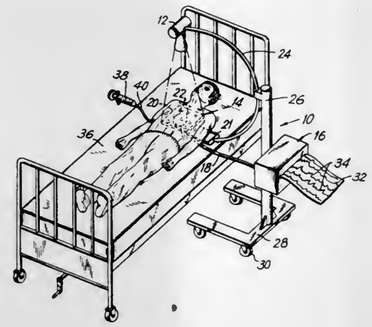
3,622,783
RETRACTABLE CASSETTE HOLDER FOR AN X-RAY TABLE
Roscoe Earl Miller, Indianapolis, Ind., assignor to Litton Medical Products, Inc., Des Plaines, Ill.
Filed Nov. 2, 1970, Ser. No. 86,026
Int. Cl. G03b *41/16*
U.S. Cl. 250—58 **9 Claims**



An X-ray table is disclosed which includes a top surface which is normally in a horizontal position and a compartment on one side of the top surface. Retractable means are provided for supporting an X-ray cassette holder in a vertical radiographic position above and at one side of the top surface of the table and for withdrawing the cassette holder into

a parked vertical position below the top surface into the compartment.

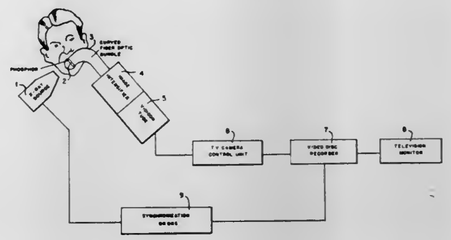
3,622,784
SENSOR-ANALYZER SYSTEM WITH MEANS FOR SELECTING OUTPUT SIGNALS CORRESPONDING TO ACCURATELY POSITIONED SENSORS
Louis R. M. Del Guercio, 14 Pryer Lane, Larchmont, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,092
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **14 Claims**



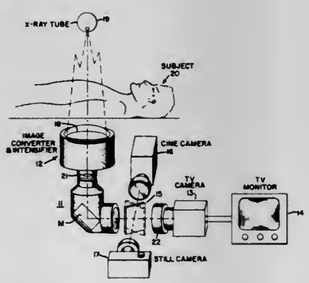
An apparatus for monitoring the condition of body organs comprises detector means having a plurality of sensors, each of the sensors being effective to detect the condition of a body organ and to provide an output signal related to the detected condition, and means operatively connected to the sensors and effective to compare the output signal of each sensor with a predetermined nominal output signal corresponding to predetermined conditions of the body organs. Means are operatively connected to the comparator means and to the sensors to select those output signals bearing a predetermined relation to known output signals. The apparatus may be used in conjunction with an indicator material which is injected into the blood stream for passage through the specific body organs to be monitored. A radiant energy source is adapted to be positioned proximate the body organs so that the rays may be directed through the organs and through the indicator material, thereby to provide an output signal at the sensors proportional to the intensity of the rays passing through the body organs and the indicator material. In the preferred embodiment, the detector means comprises a plurality of spaced sensors which are arranged in a given array so that at least several of such sensors are positioned over the body organs to be monitored.

3,622,785
INTRAORAL MINIMAL RADIATION FLUOROSCOPE
James W. Irwin, Lake Oswego; William L. Parker, Milwaukie, and Bhim S. Savara, Portland, all of Oreg., assignors to The United States of America as represented by the Secretary of the Army
Filed Mar. 3, 1970, Ser. No. 16,099
Int. Cl. H01j *31/50*
U.S. Cl. 250—77 **4 Claims**

A portable fluoroscopic unit which can be used intraorally or outside the body. The device comprises an X-ray source which generates a small number of short X-ray pulses, a curved fiber optic bundle with a phosphor deposited on the end intended for use within the oral cavity, an image intensifier, a television camera system, a video disc recorder, a television monitor, and synchronization means. An image is formed inside the mouth on the phosphor layer, this low-level image is then transmitted through the fiber optic bundle to an image intensifier. The amplified image is further amplified by the television camera system and is displayed on a monitor. A video recorder is used to freeze the image and retain a sufficient time for analysis without further X-ray exposure.



3,622,786
X-RAY IMAGE CONVERTER USING A HIGH PERFORMANCE FOLDED OBJECTIVE LENS
Bruce H. Walker, Liverpool, N.Y.; Robert Godbarsen, Jr., Wauwatosa, and John A. Bickford, Milwaukee, Wis., assignors to General Electric Company
Filed Nov. 19, 1969, Ser. No. 878,137
Int. Cl. G01t *01/20*
U.S. Cl. 250—77 **8 Claims**

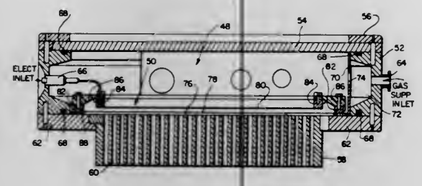


A high performance folded objective lens and a compact fluoroscopic apparatus incorporating the lens are disclosed. The objective lens has a relative aperture of f/1.0 and its performance has been optimized for use with an X-ray image intensifier tube. The lens consists of two spaced groups with a fold of 90° introduced between the two groups. The first group, which consists of four elements, is of relatively low power. The second group which consists of six elements is of relatively high power, designed particularly to have a short physical length. Provision has been made for makeup glass in the back focal region. The fluoroscopic apparatus, of which the lens is a part, achieves compactness measured along the axis of the X-ray beam by folding the optical axis. In a preferred application, this feature permits location of the fluoroscopic apparatus in the limited vertical dimensions available beneath an examination table without reduction in the efficiency of optical coupling to the conventional multiple output devices.

3,622,787
DEVICE FOR MAKING VISIBLE AND/OR REGISTERING γ-QUANTA DENSITIES OR TWO-DIMENSIONAL β-PARTICLE DENSITY DISTRIBUTIONS
Floris Timmer, A. D. Alphen, Rijn, Netherlands, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed June 2, 1969, Ser. No. 829,591
Claims priority, application Netherlands, May 30, 1968, 6807625
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **1 Claim**

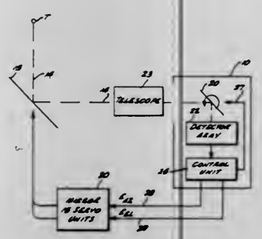
A device for making visible and/or registering the flux density of gamma-quanta or the two-dimensional density dis-

tribution of beta-particles includes a gas and vapor-filled spark discharge chamber with a flat cathode, a flat, grid-form anode and a grid-form auxiliary electrode arranged therein. The cathode is positioned parallel to and spaced from the anode and the auxiliary electrode is located therebetween. A high-voltage source is connected to the electrodes and an integrating recorder registers the pattern of the spark



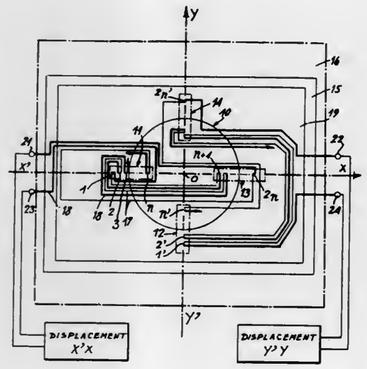
discharges between the auxiliary electrode and the anode such as caused by entering radiation. The auxiliary electrode is galvanically connected to the cathode and is spaced therefrom a distance such that the electron cloud which triggers the spark discharge is not attenuated by electron attachment in the space between cathode and auxiliary electrode.

3,622,788
TARGET SEARCH AND TRACK SYSTEM WITH DUAL MODE SCAN CAPABILITY
Raymond W. Briggs, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 11, 1969, Ser. No. 849,218
Int. Cl. G01t 1/16; H01j 29/02
U.S. Cl. 250—83.3 **12 Claims**



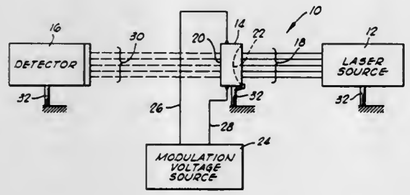
An infrared (IR) tracker receiver for searching and tracking a target from which IR energy is received. The receiver includes a linear detector array with a pair of chevron detectors on opposite sides of the center detector in the linear array. The receiver, which includes a scanning mirror, which is rotatable about an axis parallel to the linear array, is operable in a search mode in which the linear array is scanned back and forth over a moderate field of view. IR radiation, detected by the detectors, is used to generate error signals which are used to control the position of a reflecting mirror, which reflects IR radiation from a target to the scanning mirror, so as to cause the IR radiation to be detected at the center of the field of view. When the error signals fall below selected threshold levels, the system is switched to a track mode in which the detectors are scanned over a relatively small field of view, to provide a high rate of track information.

3,622,789
DEVICE FOR MEASURING THE DISPLACEMENT OF THE IMAGE OF AN OBJECT EMITTING INFRARED RAYS
Victor Volkoviski, Paris, France, assignor to Compagnie des Compteurs, Paris, France
Filed Dec. 23, 1969, Ser. No. 887,675
Claims priority, application France, Dec. 31, 1968, 182,312
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H **13 Claims**



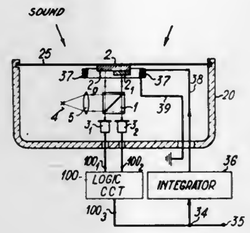
Device for measuring the displacement of the image of an object emitting infrared rays comprising at least two groups of series-connected thermoelements arranged symmetrically in relation with an origin point of the image of the object.

3,622,790
METHOD AND APPARATUS FOR MODULATING COHERENT ELECTROMAGNETIC RADIATION
Alfred T. Zavodny, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Continuation-in-part of application Ser. No. 597,502, Nov. 18, 1966, now abandoned. This application May 1, 1969, Ser. No. 820,891
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **13 Claims**



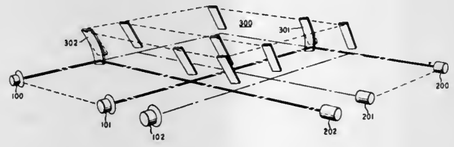
A method and apparatus for modulation of coherent electromagnetic radiation by controlled development of wave interference patterns for subsequent detection of time-varying signal indications. One form of apparatus includes a piezoelectric crystal-receiving coherent radiation and being structurally varied along the optical axis in response to a modulating voltage to cause proportionate variation of a predetermined interference pattern projection.

3,622,791
MICROPHONE CIRCUIT FOR DIRECT CONVERSION OF SOUND SIGNALS INTO PULSE MODULATED ELECTRIC SIGNALS
Patrice H. Bernard, 3, Avenue Montiagne, Paris, France
Filed May 7, 1970, Ser. No. 35,351
Claims priority, application France, June 27, 1969, 6921769
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **6 Claims**



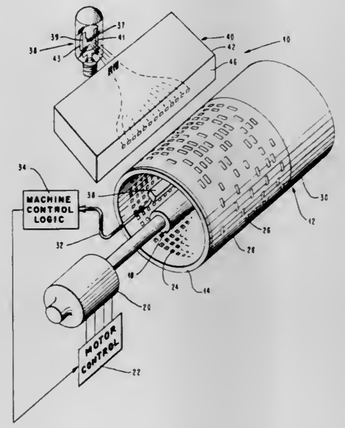
A microphone for converting sound vibrations into a train of electrical pulses and comprising a vibratory flexible diaphragm receiving the sound pressure of sound signals on one of its surfaces, wherein a small plane mirror is secured to the other diaphragm surface; the mirror is included in an optical interferometer energized by a light source and having two propagation paths, one of which is of fixed length and the other of which has a length varying in dependence upon time in accordance with the instantaneous position of the mirror and diaphragm; the light wave trains transmitted by the paths interfere in a chosen region of the interferometer to produce at least one sequence of images whose luminosity varies in dependence upon the variable path length; and such images are received by at least one photodiode delivering electric signals which are subsequently converted into a train of electric pulses.

3,622,792
OPTICAL SWITCHING SYSTEM
Jack A. Piccininni, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, Murray Hill, N.J.
Filed Dec. 29, 1969, Ser. No. 888,332
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **8 Claims**



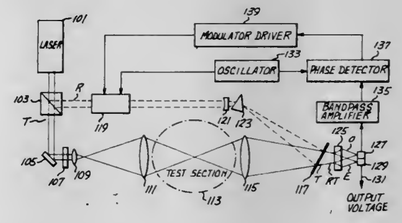
A system is disclosed that provides a switching capability on a selective basis between a plurality of laser beam inputs and a plurality of output light ports. The input devices and the output ports are arranged in a single plane with the inputs and outputs substantially perpendicular to each other. The matrix formed by the intersecting axes has a piezoelectric crystal positioned above each intersection. In response to an energizing potential, a particular crystal may be deformed into the plane of the light beams to reflect a selected input beam to a selected output.

3,622,793
FIBER OPTIC LIGHT TRANSMITTING ASSEMBLY COMPENSATING FOR SHADOWS
John J. Dalton, Rinebeck, and George P. Taylor, Red Hook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 28, 1969, Ser. No. 811,481
Int. Cl. G08c 9/06
U.S. Cl. 250—219 D **2 Claims**



A light transmitting assembly utilizing fiber optic elements to pass light from a source to a sensing station. The assembly includes a mounting block or body for the fiber optic elements, having a single input channel adjacent the light source and plural output channels located adjacent the sensing station. The fiber optic elements are arranged in layers in the input channel, and each layer is randomly arranged in a separate output channel. Shadows cast on the input end of the fiber optic elements are diffused or averaged out over the layers, and a substantially equal amount of light emanates from each output channel.

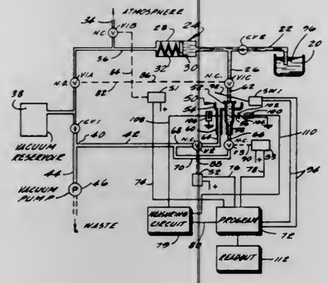
3,622,794
IMPROVEMENTS IN FEEDBACK APPARATUS FOR STABILIZING HOLOGRAMS
Charles Ray Pond, Federal Way, and Patrick D. Texeira, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed June 23, 1969, Ser. No. 835,608
Int. Cl. G01j 1/20; G01n 21/26; G02b
U.S. Cl. 250—201 **5 Claims**



Method and apparatus for stabilizing the wave fronts at the recording plane of a hologram during hologram manufacture or while viewing a stored-beam interferogram. The disclosed system alleviates vibration isolation restrictions normally encountered with holographic work. A negative feedback system is utilized to monitor the change in intensity of a reconstructed optical wave front of light transmitted through

or reflected from the hologram, relate such change to a known change in phase, and to phase modulate either the reference or signal beam accordingly. The intensity is monitored in either the signal beam or reference beam portion of the transmitted or reflected light. The wave fronts are controlled by adjusting the phase of either beam in accordance with a control signal. The negative feedback system includes a photodetector, a band-pass amplifier, a phase detector, a signal generator, a summing amplifier, a high voltage amplifier and an electro-optic phase modulator. Special purpose embodiments suitable for sampling local density fluctuation in a flowing gas are disclosed. Optional embodiments employing AC or DC stabilization circuits are presented.

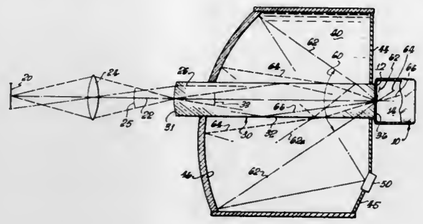
3,622,795
COLORIMETRIC FLUID TEST APPARATUS HAVING PLURAL FLUID SEQUENTIAL CONTROL
Ervin L. Dorman, Jr., Hialeah; Robert I. Klein, Hialeah; Robert L. Kreiselman, Miami, and Wallace H. Coulter, Miami Springs, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 10, 1968, Ser. No. 766,488
Int. Cl. G01n *21/26*; E03b ; G01n *33/16*
U.S. Cl. 250—218 **28 Claims**



Apparatus to be used in making hemoglobin determinations of samples of blood and other colorimetric fluid tests, which includes colorimetric computing circuitry and a flow-through cuvette in the same housing, the flow-through cuvette being normally covered by a lid which is raised by the operator when pouring the test sample into the cuvette. The construction is such that the technician need use only one hand for raising the lid and pouring the sample, leaving the other hand free for making notes or other purpose. The lid movement initiates programming means and the operating cycle, which includes: draining a blanking fluid with which the cuvette is filled between the cycles of use of the apparatus, accepting the sample poured into the cuvette, making the colorimetric measurement thereof, emptying the sample from the cuvette, rinsing the cuvette, and refilling the cuvette with the blanking fluid for the next measuring cycle. All fluid movement is achieved through the use of a system operating in conjunction with suitable valves, solenoids and at least one spring-return operated, piston-type liquid dispenser.

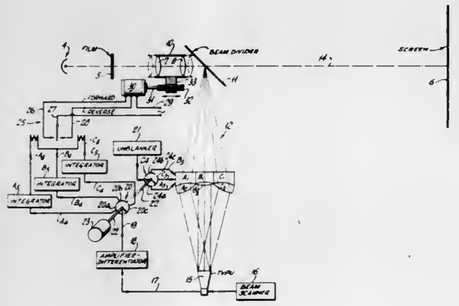
A novel cuvette construction provides concentric fluid-receiving mouths leading to inner and outer receptacles, the inner being the receptacle for the sample fluid, the outer being an overflow basin. The receptacles lead to respective independent drains, the inner being provided with a light transmitting section at which the fluid is traversed by a beam of radiant energy.

3,622,796
SELECTIVE COLLECTOR FOR THE WIDE-ANGLE PORTION OF A RADIATION BEAM
Clyde W. Harris, Santa Barbara, Calif., assignor to The Te Company, Santa Barbara, Calif.
Filed Nov. 13, 1969, Ser. No. 876,297
Int. Cl. G01n *21/22*
U.S. Cl. 250—227 **8 Claims**



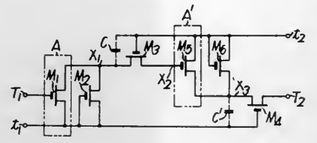
Radiation-translating devices such as resonance backscatter cells and other fluorescent bodies receive incident radiation in a concentrated beam and emit processed radiation in diffuse form. The present system separates such processed radiation from any unprocessed incident radiation specularly reflected from the cell window by receiving both in an optical light pipe coaxial with the unwanted radiation. The light pipe is laterally immersed in an optical medium of such index that the unwanted radiation is retained by total reflection in the pipe and a major portion of the initially diffuse processed radiation is transmitted through the sidewalls to form an annular beam of moderate solid angle suitable for further processing by conventional optics. The same light pipe may also supply the beam of incident radiation to the translating device.

3,622,797
RADIATION SENSITIVE AUTOMATIC FOCUS SYSTEM
Herbert E. Bragg, Oxford, N.J., assignor to Twentieth Century-Fox Film Corp., New York, N.Y.
Filed July 2, 1970, Ser. No. 51,965
Int. Cl. H01j *7/24*
U.S. Cl. 250—234 **5 Claims**



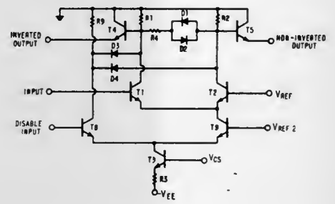
A system for automatically keeping a projected film image in sharp focus on a screen in any projection system by electronically comparing samples taken from the projected beam and moving the projection lens to its position for optimum focus. The selected sample is passed successively through optical systems of different focal lengths to form successive images on a television pickup tube, the outputs of the pickup tube for each successive image are integrated and the integrated outputs are sequentially compared in a differential relay circuit which controls a motor coupled to the projection lens for automatically moving the projection lens to its position for optimum focus.

3,622,798
INTEGRATED LOGIC CIRCUIT
Shigeyuki Ochi, and Tetsuo Ando, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 23, 1969, Ser. No. 868,800
Claims priority, application Japan, Oct. 23, 1968, July 31, 1969; 43/76921, 44/60884
Int. Cl. H03k *17/60*
U.S. Cl. 307—205 **6 Claims**



An integrated circuit having a combinational circuit and two field effect transistors formed on a common semiconductor substrate, and in which the two field effect transistors are made conductive alternately by two clock pulses without a direct current source.

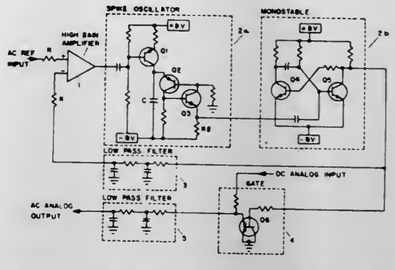
3,622,799
TEMPERATURE-COMPENSATED CURRENT-MODE CIRCUIT
Robert R. Marley, San Jose, and Walter C. Seelbach, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Apr. 20, 1970, Ser. No. 29,967
Int. Cl. H03k *19/30, 19/34*
U.S. Cl. 307—215 **14 Claims**



A novel current-mode logic circuit employing temperature-compensating circuitry is disclosed. In one embodiment, a novel disable circuit is incorporated to drive both the inverted and the noninverted output voltage levels to high when the logic circuit is disabled. In another embodiment of a single rail circuit, a novel network is employed to maintain the base-collector drop at the input transistor at zero to prevent the input transistor from going into saturation at very high operating temperature.

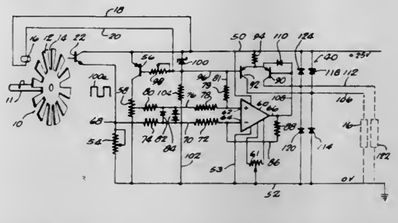
3,622,800
ELECTRONIC CIRCUIT FOR CONVERTING DC TO AC ANALOGUE SIGNALS
Shibly Joseph Abela, Mount Royal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Filed Oct. 1, 1970, Ser. No. 77,089
Claims priority, application Canada, Oct. 27, 1969, 65,983
Int. Cl. H03k *17/00*
U.S. Cl. 307—229 **7 Claims**

The disclosure teaches a completely electronic circuit for converting a DC analogue signal to a corresponding AC analogue signal. An AC reference signal is fed to the noninverting input terminal of a high gain differential amplifier whose output position modulates a pulse oscillator. The output of the oscillator is fed to a first low pass filter, which has a cutoff frequency slightly higher than the frequency of the AC reference. The output of the first filter is fed to the inverting terminal of the amplifier so that, when the gain of the amplifier is great enough, the output of the filter is substantially identical to the AC reference signal. The output of the oscillator is fed to the control terminal of a gate whose signal input is fed with the DC analogue signal so that the output of the gate is the pulse train of the oscillator multiplied by the



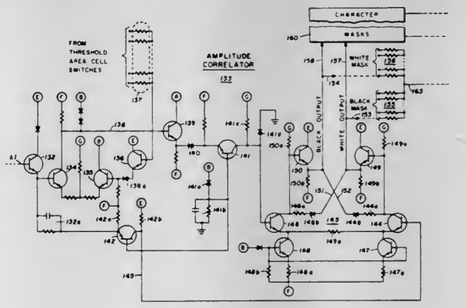
DC analogue level. The gated output is fed to a second filter, which is substantially identical to the first filter, and whose output constitutes the AC analogue signal.

3,622,801
PULSE GENERATOR HAVING ADJUSTABLE THRESHOLD LEVEL
David W. Stone, Franklin, Wis., assignor to Harnischleger Corporation, West Milwaukee, Wis.
Filed Feb. 12, 1970, Ser. No. 10,846
Int. Cl. H03k *1/12*
U.S. Cl. 307—262 **15 Claims**



A pulse generator generates a pair of complementary pulse train output signals. The pulse generator includes input circuitry which provides the single pulse train signal and a bias signal. These signals are provided to an operational amplifier, the output signal of which alternately energizes a pair of current control devices. The magnitude of the bias signal is adjustable to alter the threshold level of the pulse generator.

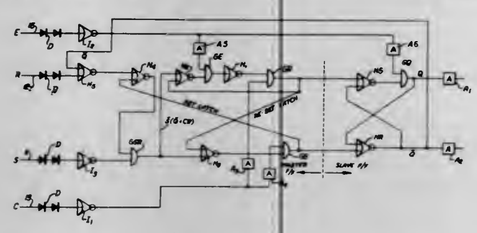
3,622,802
DIFFERENTIAL AMPLIFIER SYSTEM
Leonard J. Nunley, Dallas, Tex., assignor to Recognition Equipment Incorporated
Original application June 7, 1965, Ser. No. 461,825. Divided and this application May 15, 1969, Ser. No. 853,573
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **4 Claims**



Character recognition is accomplished by providing for comparison of the output of each transducer in a retina with

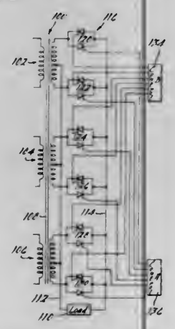
the average of a selected number of transducers in a surrounding threshold area. Means are then provided for generating a black output voltage at an analog level and a white output voltage at reference level if the transducer is in registration with an area darker than the average optical density of the threshold area. Conversely the latter means generates a white output voltage at an analog level and a black output voltage at a reference level if the transducer is in registration with an area lighter than the average of the threshold area.

3,622,803
CIRCUIT NETWORK INCLUDING INTEGRATED CIRCUIT FLIP-FLOPS FOR DIGITAL DATA PROCESSING SYSTEMS
Donald F. Cooper, Woodland Hills; Harold Marchant, Santa Monica, and Henry L. Herold, Los Angeles, all of Calif., assignors to Delaware SDS, Inc., El Segundo, Calif.
Continuation of application Ser. No. 460,408, June 1, 1965, now abandoned. This application Apr. 13, 1970, Ser. No. 28,181
Int. Cl. H03k *23/04*
U.S. Cl. 307—247 **8 Claims**



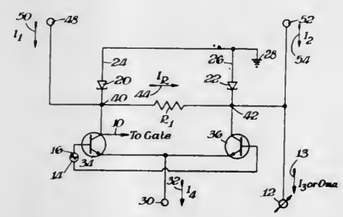
An integrated circuit flip-flop with master and slave portions. The slave portions being conventional cross coupled NOR gates, the master portion constructed for set over ride reset response to input signals and having two outputs, only one output changes with the other clock pulse phase. Determination as to which output changes is made during the clock pulse phase when both outputs are similar and in dependence upon set and/or reset inputs then received. The state of the slave portion is determined by which one of the master outputs changes with the clock. The integrated circuit flip-flop is operated at a supply voltage lower than the voltage used for biasing discrete circuit logic and flip-flop input and output, with noise rejection diodes connected at the input.

3,622,804
SYSTEM FOR PERIODICALLY REVERSING ELECTRICAL ENERGY THROUGH A LOAD
Claybourne Mitchell, Jr., Ann Arbor, Mich., assignor to The Udylite Corporation, Warren, Mich.
Continuation of application Ser. No. 665,497, Sept. 5, 1967. This application Aug. 19, 1970, Ser. No. 65,267
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 T **8 Claims**



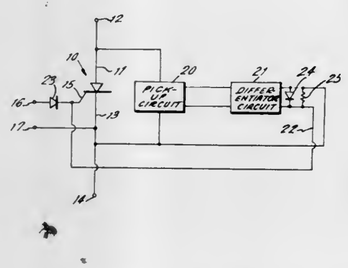
A system for feeding electrical energy from an alternating current source to a load through a rectifier arrangement, the arrangement comprising one or more pairs of back-to-back rectifying devices connected in parallel between an alternating current source and the load. Each of the elements in the pairs of rectifying elements are separately controlled such that the system may provide a main current flow of a preselected configuration and wherein the opposite rectifying element is periodically selectively energized to provide a periodic reversal of the energy through the load.

3,622,805
TRIGGER CIRCUIT
Richard H. McMorrow, Jr., Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 9, 1969, Ser. No. 814,586
Int. Cl. H03k *17/00*
U.S. Cl. 307—258 **4 Claims**



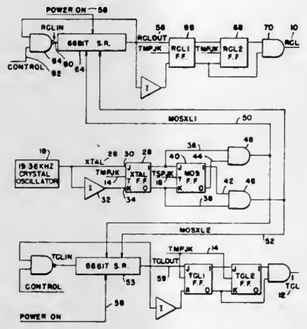
A trigger circuit uses a pair of tunnel diodes—one acting as a gate and trigger clement and the other acting as a control diode for the first—to generate triggering pulses. The circuit interconnections are such that the first tunnel diode provides an output gating pulse only in response to the synchronizing signal having crossed an upper threshold level provided a reset signal has occurred and the synchronizing signal has crossed a lower threshold level. This hysteresis type response to the synchronizing signal permits selective triggering of the circuit.

3,622,806
DYNAMIC GATE BIAS FOR CONTROLLED RECTIFIERS
Richard J. Williams, Carson, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Nov. 13, 1969, Ser. No. 876,478
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 N **6 Claims**



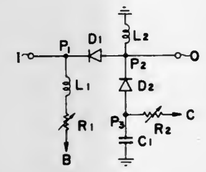
A pickup circuit connected to the main power circuit of a controlled rectifier generates an output signal responsive to the forward rate-of-change-of-voltage across the main terminals of the controlled rectifier. This output signal is then connected to the gate of the controlled rectifier as a negative gate bias, the magnitude of which is related to the rate-of-change-of-forward-voltage across the controlled rectifier device.

3,622,807
PULSE GENERATING SYSTEM FOR SYNCHRONIZING TERMINAL DATA FREQUENCY WITH COMMUNICATION LINE TRANSMISSION SPEED
Fernand D. Gillet, and Philipe Gransart, both of Bruxelles, Belgium, assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 19, 1969, Ser. No. 878,073
Int. Cl. H03k *5/04*
U.S. Cl. 307—265 **3 Claims**



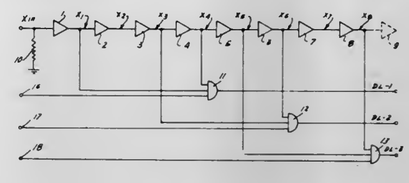
A pulse generating system generating a series of relatively low-speed or low-frequency pulses from a high-speed stable crystal oscillator, utilizes a 66-stage MOS shift register as a divisor. A second source of very high-frequency clock pulses provides a control of the pulse width of the several pulses within the pulse generating system. Disclosed herein are two systems which function in a similar manner and each are provided with suitable control members to control the generation of the lower frequency output pulses from the pulse generating system.

3,622,808
PULSE SHAPING CIRCUIT
Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan
Filed Sept. 15, 1969, Ser. No. 858,042
Claims priority, application Japan, Sept. 20, 1968, June 14, 1969; 43/67643, 44/47080
Int. Cl. H03k *17/00*
U.S. Cl. 307—268 **9 Claims**



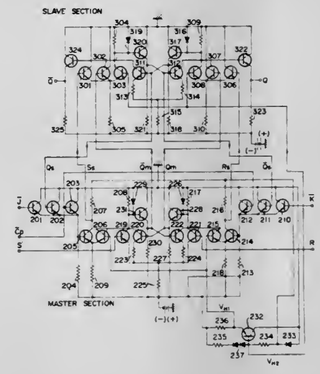
A pulse shaping circuit for producing high-frequency pulses of extremely steep waveform is comprised by a first snap-off diode connected between input and output terminals, a second snap-off diode connected to the juncture between the first snap-off diode and the output terminal and an impedance connected between the ground and the juncture between the input terminal and the first snap-off diode, the first and second snap-off diodes being poled oppositely with respect to the output terminal. The width of the shaped pulses is determined by the setting of the impedance. Sources of DC supply of suitable polarities may be connected to said impedance and said second snap-off diode.

3,622,809
ACTIVE DELAY LINE
Peter R. Williams, Wilton, Conn., assignor to Chemical Bank, New York, N.Y.
Filed Mar. 12, 1969, Ser. No. 806,472
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **14 Claims**



An electrical delay line including a series of active stages interconnected so that the leading edge of the pulses being propagated through the active stages connected in cascade controls both the turn-on and turnoff of the delayed output pulses to provide delayed pulses having constant amplitude and constant width.

3,622,810
CURRENT SWITCHING TYPE FLIP-FLOP CIRCUIT DEVICE
Sadao Sasaki, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan
Filed Dec. 5, 1968, Ser. No. 791,838
Claims priority, application Japan, Dec. 8, 1967, 42/78396
Int. Cl. H03k *3/26*
U.S. Cl. 307—291 **16 Claims**

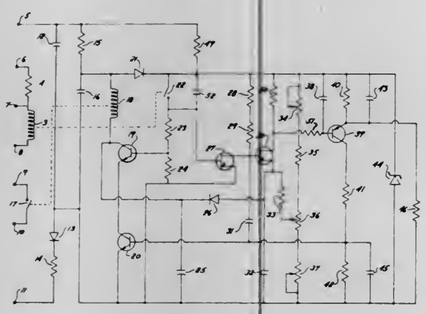


A current-switching-type flip-flop circuit device including first and second sections each comprising a first current-switching-type logic circuit comprising a first transistor forming an AND input gate and a second transistor carrying out a current switching operation jointly therewith, a second current-switching-type logic circuit provided with a third transistor forming an OR input gate to perform a flip-flop action, and a means for jointly connecting the collectors of the aforementioned second and third transistors.

3,622,811
CIRCUIT FOR MEASURING VARIABLE TIMING INTERVALS
Grover K. Houpt, Wayne, Pa., assignor to Automatic Timing and Controls, Inc., King of Prussia, Pa.
Filed Mar. 4, 1969, Ser. No. 804,232
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **5 Claims**

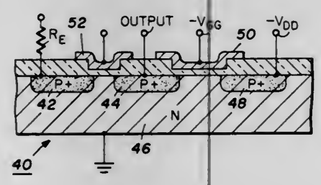
This timing circuit includes a first FET which is normally conducting in the absence of a starting signal and is in shunt

with a timing capacitor. The timing capacitor is in series with a resistor and their junction is connected to the first FET and to the gate of a second FET. The second FET has its source biased at a voltage determined by the setting on a timing dial potentiometer. It will not conduct until the charge built up on the timing capacitor, after the first FET turns off, exceeds the bias and the inherent pinch-off voltage of the second FET. When the second FET conducts, a voltage is developed across another resistor which is applied to turn on a



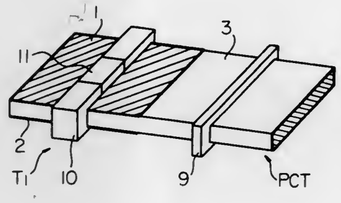
transistor that is in series with a resistor. When the transistor turns on, the voltage across the latter resistor turns on two other transistors in series with an inductor. Energization of the inductor actuates a switch associated with the load circuit which is to be controlled. A diode is connected between the second FET and the series-connected transistors to keep the second FET conductive despite an increase in the setting of the dial potentiometer after completion of the timing cycle, but before the starting circuit is deenergized.

3,622,812
BIPOLAR-TO-MOS INTERFACE STAGE
Robert H. Crawford, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 9, 1968, Ser. No. 758,201
Int. Cl. H01l 19/00
U.S. Cl. 307—303 **4 Claims**



An interface stage on an MOSFET-integrated logic circuit for shifting the positive output voltage of a bipolar logic circuit to the negative input voltage of an MOSFET logic circuit comprised of a bipolar transistor the emitter of which is connected to the output of the bipolar logic circuit, the base of which is grounded, and the collector of which is connected through a resistance to the negative drain supply voltage and to the logic input of the MOSFET logic circuit. The bipolar transistor is a surface oriented transistor formed by two spaced P-type diffusions made on the same N-type substrate by the same diffusion step used to form the source and drain diffusions of the MOSFETs. The bipolar transistor can also be used as an MOSFET with the provision of a gate electrode, and in this configuration provide an inhibit logic function and serve as an alternative input for the negative logic voltage from another MOSFET circuit.

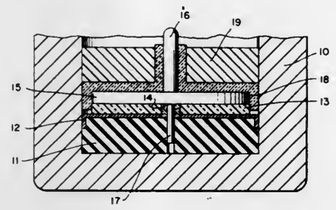
3,622,813
TERMINAL DEVICE FOR PIEZOELECTRIC CERAMIC TRANSFORMER
Osamu Kumon, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Oct. 9, 1970, Ser. No. 79,437
Claims priority, application Japan, Oct. 18, 1969, 44/99219
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **13 Claims**



A terminal device for a piezoelectric ceramic transformer of the plate-type consists of a rectangular ring made of rubber-elastic high-molecular material has two metallic members. The metallic members are mounted at opposite portions of the ring so as to contact respective input electrodes of the transformer when the terminal device is attached to the input section of the transformer. Input leads for the transformer will be connected to the respective metallic members serving as interconnection between the input electrodes and input leads.

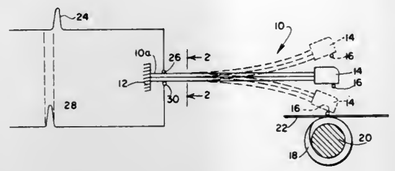
A terminal device for the output of the ceramic transformer is attached around the output section of the transformer so that the output can be taken out from any point of the output section.

3,622,814
NEGATIVELY CHARGING PIEZOELECTRIC POWER SUPPLY
Thomas E. Carlson, Hopkins, Minn., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 22, 1970, Ser. No. 56,022
Int. Cl. H01v 7/00
U.S. Cl. 310—8.4 **4 Claims**



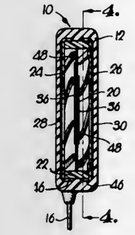
A negatively charging piezoelectric power supply including a case, piezoelectric crystal, set back weight, probe switch and rubber disk such that on accelerating the projectile containing the piezoelectric power supply, the probe shorts the charge generated by the crystal to the case through compressing the rubber disk by the weight and on lessening of the acceleration the short is removed and a negative charge produced by the crystal relaxation.

3,622,815
HIGH RELIABILITY CERAMIC BENDER
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 25, 1970, Ser. No. 22,518
Int. Cl. H01v 7/00
U.S. Cl. 310—8.6 **2 Claims**



A piezoelectric ceramic hammern of the bimorph bender-type is improved by providing an outer foil layer of stainless steel, or the like, to increase the tensile and compression strength at the surface of a layer of polycrystalline piezoelectric material.

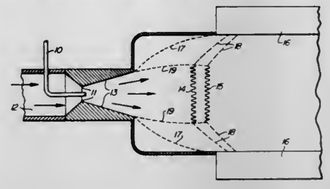
3,622,816
PIEZOELECTRIC CRYSTAL ASSEMBLY
George M. McGrew, Kansas City, Mo., assignor to Electro Dynamics Corporation, Shawnee Mission, Kans.
Filed June 12, 1970, Ser. No. 45,658
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 **6 Claims**



An improved piezoelectric crystal assembly, for minimizing the space required by and the cost of manufacturing piezoelectric units employing circular disc-type crystal elements having plated or otherwise deposited electride and contact structures thereon, is provided by housing the crystal element within an annular insulting frame having a cupped conductive member fitted upon each open end thereof, with each such member having a series of integral tabs angularly extending toward the other member for holding the crystal element within the frame and effecting electrical connection with the contact structures thereon. Openings are provided in each member to permit frequency adustment after assembly by the technique of depositing further electrode material upon the element, the assembly being closed and sealed after such adjustment by affixing covers over said openings and encapsulating the assembly in potting material.

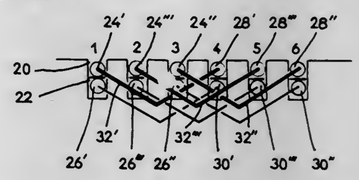
3,622,817
SHOCK INDUCED COMBUSTION AND IONIZATION MHD APPARATUS
La Var King Isaacson, Salt Lake City, Utah, assignor to The University of Utah
Filed Feb. 16, 1970, Ser. No. 11,500
Int. Cl. H02m 4/02
U.S. Cl. 310—11 **3 Claims**

The invention disclosed herein relates to the conversion of chemical energy contained in fossil fuels and other combustible products into electrical energy by the extraction of electrons from ionized combustion products as they pass through the magnetic field of a magnetohydrodynamic electric generator, all of which occurs in the absence of seeding by cesium or other elements. Combustion and ionization of the combustible products is accomplished by passage of the combustible products through a shock wave created by the change in flow of the gaseous fuel-air mixture from supersonic flow in the expansion zone of an expansion nozzle to subsonic flow in the region of the magnetohydrodynamic



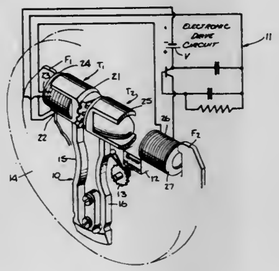
electric generator. Particulate matter, either combustible or noncombustible, ia also introduced into the gaseous flow upstream of the shock wave in order to subject the particulate matter to a nonequilibrium thermal shock upon the surface of the particles of the additional production of free electrons which are then extracted by the magnetohydrodynamic electric generator.

3,622,818
LINEAR INDUCTION MOTOR WINDING
Jean Pol Payen, Grenoble, France, assignor to Merlin Gerin Societe Anonyme, Grenoble, France
Filed Nov. 25, 1969, Ser. No. 879,873
Claims priority, application France, Dec. 20, 1968, Dec. 20, 1968; 179,774, 179,776
Int. Cl. H02k 41/04
U.S. Cl. 310—13 **4 Claims**



Linear induction motor having a slotted magnetic field structure wound with a multiphase winding having legs which extend in the slots. The legs are disposed in at least two layers in the slots and interconnected by pairs in each layer whereby all slots contain the same number of layers. The magnetic field structure is subdivided into units of double-pole pitch length which are electrically independent and not cross-connected.

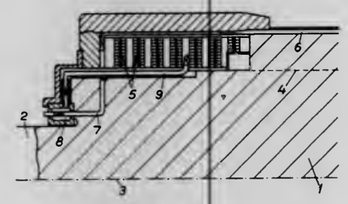
3,622,819
PERMANENT MAGNET ELECTROMAGNETIC TRANSDUCER
Dale R. Koehler, Westwood, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 11, 1970, Ser. No. 45,326
Int. Cl. H02k 33/02
U.S. Cl. 310—25 **7 Claims**



An electromagnetic transducer for actuating the tuning fork of an electronic watch. The transducer is constituted by

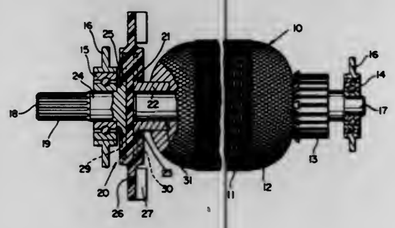
a magnetic element secured to a tine of a fork which causes the element to vibrate relative to a stationary multiturn coil. The magnetic element is formed by a cylindrical cup having a rodlike permanent magnet core supported coaxially therein to define an annular airgap. The core diminishes in cross section from the cup end to the free end thereof in a nonlinear manner such that the longitudinal profile of the core is continuously curved or nonlinearly tapered to produce a substantially uniform magnetic flux density within the core, the cross section of the coil and its longitudinal profile complementing that of the core.

3,622,820
ROTOR COOLING SYSTEM COMPRISNG MEANS FOR AVOIDING THERMAL UNBALANCE IN A LIQUID-COOLED ELECTRICAL MACHINE
Ove Tjernstrom, Vretstorp, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Sept. 21, 1970, Ser. No. 73,804
Claims priority, application Sweden, Sept. 30, 1969, 13,416/1969
Int. Cl. H02k *9/19*
U.S. Cl. 310—53 **3 Claims**



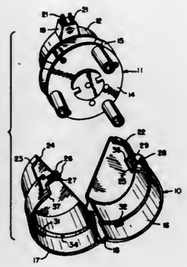
In a liquid-cooled electric machine, a rotor-cooling system is provided for avoiding thermal unbalance. This includes a number of cooling channels which run axially in the rotor and a distribution chamber for coolant arranged outside of the coil ends of the rotor winding, to which the cooling channels are connected by tubes. Each tube passes in a liquid-type way through two opposed walls of the distribution chamber and has at least one opening between the walls into the interior of the chamber. The opening is in the form of an elongated slot and its size may be varied by a pistonlike member which can be adjusted longitudinally of the tube to cover more or less of the opening.

3,622,821
DOUBLE-INSULATED MOTOR ARMATURE
George E. Maffey, Jr., Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Mar. 27, 1970, Ser. No. 23,223
Int. Cl. H02k *9/06*
U.S. Cl. 310—60 **16 Claims**



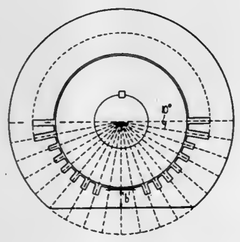
An armature including laminations, coils and a commutator and an insulating coupling to an output drive member is disclosed. Juxtaposed flange members are provided on the shaft and on the drive member and a rigid insulating coupling member is provided in interlocking relationship with the flanges. Preferably, the coupling member also serves as the hub for the motor-cooling fan and, preferably, the fan and coupling member are integrally molded in place over the two flange members.

3,622,822
ENCLOSURE FOR ELECTRIC MOTOR
Warren A. Lofstrand, Wethersfield, Conn., assignor to North American Philips Corporation, New York, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,453
Int. Cl. H02k *5/04*
U.S. Cl. 310—89 **4 Claims**



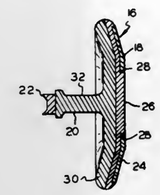
An enclosure comprising a first semicylindrical shell and a second semicylindrically shell juxtaposed to the first shell, the two shells being formed to fit around an object of nonuniform shape. A flexible ligamentous portion integral with both shells connects them together and acts as a hinge. One cooperating portion of a releasable lock is provided on each of the shells, one portion of the lock comprising a pair of laterally extending resilient fingers, each of the fingers having a shoulder or barb at its free end and the other a protrusion with a channel to receive the fingers. The shoulders on the fingers extend beyond the channel and hook behind it so as to prevent their inadvertent withdrawal.

3,622,823
ROTARY ELECTRIC MACHINES
Alexander Richard William Broadway, Westbury-on-Trym; William Fong, Westbury-on-Trym, and Gordon Hindle Rawcliffe, Bristol, all of England, assignors to National Research Development Corporation
Filed Mar. 11, 1970, Ser. No. 18,565
Claims priority, application Great Britain, Mar. 24, 1969, 15,296/69
Int. Cl. H02k *1/12*
U.S. Cl. 310—254 **3 Claims**



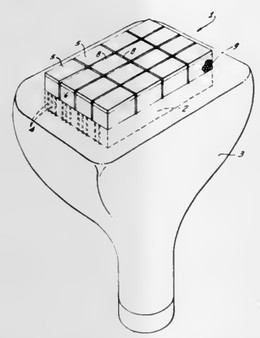
A three-phase motor with a stator winding wound on flat-sided punchings. The number of flat sides must not correspond to the pole-number. The stator slots are radial and those opposite flats on the stator punchings are shalower than those opposite the corners and in some examples are omitted. The three-phase winding used is derived from a regular double-layer, uniform-pitch, diamond coil winding by omitting blocks of coils from the top and bottom layers, the omitted coil blocks being equal in number to the flat sides, being equally spaced apart in the top and bottom layers and in coincident, overlapping or adjacent slots in the top and bottom layers.

3,622,824
COMPOSITE X-RAY TUBE TARGET
Zed J. Atlee, Elmhurst, Ill., assignor to Picker Corporation, White Plains, N.Y.
Filed June 30, 1969, Ser. No. 837,677
Int. Cl. H01j *35/10*
U.S. Cl. 313—55 **3 Claims**



A composite rotating X-ray tube target having a molybdenum head and an annular target face of 218 tungsten bonded to the molybdenum head, the head desirably having a unitary stem and backing portion of columbium.

3,622,825
MOSAIC ACOUSTIC TRANSDUCER FOR CATHODE-RAY TUBES
Grant S. Bennett, San Mateo, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.
Filed Mar. 24, 1969, Ser. No. 809,683
Int. Cl. H01j *31/49;* **H04b** *11/00;* **H01j** *31/08*
U.S. Cl. 313—66 **15 Claims**

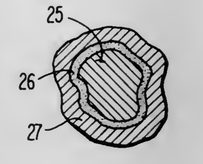


A transducer mosaic includes a plurality of spaced transducers formed with piezoelectric material for converting incident ultrasonic energy into an electrical signal. The piezoelectric is supported on one side by a pressure release barrier, suitably a conductive syntactic foam. The syntactic foam material is a mixture of miniscule hollow glass balls and conductive epoxy resin.

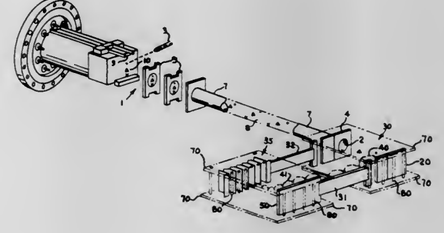
3,622,826
PHOSPHOR SCREEN COMPRISING TWO KINDS OF PARTICLES, EACH HAVING PHOSPHOR CORE AND PHOSPHOR COATING
Martin Robert Royce, Lancaster, Pa., assignor to RCA Corporation
Filed Nov. 28, 1969, Ser. No. 880,865
Int. Cl. H01j *29/18, 3/20*
U.S. Cl. 313—92 PH **2 Claims**

An electron tube having a penetration-type luminescdnt screen which includes phosphor particles of two different types. A builtup particle of the first type is comprised of a core of a first phosphor, a coating of an inert electron-absorbing layer, and an overcoating thereon of a third phosphor. A builtup particle of the second type is comprised of a core of a second phosphor, a coating of an inert electron-absorbing layer, and an overcoating thereon of the third phosphor.

At low operational voltages, the third phosphor (the overcoating) is excited to produce a colored emission to the viewer. At higher operational voltages, the first phosphor and the second phosphor (cores) of similar persistences are simultaneously excited to emit in different colors to produce a combined light of a white or off-white emission to the viewer. Thereby, the viewer may observe an information display in white or off-white and a related display in an easily distinguishable contrasting color such as red.



3,622,827
MATRIX ASSEMBLY FOR ALIGNING ELECTRON MULTIPLIER COMPONENTS
Willaim H. Shriner, Blanchester, Ohio, assignor to The Bendix Corporation
Filed Oct. 21, 1969, Ser. No. 867,997
Int. Cl. H01j *43/16, 39/34;* **B01d** *59/44*
U.S. Cl. 313—103 **1 Claim**

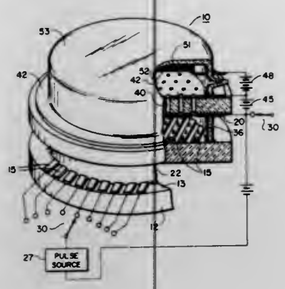


An apparatus for precisely locating the components at the input and output of an electron multiplier which includes mounting plates having precisely located holes for securing a plurality of arms in a predetermined arrangement. Mounted on the arms of the compoents which are fixed in their proper position when the apparatus is assembled.

3,622,828
FLAT DISPLAY TUBE WITH ADDRESSABLE CATHODE
Mortimer H. Zinn, Elberon, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 1, 1969, Ser. No. 881,030
Int. Cl. H01j *43/06;* **H01i** *43/08*
U.S. Cl. 313—103 **10 Claims**

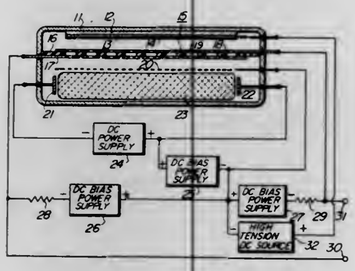
A flat panel display device having a striped address system wherein an electron beam from a selected one of several elemental emitting strips of either a field emission type cathode, a photoemissive cathode or a thermionically emissive cathode is caused to impinge upon a corresponding region of

a phosphor screen to produce visible emission from said region, said device including means for multiplying the number



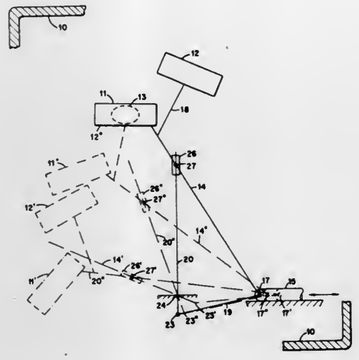
of electrons emitted from the cathode so as to permit use of a cathode of smaller current density.

3,622,829
FLUORESCENT SCREEN DISPLAY PANELS
Masanori Watanabe, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 22, 1968, Ser. No. 778,279
Claims priority, application Japan, Nov. 28, 1967, Nov. 28, 1967, Nov. 28, 1967, Nov. 28, 1967; 42/77143, 42/77144, 42/77145, 42/77147
Int. Cl. H01j *1/62, 63/04*
U.S. Cl. 313—108 R **11 Claims**



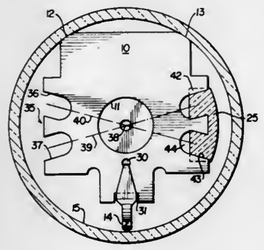
A display panel useful for realizing a very thin panel-shaped letter or figure display device or a panel-shaped TV set, wherein the small region of the fluorescent screen may be illuminated by the bombardment of charged particles; the control electrode, formed by providing a plurality of parallel metal electrode sheets on one principal surface of the insulating substrate, a plurality of parallel metal electrode sheets on the other principal surface orthogonal to the direction of arrangement of said former metal electrode sheets and holes penetrating through the insulating substrate at the part where said metal electrode sheets intersect across the insulating substrate, being made to contact the discharge plasma generated between the discharge electrodes; electrons or ions being taken out of the discharge plasma by applying a signal voltage to said metal electrodes of the control electrode and made to pass through the holes selectively, the transparent electrode comprising the fluorescent screen being provided on the side opposite to said discharge plasma with respect to said control electrode in parallel with said electrodes; and the electrons or ions passing through said holes being accelerated and made to collide with the fluorescent screen by the high voltage applied to said transparent electrode.

3,622,830
OBJECT-POSITIONING LINKAGE HAVING A SINGLE-SHAFT PLURAL-PISTON ACTUATOR
Haile S. Clay, Los Altos Hills, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 11, 1970, Ser. No. 10,515
Int. Cl. H01j *1/88*
U.S. Cl. 313—147 **7 Claims**



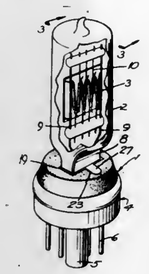
A pair of targets one of which is positioned in the path of a particle accelerator beam or both targets are removed from the beam path by means of a linkage which carries the targets in long vertical movements in response to short horizontal-actuating movements of dual coaxial pistons which differentially and reciprocably drive a single shaft through the short horizontal-actuating movements to drive the linkage to carry the targets to one of the three positions.

3,622,831
CRT ELECTRODE CLAW STRUCTURE EMBEDDED IN MOUNTING BEADS
Horst H. Blumenberg, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.
Filed Jan. 28, 1970, Ser. No. 6,399
Int. Cl. H01j *19/52, 1/98*
U.S. Cl. 313—256 **5 Claims**



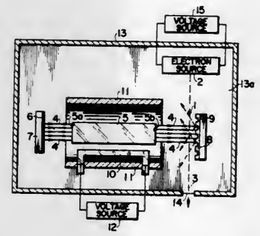
An electron gun assembly has a flat centering plat which engages the inner surface of a CRT tube envelope by means of at least three projections extending from the plate, one of which is a spring member, to thereby hold the gun axis in a predetermined alignment position with close tolerances and to permit the gun to slip into and firmly engage the envelope inner surface. The gun has electrodes mounted between a pair of glass beads into which specially shaped edges of the gun electrodes are embedded. Thus, the flat plate has claw structure for engaging the beads which is formed by two U-shaped indentations generally converging toward the center of the plate to thereby permit a thin glass bead to engage and hold the gun elements firmly without fracture.

3,622,832
INTERCHANGEABLE TUNGSTEN HALOGEN LAMP
Joseph H. Schlessel, Great Neck, and Fred M. Pintus, White Plains, both of N.Y., assignors to Airequipt Inc., New Rochelle, N.Y.
Continuation of application Ser. No. 816,843, Apr. 16, 1969, now abandoned , which is a continuation of application Ser. No. 611,417, Jan. 24, 1967, now abandoned. This application May 11, 1970, Ser. No. 37,395
Int. Cl. H01j *5/48*
U.S. Cl. 313—318 **4 Claims**



An incandescent lamp of the type known as a halogen cycle lamp having a quartz envelope selectively positioned in a supporting base of the socket-type having a centering and stabilizing pin and surrounding electric prongs and formed for use interchangeably in sockets adapted for regular incandescent lamps.

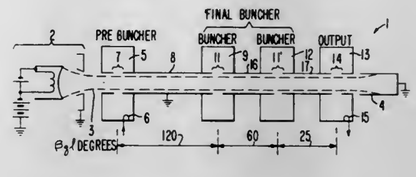
3,622,833
CHARGED PARTICLE ACCELERATOR
Yasutsugu Takeda, Tokyo, and Isao Matsui, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan
Filed May 14, 1968, Ser. No. 729,013
Claims priority, application Japan, Mar. 12, 1967, 42/29795
Int. Cl. H05h *5/00*
U.S. Cl. 315—4 **15 Claims**



A device, in which light waves are directed to the surface of a periodic structure constituted of a material having high reflectivity of the light wave used, whereby a field having a periodic strength of an electric field vector of the light wave is generated in the vicinity of the surface of said periodic structure, and the energy of the light wave is supplied to the charged particles while said charged particles pass through said field, thereby accelerating the charged particles.

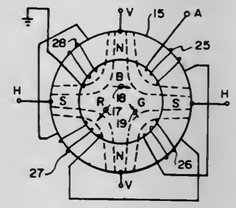
3,622,834
HIGH-EFFICIENCY VELOCITY MODULATION TUBE EMPLOYING HARMONIC PREBUNCHING
Erling L. Lien, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Apr. 15, 1970, Ser. No. 28,792
Int. Cl. H01j *23/20*
U.S. Cl. 315—5.39 **9 Claims**

A velocity modulation tube is disclosed. The tube includes beam field interaction circuits arranged along the beam path in the following order: prebuncher, floating buncher resonator, and output circuit. The prebuncher, buncher and output circuits are all tuned for a fundamental mode of resonance in the vicinity of the pass band of the tube. An abnormally long drift space, i.e., greater than 90° and preferably about 120° of reduced plasma angle is provided between interaction gaps of



the prebuncher and next succeeding floating buncher, whereby the second harmonic space charge component of the resultant current density modulation of the beam produces favorable bunching of the electrons at the entrance of the buncher cavity to obtain enhanced conversion efficiency for the tube.

3,622,835
CURRENT-GENERATING CIRCUIT
Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 10, 1969, Ser. No. 883,754
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 **10 Claims**

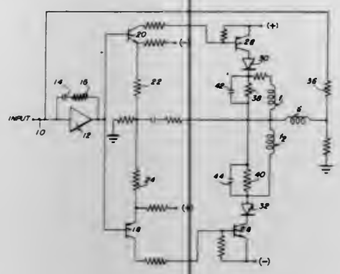


A deflection system for use with a color television multibeam cathode-ray tube utilizes a toroid deflection yoke with the distribution of the vertical and horizontal deflection windings being such as to provide a uniform deflection field within the toroid. An additional set of four series-connected, oppositely wound correction windings are wound on different quadrants of the toroid yoke; and a correction current is applied to the correction windings in the form of a current corresponding to the horizontal deflection signal modulated by the vertical deflection signal for correcting misconvergence of the beams.

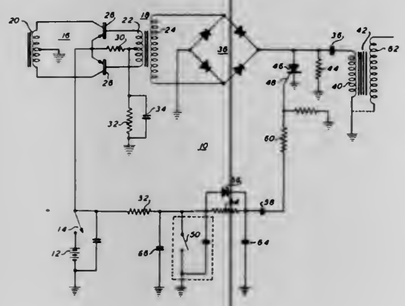
3,622,836
DEFLECTION AMPLIFIER WITH DYNAMIC FOCUS CONTROL
Asger Torben Nielsen, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 25, 1968, Ser. No. 715,896
Int. Cl. H01j *29/76*
U.S. Cl. 315—27 TD **6 Claims**

A deflection amplifier is provided which includes diodes in its output which disconnect the output drive from the deflection yoke during a transient so that the amplifier will not go into saturation and thus is able to regain control when the

transient returns from its peak. There is also provided a novel dynamic focus control in which dynamic focus coils are connected in series with the deflection yokes so that the change in focus is proportional to the extent of the deflection.



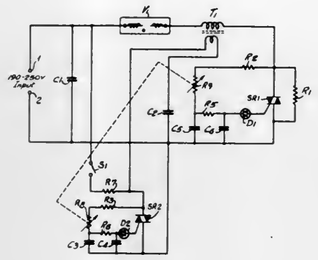
3,622,837
TRANSISTORIZED CAPACITOR-DISCHARGE SYSTEM
Murray Gellman, 1268 East Twelfth St., Brooklyn, N.Y.
Filed June 7, 1965, Ser. No. 461,743
Int. Cl. H05b *37/02*
U.S. Cl. 315—209 T **3 Claims**



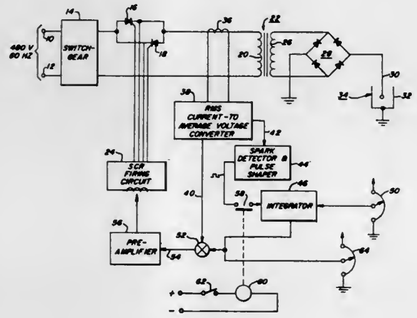
A controlled capacitor-discharge system utilizing a multivibrator source, a full-wave rectifier interposed between the multivibrator and a storage capacitor which is connected directly to the ignition coil. A silicon-controlled rectifier is operative to short the diode bridge and the storage capacitor to send a high-voltage stored energy pulse to the ignition coil and to simultaneously cut off the multivibrator power supply. The silicon-controlled rectifier is controlled in its operation by the points of the distributor on the internal combustion engine so that when the silicon-controlled rectifier is again cut off, the multivibrator will resume oscillation and the capacitor will again store energy.

3,622,838
PULSED ELECTRIC SYSTEM FOR OPERATING A GAS DISCHARGE LAMP
Maksymilian A. Michalski, Woodside, N.Y., assignor to Berkey Photo, Inc., New York, N.Y.
Filed Apr. 21, 1969, Ser. No. 817,912
Int. Cl. H05b *37/00, 39/04*
U.S. Cl. 315—241 **6 Claims**

A continually pulsing electric system for operating a gas discharge lamp directly from an alternating current source is shown in which a gas discharge lamp is connected in series with solid state switching means directly across the terminals of an alternating current supply. Control means for the solid state switching means is included as is starting means for initially igniting the gas discharge lamp. Curves are included showing the increased efficiency under pulsed operation.

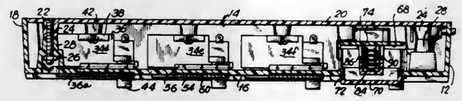


3,622,839
CONTROL SYSTEM FOR ELECTROSTATIC PRECIPITATOR POWER SUPPLY
Harry J. Abrams, Pittsburgh; Ronald C. Blackmond, Allison Park, and Roland W. Roberts, Pittsburgh, all of Pa., assignors to Robicon Corporation, Plum Industrial Park, Pittsburgh, Pa.
Filed Jan. 19, 1970, Ser. No. 4,004
Int. Cl. B03c *3/68;* **G05f** *1/40;* **H02m** *7/20*
U.S. Cl. 317—3 **6 Claims**



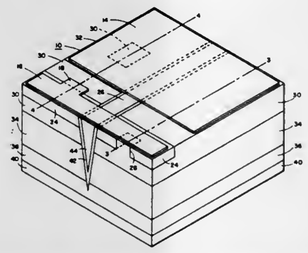
A sparking rate control system for electrostatic precipitators and the like wherein current supplied through a transformer to a rectifier connected to the precipitator is compared with a reference signal to produce an error signal for regulating the current supplied to the precipitator. In the automatic sparking rate control mode, the reference signal is integrated such that the precipitator voltage more or less gradually increases until a spark occurs. Circuitry is provided for sensing the spark and for converting it into a pulse which is combined in opposite polarity relationship with the reference signal fed to the integrator. This reduces the output of the integrator as well as the current supplied to the precipitator; whereupon the integrating action again increases the current until the next successive spark when the current is again reduced. The effect is to regulate the precipitator current and voltage near the value which provides a sparking rate set for optimum precipitator efficiency.

3,622,840
MULTIPLE OUTLET STRUCTURE
Robert D. Kahn, Rockville Centre, Long Island, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,441
Int. Cl. H02b *1/04, 11/18*
U.S. Cl. 317—114 **1 Claim**



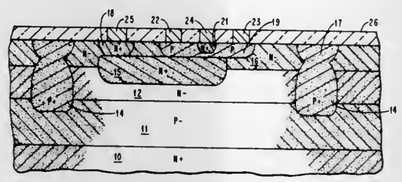
An electrical outlet control unit comprising a plurality of individual electric outlets, each of said outlets including its own switch and indicating lamp, the outlets being wired in parallel via a master switch and fuse to a source of power. The individual electric outlets are characterized by being self-contained assemblies which are mounted within the outlet control unit housing to resist shock.

3,622,841
TRIAC HAVING INCREASED COMMUTATING SPEED
Demir S. Zoroglu, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 16, 1970, Ser. No. 29,000
Int. Cl. H01l *9/12*
U.S. Cl. 317—235 AA **8 Claims**



A triac is provided having two portions of several layers thereof including particularly the main layer insulated from each other, whereby when the voltage applied to the main electrodes of the triac reverses, the charge stored in a portion of the main layer of the triac during current flow in one direction thereof cannot flow into the other portion of the main layer. This insulation therefore increases the highest commutating speed of the resultant triac over that of known triacs.

3,622,842
SEMICONDUCTOR DEVICE HAVING HIGH-SWITCHING SPEED AND METHOD OF MAKING
Avtar S. Oberai, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,428
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **13 Claims**



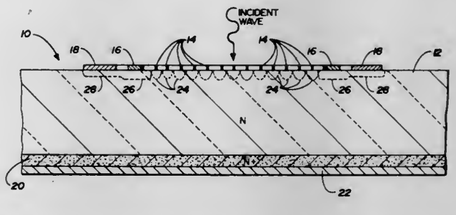
A transistor of a monolithic integrated circuit has its switching speed increased by reducing the parasitic collector capacitance through reducing the junction area between the base and the subcollector. By controlling the thickness and impurity concentration of a layer into which the subcollector region is diffused to prevent punch through of the base to the substrate of the same conductivity as the base or a layer, which is on the substrate, of the same conductivity as the base and beneath the controlled layer, the subcollector region need be positioned only beneath the emitter region and not the entire area of the base region.

3,622,843
ALUMINUM ELECTRODE ELECTROLYTIC CAPACITOR CONSTRUCTION
David A. Vermilyea, Schenectady, N.Y.; Donald R. Ochar, Columbia, S.C., and Willem Vedder, Albany, N.Y., assignors to General Electric Company
Filed Dec. 3, 1969, Ser. No. 881,853
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 **12 Claims**



Both the passivation of aluminum foil particularly for use as electrodes in wet electrolytic capacitors and the inhibition of the aluminum-water reaction within the completed capacitor are described. Pretreatment of etched aluminum foil includes the combined steps of immersion in a boiling aqueous solution containing CrO_3 and H_3PO_4 followed by a 3-minute immersion in a boiling solution of controlled pH containing $H_2PO_4^-$, $SiO_3^=$ and CrO_3. Inhibition of aluminum in a wet electrolytic capacitor is afforded by the addition of a concentration of at least one of the following inhibiting ions to the liquid electrolyte: phosphate, phosphite, periodate, arsenate, tungstate, silicate, vandadate, tellurate, tellurite, antimonate, arsenite, selenate, sulfite and germanate.

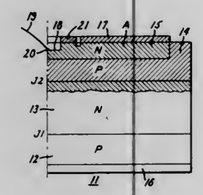
3,622,844
AVALANCHE PHOTODIODE UTILIZING SCHOTTKY-BARRIER CONFIGURATIONS
Anthony E. Barelli, and Wallace N. Shaunfield, Jr., both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 18, 1969, Ser. No. 850,875
Int. Cl. H01l *9/00, 15/00, 5/02*
U.S. Cl. 317—234 **6 Claims**



An avalanche Schottky-barrier photodiode includes a symmetrical metallic grid network deposited over a semiconductor substrate and surrounded by one or more metallic guard rings. When a sufficiently high voltage bias is supplied to the

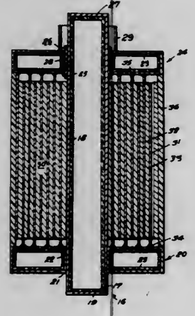
metallic grid network, carriers generated by light impinging upon the semiconductor substrate through the grid network are multiplied by the avalanche gain operation of the photodiode.

3,622,845
SCR WITH AMPLIFIED EMITTER GATE
James E. McIntyre, Crum Lynne; Dante E. Piccone, Philadelphia, and Istvan Somos, Landsdowne, all of Pa., assignors to General Electric Company
Filed May 1, 1969, Ser. No. 820,959
Int. Cl. H01l *11/10, 15/06*
U.S. Cl. 317—235 R **6 Claims**



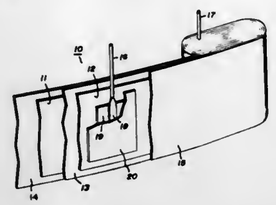
This thyristor utilizes the emitter gate heretofore described and claimed in our copending U.S. Pat. application Ser. No. 602,837, filed Dec. 19, 1966, and assigned to the assignee of the present invention (now Pat. No. 3,489,962). According to that disclosure, part of an electrode-less auxiliary region in one end layer (the emitter) of A PNPN semiconductor body is exposed to suitable triggering means for turning on the device According to the present improvement, an island of electroconductive material remote from the cathode and separate from the triggering means is disposed on another part of the auxiliary region between said exposed part and a laterally adjacent main region of the emitter, and the other part is connected to the main region in a manner to ensure a high turn-on *di/dt* capability when the referenced device is triggered by a "soft" gate drive.

3,622,846
CAPACITOR ENERGY STORAGE IMPROVEMENT BY MEANS OF HEAT PIPE
Eberhart Reimers, 7700 Random Run L. #201, Falls Church, Va.
Filed Nov. 2, 1970, Ser. No. 85,934
Int. Cl. H01g *1/11*
U.S. Cl. 317—245 **8 Claims**



The invention is a heat pipe coolable capacitor in which the heat generated therein and manifested in both radial and axial flow is removed by a novel arrangement of heat pipes.

3,622,847
FLAG TAP RETENTION MEANS IN CAPACITORS,
Frederick W. Grahame, Glens Falls, N.Y. assignor to General Electric Company
Filed Nov. 10, 1969, Ser. No. 875,224
Int. Cl. H01g *1/11*
U.S. Cl. 317—247 **3 Claims**

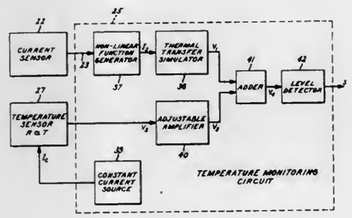


In a roll-type capacitor where a lead passes continuously from the roll and through a bushing seal in a casing, the flag tap lead is retained between a paper strip and an electrode strip in the roll by means of a section of yieldable or conforming material which covers the flag tap. During high-temperature impregnation of the capacitor the yieldable strip section conforms to or flows into the irregularities of the adjacent surfaces of the flag tap and the dielectric paper so that frictional retention of the flag tap in the roll is significantly increased.

3,622,848
CAPACITOR WITH PHOTOCROSSLINKED DIELECTRIC
William Robert Hendrix, Newark, and Stanley Tocker, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 19, 1970, Ser. No. 21,191
Int. Cl. H01g *3/00*
U.S. Cl. 317—258 **6 Claims**

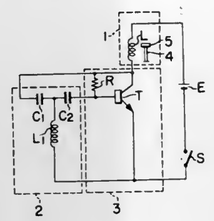
Films of photocrosslinked blends of linear polypropylene with 0.02 to 2 weight percent of a photo-sensitizing agent are used as dielectric spacers for capacitors. The sensitizing agent can be polymeric, e.g., a copolymer of ethylene and acryloxy benzophenone, or nonpolymeric, e.g., 2-methylanthraquinone. The films are advantageously oriented after extrusion and before cross-linking.

3,622,849
THYRISTOR JUNCTION TEMPERATURE MONITOR
Fred W. Kelley, Jr., Media, and Floyd L. Steen, Lansdowne, both of Pa., assignors to General Electric Company
Filed June 23, 1970, Ser. No. 49,092
Int. Cl. H02h *5/04, 7/14*
U.S. Cl. 317—33 SC **10 Claims**



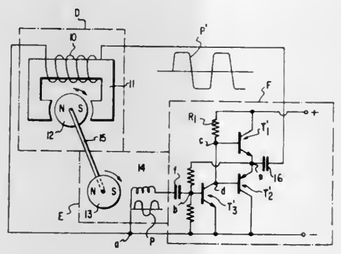
A circuit for monitoring the junction temperature of a conducting thyristor by measuring the temperature of a reference point and synthesizing the thermal response of the physical configuration between the thyristor junction and that reference point. The synthesized signal generated is indicative of the temperature difference between the junction and said reference point. That signal is combined with a signal indicative of the measured reference temperature to provide an output signal indicative of junction temperature per se. The output signal may be utilized to stop conduction in the thyristor when the monitored temperature exceeds a predetermined level.

3,622,850
ELECTROMAGNETIC DRIVING DEVICE
Shinji Nunokawa, 8-6, Hanamigawa, Chiba; Norio Tabuchi, 5-415, Makuhari-cho, Chiba, and Tatsuo Shimada, 2-106, Todoroki, Tamagawa, Setagaya-ken, Tokyo, all of Japan
Filed Oct. 22, 1969, Ser. No. 868,422
Claims priority, application Japan, Oct. 24, 1968, 43/77109
Int. Cl. H02k *33/10*
U.S. Cl. 318—128 **9 Claims**



A constant frequency electromagnetic driving device, for example for a time piece, comprises an electromechanical transducer having a coil electromagnetically coupled to a movable mechanical element and serving both pickup and driving functions to convert mechanical movement of the movable element into an electrical signal and also to convert an electrical signal into mechanical movement of the moving element. An electric circuit shifts the phase of the electrical signal generated by movement of the moving element, amplifies the phase-shifted signal and feeds it back to the coil to drive the moving element.

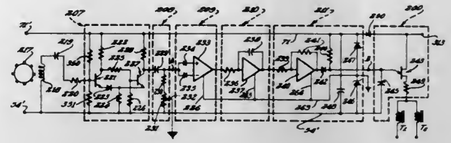
3,622,851
TRANSISTOR MOTOR
Toshihide Hanada, Yokohama-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sept. 22, 1969, Ser. No. 859,722
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **2 Claims**



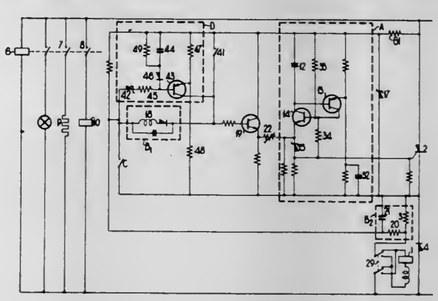
A single-ended, transistorized push/pull circuit amplifies the output of a generator mechanically interlocked to the transistorized motor rotor and is connected across the drive winding of the motor for driving the same.

3,622,852
ELECTRONIC SPEED CONTROL CIRCUIT FOR DIRECT DRIVE AUTOMATIC WASHER
George H. Myers, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 3, 1970, Ser. No. 15,992
Int. Cl. H02p *5/16*
U.S. Cl. 318—328 **3 Claims**

A motor speed control circuit in which the frequency of the tachometer feedback pulses is doubled, integrated and applied to control the charging circuit of the firing angle control circuit for varying the frequency of energizing pulses applied to the motor.



3,622,853
CONTROL CIRCUITS FOR CLOTHES WASHING AND SPIN-DRYING MACHINES
Martin Harold Eastall, Peterborough, England, assignor to British Domestic Appliances Limited, Peterborough, England
Filed Sept. 29, 1969, Ser. No. 861,716
Claims priority, application Great Britain, Sept. 30, 1968, 46,325/68
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **8 Claims**

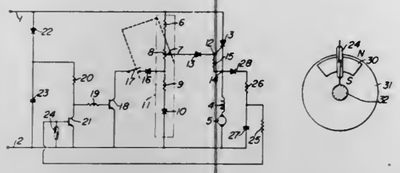


A control circuit for clothes washing and spin-drying machines incorporating a pulse-producing circuit for generating a series of electric current pulses arranged to be applied to the gate of a thyristor for controlling the power supplied to the drive motor through the thyristor, and speed control means for regulating the pulsed output to give a relatively low-motor speed for washing and a relatively higher motor speed for spin drying, together with switch means operable to control the pulse-producing circuit directly to reduce the conduction angle of the thyristor and hence the power supplied to the motor, for example to zero, and so that the return of the switch means to initial condition causes the motor to be first energized in the low-speed condition, irrespective of the condition of the speedcontrol means, so that restarting the motor at full power is avoided.

3,622,854
NEEDLE STOP APPARATUS FOR SEWING MACHINE
Toshimasa Imai, Osaka, and Hidenobu Hasegawa, Shiga, both of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan
Filed June 15, 1970, Ser. No. 46,205
Claims priority, application Japan, June 17, 1969, June 17, 1969, June 17, 1969; 44/49104, 44/49105, 44/59093
Int. Cl. H02p *3/08*; **G05d** *3/00*
U.S. Cl. 318—468 **4 Claims**

A needle stop apparatus for use in a motor-driven sewing machine, in which the needle of the sewing machine is automatically stopped at a predetermined position by turning off a controlled rectifier connected in series with the motor, said turn off of the controlled rectifier being effected by short-cir-

cuiting a gate trigger signal generator upon detecting that the needle is coming to the predetermined position when the motor is prepared to be stopped, and any manual movement

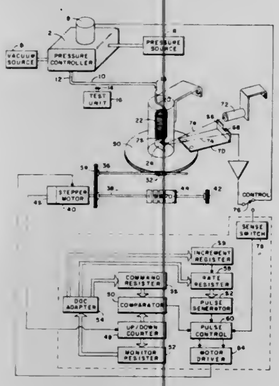


of the needle does not cause the motor to start after a predetermined time interval has elapsed from the motor stop, and further it is possible to operate the sewing machine in a one-stitch mode.

3,622,855
DIGITAL CONTROL DEVICE

David M. Hodgin, Cedar Rapids; Leonard J. Petska, Cedar Rapids; Ferman L. Walker, Cedar Rapids, and Robert H. Pool, Marion, all of Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Aug. 3, 1970, Ser. No. 60,470
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **2 Claims**



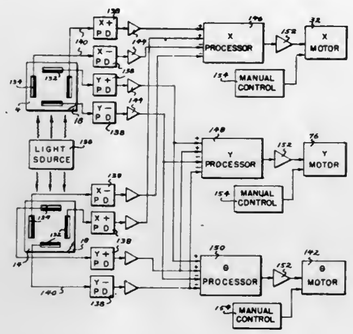
This invention relates to control means for accurately controlling the amount and rate of change of a device to be controlled. The invention contemplates a digital input device which receives a digital command, either manually or from a computer; compares the command with a signal from a position sensing mechanism; and generates an "error" signal which is applied to correctly position the controlled device.

3,622,856
AUTOMATIC PLANAR PHOTOELECTRIC REGISTRATION ASSEMBLY AND SERVO DRIVING APPARATUS THEREFOR

Gordon Willis, Cambridge, Mass., assignor to Computervision Corporation, Waltham, Mass.

Filed Aug. 18, 1969, Ser. No. 850,785
Int. Cl. G05b *1/06*
U.S. Cl. 318—640 **4 Claims**

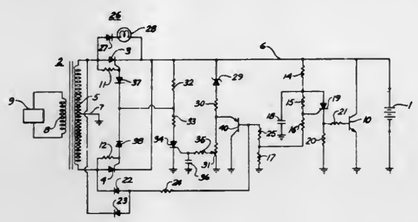
A device for registering a movable object with another object by moving the movable object through a plane has means for generating X and Y off-register signals which are coupled to X and Y step motors. The step motors are in turn coupled to X and Y lead shafts, each shaft being parallel to a common plane and having a reciprocative element mounted thereon for linear movement in response to rotation of the respective lead shaft. A floating plate is pivotally connected to the two reciprocative elements by two linkage means for movement in a plane parallel to the lead shafts. A mechanical linkage interconnects the floating plate and the movable object to translate the floating plate motion to the movable object to accomplish registration.



3,622,857
CONTROL CIRCUITRY FOR TERMINATION OF RAPID BATTERY CHARGING

Indar K. Sethi, Inglewood, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jan. 30, 1970, Ser. No. 7,014
Int. Cl. H02j *7/10*
U.S. Cl. 320—14 **6 Claims**



A battery is charged in a very short period of time, for example less than fifteen minutes, by alternately applying charging current pulses during a charge interval and applying a discharge path during a discharge interval as the charge on the battery progresses. The discharge path is applied in response to a signal that is an integral function preferably of the battery terminal voltage. Means are provided in the rapid battery charging circuitry for precluding the application of the discharge path while charge current pulses are being applied to the battery. The rapid charging of the battery is terminated with the possibility of the application of a trickle charge thereafter by circuitry that is responsive to a predetermined battery terminal voltage. The rapid battery charging circuitry also includes means for making the rapid charge terminating circuitry sensitive only to the battery terminal voltage while there are no charge current pulses being applied to the battery.

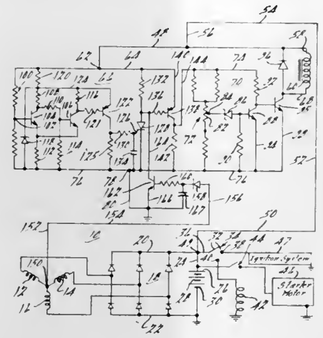
3,622,858
ELECTRICAL GENERATING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Clair Emerson Mitchell, Detroit, Mich.

Filed Oct. 29, 1970, Ser. No. 85,185
Int. Cl. H02j *7/14*
U.S. Cl. 320—64 **18 Claims**

An electrical generating system for use on an automotive vehicle in which the output of an electrical generator,

preferably in the form of an alternator, is controlled by a voltage regulator or limiter, preferably of the solid state type. The control or field winding of the alternator is energized through the voltage regulator, which includes a normally open switch, preferably of the solid state type, connected to be energized from the storage battery of the vehicle and the

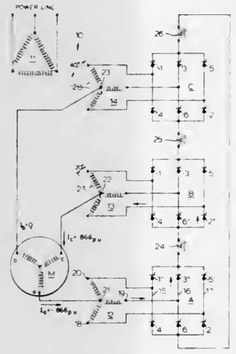


output windings of the alternator through a rectifier. Means are employed responsive to the drop in the terminal voltage of the storage battery when the starter motor of the vehicle is energized to switch the normally open switch into a conducting or closed state thereby permitting the field winding or control winding of the alternator to be energized from the storage battery and the rectifier.

3,622,859
RECTIFIER FREQUENCY CONVERTERS

Dennis F. Williamson, Media, Pa., assignor to Canadian General Electric Limited, Toronto, Canada

Filed Jan. 13, 1970, Ser. No. 2,521
Int. Cl. H02m *5/30*
U.S. Cl. 321—7 **6 Claims**

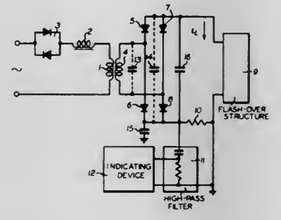


A frequency converter according to this invention comprises a transformer having three wye connected three-phase secondaries connected to a delta configuration of controlled rectifier bridges, and means for firing the rectifiers so as to obtain an adjustable frequency output from the bridges. Each bridge has three parallel legs with at least two rectifiers per leg connected in series anode to cathode. The three output terminals of each transformer secondary are connected to the three legs respectively of a different bridge between the rectifiers, and the adjustable frequency output is taken from the three wye points of the transformer secondaries. This places the impedances of the transformer secondaries between the rectifiers and the load.

3,622,860
APPARATUS FOR THE DETECTION AND INDICATION OF FLASH-OVER IN A RECTIFIER DEVICE

Erich Hayek, Marzstrasse, Austria, assignor to Firma E. Schrack Elektrizitats-Aktiengesellschaft, Pottendorferstrasse, Austria

Filed May 8, 1970, Ser. No. 35,805
Claims priority, application Austria, May 16, 1969, A4711/69
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **5 Claims**
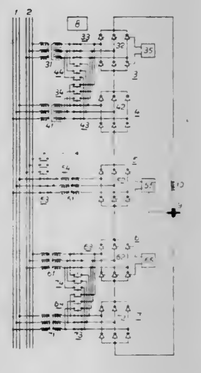


An apparatus for the detection and indication of flashovers at the output side of a rectifier, in particular for electrostatic high-voltage filters, which comprises a rectifier transformer, primary alternating current circuitry, and secondary direct current circuitry including direct current output terminals. A series rheostat is connected in the direct current circuitry, whereby flashovers result in a drop in potential at the series rheostat. The drop in potential is proportional to fluctuations of the direct current as a result of the flashover, including a capacitance which is provided in the direct current circuitry ahead of the series rheostat and in parallel with the output terminals. A high pass filter is connected with the series rheostat, and means are provided for indicating a flashover connected with the high pass filter.

3,622,861
FREQUENCY CHANGER

Carl Ingvar Boksjo, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vesteras, Sweden

Filed Oct. 14, 1970, Ser. No. 80,565
Claims priority, application Sweden, Nov. 12, 1969, 15487/69
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **5 Claims**

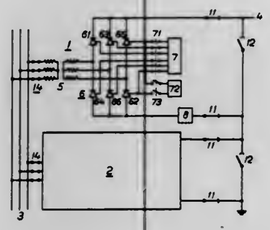


In combination with two AC networks, there is at least one converter connected to one of the networks which is composed of diodes and at least one other converter composed of controlled rectifiers. A further converter composed of controlled rectifiers is connected to one of the networks. All the converters are connected in series in one or several DC circuits. The further rectifier is controlled by the current in the DC circuit in such a way as to compensate for variations in the direct current therein. It is possible to connect the converters alternatively to either of the AC circuits.

3,622,862
BY-PASS CONNECTION OF STATIC CONVERTERS

Carl Ingvar Boksjo, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 22, 1970, Ser. No. 82,956
Int. Cl. H02m 1/18
U.S. Cl. 321—11 7 Claims

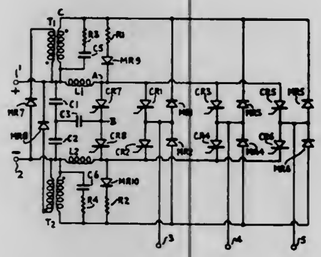


A static converter composed of a converter-transformer and a rectifier bridge connected thereto has a bypass member connected in parallel with the bridge. Two series-connected rectifiers in one phase of the bridge constitute a bypass path. A direct voltage source can be connected with said two bypass rectifiers, the source having such a polarity as to furnish a current in the conducting direction of the two rectifiers.

3,622,863
CONTROLLABLE RECTIFIER CIRCUITS WITH ENERGY RECOVERY NETWORKS

Kenneth G. King, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Apr. 22, 1970, Ser. No. 30,864
Claims priority, application Great Britain, May 29, 1969, 27379/69
Int. Cl. H02m 7/52
U.S. Cl. 321—45 ER 7 Claims

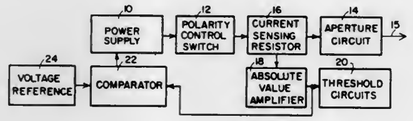


A controllable rectifier circuit includes SCRs for intermittently supplying current from input terminals to output terminals through a current limiting inductance. A commutating capacitor provided with a switching device connected in series therewith intermittently initiates a turnoff process in which current flow in the inductance is diverted from the SCRs to permit them to acquire a forward blocking condition. A unidirectionally conductive reactive current path connected between the input and output terminals enables return of reactive energy in a load to the input terminals and a saturable transformer, having a first winding connected in a path across the inductance and a second winding coupled through a diode to the input terminals, is arranged to undergo a similar voltage time integral to that which the inductance undergoes during the turnoff process and thereby enables a return of surplus energy acquired by the inductance to the input terminals during the resetting thereof towards saturation.

3,622,864
METHOD AND CIRCUITRY FOR GENERATING AND HOLDING PROPORTIONAL AGAINST INPUT POWER VARIATIONS A CURRENT AND A RESULTING VOLTAGE FOR PARTICLE ANALYZER

William A. Claps, and David R. Figueroa, both of Hialeah, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 9, 1969, Ser. No. 840,207
Int. Cl. G01n 27/00; G06f 7/38; G05f 1/10
U.S. Cl. 323—4 16 Claims

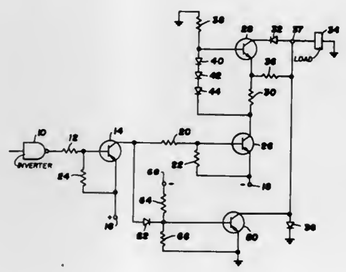


To improve the precision operation of a "Coulter Counter" particle analyzer, which is subject to small magnitude, yet statistically important input power voltage changes that are random in nature and magnitude, the current applied to the microscopic sensing aperture and the voltage applied to the threshold circuits, which monitor and respond to the amplitudes of the particle signals derived from the sensing aperture, are caused to track one another; so that variations of input power do not adversely affect the precision output of the particle analyzer. In series with both the sensing aperture circuit and the threshold circuits is the power supply, a polarity control switch and a current sensing resistor. Interposed between the current sensing resistor and the threshold circuits is an absolute value amplifier, which applies to the threshold circuits a voltage proportional to the aperture current. Additionally, the output from the absolute value amplifier is compared with an arbitrary voltage reference, and the result of the comparison is employed to determine both the aperture current and the threshold voltage.

3,622,865
CURRENT LIMITING SWITCHING CIRCUIT

Ernest O. Lee, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,514
Int. Cl. G05f 1/58
U.S. Cl. 323—4 10 Claims

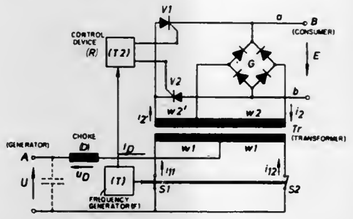


First and second transistors are connected in a series circuit with a load circuit. Switching signals are applied to the first transistor to render both transistors conductive simultaneously. A constant bias potential is applied to the second transistor so that said transistor is switched into saturation for a normal range of current. A resistor is connected in the series circuit between the transistors so that in the event of overload conditions the current flow through the resistor overcomes the constant bias and the circuit functions as a constant current source. A third transistor can be connected to apply ground to the load circuit when the first and second transistors are cut off to provide battery-to-ground signalling.

3,622,866
DIRECT CURRENT CONVERTER WITH A VARIABLE TRANSFORMATION RATIO

Andreas Boehringer, Friedrichshafen, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed Sept. 24, 1969, Ser. No. 860,576
Claims priority, application Germany, Oct. 22, 1968, P 18 04 430.9
Int. Cl. H02m 3/32
U.S. Cl. 323—17 6 Claims

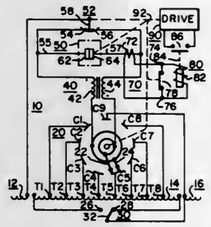


A converter circuit is provided with a transformer with a primary coil to which direct current is applied in one of two opposite directions and a secondary coil which is connected to a supplementary winding. The supplementary winding connects over a rectifier tube to each of the supply lines of the consumer. The tubes are regulated so as to be conductive or nonconductive depending upon the switching over of the primary current flow. This controls the transformation ratio.

3,622,867
LOAD TAP CHANGER SYSTEM INCLUDING PROTECTIVE APPARATUS FOR MONITORING THE OPERATION THEREOF

Thomas B. Topper, and Gilbert D. Throop, both of West Middlesex, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1970, Ser. No. 29,158
Int. Cl. G05f 1/14
U.S. Cl. 323—43.5 R 8 Claims



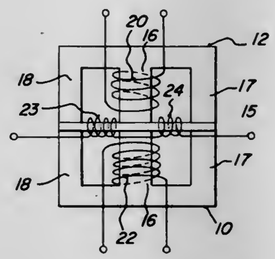
A load tap changer system for electrical transformers, including a tap selector switch, a bypass switch, a vacuum switch, and a divider reactor, interconnected to interrupt load current in the vacuum switch during a top change cycle. Protective apparatus, including a current transformer, and a shorting switch connected across the output terminals of the current transformer, prevents operation of the tap selector switch when it would be damaged by interrupting load current.

3,622,868
REGULATING POWER TRANSFORMER WITH MAGNETIC SHUNT

Joachim H. Todt, 3903 West 109th Ave., Crown Point, Ind.

Filed Feb. 6, 1970, Ser. No. 9,143
Int. Cl. H02p 13/12; G05f 1/22
U.S. Cl. 323—56 27 Claims

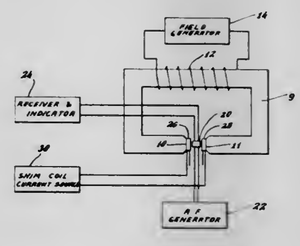
A regulating power transformer consisting of a primary winding and a secondary winding positioned coaxial on the center leg of an E-type stack of magnetic lamination pack which is separated by a layer of I-type laminations having two coils wound thereon, the latter fitting into the windows of the E-type lamination. The I-type laminations provide the function of the magnetic shunt for the flux generated by the primary coil and serve as the magnetic coupling between the E-type laminations on the primary side of the transformer and identical E-type laminations on the secondary side of the transformer. Saturation of the shunt path to various degrees through control of the excitation of the coils mounted on the I-type laminations varies the amount of bypassed or shunted magnetic flux making it available at the secondary coil in a substantially linear proportion to the DC excitation. The transformer uses less iron, is faster in response than conventional regulating transformers and has an improved output wave form.



3,622,869
HOMOGENIZING COILS FOR NMR APPARATUS

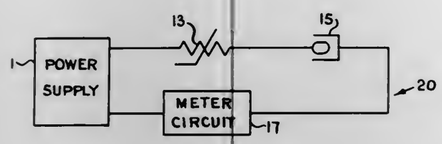
Marcel J. E. Golay, 116 Ridge Road, Rumson, N.J.

Continuation-in-part of application Ser. No. 649,539, June 28, 1967, now abandoned. This application May 31, 1968, Ser. No. 733,522
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 13 Claims



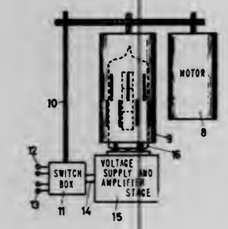
A nuclear magnetic resonance apparatus adapted for homogenizing a field includes electrically insulated electroconductors positioned on pairs of plates and arranged for generating an incremental magnetic field in the vicinity of the sample and in the direction of the main field. The incremental field is represented by spherical harmonic functions. The incremental fields are substantially orthogonal for primary degree n_p and order m_p. Arcuate and radial segments of the electroconductors are positioned on opposite surfaces of a plate with connections through the plate. The arcuate segments are radially spaced from a center thereof in a manner for reducing to a relatively low level, ancillary interferring harmonics which are also generated by the electroconductors. Means are also provided for combining orders of spherical harmonic functions to effect additional correction of interferring ancillary harmonics and to homogenize the field of a spinning sample.

3,622,870
PENNING GAUGE CIRCUIT IMPROVEMENT
Allen R. Hamilton, and Thomas R. Metzger, both of Rochester, N.Y., assignors to The Bendix Corporation
Filed Apr. 24, 1969, Ser. No. 819,072
Int. Cl. G01n *27/00*
U.S. Cl. 324—33 **1 Claim**



An improved Penning gauge circuit in which the sensitivity and linearity of the response is maintained at pressures in the $10^{-7.5}$ to 10^{-4} and $10^{-7.5}$ to 10^{-5} torr range by using a device having non-linear resistance in series with the sensing head.

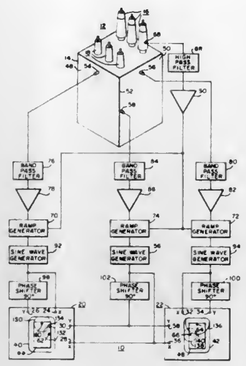
3,622,871
OSCILLOGRAPH WITH ELECTRON BEAM TUNING INDICATOR TUBE
Joachim Seidel, Crellestrasse 21, 1 Berlin 62, Germany
Filed Oct. 23, 1969, Ser. No. 868,840
Claims priority, application Germany, Oct. 31, 1968, P 18 06 303.1
Int. Cl. G01r *13/38, 13/36*
U.S. Cl. 324—97 **10 Claims**



In an oscillograph having a magic-band type electric beam tuning indicator tube and mechanically driven dissecting means passing thereover adapted to change the length of the displayed light band of the indicator tube as a function of time, the dissecting means comprises a slotted member having equally spaced slots extending in the direction of change in length of the light band, the slots being narrow relative to the width of the light bands, and the slotted member being adapted to cause the slots to sweep across said width. The slotted member is preferably a hollow slotted cylinder of a size to fit over and rotate about the indicator tube, and the spacing between the slots is preferably at least equal to the width of the light band.

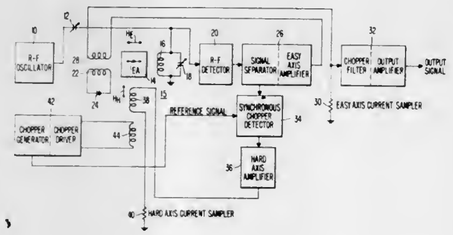
3,622,872
METHODS AND APPARATUS FOR DETECTING AND LOCATING CORONA DISCHARGE IN HIGH-VOLTAGE, FLUID-FILLED ELECTRICAL INDUCTIVE APPARATUS
Virgil L. Boaz, Daleville, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 16, 1970, Ser. No. 29,165
Int. Cl. G01r *31/06, 31/08, 31/12*
U.S. Cl. 324—52 **12 Claims**

Methods and apparatus for detecting and locating the source of a corona discharge within the casing of fluid-filled electrical apparatus. In one embodiment of the invention, the corona is detected and located by transducers connected to generate circles of increasing radii on the screen of a cathode-ray oscilloscope. In another embodiment of the invention, the corona is detected and located by generating



signals having magnitudes responsive to the X, Y, and Z coordinates of the corona source.

3,622,873
THIN MAGNETIC FILM MAGNETOMETER FOR PROVIDING INDEPENDENT RESPONSES FROM TWO ORTHOGONAL AXES
Jonathan E. Stine, Wayne, and Lewis L. Tanguy, Jr., Paoli, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jan. 27, 1970, Ser. No. 6,077
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **16 Claims**

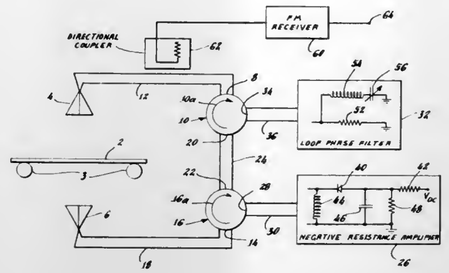


A magnetic feedback technique is described for use with a magnetometer sensor employing a thin magnetic film transducer in an inductance-variation mode to separate and isolate the easy axis and hard axis responses of the transducer, and to provide independent easy axis and/or hard axis output signals from the magnetometer.

3,622,874
SYSTEM FOR MEASURING THE THICKNESS OF SHEET MATERIAL INCLUDED IN AN RF ENERGY LOOP PATH
Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.
Filed Jan. 14, 1970, Ser. No. 2,827
Int. Cl. G01n *27/04*
U.S. Cl. 324—58.5 A **19 Claims**

Sheet material is passed between microwave antennas connected in a transmission line loop which includes a negative resistance amplifier. RF energy reflected from opposing surfaces of a metal sheet or transmitted through a dielectric

sheet is amplified by the amplifier to produce oscillatory operation. The frequency of oscillation is dependent upon



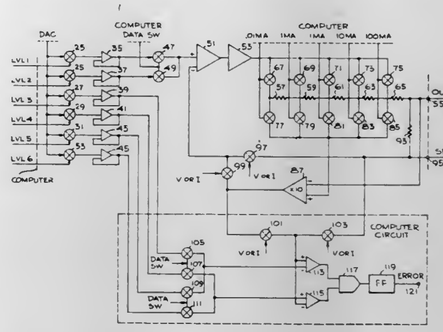
the electrical length of the loop, and thus the thickness of the sheet.

3,622,875
DIELECTRIC CONSTANT-TYPE RESISTANCE-INSENSITIVE DIRECT-READING WATER CONTENT METER
Bunjiro Ichijo, Hamamatsu-shi, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Jan. 7, 1970, Ser. No. 1,173
Claims priority, application Japan, Apr. 21, 1969, 44/29454
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **1 Claim**

A dielectric constant-type resistance-insensitive direct-reading electrical apparatus for measuring water content wherein a measuring circuit coupled to a coil of a tank circuit in a high-frequency oscillator through a mutual induction coefficient M_e comprises a series connection of a voltage pickup coil, a coil for taking out a detected voltage, a main coil and a first variable capacitor. A second variable capacitor C_e is connected to the junction between the said coil for taking out a detected voltage and the main coil, and the respective values of M_e and C_e, are suitably chosen to maintain a particular relation among the circuit constants so that a phase deviation of the detected voltage due to the connection of a test sample in parallel with the said first variable capacitor may be detected through a phase discriminator without the influence of the resistive component of the test sample.

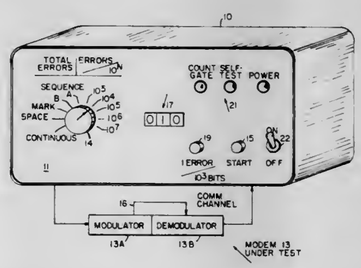
3,622,876
DIGITAL MODULE TESTER SYSTEM
Gary Ross Ure; Donald Lee Degraffenreid, and Robert Allen Savage, all of Orange County, Calif., assignors to Datatron, Inc.
Filed Dec. 14, 1970, Ser. No. 97,775
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **7 Claims**

A digital module tester system for dynamically testing multipin digital circuit modules in which a separate programmable pin electronics card is provided for each pin of the module under test. A computer controls a single digital-to-analog converter to continuously update the drive level and monitoring limits of each pin electronics card. Each pin electronics card contains switching circuitry to permit operation in a voltage forcing or current forcing mode. In the voltage forcing mode, a pin driver differential amplifier forces a voltage at the pin under test. A precision resistor in series with the pin driver differential amplifier and the pin under test is monitored for current flow to the pin under test. Comparison



circuitry compares the current flow with limit levels to provide an error indication in the event that the limits are exceeded. In the current forcing mode the pin driver differential amplifier provides a fixed current flow into the pin under test. The voltage at the pin under test is monitored and compared with limit levels to provide an error indication.

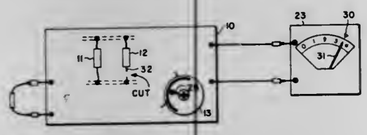
3,622,877
APPARATUS FOR TESTING MODULATOR DEMODULATOR UNITS FOR TRANSMISSION ERRORS AND INDICATING THE ERRORS PER POWER OF 10
Kenneth R. MacDavid, Clarence Center; Donald G. Shuda, Clarence Center, and John F. Leaver, Jr., North Tonawanda, all of N.Y., assignors to Sanders Associates Inc., South Nashua, N.H.
Filed Nov. 7, 1969, Ser. No. 874,839
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **4 Claims**



Test apparatus for testing and recording either accumulated errors or the probability of error for either synchronous or asynchronous digital data modulator/demodulator units (modems). The modem tester includes a test generator which under the control of a bit rate selector and a sequence mode selector generates a bit test sequence. The bit test sequence is modulated by the modulator portion of a modem under test and is then applied to the demodulator portion of either the same or a different modem under test. The modem tester further includes a reference bit sequence generator and a data synchronization network responsive to the bit test sequence after demodulation for synchronizing the reference bit sequence generator with the test sequence received from the demodulator under test. The received test sequence and the referenced sequence are compared with disagreements of the comparison being accumulated in an error counter. For testing asynchronous modems, a bit synchronization network is provided to maintain the sampling window of the comparator at substantially the middle of a bit period. In order to dis-

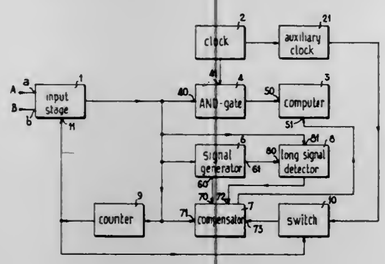
play probability of error, the mode sequence selector is settable to any one of plural total bits indicia expressed as powers of 10 on the display panel. A total bit counter responds to such settings to inhibit further operation of the error counter after a number of bit periods equal to the setting of the selector such that the total errors per power of 10 bits is displayed directly on the display panel.

3,622,878
METHOD OF CALIBRATING AN ELECTRICAL CIRCUIT
Roger J. Feulner, Mount Prospect, Ill., and Troy L. Pegram, Wabash, Ind., assignors to Honeywell Inc., Minneapolis
Filed Feb. 2, 1970, Ser. No. 7,475
Int. Cl. G01r *23/00*
U.S. Cl. 324—81 **2 Claims**



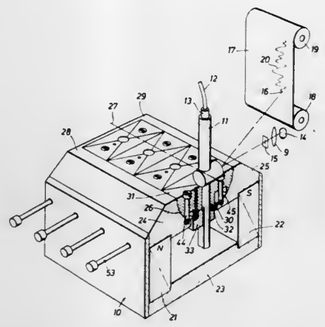
A method or process of calibrating an oscillating circuit having a predetermined frequency or period output signal for a predetermined input signal. The circuit has two capacitors connected in parallel and a variable impedance whereby upon adjustment of the variable impedance to obtain a predetermined frequency output calibration can be selectively accomplished with both capacitors in the circuit or after removing one of the capacitors.

3,622,879
PHASEMETERING SYSTEM INCLUDING NOISE COMPONENT CORRECTING MEANS
Andre Girouy; Paul Zagigaeff; Gerard d'Auzac, and Jean Douzon, all of 75 Paris (France) 51, rue de l'Amiral Mouchez (13 eme), Paris, France
Filed May 4, 1970, Ser. No. 34,142
Claims priority, application France, May 12, 1969, 6915315
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 D **6 Claims**



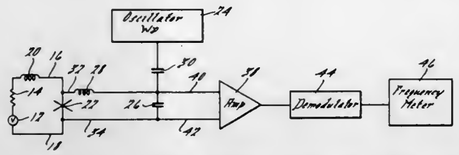
In a digital phasemeter of the type comprising an input stage for generating gating signals having duration P_i proportional to the phase-shift between two signals, and a computer for averaging the n signals P_i obtained in the course of n successive measurement, a correcting circuit is provided for compensating the errors equal in absolute value to T affecting the duration of the gating signals when, because of noise, a small real phase-shift (near zero) has given rise to a long gating signal (near T) or a large phase-shift (near 2π) to a short gating signal (near zero).

3,622,880
SHOCK RESISTANT REMOTELY CONTROLLED GALVANOMETER MOUNT
Pierre C. Escaron, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed July 9, 1969, Ser. No. 840,270
Claims priority, application France, Dec. 23, 1968, 179,899
Int. Cl. G01r *13/38*
U.S. Cl. 324—97 **3 Claims**



New and improved means for mounting galvanometers in well logging recorders or the like are disclosed which include means, including a support bracket fixed relative to the recorder, a positioning member having a socket for receiving a galvanometer, gear means for rotating the positioning member relative to the bracket to adjust the zero position of the galvanometer, and means for eliminating backlash in the gear means. The entire galvanometer mounting bracket is rotatably mounted in a rocker assembly on the main recorder frame thus allowing rotatable adjustment of the galvanometer about a vertical and a transverse axis of the recorder main frame.

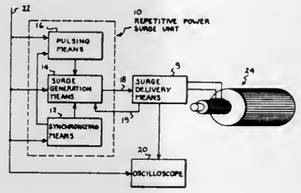
3,622,881
VOLTAGE MEASURING APPARATUS EMPLOYING A JOSEPHSON JUNCTION
Arnold H. Silver, Farmington, Mich., and James E. Zimmerman, Santa Ana, Calif., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 21, 1969, Ser. No. 809,320
Int. Cl. G01r *19/26;* **H03c** *1/00*
U.S. Cl. 324—120 **12 Claims**



This disclosure relates to a superconducting circuit means that may be utilized as an ultra-high sensitivity voltmeter or a generator generating a voltage having a substantially constant amplitude. It comprises a superconductive material having a weak link positioned therein with means for applying a voltage of unknown magnitude across the weak link. An oscillator has its output coupled to the weak link so that the output signal of the oscillator generates an oscillating current through it. The voltage of unknown magnitude causes an oscillating current to be generated through the weak link with a frequency proportional to the unknown magnitude of the voltage. The weak link mixes the frequency of the two currents and a demodulating means detects the frequency of the oscillating current produced by the voltage of unknown magnitude. When the circuit means is to be employed as a voltmeter, a frequency meter may be connected to the demodulating means which has a scale readable in voltage

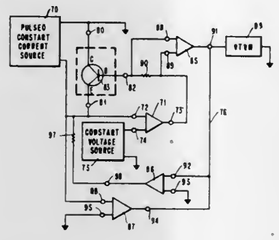
units. If the circuit means is to be employed as a generator of a voltage having a substantially constant amplitude, a standard frequency may be fed to a comparator that also receives the output from the demodulating means. The output from the comparator may be fed back through suitable means to the weak link and the amplitude of the voltage having a substantially constant magnitude may be read out across a circuit component connected to the superconducting material.

3,622,882
REACTANCE CIRCUIT TESTER
Miles D. Gardner, Toronto, Ontario, Canada, assignor to General Electric Company
Filed June 11, 1969, Ser. No. 832,133
Int. Cl. G01r *27/00, 31/06*
U.S. Cl. 324—158 MG **2 Claims**



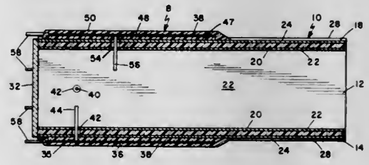
Low-impedance circuits such as the armature windings of DC motors are tested for faults by equipment which delivers to them electric power surges having wave fronts with a rapid rate of change of voltage and current with respect to time, thereby causing a ringing oscillation to occur within these circuits. This ringing oscillation is inspected and compared with the type of oscillation which should occur in a circuit of this type having no fault to determine whether a fault exists. The equipment has a test probe which is physically separable from the surge generator. A capacitor used to develop the oscillation in the electric circuit being tested is mounted directly on the probe itself and is isolated from the surge generator by means of a fast recovery rectifier circuit. The surge generator may be provided with a capacity to deliver high current pulses through low-impedance coaxial couplers to the probe to burn out contaminants which tend to short out windings of the armatures.

3,622,883
PULSED CURRENT TRANSISTOR BETA TESTER HAVING FEEDBACK TO MAINTAIN EMITTER TO COLLECTOR CURRENT CONSTANT
Kenneth E. Haire, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Original application Aug. 18, 1965, Ser. No. 538,858, now Patent No. 3,471,770. Divided and this application July 24, 1969, Ser. No. 870,839
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 T **8 Claims**



A test circuit for measuring forward current gain of a transistor comprising:
a plurality of output test terminals for connection to the collector, emitter and base of said transistor;
a first, drive, amplifier having input and output terminal;
a resistor connected in series between the output of said first amplifier and a first of said test terminals;
a first referenced potential connected to a first input of said first amplifier;
a second of said test terminals connected to a second input of said first amplifier;
a constant current generator having at least two output terminals with one generator output terminal connected to the said second test terminal and with a second generator output terminal connected to a third of said test terminals, with said second and third test terminals being adapted for connection across the emitter and collector of said transistor, and with said first test terminal being adapted for connection to the base of said transistor;
a feedback path coupled from the said first test terminal to said second test terminal and comprising:
a second differential, amplifier having inputs connected across said resistor;
and means including a third inverting, amplifier having the output thereof connected to the output of said second amplifier, and with an input of said third amplifier connected to said second test terminal for applying a feedback signal to said second test terminal.

3,622,884
MICROWAVE INTEGRATED TRANSCEIVER AND ANTENNA MODULE
Raymond C. Kent, San Diego, Calif., assignor to Teledyne Ryan Aeronautical Company, San Diego, Calif.
Filed July 15, 1970, Ser. No. 54,909
Int. Cl. H04b *1/58*
U.S. Cl. 325—15 **10 Claims**

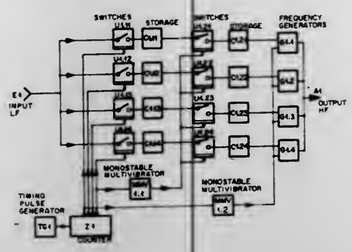


A microwave antenna module comprising a waveguide element with the basic transmitter and receiver circuitry mounted directly on the outside of the module in the form of printed circuit boards, and directly coupled to the respective output and input probes inside the waveguide. Phase control means incorporated in the circuitry allows transmission and reception of circularly polarized radiation in the same module. The structure is very simple and the circuit boards are substantially flat on the sides of the module, thus allowing compact stacking of any number of modules in an array.

3,622,885
SYSTEM FOR THE PARALLEL TRANSMISSION OF SIGNALS
Tadeusz Kruszynski, Oberdorf; Hans Van Der Floe, Selzach; Fritz Eggiman, Oberengstringen, and Ekkehard A. Wildhaber, Windisch, all of Switzerland, assignors to Autophon Aktiengesellschaft, Solothurn, Switzerland
Filed July 22, 1969, Ser. No. 843,594
Claims priority, application Switzerland, July 26, 1968, 11281/68
Int. Cl. H04b *1/66;* **H04l** *3/00*
U.S. Cl. 325—40 **9 Claims**

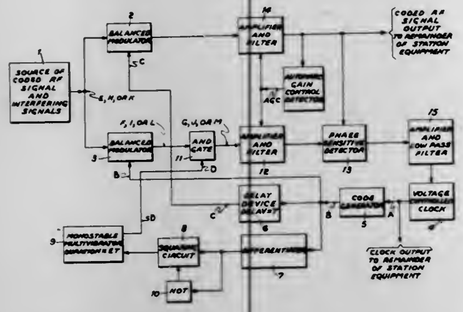
A system for transmission of continuous signals wherein the signals are sampled into sections, which sections are subsequently assembled into groups. A frequency band is permanently associated with each section dependent upon its position within the group and for each section an alternating-current pulse is produced, the frequency of said alternating-current pulse being within the frequency band associated

with said section and which contains the signal contents of the corresponding section. The alternating-current pulses are



longer than the sections and are temporarily overlapping one another.

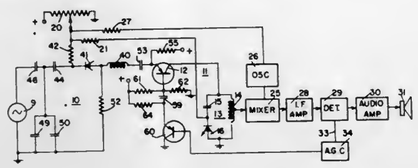
3,622,886
SYNCHRONIZATION SYSTEM
Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Sept. 25, 1968, Ser. No. 762,453
Int. Cl. H04j *3/06*
U.S. Cl. 325—321 **10 Claims**



In an early-late gate type synchronization system, a code generator driven by a voltage controlled clock produces a predetermined code signal. This signal is employed to generate a delayed version thereof and a gate signal at the transitions of the undelayed code signal. The predetermined code signal is also received from a remote transmitter by a first balanced modulator having a delayed code signal coupled to its other input to recover the received code signal. A second balanced modulator receives the received code signal on one input and the undelayed code signal on its other input. The output of the second modulator is gated by an AND gate enabled by the gate signal. The output signal of the first balanced modulator and the AND gate are coupled to a phase detector to produce a control signal operable on the clock to synchronize the delayed code signal with the received code signal.

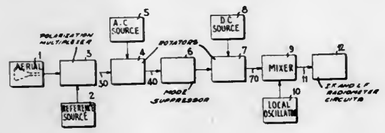
3,622,887
OVERLOAD COMPENSATION CIRCUIT FOR ANTENNA TUNING SYSTEM
Theodore A. Byles, Villa Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed May 15, 1969, Ser. No. 825,024
Int. Cl. H04b *1/18*
U.S. Cl. 325—362 **10 Claims**

A radio receiver is supplied with signals from a high impedance capacitive antenna coupled in series with a low impedance resistive load in the form of the emitter-base circuit of a common-base RF transistor amplifier. The coupling circuit is a series tuned circuit having a varactor diode connected in series with an inductor between the antenna and the emitter of the RF transistor amplifier. Overload compensation for the varactor diode is provided by a variable resistor in the form of the collector-emitter path of a second transistor connected between the base of the RF amplifier



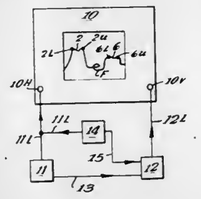
transistor and ground. The base of the RF amplifier transistor is DC isolated from the collector of the second transistor, and automatic gain control voltage is applied to the base of the second transistor to vary its conductivity in accordance with variations in the signal strength.

3,622,888
MICROWAVE RADIOMETERS
Alain Robert, and Henri Charvier, both of Paris, France, assignors to Thomson-CSF
Filed Apr. 29, 1969, Ser. No. 820,055
Claims priority, application France, May 31, 1968, 153505
Int. Cl. H04b *1/100*
U.S. Cl. 325—363 **3 Claims**



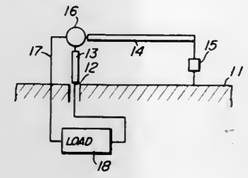
An improvement in hetrodyne-type microwave radiometers, comprising a polarization changer for passing, with crossed polarizations, the signals respectively coming from a radio source and a reference source, a first rotator, such as of the Faraday type, operated at low frequency, an mode suppressor and a mixer connected to a local oscillator, wherein a second rotator, such as of the Faraday type producing a constant rotation in the polarization, is arranged between the mode suppressor and said mixer.

3,622,889
BANDPASS RESPONSE DISPLAY
Italo Ridolfi, River Grove, Ill., assignor to Standard Kollsman Industries, Inc., Melrose Park, Ill.
Filed Aug. 29, 1969, Ser. No. 854,100
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **9 Claims**



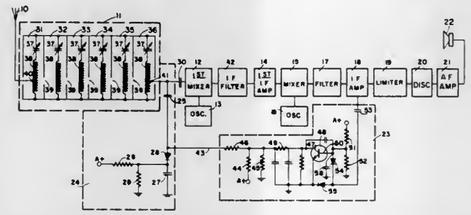
A method of testing and aligning a voltage controlled tuner provides a simultaneous display of the low and high-channel frequency response to facilitate setting of the adjustable tuning reactances. A function generator provides different tuning voltage levels in synchronism with a variable frequency signal from a sweep generator to create the tuner output signals representative of the low and high-channel responses.

3,622,890
FOLDED INTEGRATED ANTENNA AND AMPLIFIER
Kyohei Fujimoto, and Yoshiyasu Hiroi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka Japan
Filed Jan. 24, 1969, Ser. No. 793,709
Claims priority, application Japan, Jan. 31, 1968, Feb. 15, 1968, Feb. 15, 1968, Feb. 15, 1968, Nov. 18, 1968, Nov. 18, 1968, Nov. 18, 1968; 43/6321, 43/10011, 43/10012, 43/10013, 43/85085, 43/101235, 43/101236
Int. Cl. H01q *1/26*
U.S. Cl. 325—375 **11 Claims**



An integrated antenna system comprising a ground plane, at least one vertical element substantially perpendicular to the ground plane, a helically shaped element having horizontal polarization and a solid state circuit located at the junction of the horizontal and vertical elements. The described antenna system facilitates control of the characteristics of the antenna without varying the physical dimensions thereof. Consequently, antenna size may be reduced, related equipment simplified and the overall characteristics of the antenna system improved.

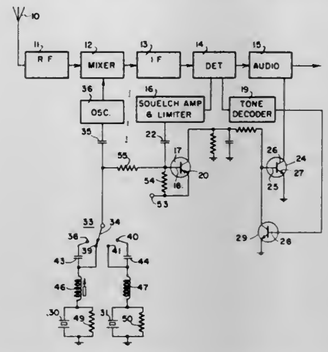
3,622,891
RADIO RECEIVER WITH AUTOMATIC CONTROL OF ATTENUATION FOR REDUCTION OF INTERMODULATION
Wayne H. Leland, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 28, 1969, Ser. No. 811,399
Int. Cl. H04b *1/18*
U.S. Cl. 325—381 **9 Claims**



An automatic control system for a communications receiver automatically increases the attenuation of a frequency selective stage, preferably near the input of the receiver, when signals above a certain strength are received. A variable reactance device is coupled to a section of a multisection helical resonator for changing the resonant frequency of the section and thereby increasing the attenuation of the resonator when strong signals are received. The variable reactance device is coupled to the resonator in a manner so that it does not contribute to the production of intermodulation in the receiver.

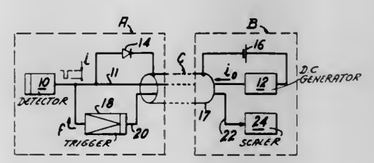
3,622,892
SINGLE POLE MULTIFREQUENCY SELECTIVE SQUELCH
Richard E. Lunquist, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of application Ser. No. 803,317, Feb. 28, 1969. This application Aug. 13, 1970, Ser. No. 63,652
Int. Cl. H04b *1/10*
U.S. Cl. 325—456 **10 Claims**

A single pole multicontact switch is used to selectively connect different crystals to an oscillator to vary the frequency of the oscillator. The crystal circuits include a direct current path and each crystal circuit is coupled to one of a pair of contacts of the switch through a direct current conductive path and to the other of the pair of contacts through a direct



current blocking path. A squelch circuit is provided with a bias circuit connected thereto and to the single pole switch. The bias circuit acts to render the squelch circuit selectively operative or inoperative according to the path through which the crystal is connected to the crystal oscillator.

3,622,893
METHOD AND APPARATUS FOR ANALYZING AN AMPLITUDE SPECTRUM
Bernard Dervieux, Chatenay-Malabry; Jean Douzon, Paris, and Andre Girouy, Paris, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Oct. 17, 1968, Ser. No. 768,389
Claims priority, application Great Britain, Aug. 26, 1968, 40719/68
Int. Cl. H03k *5/20*
U.S. Cl. 328—115 **9 Claims**

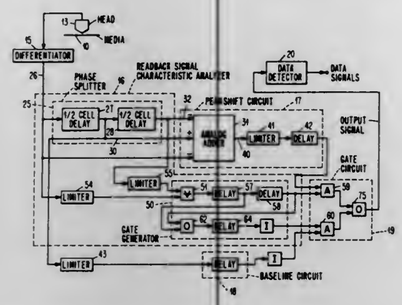


In method for analyzing the amplitude spectrum of electric pulses, a direct current of predetermined value variable by steps is generated, the amplitude of each pulse is compared with the current, a signal is emitted responsive to each pulse whose amplitude is greater than value of the current and said signals are counted. In a modified embodiment a second direct current is generated and a signal is emitted when the amplitude of a pulse is between the two currents. A device for carrying out the method is also described.

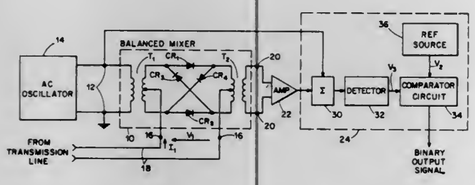
3,622,894
PREDETECTION SIGNAL COMPENSATION
Robert F. Heldecker, and Richard G. Laatt, both of Longmont, Colo. assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,784
Int. Cl. H04b *15/00*
U.S. Cl. 328—162 **17 Claims**

A periodic signal has information-bearing signal changes subject to undesired perturbations (such as peak shift) which degrade detection of the information. First and second intermediate signals are generated from the periodic signal. One of the intermediate signals is compensated for such undesired perturbations. Signal characteristics of the periodic signal are analyzed for determining the likelihood of such undesired

perturbations. Based upon the analysis, either the first or second intermediate signal is selected for detection purposes. In a preferred form, the readback signal, delayed by one-half cell period, is used as an uncompensated signal. Signal amplitudes of the periodic signal are compared at points separated by one cell period. If the amplitudes are substantially different, then the peak-shift compensated signal is selected as the output signal. At all other times, the one-half-cell delayed signal is used as the output signal.



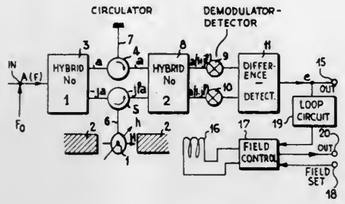
3,622,895
UNIVERSAL DIGITAL LINE RECEIVER EMPLOYING FREQUENCY CONVERSION TO ACHIEVE ISOLATION
Donald Leroy Starkey, North Tonawanda, N.Y., and Robert H. Zinsmeister, Newton, Mass., assignors to GTE Sylvania Incorporated
Filed Feb. 26, 1970, Ser. No. 14,392
Int. Cl. H03k 9/00
U.S. Cl. 329—104 **2 Claims**



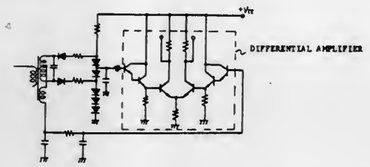
A universal digital line receiver employs an oscillator having an output signal, the frequency of which is substantially greater than the binary rate of a digital input signal to the line receiver. A transformer-coupled balanced mixer, to which the digital input signal is directed, has an input connection from the oscillator and is operative in response to the digital input signal to transfer a portion of the oscillator signal to a detector. The detector, which also has an input connection from the oscillator, provides an isolated replica of the input digital signals.

3,622,896
MICROWAVE SIGNAL-PROCESSING CIRCUITS, AND PARTICULARLY MICROWAVE FM DISCRIMINATOR
George Pircher, Paris, France, assignor to Thomson-CSF, Paris, France
Filed May 6, 1970, Ser. No. 35,077
Claims priority, application France, May 14, 1969, 15,711
Int. Cl. H03d 3/00
U.S. Cl. 329—116 **10 Claims**

A first hybrid circuit has a microwave signal applied thereto and has two signal component outputs, 90° out of phase with respect to each other. The hybrid circuit is interconnected to a second hybrid, in the form of a magic Tee, and delivers sum and difference signals of the inputs, which are then applied to a difference detector. The interconnection between the two hybrid circuits includes, in one line a ferromagnetic resonator located in a magnetic field set to the center frequency of the applied input signal to the first hybrid; upon deviation of the frequency of the input signal from the center, with the magnetic field constant, the second hybrid will develop sum and difference signals which can be detected, so that a frequency-varying signal is being analyzed. In an alternative, the input signal is kept at constant frequency and the magnetic field strength is varied, the change in the output signal than being indicative of variation of magnetic field strength.

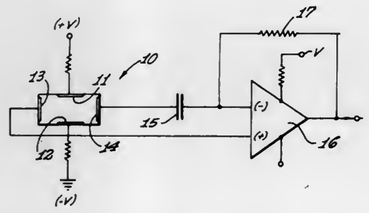


3,622,897
BIAS CIRCUIT FOR A DIFFERENTIAL AMPLIFIER
Masanobu Tsugita, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,495
Claims priority, application Japan, Dec. 26, 1968, 43/96165
Int. Cl. H03d 3/10
U.S. Cl. 329—129 **1 Claim**



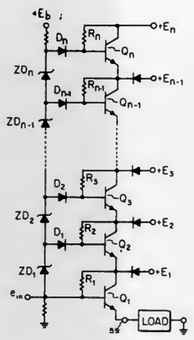
A bias circuit for a differential amplifier comprises a DC balanced bridge having a DC potential applied across one diagonal of the bridge, the biasing potentials for each amplifier of the differential amplifier being taken from the two points located on the other bridge diagonal.

3,622,898
CIRCUIT FOR PROCESSING HALL GENERATOR OUTPUT SIGNALS
Isidore William Salmon, Los Angeles, Calif., assignor to Contelesis Corporation, Maspeth, N.Y.
Filed May 20, 1970, Ser. No. 38,979
Int. Cl. H03f 15/00
U.S. Cl. 330—6 **3 Claims**



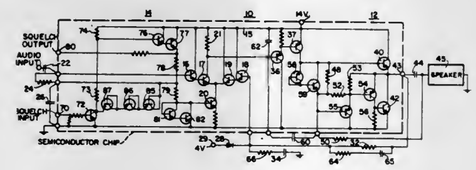
A Hall device is capacitively connected across direct and inverting inputs of a differential-operational amplifier.

3,622,899
HIGH-VOLTAGE POWER AMPLIFIER CIRCUIT
Mark F. Eisenberg, North Plainfield, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 8, 1969, Ser. No. 823,034
Int. Cl. H03f 3/04
U.S. Cl. 330—22 **7 Claims**



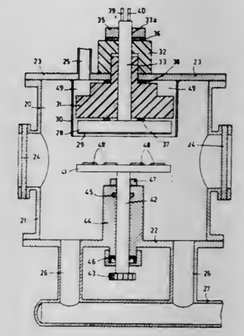
A power amplifier circuit is capable of providing high-frequency output signals over a wide voltage range. At least two transistors are coupled in series to a load terminal and the transistors are energized by respective voltage sources having different magnitudes. The transistors are biased so that they operate as amplifiers in sequence in response to an input signal of increasing magnitude. The overall power dissipation in the circuit is low for a wide range of output signals.

3,622,900
SQUELCHABLE DIRECT COUPLED TRANSISTOR AUDIO AMPLIFIER CONSTRUCTED IN INTEGRATED CIRCUIT
George M. Hanus, Norridge; Alfred R. Lucas, Northbrook, and Frank R. Skutta, Mount Prospect, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 29, 1969, Ser. No. 861,721
Int. Cl. H03f 3/68
U.S. Cl. 330—26 **20 Claims**



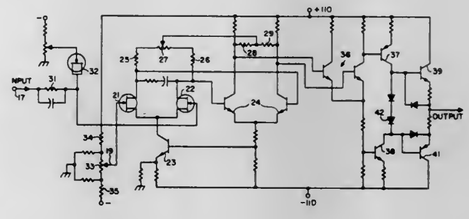
Direct coupled transistorized operational amplifier including differential amplifier input circuit, Darlington connected transistor driver, and high-efficiency output stage. To turn the amplifier on and off, bias potentials are applied to the differential amplifier in a manner to prevent audio transients. A control circuit controls the charging of capacitors to provide the bias potentials. The amplifier is constructed in integrated circuit form with compensation for temperature and frequency characteristics of substrate PNP and ring collector lateral PNP-transistors, and for input to output phase shift through the amplifier.

3,622,901
NEGATIVE-TEMPERATURE-COEFFICIENT RESISTORS IN THE FORM OF THIN LAYERS AND METHOD OF MANUFACTURING THE SAME
Jean Paul Ledran, and Paul Guiochon, both of Evreux-Eure, France, assignors to U. S. Phillips Corporation, New York, N.Y.
Filed Aug. 6, 1968, Ser. No. 750,552
Claims priority, application France, Aug. 9, 1967, 117409
Int. Cl. H01c 7/04
U.S. Cl. 338—25 **5 Claims**



A negative-temperature-coefficient resistor formed by applying a thin semiconductive silicon carbide layer to a substrate.

3,622,902
FET DIFFERENTIAL AMPLIFIER
Thomas Joseph Thomas, Lewisburg, W. Va., assignor to The Bendix Corporation
Filed Nov. 26, 1969, Ser. No. 880,036
Int. Cl. H03f 3/68
U.S. Cl. 330—30 **1 Claim**

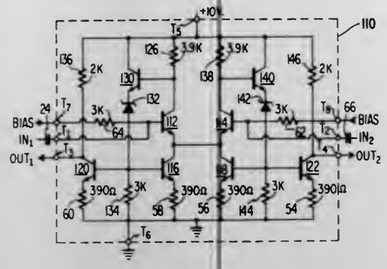


A differential amplifier for use with electrometers. The input stage employs unmatched field effect transistors for high-input impedance. The circuit is arranged for compensation and adjustment to provide satisfactory operation with unmatched transistors.

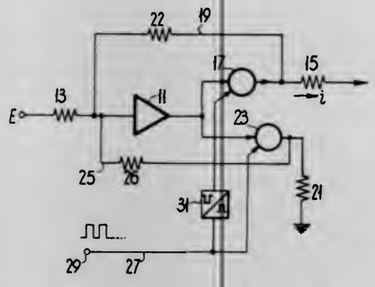
3,622,903
HIGH-GAIN DIFFERENTIAL AMPLIFIER
Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation
Filed Dec. 29, 1969, Ser. No. 888,391
Int. Cl. H03f 3/68
U.S. Cl. 330—30 **15 Claims**

A high-gain, linear, differential amplifier which provides output voltage variations substantially equal to the total

supply voltage associated with the amplifier. Each half of the amplifier comprises an input transistor, a shunt regulator transistor and a feedback arrangement between input and regulator transistors to maintain substantially constant current in the input transistor. Output transistors having their inputs in parallel with the regulator transistor inputs and output loads coupled in their collector-emitter current paths are provided.



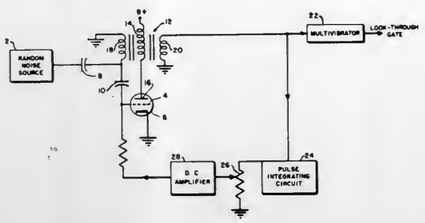
3,622,904
SWITCHING CIRCUITS
Peter Michael Knight, Maidstone, England, assignor to Elliott Brothers (London) Limited, London, England
Filed Nov. 3, 1969, Ser. No. 873,458
Claims priority, application Great Britain, Nov. 4, 1968, 52,196/68
Int. Cl. H03k *1/36*
U.S. Cl. 330—103 **1 Claim**



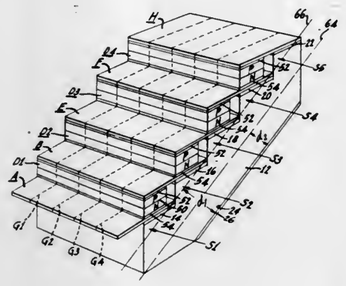
A switching circuit has an output resistance and a dummy output resistance, two switches respectively associated with the output resistances and an amplifier and dual feedback resistances respectively associated with the switches. The feedback resistances, switches and output resistances are such that a substantially unvarying current flows in the output of the amplifier either to the output or dummy output resistance depending on the switching states of the switches. As a result, the amplifier does not introduce any lag into the operation of the switching circuit.

3,622,905
RANDOM PULSE GENERATOR
Paul Merrill Brown, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 4, 1952, Ser. No. 307,886
Int. Cl. H03k *3/82, 3/16*
U.S. Cl. 331—78 **4 Claims**

1. A random pulse generator comprising a blocking oscillator having an input circuit and output circuit, a random frequency noise source connected to said input circuit for triggering said oscillator, integrating means connected to said output circuit for generating a direct current voltage proportional to the average repetition frequency of the output pulses of said oscillator, and means for coupling said direct current voltage to said input circuit whereby the period of said average repetition frequency is maintained substantially constant.



3,622,906
LIGHT-EMITTING DIODE ARRAY
Paul Nyul, Flemington, N.J., assignor to RCA Corporation
Filed Oct. 24, 1967, Ser. No. 677,571
Int. Cl. H01s *3/04*
U.S. Cl. 331—94.5 **7 Claims**

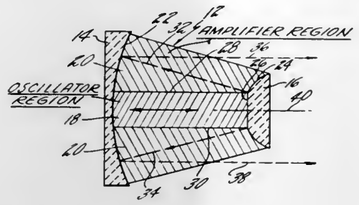


A light-emitting diode array comprises a substrate of insulating material having one side formed with a plurality of steps. A separate row of spaced-apart, similarly oriented diodes is disposed on the tread surface of each of the steps. Corresponding diodes in the different rows are disposed in columns, and the diodes in each of the columns are connected in series.

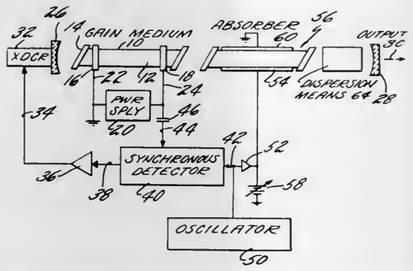
A method of making the light-emitting diode array comprises the operations of (a) forming a plurality of steps in one side of a substrate of insulating material, (b) disposing a sheet of metal, including solder, on each of the tread surfaces, each sheet having a rear portion on a tread surface and a forward portion extending over, and spaced from, a tread surface of an adjacent lower step, (c) disposing a separate relatively large semiconductor diode between the forward portion of each sheet and the rear portion of an adjacent sheet, (d) heating the assembly of the substrate, the metal sheets, and the diodes to melt the solder and to connect the diodes in series, and (e) cutting through portions of the sheets and diodes to form a plurality of columns of relatively smaller, serially connected diodes.

3,622,907
COMPOSITE OSCILLATOR AMPLIFIER LASER
Richard Giles Tomlinson, Glastonbury, and Boyce Burdick, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 27, 1970, Ser. No. 6,090
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 **4 Claims**

Two mirrors forming an optical cavity about an axis through their geometric centers are shaped and positioned to allow regions within the cavity where laser oscillation and amplification can occur. The cavity is formed by a relatively large first mirror having a reflection surface of concave contour and a smaller second mirror having a compound reflection surface of essentially convex contour, the compound mirror having a curved outer reflection surface surrounding a central flat reflection surface. The cavity, filled with a gas of high optical gain, supports electromagnetic energy oscillations between the central surface of the first mirror and the flat surface of the second mirror. A portion of the oscillation energy spills over around the flat surface of the second mirror, is reflected from the adjacent spherical surface as a beam of energy and the beam is amplified in passing back toward the outer surface of the first mirror through a gas medium of high saturation intensity. The amplified beam is reflected from the outer surface of the first mirror, further amplified and finally passed out of the cavity. A spherical as well as a cylindrical geometric embodiment are disclosed.



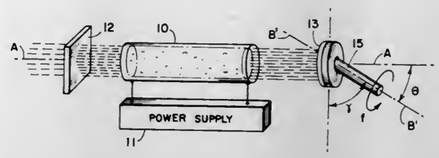
3,622,908
DITHERED GAIN CHARACTERISTIC STABILIZATION OF A GAS LASER
Michael L. Skolnick, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,262
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **3 Claims**



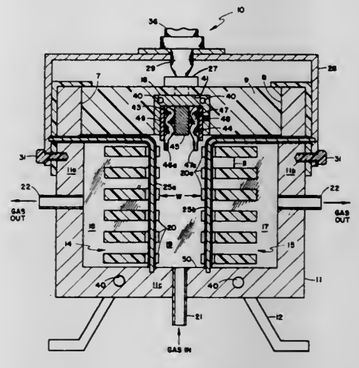
A frequency stabilized gas laser having a substantially unmodulated output beam includes, within the optical path of the optical cavity, an absorption cell having a gaseous absorption medium exhibiting the stark effect, the absorption characteristic of the cell being shifted in frequency so that the average Lamb dip frequency is coincident with the primary transition frequency of the laser gain medium, the shift being varied a small amount in an oscillatory fashion around the primary transition frequency so as to provide a dithered net optical output gain characteristic to the laser cavity. The resulting relative variation in optical cavity power extraction is used to adjust the position of one mirror, therefore the length of the cavity and the resonant frequency thereof.

3,622,909
METHOD AND MEANS FOR PROVIDING A HIGH-REPETITION RATE Q-SWITCHED GAS LASER
Brian Hanson Woodcock, St. Albans, England, and Walter Luck Faust, Los Angeles, Calif., assignors to Union Carbide Corporation
Filed Aug. 10, 1970, Ser. No. 62,281
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 **4 Claims**

A gas laser is Q-switched by rotating one of the end mirrors about an axis forming an acute angle with the axis of the resonator. By this arrangement, the pulse repetition rate of the gas laser may be increased considerably without decreasing the available dwell time for laser pulse generation.

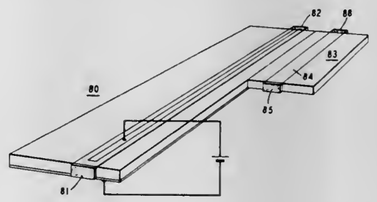


3,622,910
DYNAMIC CONVECTIVE COOLED LASER
Arthur R. Kantrowitz, Arlington, and Donald A. Leonard, Stoneham, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Nov. 20, 1968, Ser. No. 777,373
Int. Cl. H01s *3/04*
U.S. Cl. 331—94.5 **5 Claims**



An electrically pumped gas laser wherein at least one wall of the laser cavity comprises a plurality of openings to receive heated gas from the lasing region and direct the gas to a cooling region, thereby effecting cooling of such gas.

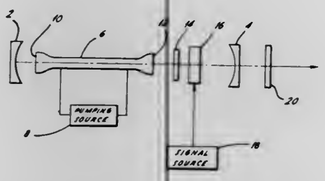
3,622,911
LASER OSCILLATOR WITH MODE SELECTOR
Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 2, 1968, Ser. No. 780,395
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **2 Claims**



This application describes a dual cavity, mode selective laser. The two cavities are formed with three mirrors, one of which is common to both the primary cavity, containing the

active laser material, and the auxiliary cavity. The common mirror is located such that a power divider, positioned in a region of the laser common to both cavities, coupled the primary cavity mirrors together by virtue of the divider's reflective properties and couples the auxiliary cavity mirrors together by virtue of the divider's transmissive properties.

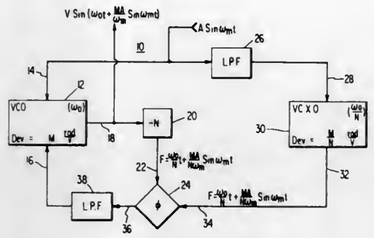
3,622,912
INTRA-CAVITY POLARIZATION MODULATED LASER
Walter M. Doyle, Laguna Beach, and Matthew B. White, Newport Beach, both of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed May 22, 1969, Ser. No. 826,918
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **12 Claims**



A laser polarization modulation system including within the laser cavity and in the laser light path a gaseous discharge tube adapted to produce laser oscillations in any one of a number of polarizations, a weakly birefringent element, and a modulator element the birefringence of which is variable, in response to an applied signal, up to a maximum value substantially greater than that of the weakly birefringent element. The modulator element is so oriented with respect to the weakly birefringent element that the modulator element, when supplied with a signal, exhibits an optic axis, oriented plus or minus 45° with respect to the optic axis of the weakly birefringent element, the sign of the angle of orientation depending on the polarity of the applied signal. The amount of birefringence exhibited by the modulator element depends directly on the value of the signal applied thereto. When no signal is applied to the modulator element, it exhibits no birefringence, and the weakly birefringent element is effective to constrain laser oscillations to a single polarization either perpendicular to or parallel to its optic axis. When an applied signal causes the modulator element to exhibit birefringence, that element causes the polarization of the laser oscillations to rotate toward the optic axis of the modulator element by an amount directly dependent on the value of the applied signal. The polarization-modulated output of the laser can be converted into an amplitude modulated signal by passing the laser output through a linear polarizer located externally of the laser cavity. Because only a small change in the birefringence of the modulator element is needed to effect substantially 100 percent amplitude modulation, the frequency of the laser oscillations is not shifted significantly by this change.

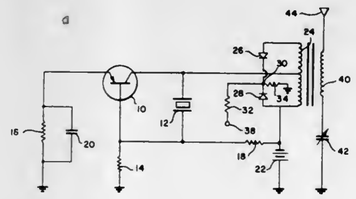
3,622,913
FREQUENCY MODULATED PHASE-LOCKED OSCILLATOR HAVING A LOW- AND HIGH-FREQUENCY RESPONSE
Don Glen Shipley, Princeton Jct., N.J., assignor to RCA Corporation
Filed Oct. 29, 1969, Ser. No. 872,185
Int. Cl. H03c *3/08*
U.S. Cl. 332—16 **8 Claims**

In a phase-locked loop frequency modulator, the signal applied to the reference input of the phase comparator is a frequency-modulated signal, modulated at the same rate as the output signal, for low-modulating frequencies. For higher modulating frequencies, the signal applied to the reference



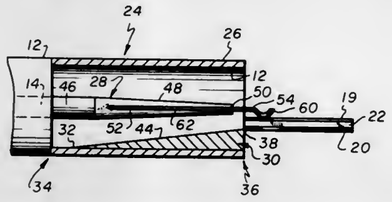
input of the phase comparator is a constant frequency source.

3,622,914
AMPLITUDE MODULATED CRYSTAL OSCILLATOR
Man Yung Chung, Seoul, Korea, assignor to Korea Institute of Science & Technology, Cheong-Ryang Seoul, Korea
Filed Nov. 24, 1969, Ser. No. 879,226
Claims priority, application Korea, Feb. 21, 1969, 1969-234
Int. Cl. H03c *1/14*
U.S. Cl. 332—56 **10 Claims**



A circuit for producing amplitude modulated waves has a tuning circuit which is connected to the output of a crystal oscillator and which contains a voltage variable capacitance load, such as a semiconductor diode. The capacitance of the load is varied in response to a modulating signal to vary the impedance of the tuning circuit and thereby modulate the output signal of the oscillator.

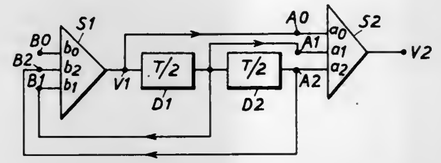
3,622,915
ELECTRICAL COUPLER
Ronald Davo, Succasunna, N.J., assignor to Meca Electronics, Inc., Denville, N.J.
Filed Mar. 16, 1970, Ser. No. 19,885
Int. Cl. H01p *3/00*; **H03h** *7/38*
U.S. Cl. 333—34 **19 Claims**



An electrical coupler is provided for connecting a coaxial transmission line to a microstrip transmission line which provides a close impedance match over a wide band of

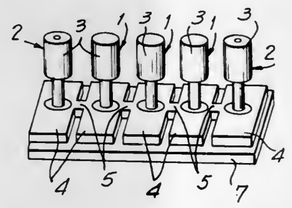
microwave frequencies. The coupler comprises an inner and an outer member which have a cross section at one end that is identical to that of the coaxial transmission line and a cross section at their other ends which includes a pair of spaced straight lines for connection to the spaced conductive strips of a microstrip transmission line. The ends of the coupler are connected by means of which provide for a uniform transition from the configuration at one end to the configuration at the other end while maintaining a substantially constant impedance.

3,622,916
PERIODIC FREQUENCY CHARACTERISTIC FILTER FOR FILTERING PERIODIC SAMPLED SIGNAL
Tore Torstensson Fjallbrant, Goteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Feb. 24, 1970, Ser. No. 13,333
Claims priority, application Sweden, Mar. 11, 1969, 3314/69, Feb. 6, 1970, Sweden, 1504/70
Int. Cl. H03h *7/10*
U.S. Cl. 333—70 A **5 Claims**



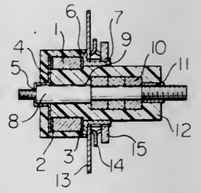
A filter has first and second multiinput addition circuits each with a single output wherein one input of the first addition is the input to the filter and the output of the second addition circuit is the output of the filter. The addition circuits are so constructed that the signal received at any input is multiplied by a weighting factor. The output of the first addition circuit is connected to one input of the second addition circuit. A plurality of serially connected delay circuits are also connected between the outlet of the first addition circuit and the inputs of the second addition circuit with the outputs of the delay circuits being connected to respective inputs of the second addition circuit and also to respective inputs of the first addition circuit. The delay of the delay circuits is equal to 1/N times the sampling period, where N is an integer greater than unity so that different transfer functions of the filter can be obtained.

3,622,917
FILTER WITH PARALLEL COMPOSITE RESONATORS
Natalia Yakovlevna Arleevskaya, Drezdens Kaya al., 10, Korp. 2, kv. 52, Leningrad, U.S.S.R.
Filed Oct. 23, 1968, Ser. No. 769,903
Int. Cl. H03h *9/04, 9/22, 9/26*
U.S. Cl. 333—71 **4 Claims**



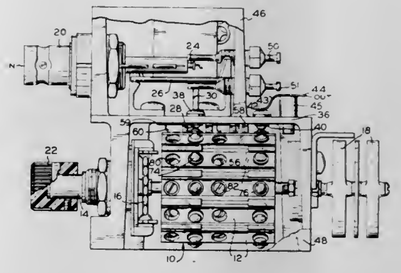
An electromechanical band-pass filter designed for high-selective filtering of electric signals within the frequency range of several kilocycles. The filter is characterized in that each of the resonators includes two parts, one of which is shaped as a dumbbell and the other of which is attached to one of the thickened ends of the dumbbell.

3,622,918
FILTER
Shiro Ito; Shoichi Iwaya, and Mitsuya Honda, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan
Filed Jan. 22, 1970, Ser. No. 4,873
Int. Cl. H03h *7/04*
U.S. Cl. 333—79 **4 Claims**



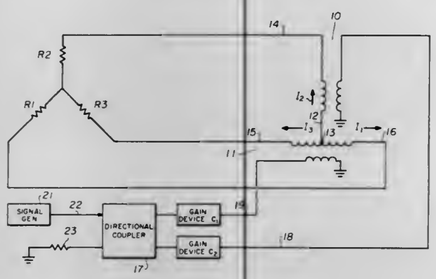
A high-voltage resistive filter of through type, using a ceramic dielectric. The filter comprises a cylindrical ceramic dielectric having electrodes formed on respective both end surfaces of said dielectric cylinders, a conductor penetrating through inner space of said cylinder and mounted at an end to one of said electrodes through a connecting metal fixture, a ferrite ring fitted to said conductor, and a chassis fitting metal fixture adhered to the other one of the electrodes. A synthetic resin is molded around the dielectric, connecting metal fixture, conductor and ferrite ring as assembled so as to bond them integrally.

3,622,919
STEP ATTENUATOR OF LOW INDUCTANCE AND HIGH BANDWIDTH
Darrel I. Wilhoit, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed June 3, 1969, Ser. No. 830,071
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 **11 Claims**



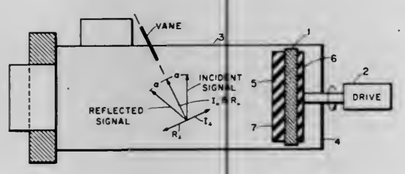
A drum attenuator for selectively connecting a plurality of attenuator sections of different value into an electrical circuit is described, in which the selected attenuator section is grounded through at least two adjacent parallel current paths of approximately equal length for each ground point to reduce inductance and to prevent signal distortion due to "ringing." The attenuator sections are each in the form of a ceramic strip having a pair of voltage divider resistors and a damping resistor coated thereon and having capacitors formed integrally therewith. The attenuator sections are releasably mounted within slots around the periphery of the attenuator drum by metal clips which also serve as ground planes. The resulting step attenuator apparatus has an extremely wide frequency bandwidth and may be used in a high-frequency cathode-ray oscilloscope to attenuate its vertical input signal by a plurality of predetermined steps.

3,622,920
WIDE-BAND PHASE-SPLITTING NETWORK
Richard V. Snyder, Glen Ridge, N.J., assignor to Merrimac Research and Development Inc., West Caldwell, N.J.
Filed June 16, 1970, Ser. No. 46,723
Int. Cl. H01p *5/12*
U.S. Cl. 333—6 **9 Claims**



A circuit is disclosed in which a quadrature coupler splits an applied signal into a pair of signals having a 90° phase differential therebetween. The pair of signals are applied to a pair of primary windings of a pair of transformers. The secondary windings of the transformers are connected in a T configuration. Three output signals are taken from the T-connected secondaries of the transformers each having exactly 120° relative phase with respect to each other.
Equations are also disclosed describing the above circuit. A computer program is also disclosed for solving the equations enabling one of ordinary skill in the art to build multicoupled mode structures which provide various desired phase relationships.

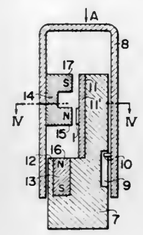
3,622,921
POLARIZATION ROTATOR
Vernon L. Heeren, Wayland, Mass., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 22, 1970, Ser. No. 82,891
Int. Cl. H01p *1/16*
U.S. Cl. 333—21 A **5 Claims**



A microwave polarization rotator is disclosed wherein a conducting vane, mounted for rotation about the longitudinal axis of a circular waveguide and placed ahead of a shorting plate which closes one end of the waveguide, is disposed within a dielectric disk which operates as a frequency-compensating means for effectively broadbanding the apparatus.

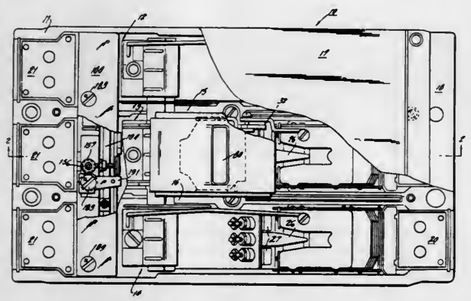
3,622,922
ELECTRIC PUSHBUTTON SWITCH
Toshio Mogi, Ayase-Machi, Kouza-gun, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed Sept. 21, 1970, Ser. No. 74,010
Claims priority, application Japan, Sept. 24, 1969, 44/90181
Int. Cl. H01h *3/00*
U.S. Cl. 335—2 **7 Claims**

A pushbutton switch comprising a casing and a base mounted therein for relative movement. The base has thereon a submagnetic pole plate and a Hall element for electrical connection to a switching element. A magnet is mounted in the casing in radial alignment with the Hall element and the pole piece whereby, upon relative movement between the casing and the base, the polarity of the voltage across the Hall element is varied to thereby actuate the switching element. A second magnet is mounted on the base



in axial alignment with the first magnet so as to normally hold the latter and the casing floating in the air by virtue of the magnetic repulsing force.

3,622,923
ELECTROMAGNETIC DEVICE FOR CIRCUIT BREAKER TRIP ASSEMBLY UNIT
Howard R. Shaffer, Glenside, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Original application July 11, 1968, Ser. No. 744,166, now Patent No. 3,505,626. Divided and this application Oct. 3, 1969, Ser. No. 871,219
Int. Cl. H01h *73/12*
U.S. Cl. 335—17 **2 Claims**

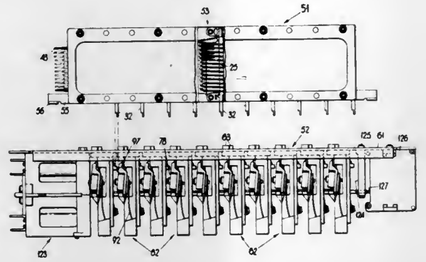


An electromagnetic device of the type having application for a circuit breaker trip unit assembly, utilizing a modified armature biasing structure as well as a means for indicating actuation of an individual magnetic assembly. The modified armature biasing structure provides a decrease of the force urging the armature away from the cooperating pole faces, as the armature gap separation decreases. By avoiding the heretofore practiced arrangement of increasing the bias force with a reduction of the gap separation, the disclosed structure permits a wider range of operation. The visual indicating means in conjunction with the trip unit assembly serves to readily indicate to the operator which pole of a multiphase device has been actuated and will require manual reset. The above noted features may be combined, and in one such combined arrangement, the armature bias force is reversed at the concluding portion of its travel, to lock the armature against the magnet pole faces until manually reset.

3,622,924
ELECTRIC SWITCHES
Michael David Harcourt, Coventry, England, assignor to The General Electric Company Limited, London, England
Filed Aug. 17, 1970, Ser. No. 64,300
Claims priority, application Great Britain, Aug. 15, 1969, 40,950/69
Int. Cl. H01h *67/26*
U.S. Cl. 335—112 **9 Claims**

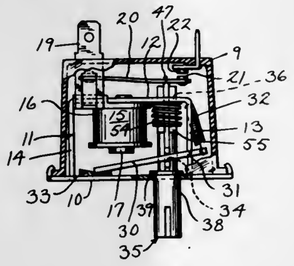
A crossbar switch comprising a rectangular array of contact sets formed by intersecting wires. Each contact set is

operated by an individual interposer member, each row of interposer members being moved by a select magnet armature into operative positions and each column of interposer members being driven, if in an operative position, to operate their



respective contact sets. The travel of the select magnet armature is limited in one direction by a stop member and in the other by the magnet core which is itself biased against the stop member.

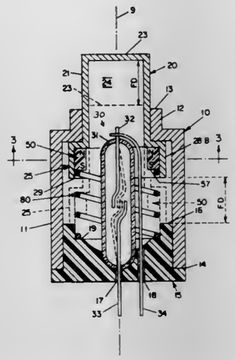
3,622,925
PUSH-TO-START SWITCH
Robert H. Rose, Milwaukee, Wis., assignor to U.S. Controls Corp., Milwaukee, Wis.
Continuation-in-part of application Ser. No. 853,878, Aug. 28, 1969, now abandoned. This application Sept. 25, 1970, Ser. No. 75,618
Int. Cl. H01h *3/20*
U.S. Cl. 335—186 **12 Claims**



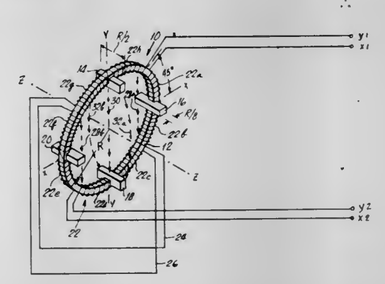
An armature is fulcrumed near one end and its other end is normally spring urged in a direction away from the pull of an electromagnet. An actuator is slidably associated with a manually operable plunger for movement axially thereof, and there is interengagement so that pushing of the plunger causes movement of the armature toward the electromagnet. Before the armature engages the core the actuator causes closing of contacts in an electric circuit to energize the coil so that the armature thereafter holds the actuator in contact-closing position, there being spring means for returning the plunger to starting position while the actuator is thus held, and there being means between the armature and actuator for returning the actuator to starting position when the coil is deenergized.

3,622,926
MAGNETICALLY ACTUATABLE REED SWITCH ASSEMBLY
George Risk, 2659 Pershing Road, Columbus, Nebr.
Filed Mar. 12, 1970, Ser. No. 18,941
Int. Cl. H01h *51/28*
U.S. Cl. 335—205 **4 Claims**

A reed switch assembly of the type comprising a pair of spaced-apart flexible magnetically permeable electrically conductive reeds adapted to contact each other when brought into proximity to magnetic flux. Herein, the magnetic flux is supplied from a permanent magnet formed of permanently magnetized particles distributed throughout a structurally continuous flexible resinous matrix, said permanent magnet-means being annularly C-shaped and resiliently constrictable and being employed in the switch assembly under conditions of unrelieved constricted stresses.



3,622,927
DEFLECTION YOKE
Clayton A. Washburn, 24 Andrea Lane, Thornwood, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,363
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **17 Claims**

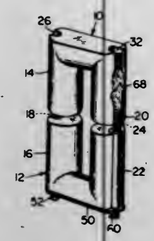


Several substantially circular deflection yoke structures for cathode-ray tubes are disclosed. Their common principal characteristics include means whereby the features of orthogonal (x, y) deflection axes are identical. This results in symmetry about the diagonal (45°) deflection positions as well as about the deflection axes. These structures each employ eight identical toroidally wound coil segments. Four coils, symmetrically placed on both sides of the x-axis, provide x-axis deflection. Four coils similarly located with respect to the y-axis provide y-axis deflection. Each coil occupies a 45° segment from its axis outwardly along an annular core piece.

3,622,928
TRANSFORMER CORE WITH ADJUSTABLE AIRGAP
Harry P. Lee, 1300 Edgewood Way, Apt. 105, Oxnard, Calif.; Peter Billic, 1446 W. Beverly Drive, Oxnard, Calif., and Clifford B. Alfors, 4671 Student St., Ventura, Calif.
Filed June 29, 1970, Ser. No. 50,611
Int. Cl. H01f *21/06*
U.S. Cl. 336—134 **1 Claim**

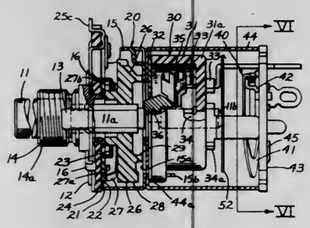
A transformer core made up of two sections separated by an airgap, the width of this gap being adjustable to minimize the overall transformer loss ratio. A pair of small runner tubes are affixed to one of the core sections, each tube being internally threaded to receive a screw journaled on the other

core section. Rotation of these screws allows for precise adjustment of the width of the gap between the core sections to



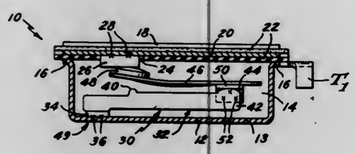
a point where maximum power transfer to an output circuit is obtained.

3,622,929
COMBINATION ELECTRICAL CONTROL
Wayne A. Barden, and Mervin B. Arisman, both of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Jan. 8, 1964, Ser. No. 336,580
Int. Cl. H01h *71/16*
U.S. Cl. 337—3 **12 Claims**



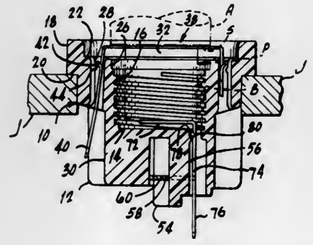
A combination electrical control having a variable resistor, a pull-push switch and an overload circuit breaker connected in tandem and having a common actuator shaft. The shaft may be rotated to alter the resistance of the variable resistor. The pull-push switch and the circuit breaker may be closed or reset when the shaft is pushed or pulled. The overload circuit breaker and the pull switch are connected in series so that the opening of either component breaks a circuit.

3,622,930
MOTOR PROTECTOR APPARATUS AND METHOD
John R. D'Entremont, Foxboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 16, 1969, Ser. No. 866,993
Int. Cl. H01h *37/04, 37/52, 61/013*
U.S. Cl. 337—107 **9 Claims**



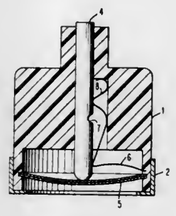
A motor protector particularly suited for use with appliance motors having a rate of rise up to 30° C. per second and higher, comprising a heater/thermostatic disc assembly in which the major heat transfer from the heater to the disc is by conduction. The disc is supported solely by the heater in such a way that the first "on" time is short and the first "off" time is long. The structure is such that the standard deviation of the first cycle "on" time is within a 3 second range necessary to protect such motors. The assembly is placed in a heat conductive can with the heater cantilever mounted on the bottom wall thereof. The thermostatic disc is in turn cantilever mounted on the heater, a contact is attached to the distal free end of the disc and is adapted to engage and disengage a stationary contact mounted on a cover which is clampingly attached to the can but electrically insulated therefrom. The device is calibrated by applying a force to the can in the vicinity of the heater mount to change the prestress of the contacts.

3,622,931
S-TYPE FUSE HOLDER
Kenneth H. Walterick, Levittown, Pa., assignor to Circle F Industries, Inc.
Filed Mar. 26, 1970, Ser. No. 22,879
Int. Cl. H01h *85/24, 85/52*
U.S. Cl. 337—216 **1 Claim**



An S-type fuse holder designed to simplify and speed up assembly, and to reduce the number and cost of its component parts, in which the center and ring contact elements are combined with their associated terminals and are thereafter simultaneously snapped into the holder body for permanent assembly therewith. The center and ring contacts are insertable from the same direction, and upon insertion snap into place after they are inserted to approximately the same extent, in a manner to permit permanent and simultaneous assembly thereof with the body by a single stroke of an assembly tool.

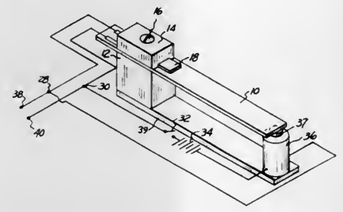
3,622,932
SELF-RESTORING THERMAL SWITCH WITH MEANS FOR INDICATING PREVIOUS OVERTEMPERATURE CONDITION
Peter J. Cunavelis; Edmund Joseph Distefano, and Donald L. Osterhoudt, Jr., all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 16, 1970, Ser. No. 55,325
Int. Cl. H01h *37/08*
U.S. Cl. 337—376 **3 Claims**



A thermally operated switch which utilizes a bimetallic diaphragm. When an overtemperature condition inverts the diaphragm, the diaphragm pushes up a plunger by a sufficient amount to enable a spring to take over and push the plunger up farther. The spring will then hold the plunger in its up position to provide a visual indication of the existence of the overtemperature condition even after the diaphragm has

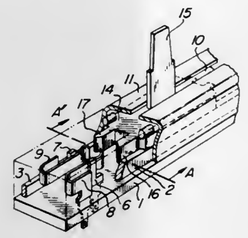
cooled enough to snap back to its normal position to turn the switch back on.

3,622,933
ELECTROMECHANICAL VIBRATING REED DEVICE
Jan A. Van Den Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.
Filed Aug. 30, 1968, Ser. No. 756,494
Int. Cl. G01l *1/18*
U.S. Cl. 338—5 **2 Claims**



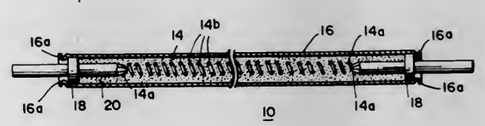
An electromechanical vibrating reed device having a vibrating reed member with an end thereof clamped in a base member. The reed member is provided with a transducer consisting of a substantially thin film of a piezoresistive material having a resistivity varying as a function of the mechanical stress imposed thereon disposed at a portion of the reed member subjected to maximum bending during oscillation or vibration of the reed member. A DC current flowing across the piezoresistive thin film is modulated in amplitude as a function of the amplitude of vibration of the reed member at a frequency corresponding to the natural resonant frequency of vibration of the reed member, and such modulated signal may be utilized to drive the reed member such as to sustain oscillation of the reed member.

3,622,934
VARIABLE RESISTOR OF SLIDING TYPE WITH SWITCH ACTIVATED BY SLIDER
Tadashi Yano, Osaka, and Shunzo Oka, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed May 22, 1970, Ser. No. 39,738
Claims priority, application Japan, May 30, 1969, 44/52233
Int. Cl. H01c *9/08*
U.S. Cl. 338—198 **9 Claims**



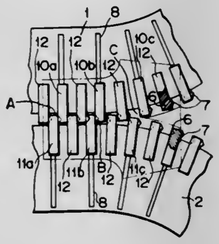
A variable resistor of sliding type with switch including a dielectric base having a resistance element and a conductive element, a slider being movable along a predetermined line on the dielectric base, a variable resistor of sliding-type means including the resistance element, the conductive element and a plurality of contactors being provided on the underside of the slider, a switching means including movable and stationary contacts and being provided on at least one of the both end portions of the dielectric base in the predetermined line, and a switch-working means being provided at the slider and being engaged with the movalbe contacts to actuate the switching means in connection with movement of the slider.

3,622,935
HELICAL RESISTANCE HEATING ELEMENT
Sterling A. Oakley, Chicago, Ill., assignor to Oakley Industries Incorporated, Skokie, Ill.
Original application Dec. 6, 1968, Ser. No. 781,883, now Patent No. 3,536,884. Divided and this application June 18, 1970, Ser. No. 47,386
Int. Cl. H01c *1/14*
U.S. Cl. 338—329 **7 Claims**



An electrical heating apparatus comprising a resistance heating element having a helical end convolution and a terminal member havng one end defined by a plurality of convergent, longitudinally extending, radially spaced projecting ridges, said ridges being welded to said end convolution at radially spaced points lying on a circle spaced between a mean diameter and an inner diameter of said end convolution.

3,622,936
ELECTRICAL MULTICONTACT CONNECTOR
Satoshi Negishi, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Nov. 10, 1969, Ser. No. 875,142
Claims priority, application Japan, Dec. 18, 1968, 43/109957
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 F **8 Claims**

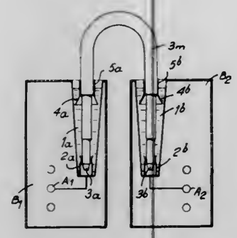


An electrical multicontact connector of zipper style is characterized in that there are spatially attached a plurality of engaging members to each of parallel-disposed, flexible supporting sheets or strips, and all or some of the engaging members of one strip are coupled with the corresponding ones of the other strip so as to form a plurality of disengageable electric conducting units, each of which is insulated from the adjacent ones by suitable means.

3,622,937
ELECTRIC CONNECTING DEVICE
Yves Bokshorn, Villiers-sur-marne, and Jean-Pierre H. Boudiak, Gagny, both of France, assignors to COQ-France, Pantin, France
Filed Feb. 12, 1970, Ser. No. 10,792
Claims priority, application France, Dec. 9, 1969, 6942446
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **4 Claims**

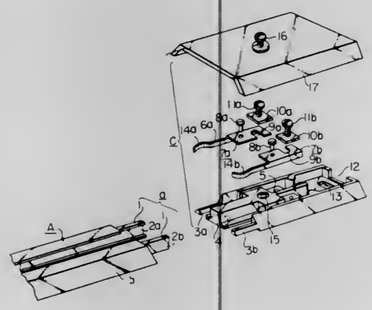
An assembly of electrical connecting devices characterized in that it comprises, in a high-voltage electric station, a first contact disposed in the bottom of a cup filled with a liquid dielectric substance and projecting towards the bottom of a

first compartment or cell, said first contact being electrically connected to a first conductor adapted to transmit electric current, a second contact disposed in the bottom of a cup filled with a liquid dielectric substance and projecting towards the bottom of a second compartment or cell, said second contact being electrically connected to a second con-



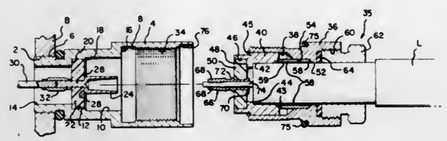
ductor adapted to transmit electric current, a connecting member in the form of a bent bar having substantially the shape of an inverted U, made of conducting material and having its ends immersed in said cups for engagement with said contacts and its intermediate portion emerging from said cups and adapted to be electrically insulated.

3,622,938
ELECTRIC POWER DISTRIBUTION DEVICE
Masamichi Ito, and Yoshiyuki Ishida, both of Kadoma-shi, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan
Filed Dec. 4, 1969, Ser. No. 882,083
Claims priority, application Japan, Dec. 10, 1968, 43/108135; Mar. 6, 1969, Japan, 44/20239; Mar. 10, 1969, Japan, 44/21501; Mar. 6, 1969, Japan, 44/20239
Int. Cl. H01r *13/60*
U.S. Cl. 339—21 R **5 Claims**



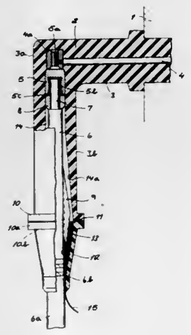
The invention provides a connector means adaptable for both mutual interconnection between electric power distribution ducts and power feed-in connection of a feed-in member to one of the ducts. The means comprises an insulative base member having at least one endwise projection and containing at least a pair of contactors extending in the same endwise direction. When the means is engaged to an end of the duct, said projection fits in a longitudinal space between respective opposing conductors in the duct or respective conductors and respective sidewalls of a duct housing so as to have the means mechanically held to the duct end, while said contactors enter into resilient electric contact with the respective conductors of the duct. When the connector means is used for the power feed-in connection, the contactors are connected at the other end to power source lines and, when used for the mutual interconnection of ducts, the means is provided with the projections and contactors respectively symmetrically extending in both endwise directions.

3,622,939
COAXIAL CABLE CONNECTION SYSTEM
Edgar Wilmot Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 27, 1970, Ser. No. 15,178
Int. Cl. H01r *13/54, 17/04*
U.S. Cl. 339—89 C **4 Claims**



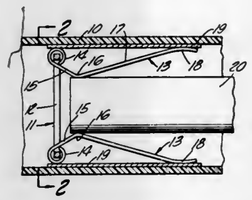
For connecting a coaxial cable to a tap box housing a high-frequency circuit, a first connector element comprising an outer conductor is secured to the box and is provided with a center contact which is secured at one end to the circuit, the other end being a socket with a conical bore. A second connector element is secured to the face end of the first element and includes an outer cylindrical member secured to the outer conductor of the cable and having centrally located spring fingers through which the inner conductor of the cable extends, the spring fingers being forced to grip the center conductor where the spring fingers enter the conical bore when the two connector elements are assembled.

3,622,940
CONNECTOR ASSEMBLY FOR ELECTRICAL APPARATUS
Reinhold Illies, Wurselen, Germany, assignor to Firma Neidecker & Co., Basel, Switzerland
Filed Dec. 22, 1969, Ser. No. 887,111
Claims priority, application Germany, Dec. 21, 1968, P 18 16 467.5
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 R **8 Claims**



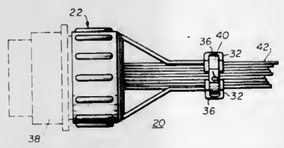
An angle connector for high-voltage rotary-field (three-phase) transformers in which a cast synthetic resin jack body is received in the transformer housing and forms at its end remote therefrom a socket extending at right angles to a bolt, pin or rod to which the socket is affixed, both socket and rod being imbedded in the insulating composition. A plug is fitted into the socket and is potted in a frustoconical sleeve which is flanged to a sleeve of the jack body.

3,622,941
HEAT RECOVERABLE ARTICLE WITH MECHANICAL INSERT
Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Continuation-in-part of application Ser. No. 591,914, Nov. 3, 1966, now abandoned. This application Oct. 30, 1968, Ser. No. 771,810
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **33 Claims**



A heat recoverable article for making mechanical or electrical connections or the like having a mechanical insert positioned within a heat recoverable sleeve. The mechanical insert is constructed so that it has a mechanical advantage, that is, it in some fashion multiplies or converts the force exerted upon it by heat recovery of the sleeve, and applies the force to the object or objects to be connected.

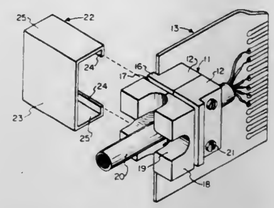
3,622,942
STRAIN RELIEF
Edward F. Rynk, Linden, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 27, 1970, Ser. No. 32,162
Int. Cl. H01r *13/58*
U.S. Cl. 339—107 **6 Claims**



The invention is directed to an improved unitary, integral, detachable strain relief. At least one generally arcuate clamping arm is resiliently coupled to a generally tubular body member adapted to be detachably secured about the outer surface of a conector or similar article. Strap receiving means project outwardly from its associated clamping arm to at least partially retain therein a strap or band disposed thereabout to secure the clamping arm to a cable or a plurality of insulated electrical wires positioned immediately adjacent thereto and extending outwardly from the connector.

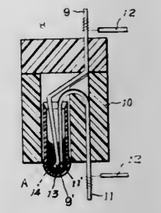
3,622,943
CABLE CLAMP WITH DIRECTING MEANS
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Inc., Northlake, Ill.
Filed Aug. 5, 1970, Ser. No. 61,120
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 **5 Claims**

A cable clamp mounted to a printed-wiring circuit board has means for directing a cable in a chosen one of several directions. The outer face has a plurality of slots radiating from the position in which the cable is clamped, and the cable may be bent into a slot and held by a constraining



device in a direction according to which slot is chosen to contain the cable.

3,622,944
ELECTRICAL CONNECTOR
Takane Tsuchiya, Yokohama-shi; Tetsuya Ohtani, Yokohama-shi; Akira Sato, Tokyo, and Syoichi Ito, Yokohama-shi, all of Japan, assignors to Tokai Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 5, 1969, Ser. No. 882,456
Claims priority, application Japan, Aug. 5, 1969, 44/61590 Aug. 7, 1969, Japan, 44/62106
Int. Cl. H01r *3/08*
U.S. Cl. 339—118 R **6 Claims**

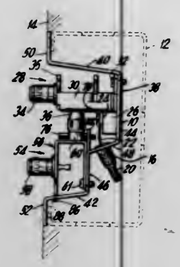


In this electrical connector, an electrical connection is made through a low melting point alloy consisting essentially of gallium and indium which is liquid at room temperature. In order to retain the low melting point alloy, contact points may be made of a porous solid material impregnated with the low melting point alloy, or may be made of cadmium, bismuth or lead having interfaces between which the low melting alloy is precipitated. In any case, gallium may be provided at one contact point and indium at the other contact point, so that when the two points are brought together the low melting point alloy is formed.

3,622,945
MULTIPURPOSE RF WALL TAP
Eric Winston, Melrose Park; Donald H. Rogers, Ivyland, and Joseph Oprysko, Philadelphia, all of Pa., assignors to Jerrold Electronics Corporation, Hatboro, Pa.
Filed May 11, 1970, Ser. No. 36,359
Int. Cl. H01r *13/60*
U.S. Cl. 339—121 **8 Claims**

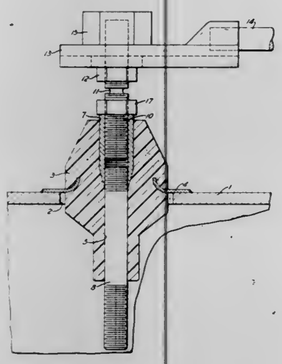
A multipurpose wall tap for use with CATV and MATV installations or the like, having a mounting frame which fits into a standard electrical outlet box. Affixed to the frame is a primary television signal module, including the required circuitry to receive the television signal from the lead-in cable, and a coaxial jack for connection to a television set antenna lead. One or more of a plurality of different auxiliary modules may be selectively installed on the mounting frame and connected to the primary TV module. Circuitry within these auxiliary modules converts the cable signal for application to a variety of equipments and associated leads, such as a coaxial TV antenna lead, a twin wire TV antenna lead, or a

single wire FM antenna lead. A cover plate protects the jacks and terminals extending from the modules, and provides the



entire assembly with the appearance of a conventional electrical outlet.

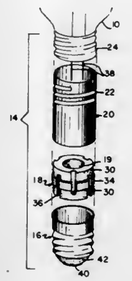
3,622,946
ELECTRICAL CONNECTOR WITH BREAKAWAY STUD
Eugene T. Rogers, Mount Pleasant, Pa., assignor to Permali Incorporated, Mt. Pleasant, Pa.
Filed Mar. 2, 1970, Ser. No. 15,507
Int. Cl. H01r *9/10*
U.S. Cl. 339—126 RS **3 Claims**



An internally threaded metal sleeve is rigidly mounted in a passage through an insulating bushing and extends outwardly to an end of the passage or beyond it. The bushing is intended to be mounted in the wall of electrical apparatus, with the outer end of the sleeve outside. Screwed into the sleeve and projecting from its outer end is a threaded stud that carries a nut which presses tightly against the outer end of the sleeve. Outwardly of the nut the stud is provided with a groove that weakens it, and a pair of nuts mounted on the stud outwardly of the groove are for holding an electric cable terminal which, if enough tension is applied to it, will cause the stud to break at its weakening groove without damaging the sleeve or bushing.

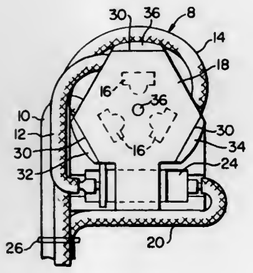
3,622,947
LAMP BASE EXTENSION
Robert M. Griffin, C/O Sylvania Electric Products, Salem, Mass.
Filed Sept. 2, 1970, Ser. No. 68,856
Int. Cl. H01r *13/30*
U.S. Cl. 339—146 **3 Claims**

A lamp base extension for halogen-type lamps where the base to filament length is increased without enlarging the size of the lamp envelope. The extended base comprises a preformed ceramic bridge spaced between an extension skirt and a screw base. The ceramic bridge is formed with reduced end portions and spaced slots about its periphery. The metal base and extension skirt are fitted over each reduced end of the bridge and the edges of the skirt and base are crimped



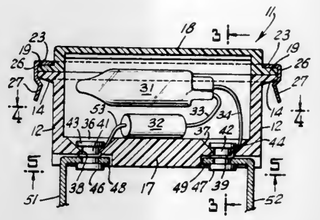
into the slots of the bridge. This forms an extended base that provides an increased light center length for the lamp without enlarging the lamp envelope or the utilization of an expensive glass insulation bridge.

3,622,948
ELECTRICAL CONNECTOR CLUSTER ASSEMBLY WITH MOTOR PROTECTION
Donald W. Foster, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1970, Ser. No. 9,377
Int. Cl. H01r *3/00, 33/72*
U.S. Cl. 339—147 R **7 Claims**



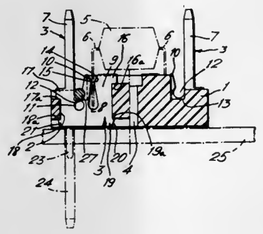
The invention comprises an apparatus especially adapted for connecting hermetic compressor motor leads disposed in a cluster to a hermetic shell-mounted terminal of the type having three closely spaced pins with flat tabs thereon. The cluster assembly includes a block with cavities therein in an orientation in which the contact sockets are relatively flat and disposed at equilateral angles to each other so as to align with the tabs on the pins and so that the contact wires extend in a pinwheel arrangement at the edge of the block. An additional socket is provided in the block for reception of a thermal sensitive device that provides overload protection for the compressor motor, with the thermal sensitive device wired in series with one of the wires of the pinwheel arrangement.

3,622,949
ELECTRICAL FIXTURE CASE
Wesley T. Sorenson, West Hartford, Conn., assignor to Sorenson Lighted Controls, Inc., West Hartford, Conn.
Filed Oct. 20, 1969, Ser. No. 867,787
Int. Cl. H01r *9/14, 9/20*
U.S. Cl. 339—147 C **1 Claim**



An electrical fixture case having interior funnel recesses and guides for accommodating rivet or wire connections.

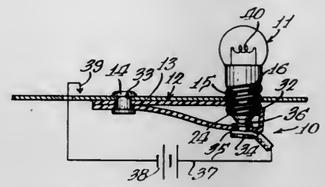
3,622,950
ELECTRICAL CONNECTOR ASSEMBLIES
Heinz A. Millinger, Wiesbaden, Germany, assignor to AMP Incorporated, Harrisburgh, Pa.
Filed June 16, 1969, Ser. No. 833,400
Claims priority, application Germany, June 26, 1968, P 17 65 657.4
Int. Cl. H01r *13/54, 11/22*
U.S. Cl. 339—174 **4 Claims**



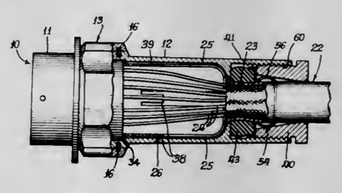
The invention concerns an electrical connector assembly comprising a housing of flexible insulating material and having a number of transverse passageways, each of which retains a connector element by complementary engagement of shoulders formed in the passageway walls and the element. Each element is stamped from sheet metal and has a contact element, e.g., a terminal post, to which connections can be made, and a socket formed by wall portions one of which is held fixed and the other of which is movable in the passaGeway. The socket receives a lead from a modulat pack, and the lead may be retained in the socket by wedging a nonconductive rod member in a recess between the contact element and the movable wall portion. The assembly is easy to make, compact, versatile and resistant to vibration.

3,622,951
SOCKET STRUCTURE
Alois F. Schoenung, Naperville, Ill., assignor to Cadaco, Inc.
Filed Aug. 6, 1970, Ser. No. 61,713
Int. Cl. H01r *33/38, 3/06*
U.S. Cl. 339—176 L **18 Claims**

A lamp socket structure for use with a threaded base lamp formed of a sheet of insulating material. The lamp socket structure is adapted to be mounted on a conductive plate defining one connection to the lamp base and the socket structure is provided with a contact defining the other connection to the lamp base. The sheet is provided with an opening defining means for threading the lamp thereto.

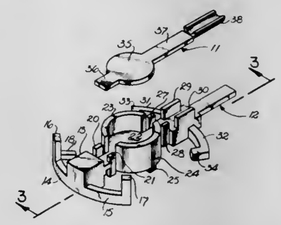


3,622,952
SHIELD TERMINATION FOR ELECTRICAL CONNECTORS
Wolfgang Hilbert, Holzkirchen, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 19, 1970, Ser. No. 3,986
Int. Cl. H01r *17/18*
U.S. Cl. 339—177 R **2 Claims**



Shield termination including clamp means are used for connection to a connector shell and for clamping engagement with an end portion of an outer flexible metallic shield of a cable, such clamp means being operable independently of strain relief means engaged with a portion of the cable shield spaced from the end portion. The clamp means comprises a first metallic member arranged to fit within the cable shield and including a thin wall having axially extending angularly spaced slots and a second metallic member surrounding the cable shield and coupled to the connector shell through a threaded ring. The second member has an inner surface portion of frustospherical shape while the wall of the first member is of complementary shape, resulting in a wedge enegagement and resilient deformation of the weall of the first member. Ground lugs are provideded on the first member for connection to contacts and conductors to be grounded.

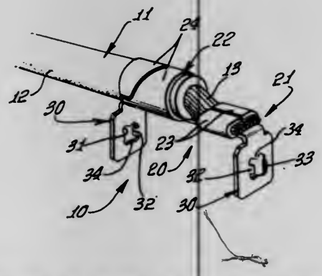
3,622,953
ELECTRICAL TERMINAL ASSEMBLY
George P. Greenamyer, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 25, 1970, Ser. No. 13,924
Int. Cl. H01r *13/40*
U.S. Cl. 339—212 **7 Claims**



An electrical terminal for use in a gas water heater control or the like in which the insulator has integral leaf spring

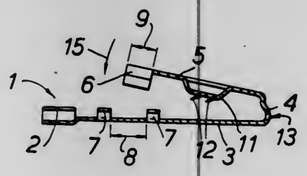
wings with projections to snap fit into a groove in the control body to retain the insulator therein.

3,622,954
ELECTRICAL CONNECTOR CONSTRUCTION FOR TERMINAL POST
Vram E. Hovnanian, Sherman Oaks, and Edward Kitzmiller, Manhattan Beach, both of Calif., assignors to Logic Dynamics, Inc., El Segundo, Calif.
Filed July 2, 1970, Ser. No. 51,966
Int. Cl. H01r *15/12*
U.S. Cl. 339—223 R **13 Claims**



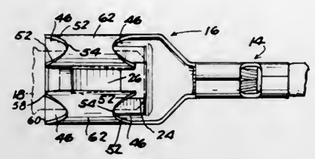
A connector of flexible, electrically conductive sheet material having a yoke with two sets of transversely protruding tabs, one set being formable to encircle the strands of wire to electrically connect the wire to the yoke, and the other set being formable to encircle and grasp the insulated wire, and a pair of parallel ears integrally formed at each end of the yoke and extending at right angles thereto. Each ear has a terminal post-receiving aperture, into which opposed longitudinally locating protrusions and opposed transverse tines extend, with the ends of the tines initially being bent away from the plane of the ear to enlarge the effective size of the aperture in order to receive the post, and being crimped toward such plane and into contact with opposed sidewalls of the post to electrically connect and secure the connector to the terminal post.

3,622,955
ELECTRICAL CONNECTOR
Raymond Fernex, Marignier, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 23, 1969, Ser. No. 868,706
Claims priority, application France, Oct. 23, 1968, 50527
Int. Cl. H01r *11/22*
U.S. Cl. 339—223 R **4 Claims**



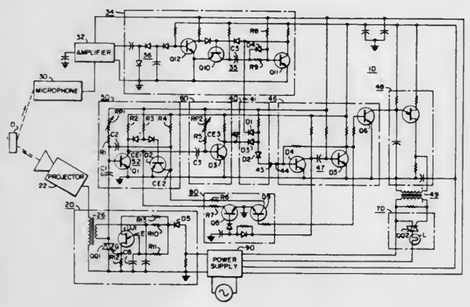
An electrical connector has opposing spring-biased arms which are provided with means for making electrical connection with a stripped end of an insulated electrical conductor and means on one of the arms for engaging the insulation of the conductor to retain the end of the conductor in position in the connector. Contact-engaging means is located on the connector for electrical engagement with a complementary contact means.

3,622,956
ELECTRICAL CONNECTOR
Alfred M. Zak, 6110 Casmere Ave., Detroit, Mich.
Filed Sept. 9, 1969, Ser. No. 856,325
Int. Cl. H01r *13/12*
U.S. Cl. 339—258 S **13 Claims**



An electrical connector adapted to be telescopically engaged with a blade-type contact. The connector has a base formed with a spring flange along each longitudinal side thereof. The flanges are formed as inverted U-shaped channels each having a free lower contact edge. Each channel is relieved at its opposite ends preferably along axially inclined planes so that the top bight portion is substantially shorter in length than the contact edges whereby to impart substantial flexibility to the portions of the flanges provided with the contact edges.

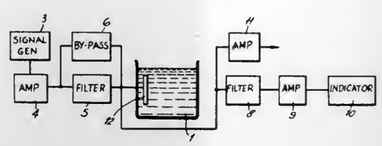
3,622,957
ULTRASONIC OBJECT DETECTOR
Ronald S. Libengood, Monroeville, and Frederick G. Geil, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,637
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 R **11 Claims**



An ultrasonic object detector system operating on the echo-ranging principle and including circuit adjustments which render the object detector system responsive to objects at a preselected distance. Additional circuit adjustments provide control of the depth of field sensitivity of the object detector system relative to the selected object distance as well as providing the capability of "locking-in" the object to prevent loss of object recognition.

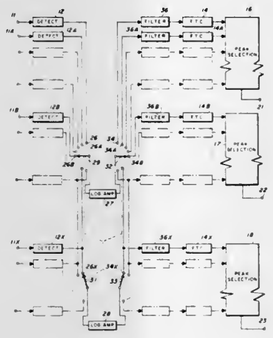
3,622,958
ACOUSTIC DETECTION APPARATUS
David Gordon Tucker, Birmingham, and Vernon Gearon Welsby, Solihull, both of England, assignors to National Research Development Corporation, London, England
Filed May 28, 1969, Ser. No. 828,532
Claims priority, application Great Britain, May 21, 1968, 26072/68
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **6 Claims**

Accoustic detection apparatus for detecting the presence of gas bubbles in a liquid, for example, blood, comprises a transducer and a detector which is selectively tuned to detect a frequency other than that transmitted and which is generated in the medium due to the nonlinear effect of the



bubbles. A single frequency may be transmitted and its second harmonic detected or else two frequency components transmitted and their sum or difference detected.

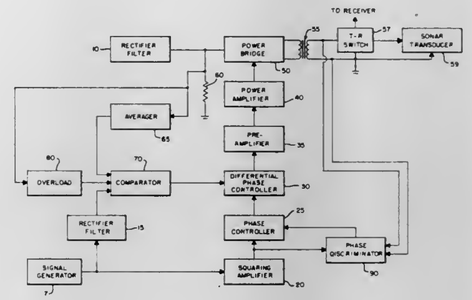
3,622,959
LOGARITHMIC FAST TIME CONSTANT SONAR RECEIVER
Edward C. Watters, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 10, 1963, Ser. No. 294,804
Int. Cl. G01s *9/66, 3/00*
U.S. Cl. 340—3 D **2 Claims**



1. A logarithmic fast time constant sonar receiver comprising:
a plurality of circuits for producing simultaneous signals from a plurality of azimuth beams,
a plurality of detectors, each of said detectors connected to a different one of said circuits,
a logarithmic amplifier, first switching means sequentially connecting said amplifier to the outputs of said detectors,
a plurality of lowpass filters, and
second switching means sequentially connecting said plurality of lowpass filters to the output of said amplifier,
so that said plurality of signals are sequentially processed.

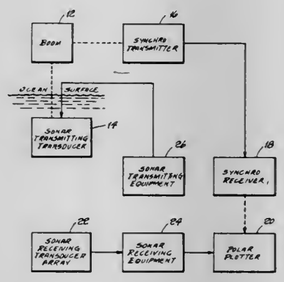
3,622,960
SONAR TRANSMITTER SYSTEM
Benjamin Barron, Malba, and Ernest Weiss, Plainview, both of N.Y., assignors to Lear Siegler, Inc., Melville, N.Y.
Filed June 13, 1969, Ser. No. 832,925
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **26 Claims**

A transmitter arrangement for a sonar active transmit-receive system in which the transducer is controlled to provide a wave front which is more coherent in phase and power by the use of a feedback control signal from the transducers.



The transducers are also made to have a constant output impedance which is of a relatively low value.

3,622,961
AUTOMATIC SONAR-BEAM-PATTERN PLOT
Alexander C. Vasiloff, Old Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 15, 1970, Ser. No. 3,127
Int. Cl. G01s *3/00*
U.S. Cl. 340—5 C **1 Claim**

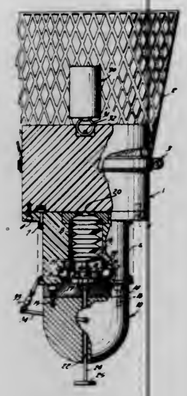


Means for making a polar plot of the beam pattern of a sonar transducer array. A sonar transmitting transducer is suspended from a long boom aboard a ship. A synchro transmitter is attached to the swivel point of the boom and electrically connected to a synchro receiver which rotates the polar-plot paper of a pen recorder. The input to the pen of the recorder is the output signal of the receiving sonar equipment on the ship, the beam pattern of the sonar equipment's receiving-transducer array being automatically recorded as the boom (and therefore the transmitting transducer) is rotated from port to starboard.

3,622,962
FREE FALL OCEANOGRAPHIC BEACON
Clifford L. Winget, Monument Beach, and Thomas B. Aldrich, West Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 9, 1969, Ser. No. 856,293
Int. Cl. B63b *51/02*
U.S. Cl. 340—5 R **6 Claims**

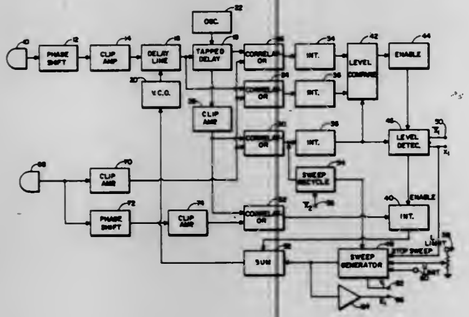
A free fall beacon for marking an ocean bottom location has a buoyant member and an anchor normally locked

together by a pressure-operated latching device. The buoyant member and the anchor are interconnected by a tether line



which determines the height above the ocean floor at which the buoyant member is moored.

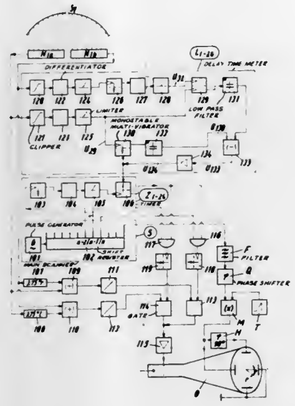
3,622,963
CONTROL APPARATUS
George E. Sage, Redmond, King, Wash., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 29, 1969, Ser. No. 794,932
Int. Cl. G01s 3/00
U.S. Cl. 340—6 R **8 Claims**



Apparatus utilizing polarity coincidence for determining direction of an object from a set of transducers and further utilizing a pair of correlating circuits to distinguish a true signal from multipath signals.

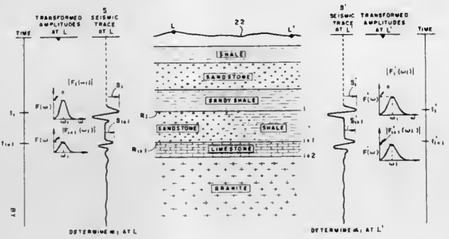
3,622,964
SYSTEM FOR DETERMINING THE DIRECTION OF ORIGIN OF WATERSOUND WAVES
Reinhard Wilhelm Leisterer, Bremen, Germany; Gunther Berkelmann, Achim, Germany, and Heinz Thiede, deceased, late of Lilienthal, Germany (by Irmgard Thiede, administratix of assets), assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany, by said Leisterer and said Berkelmann
Filed July 16, 1969, Ser. No. 842,113
Int. Cl. G01s 3/100
U.S. Cl. 340—6 R **7 Claims**

The invention provides an arrangement for determining the direction of sound waves incident within a large area of bearing, using an array of transducers allocated to adjacent sectors of the area and which are periodically scanned to provide indications on an oscilloscope the beam of which is rotated in synchronous relation to the scanning, the direction



of origin of sound within each of the different sectors being determined by measuring the phase difference or travel time difference between two of the transducers.

3,622,965
METHOD OF GEOPHYSICAL PROSPECTING BY MEASURING THE ATTENUATION OF SEISMIC WAVES IN THE EARTH
Chang Sheng Wu, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed June 18, 1970, Ser. No. 47,416
Int. Cl. G01v 1/00
U.S. Cl. 340—15.5 AC **8 Claims**

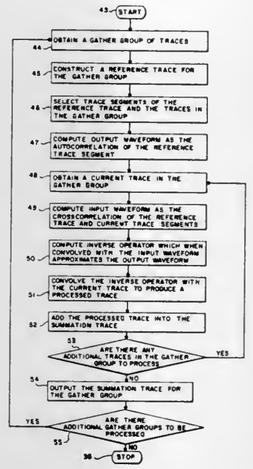


A method of seismographic exploration, to determine the attenuation coefficient in a layer from which there is obtained substantial and persistent reflection energy, by: transforming the detected reflected signals to an integral transform domain, selecting a band of transform variables over which there is substantial and persistent reflection energy, and measuring the ratios of the amplitudes of the transformed signals to obtain a measure of the attenuation coefficient of the reflected seismic signals in the studied layer.

3,622,966
WAVELET STANDARDIZATION
Charles Floyd George, Jr., Plano, Tex.; Howard A. Slack, Anchorage, Alaska, and Hugh Carroll Reeves, Plano, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Continuation-in-part of application Ser. No. 689,905, Dec. 12, 1967. This application July 17, 1970, Ser. No. 55,714
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 **5 Claims**

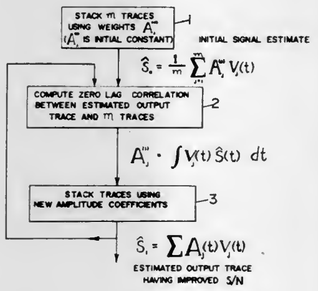
Processes for improving seismic data whereby a plurality of seismograms is standardized to have the same generating

wavelet. A reference seismogram is chosen and its autocorrelation is determined. The crosscorrelation between a first seismogram and the reference seismogram is determined. An operator is computed which transforms the crosscorrelation



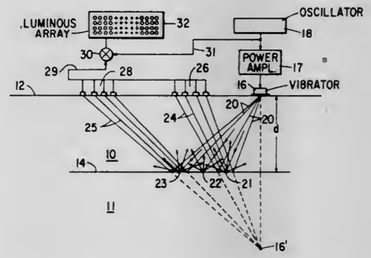
into the autocorrelation. The first seismogram and the operator are convolved to give the first seismogram the same wavelet as the reference seismogram. Additional seismograms can be standardized by this procedure using the same or a related reference seismogram.

3,622,967
OPTIMUM STACK
Manus R. Foster, Irving, and Raymond L. Sengbush, Austin, both of Tex., assignors to Mobil Oil Corporation
Filed Nov. 7, 1968, Ser. No. 774,152
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 MC **8 Claims**



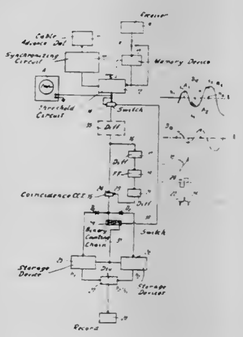
Seismic traces are weighted and stacked to produce an estimated output trace having improved signal-to-noise ratio. Those traces having the highest signal-to-noise ratio are weighted more heavily. The weights for each trace are determined from a detection of the signal between the estimated output trace and each of the seismic traces. The procedure is iterated so that the signal-to-noise ratio of the estimated output trace is progressively improved by recomputing the weights of the individual traces on each pass.

3,622,968
ELASTIC-WAVE HOLOGRAPHY USING REFLECTIONS
Daniel Silverman, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Continuation-in-part of application Ser. No. 735,294, June 17, 1968, and a continuation-in-part of Ser. No. 512,689, Dec. 9, 1965. This application May 15, 1969, Ser. No. 824,925
Int. Cl. G01v 1/28, 1/34
U.S. Cl. 340—15.5 **4 Claims**



The shape of a reflecting surface within an elastic-wave transmitting medium is determined by an adaptation of holography, by propagating through the medium from a source or source pattern coherent elastic waves that are scattered and reflected by the surface to an areal detector array, the outputs of which combined with a reference wave are recorded as an optical hologram. Reconstructions from the hologram show not only the reflecting surface but a virtual source or source pattern image due to reflections of the real source or pattern by the surface. Virtual source directions or pattern distortions are interpreted in terms of the shape or curvature of the reflecting surface.

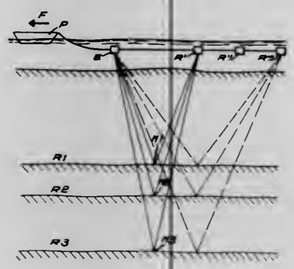
3,622,969
ACOUSTIC METHOD AND DEVICE FOR DETERMINING PERMEABILITY LOGS IN BORE-HOLES
Francisque Lebreton, Paris; Jean-Paul Sarda, Rueil-Malmaison, and Pierre Morlier, Paris, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison (Hauts de Seine), France
Continuation-in-part of application Ser. No. 649,725, June 28, 1967, now abandoned. This application June 11, 1969, Ser. No. 834,230
Int. Cl. G01v 1/00
U.S. Cl. 340—15.5 AC **26 Claims**



A method and device for determining through acoustic techniques the permeability of geological formations adjacent a borehole, wherein sonic wave trains are sequentially emitted into the formations from a source moving through the borehole to different depths and the wave trains are received at a detector located in fixed spaced relationship with the source, the received signals being then measured to

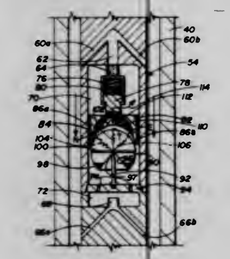
determine the ratio of the intensities of preselected oscillations of the received wave train which is plotted versus depth.

3,622,970
METHOD OF SEISMIC PROSPECTING
Leon Sayous, Pau, and Maurice Barbier, Ousse, both of France, assignors to Societe Anonyme dite Societe National des Petroles D'Aquitaine, Courbevoie, France
Filed June 19, 1969, Ser. No. 834,814
Claims priority, application France, June 21, 1968, 155964
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 AC 3 Claims



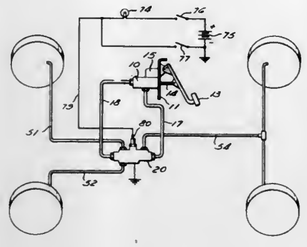
A method of seismic prospecting comprises transmitting into the ground a signal containing a series of discrete energy impulses of the same sign and constant amplitude in which the number of and intervals of time between the pulses are such that when the received signals are intercorrelated with a function of the transmitted signal to determine the travel time of the reflected waves the intercorrelation function of the transmitter signal has correlation residues, the amplitudes of which are less than a given fraction of the maximum amplitude of said intercorrelation function.

3,622,971
METHOD AND APPARATUS FOR SURVEYING THE DIRECTION AND INCLINATION OF A BOREHOLE
Jan J. Arps, Dallas, Tex., assignor to Arps Corporation, Dallas, Tex.
Filed June 30, 1969, Ser. No. 837,700
Int. Cl. 324/*48*; G01v *1/40*
U.S. Cl. 340—18 24 Claims



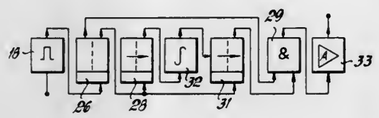
A magnetic reference member is maintained in a stationary position within a drill during drilling operations. The reference member is released in response to temporary cessation of the drilling operations and then seeks a predetermined reference orientation. In response to resumption of drilling operations, the reference member is again clamped in a stationary position and the relative position of the drill with respect to the reference member is detected and transmitted uphole during the drilling operations.

3,622,972
BRAKE FAILURE WARNING PRESSURE SWITCHES
Edward E. Herceg, Lakewood, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed Feb. 12, 1970, Ser. No. 10,786
Int. Cl. B60q *1/00*; G08b *21/00*
U.S. Cl. 340—52 C 15 Claims



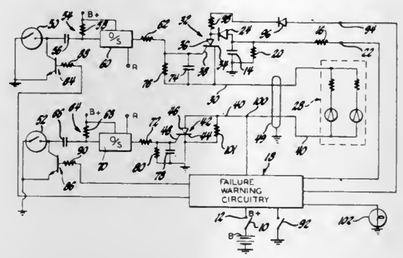
A warning switch is disclosed for continuously actuating an alarm device in response to a momentary fluid pressure unbalance in a dual hydraulic brake system. A piston is slidably disposed in the switch housing for movement in response to a fluid pressure unbalance. A switch contact unit having an insulated terminal and an insulated contact stud is detachably mounted on the switch housing. When the piston is momentarily displaced in response to a momentary fluid pressure unbalance, the terminal is grounded through the contact stud and through the piston to momentarily actuate the alarm device. A latching relay means is disposed within the switch contact unit housing and provides a continuous ground for the terminal in response to the momentary ground provided through the piston. In a first embodiment, the alarm device and the latching relay circuit are arranged in series, and a prove-out switch for testing the alarm device is interposed between the alarm device and the latching relay circuit. In a second embodiment and a third embodiment, the latching relay circuit is arranged in parallel with the alarm device, and an isolation means prevents actuation of the latching relay by the prove-out switch. In the second embodiment this isolation means includes a double pole latching relay, and in the third embodiment this isolation means includes a diode.

3,622,973
WHEEL SLIP DETECTION DEVICE
Helmut H. Domann, Leonberg, and Klaus H. Christ, Stuttgart-Durrlewang, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 24, 1969, Ser. No. 879,287
Claims priority, application Germany, Nov. 27, 1968, P 18 11 192.7
Int. Cl. B60t *8/10*
U.S. Cl. 340—52 R 13 Claims



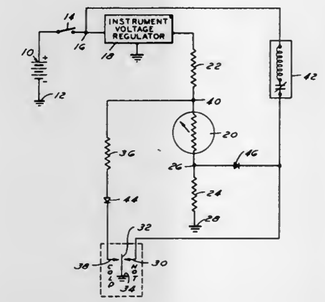
To detect transition from rolling to sliding of a wheel over a surface, a transducer coupled to the wheel provides output pulses having a repetition rate representative of wheel speed. The pulses are applied to a logic circuit including a bistable and a monostable multivibrator. An integrating circuit controls the unstable time of the monostable multivibrator in dependence on pulse repetition rate; sudden change in pulse rate itself is sensed by applying the pulses from the bistable and monostable multivibrators to a coincidence gate which activates a wheel slip detector (and, if desired, an override control to a brake, or accelerating arrangement for the wheel).

3,622,974
AIR CUSHION ACTUATION AND FAILURE WARNING CIRCUIT
Frederick A. Best, Milwaukee; Arden G. Gillund, Oak Creek, and Trevor O. Jones, Milwaukee, all of Wis., assignors to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 35,980
Int. Cl. B60r *21/00*
U.S. Cl. 340—53 2 Claims



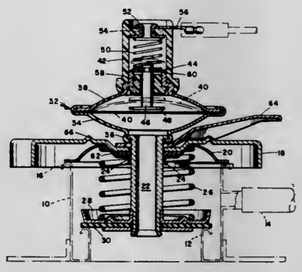
A control circuit for actuating an inflatable air cushion in a motor vehicle including an electrically fired actuator connected between a pair of SCR's which are triggered from respective vehicle deceleration sensors. A storage capacitor is discharged through the SCR's and actuator upon a deceleration of predetermined magnitude and duration. Failure warning circuitry is provided for simulated operation of the sensors and for detecting the voltage at a junction in the control circuit to determine whether various components of the control circuit are functioning properly, and if not, to provide an indication to the operator of the vehicle.

3,622,975
ENGINE TEMPERATURE-INDICATING APPARATUS
Lawrence J. Vanderberg, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 22, 1970, Ser. No. 48,216
Int. Cl. G08b *21/00*
U.S. Cl. 340—57 2 Claims



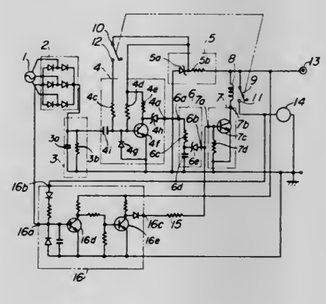
Apparatus for indicating motor vehicle engine or engine coolant temperature is described. The apparatus includes a gauge having movable means for indicating engine temperature, the gauge being operated by an electrical current from a source of electrical power and the indicator position being determined by the amount of current through the gauge. Resistance elements are connected in electrical circuit with the gauge and temperature-responsive switches associated with the engine are provided for selectively connecting and disconnecting the resistances in the gauge circuit. The connection or disconnection of the resistances produce discrete movements of the indicating means.

3,622,976
MALFUNCTION WARNING SYSTEM FOR PRESSURIZED COOLING SYSTEMS
John L. Howard, 12802 N. 23rd St., Phoenix, Ariz.
Filed June 1, 1970, Ser. No. 42,080
Int. Cl. B60q *1/00*; G08b *21/00*
U.S. Cl. 340—60 6 Claims



A warning system sensitive to loss of pressure as well as undue temperature rise in cooling systems such as in motor vehicle engines. A capsule with a diaphragm-operated electric circuit control senses the pressure loss and this is conveniently connected in the usual temperature-sensing probe circuit to provide a warning, ordinarily a lighted lamp in the driver's compartment. The pressure-sensing means is incorporated with the radiator cap or independently mounted on the radiator tank by means of a self-tapping nipple which supports the capsule carrying the pressure-sensing diaphragm.

3,622,977
SLIP WARNING SYSTEM FOR AUTOMOTIVE VEHICLES
Hisato Wakamatsu, and Noriyoshi Ando, both of Kariya-shi, Japan
Filed Oct. 8, 1968, Ser. No. 765,902
Claims priority, application Japan, Mar. 30, 1968, 43/21122
Int. Cl. B60t *8/08*
U.S. Cl. 340—62 8 Claims

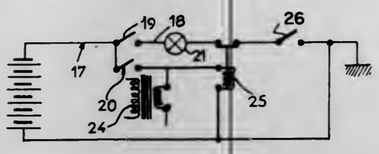


A slip warning system adapted for use in automotive vehicles, which is operative in such a manner that when the angular deceleration of a wheel has reached a set value, an alarm is sounded and at the same time the set value is raised and the alarm is continuously sounded when the wheel has stopped rotating after the angular deceleration of the wheel has reached said set value, and when the wheel has started rotating again upon release of a braking force, the alarm stops sounding.

3,622,978
WARNING ARRANGEMENT IN ANTITHEFT SAFETY LOCKING DEVICE ON AUTOMOTIVE VEHICLES

Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman S.A., Neuilly-sur-Seine (Haute de Seine), France

Filed July 30, 1969, Ser. No. 846,048
Claims priority, application France, Aug. 2, 1968, 161606
Int. Cl. B60r *25/04*
U.S. Cl. 340—64 7 Claims

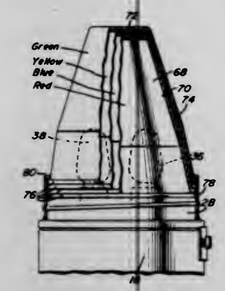


A warning arrangement in an antitheft safety lock on an automotive vehicle, operable by a removable key and comprising switch means engageable by said key upon insertion in its keyhole and normally kept open in the absence of said key, said switch means being caused to close by insertion and remaining of said key into said keyhole and to open upon removal of said key therefrom; and an electric-signalling circuit comprising electrically actuated alarm means connected in series with said switch means and energizable by the closing of said switch means.

3,622,979
DISTRESS LIGHT WITH SELECTIVELY USEABLE COLORED LENSES

Robert P. Dickerson, Hoisington, Kans., assignor to C. H. Carmichael, Hoisington, Kans., a part interest

Filed Sept. 23, 1969, Ser. No. 860,317
Int. Cl. B60q *7/00*; F21l *15/04*
U.S. Cl. 340—81 3 Claims

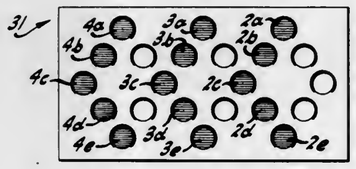


A distress light including a housing provided with a top wall from which electrically actuatable illumination means project. A plurality of generally cup-shaped lenses of different colors are provided and may be nested within each other and inverted over the illumination means. Further, the housing includes a removable retaining ring operative to releasably retain either one or all of the inverted cup-shaped lenses over the illumination means.
The distress light, while readily useable in many other environments for rendering a visual distress signal, has been specifically designed to provide an assemblage which may be compactly stored in a motor vehicle and utilized by a disabled motorist for signalling caution or requesting various types of aid. The distress light includes a pair of illumination assemblies, one being adapted to receive its power from a motor vehicle storage battery and the other being operable from a self-contained small battery source of electrical potential contained within the housing of the distress light. In this manner, an extremely dependable distress light is provided and it is to be further noted that the distress light is to be marketed with a plurality of different colored lenses for enclosing the illumination means of the distress light. The different color lenses may include a red lens for signalling the need for medical aid, a green lens for signalling a need for police aid, a blue lens for signalling a need for mechanical aid and an amber or yellow lens for signalling "caution" where no assistance is required.
In addition to the above, the illumination means operative from both the associated vehicle battery and the self-contained source of electrical potential include electrically actuated automatic cycling switch means serially connected between the sources of electrical potential and the illumination means whereby the latter will be alternately actuated.

3,622,980
DIRECTIONAL WARNING SYSTEM

Fred Russell Elledge, Jr., Napa, Calif., assignor to Cassell Co. Inc.

Filed Aug. 5, 1968, Ser. No. 750,236
Int. Cl. G08g *1/09*
U.S. Cl. 340—82 4 Claims

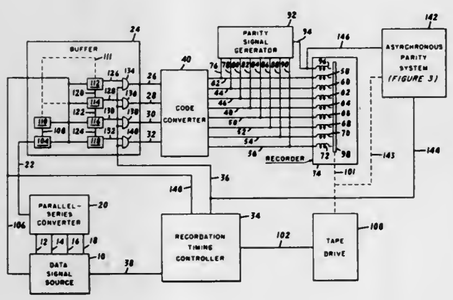


Method and apparatus for directing traffic from a distance in which a plurality of lamps are arranged in two interleaved groups with each group defining at least three arrowheads aligned one behind the other and arrowheads of separate groups being opposed. The lamps of a selected group are sequentially energized.

3,622,981
MAGNETIC TAPE RECORDING SYSTEM AND APPARATUS

Morton M. Greenbaum, New York, N.Y., assignor to Heuristic Concepts Inc., Westwood, N.J.

Filed Feb. 2, 1970, Ser. No. 7,819
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 10 Claims

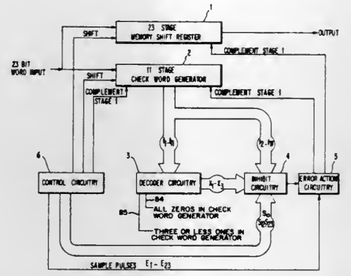


A system providing a computer-compatible record bearing information signals with parity indication therefor and bearing further parity indication in the absence of recorded information signals. Alternately operating apparatus provide such continuous parity indication, one apparatus being responsive to record movement and thus permitting elimination of incremental tape movement apparatus.

3,622,982
METHOD AND APPARATUS FOR TRIPLE ERROR CORRECTION

Bradford S. Clark, Jr., Derwood, and Alexander H. Frey, Jr., Gaithersburg, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,226
Int. Cl. H04l *1/10*
U.S. Cl. 340—146.1 8 Claims

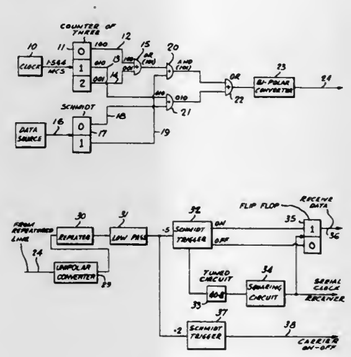


The invention relates to a simplified method for extracting triple error correction information from a (23, 12) Bose-Chaudhuri code which is the Golay code. In a 23-bit word having three or less errors, the method provides correction on a bit-by-bit basis. Each bit is assumed to be in error and corrected, the remaining 22 bits are then interrogated for two or less errors. Also disclosed is the apparatus for extracting the error correction information from the Golay code in a Bose-Chaudhuri code is comprised of a check word generator and shifting means, decoder circuitry, false error indication inhibit circuitry, control circuitry and error action circuitry.

3,622,983
PSEUDODENSITY MODULATION SYSTEM

Jacques V. Deregnaucourt, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal 101, Quebec, Canada

Continuation-in-part of application Ser. No. 579760, Sept. 15, 1966, now abandoned. This application Oct. 10, 1969, Ser. No. 868,281
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 2 Claims

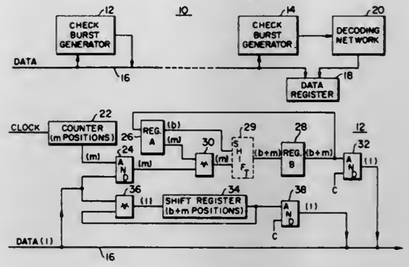


Data at a first bit rate which is to be transmitted on a data line having a much higher bit rate is encoded in a (3, 1) block code which is repeated as many times as necessary to fill all available bits on the data link. This data may be detected at the receiving end of the data link by the use of a low-pass filter, and the data can be reconstituted with very simple equipment.

3,622,984
ERROR CORRECTING SYSTEM AND METHOD

Hal P. Eastman, Del Mar, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,234
Int. Cl. G08c *25/00*; G06f *11/12*
U.S. Cl. 340—146.1 20 Claims

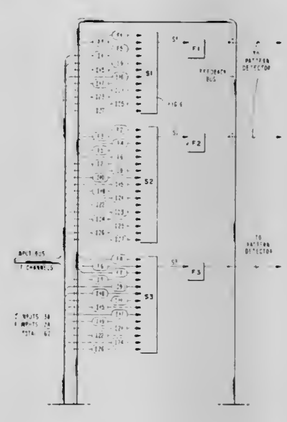


A system and method for detecting and correcting errors in binary data at speeds compatible with modern information storage and retrieval systems in which data to be transmitted or stored is processed to generate a two-part burst of check bits which is then added to the data, the first part of the burst representing a function of the data itself and the second part of the burst representing the position of each "one" bit in the data. Upon reception or readback the data is processed in the same fashion to generate a second burst of check bits which is identical to the first for identical data and which is compared with the first burst to develop a syndrome indicating the presence of any errors and their location. The developed syndrome may be processed to correct errors in the data.

3,622,985
OPTIMUM ERROR-CORRECTING CODE DEVICE FOR PARALLEL-SERIAL TRANSMISSIONS IN SHORTENED CYCLIC CODES

John K. Ayling, Fishkill, and Hua-Tung Lee, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,647
Int. Cl. G06f *11/12*; G08c *25/00*
U.S. Cl. 340—146.1 7 Claims



Errors in transmitted shortened cyclic code words are detected and corrected by unusually simple apparatus at a receiver and transmitter connected together by a bus. A 72-bit parallel code word, actually comprising a 64-bit data portion and an eight bit checking portion, is conceptually ex-

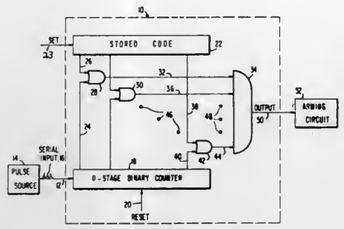
panded and treated as if it were 108 bits long. At both the transmitter and receiver, the word is split into four sequential groups and sent to an eight-position parallel feedback shift register via an 18-bit bus and intermediate circuits. Each bit on the bus is assigned a channel and the register positions are connected to selected channels through summing circuits, and to each other through feedback circuits, of varying complexity. At the transmitter, the final contents of the register are the checking portion of the code word. At the receiver, if there is an error, the final contents of the shift register indicate which bit in the data portion of the code word must be corrected. The eighteen bits on the bus are connected to selected ones of 27 conceptual channels of which 18 are real (connected to the bus) and nine are phantoms (not connected to anything). While no summing circuit connections are required for the phantom channels, each one of the 27 conceptual channels nevertheless has associated with it a known number of circuit connections. The amount of hardware is greatly reduced by connecting to the bus those conceptual channels requiring the least number of circuit connections and designating as phantoms those conceptual channels which would have required the most summing circuit connections. The total complexity of the feedback circuits and associated error location and correction circuits are similarly lessened.

3,622,986
ERROR-DETECTING TECHNIQUE FOR MULTILEVEL PRECODED TRANSMISSION
Donald T. Tang, Yorktown Heights, N.Y., and Hiashi Kobayashi, West Los Angeles, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,052
Int. Cl. G06f *11/08*
U.S. Cl. 340—146.1 **5 Claims**

Errors introduced during the transmission of digital sequences that have undergone correlative level coding with initial precoding are detected by a scheme that takes advantage of the inherent redundancy in correlative level coding. The received message is decoded in a succession of steps, the first of which is an inverse filtering operation that performs the exact inverse of the correlative encoding operation. If the channel was error-free during this transmission, the sequence constructed by the inverse filtering process is identical with the precoded sequence that was subjected to correlative level coding prior to transmission. If the channel was not error-free, then the sequence constructed by inverse filtering differs from the initial precoded sequence. Whereas the precoded sequence is constrained to a certain permitted number of voltage levels, say m levels, the sequence constructed by inverse filtering is not so constrained and may assume more than m levels. If more than m levels are occupied by the inversely filtered signal, this condition is detected as an indication of transmission error. The final decoding step is performed after this error test is accomplished.

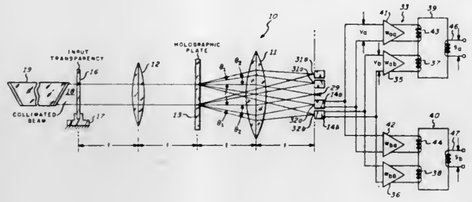
3,622,987
COUNT COMPARISON CIRCUIT
Harold Borkan, Princeton, N.J., assignor to The United States of America as represented by the Department of the Army
Filed May 5, 1969, Ser. No. 821,615
Int. Cl. G06f *7/00*
U.S. Cl. 340—146.2 **9 Claims**

Disclosed is a count comparison circuit for use in artillary fuze timers and the like. The comparison circuit comprises a counting register and a storage register. The complement of the number to be detected is stored in the storage register. OR gates are coupled to the corresponding stages of the re-



gisters and when the count is reached the OR gates activate and AND gate to produce an electrical output.

3,622,988
OPTICAL CHARACTER RECOGNITION APPARATUS
Henry John Caulfield, Carlisle, and William T. Maloney, Sudbury, both of Mass., assignors to Sperry Rand Corporation
Filed Sept. 19, 1969, Ser. No. 859,449
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 P **14 Claims**

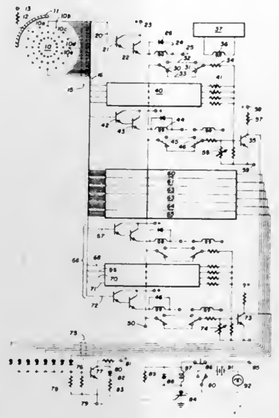


An optical character recognition apparatus comprising a signal processor including a light source and lenses for directing a light beam through both a transparency of the character to be recognized and a holographic plate containing Fourier transform interference patterns representative of the respective characters, the plate being positioned in the frequency plane of the processor. A plurality of photodetectors are positioned in the output plane of the processor at the discrete correlation points of the individual characters. The output signal of each photodetector is weighted and polarized and applied to a plurality of linear summing devices such that the individual summing devices provide a maximum output in response to predetermined characters while the remaining summing devices simultaneously provide output signals of substantially lower magnitude.

3,622,989
FINGERPRINT IDENTIFICATION
Earl R. Dowdy, Sr., Dallas, Tex., assignor to Carter Craft, Inc., Piano, Tex.
Filed Nov. 28, 1969, Ser. No. 880,712
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 E **5 Claims**

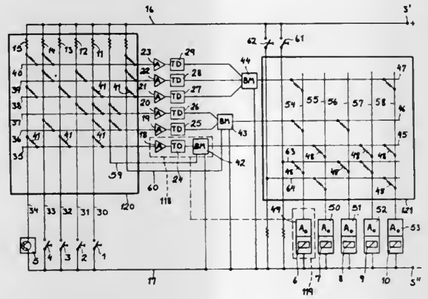
This invention relates to the identification of fingerprints automatically, and more particularly to a system in which conductive contact is made between a finger surface and an

array of electrodes with circuit means for dividing the electrodes into groups and logic means for control of the



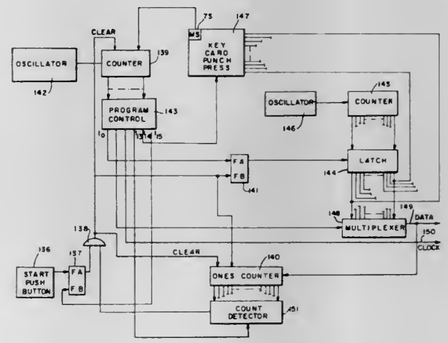
response of the system to predetermined combinations of signals from the electrodes.

3,622,990
ELECTRONIC PROGRAMMER FOR MACHINE-CONTROL SYSTEMS
Gerhard Lerch, Weilheim, and Egon Penzkofer, Munich, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich-Allach, Germany
Continuation-in-part of application Ser. No. 764,153, Oct. 1, 1968. This application Aug. 12, 1969, Ser. No. 851,148
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **15 Claims**



An electronic programming arrangement for machine operation in a system in which a switch arrangement represents a predetermined operating condition and is adapted to control an element, e.g. relay, electromagnetic valve or motor. The system has an amplifying transistor and circuitry for maintaining the transistor normally at a predetermined bias; the transistor is effectively connected with the machine-control element for operation thereof only upon the attainment of a predetermined operating bias. The switch arrangement includes a plurality of resistors in circuit with the transistor and the respective switch, each of which must be rendered effective before the transistor initiates the control operation. The switch arrangement may include a set of switch contacts in circuit with a DC source and the resistors in a crossbar array while the transistor operable by each set of switches becomes effective only when all of them have been set in a predetermined condition. The transistor serves as the input to a bistable switch device (e.g. a multivibrator flip-flop), also via a crossbar array, which can operate an output transistor arrangement as part of a switch system with similar crossbar arrays of resistors. A time delay network is provided between each of the transistors and the respective bistable multivibrators. The crossbar arrays are formed on a common printed-circuit plate.

3,622,991
ELECTRONIC LOCKING SYSTEM
Stanley Lehrer, Pompton Lakes; Raymond A. Robertson, Dover, and John C. Holme, Wayne, all of N.J., assignors to Electro-Optics Devices Corporation, Butler, N.J.
Filed Sept. 16, 1969, Ser. No. 858,470
Int. Cl. G06k *7/06, 17/00;* **H04q** *3/02*
U.S. Cl. 340—147 R **25 Claims**

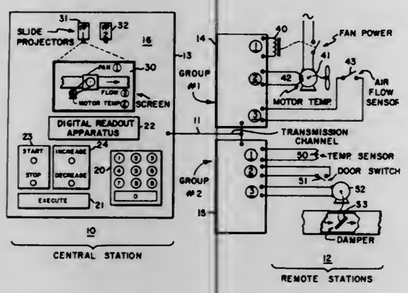


A door lock is opened by a binary-coded key card when inserted in an opening adjacent the lock. The binary access code for the lock is electronically changed for each new registrant to a particular room in a hotel or motel. The lock system includes a central control station and a plurality of substations, each serving a plurality of door units. Means are provided at a central control station for randomly generating a new binary access code, transmitting the access code through logic circuitry to the lock, and for controlling a punch press which produces a new key card containing the newly generated access code. The door control unit includes a card reader and memory circuit means for storing the newly generated access code. The memory circuit means for storing the newly generated access code. The memory circuit means stores the newly generated access code in a room key shift register, and a pass key access code in a pass key shift register. A card inserted into the card reader at the door is photoelectrically scanned to determine both its access code and whether the card is a pass key card or a room key card. The access code on the card key is thereafter electronically compared with the access data stored in the appropriate shift register. When the access code on the key card matches the stored data, the door lock is opened. In a disclosed embodiment, the means for producing the new key card includes a punch press having a plurality of appropriately placed punches controlled by solenoids connected to the output from a random number generator. When the new code is generated, the solenoids are actuated and openings are punched at predetermined locations in the key card. The circuit means at the central control station include master clock means for controlling the random number generating means and the multiplexing means which provide the central control station output data in serial form. Means are also provided for counting the number of binary "one" states in the central control output data. If the number of binary one states is unacceptable, a new access code is generated, whereas if the number of states is acceptable, the program cycle is completed.

3,622,992
SUPERVISION AND CONTROL APPARATUS WITH SELECTIVE DISPLAY

Frank H. W. Schoenwitz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 15, 1969, Ser. No. 866,459
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R **8 Claims**



A system for remote temperature supervision and control of a large, complex multispace air-conditioning installation with a central station connected over a transmission circuit to a plurality of groups of remote stations for controlling apparatus in multispaces. A central console at the central station has supervision and control apparatus which can be selectively connected by coded messages over the transmission circuit to any one of the remote stations. The central console has a display means for selectively displaying a schematic showing of the apparatus of any one group of remote stations so that upon sending a coded message to a particular remote group, the particular remote group sends a coded message back to the central console to select a schematic showing of the particular group, whereby further supervision and control can be accomplished from the central console upon referring to the schematic.

3,622,993
DIGITAL COMMUNICATION SYSTEM

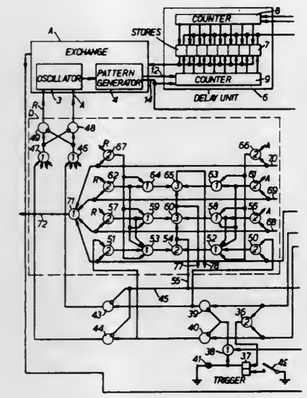
Winston Theodore Duerdoth, Ruislip, England, assignor to The Post Office, London, W. I., England

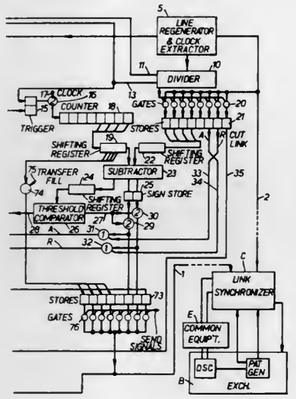
Filed Dec. 15, 1969, Ser. No. 885,000
Claims priority, application Great Britain, Dec. 18, 1968, 60,201/68
Int. Cl. H04j 3/06
U.S. Cl. 340—147 R **6 Claims**

A digital communication system is described in which the local oscillators of the different switching centers of the system are synchronized by selectively increasing or decreasing the frequencies of the oscillators by preset amounts in response to phase advancing and retarding control signals respectively.

Each switching center includes for each incoming channel an aligner for absorbing phase differences between incoming digits and local digit times as determined by the oscillator. Each switching center includes for each link joining it to another switching center a comparator for comparing the phase differences between incoming digits and local digits in the centers at the ends of the link, the comparator producing a phase advancing or retarding control signal whenever the difference between the phase differences exceeds a threshold value, the sense of the difference determining the type of control signal.

To avoid blocking of the control system due to the simultaneous generation of conflicting control signals in any center the control signals from the different links are progressively inhibited in ascending order of importance of the links whenever the comparators detect excessive differences, until control signals of a single sense only are produced. To minimize the disturbance of the more important switching centers the threshold value above which the control signals are produced are larger links to such centers than for links to centers of





lesser importance only, and the preset frequency shifts may be smaller for the more important centers. In any closed loop the threshold value of a direct links between two centers is less than the sum of the threshold values in any series of links joining them.

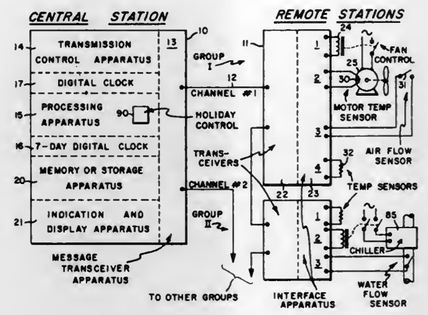
3,622,994
CONTROL AND SUPERVISION SYSTEM HAVING DATA STORAGE

Frank H. W. Schoenwitz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 11, 1970, Ser. No. 10,501
Int. Cl. H04q 5/00, 11/00
U.S. Cl. 340—152 **10 Claims**

A control and supervision system for controlling and supervising the operation of a building air-conditioning system. A central station and a plurality of remote stations connected by a communication channel, wherein the central station has data associated with the remote stations stored in a memory.

As messages are received from the remote station, a portion of the message can selectively operate the memory apparatus

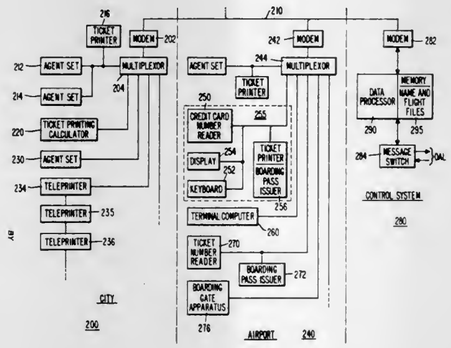


to obtain information from the memory associated with the particular station from which the message originated.

3,622,995
AUTOMATIC TICKET/CREDIT CARD CHECK-IN SYSTEM

Uselma Clarke S. Dilks, Bloomfield Hills, Mich.; James E. Hopkins, Berwyn; Carl W. Marquis, Lionville, and Howard R. Nonken, Downingtown, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 21, 1969, Ser. No. 809,277
Int. Cl. G07f 7/02
U.S. Cl. 340—153 **16 Claims**

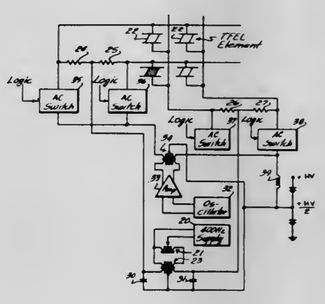


Data processing systems for automatic, on-line checking of numbered reservations and/or the control of credit card purchases, without referencing any data on the ticket or credit card itself. Such systems include a central processor, a remotely addressable central data store for reservation and customer account information, and remote terminal input apparatus, printer apparatus and ticket or card number reader apparatus. The remote terminal input apparatus includes ticket, credit card and freight bill number readers, in addition to keyboard input apparatus for on-line access to numbered reservations or accounts. One such system also includes automatic boarding pass issue apparatus responsive to the central processor system and pass-operated boarding gate apparatus.

3,622,996
ELECTROLUMINESCENT DISPLAY

James L. Bath, New Brighton, and Donald C. McIntyre, Roseville, both of Mich., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,076
Int. Cl. G08b 5/36
U.S. Cl. 340—166 **1 Claim**

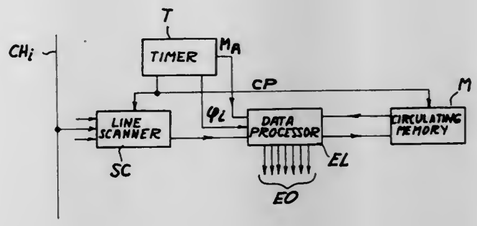


An electroluminescent display panel controlled by AC flooding and exciting voltages of different frequencies for obtaining rapid response times.

3,622,997
SIGNAL DISCRIMINATOR FOR TIME-SHARING COMMUNICATION SYSTEM HAVING PERIODIC LINE SAMPLING

Luigi Casella; Aldo Perna, and Giuseppe Valbonesi, all of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 20, 1970, Ser. No. 29,781
Claims priority, application Italy, Apr. 18, 1969, 15734A/69
Int. Cl. H04g 3/00
U.S. Cl. 340—167 **6 Claims**

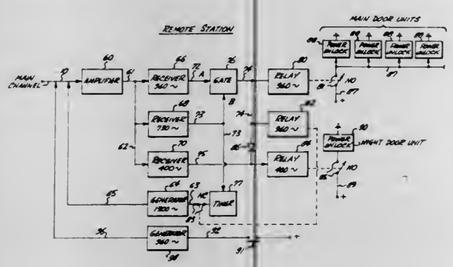


To distinguish between DC pulses of different length detected by periodic sampling of a given transmission line, a data processor evaluates a combination of criteria including the instantaneously sampled line voltage (A), the continuity or lack of continuity of that voltage for a prolonged period (D_e'), and the output of the data processor in a preceding sampling interval. This output is preserved, for subsequent reevaluation, in the form of a digital code stored in a time slot of a circulating memory assigned to the line under test. Some of the output signals of the data processor identify transitory conditions which, in the next evaluation cycle, must be converted into one of two possible definite conditions recognized as significant line-voltage criteria.

3,622,998
REMOTE CONTROL SYSTEM WITH VERIFICATION CAPABILITY

Joe M. Kortman, and Joseph Schulein, both of Vancouver, Wash., assignors to H. Dutton Hayward, Trustee of the Hilda Trusts, Tacoma; Joseph Schulein and Margaret A. Schulein, Vancouver, Wash., part interest to each

Filed Mar. 2, 1970, Ser. No. 15,426
Int. Cl. H04q *9/00*; G08b *5/00*
U.S. Cl. 340—171 R **4 Claims**

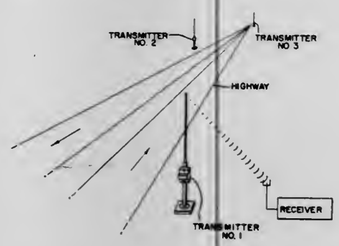


A system for operating actuators, such as electrically operable door locks, at one or more remote stations by means of a control unit at a central station. A lock signal of predetermined frequency is generated upon operation of a lock button on the control unit. The lock signal is supplied to the remote station via a main communication channel to deenergize power units on the doors and permit the spring-loaded door locks to lock. An indicator lamp is provided at the central station to verify the proper locking of the doors upon reception of a return signal from the remote station. To open the doors, an unlock signal of another predetermined frequency is supplied to the remote station via the main communication channel line to energize the power units and overcome the spring forces on the locks. The unlock signal is initiated upon operation of an unlock button on the central station control unit or by operation of an unlock button on a second control unit at the remote station. A signal of a third predetermined frequency is supplied upon operation of a night control button on the central station control unit to open a designated door at the remote station used for authorized night entry.

3,622,999
BINARY-CODED EMERGENCY COMMUNICATION SYSTEM

Frank C. Getz, Jr., Upper Providence, Pa.; James A. Fraunfelder, Franklin, Mass.; Sidney L. Kauffman, Jr., Durham, N.C., and William H. Kurlans, Philadelphia, Pa., assignors to Gulf & Western Systems Company, New York, N.Y.

Continuation-in-part of application Ser. No. 654,649, July 19, 1967, now abandoned. This application June 30, 1969, Ser. No. 837,653
Int. Cl. H04q *1/00*
U.S. Cl. 340—171 R **9 Claims**

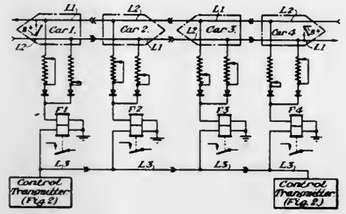


There is provided a binary-coded signal communication system including a plurality of transmitters for transmitting binary-coded frequency signals and a receiver for receiving said binary signals, wherein each of the transmitters includes a means for generating at least one address word and a message word, wherein each word is comprised of a series of binary-coded frequency pulses selected from a first frequency and a second frequency; and, the receiver includes means for separating the reference frequency from the series of binary-coded first and second frequencies, and a binary-coded decimal-to-decimal decoder means for decoding the series of binary-coded first and second frequencies and providing decimal indications thereof.

3,623,000
TRAINLINE CONTROL SYSTEM

Raymond C. Franke, Glenshaw, and George W. Donaldson, McKeesport, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 27, 1970, Ser. No. 32,228
Int. Cl. B60l *15/32*
U.S. Cl. 340—172 **10 Claims**

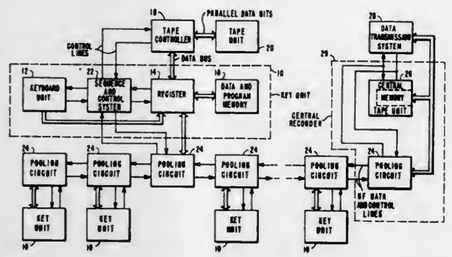


One winding of a differential relay on each car is connected through successively increasing resistors to a constant voltage trainline thus supplying a successively decreasing constant current to each relay. The other winding of each relay is connected to another trainline through which pulses of variable duration are transmitted. By increasing the pulse duration, the controller increases the number of relays which are successively energized as the sum of pulse current plus constant current exceeds each relay pickup valve. Means for operating the system from either end of the train are also provided.

3,623,001
INPUT DATA PREPARATION SYSTEM

Robert A. Kleist, Anaheim; David W. Mayne, San Juan Capistrano, and Robert L. Thorne, Anaheim, all of Calif., assignors to Peripheral Business Equipment, Inc.

Filed Jan. 6, 1970, Ser. No. 951
Int. Cl. H04l *5/00*; G06f *7/00*
U.S. Cl. 340—172.5 **39 Claims**

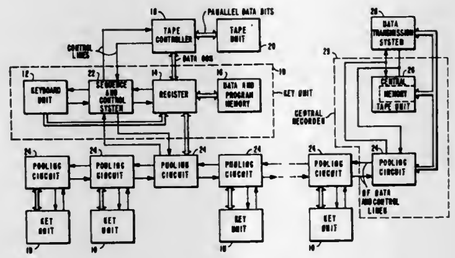


An input preparation system is provided that can generate a series of data records on a single high-capacity storage member in computer compatible form from a variable number of input stations that may operate in different modes. Each of a number of input data preparation systems includes a key board and a memory for storing at least one block of data, and a sequencing control that can govern output transfer of a stored block of data when the unit is employed alone, or accept external command when a number of units are to be used together. The data input systems may comprise keyboard units, magnetic tape units, combinations of these, or other units, such as card systems, that are capable of storing a block of data. In order to combine the data blocks, each input system is coupled to a separate pooling circuit in an intercoupled queuing chain of pooling circuits. Blocks of data may be initially generated asynchronously at relatively slow, operator-controlled rates, and then queued on a priority basis determined by location in the chain and the status of transfer requests to a single-record generating unit, or to a data transmission system. The arrangement is such that different system modes, such as data entry, merging and verifying may be used at different stations along the chain. Each single station may be employed independently, together with appropriate recording equipment, or coupled in a short length or long length pooling chain, with acceptable operator delay times being achieved at the lowest priority station in a chain of substantial length.

3,623,002
DATA-POOLING CIRCUITS

David W. Mayne, San Juan Capistrano, and Alan K. Jennings, Anaheim, both of Calif., assignors to Peripheral Business Equipment, Inc.

Filed Jan. 6, 1970, Ser. No. 968
Int. Cl. H04l *5/00*; G06f *7/00*
U.S. Cl. 340—172.5 **12 Claims**



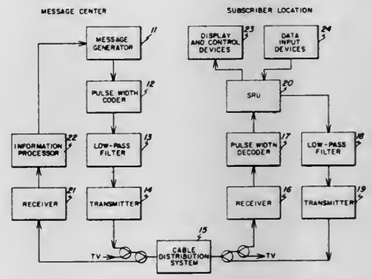
Modular pooling circuits for transferring data Blocks are provided that can be serially coupled in variable length chains of substantially indefinite capacity and provide automatic queuing of the data blocks. To utilize data characters provided in parallel form from a data unit, and to enter these into the pooling chain, each pooling circuit module includes a bidirectional parallel-to-serial converter circuit, a pair of signal repeaters for transferring command and data signals along the chain, and priority selection and signal-switching circuits. Each pooling circuit generates signals at selected frequencies for the command data signals. Each circuit also operates in a repeater mode for both command and data signals treansferred along the chain, until the associated data unit has available data and the pooling circuit occupies the highest position that is requesting priority in the chain. Data and command signals that are transferred along the chain are reconstituted, as to timing and waveform, but otherwise transferred without modification. When locally initiated data and command signals are transferred, lower priority units are effectively disconnected from the chain, and higher priority units are effectively disabled until the transfer is complete.

3,623,003
SUBSCRIBER-RESPONSE UNIT

Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 3, 1970, Ser. No. 16,085
Int. Cl. H04g *3/00*
U.S. Cl. 340—172.5 **13 Claims**

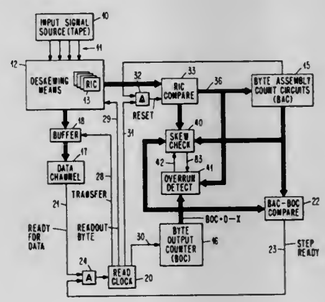
A subscriber response unit (SRU) is disclosed wherein data may be communicated to and from a central control system or message center. The SRU responds only the received data properly address coded for that particular unit. Information entered into the SRU locally is automatically read out to the message center in response to an interrogation signal from the message center. The SRU is able to accept both high and low data input rates and can store information for future use. Further, the SRU can perform switching or controlling operations in response to properly address coded signals from the message center.



3,623,004
BUFFERING AND TRANSFERRING SIGNALS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,871
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **5 Claims**



U.S. Pat. No. 2,921,296 discloses a deskewing system usable to transfer signals from a magnetic tape to a byte-oriented data-processing system. The present disclosure teaches that buffering efficiency can be improved by providing dual output counters, as opposed to the output counter (ROC) 100 in the above-cited patent. Byte assembly count (BAC) tallies the number of assembled input bytes to be transferred to the byte-oriented system. A byte output counter (BOC) tallies the number of bytes that have been transferred to the byte-oriented system. Comparison between the tallies in BAC and BOC causes bytes to be transferred to the byte-oriented system. This arrangement uses the deskewing buffers as byte-oriented buffers.

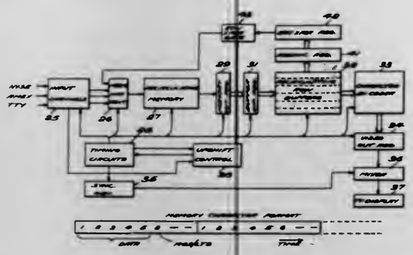
3,623,005
VIDEO DISPLAY APPARATUS EMPLOYING A COMBINATION OF RECIRCULATING BUFFERS

Richardson S. Roberts, Jr., Cherry Hill, N.J., assignor to Ultronic Systems Corp., Mount Laurel, N.J.

Original application Aug. 1, 1967, Ser. No. 657,664. Divided and this application Jan. 20, 1970, Ser. No. 4,207
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **5 Claims**

Coded characters from a plurality of input sources are stored in different intervals of a recirculating memory, each

interval containing the characters for a row of the display. Characters for a display row are loaded into buffer register means which is then recirculated and the contents encoded during successive recirculations to produce signals representing the portions of the characters to be displayed on respective lines of the display row. Information from one source is



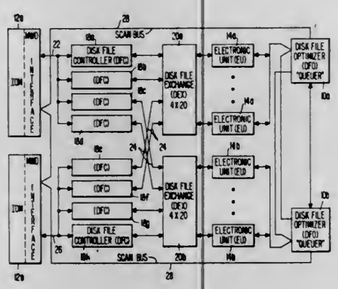
displayed in a plurality of rows which are upshifted to rows thereabove and new information displayed in the bottom row, by delaying the vertical sweep relative to said encoding during upshift. Information from another source is displayed in rows which do not upshift, by delaying the decoding so that it remains unchanged with respect to the vertical sweep.

3,623,006

QUEUEING DEVICE FOR THE SELECTION OF REQUESTS FOR ACCESS TO A STORAGE MEDIUM

George Balakian, Malvern; Murray Klug, King of Prussia; Hans K. Forell, Arcola, and Leo C. Daiuto, West Chester, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 29, 1970, Ser. No. 50,734
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 **22 Claims**



In a data processing system which includes secondary storage media, such as magnetic diyks, the present device, descriptively called a disk file optimizer, stores a list or queue of requests for disk access, and using positional information obtained from the several disks in the secondary storage system, selects the most optimum request for execution based on minimum latency time. The device performs a queueing function and may be termed a "queuer."

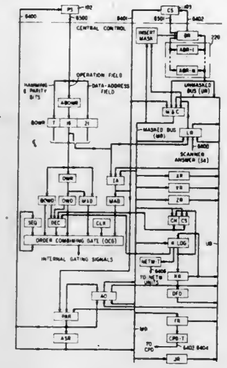
3,623,007

FEEDBACK CONTROL MONITOR FOR STORED PROGRAM DATA PROCESSING SYSTEM

Barry J. Eckhart, Ottawa, Province of Ontario, Canada, and Erna S. Hoover, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 14, 1967, Ser. No. 645,921
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **17 Claims**

Although it is known that the more urgent tasks which are to be processed by a stored program controlled data processing machine can be accommodated on a real-time basis by controlling the machine to work on these tasks more often, this procedure has not been sufficient to prevent overload during periods of heavy traffic. To assure efficient



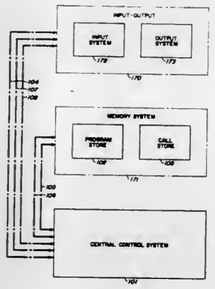
operation, a measure of machine occupancy is periodically obtained and is employed to control the number of new work entries which the machine is allowed to process per unit time interval and per visit to that class of work.

3,623,008

PROGRAM-CONTROLLED DATA-PROCESSING SYSTEM

Anton H. Doblmaier, Summit, N.J.; John A. Harr, Geneva, Ill.; Frank F. Taylor, West Chicago, Ill., and Werner Ulrich, Glen Ellyn, Ill., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original application Dec. 31, 1963, Ser. No. 334,875, now Patent No. 3,570,008. Divided and this application Nov. 24, 1967, Ser. No. 685,691
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **47 Claims**



A program-controlled data-processing system in which "three-cycle overlap" execution of program instructions is employed. The processor comprises three circuit arrangements which are concurrently operative with respect to three successive program order words. Each order word which is executed by the control arrangement is first brought into one circuit arrangement (the Buffer Order Word Register) and at a discrete time thereafter each instruction is moved to a second circuit arrangement (the Order Word Register). While the order word is in the Buffer Order Word Register, the instruction portion of the order word is decoded by a corresponding decoder circuit (the Buffer Order Word Decoder) and while it resides in the Order Word Register the instruction portion of the order word is decoded by a second decoder, namely, the Order Word Decoder. The third circuit

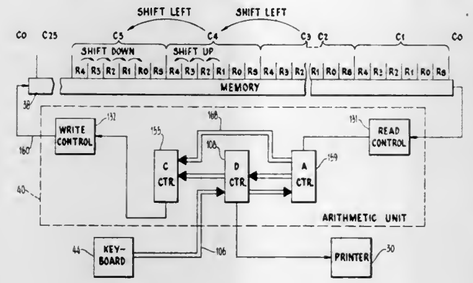
arrangement serves to transmit commands to the program store to obtain a next succeeding order word from the Buffer Order Word Register.

3,623,009

ELECTRONIC PRINTING CALCULATOR

Robert A. Ragen, Hayward, Calif., assignor to The Singer Company

Filed Nov. 18, 1968, Ser. No. 776,583
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **20 Claims**



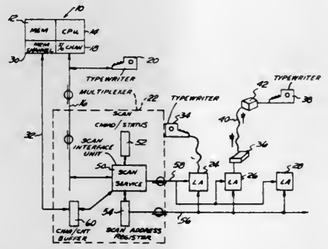
A desk-type calculator having a set of decimal digit keys, a decimal point key, a decimal point-setting switch, a set of function-initiating keys, a printing means, and electronic control means. A number, which may include either or both a whole portion and a decimal fraction portion, is entered into a memory means by operation of the digit keys and/or the decimal point key. Operation of a function key causes the number to be printed on a paper strip. The entered numbers are printed so that the least significant actually entered digits occupy the rightmost print positions; the decimal points are not intentionally aligned vertically. Upon execution of the operation commanded by the function key, such as, for example, addition, multiplication, division, etc., the result, or answer, is automatically printed on paper strip with the decimal point appearing at a location determined by the setting of the decimal point wheel.

3,623,010

INPUT-OUTPUT MULTIPLEXER FOR GENERAL PURPOSE COMPUTER

Kenneth E. Burkhalter, Ann Arbor, Mich., assignor to Information Control Systems, Inc., Ann Arbor, Mich.

Filed May 23, 1969, Ser. No. 827,420
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **8 Claims**



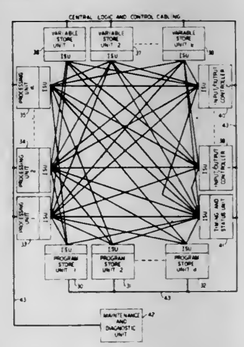
A plurality of input-output devices are serviced by a single general purpose computer on a time-shared basis through a multiplexer which transfers data between the computer and the devices. To enter data to the computer, the multiplexer continually scans the I/O devices and enters data from any which it finds transmitting, to the computer memory, in a manner which accommodates the various data rates and word formats of the devices, employing a direct memory access technique. The multiplexer includes one clock for each different I/O device data rate, the devices are scanned at a substantially higher rate than any of the clocks, and input data is assembled in an assigned memory location under control of a scan signal and a particular clock. The reverse process is employed to disassemble feed output information from the memory to a particular I/O device addressed under control of the computer accumulator.

3,623,011

TIME-SHARED ACCESS TO COMPUTER REGISTERS

Joseph S. Baynard, Jr., Burlington, N.C.; Ronald L. Coffin, Cedar Rapids, Iowa; James E. Cullom, Greensboro, N.C.; Nathan Ehrlich, Morris Township, Morris County, N.J.; Garner Jones, Burlington, N.C.; John W. Olson, Morris Township, Morris County, N.J., and Dennis F. Widman, Lake Hiawatha, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Coffin, said Ehrlich and said Olson and Western Electric Company, Incorporated, New York, N.Y., by said Baynard, said Cullom, said Jones and said Widman

Filed June 25, 1969, Ser. No. 836,241
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **24 Claims**



A multiprocessor computer system is disclosed in which a number of processing units, program storage units, variable storage units and input-output units are selectively combined to form one or more independent data processing systems. A maintenance and diagnostic subsystem has access to all of the critical elements of the data processing system by means of a bussing system independent of the normal data paths. The maintenance and diagnostic subsystem uses this bussing system to test and monitor portions of the data processing system, reading data from and writing data into the various elements, as desired. The bussing system includes time-divided bilateral data links for such data reading and writing.

3,623,012

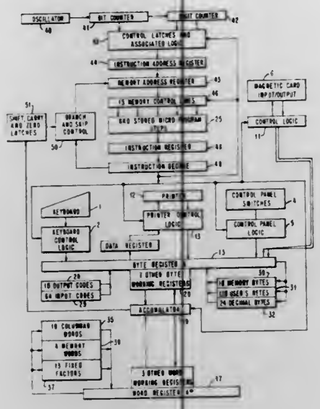
ACCOUNTING SYSTEM WITH PROGRAM BY EXAMPLE FACILITIES

Denis E. Lowry, Lexington, Ky., and William L. McDonald, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,757
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 **4 Claims**

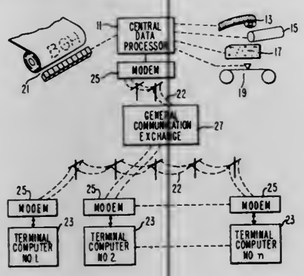
The accounting system is operator-oriented and includes arithmetic and stored program facilities. The system features entry of program instructions through a "program by example" routine in which the operator enters control (program) information concurrently with the entry of data during conventional typing routines. That is, as the problem is worked, the steps in the operation are stored in program memory. The system is then able to execute the program in a repetitive manner accepting additional keyed-in data, performing calculations, and printing necessary output documents. The system is particularly useful with accounting forms having information arranged in columns. Additional features involve manipulation of column registers, one associated with each

column, the branching techniques, decimal point control, determination of true percentages (Percent Equal), use of



the Alpha Emit function and the provision of various input and output devices including a magnetic card apparatus.

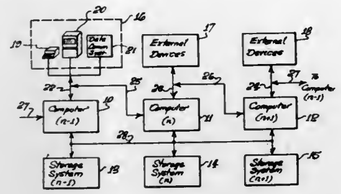
3,623,013
DATA PROCESSING NETWORK AND IMPROVED TERMINAL
Cornelius C. Perkins, Birmingham, and Godfrey Liu, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Aug. 13, 1969, Ser. No. 849,822
Int. Cl. H04q *3/00*
U.S. Cl. 340—172.5 **10 Claims**



A data processing system having a central or main data processor and a plurality of remote data terminals each having at least one selectively changeable terminal address. The central processor is coupled in a poll-select environment to the various remote terminal processors via a communication link. The respective remote terminals are able to modify the poll-select sequence as set up by the central processor by selectively changing its terminal address for either the poll or select mode. Additionally, groups of the remote terminals may be assigned a selectively changeable group or broadcast address which may be changed either locally at the remote terminal or remotely by the central processor.

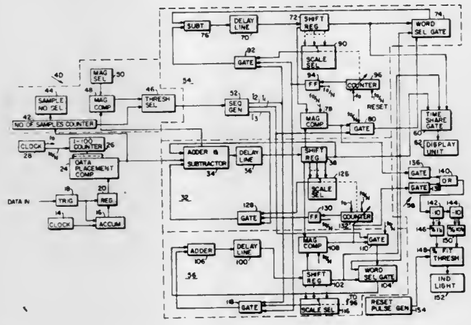
3,623,014
COMPUTER COMMUNICATIONS SYSTEM
Melvin L. Doelz, Corona Del Mar; Robert F. Martin, Orange, and Fred K. Morioka, Tustin, all of Calif., assignors to Control Data Corporation, Santa Ana, Calif.
Filed Aug. 25, 1969, Ser. No. 852,714
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **7 Claims**

A computer controlled, data communications system is provided for transmitting data between a plurality of external devices. The system comprises up to eight, general purpose, digital computers, each with an associated disc-file storage system. The computers and the disc-file storage units are organized such that communication between the computers is made via the disc-file storage associated with each computer, not directly between the computers themselves. Each group of external devices is coupled to a primary and secondary



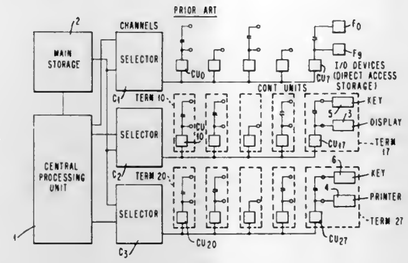
computer such that upon the failure of the primary computer, the secondary computer will procss the data for its primary group of devices as well as for those external devices for which it is the secondary computer. Each disc-file storage unit is the primary storage for one computer and the copy storage for one additional computer. Upon the failure of a primary disc-file storage unit, a computer can operate with the copy storage unit.

3,623,015
STATISTICAL PATTERN RECOGNITION SYSTEM WITH CONTINUAL UPDATE OF ACCEPTANCE ZONE LIMITS
Herbert E. Schmitz, Amherst, and Kenneth D. Labaugh, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Sept. 29, 1969, Ser. No. 861,668
Int. Cl. G06f *7/02*, *15/18*
U.S. Cl. 340—172.5 **17 Claims**



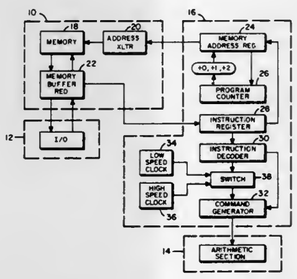
A pattern recognition system which employs three similar addressable memories. Data representing an upper limit distribution pattern of a series of measurements on a particular parameter is stored in one memory, while data reflecting a lower limit distribution pattern of the measurements on the same parameter is contained in the second memory. Then new data reflecting additional parameter measurements is loaded into the third memory and compared with the data in the other two memories to see if this new data "fits" within the acceptance zone defined by the upper and lower limit patterns. If there is a fit, then the system emits a recognition signal which indicates that the additional parameter measurements belong to the same parameter set which established the original upper and lower limit patterns. Following this, the upper and lower limit patterns contained in the first and second memories are updated to include the new data, and then more parameter measurements are made and compared with the updated acceptance zone. This process continues with still more incoming measurement data so that the upper and lower limit patterns are continually modified to accommodate long term changes in the pattern to be recognized.

3,623,016
ELECTRONIC KEYBOARD
Vaughn D. Winkler, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,884
Int. Cl. G08b *29/00*; H04l *3/00*
U.S. Cl. 340—172.5 **10 Claims**



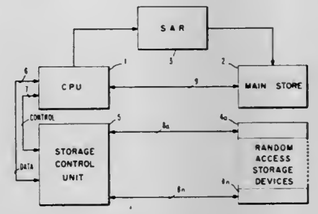
Keyboard providing character coded information with each key depression is described. Information storage apparatus is included within the keyboard for storing one or more discrete character codes. By suitably controlling the access to the stored information, a plurality of multicharacter messages may be obtained with each key depression. The memory may be of the read-write type permitting security control of the data transmitted between the keyboard of a terminal and the central processing unit of a computer. Provision is included in each key for providing an electronic interlock to permit operation in a burst mode.

3,623,017
DUAL CLOCKING ARRANGEMENT FOR A DIGITAL COMPUTER
William P. Lowell, St. Paul, and Harry W. Moore, III, St. Croix Beach, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,546
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **4 Claims**



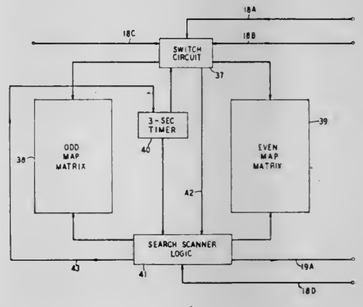
In most general purpose digital computers, there are some instructions that require a relatively long execution time. Some examples of these extended sequence instructions would be multiply, divide, square root, etc. When starting the execution of this type of instruction, it is necessary to interrupt the normal timing of the computer and to implement an "arithmetic hold" condition which, in effect, keeps the computer from fetching a new instruction while the extended sequence instruction is being executed. In the present invention, two 4-phase different-speed clocks are utilized. The pulse repetition rate of the first low-speed clock may be substantially less than that of the second high-speed clock. Suitable control circuits are provided for sensing when an extended sequence-type instruction is involved and for switching in the high-speed clock such that the extended sequence instruction is executed at a higher rate than is a normal instruction.

3,623,018
MECHANISM FOR SEARCHING FOR SELECTED RECORDS IN RANDOM ACCESS STORAGE DEVICES OF A DATA PROCESSING SYSTEM
James R. Evans, Endicott, and John W. Roossien, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,610
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **5 Claims**



A mechanism is disclosed for making complex record searches in random access storage devices. A plurality of parameter values, for example, the department number, age, years of service, are each compared in succession with upper and lower limit parameter values. The parameter values are found in each record by the use of a beginning address of the byte in the record at which the parameter value begins and by a byte count value which is equal to the number of bytes required to define the parameter. A plurality of logical operators associated with each parameter define combinations of parameter tests which must be met in order to satisfy the search criteria.

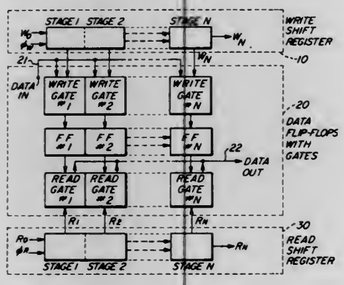
3,623,019
PROGRAMMED TIME-OUT MONITORING ARRANGEMENT USING MAP TIMING
George S. Groth, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 26, 1969, Ser. No. 880,277
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **11 Claims**



Multiple, multistation, data lines are independently operable when polling the stations on each line to determine their readiness for communication. Each polling interrogation signal applied to a line causes the storage of a line-timing status bit in one of two duplicate memories in a supervising office. Each such memory contains one bit location per data communication line. Upon the occurrence of a station response to the interrogation, the timing status bit for the corresponding line is erased from memory. The two memories are alternately utilized for receiving timing bits during recurrent periods which are equal to a minimum allowable timeout interval for a station. Prior to each such use, a memory is scanned to detect any timing bits persisting therein and thereby indicating a timeout condition on the corresponding line. Such a condition further indicates a need

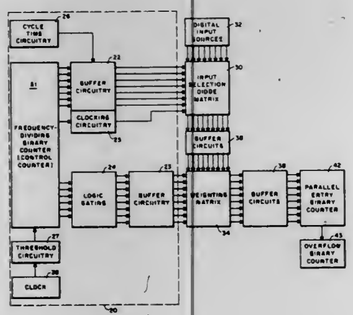
for a special control routine for the timed out station. Both apparatus and program embodiments of the invention are disclosed.

3,623,020
FIRST-IN FIRST-OUT BUFFER REGISTER
Roger Alain Mao, Somerville, N.J., assignor to RCA Corporation
Filed Dec. 8, 1969, Ser. No. 883,181
Int. Cl. G06f *5/06*
U.S. Cl. 340—172.5 **13 Claims**



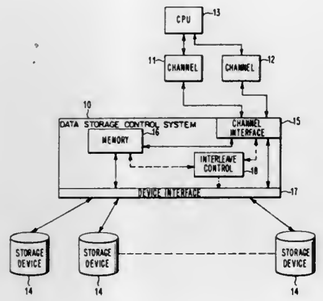
A storage means receives, and stores in separate stages, the bits of serially transmitted digital data. The stored data is read out during the read-in period at a rate which may be equal to or slower than that of the input data and which may start at the time the first bit is received. Output gates coupled to the storage means stages are enabled, one at a time, to read out the stored bits in the same order in which they are received.

3,623,021
DIGITAL WEIGHTING MULTIPLEXER WITH MEMORY
Lawrence B. Haskin, Liverpool, and Samuel M. Korzekwa, Baldwinsville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 15, 1969, Ser. No. 885,134
Int. Cl. H04j *7/00*
U.S. Cl. 340—172.5 **2 Claims**



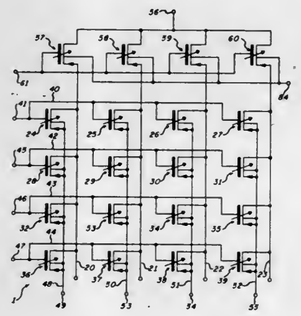
A system which offers a new and improved technique in the realm of multiplexing operations having the capability of scanning large numbers of digital inputs, assigning weights of importance to these inputs and storing the weighted sum in a memory. The present technique is especially signficant in that it is a completely digital operation, eliminating the need for strict specifications on such input parameters as pulse length and amplitude, and it permits the processed result to be stored indefinitely in a counter or until the information is needed.

3,623,022
MULTIPLEXING SYSTEM FOR INTERLEAVING OPERATIONS OF A PROCESSING UNIT
Robert C. Day, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,482
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **12 Claims**



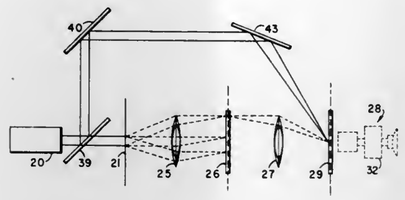
Apparatus for controlling the operation of a plurality of data storage devices and the transfer of data between the devices and one or more data processing systems. The apparatus includes complete primary and partially duplicative secondary circuitry which responds to certain combinations of instructions from separate sources in the same data processing system or from different data processing systems to selectively run a primary operation at full speed or interleave a primary operation and a secondary operation.

3,623,023
VARIABLE THRESHOLD TRANSISTOR MEMORY USING PULSE COINCIDENT WRITING
Robert E. Oleksiak, Carlisle, Mass., assignor to Sperry Rand Corporation
Filed Dec. 1, 1967, Ser. No. 687,166
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **6 Claims**



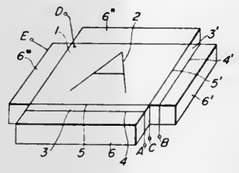
A computer memory utilizing variable threshold transistor memory cells for storing respective digital bit data. Each transistor is characterized by an electrically controllable conduction threshold which is set by the simultaneous application of pulses to the gate electrode and to the substrate, each pulse having half the amplitude required for threshold setting. The gate pulses are square waves centered about zero volts while the substrate pulses are unidirectional and of a polarity representing the binary state into which the memory cell is to be placed. Thus, the memory cells are placed into the ZERO state and the ONE state during respective portions of the writing cycle.

3,623,024
SIGNAL RECOVERY SYSTEM USING OPTICAL MIXING
Dale Leslie Hamilton, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Feb. 9, 1968, Ser. No. 704,456
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **24 Claims**



An apparatus for detecting information from a light-responsive storage medium whereby plain parallel monochromatic light is passed through the medium to obtain resultant optical waves which are combined with a reference wave by optical mixing to obtain the desired information output.

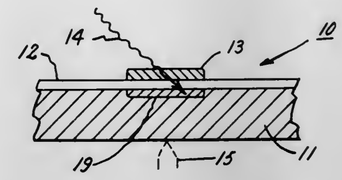
3,623,025
VARIABLE RESISTANCE INFORMATION READING ELEMENT
Akio Yamashita, Ikeda-shi, and Takehiro Tsuzaki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 13, 1968, Ser. No. 752,294
Claims priority, application Japan, Aug. 18, 1967, 42/53366
Int. Cl. G11c *11/34, 13/02*
U.S. Cl. 340—173 R **5 Claims**



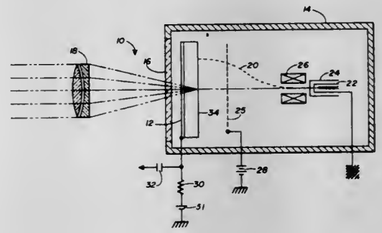
A recording device in which there is added in accordance with a recording signal an impurity acting as a recombination center and forming a deep energy level to a solid like a semiconductor and an insulator having a forbidden band in their energy band structures and applying an elastic wave to said solid so that the electric resistance in the neighborhood of the impurity atoms is varied thereby converting the recorded signal to an electric signal.

3,623,026
MIS DEVICE AND METHOD FOR STORING INFORMATION AND PROVIDING AN OPTICAL READOUT
William E. Engeler, Scotia, and Marvin Garfinkel, Schenectady, both of N.Y., assignors to General Electric Company
Filed Jan. 21, 1969, Ser. No. 792,488
Int. Cl. G11c *11/34, 11/42;* **H01l** *17/00*
U.S. Cl. 340—173 LS **13 Claims**

An information storing method and a storing device using a conductor-insulator-semiconductor (CIS) structure as a conductor storage element is disclosed within. The CIS structure is initially charged to predetermined voltage. Minority carriers are controllably generated within the semiconductor in proportional response to an information-bearing signal such as electromagnetic radiation flux. The generated minority carriers move to and are stored at the surface of the semiconductor beneath the conductor due to the electric field. The voltage is reversed, injecting the generated minority carriers into the semiconductor where they recombine with majority carriers. Electromagnetic radiation is produced during the recombination in an amount proportional to the integrated incident electromagnetic radiation flux.



3,623,027
SOLID-STATE LIGHT-SENSITIVE STORAGE DEVICE
Robert L. Williams, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 3, 1969, Ser. No. 813,186
Int. Cl. G11c *11/34, 11/42*
U.S. Cl. 340—173 LS **12 Claims**

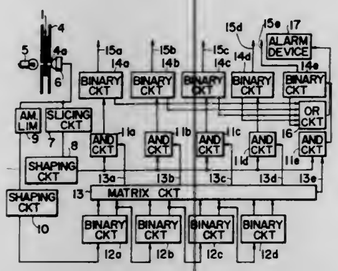


A PN-junction target in an information storage system stores an electronic charge pattern that varies in accordance with the quantity of illumination incident thereon. The target comprises a high resistivity semiconductor substrate having a single large PN-junction formed therewith that extends over one surface of the high resistivity section. The PN-junction may be formed by diffusing an impurity into the high-resistivity substrate or by epitaxially growing a crystal on the substrate. A single PN-junction target provides good charge separation for improved sensitivity of the storage device to small quantities of illumination incident thereon.

3,623,028
INFORMATION READ-OUT SYSTEM
Muneo Yoshida; Noriyuki Yamauchi, and Yosito Kiyama, all of Kobe-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 9, 1969, Ser. No. 840,269
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **9 Claims**

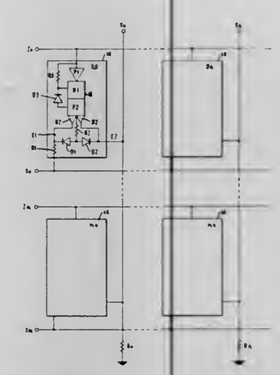
An information carrier includes a base carrying information indicia having physical properties differing from those of the base. The indicia are arranged on the base in a manner such that, during a read-out operation, each indicia is detected twice by a detector. The carrier may comprise a circular transparent base having annular indicia thereon, the indicia being either transparent or nontransparent. A slicing circuit and a shaping circuit connected to the detector provide first pulses specific to only those detected indicia of a particular type, such as the transparent indicia. An amplitude limiter and a shaping circuit connected to the detector provide clock pulses corresponding to each of the detected information indicia. The first pulses are supplied as inputs to AND circuits each respective to a particular indicia. The clock pulses are supplied to cascaded binary circuits whose number is equal to one less than the number of information

indicia. A matrix is connected to the outputs of all of the binary circuits, and has respective outputs each connected to a different one of the AND circuits. The outputs of the AND circuits are connected to respective flip-flop circuits each corresponding to a respective information indicia and arranged as a binary circuit. Each AND circuit, responsive to



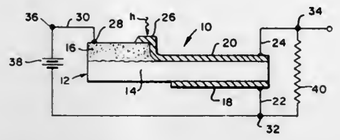
concurrent receipt of a first pulse and a clock pulse, provides a control output signal to a respective flip-flop circuit. Each flip-flop circuit, responsive to receipt, during each output pulse train, of two control output pulses at its input, provides a shift signal at its output. If any flip-flop circuit receives only one control output pulse during each output pulse train, an OR circuit is triggered to sound an alarm.

3,623,029
BISTABLE MULTIEMITTER SILICON-CONTROLLED RECTIFIER STORAGE CELL
Evan E. Davidson, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,153
Int. Cl. G11c *11/34, 7/00;* **H03k** *17/72*
U.S. Cl. 340—173 NR **1 Claim**



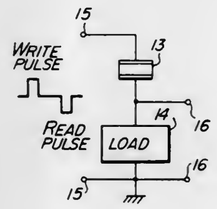
This specification discloses a storage cell which employs a single dual emitter silicon-controlled rectifying device as a storage element. This silicon-controlled rectifier device is biased to have two stable-operating states and is addressed by a word line connected to one of its emitters and a bit line connected to the other of its emitters. A transistor is formed by these two emitters and the gating layer of the silicon-controlled rectifier. By application of half select pulses to the word and bit lines this transistor is broken down so as to cause current to flow in the gating region or layer of the silicon-controlled rectifier. When current flows in the gating region the operating characteristic of the silicon-controlled rectifier changes so that the silicon-controlled rectifier switches from a high-voltage, low-current stable state to a low-voltage, high-current stable state along the operating curve of the silicon-controlled rectifier.
To increase the turnoff speed of the silicon-controlled rectifier a Schottky Barrier diode is connected between the gating layer and the other intermediate layer of the silicon-controlled rectifying device to discharge charge stored in the junction between the two layers.

3,623,030
SEMICONDUCTOR-FERROELECTRIC MEMORY DEVICE
David E. Sawyer, Newton Centre, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed May 22, 1970, Ser. No. 39,755
Int. Cl. G11c *11/22, 11/40, 13/04;* **H03k** *3/42*
U.S. Cl. 340—173.2 **10 Claims**



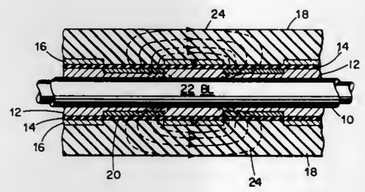
A monolithic, optically written and electrically read ferroelectric memory element employing a single crystal of barium titanate. One portion of the crystal possesses ferroelectric capacitor properties and another portion has been reduced to convert that portion from an insulator materal to an N-type semiconductor. At least one of the capacitor electrodes is transparent and contacts the semiconductor portion to form a Schottky barrier electrode. With the memory element connected in a circuit such that the Schottky diode is reverse biased, the "write" state is achieved by light excitation of the semiconductor portion through the transparent electrode which charges the ferroelectric capacitor portion of the crystal. The device is electrically read by examining the remanent polarization state of the ferroelectric capacitor portion.

3,623,031
FERROELECTRIC STORAGE DEVICE USING GADOLINIUM MOLYBDATE
Akio Kumada, Kodaira-shi, Japan, assignor to Hitachi Ltd., Tokyo, Japan
Filed Mar. 25, 1969, Ser. No. 810,202
Claims priority, application Japan, Mar. 30, 1968, 43/20817
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **5 Claims**



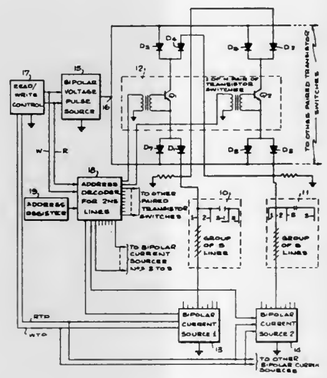
Electrodes for applying a voltage are provided on upper and lower surfaces of a stable irregular ferroelectric body such as $Gd_2(MO_4)_3$ single crystal which strains at the time of polarization reversal and is stable at room temperature or a similar stable irregular ferroelectric body which has a clear threshold voltage for polarization reversal, to compose a memory element and a load element is connected to one of the electrodes in series with said memory element. Read-out or write-in pulses having a voltage sufficient to cause the polarization reversal of said stable irregular ferroelectric body and with a polarity opposite to each other are applied to said memory element and load element from a driving circuit, and the change in the polarization of said memory element when the read-out pulse is applied is read out as a change in voltage across the load element.

3,623,032
KEEPER CONFIGURATION FOR A THIN-FILM MEMORY
Sergiu Schapira, Brookline, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Feb. 16, 1970, Ser. No. 11,502
Int. Cl. G11b *7/02, 11/14, 5/04*
U.S. Cl. 340—174 BC **2 Claims**



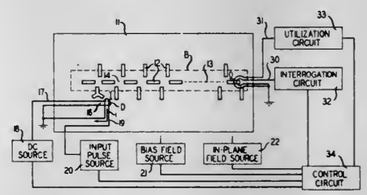
A magnetic memory device has a number of substantially parallel elongated memory elements arranged within a plane and extending transverse to and magnetically coupled with a group of conductors parallel to the plane. The conductors are disposed on a dielectric sheet spaced from the memory elements. A soft layer of magnetic material covers one side of the dielectric sheet. On the opposite side of the dielectric sheet, strips of soft magnetic material are disposed between the conductors. This side of the dielectric sheet is secured to the plane of memory elements.

3,623,033
CROSS-COUPLED BRIDGE CORE MEMORY ADDRESSING SYSTEM
Philip A. Harding, Palos Verdes, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.
Filed June 29, 1970, Ser. No. 50,531
Int. Cl. G11c *7/00, 11/06*
U.S. Cl. 340—174 TB **10 Claims**



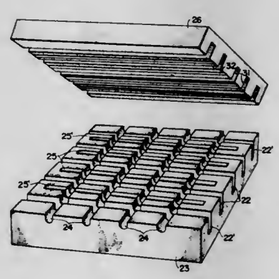
A drive system for a coincident-current magnetic core memory is disclosed which employs a fewer number of transistors to steer drive current of proper polarity through a selected line for read and write cycles. The lines are grouped into 2N groups of S lines, and the groups are associated in pairs. A given pair of groups is cross-coupled to the emitters of one of N pair of transistor switches by diodes, each poled for forward conduction when one of the transistors is activated depending upon both the direction of current flow desired and the group in which the particular line to be driven is. A voltage is applied to the activated transistor of proper polarity for the drive current, and one of S bipolar drive current sources is activated to uniquely drive current through the particular line in the desired direction.

3,623,034
SINGLE WALL DOMAIN FAST TRANSFER CIRCUIT
Peter Istvan Bonyhard, Newark, and Irynej Danylchuk, Morris Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 18, 1970, Ser. No. 38,124
Int. Cl. G11c *19/00, 11/14, 7/00*
U.S. Cl. 340—174 TF **6 Claims**



A fast transfer circuit for single wall domains is described. The circuit comprises a succession of recirculating positions defined by magnetically soft overlays. It all the recirculating positions are occupied by domains, any subsequent information introduced to the beginning of the sequence appears at the end of the sequence more quickly than a domain otherwise moves in a normal propagation mode employing overlays. Movement of domains is in response to a rotating in-plane field which changes the positions of domain-attracting poles in the overlay.

3,623,035
MAGNETIC MEMORY MATRIX AND PROCESS FOR ITS PRODUCTION
Seihin Kobayashi; Michihiro Torii, and Masanori Kurahashi, all of Shizuoka Prefecture, Japan, assignors to Fuji Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 21, 1969, Ser. No. 792,447
Claims priority, application Japan, Feb. 2, 1968, 43/6031
Int. Cl. G11c *5/04, 11/02*
U.S. Cl. 340—174 BC **7 Claims**

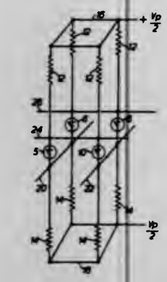


A magnetic memory matrix is composed of a plurality of tubes of ferrite material and a magnetic keeper. Depressions on the surface of the keeper hold the ferrite tubes and other depressions define bit areas, the two groups of depressions intersecting at right angles with each other and the depressions of each group being substantially in parallel alignment. Word wires are arranged in parallel lines between those depressions defining bit areas, and a bit wire and a sense wire are threaded through each ferrite tube. The depressions defining the bit areas effectively define the flux paths around the word wires.
The process for making the magnetic keeper comprises (1) mixing fine fired ferrite particles with an organic binder, i.e. a solution of thermoplastic, (2) pressing and forming a board from the mixture, and (3) forming the two kinds of depressions on the board.

3,623,036
DATA STORAGE ARRANGEMENTS

Donald F. Taylor; Alan Jones, and Bryan L. H. Wilson, all of Ilford, England, assignors to The Plessey Company Limited, Ilford, England

Filed Aug. 27, 1969, Ser. No. 853,273
Int. Cl. G11c 5/02, 11/36, 11/42
U.S. Cl. 340—173 LS 9 Claims

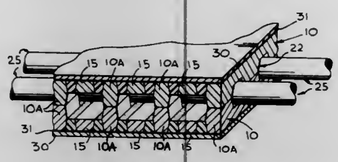


A data storage arrangement is disclosed comprising a plurality of PN diodes fabricated from gallium arsenide or similar material such that each device has a low-voltage/high-current operating state and a low-current/high-voltage operating state and is capable of producing an electroluminescent output only when in the low-voltage/high-current state. The devices are electrically connected in parallel between a power supply which sustains them in their particular states. Coordinate-fashion control connections enable any selected device to be energized so as to switch it into a particular one of its two states according to the data to be stored. Data is read out from any device by momentarily energizing the control connections of that device with a relatively high voltage. If the device is in the low-voltage/high-current state, an electroluminescent output will be produced, but not if the device is in the other state.

3,623,037
BATCH FABRICATED MAGNETIC MEMORY

Howard L. Parks, Woodland Hills, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 8, 1969, Ser. No. 864,616
Int. Cl. G11c 5/04, 11/04, 11/14
U.S. Cl. 340—174 PW 17 Claims

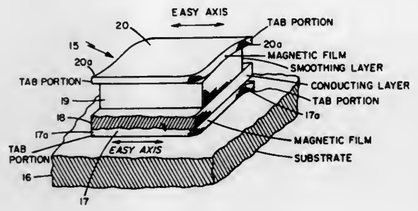


A magnetic wire memory construction comprising a plurality of stacked memory planes, each memory plane being formed from two like-formed self-supporting and rigid metal sheets in opposed relation. The sheets have channels formed therein using precision batch fabricated metal sculpturing techniques, with certain of the channels being filled with insulative material. The dimensions and locations of the channels are chosen so that precisely located memory wire receiving tunnels and corresponding insulated drive line strips perpendicular thereto are formed when the sheets are placed together in opposed relation. Memory wire elements are inserted into the tunnels which protect and shield the elements and maintain them accurately positioned with respect to one another and to the drive line strips so as to permit achieving a memory of increased density and speed of operation.

3,623,038
PHERAL LAYER MAGNETIC THIN FILM ELEMENT

Dennis M. Franklin, Randolph; Richard M. Hornreich, Sudbury, and Harvey Rubinstein, Lynnfield, all of Mass., assignors to GTE Sylvania Incorporated

Filed Dec. 19, 1969, Ser. No. 886,474
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 16 Claims

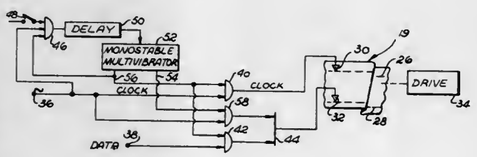


A multilayer magnetostatically coupled thin-film magnetic memory device comprising first and second magnetic films having a conducting layer and a smoothing layer therebetween. Each of the magnetic films includes a pair of small shaped tab portions, one at each end region of the film, for preventing the undesirable formation during normal current disturb conditions of parasitic (or "reverse") magnetic domains in the portions of the films disposed above and below the conducting layer. In a first form of the tab portions in accordance with the invention, the tab portions have a tapered-tip geometry and serve to prevent completely the formation of parasitic magnetic domains anywhere within the magnetic films. In an alternative form of the tab portions in accordance with the invention, the tab portions have a rectangular geometry and parasitic magnetic domains are formed in the magnetic films. However, the parasitic magnetic domains are formed only in the rectangular tab portions and not in the portions of the magnetic films disposed above and below the conducting layer. Since the portions of the magnetic films disposed above and below the conducting layer are the only portions affected by magnetic fields (produced by current flow through the conducting layer), the parasitic magnetic domains present in the rectangular tab portions do not lead to a loss of information stored in the magnetic films.
An alternative multilayer magnetostatically coupled thin-film magnetic memory device having no smoothing layer is also disclosed.

3,623,039
MAGNETIC TAPE SYSTEM HAVING MARK CODE IN THE FORM OF COINCIDENT ABSENCE OF CLOCK AND PRESENCE OF DATA PULSES

James E. Barham, 5151 Buffalo Ave., Sherman Oaks, Calif.

Filed May 8, 1970, Ser. No. 35,829
Int. Cl. G11b 27/30, 23/36
U.S. Cl. 340—174.1 J 10 Claims

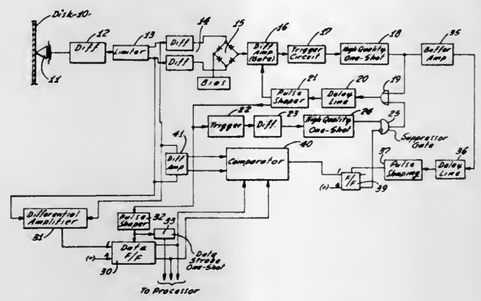


A recording system is disclosed for use in conjunction with a recording medium, e.g. magnetic tape, wherein the tape carries at least a clock channel and one data channel, and wherein data is defined in discrete sections along the length of medium. The system locates the sections by "mark" codes which precede each section and are followed by addresses that identify the sections. An absence of signals in the clock channel over a predetermined length of tape is one element of a "mark" code. The other element is provided by a coincident predetermined code signal in the data channel.

3,623,040
DIGITAL DECODING OF REPRODUCED SIGNALS

Robert W. Erickson, Pacific Palisades, and Harvey R. Fields, Hawthorne, both of Calif., assignors to Scientific Data Systems, Inc., El Segundo, Calif.

Filed June 25, 1969, Ser. No. 836,230
Int. Cl. G11b 5/02, 5/44
U.S. Cl. 340—174.1 H 21 Claims

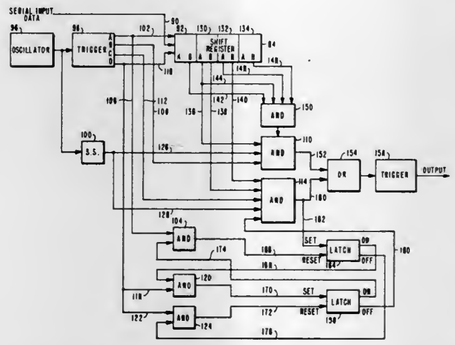


Representation of the particular characteristic which may define a bit cell and clock signal are derived from the readout signal. Depending upon the recording format, the clock pulses and the readout signals are combined to sequentially establish particular states in a bistable device in representation of the bit held within the bit cell currently read out, usually to be held therein until the value of the next bit has been ascertained. The clock pulse generator is under control of temporarily effective rejection and disabling control means which, after each recognition of a clock pulse and bit cell-defining characteristics in the readout signal, rejects for particular periods of time and subsequently thereto recognition of recurrence of such characteristics for clock pulse production.

3,623,041
METHOD AND APPARATUS FOR ENCODING AND DECODING DIGITAL DATA

David L. MacDougall, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 22, 1969, Ser. No. 843,522
Int. Cl. G06f 5/00; G11b 5/06
U.S. Cl. 340—174.1 G 10 Claims

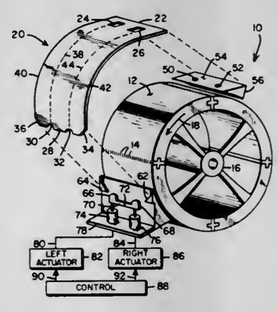


Method and apparatus are disclosed for processing and storage of binary information on a medium having two separately identifiable levels or states and having a plurality of nearly uniform bit cells. Encoding is accomplished by writing a transition between the two states at the center of each bit cell representing a "one" unless the cell is preceded by a "zero one" and followed by a "zero." Transitions are written at the leading edges of bit cells which are to represent a "zero" if there is not a "one" or a "zero" written in the preceding cell or a "one" dropped in the preceding cell. In decoding, the data transitions detected at the centers of bit cells are separated as "ones" while bit cells having a transition at the leading edge thereof are considered to represent "zero." Bit cells which do not have a transition either at the center thereof or at the leading edge thereof are determined to represent "zero" unless the immediately following bit cell is similarly absent a transition at the leading edge or center thereof, in which case a "one" is inserted into the first of the two bit cells absent any transitions.

3,623,042
MAGNETIC RECORD MEMBER FINE POSITIONING APPARATUS

Gary B. Woehler, Minneapolis, and Leroy A. Vos, St. Paul, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,544
Int. Cl. G11b 5/60, 5/78
U.S. Cl. 340—174.1 E 10 Claims



An improved magnetic record member fine positioning apparatus for use in a magnetic memory system is described. The magnetic memory system includes a plurality of reading and recording transducers mounted in a rotatable support member for cooperating with a flexible record member. The flexible record member has a magnetic coating thereon and is maintained out of contact with the rotatable support member by a layer of air. A record member profile correction device is arranged with a record member retaining device for movably retaining one end of a flexible record member. Switchable members are arranged for cooperating with positioning notches in the other end of the flexible record member, the selection of one of the positioning notches cooperating with drag force of the supporting layer of air for accomplishing the fine positioning of the record member.

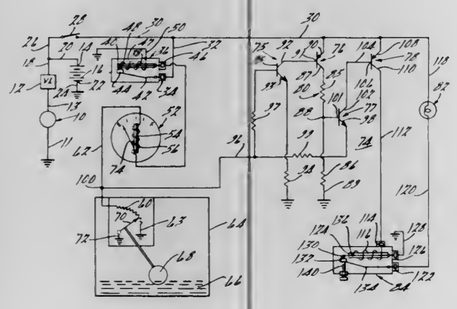
3,623,043
LOW LIQUID LEVEL WARNING SYSTEM

Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

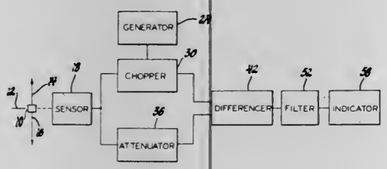
Filed July 10, 1969, Ser. No. 840,651
Int. Cl. B60q 1/00
U.S. Cl. 340—181 5 Claims

A low liquid level warning system particularly suitable to give a warning to a vehicle operator of a low liquid level condition in automotive vehicle liquid containers, for example, in the fuel tank of the automobile. The low liquid level warning system is coupled to a conventional liquid level indicating system that is supplied with pulsating electrical energy having

a substantially constant effective voltage value irrespective of the terminal voltage of the charging system of the vehicle and of the source of electrical energy for the vehicle. A solid-state circuit means has an input circuit connected to the liquid-level indicating system and an output circuit connected to the source of electrical energy, i.e., the charging system for the vehicle, and to a pulse-integrating relay. The pulse-integrating relay is normally closed and when in this position energizes a warning indicator or lamp. When the level of the liquid is above a critical low level, pulses of electrical energy are applied to the relay from the solid-state circuit means and these pulses will open the relay thereby extinguishing the warning lamp or other indicating means which has been energized upon initial closing of the ignition switch. When the liquid level falls to a critical low level, for example, one-eighth to one-tenth of the full capacity of a fuel tank, the solid-state circuit means no longer applies pulses to the pulse-integrating relay and the relay closes. As a result, the warning indicator or lamp is energized thereby giving the vehicle operator a warning of a low level condition in a container, particularly, a low level condition in the fuel tank of an automotive vehicle.

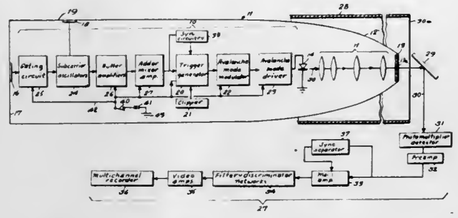


3,623,044
DEMODULATING METHOD AND APPARATUS
Ronald M. Wagner, Greendale, Wis., assignor to General Motors Corporation, Detroit, Mich.
Filed July 28, 1969, Ser. No. 845,139
Int. Cl. G08c *19/02*
U.S. Cl. 340—187 **5 Claims**



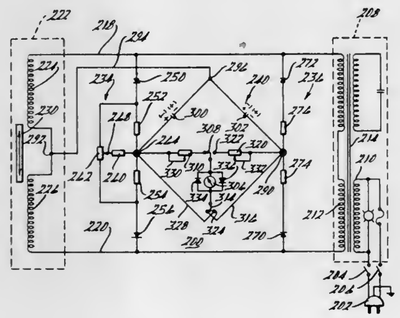
A method and apparatus for provided for producing a DC output signal having a polarity which is indicative of the phase relationship between an AC input signal and an AC reference signal and having an amplitude which is indicative of the amplitude of the AC input signal. The method and apparatus are applied to determine the direction and the magnitude of the displacement of a movable member form a null position.

3,623,045
INTERNAL GUN TUBE BALLISTICS LASER TELEMETER
Lawrence A. Ouellette, Hackettstown, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Nov. 23, 1970, Ser. No. 91,895
Int. Cl. G08c *15/04, 19/12*
U.S. Cl. 340—190 **8 Claims**



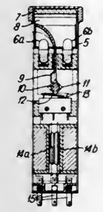
A laser telemeter affixed in the interior of a projectile whereby performance data may be obtained from the projectile body or its safing, arming and fuzing components during the time of actual high imparted shock and acceleration while the projectile is in transit in the gun tube. A RF oscillator which generates the carrier frequency is coupled to modulator means which converts the output of the generator to current pulses whereby the injection diode is current pulsed above the lasing threshold resulting in a constant train of light pulses being emitted therefrom. The light pulses pass through an opening in the nose of the projectile and then down the gun tube to the exterior thereof. Transducers affixed to various areas or components of the projectile respond to the performance of said areas or components to produce electrical signals which are coupled to and frequency modulate related RF subcarrier oscillators. The frequency modulated outputs of the subcarrier oscillators are superimposed on the output of the carrier oscillator. Thus, the light pulses are subsequently frequency modulated providing data indicative of the performance of said areas or components. The modulated light pulses are detected and processed by receiver means which include a photomultiplier, upon which the modulated light pulse impinge, coupled to electronic demodulating circuits and recorders.

3,623,046
TRANSDUCER SYSTEM
George Scourtes, Detroit, Mich., assignor to Cox Instruments Division Lynch Corporation, Detroit, Mich.
Original application Oct. 5, 1965, Ser. No. 494,164, now Patent No. 3,528,288. Divided and this application Nov. 5, 1969, Ser. No. 871,020
Int. Cl. G08c *19/08*
U.S. Cl. 340—199 **8 Claims**



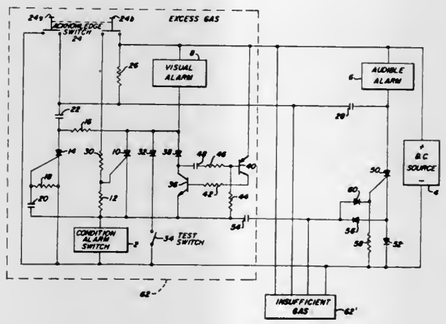
A circuit for energizing a differential inductor transducer uses rectifier voltage dividers in a balanced bridge circuit.

3,623,047
ANNUNCIATOR UNIT
John Stallebrass, 15 Adam and Eve Mews, London, W.8., England
Filed July 8, 1968, Ser. No. 743,163
Claims priority, application Great Britain, July 18, 1967, 32,912/67
Int. Cl. G08b *29/00, 21/00*
U.S. Cl. 340—213.1 **4 Claims**



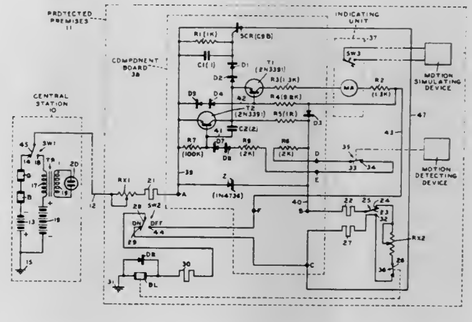
This invention relates to a fault warning annunciator having red and green lamps giving signals to indicate fault and normal conditions respectively, one or other of the lamps being energized at any time. Each lamp operates in an insistent mode until an operator acknowledges the signal by pressing a button switch whereupon the lamp operates in a less insistent acknowledged mode. The button switch is a two-position mechanical switch which changes over the modes of operation of the lamps alternately between conditions in which one lamp is in its insistent mode and the other lamp is in its acknowledged mode and vice versa, whereby when the button switch is pressed to acknowledge a signal from one lamp, the other lamp is automatically reset to operate in its insistent mode when next energized.

3,623,048
CONDITION CHANGE ALARM SYSTEM
Logan D. Haddock, Provo, Utah, assignor to United States Steel Corporation
Filed Mar. 28, 1969, Ser. No. 811,306
Int. Cl. G08b *19/00, 29/00*
U.S. Cl. 340—213.1 **3 Claims**



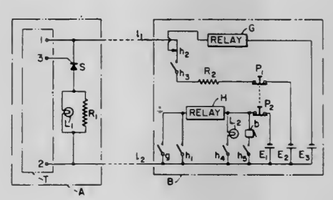
A dual alarm system for monitoring a switch position requiring alarm acknowledgment. When the switch closes, a first alarm goes on steady and a second alarm goes on pulsating. Acknowledgment turns off the first alarm and changes the second alarm from pulsating to steady. When the switch opens, the first alarm again goes on and the second alarm changes to reduced intensity. A second acknowledgment then turns off both alarms.

3,623,049
DIRECT WIRE BURGLAR ALARM SYSTEM PROVIDING SUBSCRIBER TESTING OF MOTION DETECTING DEVICES
Frederick G. Hill, Yonkers, N.Y., assignor to American District Telegraph Company, Jersey City, N.J.
Filed Sept. 12, 1969, Ser. No. 857,450
Int. Cl. G08b *13/00, 29/00*
U.S. Cl. 340—214 **7 Claims**



The present invention comprises a direct wire central station burglar alarm system having means whereby the operation of certain motion detection devices forming a portion of the protection system may be tested by the subscriber to the protection service. Means are also provided for giving visual indication of the results of such testing, for retaining alarm signals until intentionally released, for operation with more than one motion detection device, for operation with motion detection devices of different types and for operation with reversed polarity power supply.

3,623,050
ELECTRIC SOURCE DEVICES FOR FIRE ALARM SYSTEMS
Atsuhiro Kojima, Yokohama, Japan, assignor to Nittan Company, Ltd., Tokyo, Japan
Filed Nov. 19, 1968, Ser. No. 776,985
Claims priority, application Japan, Nov. 25, 1967, 42/98666
Int. Cl. G08h *17/12*
U.S. Cl. 340—228.1 **1 Claim**

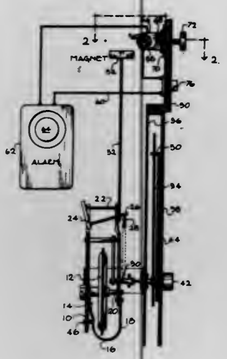


A fire alarm system uses a detector operated from a regulated voltage supply which maintains the sensitivity of the detector and switches to an unregulated voltage supply whenever a fire is detected to supply the energizing current for audible and visual alarm indicators.

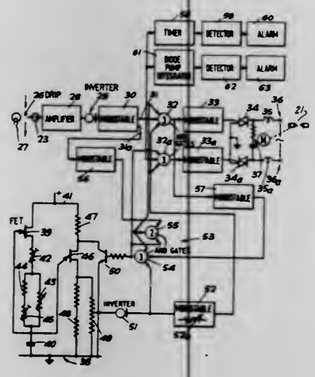
3,623,051
ALARM BAROMETER
Alvin R. Juno, and Jasper R. Pruitt, both of Lubbock, Tex., assignors to Weather Watch Instruments, Lubbock, Tex.
Filed June 12, 1970, Ser. No. 45,714
Int. Cl. G08b *21/00;* **H01h** *35/34*
U.S. Cl. 340—236 **12 Claims**

An aneroid barometer with a U-spring has a magnet on the end of a long arm attached to the U-spring, so that the mag-

net will have greater movement than the U-spring. The magnet is proximate a magnetic-responsive electrical switch which is connected to an alarm having self-contained batteries. The position of the switch may be adjusted so that the alarm is sounded at a predetermined low barometric pressure.

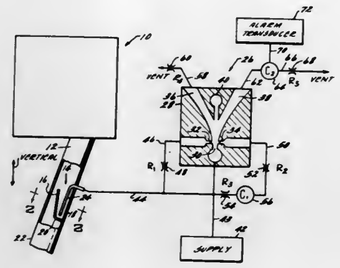


3,623,052
AUTOMATIC INFUSION APPARATUS
Basil Harry Royston Spiller, London, England, assignor to Decca Limited, London, England
Filed Nov. 7, 1969, Ser. No. 874,889
Claims priority, application Great Britain, Dec. 12, 1968, 59,230/68
Int. Cl. G08b *19/00*; **A61m** *5/16*; **G05d** *7/00*
U.S. Cl. 340—239 R **11 Claims**



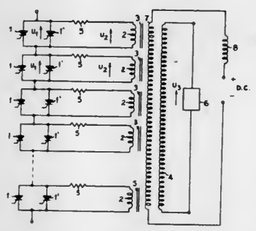
An automatic infusion apparatus in which a timer is started each time a drip of infusion fluid is delivered. A circuit including two AND gates responds to the timer and to a drip detector to determine qualitatively whether the next drip occurs before or after a timing period. Each AND gate triggers a respective monostable timing circuit controlling a motor for altering an adjustable valve to adjust the drip rate by a single increment. The motor is prevented from operating i. the next drip occurs slightly after the timing period.

3,623,053
LEAK-DETECTING APPARATUS
Arthur Stivers Meyer, West Chester, Ohio, assignor to General Electric Company
Filed Oct. 23, 1969, Ser. No. 868,722
Int. Cl. G01f *1/00*
U.S. Cl. 340—242 **4 Claims**



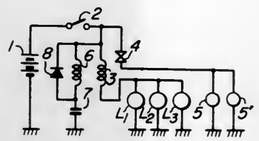
A device for detecting leaks of a predetermined magnitude from fluid-containing apparatus, which device comprises an oversized drain tube skewed with respect to vertical and including a cup defined in part by the tube's lower interior wall so as to collect fluid flowing on the wall. The cup contains a small hole in its bottom surface for drainage. A sensing tube extends into the cup and is connected to switching means for sensing the presence of a predetermined fluid level in the cup and triggering an alarm in response thereto. Fluidic switching means which comprise a digital fluid amplifier are shown.

3,623,054
APPARATUS FOR MONITORING HIGH-VOLTAGE RECTIFIER SYSTEMS
Rolf Wuthrich, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Mar. 24, 1969, Ser. No. 809,517
Claims priority, application Switzerland, June 5, 1968, 8309/68
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 E **3 Claims**



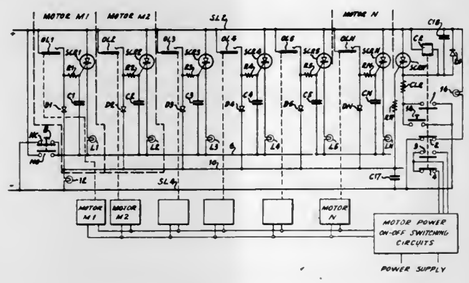
Apparatus for monitoring high-voltage rectifier systems of the type which comprises a plurality of rectifier, e.g. thyristor stages connected in series to a source of high-voltage alternating current. Each stage is paralleled by a high-resistance circuit which includes a primary winding of a transformer wound on a magnetic core which is adjusted to substantially saturation level. A secondary winding linked with and common to all of the cores serves as a voltage-summing device for all of the primary windings and is connected across an indicating device for signifying when and how many of the rectifier stages signifying failed and thus whether or not the rectifier system is safely operational. All of the transformers may be constructed upon a common core which may, for example, have a U-shaped configuration and with the saturable .ransformer cores in the form of annular members surrounding the legs of the U.

3,623,055
DEVICE FOR INDICATING DISCONNECTION OF LIGHTING MEANS IN AUTOMOBILE
Yasuhiko Sakurai, Kariya-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan
Filed Mar. 7, 1969, Ser. No. 805,127
Claims priority, application Japan, Mar. 11, 1968, 43/8885
Int. Cl. H05b *37/03*
U.S. Cl. 340—251 **4 Claims**



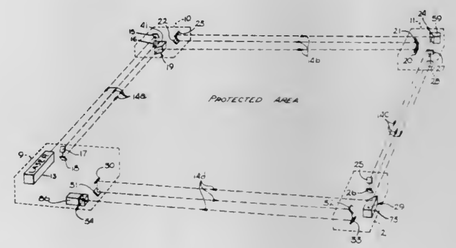
A device for indicating the disconnection of lighting means in an automobile which insures accurate indication in spite of normal lighting load current variations caused by filament temperature changes, operation sequences, etc. The device includes at least one indicator connected to a power source through a normally closed relay contact that is held open by the normal light load current when there are no disconnected or nonfunctioning lights. The relay coil includes a current coil for carrying the load current and a voltage coil connected in series with a capacitor to cumulatively add to the magnetomotive force of the current coil during an initial period when the light circuit is first switched on to thereby insure an initial opening of the normally closed relay contacts even if some of the light load is disconnected or nonfunctional. In this manner, the normal current variations during the initial period of operation do not cause an erroneous malfunction indication but, rather the current in the current coil after the initial time period is effective to cause accurate malfunction indications.

3,623,056
MOTOR OVERLOAD MONITOR
Joel A. B. Elston, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Aug. 14, 1968, Ser. No. 752,531
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 **7 Claims**



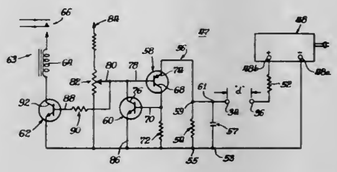
A motor overload monitor of the solid-state type that functions in response to closing of one or more thermal overload contacts respectively associated with a plurality of motors to provide a memory-type lamp indication of each thermal overload condition, and to drop out a power control relay common to the motors with a lamp indication of such power disconnection, and to provide a lamp indication common thereto whenever one or more overload contacts are closed that extinguishes to indicate that all of them have reset. The power control relay can be manually reset only if all overload contacts have reset to open condition and those memory-type lamp indicators can be manually reset whose respectively associated overload contacts have reset to open condition. Use of normally open thermal overload contacts allows disconnection of motors for repair without affecting operability of the rest of the system.

3,623,057
LASER PERIMETER INTRUSION DETECTION SYSTEM
Robert A. Hedin, and Alfiero F. Balzano, both of Los Angeles, Calif., assignors to R. B. Phinizy, Anaheim, Calif.
Filed May 14, 1969, Ser. No. 824,625
Int. Cl. H04q *5/00*; **H01j** *39/00*; **G08b** *13/16*
U.S. Cl. 340—258 B **13 Claims**



A laser perimeter intrusion detection system which includes means for providing laser beam components for defining the perimeter of a predetermined geographical area to be protected. The system includes a sensing subsystem which is comprised of a plurality of sensors for providing electrical outputs from the sensors, the electrical outputs being responsive to interruption of any of the laser beam components. The system has an electrical signal-processing and logic subsystem for identifying the specific portion of the perimeter controlled by any of the laser beam components when the particular component is traversed by an intruder. Included are means for chopper-modulating the laser beam to increase the difficulty of compromising the system and to make the laser beam invisible to the human eye.

3,623,058
SHEET-SENSING APPARATUS
William R. Maloney, Deerfield, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Nov. 18, 1968, Ser. No. 776,649
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **2 Claims**

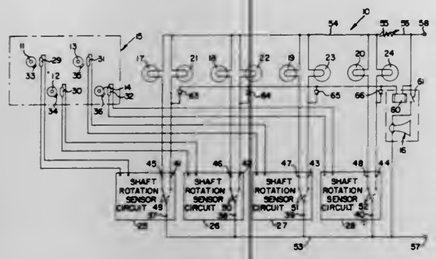


Apparatus for sensing the presence of master sheets or the like in a copying machine, comprising a pair of spaced-apart electrodes connected to a high-voltage source, with a transistor switching circuit coupled thereto. Circuit continuity is completed through an ionized path between the spaced electrodes caused by the high voltage produced thereat. When continuity between the electrodes is maintained, the transistor switching circuit is operated to a first state, but upon passage of a master sheet between the electrodes, current flow between the latter ceases or is reduced to a point whereat the transistor switching circuit is no longer maintained in the first state, and is switched to a second state of operation.

3,623,059
SHAFT MONITOR CIRCUIT

Calvin P. Rickerd, La Grange Park, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 21, 1969, Ser. No. 878,717
Int. Cl. G08b *21/00*
U.S. Cl. 340—271 **2 Claims**

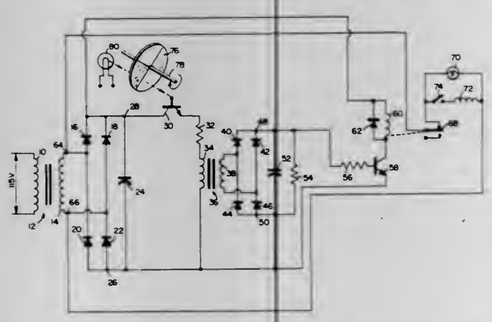


Monitor circuit wherein a plurality of signal means responsive to malfunctions, such as failure of rotation of shafts of a combine of the like at the proper speed, are arranged to energize indicator lamps and to also energize, through unidirectional conduction devices, an alarm means such as a horn. The horn alerts the operator that a shaft is not operating properly and one of the indicator lamps locates the particular shaft.

3,623,060
MOTION DETECTOR

Newell G. Welch, Waynesboro, Va., assignor to Acme Visible Records Inc., Crozet, Va.

Filed Jan. 3, 1969, Ser. No. 788,741
Int. Cl. G08b *21/00*
U.S. Cl. 340—271 **3 Claims**



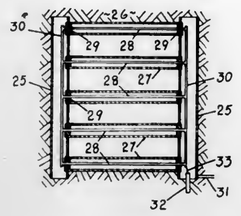
A motion detector system for indicating the stopping of a rotary member being monitored including a circuit having a light-sensitive element, means operably coupled to the rotary member for periodically impinging a light beam on the light-sensitive element and an alarm means included in said circuit operable in response to the removal of the light beam from the light-sensitive element in accordance with the stopping of the rotary member.

3,623,061
STRUCTURE SECURITY ALARM

Brian Hedley Mayhew, Snelgrove, Ontario; Frank Dezso V. Palmay, Bramalea, Ontario, and Sydney Thomas Wiles, Cooksville, Ontario, all of Canada, assignors to Chubb-Mosler and Taylor Safes Ltd., Brampton, Ontario, Canada

Filed July 24, 1968, Ser. No. 747,392
Int. Cl. G08b *13/26*
U.S. Cl. 340—273 **4 Claims**

A window grill comprises an assembly of tubular metallic grill elements, forming a first capacitor electrode, and a system of interconnected metal rods supported within the grill elements in spaced relation thereto, the rods forming a

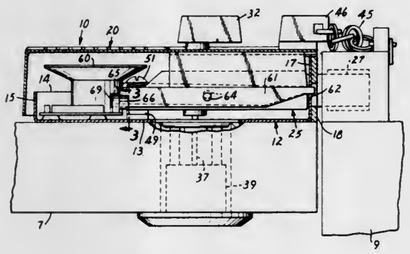


second capacitor electrode. Deformation of the grill results in a change of capacitance which may be detected by a capacitance-responsive device.

3,623,062
LOCK ALARM STRUCTURE

Paul Maddison Hawkins, Afton Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed June 25, 1970, Ser. No. 49,826
Int. Cl. G08b *13/06;* **E05b** *45/00*
U.S. Cl. 340—274 **4 Claims**



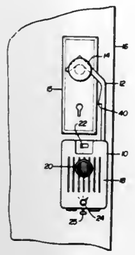
A lock and alarm structure incorporating a signal-generating device within a casing which is adapted for mounting on a closure member. A bolt housing is resiliently mounted in said casing and slidably receives a bolt. The bolt housing is mounted to pivot on the bolt and the bolt is formed with a resilient sidewall to permit the bolt housing to pivot on its mounting. A switch-actuating lever is pivotally mounted on the bolt housing and extends through an opening in the casing such that relative movement between the intermediate portion of the bolt housing and the casing, upon pivoting of the bolt housing, will actuate the signal-generating device. The switch lever is positioned adjacent the bolt and is not easily accessible.

3,623,063
ALARM

John V. Fontaine, 2817 N.E. 26th Court, Fort Lauderdale, Fla.

Filed Oct. 22, 1969, Ser. No. 868,424
Int. Cl. G08b *13/26*
U.S. Cl. 340—274 **10 Claims**

An alarm device in which an oscillator controls the condition of actuating means for a signalling device which provides an alarm signal when the frequency of the oscillator is changed, the device including a conductive suspending handle electrically connected to the oscillator for (a) suspending the device from a conductive doorknob of a door and (b) electrically connecting the oscillator to the doorknob, and a balancer plate for the oscillator to capacitively couple a reference portion of the oscillator to the door when the device is suspended from the doorknob by the handle,

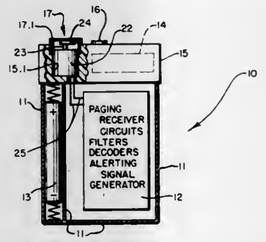


whereby touching of the doorknob changes the frequency of the oscillator to actuate the signalling device.

3,623,064
PAGING RECEIVER HAVING CYCLING ECCENTRIC MASS

Sholly Kagan, East Natick, Mass., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 11, 1968, Ser. No. 766,781
Int. Cl. G08b *7/00*
U.S. Cl. 340—311 **9 Claims**

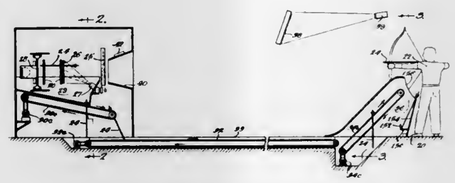


A radio-operated paging receiver is fitted with an electrically driven vibrator which causes the receiver to vibrate at a subaudible frequency when a paging signal is received.

3,623,065
ARROW HIT LOCATION INDICATOR

Gilbert M. Rockwood; Jack A. Russell; Bradford J. Baldwin, and Anthony J. Gratzky, all of Muskegon, Mich., assignors to The Brunswick Corporation

Filed Feb. 14, 1969, Ser. No. 799,447
Int. Cl. A63b *71/06*
U.S. Cl. 340—323 **9 Claims**

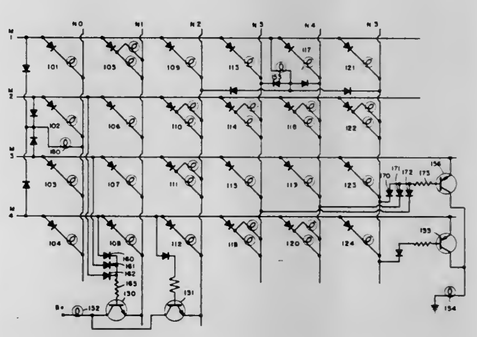


An automatic archery range including a firing line or shooting station from which arrows are fired in a flight path towards a penetrable target, a self ejecting arrow receiving and holding backstop behind the target, an arrow collector beneath the backstop, arrow return means for receiving arrows from the collector and returning them to a quiver adjacent the firing line or shooting station, a target monitor observable by an archer from the shooting station or firing line for indicating to the archer or to spectators where the arrows have hit the target and means for scanning the flight path for sensing the position on the target hit by fired arrows and operating the target monitor.

3,623,066
PROGRAMMABLE LAMP ILLUMINATION DEVICE

William F. Norris, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed Dec. 16, 1968, Ser. No. 783,987
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **11 Claims**



A programmable computer for controlling the sequential illumination of a plurality of light sources or lamps. Properly programmed, this unit can produce up to 400 different lighting patterns in a plurality of light sources. Provision is made for illuminating different lamps sequentially and also for including a single lamp in more than one illumination pattern. The computer and the light sources are intended for use as a guide to assemblers of wiring harnesses in the electronics industry. In addition to the above-mentioned illumination control facilities, the computer includes circuitry to aid in tracing out and separating the various wires contained in a multiconductor cable. A set of 40 leads are used to connect the light sources to the computer. Programming is achieved by interposing logic elements between these 40 leads and the light sources.

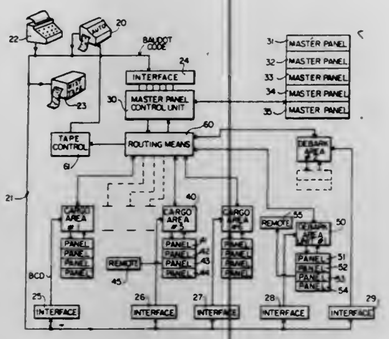
3,623,067
DISPLAY SYSTEM FOR COMMUNICATING DATA AMONG UNITS IN DIVERSE AREAS

Joseph D. Deal, Jr., Newport News, and George A. Taylor, Hampton, both of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

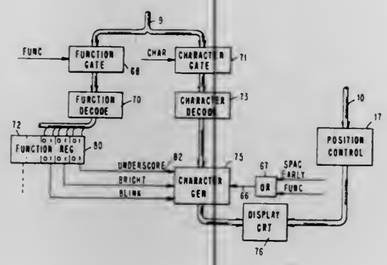
Filed Oct. 14, 1969, Ser. No. 866,255
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 R **42 Claims**

A display system including plural master area display panels and multiple mutually distant display areas all having a number of display panels which can be selectively routed through a trunkline network to become associated with a particular master panel to receive display data. The slave panels retain the address of the associated master panel, and all panels which have been occupied by data relating to a particular transaction can then be decoupled from the display data lines of the network and left to display their data while these same lines are used to transfer data relating to another transaction to other selected panels, there being many available panels in each area. The occupied slave panels though decoupled from the data lines of the network, can still answer back to an associated master panel to indicate status of the transaction via other network lines which are connected in parallel to all master panels and which use the address of the associated master panel to enable the latter's answer back gating means. The system is responsive to encoded-format data and command signals from suitable

input sources which communicate the data to the panels and control its routing either by accessing occupied panels by address, or else by searching out unoccupied panels to receive new data.

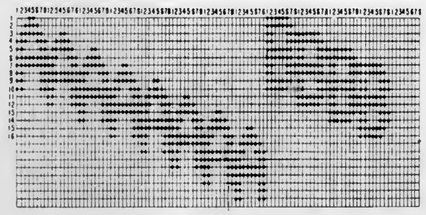


3,623,068
SERVING DISPLAY FUNCTIONS BY MEANS OF CODED SPACE INFORMATION
Thomas B. Horgan, Kingston; Lawrence G. Mosher, Rhinebeck; Charles E. Mullery, Saugerties, N.Y., and Charles E. Newcomb, Norwood, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,749
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **9 Claims**



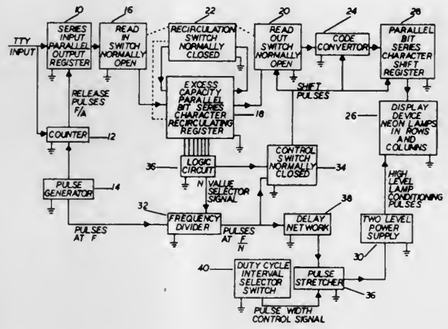
Disclosed is a display system including a regenerative display and a memory where the memory provides the information which is displayed. The memory addresses have a one-for-one correlation with the display addresses. Each word obtained from a memory address is displayed, when it contains a character code, at its corresponding display address. Each word in memory can store a character code defining a character to be displayed or a function code defining a regenerative function to be performed. The function codes are placed in only those memory locations, adjacent locations containing character information, which contain an indication that nothing (i.e., a space) is to be displayed. A control field in each memory word is employed to designate the nature of the particular word stored, that is, to designate whether a function code, character code or some other code is stored in that word. Using control fields allows those words which normally contain only space indications to be beneficially used to contain function codes. The function codes, of course, are decoded in a different manner from the character codes.

3,623,069
MULTIPLEX CHARACTER GENERATOR
Ancile E. Malden, Potomac, Md., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,713
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **35 Claims**



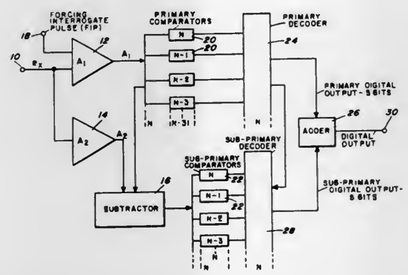
A display system including a symbol generator which consists of a group of segment generators. Each segment generator generates a portion of the symbol to be displayed in time sequence so that the segment generator which generates the first portion of the symbol will be free to generate the first portion of a following symbol or the first portion of a symbol on another display device while the other segment generators are generating the remainder of the first symbol. The outputs from this group of segment generators is transmitted through a group of multiplex gates which assemble the symbols into video data signals for a group of display devices.
The segmented character generator permits the generation of lower case characters, the generation of color symbols and words and expansion or reduction of display cluster sizes with high efficiency.

3,623,070
TRAVELING-MESSAGE DISPLAY SYSTEM
Ronald W. Johnson, Cherry Hill, N.J., and Harry F. Geib, Trevose, Pa., assignors to Ultronic Systems
Filed Apr. 24, 1970, Ser. No. 31,714
Int. Cl. G08b *5/36*
U.S. Cl. 340—339 **8 Claims**



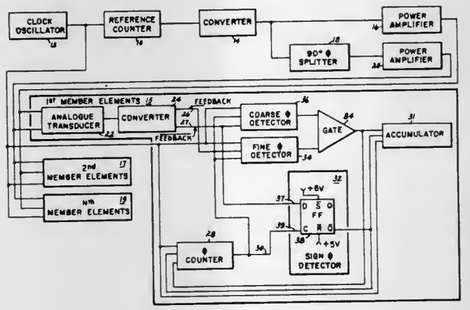
Moving ticker display apparatus for displaying stock exchange transaction information employs an array of neon lamps arranged in rows and columns. Characters are formed on the extreme right-hand column of the array, one vertical line at a time, and move from right to left at a variable rate. The rate at which characters are displayed and the rate at which information is received normally differs. A recirculating buffer receives incoming information and makes same available for further processing prior to visual presentation by the matrix. At least one stage of the buffer is always empty. A plurality of discretely different speeds are available for advancing the display across the array. The particular speed utilized at any time depends upon the number of stages in the buffer which are filled at the time. Digital speed selector means, responsive to this number, selects the appropriate one of these speeds for use.

3,623,071
FORCED THRESHOLD ULTRA-HIGH-SPEED ANALOG TO DIGITAL CONVERTER
John M. Bentlye, Crofton, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 24, 1970, Ser. No. 66,511
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **6 Claims**



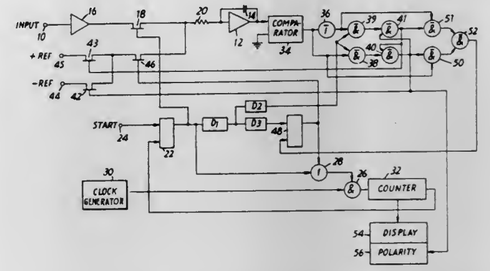
An analog to digital converter that provides conversion in real time at high bit rates and accuracy without the use of a digital to analog converter and successive comparisons or subtractions of reference voltages.

3,623,072
DIGITAL MEASURING SYSTEM
Richard A. Pohlman, Cincinnati; Melvin C. Groth, Maineville; Robert M. Ondercin, Cincinnati, and Thomas J. Doran, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 28, 1969, Ser. No. 819,569
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **3 Claims**



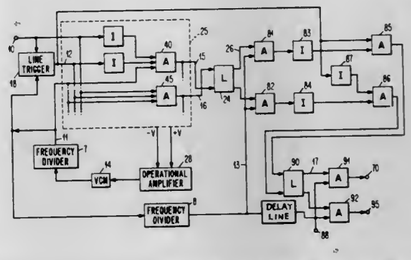
A digital-measuring system to indicate the absolute position of movable members on a machine with respect to a predetermined origin. The system is independent from the driving mechanism of the members and is operable using a single linear or rotary analogue transducer per member. The analogue transducer is excited by a constant frequency signal source. Driving of a member causes the output of a transducer to shift in phase with respect to an initial state of a phase counter. This shift in phase is detected and used to update the phase counter and an accumulator containing the absolute position.

3,623,073
ANALOGUE TO DIGITAL CONVERTERS
Desmond Wheable, and Stephen H. Outram, both of Farnborough, England, assignors to The Solartron Electronic Group Limited, Farnborough, England
Filed May 7, 1969, Ser. No. 822,581
Claims priority, application Great Britain, Dec. 20, 1968, 60,791/68
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **8 Claims**



In known dual ramp digital voltmeters the ramp up (as the input voltage is integrated) is followed immediately by the ramp down (as the opposing reference voltage is integrated). In this invention there is a small but deliberate delay between ramp up and ramp down which allows conditions to settle and provides an interval during which a reliable polarity determination can be effected.

3,623,074
DIGITAL DATA RECOVERY BY WAVELENGTH INTERPRETATION
David L. Bailey, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 27, 1969, Ser. No. 837,084
Int. Cl. H03k *13/24*; **H04l** *3/00*
U.S. Cl. 340—347 DD **8 Claims**

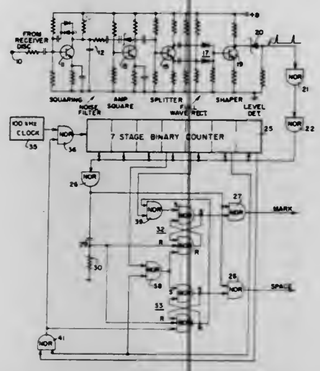


Binary data is recovered from waveforms encoded in phase encoded, double frequency, MFE, MZE, or similar patterns by sensing wavelengths preceding and/or following a transition in the waveform at approximately the center of a bit cell. The gating of "1's" and "0's" from data related clock pulses is switched as a function of that sensing. In one embodiment, wavelengths are interpreted by direct logic to coordinate the switching of the gated "1's" and "0's." In another embodiment, clock pulses are counted into alternately active paths with the outputs of these paths being logically interpreted to control the gating.

3,623,075
ASYNCHRONOUS DATA DECODER
Stephen M. Bench, Rolling Meadows, and Thomas J. Rollins, Arlington Heights, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 16, 1969, Ser. No. 866,999
Int. Cl. H04l *27/24*
U.S. Cl. 340—347 DD **4 Claims**

Digital information to be decoded is transmitted over a voice band transmission medium as a sequence of half-cycles

of tone of different frequencies, with different frequency tones being utilized for mark and space data bits. Only a half-cycle is required for each data bit with a phase reversal occurring at each data bit. The incoming signals are transformed into a sequence of zero crossings with the pulse interval time duration between these zero crossings being compared with a local frequency standard. At the end of each pulse interval, the decision of whether or not a mark or space has been received is determined in accordance with the count stored in a counter driven by the local frequency standard. The counter then is reset, storing a new count during the next half-cycle signal received.



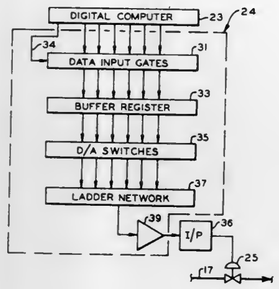
3,623,076
METHOD AND APPARATUS FOR TESTING A-TO-D CONVERTERS
Jerrell F. Moffitt; Algernon S. Badger, and Paul I. Madeley, all of Houston, Tex., assignors to GEO Space Corporation
Filed Sept. 11, 1969, Ser. No. 857,087
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 AD **9 Claims**



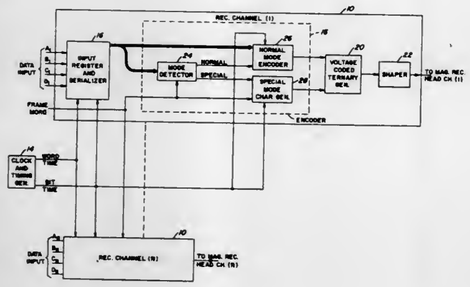
A method and apparatus for testing an A-to-D converter by applying to the A-to-D converter a DC test signal whose amplitude is varied and which is modulated by an AC signal. The output digital data from the A-to-D converter is applied to a D-to-A converter and then displayed for monitoring the distortions of the A-to-D converter.

3,623,077
DIGITAL-TO-ANALOG CONVERTER
Vernon R. Clark, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 20, 1969, Ser. No. 867,543
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **7 Claims**

Isolation transformers are employed to provide direct current isolation of the analog output signal of a digital-to-analog converter from the digital input signals and from the digital computer power supply. The converter contains buffer storage elements, digital-to-analog switches, and a ladder network to retain the last computer output signal indefinitely in case of computer breakdown or failure of the computer power supply. An analog controller can be employed to provide a continuous correction to the last computer control signal represented by the converter output, in the event the computer fails or is shut down for repair.

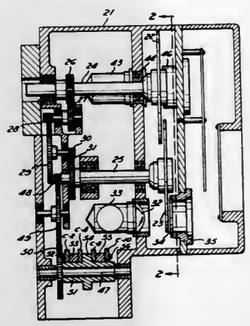


3,623,078
INFORMATION HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA
John S. Whiting, Ontario County, N.Y., assignor to General Dynamics Corporation
Filed Nov. 14, 1969, Ser. No. 876,974
Int. Cl. G06f *5/00;* **H03k** *13/24*
U.S. Cl. 340—347 DD **13 Claims**



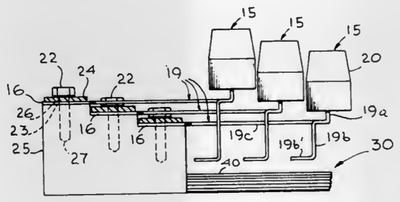
A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is described. Binary input information is encoded into a ternary signal for recording. The ternary signal has spectral properties which facilitate recording with extremely high bit packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which make up the words, is also derived. The system includes means for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

3,623,079
PATTERN READING ANALOG-TO-DIGITAL CONVERTER
Ralph H. Schuman, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Continuation of application Ser. No. 560,951, June 6, 1966, now abandoned. This application Dec. 8, 1969, Ser. No. 878,986
Int. Cl. G08c *9/06, 9/08*
U.S. Cl. 340—347 P **17 Claims**



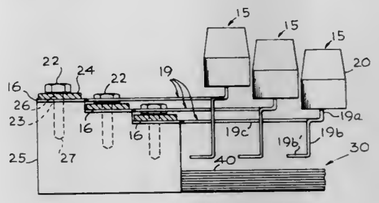
An improved code converter includes a coded information member and signal generators or readers which cooperate therewith to indicate the magnitude of a quantity with a multidigit number to the base 10. The coded information member and signal generators provide signals defining a cyclic code having 20 unique representations for defining a first multidigit binary number indicating the magnitude of a given order digit of the base 10 multidigit number. The magnitude of the binary digit 2^0 of a second multidigit binary number for indicating the value of the next significant order digit of the base 10 multidigit number is derived from the signals defining the 20 unique representations for the given order digit. Lead and lag reading devices are advantageously controlled in dependency upon the magnitude of the binary digit 2^0 of the multidigit binary number for indicating the value of the next significant order digit.

3,623,080
SELF-ENCODING KEYBOARD EMPLOYING EDDY CURRENT SHORTING
Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 2, 1970, Ser. No. 160
Int. Cl. H03k *13/00*
U.S. Cl. 340—365 **21 Claims**



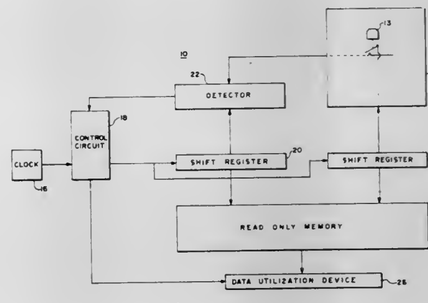
A self-encoding keyboard which employs eddy current shorting effects for generating coded digital electrical signals representative of actuated keys. Each key includes a metal element which upon actuation of the key is brought into close proximity to a corresponding group of stacked printed circuit windings so as to produce an eddy current shorting effect which is detected and used to produce a group of coded digital output signals uniquely representative of the actuated key.

3,623,081
SELF-ENCODING KEYBOARD EMPLOYING EDDY CURRENT SHORTING
Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of application Ser. No. 160, Jan. 2, 1970. This application Jan. 26, 1970, Ser. No. 5,737
Int. Cl. H03k *13/00*
U.S. Cl. 340—365 **26 Claims**



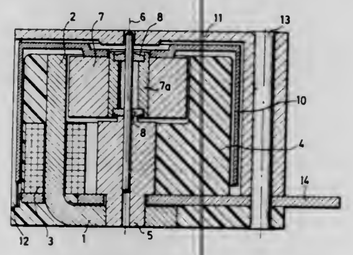
A self-encoding keyboard which employs eddy current shorting effects for generating coded digital electrical signals representative of actuated keys. Each key includes a metal element which upon actuation of the key is brought into close proximity to a corresponding group of stacked printed circuit windings so as to produce an eddy current shorting effect which is detected and used to produce a group of coded digital output signals uniquely representative of the actuated key. Winding encoding arrangements employing two windings per binary digit as well as a single winding per digit are described.

3,623,082
KEYBOARD ASSEMBLY
Mark S. Stein, Morton Grove; Richard F. Maier, Chicago, Ill., and Robert I. Foster, Bountiful, Utah, assignors to C. P. Clare & Company, Chicago, Ill.
Filed May 27, 1970, Ser. No. 40,829
Int. Cl. G08b *11/00*
U.S. Cl. 340—365 **17 Claims**



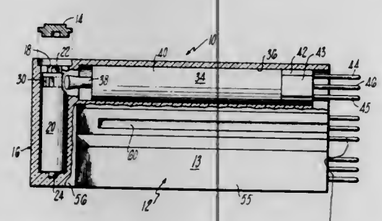
A keyboard assembly for detecting closures in a plurality of switches places in rows and columns to form a matrix or keyboard, each switch representing a distinct data item, includes a signal source continuously operating first and second shift registers in asynchronous relation to each other to provide a distinct register setting for each of the switches. Whenever one of the switches is closed, a control circuit interrupts or arrests the continuous operation of the first and second shift registers in the distinct setting representing the closed switch and shortly thereafter supplies a strobe signal to enable a data utilization device to receive a coded representation of the distinct setting from a read only memory coupled to and controlled by the first and second shift registers.

3,623,083
ELECTROMECHANICAL INDICATING DEVICE
Werner Fessler, Heidelberg, and Heinz Leiber, Leimen, both of Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany
Filed Dec. 5, 1969, Ser. No. 882,595
Claims priority, application Germany, Dec. 6, 1968, P 18 13 121.0
Int. Cl. G08b *5/24*
U.S. Cl. 340—366 **6 Claims**



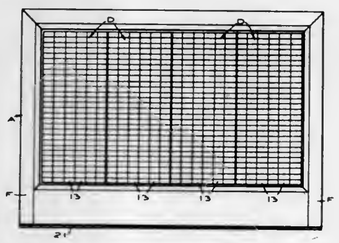
An electromechanical indicating device for selectively displaying a plurality of symbols having a permanent magnet rotor, to which a symbol carrying cover is coupled, which is selectively deflectable to a plurality of discrete angularly spaced positions by selective energization of the excitation coils or windings placed on the pole pieces of the stator which is formed from a single piece of magnetizable material. The axes of the pole pieces of the stator and windings thereon are parallel to the vertical of rotation of the rotor. The symbols are on the vertical outer surface of the cover which has a height substantially greater than the outer periphery thereof divided by the number of symbols thereon. Deflection of the rotor is preferably brought about by selective energization of two or three adjacent windings.

3,623,084
MAGNETIC INDICATOR WITH CAPACITOR CONNECTED COILS
Robert P. McCormick, Broad Brook, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed May 22, 1968, Ser. No. 730,989
Int. Cl. G08b *5/26, 5/30*
U.S. Cl. 340—378 **1 Claim**



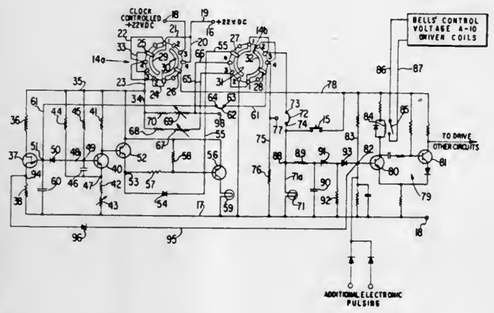
An electromagnetically operated indicator having three parallel rotatably mounted indicating elements which are mounted in side-by-side relationship, which may be independently electromagnetically positioned in each of four equiangularly spaced operating positions and which are marked to collectively indicate each of the sequence of characters of 0 through 9. A viewing window formed to provide convex magnifying lenses for enlarging the viewing angle and for magnifying the forward surface portions of the indicating elements is provided in front of the indicating elements and a pair of rearwardly extending electromagnets is provided for selectively and individually positioning each of the indicating elements in each of its four operating positions. The indicator may be modified to include auxiliary magnetic detents for holding the indicating elements in offset angular positions when the electromagnets are deenergized so as to prevent rotational hangup of the indicating elements when the electromagnetic fields are reversed. Alternative antihangup arrangements include a magnetic shunt between the cores of the electromagnets and means for electrically interconnecting the electromagnets for momentarily energizing the "inactive" electromagnet or operating the "inactive" electromagnet at a lower level when the other electromagnet is energized.

3,623,085
REGISTER BOARD
John J. Hodson, Burlingame, Calif., assignor to Kathryn F. Hodson, San Mateo, Calif., a part interest
Filed May 12, 1969, Ser. No. 823,772
Int. Cl. G08b *5/36*
U.S. Cl. 340—381 **5 Claims**



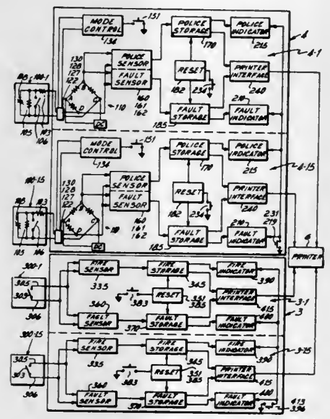
A register board provided with a cabinet having at least one swingable front panel mounted thereon for movement between open and closed position, the panel supporting a series of switches. Each switch has a switch unit carrying an electrical bulb and a translucent lens disposed over the bulb, each lens being selectively depressible to light the bulb therebeneath and each lens being provided with a distinctive indicia. The panel, when swung open, carries all of the switches thereon into exposed position for wiring, servicing and changing of the lenses.

3,623,086
SOLID STATE CONTROL SYSTEM FOR STRIKING BELLS
William R. Cronin, Philadelphia, and Charles F. Marsh, Sellersville, both of Pa., assignors to Schulmerich Manufacturing Co., Sellersville, Pa.
Filed Nov. 6, 1968, Ser. No. 773,841
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 E **4 Claims**



A solid state control system particularly adapted for the striking of bells in which separate circuits operated by a common control provide variable rate and variable symmetry signals for operating a reed-type output switch. Automatic or manual control is provided.

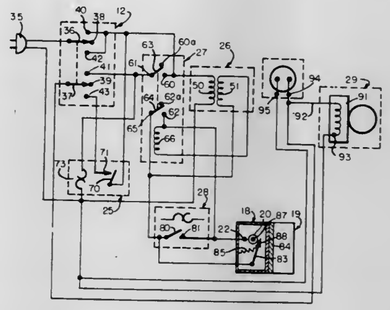
3,623,087
ALARM MONITORING SYSTEM
John H. Gallichotte, Newtown, and Russell L. Terrell, New Milford, both of Conn., assignors to The Mosler Safe Company, Hamilton, Ohio
Filed Nov. 21, 1968, Ser. No. 777,726
Int. Cl. G08b *19/00*
U.S. Cl. 340—412 **12 Claims**



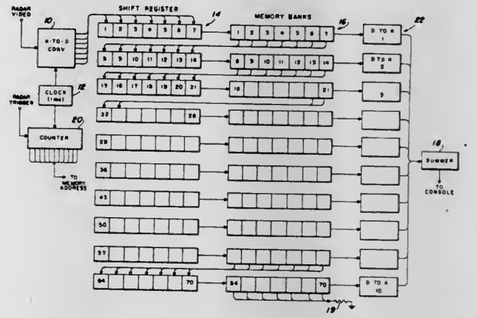
An alarm-monitoring system including a central station having a plurality of fire alarm indicating and control panels and a plurality of security alarm indicating and control panels, each panel having a plurality of zone sections individually responsive to a remote located alarm-condition responsive device or termination unit. Each zone section includes a sensor which generates an alarm signal at the central station when its associated fire or police alarm condition responsive device detects a fire or police alarm condition at its associated remote protected premise. Each zone section also includes an alarm condition storage device for storing the fact that an alarm condition has occurred, and an alarm condition indicator responsive to the storage device for providing an intermittent visual indication when an alarm condition occurs. Each zone section further includes a sensor for detecting circuit faults at its associated alarm condition responsive device or termination unit, a storage device for storing the fact that a circuit fault has occurred, and a circuit fault indicator for providing an intermittent indication of the detection of such a circuit fault. Each fire and security panel includes means for converting an intermittent indicating alarm signal to a continuous indicating signal. The signal-converting means of each panel is common to all zones of the panel. Each of the zones also includes a printer interface capable of generating, each time one of the zone storage devices changes state, a binary signal indicating the nature of the change and the identity of the zone. Associated with all of the panels and common to each of them is a printer which provides, in response to successive changes in the status of the zones, successive printed records reflecting the nature of the status change, the time and date thereof, and the identity of the zone in which the status change occurs.

3,623,088
ALARM SYSTEM WITH MANUALLY SELECTABLE TIME DELAY
Ronald C. Peterson, Washington, D.C., assignor to Peterson Design Company, Inc, Washington, D.C.
Filed July 22, 1969, Ser. No. 843,446
Int. Cl. G08b *19/00, 17/00, 13/24*
U.S. Cl. 340—420 **19 Claims**

An alarm system for detecting the presence of either an intruder or a fire, having a general purpose relay connected to a sensing circuit and operative in conjunction with a transformer power supply to energize an alarm either immediately or, in conjunction with a time delay relay, after a predetermined delay period has expired. A selector switch coupled to both the general purpose relay and the time delay controls the system to cause the alarm to be energized either immediately after an intruder (or fire) is sensed or after the termination of the predetermined delay period beginning at the time of entry of the intruder.



3,623,089
MEANS FOR INTEGRATING SUCCESSIVE RADAR VIDEO SIGNALS IN A COMPUTER
Lewis H. Bossert, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 8, 1969, Ser. No. 864,720
Int. Cl. G01s *9/02*; **H04b** *1/10*
U.S. Cl. 343—5 DP **3 Claims**



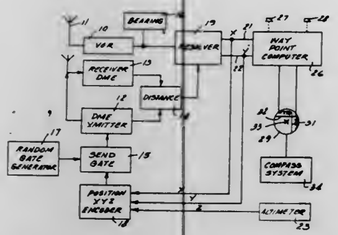
To improve the signal-to-noise ratio in a radar receiver, a succession of video signals from a fixed source at a given range and azimuth are repeatedly received, each raw signal being sampled and converted to a binary coded number or word of say seven bits, and fed into the first of a series of seven-stage shift registers. Each seven-bit word is shifted into the next register as new information is fed into the first register, the word in the last register being discarded. After each new word is inserted the contents of each register is converted back to its analog value, all analog values being then added together and applied to the display cathode-ray tube.

3,623,090
AIR TRAFFIC CONTROL SYSTEM
Glen A. Gilbert, Hialeah, Fla., and James Hobbs, Overland Park, Kans., assignors to Butler National Corporation, Minneapolis, Minn.
Filed Nov. 15, 1968, Ser. No. 776,209
Int. Cl. G08g *5/00*; **G01s** *9/02*
U.S. Cl. 343—6 **9 Claims**

An aircraft traffic control system which has a first portion that allows aircraft to detect other aircraft in their vicinity so

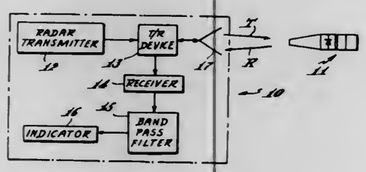
that they are aware of them and which also allows an aircraft to maintain a particular spacing with respect to a selected aircraft to alleviate the load on the ground air traffic controllers, is disclosed.

The identification, altitude and coordinates of an aircraft is transmitted and received by other aircraft and/or by ground



stations to allow other aircraft to be aware of the position of traffic, and the ground stations may utilize the information for local and en route control so that monitoring and control of all aircraft may be maintained throughout the system. Various instrumentations and implementations are disclosed which allow existing facilities to be used with modifications which are simple and relatively inexpensive.

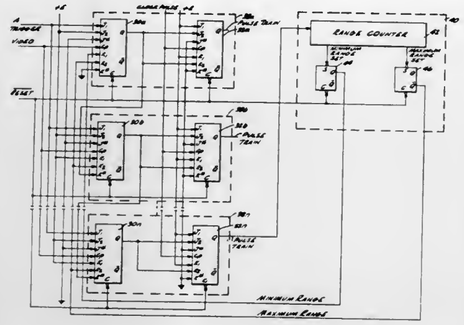
3,623,091
PASSIVE RESPONDER
John J. Mayo, Jr., Lynnfield, and Robert L. Cavanaugh, Wilmington, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Jan. 26, 1970, Ser. No. 5,725
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.8 R **10 Claims**



A passive responder utilizing a cylindrical waveguide and a dielectric rod element for receiving electromagnetic wave energy from an interrogating radar and for reflecting such energy back to the radar. A shorting element is used in conjunction with a pair of orthogonally mounted diode elements, all of which are positioned with the waveguide, such diode elements being suitably switched as by a multivibrator circuit to provide a phase modulated return signal. The diodes are mounted at a distance equal to an odd multiple of quarter wavelengths from the shorting element to produce a 180° phase shift of the incoming and reflected signal so as to produce a modulated return signal of the suppressed carrier type.

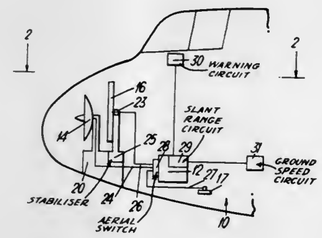
3,623,092
MULTIPLE COUNTER GATING WITH JK ELEMENTS
Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 6, 1968, Ser. No. 736,934
Int. Cl. G01s *7/02, 9/04*
U.S. Cl. 343—7 A **39 Claims**

A range gate circuit including two serially connected flip-flops for producing a pulse train output signal derived from a clock pulse signal during the interval of time between gate signals that correspond to transmitted range pulse signals and reflected energy signals. A plurality of the individual gate means are further connected in parallel circuit relationship in which each of the gate means is connected to another gate means so that the pulse train from each of the gate means is initiated simultaneously by the gate signals corresponding to transmitted range pulse signals and are sequentially discon-



tinued by sequentially received reflected energy signals received from a plurality of targets whereby the range of the targets can be determined from the pulse counts of the pulse trains.

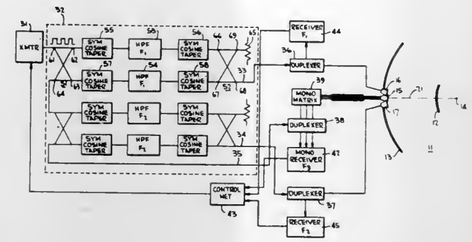
3,623,093
RADAR INSTALLATION
David Rooksby Bollard, North Fambridge, and William Alfred Jenkins, Westcliff-on-Sea, both of England, assignors to Ekco Electronics Limited, Essex, England
Filed Aug. 20, 1969, Ser. No. 851,577
Claims priority, application Great Britain, Oct. 31, 1968, 51,745/68
Int. Cl. G01s *9/02*
U.S. Cl. 343—7 TA **24 Claims**



An airborne radar installation comprises a first aerial to monitor a first region, a second aerial to monitor a second region, a third aerial to monitor a third region, and transmitting and receiving equipment, at least the transmitting equipment being common to all said aerials, and means for sequentially operatively connecting each aerial to the common equipment during respective predetermined periods of time.

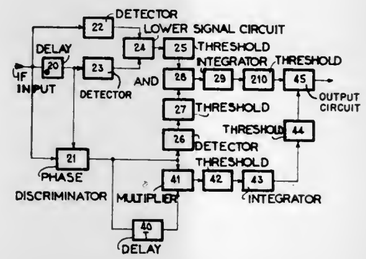
3,623,094
TARGET ACQUISITION ANTENNA
T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration in respect to an invention of; Joseph P. Grabowski, Willingboro, and Walter E. Powell, Jr., Cinnaminson, N.J.
Filed Feb. 27, 1969, Ser. No. 802,812
Int. Cl. G01s *9/22;* **H01q** *13/02*
U.S. Cl. 343—7.4 **8 Claims**

A target tracking and acquisition system includes a Cassegrain reflector system driven by three horn feed elements. One horn excites a main lobe coincident with the reflector system boresight axis while the other horns excite main lobes at off axis angles above and below the boresight axis. Relatively high amplitude crossovers exist between the three main lobes. The feed producing the main lobe coincident with the boresight axis lies at a focal point of the reflector system, while the feeds which excite the other two main lobes are removed from the boresight, elevation and azimuth axes of



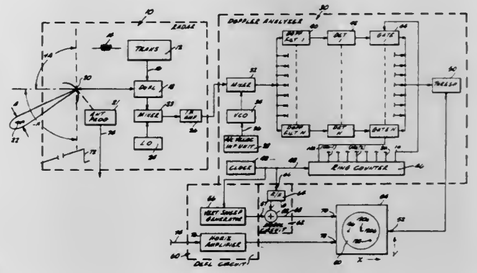
the reflector system. The feed elements are driven through a frequency multiplexer, having a plurality of cascaded channels. Each of the channels, except one, includes a pair of hybrids, between which are connected a pair of high pass filters.

3,623,095
PULSE RADAR SYSTEM
Lucien Gerardin, Le Raincy and Jacques Leger, Boulogne-sur-Seine, both of France assignor to Compagnie francaise Thomson Houston-Hotchkiss Brandt, Paris, France
Filed May 26, 1965, Ser. No. 459,537
Claims priority, application France, June 2, 1964, 976,768
Int. Cl. G01s *9/42, 7/28*
U.S. Cl. 343—7.7 **9 Claims**



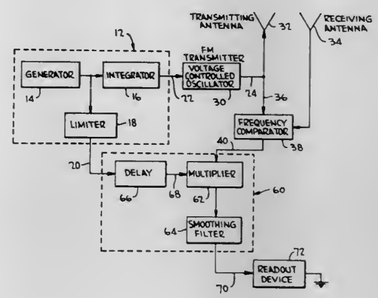
1. In a radar system having transmitting means for sending out pairs of uniformly spaced pulses of high-frequency wave energy during successive repetition periods and receiving means for producing echo pulses in response to reflections of said pulses from outlying objects, said receiving means including a first channel for conveying said echo pulses, a second channel for conveying said echo pulses with a delay relative to said first channel equaling the spacing of the pulses in each pair, and phase-discriminator means connected to receive echo pulses from both said channels for deriving therefrom a signal dependent in its magnitude upon the phase relationship of a delayed first echo pulse and a concurrently arriving undelayed second echo pulse, the combination therewith of control means connected to said phase-discriminator means for comparing the phase relationships of corresponding pairs of coincident echo pulses during consecutive repetition periods, and circuit means responsive to said control means for transmitting said signals to a load as a moving-target indication only upon the degree of correlation of said coincident echo pulses during consecutive repetition periods exceeding a predetermined threshold value.

3,623,096
DEFLECTION MODULATED TARGET DISCRIMINATOR
Guy V. Morris, Harbor City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 15, 1967, Ser. No. 617,765
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **5 Claims**



A target discriminator including a target signal source coupled to a display monitor. A modulation circuit is connected to the display monitor's deflection circuits to produce periodic shifts in the relative timing between the target signal source and the deflection signals. Target signals are displayed as multiple adjacent intensified spots on a display surface, and noise signals as single discrete intensified spots.

3,623,097
MODULATION CORRELATED FM RANGING SYSTEM
Raymond H. Femenias, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army
Filed July 17, 1969, Ser. No. 842,479
Int. Cl. G01s *9/24*
U.S. Cl. 343—14 **11 Claims**

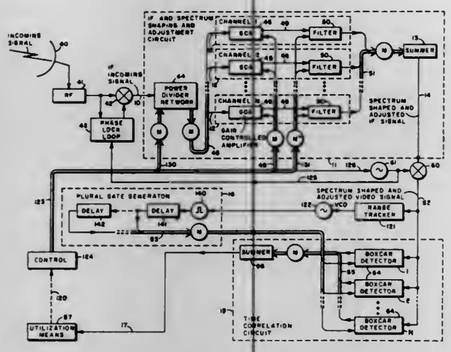


A modulation correlated FM ranging system for the detection and reliable indication of target presence and distance to target. The system utilizes cross-correlation and successive coherent detection techniques to provide a greatly improved signal-to-noise ratio at the receiver output in addition to the featured capability of coding against foreign signals. The system is insensitive to leakage effects and can range quantizing-effect free and ambiguity free while sacrificing neither transmitter bandwidth nor in-target observation time. The system also provides an optimal figure of merit for distance-measuring systems. In addition to distance measurement by frequency difference, the system incorporates a special time delay parameter which, when properly selected, allows a high correlation at the receiver output whenever a target is present in the target area.

3,623,098
SIGNAL PROCESSING

John Mc A. Jones, Tempe; Richard W. Kelly, Scottsdale, and Lawrence E. Langley, Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 31, 1969, Ser. No. 795,603
Int. Cl. G01s 7/34
U.S. Cl. 343—17.1 R 12 Claims



An input signal is supplied through a plurality of band-pass channels which selectively apply different amplifications to signals therein. Frequency adjustments in individual channels as well as between channels is provided. A composite signal is formed from the various channel signals which enhances signal detection. The electrical characteristics of the various channels is determined by interfering spectrum in which the input signal resides.

3,623,099
SUPERWIDE BAND WAVE ABSORBER

Kunihiro Suetake, No. 10-11 Minami, 3-Chome, Meguro-Ku, Tokyo, Japan

Filed Dec. 17, 1969, Ser. No. 885,870
Int. Cl. H01q 17/00
U.S. Cl. 343—18 A 5 Claims



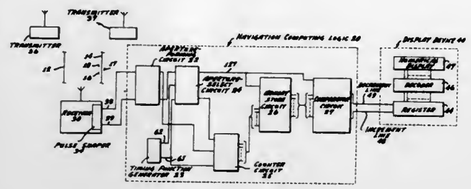
A wave absorber composed of a wave-absorbing ferrite wall in combination with a zigzag wave-absorbing dielectric wall disposed on the front side of the ferrite wall which can absorb superwide band waves wherein frequencies between the range of about 100 MHz. and 1,000 MHz. are absorbed by the ferrite wall and frequencies greater than 1,000 MHz. are absorbed by the dielectric wall.
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,623,100
LANE COUNTER FOR DIGITAL NAVIGATIONAL COMPUTER SYSTEM

Bruce E. Rapp, Garden Grove, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed May 1, 1969, Ser. No. 821,033
Int. Cl. G01s 1/24
U.S. Cl. 343-103 15 Claims

Computing circuitry for a monitoring system to computationally detect the occurrence of a transition which is derived from a time relationship of received input signals. Aperture computing circuitry selectively measures sampled aperture signals produced from the received input signals and circuit storage circuitry categorizes the sampled aperture signal in

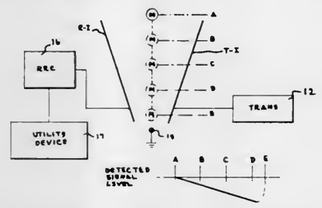


accordance with its measured time duration by computing a lane or zone status which is stored therein. The zone status data is further processed by a comparator circuit which computationally detects the occurrence of a monitored transition.

3,623,101
RF POSITION-SENSING AND CONTROL SYSTEM

Robert Karl Grebe, and Earl Raymond Kreinberg, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 11, 1968, Ser. No. 744,070
Int. Cl. G01s 11/00
U.S. Cl. 343—112 R 10 Claims



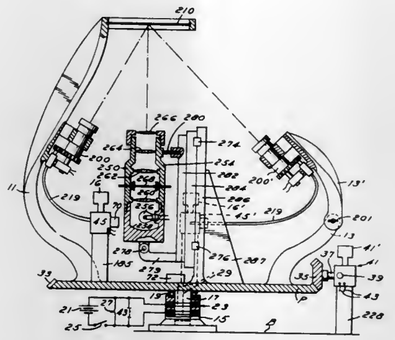
Method and means are disclosed for sensing and detecting the position of a member by the effect of the member on the coupling between sensing elements separately connected to an RF transmitter and an RF receiver. The sensing elements are disposed to provide a degree of coupling therebetween related to the physical position of the member between such elements and to produce a sensed signal indication of either member position or member presence. The sensed signal is detected and applied to a utility device which may be in the form of an alarm, counter indicator, recorder, or in the form of a motor to provide a feedback signal capable of altering the position of the sensed member. In one form of the invention a wire or strip feeding control apparatus senses the position of a free-hanging span of the wire or strip to develop a reel-motor control signal and adjust the fall or sag of the span, thereby controlling feed rate and wire or strip tension. For nonconductive sensed members or for fluids a conductive element is carried in a frame of dielectric material in the plane of the sensing element coupling which restricts the sensed member to movement along an axis bisecting the zone of coupling of the transmitting and receiving antenna elements.

3,623,102
POSITION PLOTTER

George M. Holley, Jr., 510 Sheldon Road, Grosse Pointe, Mich.

Continuation-in-part of application Ser. No. 730,204, May 17, 1968, now Patent No. 3,524,187, Continuation-in-part of application Ser. No. 872,060, Oct. 29, 1969. This application Dec. 30, 1969, Ser. No. 889,080
Int. Cl. G01s 5/08
U.S. Cl. 343—112 PT 7 Claims

This disclosure relates to an automatic position plotter having particular utility for marine vessel navigation applications and which will give a visual plot in relation to a navigational chart during movement of the vessel. The plotter includes a rotatable platform carrying according to one embodiment of the invention a chart image projector and two reticle position projectors with the platform and the reticle projectors controlled by radio directional control apparatus

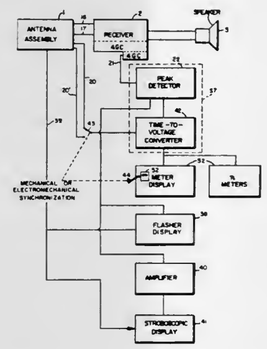


that automatically maintains the projected images in proper orientation during movements of the vessel to provide a continuous plot of position. If desired the platform may be rotated manually to provide a semicontinuous or semiautomatic position plotter, and further the reticle projectors may be replaced by mechanical pointer devices.

3,623,103
CONTINUOUSLY INDICATING RADIO DIRECTION FINDER

Charles A. Baldwin, 3406 Old Dominion Road, Alexandria, Va.

Filed Sept. 10, 1969, Ser. No. 856,599
Int. Cl. G01s 3/70
U.S. Cl. 343—118 6 Claims

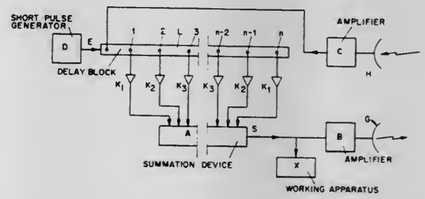


A radio direction finder comprising a continuously rotating assembly including a directional receiving antenna and means for generating a pulse upon movement of the antenna past a point of reference, means to detect a null in the reception of a radio signal by the antenna, and means triggered by the reference pulse and terminated by the detected signal to establish an output the magnitude of which is a function of the arc of rotation of the antenna between the point of reference and the null of the received signal. The antenna assembly includes angularly related loop antennas, one of which is associated with a sense antenna and the other of which is independently balanced against ground.

3,623,104
MATCHED FILTERS FOR THE TREATMENT OF FREQUENCY-MODULATED PULSES

Michel Jacques Robert Nicolas, Paris; Jacques Desire Deschamps, Saint-Cloud, and Andre Adamsbaum, Boulogne-Billancourt, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris-Seine, France

Filed Dec. 28, 1961, Ser. No. 163,970
Claims priority, application France, Dec. 30, 1960, 848524
Int. Cl. G01s 9/02
U.S. Cl. 343—17.2 R 1 Claim

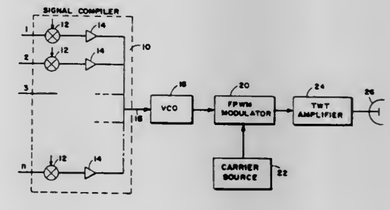


1. A long-range radar system comprising in combination a short pulse generator, a transmission set with an antenna, a reception set with an antenna, matched filter circuitry comprising a single delay line for transforming short pulses of high peak power into long pulses of low peak power and vice versa with a single input terminal at one end connected to both said generator to receive pulses therefrom and to said reception set to receive signals therefrom, the delay line having a center of symmetry with a plurality of spaced taps along said delay line symmetrically located two by two about said center of symmetry, a summation stage having an input line for each of said taps and an output connected to said transmission set for supplying a signal proportional to the algebraic sum of all voltages supplied to the input lines, and separate amplifiers connecting each tap with each input line with respective gains for the symmetric pairs of taps being equal.

3,623,105
FILTERED PULSE WIDTH MODULATION COMMUNICATION SYSTEM

Ira Kamen, New York, and Joseph H. Vogelman, Roslyn, both of N.Y., assignors to Laser Link Corporation, New York, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,672
Int. Cl. H04b 1/04, 1/16
U.S. Cl. 343—203 10 Claims

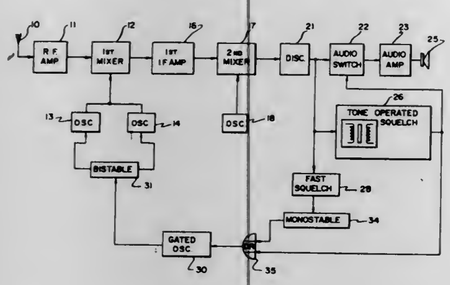


A communications system provides a practical means for transmitting a plurality of input information signals, such as television signals, over a single transmitter. The signals are combined or multiplexed to form a composite signal which serves to modulate an initial carrier signal. That modulated signal in turn pulse modulates a transmitter carrier to produce a pulse width modulated signal that contains all the essential information of the input signals.

3,623,106
MULTIFREQUENCY RECEIVER EMPLOYING TONE-CODED SQUELCH WITH AUTOMATIC CHANNEL SELECTION

Eugene A. Zerega, Jr., Schiller Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 3, 1969, Ser. No. 838,733
Int. Cl. H04j 1/14
U.S. Cl. 343—206 **8 Claims**

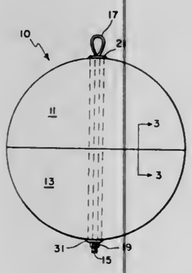


A switching system for a multichannel receiver employing a tone-coded squelch circuit includes a plurality of local oscillators for operating on different channels and renders the oscillators operative in turn, with the switching system being latched when a carrier is received to hold the receiver on the channel having the carrier for a length of time sufficient to enable oscillations to build up in the tone-operated squelch circuit, thereby permitting the cycle of operation of the switching system to be independent of the time required for oscillation buildup in the tone-operated squelch circuit which then assumes control of the operation of the switching circuit.

3,623,107
RADAR CALIBRATION SPHERE

Robert T. Holdren, III, Pocomoke, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 30, 1970, Ser. No. 23,532
Int. Cl. H01q 1/28
U.S. Cl. 343—706 **5 Claims**



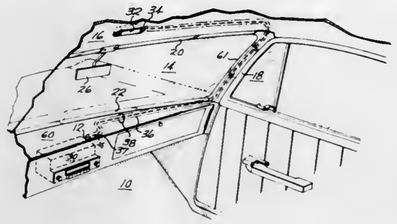
A firm, lightweight, conductive-coated, plastics sphere adapted for launching by a gas filled balloon or the like for radar tracking and calibration.

3,623,108
VERY HIGH FREQUENCY ANTENNA FOR MOTOR VEHICLES

Wilbur F. DuBois, and Conrad O. Gardner, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 13, 1969, Ser. No. 824,041
Int. Cl. H01q 1/32
U.S. Cl. 343—712 **1 Claim**

An omnidirectional type antenna for very high frequency receivers in motor vehicles. The antenna utilizes a single conductive element coupled between a very high frequency receiver located below the front windshield and a conductive connection with the body of the motor vehicle at a point immediately above the front windshield and at the center thereof. A series coupling capacitor provides coupling of the conductive element to the very high frequency receiver. The ground connection for the very high frequency receiver is

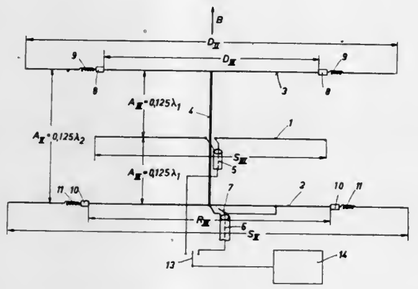


provided by a conductive connection from the receiver to a point on the body of the motor vehicle below the front windshield. The conductive element extends from the point at the center of and above the front windshield vertically downward through or adjacent to the windshield to the very high frequency receiver or extends vertically downward through the corner post between the front windshield and the adjacent side door.

3,623,109
YAGI-TYPE MULTIBAND ANTENNA HAVING ONE ELEMENT PARASITIC IN ONE FREQUENCY BAND AND DRIVEN IN ANOTHER FREQUENCY BAND

Klaus Neumann, Am Klosterberg 13, 667 St., Ingbert (Saar), Germany

Filed Dec. 26, 1967, Ser. No. 693,381
Int. Cl. H01q 21/12, 21/30
U.S. Cl. 343—722 **3 Claims**



A Yagi-type multiband antenna including a driven element, a director and a reflector as parasitic elements in which a feeder between one of the parasitic elements and the transmitter may be switched on for making this one parasitic element operable as driven element of a two-element antenna system.

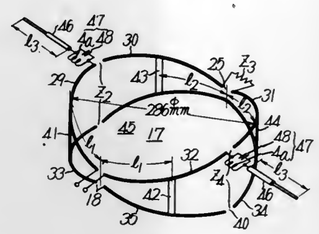
3,623,110
LOOP ANTENNA WITH SPACED IMPEDANCE ELEMENTS

Toshitada Doi, Kanagawa-ken, and Kosuke Akiba, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 9, 1969, Ser. No. 856,281
Claims priority, application Japan, Sept. 10, 1968, 43/65131
Dec. 14, 1968, 43/91931
Int. Cl. H01q 11/12
U.S. Cl. 343—722 **6 Claims**

In a directional antenna, particularly for television receivers, in which a loop antenna element consists of at least

three arcuate conductive members, output terminals are connected between two of the adjacent ends of the conductive members and impedance means are connected between the

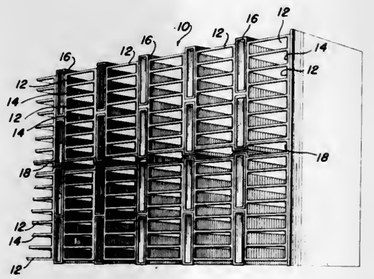


other adjacent ends of the conductive members so as to determine the distribution of a current flowing to the antenna element.

3,623,111
MULTIAPERTURE RADIATING ARRAY ANTENNA

Joseph H. Provencher; Jerry E. Boyns; Archer D. Munger, and Brian R. Gladman, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,082
Int. Cl. H01q 3/26
U.S. Cl. 343—727 **4 Claims**



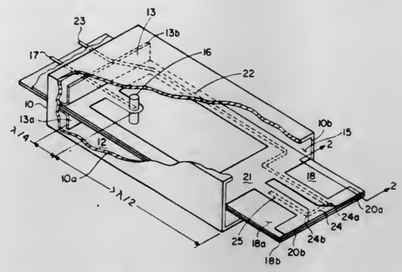
An integrated function microwave radiating structure capable of radiating electromagnetic energy at several selectively predetermined different frequency bands simultaneously and which can be used as an element of a large microwave array antenna is disclosed. The unitary substantially rectangular structure comprises multiple, closely spaced sets of radiating elements of various possible configurations located and supported in a defined aperture area in an interlaced contiguous manner with respect to each other. Each set of radiating elements radiates over a particular frequency band within the total band over which coverage is required. By energizing each radiating element independently in a predetermined phase and amplitude relationship with respect to the other elements, the radiated composite beam (from each of the elements) can be scanned in either the horizontal or vertical planes. Undesired mutual interaction affects between the closely spaced adjacent elements operating at different frequencies are minimized by cross-polarizing techniques.

3,623,112
COMBINED DIPOLE AND WAVEGUIDE RADIATOR FOR PHASED ANTENNA ARRAY

William Emory Rupp, Glen Arm; Richard Monroe Cox, Baltimore, Md., and Robert Alexander Keough, York, Pa., assignors to The Bendix Corporation

Filed Dec. 19, 1969, Ser. No. 886,536
Int. Cl. H01q 3/26, 21/00
U.S. Cl. 343—727 **5 Claims**

An antenna includes a waveguide slot aperture radiator and a dipole radiator centrally located therein and located longitudedly with respect to the waveguide a quarter



wavelength from the aperture. Each radiator is separately excited.

3,623,113
BALANCED TUNABLE HELICAL MONOPOLE ANTENNA

Ivan M. Falgen, Cochituate, Mass., and Valor C. Smith, La Mesa, Calif., assignors to Chu Associates, Inc., Harvard, Mass.

Filed Aug. 21, 1969, Ser. No. 852,052
Int. Cl. H01q 1/36
U.S. Cl. 343—747 **4 Claims**

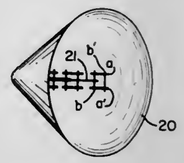


This disclosure deals with a novel balanced tunable helical monopole antenna, that, through a symmetrical construction involving a central feed and simultaneous turn-shorting tuning from the ends thereof, enables the obviating of the necessity for a ground plane.

3,623,114
CONICAL REFLECTOR ANTENNA

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Arthur F. Seaton, Palos Verdes Estates, Calif.

Filed Aug. 11, 1969, Ser. No. 848,776
Int. Cl. H01q 13/10
U.S. Cl. 343—771 **13 Claims**



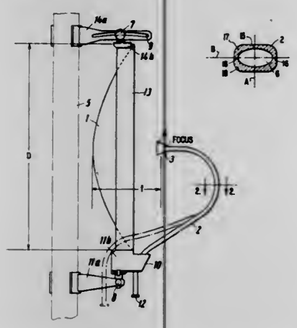
A conical reflector antenna is disclosed with a feed that is either a close approximation to a line source or a cylindrical structure which is electrically equivalent to a line source. Nearly complete control of its aperture illumination function is achieved by exciting various amounts of the line source or cylindrical feed. In addition to beamwidth control of a collimated beam that is linearly or circularly polarized, phase-sensing monopulse operation is made possible by dividing a

cylindrical feed structure into three equal sectors and incorporating conventional directional couplers for obtaining the difference between received signals from sectors on either side of a vertical axis for azimuth error, and the weighted difference between the sum of those signals and the signals from the third sector for an elevation error.

3,623,115
DIRECTIONAL ANTENNA

Erich Schuttloffel, Backnang, and Hans-Dieter Kuhne, Allmersbach, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm (Danube), Germany

Filed Nov. 18, 1969, Ser. No. 877,630
Claims priority, application Germany, Dec. 7, 1968, P 18 13 406.0
Int. Cl. H01q *13/02, 19/14*
U.S. Cl. 343—781 **6 Claims**

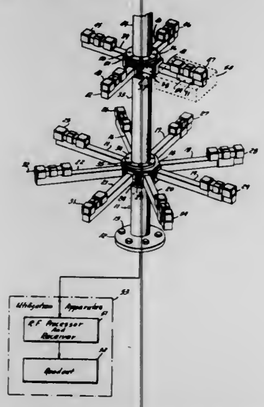


A feeder waveguide for a parabolic antenna formed from a seamless aluminum tube having an elliptical cross section and walls of continuously varying thickness. The wall thickness of the waveguide is smallest along the axes of its elliptical cross section, and is greatest at points lying between the major and minor axes of the elliptical cross section. The waveguide has a horn formed in one of its ends and a connecting flange formed in the other of its ends.

3,623,116
FERRITE CORE CROSSED SPACED LOOP ANTENNA

Terry C. Green, and Ruell F. Solberg, Jr., both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 19, 1970, Ser. No. 65,073
Int. Cl. H01q *7/08*
U.S. Cl. 343—788 **10 Claims**

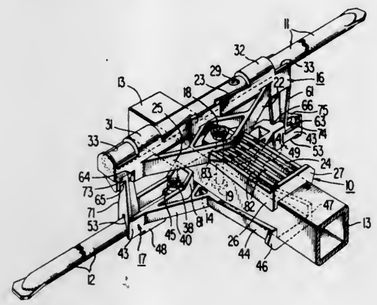


Disclosed herewith is an antenna having an upper tier field sensor of four ferrite core loop antennas connected in crossed simple-loop mode disposed at 90° intervals around a center support pipe and a lower tier direction finder of eight ferrite core loop antennas connected in crossed spaced loop mode likewise disposed around said center support pipe but at 45° intervals. The electrical leads of each of said ferrite core loop antennas of both of the aforesaid tiers are respectively connected to each other and a compatible data processing receiver in such manner and as necessary as to effect a bearing readout therefrom of predetermined electromagnetic energy sensed by the entire antenna.

3,623,117
COLLAPSIBLE STRUCTURE TO SUPPORT ANTENNA ELEMENTS

Neil Worrall Burwell, deceased, late of Moorestown, N.J. (by Shirley D. Burwell, legal representative), and Franklin Roosevelt Di Meo, Woodbury, N.J., assignors to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,478
Int. Cl. H01q *3/02*
U.S. Cl. 343—882 **13 Claims**

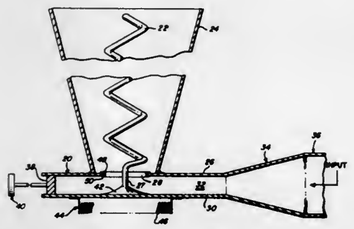


A collapsible structure for supporting a pair of elongated conductive rods is provided. In the described arrangement, a pair of identical support parts of insulator material are mounted in opposed interfitting relation to the boom of an antenna. The support parts are mounted so that antenna rods fixed to the support parts lie parallel to the boom when the structure is in the collapsed condition and cross generally perpendicular to the boom when the structure is operated to place the rods in their extended or operative condition. The two support parts of insulator material each have a load bearing leg extending therefrom which fits into a slot in the other insulator support part upon the parts being pivoted to place the rods in the extended condition.

3,623,118
WAVEGUIDE-FED HELICAL ANTENNA

George J. Monser, and John R. Ehrhardt, both of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed July 1, 1969, Ser. No. 838,143
Int. Cl. H01q *1/36, 1/50;* **H03h** *7/38*
U.S. Cl. 343—863 **11 Claims**

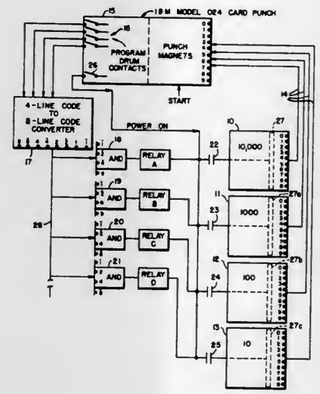


A helical antenna excited from a waveguide having sidewalls of reduced height to provide an improved impedance match between the waveguide and the helix, one end of the helix being attached to the waveguide whereby heat may be conducted therefrom during operation.

3,623,119
CARD PUNCH SYSTEM

Robert F. Orr, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Mar. 13, 1969, Ser. No. 807,054
Int. Cl. G01d *9/38*
U.S. Cl. 346—9 **3 Claims**

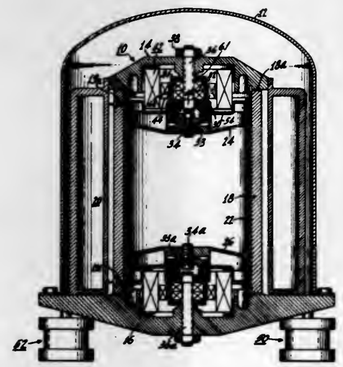


A card punch system including a card punch machine comprising program drum contacts operated in accordance with a program code, a data source electrically connected to the card punch, and circuit means driven by the program drum contacts electrically connected to the data source for entering data automatically into the card punch in serial fashion in accordance with said program code.

3,623,120
MAGNETIC DRUM SYSTEM

Abraham Lichowsky, Los Angeles, Calif., assignor to Radio Corporation of America

Filed July 11, 1968, Ser. No. 744,059
Int. Cl. G11b *25/02, 5/76*
U.S. Cl. 346—74 M **12 Claims**

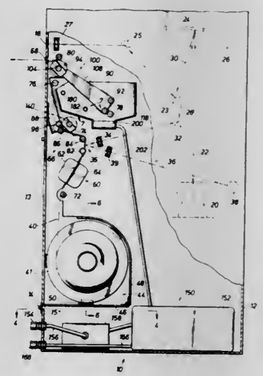


Lightweight, thin-walled magnetic drum, without center shaft, in heavy-walled, rigid housing. Flexure elements under stress which act as end walls of the drum are each fixed to a bearing race. Another race of each bearing is fixed to the housing. Differential expansion and other misalignments between the drum and housing are taken up equally by these flexure elements. At the drum ends, any thermally induced axial misalignment which occurs between magnetic heads and their tracks on the drum is one-half that of conventionally mounted magnetic drums of the same length, and at the drum center there is no misalignment.

3,623,121
ELECTROPHOTOGRAPHIC RECORDER

Gene Corgey, Cypress, Tex., assignor to GEO Space Corporation

Filed May 28, 1969, Ser. No. 828,512
Int. Cl. G03g *15/10;* **G01d** *11/24*
U.S. Cl. 346—74 P **13 Claims**

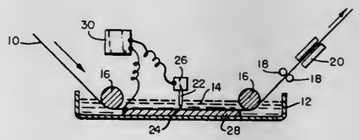


A recording seismograph is provided which employs an electrophotographic recording process to provide a dry record or seismogram. The seismograph includes a multielement galvanometer, a light source, timing light signals and optical means for impinging the light traces on a chemically treated paper which has been properly charged prior to being exposed to the light traces. The exposed paper is then passed through a developer tank in which the paper is sprayed with a toner on the sensitized side of the paper only. Control of the toner spray achieves controlled development of the image. The paper storage and loading mechanism is mounted on the front door which allows easy loading of the recorder.

3,623,122
ELECTRIC RECORDING APPARATUS EMPLOYING LIQUID DEVELOPER

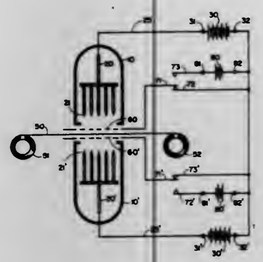
Richard A. Fotland, Cleveland, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed June 4, 1970, Ser. No. 43,391
Int. Cl. G03g *13/00*
U.S. Cl. 346—74 E **8 Claims**



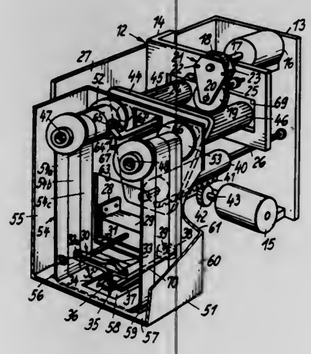
A method and apparatus for generating imagery in which information from either an original document or an electronic input is placed on paper or other suitable record medium by the use of control element(s) which establish an electric field adjacent to the record medium; the recording element(s) being immersed in a liquid.

3,623,123
ELECTROSTATIC PRINTER
Alex E. Jvirblis, Mountain View, Calif., assignor to The Singer Company
Filed Mar. 10, 1969, Ser. No. 806,782
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 ES **13 Claims**



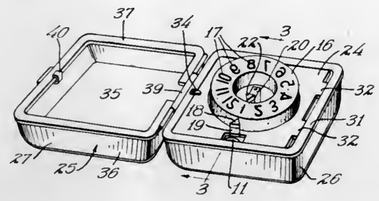
An electrostatic apparatus for alphanumeric character generation is disclosed. Character generation is controlled by selectively switching the potential on selected elements of a multielement grid positioned between the corona source and the receptor. For increased writing speed, there is disclosed a structure having a corona source and a multielement grid on each side of the receptor.

3,623,124
COLOR PRINTER FOR ISOTOPE SCANNER
Winfried Platz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Jan. 3, 1969, Ser. No. 788,721
Claims priority, application Germany, Jan. 8, 1968, P 16 16 113.0
Int. Cl. A61b *6/00*; **G01d** *15/20*
U.S. Cl. 346—106 **2 Claims**



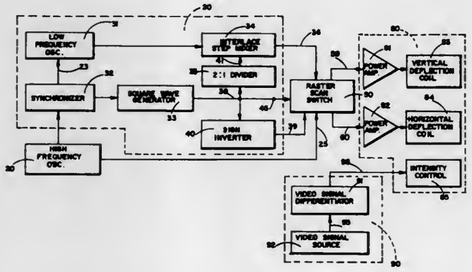
An apparatus for isotope diagnosis or scanner has a probe for ray measuring by means of which the section being examined is checked line by line and the measured results are reproduced upon a writing material by means of a color scriber containing a printing type. A colored band with differently colored longitudinal strips located next to each other is moved longitudinally and transversely under the printing type so that markings of different colors are imprinted depending upon the results of the measurement. The invention is particularly characterized by only a mechanically sliding connection of the movable parts of the writing means with the band-moving drives attached to fixed supports, the drive of the printer of markings and the switches for varying the direction of movement of the band.

3,623,125
TIME-RECORDING WATCH
Emmett D. McGowan, 1831 Portland Ave., St. Paul, Minn.
Filed July 22, 1969, Ser. No. 843,358
Int. Cl. G01d *15/20*
U.S. Cl. 346—142 **1 Claim**



A watch case supports a rotatable disc rotatable every 12 or 24 hours. A pointer is provided driven concentrically with said disc every hour. A fixed reference member is provided to indicate the position of the disc. Numerals in the disc may be imprinted upon a sheet to show the relative position of the disc, pointer, and fixed reference number.

3,623,126
EDGE SHARPENING IN A SCANNED IMAGE DISPLAY SYSTEM
George B. Newhouse, Long Beach, Calif., assignor to North American Rockwell Corporation
Filed Sept. 24, 1969, Ser. No. 860,598
Int. Cl. H04m *5/14*
U.S. Cl. 178—7.5 R **6 Claims**



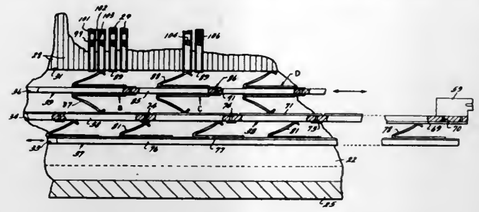
An interlaced raster scan that scans alternately in each of two preselected mutually orthogonal directions, utilizing signal spike forming circuitry responsive to changes in the raster scan video display signal. More nearly equal image edge sharpening is provided for all edges of the display, regardless of the orientation of the image edge.

ERRATA

For Classes 178—7 thru 343—767 see:
Patent Nos. 3,623,126 thru 3,623,162

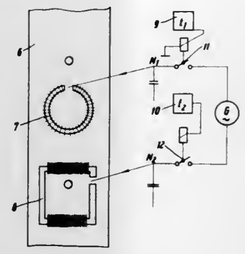
3,623,127
ELECTRICAL PRINTED CIRCUIT SWITCHING DEVICE
Ashley C. Glenn, 2440 Dorian Drive, Reading, Ohio
Filed Nov. 3, 1969, Ser. No. 873,211
Int. Cl. H01h *15/00*; **H05k** *5/00*; **H02b** *1/04*
U.S. Cl. 200—16 R **4 Claims**

A switching device which comprises a boxlike enclosure in which contact boards are mounted for relative movement. Interconnecting contacts on the contact boards establish paths of electrical connection between input conductors and rows of outwardly extending contacts. The contact boards are moved between selected positions to connect selected rows of outwardly extending contacts to the input conductors. Circuit boards each having contacts engageable with outwardly extending contacts of a selected row are mounted in the enclosure in position for engagement of contacts of the circuit board with the outwardly extending contacts of one row.



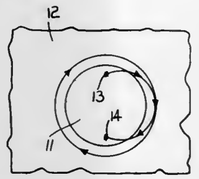
Movement of the contact boards permits connection of selected pairs of input conductors when the contacts boards are in selected positions.

3,623,128
APPARATUS FOR IMPROVING THE TORSIONAL FATIGUE STRENGTH OF CRANKSHAFTS
Gerhard Seulen, and Friedham Reinke, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Renscheid-Hasten, Germany
Original application Feb. 2, 1968, Ser. No. 704,891, now Patent No. 3,510,928, dated May 12, 1970. Divided and this application Dec. 22, 1969, Ser. No. 889,766
Int. Cl. H05b *5/00*, *9/06*
U.S. Cl. 219—10.57 **4 Claims**



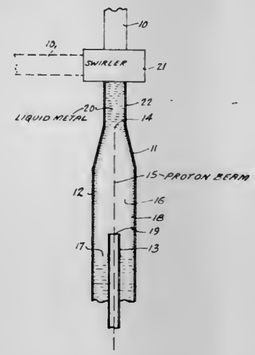
Crankshafts frequently have low torsional fatigue strength in the region of the oilholes on the main bearing surfaces when inductively hardened. The invention provides a method and apparatus for producing hardened zones which increase in depth along the main bearing surface towards the oilhole, which oilhole is preferably hardened along its whole length, whereby the torsional fatigue strength is improved.

3,623,129
ELECTRON BEAM WELDING
Brian Leslie Miles, Kings Heath, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 17, 1969, Ser. No. 858,687
Claims priority, application Great Britain, Sept. 23, 1968, 45,075/68
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **5 Claims**



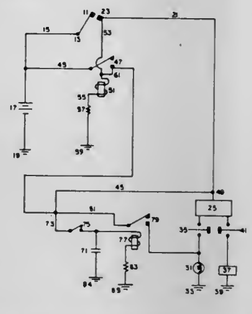
A method of electron beam welding a patch into an aperture in a finished component to form an assembly. A patch is inserted into a corresponding aperture in a component, excess material being provided on the face of the patch and/or the component to be presented to the electron beam. The electron beam is directed so that it first impinges on the excess material, and then the component is moved relative to the beam so that the beam impinges on and then follows the interface between the component and the patch. Thus, the patch is welded to the component around the periphery of the patch. The component is then moved relative to the beam so that the beam again impinges on the excess material, the action of the beam is then stopped, and the excess material is machined away.

3,623,130
TARGET ASSEMBLY FOR A THERMAL NEUTRON GENERATOR
Desmond G. Dalrymple, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed May 16, 1969, Ser. No. 825,140
Int. Cl. G21g *3/04*
U.S. Cl. 250—84.5 **2 Claims**



A target assembly for a thermal neutron generator wherein an elongated target tube has a top end receiving liquid metal and a bottom end receiving a windowless proton beam tube; the liquid metal enters the target zone with a swirl causing the liquid metal to adhere to the wall of the target tube so as not to enter the proton beam tube.

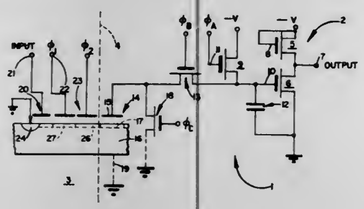
3,623,131
COMBINATION TIME DELAY AND SELF-ACTUATING VOLTAGE LEVEL PROTECTIVE CIRCUIT FOR VEHICULAR ELECTRICAL SYSTEMS
Carl D. Russell, 1502 South Boulder St., Tulsa, Okla.
Filed May 19, 1970, Ser. No. 038,693
Int. Cl. H02h *3/24*
U.S. Cl. 307—10 BP **18 Claims**



The invention resides in a modification of the vehicular electrical system to include a protected time delay circuit for

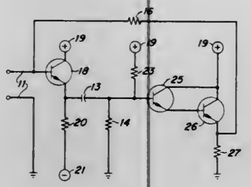
maintaining the lights or the like on for a predetermined period after initiation, and a voltage-sampling interrupter for interrupting the electrical system when the battery voltage decays to a predetermined level if the lights or other load have been inadvertently left on or short-circuited.

3,623,132
CHARGE SENSING CIRCUIT
Robert D. Green, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed Dec. 14, 1970, Ser. No. 979,810
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—205 **9 Claims**



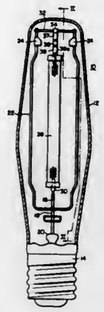
A first field effect transistor is turned on during a first phase recurring interval for charging a first capacitor at the gate electrode of an output field effect transistor. During a second phase recurring interval, a second field effect transistor in series between the plate of a second capacitor and the first capacitor, is turned on. The voltage on the first capacitor is connected to the plate of the second capacitor for inverting or depleting the semiconductor region subjacent the plate of the second capacitor. If minority carriers are available in the semiconductor substrate adjacent to the region covered by the plate, the subjacent region is inverted and electrically connected to a charge coupled circuit. If an inversion does not occur, the voltage on the first capacitor is unchanged and the output field effect transistor remains on for indicating the absence of charge (minority carriers) on the charge coupled circuit. If the charge coupled circuit provides minority carriers to the second capacitor, the voltage on the first capacitor is reduced and the output field effect transistor is turned off for indicating the presence of charge on the charge coupled circuit.

3,623,133
TWO-TERMINAL INDUCTORLESS ELECTRONIC REACTOR
Delroy Ashby, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 12, 1969, Ser. No. 875,752
Int. Cl. H03k *3/26*
U.S. Cl. 307—230 **1 Claim**



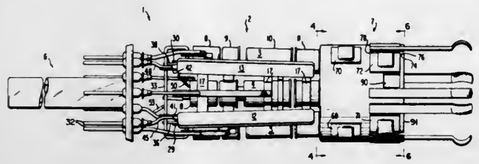
Large values of accurately controlled inductive or capacitive reactance are obtained by using a two-terminal electronic reactor made up of only transistors, resistors, a capacitor and, if desired for protective purposes, a few diodes. In its simplest form, the electronic reactor includes a transistor emitter-follower stage, an impedance network including a series arm and a shunt arm connected between the external terminals of the reactor and the input terminals of the emitter-follower, and a feedback resistor connected from the output of the emitter-follower to one of the reactor external terminals.

3,623,134
ARC TUBE CENTERING DEVICE
Leo C. Werner, Cedar Grove, and Raymond M. Kane, Florham Park, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,597
Int. Cl. H01j *61/34*
U.S. Cl. 313—25 **8 Claims**



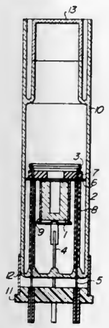
An improved mounting structure for a gas discharge lamp employing a ceramic arc tube mounted on a support frame within an outer glass envelope. The arc tube is secured at one end to a lead in conductor and at its other end is connected to the supporting frame in a manner which substantially restricts all lateral movement of the arc tube with respect to the support frame while permitting free axial movement of one end of the arc tube with respect to the support frame.

3,623,135
ELECTRON GUN ASSEMBLY MOUNTING
Frederick F. Doggett, East Syracuse, and Leonard W. Jenne, Jr., Baldwinsville, both of N.Y., assignors to General Electric Company
Original application May 24, 1968, Ser. No. 731,807. Divided and this application Sept. 16, 1969, Ser. No. 870,768
Int. Cl. H01j *1/88, 5/50, 19/44, 29/50*
U.S. Cl. 313—70 R **4 Claims**



An electron gun assembly of the three gun, in-line type. The three guns each including a plurality of electrode elements are rigidly attached to four support rods or glass beads by a mounting means comprising four metal straps which connect each of the outer gun elements to two support rods and the center gun elements to all four support rods. A first group of four L-shaped metal tabs are imbedded in the ends of the support rods, and two mounting bars are each connected at both ends to two of the tabs for the purpose of making electrical connections to the gun heater elements. A second group of U-shaped metal tabs are also imbedded in the ends of the support rods to permit a mechanical connection of a stem component whereby the gun electrode elements are isolated from forces applied to the stem. A convergence assembly is self-registering with respect to the gun assembly by the alignment of precision holes in the base of the convergence assembly with cutouts provided in a flange on the center gun electrode. A plurality of slots are provided in the wall of the convergence assembly which permit self-registering of pole piece elements positioned inside the assembly.

3,623,136
LIGHT-SOURCE LAMP FOR ATOMIC LIGHT-ABSORPTION ANALYSIS
Sadami Tomita, Hitachi-shi; Akira Hosoya, Hitachi-shi, and Hiroshi Okagaki, Katsutashi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 7, 1969, Ser. No. 822,360
Claims priority, application Japan, May 10, 1968, 43/30883
Int. Cl. G01j *3/12;* **H01j** *61/08*
U.S. Cl. 313—178 **26 Claims**



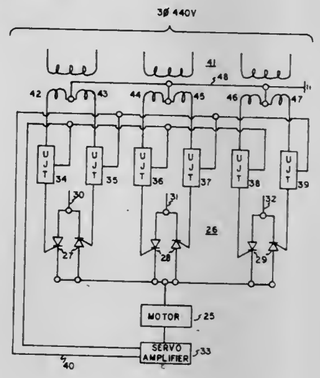
A light source lamp for atomic light-absorption analysis comprising a structure constituted by a molded body of fine metal wires having a relatively high-melting-point which are mechanically closely linked with each other having a metal having a relatively low-melting-point impregnated in the gaps between the fine wires, wherein the metal of a low-melting-point is continuously fed to a hollow portion through the gaps between the fine wires while maintaining the contour of the structure by virtue of the frame composed of the fine metal wires of a high-melting-point, thereby making it possible to produce a high light-intensity resonance line of the low-melting-point metal which is stabilized for a long time.

3,623,137
ELECTRON DISCHARGE DEVICE
Victor H. Campbell, Sylvan Heights, Emporium, Pa., assignor to Sylvania Electric Products, Inc.
Original application Dec. 8, 1966, Ser. No. 600,182, now Patent No. 3,479,449, dated Nov. 18, 1969. Divided and this application Apr. 30, 1969, Ser. No. 820,448
Int. Cl. H01j *21/00, 19/14*
U.S. Cl. 313—301 **1 Claim**



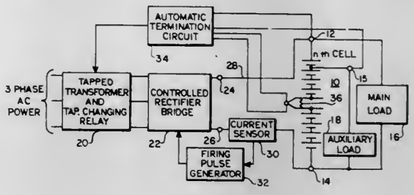
An electron discharge device includes a plurality of signal input and signal output electrodes and a cathode electrode common to all other electrodes to provide a stable ratio of output signals in response to a ratio of input signals.

3,623,138
LINEAR DC VOLTAGE TO FIRING ANGLE CONVERTER CIRCUIT
John A. Joslyn, Dalton, Mass., assignor to General Electric Company
Continuation-in-part of application Ser. No. 479,550, Aug. 13, 1965, now abandoned. This application Aug. 26, 1969, Ser. No. 853,187
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 **6 Claims**



A triggering circuit for a controlled rectification system is provided which supplies firing pulses to the rectifiers at some phase angle determined by an input DC error signal. The firing circuit uses a unijunction transistor having a pulse output transformer coupled to the transistor output circuit for application of firing pulses to the gate-cathode circuit of the controlled rectifier. A DC error voltage is applied to one of the base electrodes of the unijunction transistor and a phasing voltage is coupled to its emitter electrode for synchronization of the triggering pulse with an AC voltage applied to the associated rectifier of the rectification system. A preferred application of the firing circuit is to control a reversible DC motor utilizing an SCR power amplifier in a servomechanism or regulating system.

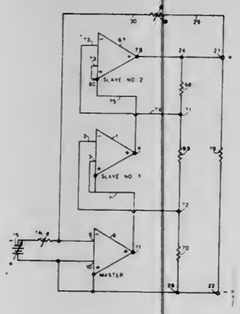
3,623,139
METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING THE FAST CHARGING OF RECHARGEABLE BATTERIES
Arthur F. Dickerson, Woodland Hills, Calif., assignor to General Electric Company
Filed Nov. 6, 1969, Ser. No. 874,447
Int. Cl. H02j *7/04*
U.S. Cl. 320—22 **7 Claims**



A method and apparatus for automatically controlling the fast recharging of a storage battery pack consisting of a number of cells (N). The cells are conditioned so that at least one of them is at a slightly higher charge state than the

remaining cells (N-1) before initiating a recharging process. All the cells (N) are connected to a source of charging current and a voltage level responsive circuit is connected across the at least one cell which is at a higher charge state in order to monitor the increasing voltage thereof. The cells (N) are initially charged with a high current until the voltage at the terminals of the cell with the higher charge state abruptly rises and thereby signals to the voltage level responsive circuit that the cell has achieved full charge. At this point, the voltage level responsive circuit causes a transformer tap changing and switching circuit to terminate the high-current fast-charging mode and to establish a low-current slow-charging mode.

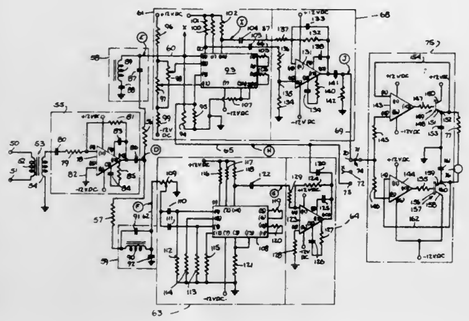
3,623,140
PLURALITY OF PROGRAMMABLE REGULATED POWER SUPPLIES SHARE THE LOAD IN A PREDETERMINED RATIO WITH OVERALL STABILITY DETERMINED BY THE MASTER SUPPLY
Sarkis Nercessian, Long Island City, N.Y., assignor to Forbro Design Corp., New York, N.Y.
Filed Jan. 30, 1970, Ser. No. 7,174
Int. Cl. G05f 1/56
U.S. Cl. 323—23 **10 Claims**



A plurality of programmable power supplies are connected in cascade and are interconnected in such manner as to provide that they share the load in predetermined ratios and so that the overall stability is determined substantially solely by the characteristics of the master supply.
Prior art combinations of power supplies have been of two general kinds. The first kind has been called "piggy-back" where an unregulated power supply is connected in series with a programmable regulated power supply. An overall feedback circuit has been used to control the voltage across the load. Such an arrangement, however, cannot provide output voltage less than the output of the unregulated power supply and voltage ratio load sharing cannot be provided. The second kind uses two programmable regulated power supplies in a master-slave combination. The master power supply is used to control the slave power supply. There is no overall feedback and hence, the accuracy and stability of the system is governed by the less stable and accurate of the two power supplies. Offset and drift, for example, may be degraded by the slave power supply.

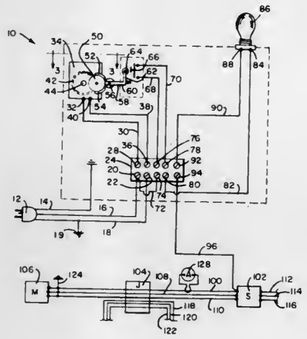
3,623,141
APPARATUS AND METHOD FOR MEASURING TRANSMISSION CHANNEL CHARACTERISTICS
John T. Boatwright, Hopkinton, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.
Filed May 21, 1970, Ser. No. 39,247
Int. Cl. G01d 27/00
U.S. Cl. 324—57 DE **11 Claims**

A test signal is produced by adding a sinusoidal signal at a fundamental frequency to the second harmonic thereof which has been produced by squaring the fundamental frequency signal in a linear multiplier and eliminating the DC component. The dual-frequency phase coherent test signal is detected after transmission through the transmission channel under test. The detected signal is acted upon with the low-frequency component being squared in a linear multiplier to produce an intermediate signal from which the DC component is eliminated and which is then combined with the



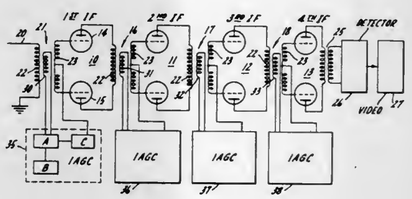
high-frequency component in the detected signal by modulation with the aid of a further linear multiplier to produce the sum and difference components, the difference components being selected by a low-pass filter and measured as to peak-to-peak amplitude.

3,623,142
CABLE CONDUCTOR LOCATOR INCLUDING CAM-OPERATED SWITCH MEANS FOR IMPRESSING A PULSING CURRENT ON THE CONDUCTOR
Mayes O. Key, Locust Grove, Okla., assignor to Bruce E. Johnson, Tulsa, Okla., a part interest
Filed Oct. 8, 1969, Ser. No. 864,669
Int. Cl. G01d 19/16, 31/08
U.S. Cl. 324—66 **2 Claims**



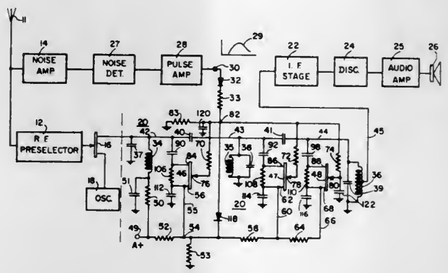
A method of locating a particular electrical conductor among a plurality of electrical conductors from a remote location comprises applying a pulsing current to each of said conductors in turn, and identifying the particular electrical conductor by measuring the pulsing current with a clamp-on ammeter. If certain of the electrical conductors are "live," the ammeter will identify them by their steady current, and if other of the conductors show no current flowing, the operator knows that they are not the ones sought. The pulsing current is applied to the conductor by means of an apparatus having a synchronous motor operating against a cam member which in turn operates a make and break switch to impress a pulsing current of known amplitude to the conductor, which is subsequently identified by a clamp-on ammeter.

3,623,143
ANTIJAM RECEIVER OF WIDE DYNAMIC RANGE UTILIZING IAGC ACTION FOR CLOSELY PACKED PULSES
Joseph F. Marshall, Woburn, Mass., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 15, 1963, Ser. No. 258,930
Int. Cl. H04b 1/16; H03g 3/20
U.S. Cl. 325—326 **11 Claims**



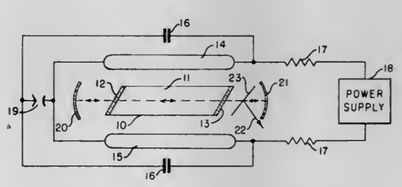
1. An instantaneous automatic gain control circuit of a radio frequency receiver having a plurality of intermediate frequency amplifier stages coupled in sequence by transformers the secondaries of which transformers are center tapped, comprising:
a sampling secondary winding in flux relation with selected intermediately frequency transformers;
a threshold control voltage coupled to one terminal lead of one of the sampling secondary windings to establish a bias in said winding; and
a slow back biasing network and an instantaneous back biasing network coupled in parallel between the other terminal lead of said one sampling secondary winding and the center tap of the secondary in flux relation with said one of the sampling secondary windings whereby the intermediate frequency amplifier stages having jamming signals of unwanted high amplitude applied thereto will be instantaneously back biased in the forward direction to avoid saturation of the forward intermediate frequency amplifier stages.

3,623,144
IMPULSE NOISE-BLANKING SYSTEM EMPLOYING FIELD EFFECT TRANSISTORS
Burton J. Fischel, Glenview, and Frank J. Cerny, Jr., Riverside, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed May 13, 1970, Ser. No. 36,717
Int. Cl. H04b 1/10
U.S. Cl. 325—478 **10 Claims**



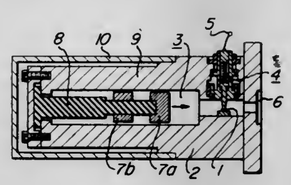
The blanking system, for grounding the signal path of a receiver during the existence of impulse noise, includes field effect transistor blanking elements connected across the sections of a Butterworth filter located in the signal path. The field effect transistors are biased so that they produce virtually no blanking pulse injection, switching transient insertion or intermodulation between undesired signals. Thus, there need not be as much selectivity in the stages of the receiver preceding the blanker thereby facilitating an increase in the blanking rate of the blanker as compared to blankers utilizing bipolar transistors or diode-blanking elements. In addition, the blanking system includes desensitizing circuitry for reducing saturation of the noise detector otherwise caused by radio frequency signals occurring in the noise-sampling channel.

3,623,145
HIGH-ENERGY CHEMICAL LASER SYSTEM
David W. Gregg, Lafayette, and Richard K. Pearson, Pleasanton, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed May 26, 1970, Ser. No. 40,653
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 **10 Claims**



A high-energy chemical laser system wherein explosive gaseous mixtures of a reducing agent providing hydrogen isotopes and nitrogen-fluorine compounds are uniformly ignited by means of flash-photolysis or an electron beam. The resulting chemical explosion pumps a lasing chemical species, hydrogen, deuterium or tritium fluoride which is formed in the chemical reaction. The generated lasing pulse has light frequencies in the 3-micron range. Suitable nitrogen-fluorine gaseous compounds include tetrafluorohydrazine (N_2F_4), nitrogen-trifluoride (NF_3) difluorodiazine (N_2F_2), and suitable reducing agents including hydrogen (H_2) deuterium (D_2), tritium (T_2) diforane (B_2H_6) pentaborane (B_5H_9) and methane (CH_4), as well as combinations of the gaseous compound and/or molecular mixtures of the reducing agent.

3,623,146
TEMPERATURE COMPENSATED CAVITY FOR A SOLID-STATE OSCILLATOR
Yoichi Kaneko, Kokubunji-shi, and Kenzi Sekine, Hachioji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 23, 1969, Ser. No. 827,275
Claims priority, application Japan, May 29, 1968, 43/36069
July 17, 1968, 43/50300
Int. Cl. H03b 3/04, 7/14
U.S. Cl. 331—96 **1 Claim**

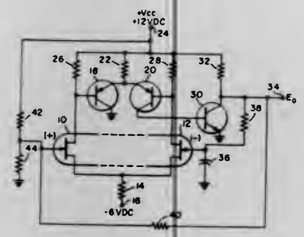


A temperature-compensating device for a solid-state oscillator, wherein a part of the conductive walls constituting a cavity resonator is formed by a movable plate, the movable plate is fixed to one end of a dielectric rod with a high coefficient of linear expansion, and the other end of said rod is fixed to an extension of said cavity resonator.

3,623,147
PRECISION ASTABLE MULTIVIBRATOR

Ronald C. Scheerer, Baltimore, and Seymour J. Rogal, New Carrollton, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1970, Ser. No. 43,720
Int. Cl. H03k 3/282
U.S. Cl. 331—113 **11 Claims**

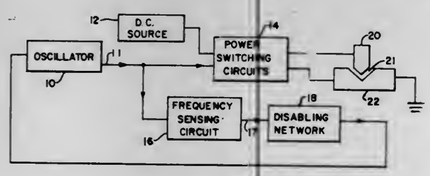


A free-running multivibrator employing semiconductive devices wherein the accuracy of the frequency output is relatively insensitive to variations in semiconductor characteristics. The multivibrator is comprised of a pair of differential amplifiers, one of which includes a matched pair of field effect transistors which are alternately rendered conductive and nonconductive by the charge and discharge of a single capacitor.

3,623,148
APPARATUS FOR SENSING THE FREQUENCY OF MACHINING PULSES FROM AN EDM POWER SUPPLY

Philip E. Berghausen, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed July 13, 1970, Ser. No. 54,102
Int. Cl. B23k 9/10
U.S. Cl. 331—172 **2 Claims**



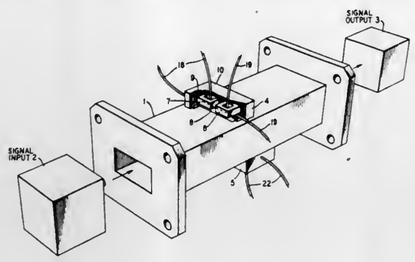
An apparatus for monitoring the frequency of output pulses from an EDM power supply and terminating the operation of the supply when the output pulse frequency exceeds a predetermined magnitude. The apparatus comprises a frequency sensing circuit that produces an output signal having a magnitude that is a function of the output pulse frequency. A switching network is connected to the sensing circuit and terminates the operation of the power supply in response to an output signal representing the predetermined output pulse frequency magnitude.

3,623,149
RECIPROCAL LATCHING FERRITE WAVEGUIDE PHASE SHIFTER HAVING WAVEGUIDE STUBS ENERGIZED IN PHASE QUADRATURE

John Ineson Smith, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 12, 1970, Ser. No. 45,695
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A **7 Claims**

A waveguide phase shifter of the loaded line type using latching ferrite material as the active element. The active ferrite material is fabricated in the shape of thin and low-volume toroids which are disposed in pairs in waveguide stubs that are coupled to a main waveguide by coupling slots formed therein. Means are provided for alternatively energizing the toroids into either a symmetrical state or an antisymmetrical state. The changes in impedance and phase constants between these two different states produce

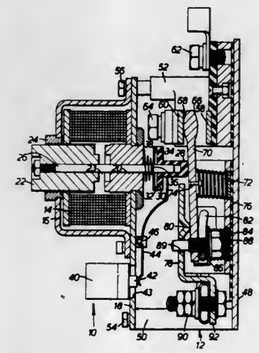


susceptance changes across the coupling slots thereby effecting corresponding changes in the phase of microwave signals propagated over the main waveguide. This phase shift of the signals is reciprocal.

3,623,150
CONTACTOR SWITCH

George Eric Minns, Teddington, England, assignor to Dewhurst and Partner Limited

Filed Jan. 12, 1970, Ser. No. 2,448
Claims priority, application Great Britain, Jan. 20, 1969, 3,230/69
Int. Cl. H01h 3/00
U.S. Cl. 335—192 **6 Claims**



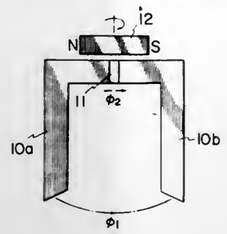
A contactor rated to switch at least 20 amperes in which the movement of a contact arm to engage a moving contact with a fixed contact occurs in two stages, the arm first moving to engage the moving contact with the fixed contact and then pivoting about the fixed contact. The contactor is in two separably connected parts, the first comprising the electromagnet drive system and the second comprising the contact set, main spring, possibly an auxiliary spring, and a microswitch.

3,623,151
CONVERGENCE YOKE CORES FOR CATHODE-RAY TUBES

Hiroshi Ikeuchi, Yokohama City, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed July 13, 1970, Ser. No. 54,384
Int. Cl. H01f 1/00
U.S. Cl. 335—212 **8 Claims**

In a convergence yoke core comprising a pair of L-shaped core members disposed in a U-shaped configuration with their inner ends of shorter legs opposed to each other with a gap therebetween and a static magnet disposed above the gap, the gap s bridged by a magnetic member having positive thermal expansion coefficient or negative thermal coefficient

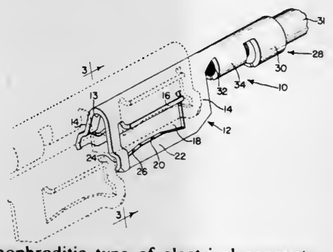


of permeability so as to compensate for the variation in the magnetic flux of the static magnet caused by the variation in the ambient temperature.

3,623,152
HERMOPHRODITIC ELECTRICAL CONNECTOR

Charles E. Gutshall, Schaumburg, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,634
Int. Cl. H01r 25/00
U.S. Cl. 339—47 R **3 Claims**

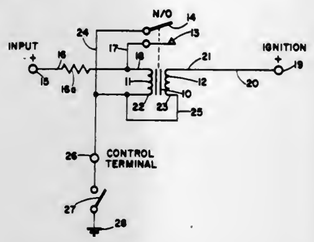


Hermophroditic type of electrical connector is generally tent shaped and provided with outwardly extending contact flanges on its sidewalls. The sidewalls cooperate with the apex to form a symmetrical channellike member, the shape of which permits two or more connectors to be assembled in a stack in snap-in and snap-off relationship by axial sliding engagement of the contact flanges with longitudinal cam surfaces formed on the walls and the exertion of force compatible with the thickness of the material from which the connector is formed.

3,623,153
ON-CIRCUIT BUZZER DEVICE WITH BUCKING FOR AUTOMOBILES COIL CANCEL

Rodney Hayden, Stoney Creek, Ontario, and Mario Guarasci, Niagara Falls, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 29, 1969, Ser. No. 820,095
Claims priority, application Canada, Dec. 26, 1968, 038,724
Int. Cl. B60q 5/00
U.S. Cl. 340—52 D **2 Claims**

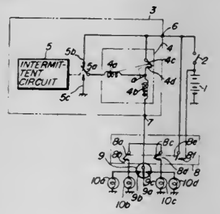


This is an on-circuit buzzer device for automotive use which utilizes a pair of coils in electrical bucking arrangement to operate a buzzer when certain conditions are met. The device uses the bucking arrangement as a cancelling means.

3,623,154
FLASHER CIRCUIT FOR VEHICLES

Hisashi Yonezu, Chita-gun, Aichi-ken, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

Filed Aug. 7, 1968, Ser. No. 750,878
Claims priority, application Japan, June 13, 1968, 43/40789
Int. Cl. B60q 1/38
U.S. Cl. 340—81 **9 Claims**

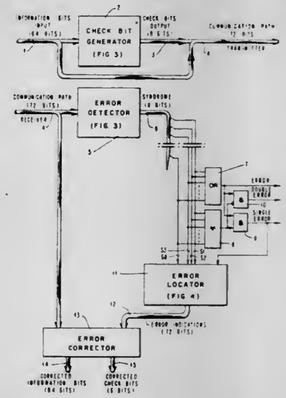


A flasher for vehicles, wherein detection of current is effected by the steady state current of load lamps such as turn signal lamps so that said apparatus may be capable of detecting a burnout of the turn signal lamps when used as a turn signal flasher and capable of flashing the front and rear or left and right turn signal lamps in a stable manner at an adequate frequency when used as a hazard warning flasher.

3,623,155
OPTIMUM APPARATUS AND METHOD FOR CHECK BIT GENERATION AND ERROR DETECTION, LOCATION AND CORRECTION

Mu-Yue Hsiao, Poughkeepsie, and Eugene Kolankowsky, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,858
Int. Cl. G06f 11/10
U.S. Cl. 340—146.1 **20 Claims**



Errors in code words transmitted over a communication path are detected and corrected by optimum apparatus at transmitting and receiving ends of the path. Illustratively, a 72 bit parallel code word, comprising a 64 bit information portion and an eight bit check portion is communicated between a transmitter and a receiver. A check bit generator at the transmitter generates eight check bits as a function of the 64 information bits, each check bit being associated with a number of information bits (a check bit and its associated information bits forming a "code group"). The information bits and check bits are communicated to the receiver where an error detector compares check bits generated from the received information bits with the received check bits and an error locator analyzes any mismatch to determine the location of an error. An error corrector then corrects any infor-

mation or check bit which is identified as incorrect by the error locator. The check bit generator at the transmitter supplies signals, at outputs corresponding to the check bits, by Exclusive ORing the information bits in its code group, in accordance with a single error correction and double error detection (SEC/DED) code. The error detector examines each code group separately by Exclusive ORing both its information and check bits in accordance with the same code and supplies syndrome signals manifesting the result of the examination. Error detection and correction are possible because, upon transmission, each code group contains an even number of bits (even parity), only one of which is a check bit, and each bit of each code word is a member of an odd number of code groups. At the receiver, a single correctable error is assumed to have occurred if an odd number of received code groups contains an odd number of bits (odd parity) and an uncorrectable double error is assumed to have occurred if an even number of code groups have odd parity. Single errors are then located and corrected as an AND function of the odd parity code groups. The check bit generator, error detector and error locator are designed in accordance with a technique for using a minimum number of components and a uniform number of components in each parallel signal path. Among the design goals are: each unique code group should substantially contain the same number of bits, each information bit must be a member of an odd number of code groups greater than one, and each check bit must be a member of a different code group. The number of code groups to which each information bit is assigned is determined by first exhausting the lowest odd number of code group combinations available before going to the next odd number of combinations.

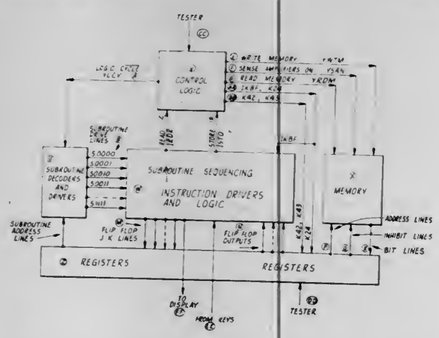
3,623,156
CALCULATOR EMPLOYING MULTIPLE REGISTERS AND FEEDBACK PATHS FOR FLEXIBLE SUBROUTINE CONTROL

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Original application June 23, 1966, Ser. No. 559,887, now Patent No. 3,566,160, dated Feb. 23, 1971. Divided and this application May 26, 1969, Ser. No. 827,795

Int. Cl. G06f 9/16

U.S. Cl. 340—172.5 **29 Claims**



Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode-ray tube output display. The flip-flop registers include a program register comprising a set of primary flip-flops for designating a subroutine to be performed and a set of secondary flip-flops for sequentially designating a group of one or more instructions to be executed in each state of the designated subroutine. The primary and secondary flip-flops are controlled by multiple feedback paths. Power switching is employed in the internal control and subroutine logic so that the subroutines and instructions are supplied with power only when they are to be executed. The flip-flop registers also include a memory access register for receiving information read from and to be written into the random access memory. When a random access memory cycle is required, it is automatically interposed between the otherwise regularly recurring logic cycles by the internal control and subroutine logic. Separate logic circuits are provided for enabling the state of the secondary flip-flops to be directly transferred to the memory access register and vice versa so that encoded transfer vectors may be stored in the random access memory and subsequently decoded by the internal control and subroutine logic to permit unrestricted subroutine returns. In the keyboard input two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in an address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J-K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J-K inputs. In the cathode-ray tube output display, a recurring pattern generated by integration in only two directions is selectively blanked to display the results of the operations performed by the calculator. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

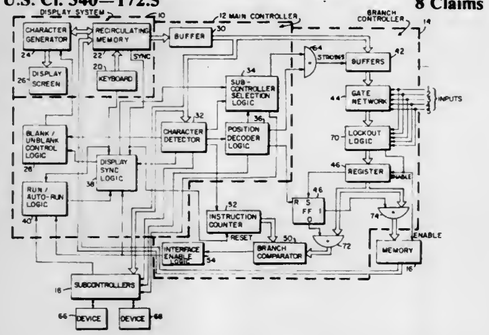
3,623,157
BRANCH CONTROL OF ELECTROMECHANICAL DEVICES AND DISPLAY INFORMATION

Gary N. Stapleford, Nashua, N.H., assignor to Sanders Associates, Inc., Nashau, N.H.

Filed Oct. 29, 1969, Ser. No. 872,342

Int. Cl. G06f 3/14, 7/00; G09b 7/04

U.S. Cl. 340—172.5 **8 Claims**



Information presented on a display screen is responded to by an operator and dependent on the operator's response the apparatus of the invention branches to another instruction presently available in the display system's recirculating memory or to a full page of instructions stored in an auxiliary memory. The instruction branched to causes information associated with it to be displayed for a further response by the operator and/or causes the main controller of the invention to activate one or more subcontrollers which in turn activate one or more electromechanical devices. For example, a student in response to a question displayed may select one multiple-choice answer. Dependent on this answer he may see further information displayed and in addition a short movie or group of slides presented, and still further, information might be played back from a tape recorder.

3,623,158
DATA PROCESSING SYSTEM INCLUDING NONASSOCIATIVE DATA STORE AND ASSOCIATIVE WORKING AND ADDRESS STORES

Roger J. Llewelyn, Romsey, and John F. Minshull, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

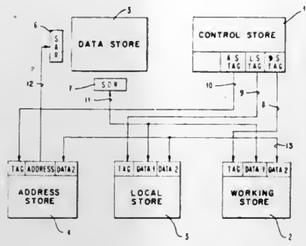
Filed Nov. 10, 1969, Ser. No. 875,234

Claims priority, application Great Britain, Nov. 12, 1968, 53,517/68

Int. Cl. G11c 7/00, 9/00

U.S. Cl. 340—172.5 **12 Claims**

An electronic data processing system comprising a nonassociative data store and four associative stores; a control store, a working store, a local store and an address store. The address store, under control of the control store, operates



upon address data which is then used to address the data store. The working store and the address store may function simultaneously to provide improved instruction execution.

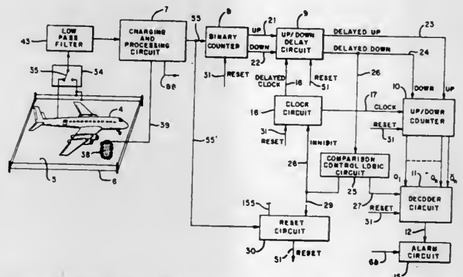
3,623,159
CAPACITIVE INTRUSION DETECTION SYSTEM

Robert F. Bell; Andrew L. Davis, and James M. Tresidder, Jr., all of Sunnyvale, Calif., assignors to Sylvania Electric Products Inc.

Filed Dec. 11, 1968, Ser. No. 782,928

Int. Cl. G08b 13/26

U.S. Cl. 340—258 C **30 Claims**



Each time the capacitance of a protected aircraft is charged to a prescribed threshold voltage level by a constant current source, it is discharged and an event or count is recorded in a first counter which automatically resets when it is full to repeat this operation cycle. The presence of an intruder near the aircraft causes its capacitance, and thus the time to fill the first counter, to change. An up/down counter is responsive to the outputs of the first counter and a clock generator for first counting up the number of clock pulses that are produced. When the first counter is half-full, the second counter counts down (subtracts) from the contents thereof the number of clock pulses that are produced prior to reset of the first counter when it is full. A decoder network monitors the remainder count in the up/down counter and initiates an alarm indicating intrusion of the protected aircraft area when the absolute value of the remainder count exceeds a prescribed minimum count at the end of any operation cycle. The system is reset at the end of each cycle.

3,623,160
DATA MODULATOR EMPLOYING SINUSOIDAL SYNTHESIS

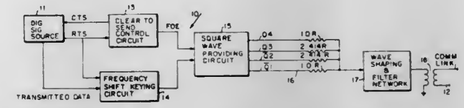
George R. Giles, Williamsville; Donald G. Shuda, Clarence Center, and Kenneth R. MacDavid, Clarence Center, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 17, 1969, Ser. No. 858,721

Int. Cl. H03k 13/02

U.S. Cl. 340—347 DA **11 Claims**

Multitone data-transmitting apparatus employing sinusoidal synthesis with harmonic cancellation. A multitone data transmitter employs relative phase displacements between plural digital waveforms all of which are representative of a tone to be transmitted and a weighted summing network for summing the plural waveforms so as to cancel undesirable harmonics of the frequency tone to be transmitted. In the illustrated FSK modulator, four square waves having relative phase shifts of $\pi/4$ radians are given suitable summing weights so as to cancel the third and fifth harmonic of any selected one of the FSK tones.



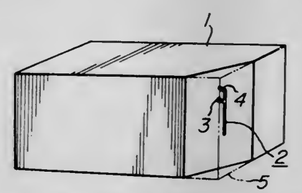
3,623,161
FRACTIONAL WAVELENGTH FOLDED ANTENNA MOUNTED ON PORTABLE RADIO

Kyohei Fujimoto, Yokohama, and Toshio Tatsuzawa, Fujsawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 761,267, Sept. 20, 1968, now abandoned. This application Aug. 3, 1970, Ser. No. 60,507. Claims priority, application Japan, Sept. 26, 1967, 42/82798, Dec. 1, 1967, 42/101502, Dec. 4, 1967, 42/103110

Int. Cl. H01q 1/24

U.S. Cl. 343—702 **10 Claims**



A portable radio device provided with an antenna small sized and not projected from the device for the convenience of handling, which antenna has two polarizations to be made operable almost free from disadvantages in operation due to change in electromagnetic field which are brought about with influences of ambient geographical features or houses.

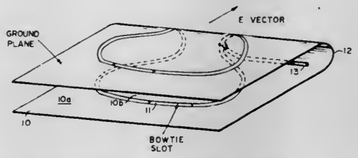
3,623,162
FOLDED SLOT ANTENNA

Arthur R. Whitty, Hollis, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 24, 1970, Ser. No. 58,015

Int. Cl. H01q 1/28, 13/10, 13/16

U.S. Cl. 343—767 **4 Claims**



A folded slot antenna comprising a sheet of conductive material folded upon itself and having a bow tie shaped slot arranged symmetrically about the bend of the fold on the surface of the sheet. This antenna structure can be flush mounted, for example, in the leading edge of the horizontal stabilizer or of the dorsal fin of an aircraft.

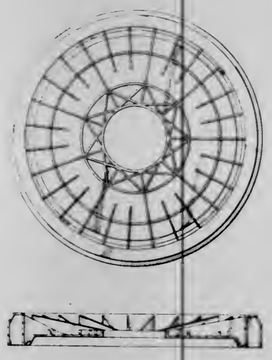
DESIGNS

NOVEMBER 23, 1971

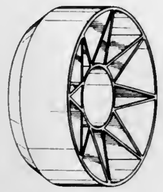
222,633
COMBINED STORAGE AND DISPLAY CART
Robert W. Carter and Walter P. Graber, Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.
Filed Nov. 10, 1969, Ser. No. 20,004
Term of patent 14 years
Int. Cl. D12—*02*; D6—*04*
U.S. Cl. D14—3



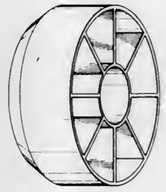
222,634
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed June 24, 1970, Ser. No. 23,655
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



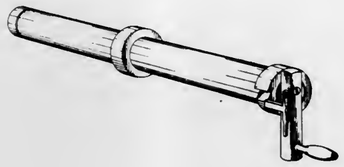
222,635
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 6, 1970, Ser. No. 23,845
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



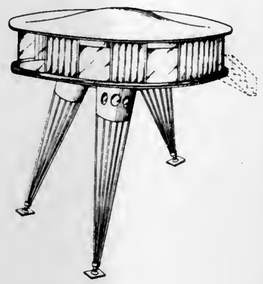
222,636
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 13, 1970, Ser. No. 23,939
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



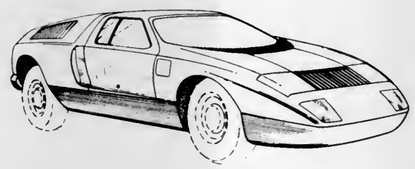
222,637
KITE CONTROL
Vivian S. Becker, 1197½ N. Oregon St., Ontario, Oreg. 97914
Filed Feb. 9, 1970, Ser. No. 21,348
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—222



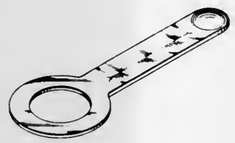
222,638
RESIDENTIAL DWELLING
Paul V. Frakes, Williamsport, Pa., assignor to The Gazer Corporation, Williamsport, Pa.
Filed Jan. 28, 1970, Ser. No. 21,124
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



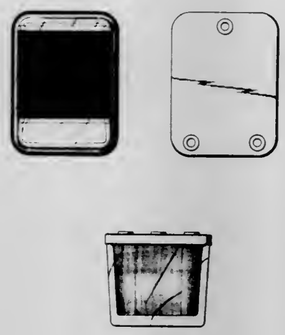
222,639
AUTOMOBILE BODY
Karl Wilfert, Gerlingen-Waldstadt, and Fredrich Geiger, Boblingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 5, 1970, Ser. No. 21,298
Claims priority, application Germany Aug. 5, 1969
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



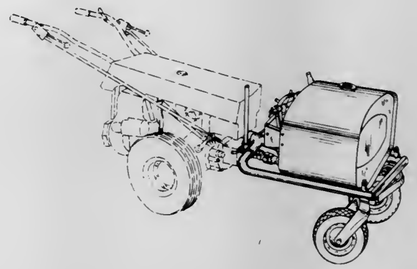
222,640
FISHING LINE CLIP
Herbert J. Mayer, 1153 Chevy Chase Drive, Anaheim, Calif. 92805
Filed June 18, 1970, Ser. No. 23,551
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



222,641
DISPOSABLE LIQUID FILTER CARTRIDGE
Vernon D. Roosa, % Standadyne Inc., P.O. Box 1440, West Hartford, Conn. 06101
Filed June 15, 1970, Ser. No. 23,490
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



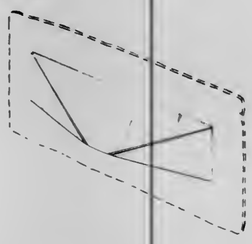
222,642
TRAILER MOUNTED SPRAYER UNIT
Roy F. Broyhill, Dakota City, Nebr. 68731
Filed July 10, 1970, Ser. No. 23,905
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



222,643
CORRUGATED TUBING
Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advanced Drainage Systems, Inc., Waterville, Ohio
Filed Apr. 3, 1970, Ser. No. 22,231
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45



222,644
LOUVER
Joseph Veneziano, 1982 Staunton Road, Cleveland Heights, Ohio 44118
Filed May 13, 1970, Ser. No. 22,951
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—115



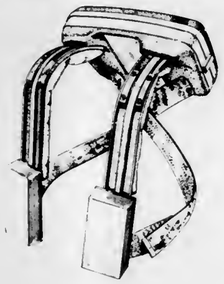
222,645
ELECTRICAL CONTROL CONSOLE
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Port Washington, N.Y.
Filed June 9, 1970, Ser. No. 23,391
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

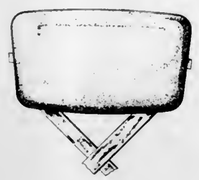


222,646
LAMP
Joseph R. Clark, Jr., 5501 N. 27th Drive, Phoenix, Ariz. 85017
Filed June 11, 1970, Ser. No. 23,442
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

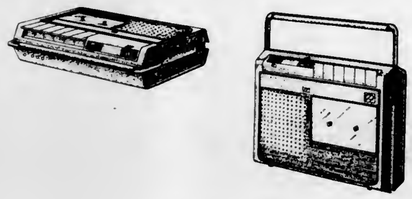


222,647
BACKPACK TRANSMITTER OR SIMILAR ARTICLE
Cornelius T. de Kam, Edgewood, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Oct. 28, 1969, Ser. No. 19,768
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

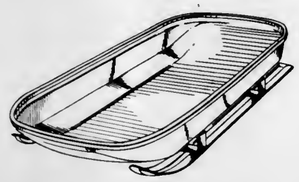




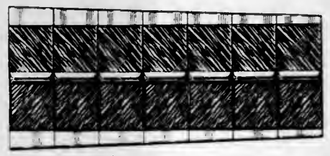
222,648
TAPE RECORDER
Isao Aburatani and Yoshihiko Ohyama, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 26, 1970, Ser. No. 23,156
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14



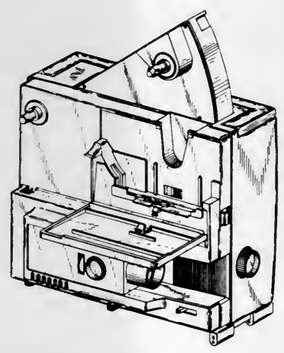
222,649
SLED
Yves Anselme Lapointe and Jerome Bombardier, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 19, 1970, Ser. No. 23,061
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



222,650
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed July 16, 1970, Ser. No. 23,980
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



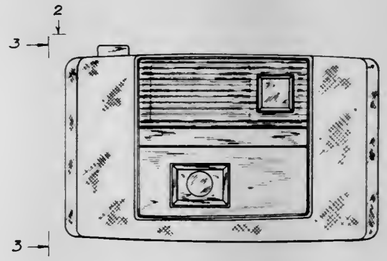
222,651
COMBINED MOTION PICTURE PROJECTOR AND CARRYING CASE THEREFOR
Dianne B. Ainslie, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 23, 1970, Ser. No. 22,828
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



222,652
MAIL BOX COVER
Thomas J. Kinskey, 95 Woodside Drive, Washington, Pa. 15301
Filed May 21, 1969, Ser. No. 17,261
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D74—9



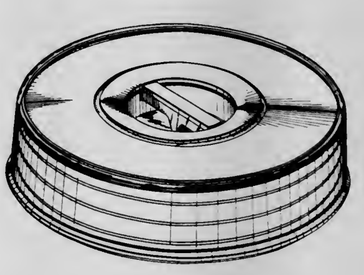
222,653
CAMERA
Ronald A. Emmerling, Montvale, N.J., assignor to Atlas-Rand Corporation, Parmus, N.J.
Filed June 29, 1970, Ser. No. 23,730
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



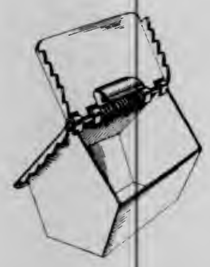
222,654
ILLUMINABLE TOY VANITY KIT
Robert L. Lindsay, Hamilton, Ohio, assignor to Kenner Products Company, Cincinnati, Ohio
Filed May 6, 1970, Ser. No. 22,829
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



222,655
COMBINED CONTAINER AND DISCS
Charles T. Inatomi, Culver City, and Jackson R. Iblings, Manhattan Beach, Calif., assignors to The National Cash Register Company, Dayton, Ohio
Filed July 7, 1969, Ser. No. 18,067
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



222,656
COMBINED MUSIC BOX AND TOTE BOX OR THE LIKE
Ernest L. Thornell, Horicon, Wis., assignor to Marlin Toy Products Inc.
Filed Mar. 2, 1970, Ser. No. 21,691
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



222,657
RACKET
Peter A. Latham, Newburyport, and Paul E. Brefka, Framingham, Mass. (both of 39 Commercial Wharf, Boston, Mass. 02110)
Filed Feb. 5, 1969, Ser. No. 15,632
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23D DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
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A-Z International Tool Company: *See—*
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Abela, Shibly Joseph, to Canadian Marconi Company. Electronic circuit for converting DC to AC analogue signals. 3,622,800, Cl. 307-229.

Abex Corporation: *See—*
Frank, Earl E., 3,621,943.

Abrams, Harry J.; Blackmond, Ronald C.; and Roberts, Roland W., to Robicon Corporation. Control system for electrostatic precipitator power supply. 3,622,839, Cl. 317-3.

ACEC Ateliers de Constructions Electriques de Charleroi: *See—*
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ACF Industries, Incorporated: *See—*
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Actrn, Daniel D.; and Mumford, Orris E., to Anchor Hocking Corporation. Metered compound applying nozzle. 3,622,050, Cl. 222-309.

Adachi, Shoichi; and Kaga, Shoitiro. Cloth folding machine. 3,622,146, Cl. 270-31.

Adams, Paul Frederick, to United Engineering and Foundry Company. Straightening machine for structural workpieces. 3,621,693, Cl. 72-164.

Adams, William L.; Grant, Michael P.; and Hickman, Richard W., to Industrial Nucleonics Corporation. System and method of process control, particularly papermaking processes in response to fraction defective measurements. 3,622,448, Cl. 162-198.

Adamsbaum, Andre: *See—*
Nicolas, Michel Jacques Robert; Deschamps, Jacques Desire; and Adamsbaum, Andre, 3,623,104.

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Seulen, Gerhard; and Reinke, Friedham, 3,623,128.

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Aerazur Constructions Aeronauriques: *See—*
Bernard, Jean Paul, 3,622,107.

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Air Products and Chemicals, Inc.: *See—*
Buselli, Alio J.; Blades, Charles E.; and Croix, Louise Speers, 3,622,531.

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Akeyama, Katsumi; and Nasu, Katsuya, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-threonine. 3,622,453, Cl. 195-29.

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Allard, Pierre Jean-Marie Theodore. Automatic boring grab. 3,621,923, Cl. 175-24.

Allaria, Eugenio; and Guzzi, Luigi, to Fabbrica Italiana Magneti Marelli S.p.A. Device for attaching the wiper to the wiper arm of a windshield wiper. 3,621,507, Cl. 15-250.32

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Allen, Charles Malcolm, to Battelle Development Corporation, The. Sealed piston compressor or pump. 3,622,251, Cl. 417-471.

Allen, Frank D., deceased; and Allen, Mona Armstrong; executrix, to Eastman Kodak Company. Thermographic processes and elements utilizing photocrosslinkable polyesters. 3,622,320, Cl. 96-28.

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Allen, Mona Armstrong: *See—*
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Allen, William A., to SCM Corporation. Calculator keyboard cover interlock with display cover and switch. 3,622,720, Cl. 200-50.

Allied Chemical Corporation: *See—*
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Allis-Chalmers Manufacturing Company: *See—*
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Alpert, Seymour B.; Chervenak, Michael C.; and Wolk, Ronald H., to Hydrocarbon Research, Inc. Hydrogenation of hydrocarbons with catalytic microspheres. 3,622,500, Cl. 208-111.

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Alvic Development Corporation: *See—*
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Ermidis, Nicholas P., 3,622,547.
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Amin, Rajnikant B.; and Hoffman, Lewis C., to Du Pont de Nemours, E. I., and Company. Air fireable compositions containing vanadium oxide and boron, and devices therefrom. 3,622,523, Cl. 252-514.

Amoco Production Company: *See—*
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Anderson, Robert D.; Herz, Alvin E.; Jones, Clabeorn; Strickland, Harold; and Wilson, William K., to Foster, L. B., Company. Methods of soil compaction. 3,621,659, Cl. 61-35.

Anderson, Wallace Q. Hand held stranded-wire dressing tool. 3,621,890, Cl. 140-123.

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Ando, Masao, to Chisso Corporation. Flexible heat-generating device. 3,622,731, Cl. 219-10.49

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Andreassen, Alfred E. O., to Chamberlain Manufacturing Corporation. Ladder structure. 3,621,936, Cl. 182-194.

Andrews, Douglas Haig, to Canadian Industries Limited. Pulp bleaching process. 3,622,444, Cl. 162-85.

Andrews, Hugh Hill; Flisher, Kenneth W.; and Taylor, Donald O., to Scovill Manufacturing Company. Fastener for non-woven fabrics. 3,621,537, Cl. 24-216.

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Antonevich, John N., to Blackstone Corporation. Methods and apparatus for testing glassware. 3,621,705, Cl. 73-12.

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CLASSIFICATION OF PATENTS

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Design Patents

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Defensive Publications Applications

(Notice of Dec. 16, 1969, 869 O.G. 687)

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PATENT OFFICE NOTICES

Public Law 92—132

[92nd Congress, S. 1253]

October 5, 1971

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks. International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-475 (Comm. on the Judiciary).
SENATE REPORT No. 92-71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Dec. 31, 1971.

Bell, Ronald S., 4111 Medford Drive, Annandale, Va., 22003.
Bettis, Bernard, 17 Brook Hill Lane, #C, Rochester, N.Y., 14625.
Crosson, Kenneth L., 6146 Springhill Terrace, #203, Greenbelt, Md., 20770.

ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.

Nov. 5, 1971.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Feb. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c413, *George H. Butterfield, Sr.* v. *Invisible Lens Corporation.* Cause dismissed without prejudice, Sept. 18, 1970.

2,625,683, Roth and Lombard, CRASH HELMET, **filed** Aug. 30, 1967, D.C., C.D. Calif. (Los Angeles), Doc. 67-1287-F, *Bell-Toptex, Inc.* v. *James E. Charlsen and Judy Charlsen et al.* Action dismissed by the court for lack of prosecution, June 21, 1971.

2,629,134, R. P. Molitor, METHOD OF MANUFACTURING ARTICLES FROM VINYL RESINS, **filed** Nov. 3, 1960, D.C., S.D.N.Y., Doc. 60-C-4327, *Barr Rubber Products Company* v. *Sun Rubber Company and Wonder Products Inc.* Consent judgment, defendant owner of patent and infringed by Barr. Action dismissed with prejudice as to the parties Barr and Sun, July 6, 1971 (supplemental notice).

2,633,251, J. K. Bruce, PALLETIZER, **filed** Mar. 26, 1970, D.C., E.D. Mo. (St. Louis), Doc. 70C146(3), *Production Aids Incorporated* v. *Contract Beverage Packers, Inc.* Stipulation and order dismissing cause with prejudice, June 24, 1971.

2,637,893, G. Shaw, ARTIFICIAL FILAMENT, **filed** Feb. 14, 1967, D.C.N.J. (Newark), Doc. C-165-67, *Gilbert Shaw and Polymers, Inc.* v. *Consolidated Novelty Company.* Stipulation of dismissal, June 14, 1971.

2,652,402. (See 2,742,462.)

2,658,742, Suter and Ruff, CATALYTIC FUME INCINERATION; **2,720,494,** same, PROCESS OF PREPARING CATALYTIC ELEMENTS, **filed** July 9, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1663, *Universal Oil Products Co.* v. *Catalytic Products Intl. et al.*

2,667,312, Denison and Johnson, FISHING REEL; **2,828,088,** same, SPINNING REEL, **filed** Oct. 19, 1967, D.C., N.D. Ohio (Cleveland), Doc. C67-759, *Denison-Johnson, Inc.* v. *True Temper Corporation.* Consent judgment, patents valid and defendant has infringed, June 22, 1971.

2,694,692, Amos, McCurdy and McIntire, METHOD OF MAKING LINEAR INTERPOLYMERS OF MONOVINYL AROMATIC COMPOUNDS AND A NATURAL OR SYNTHETIC RUBBER, **filed** June 29, 1970, D.C. Del. (Wilmington), Doc. 3921, *The Dow Chemical Company* v. *Monsanto Company.* Stipulation of settlement with prejudice, June 21, 1971.

2,705,492, M. H. Chandler, TEETH PROTECTOR, **filed** Nov. 16, 1964, D.C., S.D. Tex. (Houston), Doc. 64-H-591, *Dr. M. H. Chandler and Sidney P. Chandler* v. *Stern Dental Laboratory Co., Inc. et al.* Final judgment, case dismissed, July 8, 1971.

2,706,621, T. J. Laird, DISPERSION MILLS, **filed** July 2, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-312, *Kinetic Dispersion Corp.* v. *Gaze J. Sabo and Dispersion Equipment Corp.*

2,720,494. (See 2,658,742.)

2,722,001, Schafroth, and Mott, RETRACTABLE ANVIL STAPLING MACHINE; **2,778,022,** W. Schafroth, STAPLE MAGAZINE AND FEED MEANS FOR STAPLING MACHINES; **2,816,288,** Heilman, Kaye and Wasynczuk, TWO-PIECE REMOVABLE ANVIL FOR STAPLING MACHINES, **filed** July 6, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-1296-ACW, *International Staple & Machine Co.* v. *National Packaging Corp. and Showa Boeki Co., Ltd.*

2,728,779, A. Pohland, ESTERS OF SUBSTITUTED AMINOBUTANES, **filed** Oct. 27, 1969, D.C., S.D. Fla. (Miami), Doc. 69-1241-C-JLK, *Eli Lilly and Company, Inc.* v. *Generix Drug Sales, Inc.* Consent judgment, patent valid and defendants are permanently enjoined, July 30, 1971.

2,734,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Nov. 23, 1970, D.C. Conn. (New Haven), Doc. 14149, *Egan Machinery Company and William H. Willert* v. *Polymer Machinery Corp.* Stipulation for dismissal, May 19, 1971.

2,736,880, J. W. Forrester, MULTI-COORDINATE DIGITAL INFORMATION STORAGE DEVICE, **filed** Apr. 17, 1970, D.C. Mass. (Boston), Doc. 70-523-F, *Massachusetts Institute of Technology* v. *Fabri-Tex Incorporated.* Order dismissing action with prejudice and license is entered into and accepted. Upon any breach of or default under this license by licensee, MIT may terminate this license by 30 days' written notice by registered mail to licensee, June 22, 1971.

2,740,027, Budd, Stackhouse and Slough, RADIO AND TELEVISION RECEIVER COMPONENT ADAPTED ESPECIALLY FOR USE WITH PRINTED WIRING; **2,781,436,** W. A. Barden, VARIABLE RESISTOR WITH MEANS FOR PREVENTING SHAFT RATTLE; **2,836,691,** Di Girolamo and Arisman, COMBINATION VARIABLE RESISTOR AND SWITCH; **3,304,199,** Faber, Francis, Holmes and Boykin, ELECTRICAL RESISTANCE ELEMENT; **3,412,059,** Stickelmeyer and Safranski, AQUEOUS DISPERSION COATING CONTAINING WAX AND CERTAIN ACRYLATE TYPE POLYMERS; **3,550,059,** Barden, Van Bethuysen and Zdanys, VARIABLE RESISTANCE CONTROL, **filed** July 6, 1971, D.C., S.D.N.Y., Doc. 71-C-30002, *CTS Corp.* v. *ALPS Electric Co. Ltd.*

2,742,462, G. Gever, NEW N-(5-NITRO-2-FURFURYLIDENE) - 3 - AMINO - 2 - OXAZOLIDONES; **2,652,402,** same, SERIES OF NEW 3-AMINO-2-OXAZOLIDONES AND THE PREPARATION THEREOF; **2,943,019,** M. P. Natt, ANTICOCCIDIAL COMPOSITION AND METHOD OF COMBATTING COCCIDIOSIS, **filed** Oct. 27, 1969, D.C., E.D. La. (Baton Rouge), Doc. 69-223, *Morton Norwich Products, Inc. et al.* v. *Matt C. Hunter, doing business as Chemage Company.* Consent judgment, plaintiff sole owner of patents and injunction restraining defendant permanently, June 11, 1971.

2,769,904. (See 3,061,788.)

2,769,905. (See 3,061,788.)

2,778,022. (See 2,722,001.)

2,781,436. (See 2,740,027.)

2,802,257, C. N. Holtzapple, METHOD OF FORMING AN ELECTRICAL CONNECTION; **3,009,503,** same, IMPROVED TOOL FOR MAKING ELECTRICAL CONNECTIONS; **3,553,814,** F. W. Rider, TERMINAL APPLICATOR FOR TERMINALS IN STRIP FORM, **filed** June 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1342, *AMP Incorporated* v. *Brundy of Midwest, Inc.* **Same, filed** July 8, 1971, D.C. Conn. (Bridgeport), Doc. B-322-C, *Brundy Corporation* v. *AMP Incorporated.*

2,804,554, C. Ippolito, EMERGENCY STAND-BY ELECTRIC SERVICE APPARATUS; **2,864,005,** same, STANDBY ELECTRICAL SYSTEM, **filed** Apr. 7, 1961, D.C. Conn. (New Haven), Doc. 8757-C, *Dual-Lite Company* v. *The Mallard Manufacturing Company.* Stipulation dismissing all claims and withdrawing action, May 7, 1971.

2,804,571. (See 3,061,788.)

2,816,288. (See 2,722,001.)

2,823,828, M. A. Frater, NESTING AND STACKING CONTAINER, **filed** May 2, 1969, DC., E.D. Mich. (Detroit), Doc. 32744, *Milton A. Frater and G. B. Lewis Company* v. *Pickney Molded Plastics, Inc.* Consent judgment for permanent injunction, Aug. 12, 1971.

2,826,694. (See 3,061,788.)

2,828,088. (See 2,667,312.)

2,836,691. (See 2,740,027.)

2,853,609. (See 3,061,788.)

2,864,005. (See 2,804,554.)

2,883,619. (See 3,061,788.)

2,930,986. (See 3,061,788.)

2,943,019. (See 2,742,462.)

3,009,503. (See 2,802,257.)

3,061,788, J. R. Kobbe, MULTIVIBRATOR HOLD-OFF CIRCUIT; **2,769,905,** R. L. Roplequet, SWEEP CIRCUIT; **2,769,904,** GATED SWEEP GENERATOR; **2,853,609,** same, MULTIVIBRATOR HOLD-OFF CIRCUIT; **2,883,619,** Kobbe and Polits, ELECTRICAL PROBE; **2,930,986,** same, DISTRIBUTED AMPLIFIER; **2,826,694,** R. L. Roplequet, FREE-RUNNING MULTIVIBRATOR; **2,804,571,** J. R. Kobbe, UNBLANKING CIRCUIT FOR CATHODE RAY TUBES, **filed** Mar. 2, 1961, U.S. Ct. of Cl., Doc. 79-61, *Tektronix, Inc.* v. *The United States, defendant; The Hickok Electric Instrument Co., Jetronic Industries, Inc., and Lavoie Laboratories, Inc., third-party defendants.* Opinion, patents valid and infringed, decided June 11, 1971.

3,304,199. (See 2,740,027.)

3,322,289, Wendell and Peterson, LOADING, STORAGE AND DISPENSING APPARATUS FOR USE WITH A BITUMINOUS MIXING PLANT, **filed** June 7, 1971, D.C., S.D.N.Y., Doc. 71-N-C-2527, *Add-A-Bin Co.* v. *Michael Dydzyk.* **Same, filed** June 8, 1971, D.C. Md. (Baltimore), Doc. 71-612-T, *Add-A-BIN Co.* v. *The Bituminous Construction Co.*

3,377,716, A. R. Schmoyer, METHOD OF AND APPARATUS FOR TEACHING THE OPERATION OF A KEYBOARD CONTROLLED MACHINE OR INSTRUMENT; **3,482,480,** T. W. Decker, TEACHING APPARATUS FOR KEYBOARD INSTRUMENT, **filed** June 18, 1971, D.C., N.D. Tex. (Dallas), Doc. CA-3-4896-A, *IMC International, Inc.* v. *Arthur R. Schmoyer.*

3,412,059. (See 2,740,027.)

3,482,480. (See 3,377,716.)

3,550,059. (See 2,740,027.)

3,553,814. (See 2,802,257.)

D. 212,372, Trimble and Rottman, GOAL POST, **filed** Mar. 5, 1971, D.C., N.D. Tex. (Wichita Falls), Doc. CA7-627, *Triman Tele-Goal, Inc.* v. *Wichita Falls Independent School District. Design patent valid.* Defendant is satisfied by virtue of a license granted by plaintiff, apr. 14, 1971.

Erratum

In the OFFICIAL GAZETTE of Aug. 17, 1971, vol. 889, page 712, in paragraph 21 beginning with 3,229,413, last line should read *Stipulation and order of dismissal, Mar. 26, 1971.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before November 29, 1971.

Birch, Anthony L., 5420 Bradley Blvd., Bethesda, Md. 20014
Bitner, Ronald G., P.O. Box 2228, Sta. D, Ottawa, Ontario, Canada
Deluca, Alfred A., 12 Harrogate Place, Ottawa, Ontario, Canada
Ditlow, Clarence M. III, 661 South Carolina Ave. SE., Washington, D.C. 20003
Fassi, Aldo, Via Sassetti, 12, Milan, Italy
Incollingo, Italo, Via Pergine, 12, Milan, Italy
Leman, John F., P.O. Box 8305, Ottawa, Ontario, Canada
Lemon, Francis W., 175 Bronson Ave., Apt. 409, Ottawa, Ontario, Canada
McKenzie, R. Dale, 190 Howland Ave., Toronto, Ontario, Canada
Pole, Frank I., 21 Parkside Crescent, Ottawa, Ontario, Canada
Straznicky, Ivan, 15 Rockway Crescent, Apt. 16, Ottawa, Ontario, Canada
Turpin, Frank, 2125 Bel-Air Drive, Ottawa, Ontario, Canada
Wood, Brian J., 833 Pigott Road, Richmond, British Columbia, Canada

ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.

Oct. 13, 1971.

Certificates of Correction for the week of Nov. 30, 1971

Re. 27,085	3,558,599	3,573,859	3,581,795
3,285,906	3,560,581	3,574,159	3,582,033
3,486,619	3,560,937	3,574,215	3,583,457
3,490,991	3,563,945	3,576,185	3,584,579
3,496,163	3,565,931	3,576,514	3,584,862
3,496,253	3,566,138	3,577,052	3,585,084
3,499,917	3,566,238	3,577,232	3,585,213
3,506,504	3,566,365	3,577,418	3,585,405
3,510,492	3,566,590	3,577,748	3,586,221
3,514,284	3,566,782	3,577,862	3,586,222
3,521,824	3,566,884	3,578,107	3,586,727
3,528,836	3,567,065	3,578,475	3,586,832
3,534,254	3,567,480	3,578,907	3,586,931
3,534,342	3,567,621	3,578,958	3,587,677
3,539,344	3,567,631	3,579,154	3,588,466
3,541,406	3,567,991	3,579,328	3,588,592
3,547,867	3,568,801	3,579,379	3,588,641
3,548,210	3,570,094	3,580,092	3,588,994
3,549,044	3,571,782	3,580,107	3,589,190
3,553,281	3,571,838	3,580,974	3,589,483
3,553,414	3,571,981	3,581,187	3,590,239
3,555,336	3,573,302	3,581,208	3,590,903
3,557,320	3,573,857	3,581,756	3,597,479

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 16, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-11-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-11-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-23-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-12-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-07-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-20-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive
Plant Patents..... Numbers 1,328 to 1,338, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 30, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T892,018
PROCESS FOR PREPARING HIGH PURITY DIHYDROISOPHORONE

William E. Wellman, 24 Cambridge Road, Edison, N.J. 08817; Paul E. Burton, 761 Austin St., Westfield, N.J. 07090; and William D. Diana, 1001 Shadow Oak Lane, Somerville, N.J. 08876

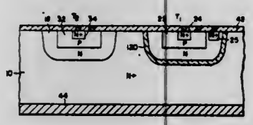
Filed Sept. 10, 1968, Ser. No. 758,839
Int. Cl. C07c *45/00, 49/30*
U.S. Cl. 260—586 R
1 Sheet Drawing. 28 Pages Specification

In the hydrogenation of isophorone to dihydroisophorone, maintaining the reaction zone at elevated pressures under mild temperature conditions significantly improves the selectivity to dihydroisophorone at high conversion levels. Isophorone is contacted with hydrogen in the presence of a hydrogenation catalyst in a hydrogenation zone wherein the hydrogen pressure in said zone is maintained between about 10 to 200 p.s.i.g. and the temperature in said zone ranges from about 25° to less than 175° C. The hydrogenation reaction product recovered from the reaction zone is distilled to obtain substantially pure dihydroisophorone. In a preferred embodiment, the hydrogenation reaction product is distilled in a first zone to separate the distillate comprising dihydroisophorone and β-isophorone from the residue comprising α-isophorone. The distillate withdrawn from the first zone is then passed to a second zone wherein said distillate is heated at a temperature sufficient to substantially isomerize β-isophorone to α-isophorone without causing pyrolysis of the remainder of said distillate. The effluent from said second zone is then passed to a third zone to separate the distillate comprising dihydroisophorone from the residue comprising α-isophorone.

T892,019
SEMICONDUCTOR INTEGRATED CIRCUIT WITH ISOLATED ELEMENTS AND POWER TRANSISTOR UTILIZING SUBSTRATE FOR LOW COLLECTOR RESISTANCE

Edgar A. Sack, 48 St. Andrews St., Severna Park, Md. 21146

Filed Jan. 27, 1969, Ser. No. 794,046
Int. Cl. H01l *19/00*
U.S. Cl. 317—235
1 Sheet Drawing. 8 Pages Specification



A substrate, preferably of low resistivity, can serve as a collector contact region of a power transistor as well as a support for other functional elements of an integrated circuit. An epitaxial layer on the surface of the substrate, of the same conductivity type but higher resistivity, contains other regions of functional elements. Isolation means such as PN junction forming regions or dielectric material, underlies and encloses those portions of the epitaxial layer to be isolated. Minimal collector resistance and increased power handling capability can be obtained with the power transistor structure without sacrificing isolation or complicating fabrication.

T892,020
METHOD FOR VARYING THE CONTRAST OF DUPLICATE RADIOGRAPHS

Leland Erickson, Kodak Park Works, Rochester, N.Y. 14650

Filed Feb. 2, 1970, Ser. No. 8,027
Int. Cl. G03b *41/16*
U.S. Cl. 355—132
No Drawing. 9 Pages Specification

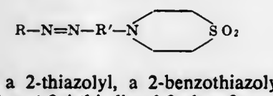
A method of adjusting the contrast of copies of radiographs to permit successful rendition of the original radiograph is described. According to the present method there is provided exposure of a direct-positive photosensitive element having at least two photosensitive layers separated by a filter layer to a light source selected for its wavelength distribution. The contrast control which characterizes the method of the present invention is readily achieved by utilizing the above-described photographic element and exposing the element through a radiographic master with a light source selected for its wavelength emission. By properly selecting the characteristics of said photographic element and by selecting an appropriate spectrum of exposing light, it is possible to produce a duplicating film having a gamma of unity and maximum density greater than 3.0 which can render a faithful copy of a radiograph containing densities greater than 3.0.

T892,021
MONOAZO COMPOUNDS CONTAINING A THIOMORPHOLINEDIOXIDE GROUP AND MATERIALS DYED THEREWITH

Max A. Weaver and David J. Wallace, both of P.O. Box 511, Kingsport, Tenn. 37662

Continuation of application Ser. No. 721,094, Apr. 12, 1968. This application Mar. 5, 1970, Ser. No. 17,010
Int. Cl. C09b *29/36, 62/82*; D06p *1/04*
U.S. Cl. 8—41 C
No Drawing. 22 Pages Specification

Monoazo dyes of the formula

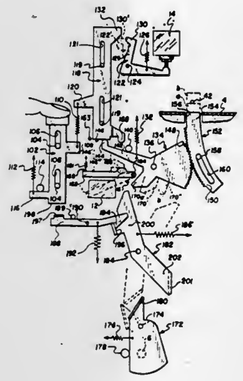


wherein R is a 2-thiazolyl, a 2-benzothiazolyl, a 1,3,4-thiadiazol-2-yl, a 1,2,4-thiadiazol-2-yl, a 3-pyrazolyl or a 2-thienyl radical and R' is a p-phenylene radical which dyes are useful in dyeing hydrophobic textile materials to give yellow to blue dyeings having good light, washing, gas and sublimation fastness properties.

T892,022
MECHANISM FOR EFFECTING SYNCHRONOUS PERCUSSIVE FLASH EXPOSURES

William T. Hochreiter, 23 Chestnut Drive, Rochester, N.Y. 14624

Filed Mar. 27, 1970, Ser. No. 23,129
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5
6 Sheets Drawing. 28 Pages Specification



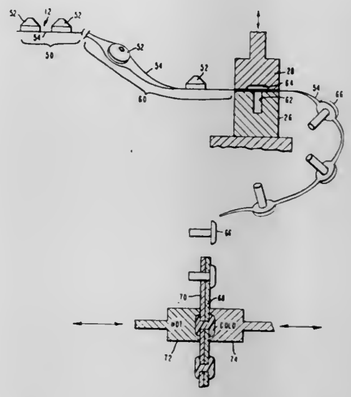
A mechanism for effecting synchronous flash exposures in a camera adapted to receive a percussive flash device of the type incorporating a pre-energized impacting member. According to several embodiments, a high energy lever is released from a set condition in response to the displacement of a release member, and operates to actuate the camera shutter and release the impacting member of the flash device, thereby effecting a synchronous flash exposure. The condition of the impacting member at the camera firing site is determined by a gear driven actuating probe, which additionally serves to fire the flash device. A visual signal indicates that the impacting member is not in the set condition. According to other embodiments, displacement of a release member by a prescribed amount in turn moves a latch which releases high energy levers for effecting synchronous flash exposures.

T892,023
PROCESS FOR NONMELT FORMING WEBS OF THERMOPLASTIC RESIN AND ARTICLE FORMED THEREBY

Kenneth W. Filbert, 6 Hilton, Hilton, and Peter J. Wayne, 731 Halstead Road, Sharpley, both of Wilmington, Del. 19803

Filed Apr. 10, 1970, Ser. No. 27,240
Int. Cl. B29f *3/00*; F16b *19/04*
U.S. Cl. 161—116
1 Sheet Drawing. 6 Pages Specification

Thermoplastic resin is formed into a continuous patterned web which remains intact while passing through one or more stations where work, including nonmelt forming, is done on the web. For example, the web as formed comprises a strip of film having spaced preforms integrally molded to one surface thereof. At the first station, the web is longitudinally nonmelt drawn which increases the distance between the preforms but does not change their configuration because of their greater thickness. At the next station, the preforms are nonmelt formed into a rivet, and the film between rivets is trimmed in width if desired. At the final station, the web is broken down into discrete rivets which are nonmelt formed in fastening disposition through apertured sheet members. If the film of the web is retained between one or more pairs of rivets, the previously described nonmelt drawing of the web strengthens the film so that it can serve as a high strength tying element between rivets. Instead of



rivets, the preforms can be utilized as-molded or as thereafter nonmelt formed or drawn to form other useful articles together with or apart from the as-molded or thereafter nonmelt drawn film portion of the web.

T892,024
PROCESS FOR THE ISOMERIZATION OF DIMETHYL CIS-1,4-CYCLOHEXANEDICARBOXYLATE TO THE TRANS-ISOMER

John G. Thweatt, Rte. 11 37663, and Wayne V. McConnell, 1509 Ardmore Place 37664, both of Kingsport, Tenn.

Filed May 13, 1970, Ser. No. 36,997
Int. Cl. C07c *67/00, 69/74*
U.S. Cl. 260—468 R
No Drawing. 6 Pages Specification

A process for isomerizing a mixture of cis- and trans-dimethyl 1,4-cyclohexanedicarboxylate containing a high content of the cis-isomer to mixtures containing much larger amounts of the trans-isomer by heating the original mixture in the presence of an acidic catalyst which is insoluble in the mixture of cis- and trans-isomers. The insoluble catalyst can be removed from the reaction mixture by filtration or decantation, permitting either the substantially pure trans-isomer or at least a mixture of cis- and trans-isomers uncontaminated with the catalyst to be recovered. The ratio of catalyst employed with respect to the cis- and trans-mixture may range from about 0.005 to 1.0. When operating at atmospheric pressure heating may be at a temperature of 200–265° C. Carrying out the reaction at super-atmospheric pressures permits the use of higher temperatures.

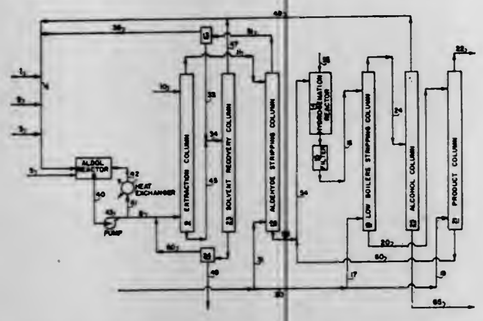
T892,025
PROCESS FOR PREPARATION OF 2,2-DIALKYLPROPANE-1,3-DIOL

Hugh J. Hagemeyer, Jr., and Sam H. Johnson, Jr., both of Box 2068, Longview, Tex. 75601

Continuation of application Ser. No. 732,165, May 27, 1968. This application Aug. 24, 1970, Ser. No. 66,638
Int. Cl. C07c *31/02, 47/02*
U.S. Cl. 260—635 P
1 Sheet Drawing. 15 Pages Specification

A process for preparing 2,2-dialkylpropane-1,3-diols by contacting an alcoholic solution of an aldehyde having a single alpha-hydrogen atom and from 5 to 23 carbon atoms with formaldehyde in the presence of a caustic aldol condensation catalyst. The aldehyde is present in

a ratio of from 1 to 3 moles of aldehyde per mole of formaldehyde. The reaction is conducted at a temperature of from 0° C. to 40° C. to form an aldol. The alcohol, salts and catalyst residue are removed by water washing. Other dissolved impurities and unreacted re-

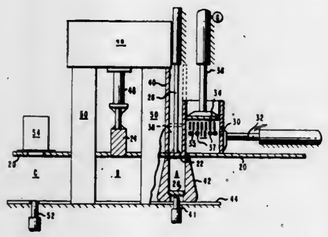


agents are removed by stripping with a heated inert gas. The purified aldol is reduced with hydrogen in the presence of a barium-promoted copper-chromium oxide catalyst and subsequently stripped of reduction by-products with an inert gas to yield the essentially pure diol.

T892,026
PROCESS FOR IMPROVING RELEASE PROPERTIES AND LUBRICITY OF PERFLUOROOLEFIN POLYMER FILMS
Michael J. Bagnall, Grand Blanc, Mich., and Michael W. Miller, King of Prussia, and Le Verne K. Osdal and Edward J. Welch, Springfield, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 16, 1970, Ser. No. 81,627
Int. Cl. B44d *1/38, 1/46, 1/48*
U.S. Cl. 117—64
No Drawing. 15 Pages Specification

Process for improving the lubricity and release properties of the surface of films of polytetrafluoroethylene, tetrafluoroethylene/hexafluoropropylene copolymers, or blends of polytetrafluoroethylene or tetrafluoroethylene/hexafluoropropylene with other film-forming material which comprises subjecting the surfaces of such films to sufficient thermal energy or mechanical energy to coalesce at least some of the polytetrafluoroethylene or tetrafluoroethylene/hexafluoropropylene at the surface of the film.

T892,027
BALING APPARATUS
Bernard Landoff Matthews, 2509 Kittiwake Drive, Brookemeade, Wilmington, Del. 19805
Filed Oct. 26, 1970, Ser. No. 83,726
Int. Cl. B30b *15/30*
U.S. Cl. 100—215
1 Sheet Drawing. 11 Pages Specification



A baling apparatus with facilities for successive, bidirectional stages of compression. In the first stage, staple fibers are accumulated and tamped into a batt of low density. One wall of the accumulation chamber is a platen which transfers the tamped batt to an intermediate chamber, further compresses it in a second stage and then functions as a wall of the intermediate chamber. Next, the batt is ejected into a mold which travels on tracks into position for the third stage beneath a high compression platen. The platens move downwardly in the first and third stages and laterally in the second stage.

PATENTS

GRANTED NOVEMBER 30, 1971

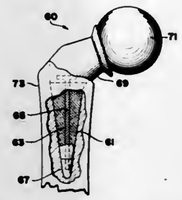
GENERAL AND MECHANICAL

3,623,163
BACKSTOP FOR A BALL GLOVE
Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jan. 16, 1970, Ser. No. 3,297
Int. Cl. A41d *13/10*
U.S. Cl. 2—19 **12 Claims**



A ball glove body has a flexible backstop attached to and extending between its index finger section and its thumb section. The backstop possesses a conical or concave shape and forms a continuation of the ball-receiving side of the glove body so as to create a deep ball-receiving pocket within the glove.

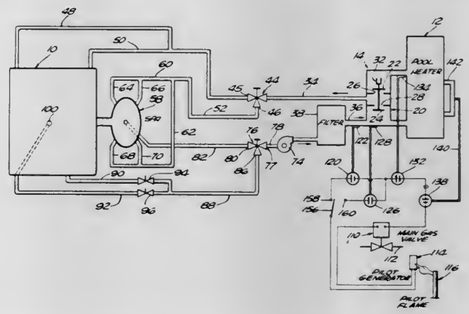
3,623,164
PROSTHETIC DEVICE
Jack C. Bokros, San Diego, Calif., assignor to Gulf Oil Corporation
Filed Oct. 6, 1969, Ser. No. 863,959
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **11 Claims**



A prosthetic device designed for implantation in broken bones. An inner rod member of high-strength metallic alloy having a high modulus of elasticity is disposed within an outer sleeve member of carbon having a low modulus of elasticity. The carbon sleeve is bonded or friction-fitted to the inner rod, or it may be prestressed between an enlarged head at one end of the rod and a nut. The composite unit has a modulus of elasticity closely approximating that of living bone which allows the unit to remain securely implanted and not be displaced through toggling.

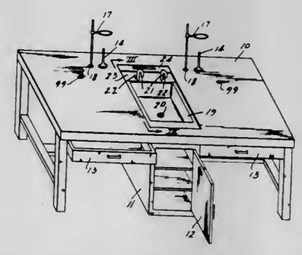
3,623,165
MULTIPLE POOL SYSTEM WITH COMMON HEATER
Alfred Whittell, Jr., Los Angeles, Calif., assignor to Raypak Company, Inc., El Monte, Calif.
Filed Feb. 9, 1970, Ser. No. 9,650
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.15 **7 Claims**

A multiple pool system comprising a main pool and a small therapeutic pool or spa, both pools being heated from a common heater. Operation can be shifted from one pool to the other manually. The pool heater is controlled by a flow governor controlling a bypass to normally limit the temperature in the heater. The heater is gas fired and the gas valve is controlled in response to



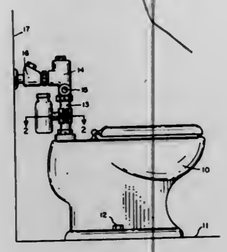
temperature of water returning to the heater. When operation is shifted to the therapeutic pool the control point of the control of the gas valve is raised which causes the flow governor to cut-off the bypass across the pool heater resulting in the water in the spa or therapeutic pool being maintained at a higher temperature.

3,623,166
SEPARABLE CONNECTION OF PORTABLE UNITS WITH FLUID DUCT AND ELECTRICAL MEANS
Thomas A. Wilkinson, Patterson Drive, Rte. 1, Morris, Ill. 60450
Filed Nov. 13, 1969, Ser. No. 876,338
Int. Cl. E03c *1/00*
U.S. Cl. 4—191 **20 Claims**



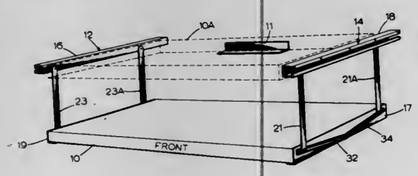
For effecting utility connections with a portable unit, it is adapted to carry connecting structure which is movable into and out of connecting relation to complementary connecting structure at a fixed location. More particularly fluid duct means and electrical means of the portable unit are adapted to be operatively connected with fluid duct means and electrical means at a fixed location by a device comprising separable complementary mounting structures respectively on the unit and at a fixed location, such structures having respective connecting means and complementary mating separable coupling elements for coupling the connecting means together, with releasable means for locking the structures together with the coupling elements mated.

3,623,167
SANITARY DISPENSERS
Marius H. Syrenne and Alphonse R. Syrenne, both of 1604 9th Ave. N., Saskatoon, Saskatchewan, Canada
Filed Feb. 16, 1970, Ser. No. 11,752
Int. Cl. E03d *9/03*
U.S. Cl. 4—225 **3 Claims**



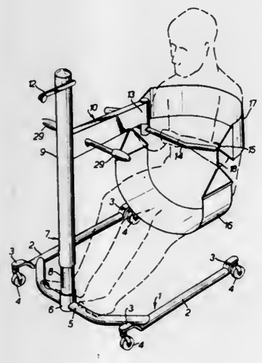
A screw-topped container having a central side connection for attachment to and communication with the flush pipe of a toilet and/or a urinal; said central connection providing a sump in the container; said connection also projecting a baffle into and across the flush pipe for water entrance to the container through the connection when the flushing operation occurs; a breather piping from the upper part of the container, through said connection and the baffle, into the flush pipe to prevent an air lock and a vacuum in the container; a bag containing bactericide, water-immersed in said sump for protection from air deterioration and to enrich the water, for delivery to the flush pipe in the draining of the container after said flushing.

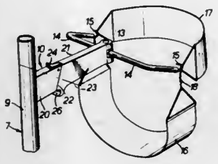
3,623,168
OVERHEAD BUNK LINKAGE
Kenneth E. Rouch, Rte. 3, Box 291C, Edwardsburg, Mich. 49112
Filed Aug. 11, 1970, Ser. No. 62,812
Int. Cl. A47b *67/02, 57/06;* **A47c** *17/40*
U.S. Cl. 5—10 **6 Claims**



The overhead bunk linkage for positioning and supporting assists in manipulating a load such as a bunk bed between storage and use positions. Spaced linkage assemblies are located one adjacent each end of the bunk designed to operate in spaced planar regions perpendicular to the bunk. Each linkage assembly has front and rear downwardly extending support links, each link mounted for swinging movement from an upper support region where spring means are provided to urge the lower ends of the front and rear links toward each other. Adjacent the lower ends of the links, tracks are provided on the ends of the bunk extending adjacent the plane of the swing of the links with a sliding connection between the links and the tracks. The tracks extend front and rear from the central region of the bunk and preferably are inclined upward in their path toward front and rear. With this sliding connection and a substantial swinging force on the links, the direction of movement of the links relative to the inclined tracks exerts components of lifting force upward on the bunk, thus to assist manual manipulation of the bunk toward and away from a storage position.

3,623,169
APPARATUS FOR HANDLING DISABLED PERSONS
David Richard James, Hasfield, England, assignor to Mecanaids Limited, Gloucester, England
Filed June 16, 1969, Ser. No. 833,631
Claims priority, application Great Britain, June 17, 1968, 28,687/68
Int. Cl. A61g *7/10, 1/02*
U.S. Cl. 5—81 **10 Claims**



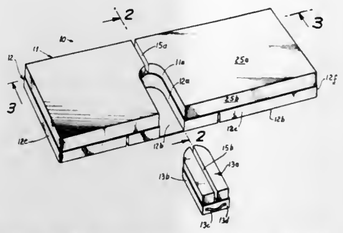


Apparatus for handling disabled or infirm patients comprises a wheeled chassis on which is mounted an upstanding lifting column. A rigid cantilever lifting arm projects from the column. Means are provided to raise and lower the cantilever arm, and a lateral suspension hanger projects symmetrically on both sides of a rigid vertical bearing in the cantilever arm. The hanger provides spaced suspension points for a patient support sling.

3,623,170
MATTRESS WITH SERVICE PLUG AND PROVISION FOR LONG SHEET
John H. Staley, 4512 Timbercrest Lane 76705, % S. M. Tucker, and Wesley D. Ballard, 1011 N. 15th St. 76707, both of Waco, Tex.
Filed Jan. 5, 1970, Ser. No. 677
Int. Cl. A47c *27/08;* **A61g** *7/02*
U.S. Cl. 5—90 **10 Claims**

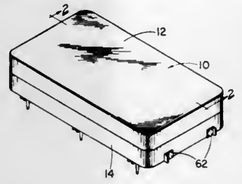
The disclosure is to a mattress comprised of a base of flexibility but of substantial rigidity and a cushion of soft, yieldable, material, as foam rubber with the base having upwardly grooved ribs thereacross longitudinally spaced apart in correspondence with the spacing of the joints or pivot lines of hospital bed frames. An offset is provided into the mattress from one side thereof at relative distance from foot and head at which a conventional bed pan would be used, and a plug in correspondence with cushion and base materials is normally in place

in the offset. A groove extends through the plug in direction transversely of the mattress when the plug is in place and a transverse groove across the cushion distance from offset to other side is in co-extension of the plug groove. Thus a cover sheet, may have that length thereof, in excess of conventional length, folded into the



transversely aligned cushion and plug groove when the plug is in place. Then, with plug removed, the fold part of the sheet from the plug groove may be spread out to protectively cover the offset prior to the insertion of a service item, as a bed pan, into the offset. The invention may include other items than a special bed pan, as, for instance, an inspection mirror.

3,623,171
MATTRESS CONSTRUCTION
Sanford L. Arkin, 700 Alamosa Drive, Claremont, Calif. 91711
Filed Nov. 17, 1969, Ser. No. 877,099
Int. Cl. F16f *3/10;* **A47c** *27/22, 23/04*
U.S. Cl. 5—351 **7 Claims**



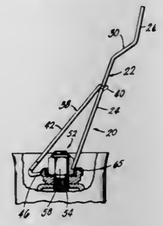
This invention is to a cushion structure for use in bedding and seating, and comprises compression springs embedded within cushion members formed of plastic foam material.

It includes retainers at either end of the compression springs and, in one embodiment, two cushion members bonded in adjacent relation and having a plastic grid embedded therein at their adjacent portions to provide stability.

Another embodiment comprises a single foam cushion member on a platform to which the compression springs are operatively connected. The platform is mounted on adjustable legs.

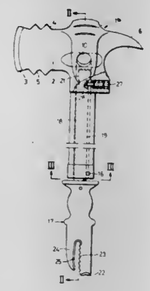
3,623,172
HAND TOOL FOR APPLYING AND REMOVING NUTS
Russell D. Hall, 533 Woodhaven Drive, Lansing, Mich. 48917
Filed Jan. 22, 1970, Ser. No. 4,923
Int. Cl. B25b *27/00;* **B25f** *1/04*
U.S. Cl. 7—1 G **8 Claims**

A hand tool for use in confined spaces to apply and remove nuts which are locked on a mating threaded member by a locking element having a bendable locking projection thereon, the tool including an elongate actuating member having wrench means on one end portion thereof and angularly disposed abutment surfaces on the opposite end thereof, and a lever member having one end portion pivotally connected to an intermediate portion of the actuating member, the other end portion of the lever member having an angularly extending flange



terminating in a relatively sharp edge adapted to engage and lift the tab of the locking element upon angular movement of the tool.

3,623,173
PORTABLE COMBINATION TOOL
Sixten Robert Hagqvist, Nysatersvagen 87, Trollhattan, Sweden
Filed May 2, 1969, Ser. No. 821,392
Claims priority, application Sweden, May 10, 1968, 6,311/68
Int. Cl. B25f *1/00*
U.S. Cl. 7—8.1 **8 Claims**

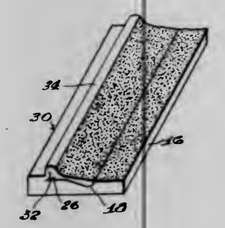


There is provided a portable combination tool intended for manual use in penetrating barriers occurring in such disasters as fire, collapsed buildings and the like, into the region of which it is difficult to carry a plurality of special tools. The combination tool consists of two parts, each provided with its respective shaft capable of being collapsed telescopically one within the other, and which can be locked together in different extended or collapsed positions. One portion of the tool is provided with an axe-and-pick head and a laterally projecting crow bar and suspension loop, while the other portion of the tool is provided with forked leg members, shaped to form a chisel-like member and a cutting tool respectively, and wherein said tool portions can also be used as a wedging means and a hammer.

3,623,174
SHOE WELTING AND METHOD OF MAKING THE SAME
Percy W. Greene, Whitman, and Enoch E. North, Brockton, Mass., assignors to Barbour Welting Company, Inc., Brockton, Mass.
Filed Feb. 9, 1970, Ser. No. 9,653
Int. Cl. A43b *15/00*
U.S. Cl. 12—146 W **3 Claims**

The present invention relates to a novel and improved shoe welting and to the method of making the same. The welting comprises a welt having an upstanding bead, a welt extension and an inseam flange, and is formed by cutting a rectangular fillet of leather to provide a flap hinged

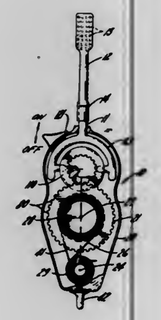
to its upper surface. The flap is provided with a relatively thick depending shoulder in its undersurface, and the body of the cut fillet is also provided with a longitudinally extended groove spaced inwardly from the marginal edge of the fillet. The flap is folded upon itself to provide an upstanding bead, the body of which is made up of the integral shoulder portion and portions of the flap. Novel provision is made for maintaining the bead in its upstanding position and comprises the integral shoulder portion and the longitudinal groove into which the free end of the flap is positioned and maintained by cementing and molding the parts together.



The method comprises the cutting and folding of the cut parts of the fillet to form the bead and folding and cementing it in operative position relative to the cut fillet.

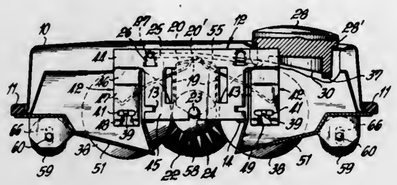
The present shoe welting is particularly adapted for use in the manufacture of women's cemented shoes. However, it is not limited in its application to the manufacture of women's shoes.

3,623,175
NEGATOR DRIVEN TOOTHBRUSH
Frank W. Emerson, 113 Roper Drive, Peterborough, Ontario, Canada
Filed Nov. 5, 1969, Ser. No. 874,226
Int. Cl. A61c *17/00;* **A46b** *13/02*
U.S. Cl. 15—22 R **7 Claims**



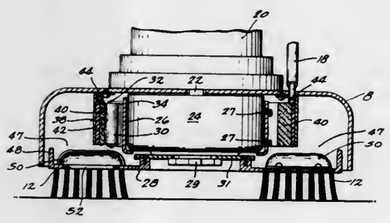
A spring-driven motor assembly for producing oscillatory motion of an output shaft and particularly adapted for use in a power toothbrush assembly. A spring drive producing a substantially constant output torque is wound by a pull-cord winding assembly and released to impart a drive force to an escapement-type motion translator which oscillates an output shaft. Included between the winding assembly and the spring support is a clutch which allows unwinding of the power spring free from any drag effect from the winding assembly.

3,623,176
FLOOR-TREATING APPARATUS
Gunter Leifheit and Johannes Liebscher, Nassau (Lahn), Germany, assignors to Leifheit International Gunter Leifheit KG., Nassau (Lahn), Germany
Filed Dec. 12, 1969, Ser. No. 884,623
Claims priority, application Germany, Dec. 14, 1968, P 18 14 730.3
Int. Cl. A47l *11/32*
U.S. Cl. 15—42 **34 Claims**



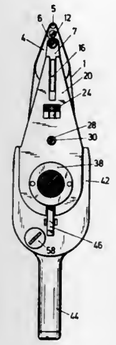
Wheels support a housing for movement on a surface to be treated. A brush roller is mounted in the housing for turnably engaging this surface. Mounting means mounts the brush roller with freedom of adjustment between a lower and an upper position with reference to the surface. Biasing means permanently urges the brush roller to one of these positions. A control member is releasably coupled with the housing and has an outer manually engageable portion and an inner contact portion which cooperates with the mounting means. The control member is turnable between two terminal settings in one of which it moves the brush roller to the other of its positions against the opposition of the biasing means. Detent means prevents unintentional turning movement of the control member beyond its terminal settings and precludes axial shifting of the control member.

3,623,177
RUG SHAMPOOER AND SCRUBBER
Sam Pack, 3607 N. 53rd St., Milwaukee, Wis. 53216
Filed Dec. 15, 1969, Ser. No. 885,011
Int. Cl. A47l *11/162, 11/03*
U.S. Cl. 15—50 R **13 Claims**



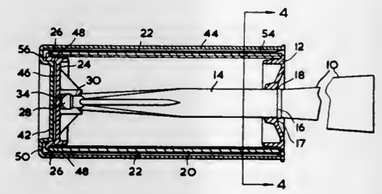
A wheeled housing carries a motor having a shaft extending into the housing to drive a rotor which carries scrubbing brushes and foam-generating rollers. The rollers are engaged under pressure with an annular sponge surrounding the rotor and supplied with liquid detergent which, as the rotor turns, is turned into foam by the manipulation of the sponge as the rollers compress and release it. The brush carrier which is part of the rotor has scoops for deflecting the foam through openings in the carrier to pass downwardly between the bristles of the brushes to loosen dirt in the rug to be lifted to the surface by the action of the brushes.

3,623,178
POWER DRIVEN ENDLESS BELT TYPE CLEANSING MACHINE
August Kurz, 1 Fruhlingstrasse, D–7321 Waschenbeuren, Germany
Filed Oct. 15, 1969, Ser. No. 866,590
Claims priority, application Germany, Oct. 17, 1968, P 18 03 568.2
Int. Cl. A47l *1/04*
U.S. Cl. 15—99 **9 Claims**



A motor driven cleansing machine having an endless belt driven over a plurality of rollers. One roller forms the front edge of a belt-supporting member, between two converging belt-supporting sides, which is pivotably mounted in a frame. The pivot axis is parallel with the axes of the rollers. The belt-supporting member is held in a neutral position by the tension of the belt but is pivotable in either direction when the front edge of the belt-supporting member is pressed against a surface to be cleansed.

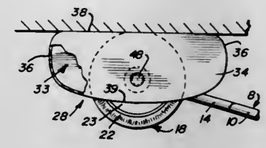
3,623,179
TACKY ROLLER HAVING SPLINED COVER
Eric Michael Roth, R.R. 1, Unionville, Ontario, Canada
Filed Sept. 10, 1969, Ser. No. 856,772
Int. Cl. A47l *25/00*
U.S. Cl. 15—104 A **4 Claims**



A particle collecting roller with a tacky surface is mounted on one end of the handle and the roller has a recessed free end cap which will detachably attach to a cover for the roller. With the cover so attached and overlying the roller, splines on the inner cover surface, space the cover from the tacky surface.

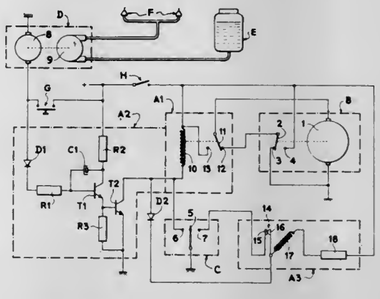
3,623,180
PAINT ROLLER WITH GUARD
Robert L. Anderson, Great Falls, Mont., assignor of a fractional part interest to James R. Paul, Great Falls, Mont.
Filed Oct. 31, 1969, Ser. No. 872,996
Int. Cl. B44d *3/28*
U.S. Cl. 15—230.11 **5 Claims**

A non-smearing guard for attachment to the respective outward ends of an axle and a complemental free turning axle-supported striping-type paint roller. This attachment comprises an elongated protectively coated plate of prescribed size and shape the median portion of the inward attachable side of which is detachably and



adjustably mounted on a pocket enclosed but accessible end of the axle. Equipped with this guard the roller can be guidingly push-pulled along a side wall surface proximal to the ceiling without smearing paint on the ceiling.

3,623,181
DEVICE FOR CLEANING A WINDSCREEN
Christian Bailly, Le Pecq, France, assignor to Automobiles Peugeot, Paris, and Regie Nationale des Usines Renault, Billancourt, France
Filed Jan. 28, 1970, Ser. No. 6,386
Claims priority, application France, Feb. 20, 1969, 6904266
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.02 **1 Claim**

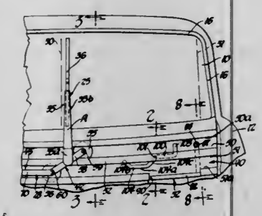


A windscreen cleaner in which timing means associated with a circuit controlling the pump of a window washer is adapted to produce, as soon as said means supply the pump with current, the immediate operation of the wiper motor and continuation of said operation during a suitable number of cycles after the end of the operation of the washer.

3,623,182
TRANSVERSE WIPING APPARATUS HAVING PARK LATCH PARK MECHANISM
Eric G. Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1970, Ser. No. 67,516
Int. Cl. A47l *1/00;* **B60s** *1/08*
U.S. Cl. 15—250.17 **4 Claims**

In a preferred form, this disclosure relates to a windshield wiping apparatus for wiping a windshield of an automotive vehicle. The windshield wiping apparatus includes a windshield wiper, an actuating mechanism for moving the windshield wiper transversely of the windshield between first and second positions while maintaining the wiper in a generally vertical disposition during running operation, and a parking mechanism for moving the wiper from its generally vertical run position to a

park position adjacent the lower edge of the windshield when running operation is being terminated. The actuating mechanism includes a trolley which supports the wiper and which is guided for movement through a first path by a guide means. The parking mechanism includes



a pair of latch means for holding a roller of the trolley stationary while the remainder of the trolley is pivotally moved about the roller to cause the wiper to be moved from its generally vertical run position towards its park position.

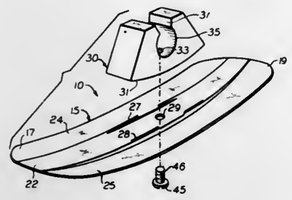
3,623,183
WINDSHIELD WIPERS, ESPECIALLY FOR MOTOR VEHICLES
Karl Wilfert, Gerlingen-Waldstadt, and Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 30, 1969, Ser. No. 872,711
Claims priority, application Germany, Nov. 2, 1968, P 18 06 719.1
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.42 **18 Claims**



A windshield wiper, particularly for motor vehicles, in which an elastic wiper blade is adapted to be connected with a first element which in turn is connected with a second element; the two elements possess the properties of bending springs and, with the wiper blade not resting on the windshield are such that the element connected with the wiper blade has an approximately S-shaped configuration while the other element is curved outwardly.

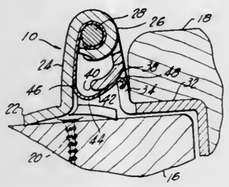
3,623,184
SKID FOR TUBULAR FURNITURE
Paul M. Mazur, 1 William St., New York, N.Y. 10004
Filed Mar. 26, 1970, Ser. No. 22,956
Int. Cl. B60b *33/00*
U.S. Cl. 16—42 **7 Claims**

A skid for tubular furniture serving to implement the facility with which such tubular furniture such as a folding or lounge chair may be moved over a lawn or beach where the chair is used. The skid is formed of a ski shaped dish or shoe having rounded edges, and is arcuate in transverse and longitudinal cross section. An attaching member channel extends longitudinally of the skid, and an attaching member formed either in the shape



of a hollow vertically extending sleeve, or a truncated triangular block with a horizontally extending bore is secured to the ski-shoe, the vertically extending sleeve being used for furniture having vertical legs without lower extremity cross bracing, and the truncated cone attachment being utilized with items of furniture having a bottom cross bar.

3,623,185
SELF-LATCHING HINGE
Robert S. Cartwright, Booneville, and James R. Deadrick, Winston-Salem, N.C., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 7,876
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **7 Claims**

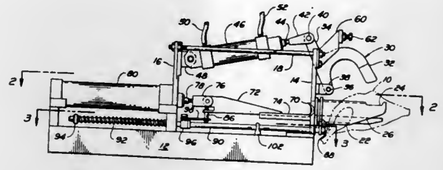


The following specification describes a door or cabinet hinge in which a latch integrally formed on one of the hinge leaves engages a leaf spring camouflaged by the other leaf on closing of the door for latching the door closed with the spring also serving to pivot the door closed.

3,623,186
POULTRY HANDLING
Mitchell W. Panek, Chicago, Ill., assignor to Swift & Company, Chicago, Ill.
Original application Sept. 8, 1967, Ser. No. 666,434, now Patent No. 3,541,634, dated Nov. 24, 1970. Divided and this application Oct. 27, 1970, Ser. No. 84,336
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **5 Claims**

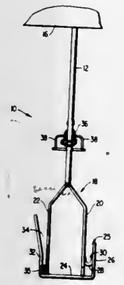
The keel bone is removed from eviscerated fowl by supporting the latter preferably from the interior of the body cavity and applying a compressive force against the keel bone from outside the body and in an inward direction. Thereafter the keel bone is engaged within the cavity and pulled free through the posterior opening in the fowl carcass. An apparatus for performing the method includes a tubular support for insertion into the body cavity, and

a punch member drivable against the exterior of the keel bone. An aperture in the tubular support allows the keel bone to be thus pushed partly into the support. Thence a claw that is reciprocable within the tubular support ex-



tracts the keel bone by withdrawing same through the rear thereof. An ejector ram is also actuated by the claw to propel a completed carcass from the support when the claw is returned to the forward end thereof.

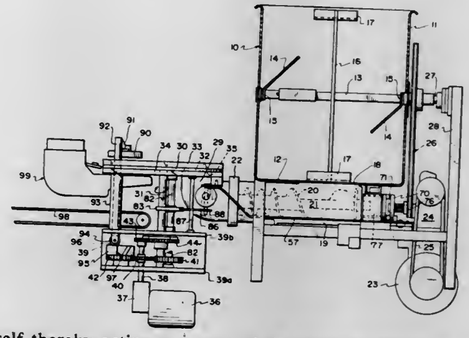
3,623,187
SKINNING TOOL
Edward F. Grubbs, Rte. 2, Walnut Cove, N.C. 27052
Filed Apr. 21, 1970, Ser. No. 30,505
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 **7 Claims**



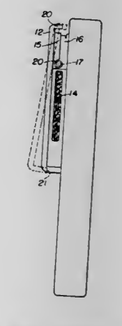
A tool for aiding in the manual skinning of small animals comprising a vertical rod support suspended from overhead support means and a base portion connected to the lower end of the rod and positioned at working height for a skinner. The base has on one side a tailbone extraction section for use in removing the tailbone from the tailskin of the pelt and on the other side an elongated taper section within which a hind leg of the carcass is wedged to support the carcass as the pelt is stripped downwardly therefrom.

3,623,188
MOLDING APPARATUS
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation
Filed Nov. 28, 1969, Ser. No. 880,695
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **21 Claims**

Molding apparatus for molding articles such as patties from a plastic material such as ground raw meat comprising a mold having a mold opening, force feed means such as a grinder screw for moving the material into the mold opening under increasing pressure as the force feed means is operated, means for terminating the feeding when the material in the mold opening reaches a predetermined pressure corresponding to a desired density of the article in the mold opening and means for thereupon removing the article from the mold opening, the molded article itself thereby acting as a part of the timing mechanism to terminate the feeding when the article has achieved the desired density or consistency.



3,623,189
SELF-LOCKING CLIP FOR SUPPORTING AN ARTICLE ON A BELT OR OTHER SUPPORT
Mieczyslaw Wilczynski, Westchester, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 24, 1970, Ser. No. 92,351
Int. Cl. A44b *21/00*
U.S. Cl. 24—3 F **8 Claims**

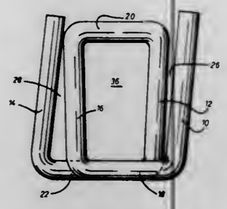


Self-locking belt clip for miniature radio pager or other device, for supporting the same on a belt or pocket of the user, or on another support. The clip is secured to the device by a pair of brackets connected to each other by a pivot rod, with a spring about the pivot rod holding the brackets in position so that the clip is closed against the device. The brackets have locking tabs which engage the other bracket to lock the clip and prevent opening thereof. The lock is released by moving the clip so that one bracket is moved axially along the pivot rod and the locking tabs clear the other bracket and permit the clip to be opened. The same spring which holds the clip closed also holds the two brackets in the axial position which locks the clip.

3,623,190
BUCKLE
Thomas J. Karass, 411 Kindersley Ave., Mount Royal, Quebec, Canada
Filed Nov. 17, 1969, Ser. No. 877,100
Int. Cl. A44b *11/00*
U.S. Cl. 24—74 I **3 Claims**

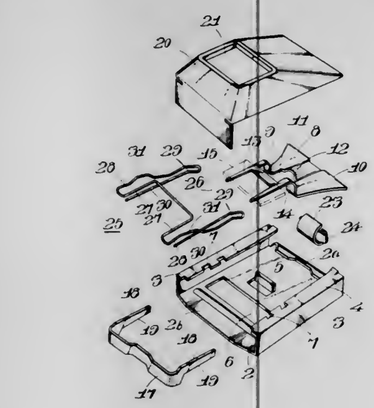
A buckle comprising a single continuous length of material particularly adapted to readily secure end-to-end two ends of strapping. The continuous length of ma-

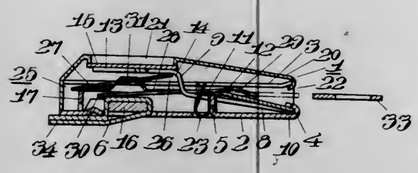
terial is bent to form two pairs of strap-engaging arms. The two strap-engaging arms of each pair of arms are arranged in closely spaced relationship along each other



and preferably with one of said strap-engaging arms determining a free end extending at a slight angle relative to the other arm of the same pair.

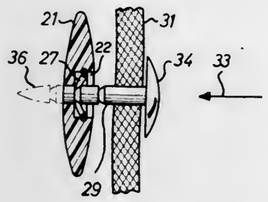
3,623,191
SEAT BELT BUCKLE
Yoshihiro Hayashi, Kasugai, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho Nishikasugai-gun, Aichi-Prefecture, Japan
Filed Dec. 4, 1970, Ser. No. 95,216
Int. Cl. A44b *11/26*
U.S. Cl. 24—77 **1 Claim**





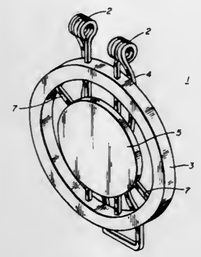
A seat belt buckle characterized in employing a single wire spring in the buckle body comprising a lock plate engageable with a tongue plate and a belt bar for securing the other tongue of the belt. Said single wire spring is adapted to be secured on a base plate at its one portion and to exert no springy force on each element of the buckle body besides the required portions. It is so constructed to effect two independent springy actions thereby lifting up the free end of the lock plate and pressing down the belt bar effectively without an aid of any other component.

3,623,192
BUTTON
Zareh Papazian, Annecy, France, assignor to Ste. d'Exploitation de Brevets Industriels, Annecy, France
Filed May 5, 1969, Ser. No. 821,863
Claims priority, application France, May 7, 1968, 104,474, 104,674
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 PR **4 Claims**



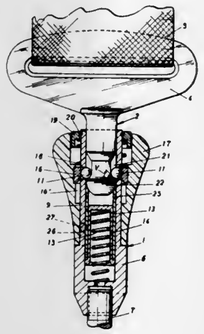
A button assembly comprises a female member having the configuration of the desired button and a male member cooperative with the female member to attach same to a piece of cloth. The female member is provided with an internal recess and retaining means is disposed within the recess to engage with the male member. The male member comprises an elongated shaft on which are provided a plurality of axially spaced apart grooves. During assembly, the male member is inserted through the cloth into the female member whereupon the retaining means engages with one of the grooves to effectively connect together the male and female members. The retaining means comprises a washer having flexible projecting arms which engage in one of the grooves and the lip portion of the male member is then cut off. Alternatively, a decorative covering can be provided over the female member after the tip portions has been removed.

3,623,193
ORNAMENTAL MONEY CLIP
Hansen L. Rikard, 7482 E. 48th St., Tulsa, Okla. 74145
Filed June 8, 1970, Ser. No. 44,244
Int. Cl. A44b *21/00*
U.S. Cl. 24—261 PC **2 Claims**



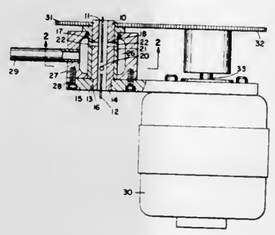
An ornamental money clip for holding paper money in a folded position, the improvement including coil springs structure in a wire pattern for holding the folded money; and means to fasten the wire pattern in combination with a selected medallion. The said combination having sufficient resiliency to open and close regardless of the expansion required.

3,623,194
QUICK RELEASE COUPLING, PARTICULARLY FOR SAFETY HARNESSES FOR CARS
Carl Erik Claeson, Molndal, and Sten Axel Magnus Smederod, Goteborg, Sweden, assignors to Goteborgs Bandvaverl AB, Goteborg, Sweden
Filed Dec. 15, 1969, Ser. No. 885,207
Claims priority, application Sweden, Dec. 19, 1968, 17,425/68
Int. Cl. A44b *17/00*
U.S. Cl. 24—211 N **8 Claims**



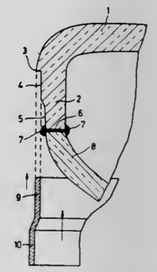
A snap fastener of the type in which a grooved locking pin is retained in releasable axial engagement in a housing by means of locking balls which are held in a non-locking position by a spring loaded bush until the latter is displaced by insertion of the pin, is provided with a safety member preventing said displacement being inadvertently causes by the insertion of an article of even slightly less diameter than the pin. An axially movable spring loaded ring holds the balls in locking engagement with the pin groove, said ring is moved to release the pin by pulling an axially movable knob or by pressing an arm of a lever pivoted on the housing.

3,623,195
PROCESS AND APPARATUS FOR INTERTWINING YARN
Stanley R. Nechvatal, Raleigh, and William N. Parks, Durham, N.C., assignors to Hercules Incorporated, Wilmington, Del.
Filed Dec. 30, 1969, Ser. No. 889,103
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **3 Claims**



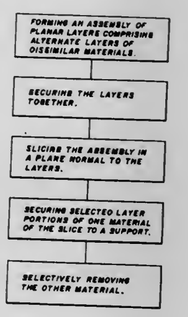
Jet apparatus and process for intertwining, entangling or interlacing synthetic yarn to improve its coherency is disclosed. Yarn is intermittently subjected to the action of a fluid, e.g., air, under pressure as it is pulled through a passageway. The intermittent introduction of air through jet conduits into the yarn passageway creates a kind of turbulence which causes the filaments of the yarn to be intertwined in a relatively uniform pattern at substantially uniform spaced sites therealong.

3,623,196
METHOD OF PROVIDING AN ANTI-IMPLOSION CLAMPING BAND AROUND THE ENVELOPE OF A COLOUR TELEVISION PICTURE TUBE
Hendrik Bongenaar and Theodorus Cornelis Gerardus Dorelelijers, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed July 24, 1969, Ser. No. 844,514
Claims priority, application Netherlands, Aug. 1, 1968, 6810978
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **3 Claims**



A method of providing without damage to the seam, an anti-implosion clamping band upon a colour television picture tube having envelope window and cone secured together by means of a solder glass. A profiled band comprising narrow and wide portions is slid, with its wide portion foremost, from the window entirely over the mould match line; permanent deformation of the band being avoided by heating the band or by providing saw cuts in the more narrow portion of the band.

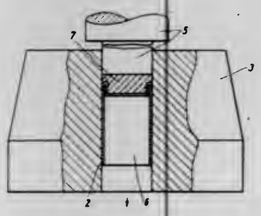
3,623,197
ELECTROSTATIC DEFLECTION ELECTRODE SYSTEM FOR ELECTRON BEAM DEVICE HAVING AN ARRAY OF LENSES
William L. Jones, Owensboro, Ky., assignor to General Electric Company
Filed Mar. 27, 1970, Ser. No. 23,221
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.14 **4 Claims**



Accurately spaced, parallel conductors forming an array of deflection electrodes are provided to respectively

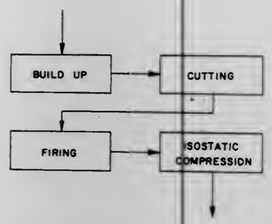
deflect an electron beam emanating from one or more of an array of lenses. The array of electrodes are constructed by first forming a stack of planar sheets comprising alternate layers of the electrode material and a second removable material which acts as an accurate spacer during fabrication of the array.

3,623,198
PROCESS FOR MAKING A THERMIONIC CATHODE
Walter Held, Gunzburg, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany
Filed May 5, 1969, Ser. No. 821,717
Claims priority, application Germany, May 4, 1968, P 17 64 240.3
Int. Cl. H01j *9/16*
U.S. Cl. 29—25.18 **4 Claims**



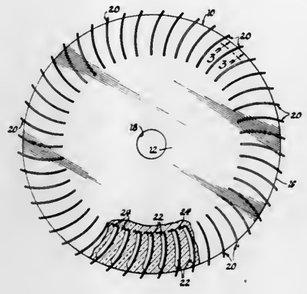
A process for making a thermionic cathode for use in the emission system of a cathode ray tube, the cathode being composed of a sintered pressed body which is to be the electron emitting element and which is formed by pressing powdered material of which the body is to be made into a cavity of an appropriately shaped cathode cup in such a manner that the emission body is formed to communicate with the cathode cup over a large area and that the cavity of the cathode cup is deformed in such a manner that the emission body is permanently clamped into the cavity of the cathode cup.

3,623,199
METHOD FOR ADJUSTING CAPACITANCE VALUES
Robert Swart, Newtown, Conn., assignor to Vitramon Incorporated, Monroe, Conn.
Filed Mar. 26, 1968, Ser. No. 716,244
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **4 Claims**



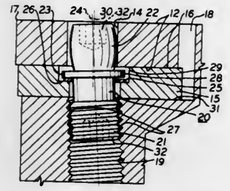
A method of adjusting the capacitance value of a fired monolithic electronic component which comprises subjecting the fired component to an increased pressure and a temperature in the softening range of the dielectric to reduce the volume of the void population in the dielectric.

3,623,200
BLENDING DEVICE
Joseph Curcio, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 30, 1970, Ser. No. 23,765
Int. Cl. B23d *71/00*
U.S. Cl. 29—78 **4 Claims**



A rotary blending device for filler material including a support member with a plurality of cutter bits each having a blade. One form of the device includes a disc-shaped flexible support member having a plurality of cutter bits, each having an arcuate blade with a shearing face, spaced around the periphery of the support member. The device polishes the filler material on a surface while concurrently removing the excess filler in chip form.

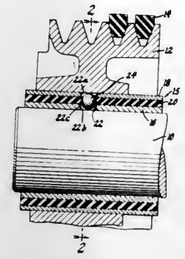
3,623,201
RAKE TOOLHOLDER
Manfred Wallace Gustafson, Fagersta, Sweden, assignor to Fagersta Bruks AB, Fagersta, Sweden
Filed Sept. 19, 1969, Ser. No. 859,273
Claims priority, application Sweden, Sept. 24, 1968, 12,853/68
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **3 Claims**



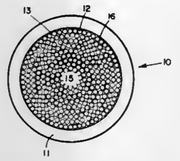
A toolholder for a rake utilizing a threadably adjusting clamping pin which, during threading into an appropriately slightly inclined threaded opening in the tool holder body, is simultaneously urged by the inclination through a pivoting movement which results in clamping engagement of the pin against the rake and concomitantly results in clamping engagement of an anvil between the rake and the toolholder body.

3,623,202
METHOD OF MAKING A DRIVE TRANSMITTING CONNECTION
Glen Allen Kendall, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application Nov. 27, 1968, Ser. No. 779,479, now Patent No. 3,541,810, dated Nov. 24, 1970. Divided and this application Feb. 20, 1970, Ser. No. 12,945
Int. Cl. B23p *11/00, 19/00*; F16d *3/58, 7/00*
U.S. Cl. 29—148.4 A **4 Claims**

There is a drive connection disposed between a rotatable input and a member driven by the input, which includes inner and outer cylindrical sleeves having a compressed elastomeric, torque-transmitting sleeve therebetween. The sleeves have aligned radial holes formed therein to accommodate steel balls which are effective on torque overload to provide driving contact between the inner and outer sleeves thereby limiting elastomeric sleeve slip and wear.

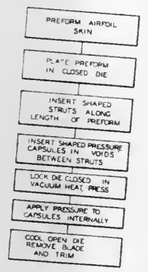


3,623,203
REINFORCED STRUCTURAL MEMBERS AND METHOD OF MAKING SAME
Jim Henshaw, Harvard, and Paul J. Roy, Lowell, Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Mar. 24, 1970, Ser. No. 22,199
Int. Cl. B23p *17/00*
U.S. Cl. 29—155 R **11 Claims**



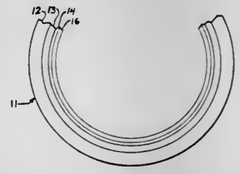
This invention covers a structural member having a high strength to weight ratio. The invention relates to methods of processing high strength-high modulus (of elasticity) composite material used in conjunction with metal carriers and result in integrated metal-composite structural elements. More specifically, the high strength-high modulus composite is deposited within passages or hollows within the metal carriers.

3,623,204
METHOD OF FABRICATING HOLLOW GAS TURBINE BLADES
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 2, 1970, Ser. No. 7,627
Int. Cl. B23p *15/02, 15/04*
U.S. Cl. 29—156.8 H **10 Claims**



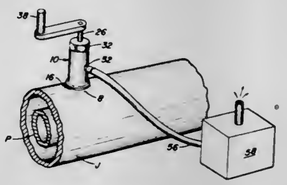
A method for fabricating hollow, reinforced blades for use in gas turbine engines is disclosed wherein a skin layer preform is positioned against the die wall of a closed die, reinforcing support struts are placed within the preform and thin walled pressure tubes are inserted therebetween. The die is heated to 1500° F. whereafter a fluid is introduced into the heated tubes subjecting the walls thereof to a pressure of 12,000 p.s.i. whereby the tubes are deformed outwardly against and into intimate contact with the preform and struts. The fluid pressure and die temperature cooperate to effect a diffusion bond between the blade members thereby forming a hollow blade having reinforcing struts therein.

3,623,205
COMPOSITE BEARING STRUCTURE
Bruce E. Scott, Wyckoff, N.J., assignor to Curtiss-Wright Corporation
Filed Dec. 24, 1969, Ser. No. 888,017
Int. Cl. B32b *15/18*
U.S. Cl. 29—196 **7 Claims**



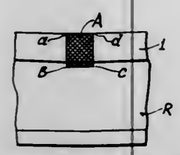
A journal bearing structure in which a base metal member has a silver heat-conducting and fatigue-resistant intermediate layer and a bearing surface of lead-tin alloy, with a pure tin barrier layer between the lead-tin alloy and the silver to control diffusion and migration of the tin from the alloy in order to maintain corrosion resistance of the bearing surface.

3,623,206
VACUUM SEAL-OFF VALVE TOOL
Robert N. Hager, Jr., Gainesville, Fla., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Jan. 7, 1970, Ser. No. 1,162
Int. Cl. B23p *19/04*
U.S. Cl. 29—240 **6 Claims**



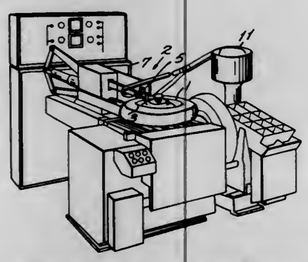
A valve tool for removing and installing the cap portion of a fitting attached to a container or vacuum system while the container or system is being evacuated. The bell-shaped body of the valve positions over the pump-down fitting during vacuum pumping thereof. A socket wrench enclosed within the valve body engages the cap portion of the fitting for installation or removal thereof by manual operation of a handle outside of the valve body. A shaft extending through a seal in the valve body, connects the socket wrench to the handle. A port located in the valve body provides passage means for evacuating gases from the system or container.

3,623,207
METHOD FOR REPAIR OF RAILS
Ivo Zoso, 316 Barry Ave., Chicago, Ill. 60657, and Thomas F. Kennedy, Jr., 705 Benwood Drive, Carbondale, Ill. 62901
Filed Sept. 3, 1968, Ser. No. 756,978
Int. Cl. B22d *19/10*; B23p *7/00*
U.S. Cl. 29—401 4 Claims



Process and apparatus for repairing defects in rail heads and webs by removal of a portion of the rail head embodying the defect, enclosing the removed portion within a housing having a pouring space surrounding the removed portion and a pouring basin communicating with the space and through which the molten metal is introduced and a means for preheating the rail prior to metal pouring.

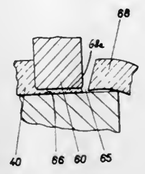
3,623,208
METHOD AND APPARATUS FOR AUTOMATIC BALANCING OF MOTOR VEHICLE WHEELS
Dionys Hofmann, Darmstadt-Marienhohe, Germany, assignor to Dionys Hofmann GmbH Maschinenfabrik, Onettmettingen, Wurttemburg, Germany
Continuation-in-part of application Ser. No. 800,882, Feb. 20, 1969. This application Sept. 23, 1969, Ser. No. 864,941
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 2 Claims



While the vehicle wheel remains mounted on the device which has automatically determined the angular locations and amounts of the weights needed to balance the wheel at the two rim flanges, the tire beads are distorted away from the rim flanges at these locations and balance weight holding clips are installed so as to extend out over the respective rim flanges. Where tilting of the clips during installation may be a problem, a balance weight form simulating member is swung into place between the clip and rim flange until after the tire bead has been allowed to return and thus grip the clip between itself and the respective rim flange.

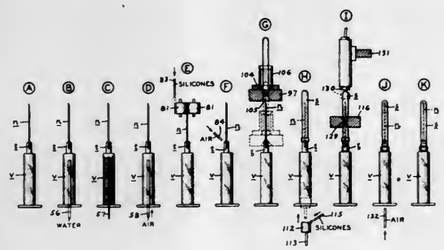
3,623,209
METHOD FOR SEPARATING BLANKS FROM PLASTIC SHEETS
Gerhard Zühlke, Geroldswil, and Paul Brändli and Max Spälti, Zurich, Switzerland, assignors to Zuhlke & Brandli AG, Zurich, Switzerland
Filed Apr. 25, 1969, Ser. No. 819,404
Claims priority, application Switzerland, Aug. 14, 1968, 12,230/68; Nov. 5, 1968, 16,434/68
Int. Cl. B23p *17/00*
U.S. Cl. 20—413 4 Claims

Mirrors for use by dentists or for similar purposes are produced by clamping a blank of strongly light-reflecting synthetic thermoplastic material between annular male and female mirror frame portions. Such clamping step is carried out simultaneously with separation of the blank from a web of sheet material which is maintained in flattened and stretched condition and is weakened in the zone around the blank by a welding electrode which softens the material of the web and penetrates into the



thus softened material by being biased toward a supporting surface located opposite the electrode. The male mirror frame portion serves as a means for tearing the blank from the weakened zone and for simultaneously moving the marginal portion of the thus separated blank against the internal surface of the female mirror frame portion.

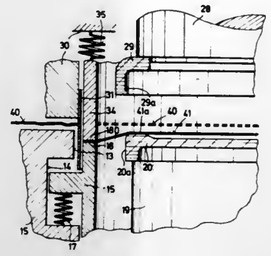
3,623,210
METHOD OF AND APPARATUS FOR APPLYING A SHEATH TO A HYPODERMIC NEEDLE SECURED IN A VIAL
Walter A. Shields, Jamaica, N.Y.
(38—09 24th St., Long Island City, N.Y. 11101)
Filed July 10, 1969, Ser. No. 840,668
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 20 Claims



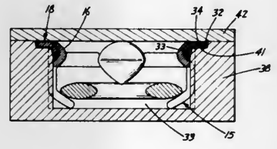
The vials having hypodermic needles secured therein are intermittently presented to successive stations where the vials are internally cleaned, the junctures between the vials and the hypodermic needles are dried, the hypodermic needles are externally lubricated, the sheaths are engaged over the hypodermic needles, the interior of the vials are lubricated, the sheaths are fully engaged on the vials, and finally the interiors of the vials are dried.

3,623,211
METHOD OF FRAMING A FOIL PORTION
Gerhard Zuhlke, Geroldswil, Switzerland, assignor to Schweiger & Schweizer AG, Zug, Switzerland
Filed Oct. 6, 1969, Ser. No. 864,048
Claims priority, application Switzerland, Oct. 21, 1968, 15,674/68
Int. Cl. B23p *11/02*
U.S. Cl. 29—448 6 Claims

In order to frame a foil portion with a mirror surface, a foil is perforated along a circular line, a marginal zone of the foil is frictionally held within the endless line, the foil is cut along the endless line, and the marginal zone is firmly clamped and moved over a first frame part and tensioned, whereupon a second frame part is pressed against the first frame part and clamps the tensioned foil to the first frame part without any wrinkles or folds.



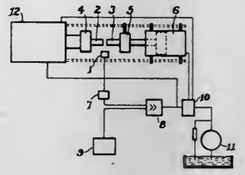
3,623,212
METHOD OF MAKING SUTURING MEMBER ON A DEVICE
Francis W. Child, Maple Plain, Minn., assignor to Washington Scientific Industries, Inc., Minnetonka, Minn.
Filed Apr. 21, 1969, Ser. No. 817,988
Int. Cl. B23p *9/00*
U.S. Cl. 29—445 19 Claims



A suturing member associated with an implantable device, as a heart valve, for accommodating sutures to join the device to living tissues. The suturing member has a porous fabric cover surrounding a semi-rigid core of plastic material. The outer surface of the plastic material is bonded to the inner surface of the fabric cover.

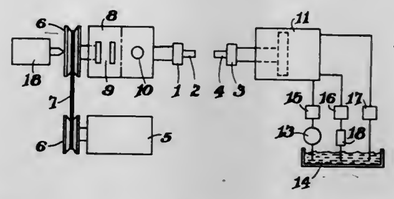
3,623,213
PROCESS AND MACHINE FOR FRICTION WELDING
Mario Sciaky, Saint-Cloud, and Emmanuel Julien Thirion, Paris, France, assignors to Welding Research, Inc., Chicago, Ill.
Filed Jan. 14, 1969, Ser. No. 791,023
Claims priority, application France, Mar. 8, 1968, 143,078
Int. Cl. B23k *27/00, 31/02*
U.S. Cl. 29—470.3 8 Claims

This disclosure relates to the process of friction welding and, specifically, to a method and apparatus whereby the mechanical work transferred to the parts to be welded is controlled in accordance with a pre-established program of energy versus time. The energy being supplied to the work pieces is determined by measuring the angular rotation and the resistant torque between the two parts rubbing one against the other, or by measuring the temperature of the parts. The measured values are compared to the preset reference values and the axial force between the parts being welded is controlled so as to maintain



the error between the reference and the energy input as close to zero as possible.

3,623,214
FRICTION WELDING MACHINE AND PROCESS
Mario Sciaky, St.-Cloud, and Emmanuel L. Thirion, Paris, France, assignors to Welding Research, Inc., Chicago, Ill.
Filed Jan. 29, 1969, Ser. No. 794,872
Claims priority, application France, Apr. 5, 1968, 147,227
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 10 Claims



The disclosure concerns a method of friction welding in which the power absorbed by the parts rubbing one against the other is caused to follow a preset program of power. The absorbed power is measured continuously by measuring separately the friction couple and the angular velocity of the work piece which is rotating and forced against the stationary work piece. The absorbed power is then compared to a preset power program and the difference or error between the two is fed to a servo amplifier and operator which functions to cause the absorbed power to follow the preset power program.
Should the error exceed a preset value a signalling device is energized to alert the machine operator.

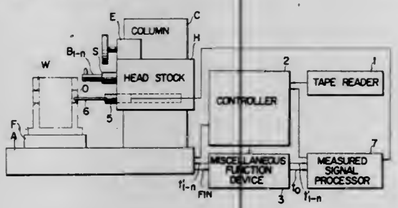
3,623,215
METHOD OF MAKING WIRE-WOUND SHAPED CHARGE CONICAL LINER
Clarence E. Weinland, Vista, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed June 5, 1970, Ser. No. 59,792
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.3 2 Claims

A method of fabricating a conical metal cavity liner such that its mass in any section transverse to its axis is uniformly distributed. The method includes the steps of anchoring copper or other wire in place on a conical mandrel and winding this basic wire onto the mandrel until a cone is formed, winding a soldering or filler wire into the grooves formed between adjacent turns of the basic wire winding, heating the mandrel with the double winding in place so as to fuse the filler wire and basic wire into an integral unit. After cooling, the cone formed is removed as a unit from the mandrel.

3,623,216
AUTOMATIC TOOL POSITION COMPENSATING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

Kenzo Aihara, Tokyo, and Hideo Hirokawa, Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Minato-ku, Tokyo, Japan

Filed July 10, 1969, Ser. No. 840,737
Claims priority, application Japan, July 17, 1968, 43/49,916
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **1 Claim**

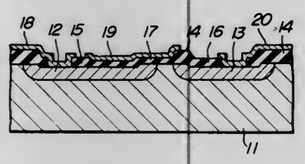


Further, as described in U.S. application S.N. 839,723, filed July 7, 1969 in the names of Tanabe et al. and assigned to the assignee of the present application, by constructing the main spindle S thereof while maintaining a definite position relative thereto. The measuring element coupled to a controller for the machine tool for sensing the dimensions of the workpiece upon receipt of a command signal from a tape reader through the controller. It produces a tool deviation signal representative of the differences between the sensed dimensions and the dimensions called for by command information read by said tape reader. A measured signal processor is coupled to the measuring element and the controller and to a miscellaneous function device for calculating the deviation between the measured dimension and the corresponding programmed dimensions from the output from the measuring element and to memorize the result of the calculation as a compensating value. The compensating value memorized in the measured signal processer is transmitted to the controller as pulses so that the compensation of the position of the cutting tools and the table of the machine can be carried out automatically, depending on the dimensions sensed by the measuring means.

3,623,217
METHOD OF MANUFACTURING A FIELD EFFECT SEMICONDUCTOR DEVICE

Hiroto Kawagoe, Kodaira-shi, and Masaharu Kubo, Kokubunji-shi, Japan, assignors to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

Original application May 28, 1968, Ser. No. 732,664. Divided and this application Nov. 26, 1969, Ser. No. 880,409
Int. Cl. B01j *17/00;* **H01g** *13/00*
U.S. Cl. 29—571 **3 Claims**

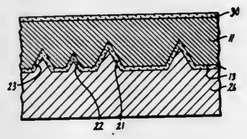


A method of manufacturing an MIS type FET, wherein, after source and drain regions are formed in a surface of a semiconductor body, a part of an insulating film which has been used as a selective diffusion mask is removed to expose a carrier path between the regions and a continuous part of the source region, while the other part of the insulating film covering the semiconductor surface, especially, the surface portion of the drain region adjacent to the carrier path is left, then the exposed surface of the body is again covered with a further insulating film which is thinner than that of the remaining insulating film, and then a control electrode is formed on the further insulating film.

3,623,218
METHOD FOR DETERMINING DEPTH OF LAPPING OF DIELECTRICALLY ISOLATED INTEGRATED CIRCUITS

Hajime Mitarai, Sunnyvale, Calif., Carroll E. Nelson, Dallas, Tex., and Albert P. Youmans, Cupertino, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 16, 1969, Ser. No. 791,659
Int. Cl. H01l *7/00, 7/50*
U.S. Cl. 29—577 **7 Claims**

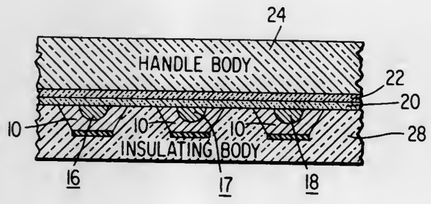


Method and structure for determining the depth of lapping of dielectrically isolated integrated circuits utilizing at least two etched recesses which are generally V-shaped in cross-section and which have apexes at different elevations.

3,623,219
METHOD FOR ISOLATING SEMICONDUCTOR DEVICES FROM A WAFER OF SEMICONDUCTING MATERIAL

Arthur Irwin Stoller, North Brunswick, and William Henry Schilp, Flemington, N.J., assignors to RCA Corporation

Filed Oct. 22, 1969, Ser. No. 868,470
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—580 **8 Claims**

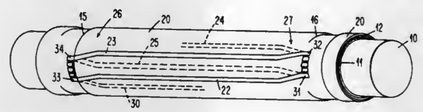


An array of devices is first formed in a silicon wafer. A protective layer of silicon nitride is deposited on the surface of the wafer, and a glass handle body having a thermal expansion coefficient closely matching that of silicon is sealed to the silicon nitride layer. That portion of the wafer between adjacent devices is etched away, and a body of a softened glass which has a like expansion coefficient, but is less refractory than the glass handle body, is hot-pressed into the array of isolated devices. The handle body is then removed by etching.

3,623,220
METHOD OF MAKING A TUBULAR PRINTED CIRCUIT ARMATURE USING PLATING TECHNIQUES

Gordon G. Chase, Nederland, and John E. Parker, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,816
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **9 Claims**

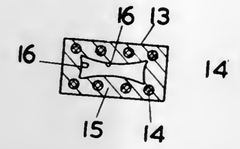


A tubular armature, intended for use with an electric motor, is made by plating a first layer of copper onto a stainless steel mandrel, coating the layer of copper with epoxy and fiberglass to form a support cylinder, curing the epoxy, removing spaced portions of the epoxy-glass cylinder in two spaced bands, thus leaving between the bands a mid-portion of the support cylinder which is equal in length to the desired length of the armature, plating a second layer of copper on the support cylinder so as to overlap and make electrical connection to the spaced bands of exposed copper of the first layer, removing the composite cylinder from the mandrel, and photo-etching an armature winding circuit in the inner and outer copper layers such that the crossover portions of the inner and outer winding conductors at each end of the armature are separated by the epoxy-glass cylinder, and such that the interconnections of the individual inner and outer winding conductors are made by copper tabs which extend axially into the spaced bands of overlapped layers of copper.

3,623,221
METHOD OF FABRICATING A TUBULAR SUPERCONDUCTOR ASSEMBLY

Peter Harlow Morton, Solihull, and Anthony Clifford Barber, Lichfield, England, assignors to Imperial Metal Industries (Kynoch) Limited, Witton, Birmingham, Warwickshire, England

Original application May 4, 1967, Ser. No. 636,203, now Patent No. 3,472,944, dated Oct. 14, 1969. Divided and this application May 21, 1969, Ser. No. 836,682
Claims priority, application Great Britain, May 20, 1966, 22,581/66
Int. Cl. H01r *11/00*
U.S. Cl. 29—599 **10 Claims**



A method of fabricating an assembly of two or more superconductor elements embedded within the wall of a metallic tube wherein the elements are located in annular formation within a tube of non-superconductor material, the assembly is heated to enhance bonding, and the assembly is extruded to form an integral tube.

3,623,222
DOUBLE GRIP PRUNER

George J. Akers and Wilfred M. McCord, Jr., Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.

Filed Oct. 16, 1969, Ser. No. 867,029
Int. Cl. B26b *17/02*
U.S. Cl. 30—190 **12 Claims**

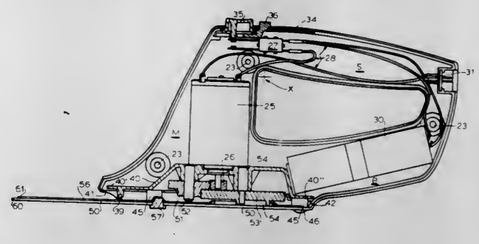
A pruner comprising two separated squeeze-grip operating handles adapted for simultaneous squeeze-grip operation by both hands for increasing the cutting power transmitted to the pruner cutting jaws; and which operating handles are in longitudinally spaced relation along the pruner shaft to facilitate the maneuvering of the jaws relatively to the branches of a tree, bush or the like.



3,623,223
CORDLESS ELECTRIC GRASS SHEAR

James E. Edgell, Bradford Woods, and Daniel A. Maniero, Pittsburgh, Pa., and William C. Albertson, Jr., Rocky River, Ohio, assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.

Filed Nov. 7, 1969, Ser. No. 874,864
Int. Cl. B26b *19/02*
U.S. Cl. 30—220 **12 Claims**



A battery operated grass shear incorporates a low friction, flexible tooth blade adapted to slide over tough grass without stopping the cutting action and further incorporates a hollow housing having various specially disposed handle, motor and battery compartments.

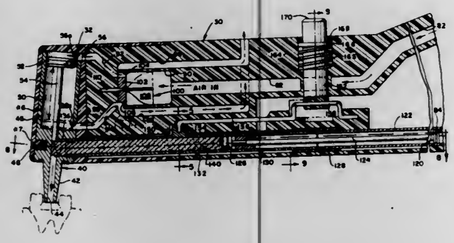
3,623,224
DENTAL INSTRUMENT

Donald G. Smith, 299 Alhambra Circle, Coral Gables, Fla. 33146

Filed Nov. 28, 1969, Ser. No. 880,566
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 **20 Claims**

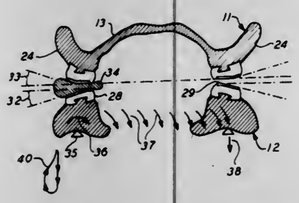
A housing supports a working tip having a bore formed therethrough, a fluid operated plunger being mounted

for reciprocation within said bore to feed amalgam from the end of said working tip and to compact amalgam in a tooth. Storage means is provided within the housing for receiving a reserve supply of amalgam, and separate transfer feed means is provided within the housing for feeding amalgam directly from the storage means into the bore



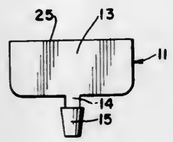
formed in the working tip and into the path of movement of the reciprocating plunger during operation of the instrument. The feed means is continuously operated while the instrument is in use, and manual control means is also provided in certain modifications for additionally controlling the feed means.

3,623,225
ARTIFICIAL DENTURE
Charles M. Moore, 205 Park St., Montclair, N.J. 07042
Filed May 21, 1970, Ser. No. 39,358
Int. Cl. A61c *13/00*
U.S. Cl. 32—8 **22 Claims**



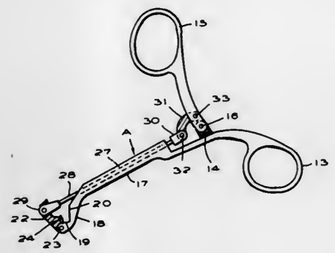
Complementary upper and lower artificial dentures, each with a developed base carrying blocks of artificial posterior teeth, the upper and lower posterior teeth of said dentures having meeting occlusal surfaces which are centralized antero-posteriorly and divided into lingual and buccal parts, the lingual occlusal part of said upper teeth being normally horizontal and relatively wide with the buccal part relatively narrow and sloping a few degrees upward and outward, while the lingual occlusal part of said lower teeth are also normally horizontal, relatively narrow and the only contacting area, the occlusal buccal part sloping a few calibrated degrees downward and outward and away from the essentially horizontal upper teeth forms, so that swallowing contact and chewing trans-bolus pressures are exerted downward and inward on the usually less stable lower denture, effecting a stabilizing action thereon without lessening the stability of the opposing denture, said denture teeth approximating the width of the natural teeth and being armored by hard wear-resistant metal alloy, or porcelain-faced metal alloy, chewing surfaces with cutting blades running transversely on the occlusal chewing surfaces and having muscle-molded buccal bases with sides extended as bulges to avoid food entrapment.

3,623,226
METHOD AND APPARATUS FOR INSERTING A DENTAL IMPLANT
Alfred E. Edelman, 2723 Federal St., Camden, N.J. 08105
Filed Aug. 27, 1969, Ser. No. 853,278
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **20 Claims**



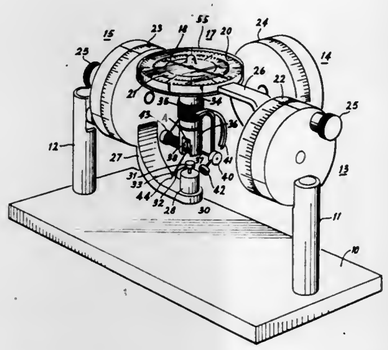
Fitting anchors called vents into the jaw bone of a person to support artificial tooth structure which includes a method of using a temporary gauge type implant to determine the proper location of the vent so that a vent for supporting a tooth will be in the most desirable position with a minimum of grinding and adjustment.

3,623,227
DENTAL INSTRUMENT FOR USE WITH TEETH-SPREADING WEDGES DURING FILLING OPERATIONS
Benjamin F. Tofflemire, 41301 Crest Drive, Hemet, Calif. 92343
Filed Dec. 18, 1970, Ser. No. 99,608
Int. Cl. A61c *3/00*
U.S. Cl. 32—64 **6 Claims**



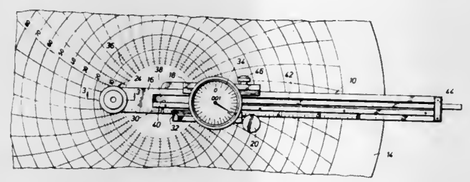
A dental instrument for use with teeth-separating wedges during filling operations of a patient's teeth, wherein each of the wedges has a base rectangular in cross-section with an interdental wedge portion projecting from the base, and each wedge further having a flat surface adapted to be positioned adjacent to the alveolar crest of the gingival tissues of the patient. The instrument defines a fixed jaw and a swingable jaw that are made to grip the wedge base, when the wedge is being moved into a position between adjoining teeth, or the wedge is being removed, the fixed jaw having a horizontal rest against which the flat gingival-facing surface of the wedge base is adapted to be placed, and the instrument is movable so that the horizontal rest will parallel the occlusal plane of the patient's teeth.

3,623,228
SPHERICAL TRIANGLE RESOLVER
Joseph C. Clark, 4843 Backacher Lane, Orlando, Fla. 32806
Filed Dec. 6, 1968, Ser. No. 781,909
Int. Cl. G01c *21/20*
U.S. Cl. 33—1 SA **6 Claims**



A spherical triangle resolving apparatus for determining a great circle course and the distance over the great circle course from an instant position to an objective position from inputs of the instant latitude, the objective latitude and the difference in longitude of the two positions. The inputs of instant latitude, objective latitude and difference in longitude each move a single shaft, which shaft is coupled to a pair of intersecting shafts in such a manner that the movement of the intersecting shafts provides outputs of the course and distance on dials that remain in a fixed plane relative to the base of the apparatus.

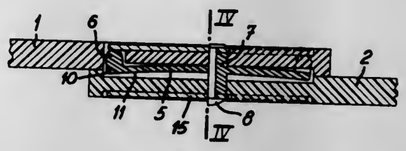
3,623,229
CHART AND INSTRUMENT CALIBRATORS
Bruce J. Caldwell, Houston, Tex., assignor to Tejas Instrument Engineers, Inc., Houston, Tex.
Filed Sept. 29, 1969, Ser. No. 863,024
Int. Cl. G01c *15/12*
U.S. Cl. 33—46 R **22 Claims**



One model calibrator is similar to a vernier caliper but has a male member that mates with a circular chart center hole and has an optical sight and reticle. Readings can be taken with this instrument to check either the accuracy of industrial instrument recordings or their chart imprints. In another model the calibrator is provided with a female member that fits snugly over mounting hubs of turntables associated with recorder chart drives and data processing equipment.

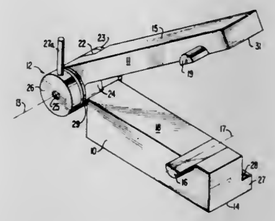
A desk model provides the capability of spot-checking of charts and calibrating instruments. It features digital readout and a carriage mechanism that can be actuated by a hand crank or servo motor. This configuration is best equipped with a light source for added illumination. It also features a magnified reticle for ease in obtaining precision measurements.

3,623,230
FOLDING MEASURING RULE
Andre Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Zone Industrielle, Trepillot, Besancon, France
Filed Nov. 24, 1969, Ser. No. 879,029
Claims priority, application France, Dec. 2, 1968, 176,221
Int. Cl. B43l *7/06*
U.S. Cl. 33—118 **7 Claims**



In a folding measuring rule each pair of adjacent limbs is pivotally hinged by a rivet. Each such hinge includes a resilient locking element extending between the two limbs and with at least one projection out of the plane of the rule. One of the limbs of the pair has at least one depression into which said projection is engageable when the limbs are in full open or closed position, the locking element being resiliently displaceable away from the limb with depressions during pivoting of the limbs.

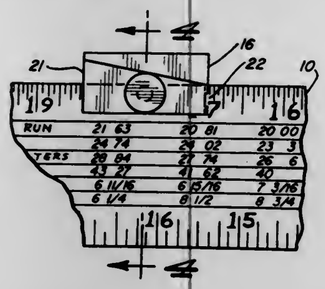
3,623,231
ANGLE GAUGE
Pliny G. Holt, 8813 Stonehaven Court, Potomac, Md. 20854
Filed July 18, 1969, Ser. No. 842,859
Int. Cl. G01b *3/30, 5/24*
U.S. Cl. 33—174 **3 Claims**



An angle gauge for establishing an angle between two surfaces with great accuracy wherein two arms are pivotally connected for rotation about an axis that is parallel to flat base surfaces extending along one side of each arm. A reference pin of known radius protrudes from each arm parallel to the pivotal axis of the arms with the center line of each reference pin being located an accurately known distance from a radial extending perpendicularly from the pivotal axis along facing inner surfaces of the arms so that establishing the outer surfaces of the two pins into contact with the respective jaws of micro meter calipers set ot a separation calculated at twice the distance from the center line of the pins to the pivotal axis of the arms multiplied by the sine of one-half the angle

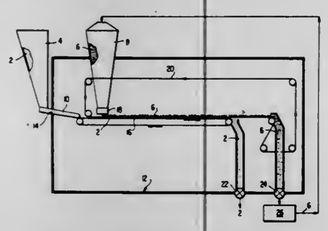
to be established plus the radius of each of the pins will align the base surfaces of the two arms to define the desired angle between them.

3,623,232
CHECK MARK RAFTER AND STAIR LAYOUT GAUGES
Julius M. Mahlstadt, Brown County, Minn. (1211 N. Spring St., New Ulm, Minn. 56073)
Filed Jan. 26, 1970, Ser. No. 889,009
Int. Cl. B43l *7/00*
U.S. Cl. 33—173 **1 Claim**



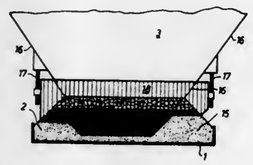
A pair of scribing accessories adjustably attachable to a carpenter's framing square for scribing of rafter layouts. Each accessory is substantially U-shaped for straddling the arms of the square, has locking means thereon, a fin and inclined shoulders.

3,623,233
METHOD AND APPARATUS FOR DRYING DAMP PULVERANT MATERIALS BY ADSORPTION
Nelson Severinghaus, 213 Glenn Circle, Decatur, Ga. 30030
Filed Dec. 3, 1969, Ser. No. 881,743
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 **14 Claims**



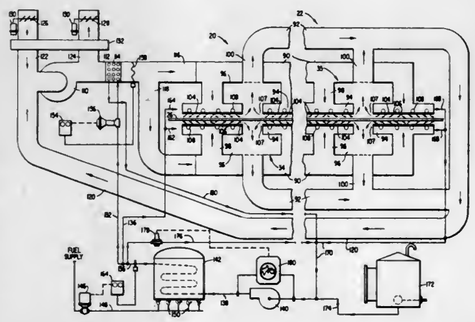
Method and apparatus for drying pulverized materials at ambient temperature wherein the method includes placing an adsorbent directly in contact with the material through a porous medium for a predetermined period of time to adsorb the water from the material and subsequently removing the water-laden adsorbent from the material. The apparatus of the invention comprises, in the first embodiment, conveying means for supporting and transporting the pulverized material, a porous medium for carrying the adsorbent in contact with the material for a predetermined length of time, and means for supplying the material to the conveying means and adsorbent to the porous medium. The second embodiment of the apparatus includes means for mixing the material with the adsorbent and means for subsequently separating the adsorbent from the material.

3,623,234
REMOVING WATER FROM CALCIUM SULPHATE
Alfons Nikolaus Knauf, Haus Hellgenborn, Siersburg, Saar, Germany
Filed May 27, 1969, Ser. No. 828,223
Claims priority, application Germany, May 31, 1968, P 17 71 502.5
Int. Cl. F26b *3/06*
U.S. Cl. 34—25 **7 Claims**



When heating calcium sulphate to remove water from it, the calcium sulphate is usually placed on a moving grate and heat is applied from the top being drawn through the calcium sulphate and grate into chambers. However, when the drawing fans are locally placed to one side or the other of the moving grate, a greater amount of air is drawn through that side of the moving grate adjacent the fan. To overcome this problem, the moving grate is supplied with a smaller free cross-section per unit area adjacent the edges of the moving grate, and preferably adjacent that edge where the fan is located. Consequently, less gas can be drawn through that portion of the grate which, because of the greater pressure at that portion, tends to permit a uniform amount of gas to be drawn through the moving grate across its width. This adjusting of the free cross-section of the grate gives a rough regulation of the gas flow resistance through the calcium sulphate, and the fine regulation is afforded by providing at least two layers of calcium sulphate on the moving grate, each layer having particles of the same size but the bottom-most layer having particles smaller than each layer there above, and varying the height of the lower layer adjacent to the side of the movable grate. This variation in height gives a fine regulation of the gas-flow resistance through the calcium sulphate.

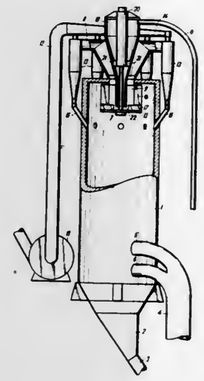
3,623,235
DRYING APPARATUS FOR VENEERS AND OTHER MATERIALS OF SHEET AND WEB FORM
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Oct. 7, 1970, Ser. No. 78,795
Int. Cl. F26b *13/00*
U.S. Cl. 34—48 **22 Claims**



Apparatus for drying veneers and other materials in sheet and web form including a dryer which has a conveyor for transporting the material through a passage

between juxtaposed radiant heat-fluid impingement units and a hold-down arrangement for pressing the material against the conveyor as the material moves through the passage. The apparatus also includes a system for supplying a heated gas and a heat transfer liquid to the radiant heating-fluid impingement units.

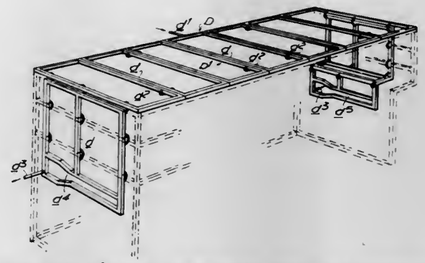
3,623,236
ARRANGEMENT FOR PREHEATING OF PULVERULENT MATERIAL, PARTICULARLY OF RAW CEMENT POWDER
Zdeněk Zacpal, Horni Mostenice, and Petr Němeček, Prerov, Czechoslovakia, assignors to Prerovske strojirny, narodni podnik, Prerov, Czechoslovakia
Filed Nov. 21, 1969, Ser. No. 878,841
Int. Cl. F27b *15/00*
U.S. Cl. 34—57 R **5 Claims**



A shaft heat exchanger for pulverulent material with an inlet for hot gases at the bottom and an inlet for the material to be preheated at the top is provided at the top of the shaft with a rotary shutter separator serving simultaneously as distributor of the raw material in the interior of the shaft. The gas outlet of said rotary shutter separator is connected to cyclone separators arranged along the circumference of the top of the shaft. The solid particles separated in the cyclone separators are returned directly back into the shaft.

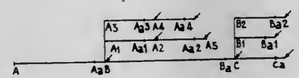
3,623,237
OUTER COVERS FOR THE ROLLERS OF MACHINES FOR THE TREATMENT OF MATERIALS IN WEB FORM
Jack D. Whittaker, St. Annes-on-Sea, Harry W. Loveday, Blackburn, Denis R. Barbour, Taunton, and William Tweedie and George S. Dryden, Hele, England, assignors to Greenbank Engineering Company Limited, Blackburn, and Easton & Johnson Limited, Taunton, England
Filed Apr. 21, 1970, Ser. No. 30,506
Claims priority, application Great Britain, Apr. 26, 1969, 21,413/69
Int. Cl. F26b *19/00*
U.S. Cl. 34—201 **4 Claims**

A machine for the treatment of material in web form with humidified air or steam constructed with a top and ends forming a frame comprising a plurality of rectangular or square frame elements welded together, each formed of a plurality of tubes for the passage of the heated fluid adjacent frame elements being connected



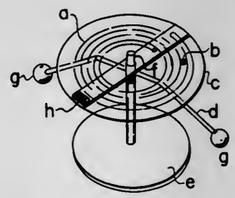
by cross over pipes to convey the fluid from one element to an adjacent element.

3,623,238
TEACHING MACHINE
Jacques Laplume, Gif-sur-Yvette, France, assignor to Societe d'Etudes Techniques et d'Enterprises Generales (SODETEG), Le Plessis-Robinson, France
Filed June 11, 1969, Ser. No. 832,290
Claims priority, application France, June 28, 1968, 157,048
Int. Cl. G09b *7/04*
U.S. Cl. 35—9 A **11 Claims**



A tape recorder presents instructional items to a student, who has a keyboard; the student is asked to operate a particular key in response to a question at the end of each instruction item; if an incorrect answer is recorded by a key, a sub-instruction item including further explanation is presented to the student, the sub-instruction item being recorded on a parallel track, or in series with the main item, the sub-instruction items are skipped under control of a control unit if the key associated with the correct answer is operated. Machine instruction words to determine coincidence of key operation and correct answer are coded by pulse coded, selected frequencies recorded on the tape or the like, and selected by tank circuits.

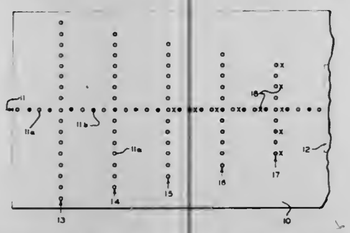
3,623,239
SCIENTIFIC MODEL TOYS
Nikolay D. Maslokovets, 4204–2 Knox Road, College Park, Md. 20740
Filed Aug. 28, 1970, Ser. No. 67,741
Int. Cl. G09b *23/20*
U.S. Cl. 35—19 R **6 Claims**



The apparatus is a mechanical model of the cyclotron which may be used as a toy for amusement or as an educational toy. It serves to show the working principle of the cyclotron. The working principle of the betatron may likewise be shown by the same apparatus using a circular

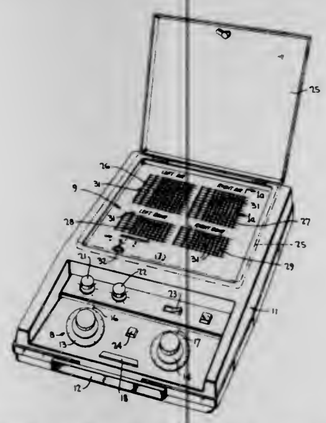
ring in place of the spiral raceway for the ball. Apparatus may serve for lectures in physics in high school, college, university or as a scientific toy or just as a toy.

3,623,240
MODEL FOR AIRPORT RUNWAY LIGHTING
Victor T. D. Wood, Goring-by-Sea, England, assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,510
Int. Cl. B64g *7/00*; **G09b** *9/08*
U.S. Cl. 35—12 N **8 Claims**



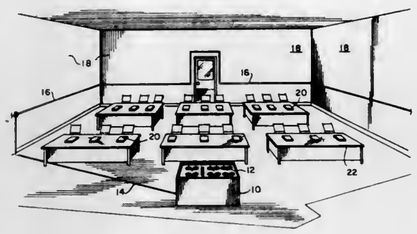
An arrangement for simulating, in reduced-scale model form, the approach lighting to an airfield runway. The problem of providing the necessary number of light-emitting members in realistic relationship, due to the greatly reduced scale of the model, is overcome by utilizing certain of the members to simulate more than one actual approach light. In the disclosed embodiment, certain of the light-transmitting members which represent the row of constant intensity lights extending from the center line of the runway also represent the strobe lights used under conditions of reduced visibility to indicate the direction of the runway center line. Means are provided for cooperatively adjusting the intensity of all the simulated lights to represent any desired level of visibility.

3,623,241
AUDIOMETER TEACHING DEVICE
Marshall A. Becker, 1007 Crest Park Drive, Silver Spring, Md. 20903; John S. Horner, 2400 Barracks Road, Charlottesville, Va. 22901; and Edward S. Stein, 5717 Nevada Ave. NW., Washington, D.C. 20015
Filed June 29, 1970, Ser. No. 50,403
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. G09b *25/02*
U.S. Cl. 35—13 **17 Claims**



In a device for training personnel to utilize audiometers, instructor programmed settings of potentiometers simulate the amplitude versus frequency hearing threshold response of a simulated subject. The responses for different frequencies are selectively fed through a switch controlled by a trainee to provide variable amplitude signals representing simulated air and bone conduction responses for both ears. Different combinations of these responses are selectively fed through a second switch controlled by the trainee to simulate different test modes. The responses of the second selector switch are fed to an electronic network having trainee responsive inputs indicative of simulated tone amplitudes and noise masking effects fed to the simulated subject. The electronic circuit is selectively responsive to an instructor-induced variable amplitude signal simulating response inconsistency of simulated subjects. These signals are combined to derive a binary signal actuating a gate feeding a lamp indicator. The gate is also responsive to a trainee actuated switch for simulating the application of a tone by the audiometer to the simulated subject. The gate and switch circuitry prevent the trainee from sweeping the frequency and amplitude response selectors.

3,623,242
ELECTRONIC TEACHING SYSTEM
Edwin L. Hoover, Dayton, Ohio, assignor to Duncan Electric Company, Inc., Lafayette, Ind.
Continuation-in-part of application Ser. No. 778,040, Nov. 22, 1968. This application Oct. 15, 1970, Ser. No. 81,090
Int. Cl. G09b *5/04*
U.S. Cl. 35—35 C **13 Claims**

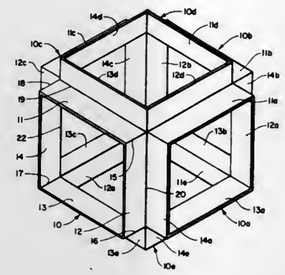


A teaching system in which there is provided an instructor's console and a plurality of student stations. The console is provided with a plurality of lesson sources which are selectively transmitted to and received by the student stations. The student stations also have means for connecting a plurality of lesson sources directly thereto. Said console and stations are also provided with means for providing an intercom link selectively actuatable for connection between said console and any one or all of said student locations whereby an instructor at said console can monitor and converse with any one or all of the students at said stations. Means are also provided at each station whereby any student can, in addition to conversing with the instructor, hear his voice projected into the system.

3,623,243
ARCHITECTURAL AND DESIGN AID
Arthur K. Hick, Mill Valley, Calif., assignor of a fractional part interest to Frederic M. Jukich, Sausalito, Calif.
Filed Aug. 12, 1970, Ser. No. 63,238
Int. Cl. A63h *33/04*
U.S. Cl. 35—72 **3 Claims**

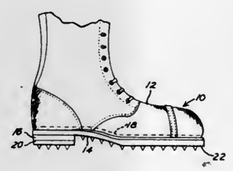
A collapsible, six-sided architectural and design aid may be manipulated to exhibit various geometric configurations. When the design aid is expanded to assume

the general shape of a parallelepiped, the sides form consecutively connected and rectangular front, first side, back and second side sections and top and bottom sections. Each section comprises first, second, third and fourth sub-



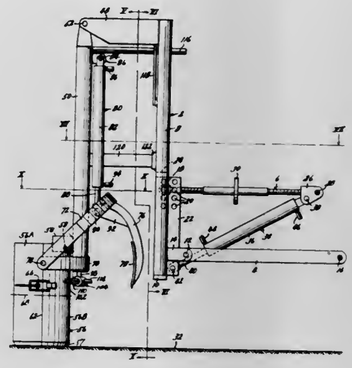
sections consecutively connected together at their side edges by parallel minor scorelines. Each section is hingedly connected to four other sections by a major scoreline at each side.

3,623,244
CALKED LOGGERS' BOOTS
Norman A. Williams, P.O. Box 215, Winston, Oreg. 97049
Filed Apr. 8, 1970, Ser. No. 26,494
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 D **1 Claim**



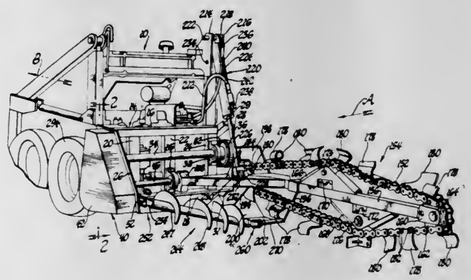
A loggers' boot is provided having thick, calkable sole members of tough sheet material such as loggers' oak leather affixed to the undersides of the heel and of the tread area of the sole of an otherwise normal boot. Each calkable member has a multiplicity of closely spaced perforations bored through it in a drill press, and contains in each perforation the body portion of a cone nut whose flange portion squarely abuts a substantial area of the inner surface of the calkable member, whose prongs penetrate the calkable member from within, and whose internally threaded body extends through, or nearly through said member. A calk of novel, one-piece construction is securely threaded in each cone nut, each calk comprising a threaded cylindrical body, a sharp inner conical tip which extends inward beyond the calkable member and penetrates the conventional sole or heel portion of the boot as the case may be, an exposed outwardly projecting, sharp conical tip, and a rigid collar of substantial thickness which surrounds the body between the threaded portion and the outer tip. The collar has flat sides adapting it to have interfitting, driven relation with the socket of a power wrench, so that the calks can be quickly, effectively and consistently driven into place by the power wrench, and can be quickly and efficiently extracted by the same means.

3,623,245
TREE BALLING MACHINE
Harold B. Adams, Sarcoxie, Mo. 64862
Filed Sept. 15, 1969, Ser. No. 858,034
Int. Cl. A01g *23/06*
U.S. Cl. 37—2 R **2 Claims**



A tree balling machine consisting of an open-bottomed, vertical cylindrical bucket diametrically split and with its sections hinged together to be closed about a small tree or other plant above ground level, a framework for supporting the bucket from a tractor or the like, power mechanism for pushing the bucket vertically into the ground to enclose the roots of the plant, power mechanism for oscillating the bucket about its vertical axis to assist its penetration into the ground, a cut-off tool adapted to be inserted horizontally into the ground beneath the bucket afer the bucket has been pushed into the ground, and power mechanism for elevating the bucket and the cut-off tool simultaneously, whereby the plant is removed from the ground with a ball of earth around its roots.

3,623,246
MOBILE TRENCH EXCAVATING APPARATUS
Roy W. Skomial, Warren, Mich. (2900 W. Wardlow, Highland, Mich. 48031), and Bert C. Van Giesen, 2514 Banner, Ferndale, Mich. 48220
Filed May 7, 1969, Ser. No. 822,493
Int. Cl. E02f *5/06*
U.S. Cl. 37—86 **7 Claims**



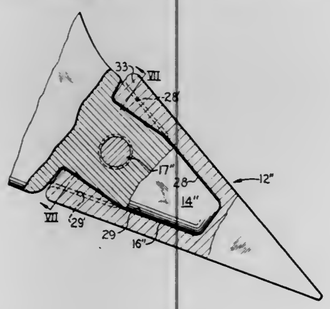
A trenching apparatus situated on a vehicle for mobility has a mounting frame in turn supporting a pivotal trenching or digging boom assembly which can be pivoted to varying positions including a trenching or digging position; a soil or dirt deflector operatively carried by the

frame serves to deflect the dirt, dug by the trenching boom, to one side of the resulting trench and a powered conveyor device of an auger or screw-like configuration serves to convey the deflected dirt or soil a substantial distance away from the trench in order to prevent the said dirt from falling back into the trench; the trenching boom assembly is mounted to one side of and generally outboard of the vehicle thereby enabling the digging of a trench in close proximity to an existing structure or wall if necessary.

ERRATA

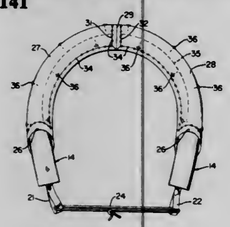
For Classes 37—92 and 37—142 see:
Patent Nos. 3,624,826 and 3,624,827

3,623,247
HIGH STRENGTH DIGGING TOOTH
Visvaldis A. Stepe, Willow Spring, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 26, 1970, Ser. No. 5,806
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 R **1 Claim**



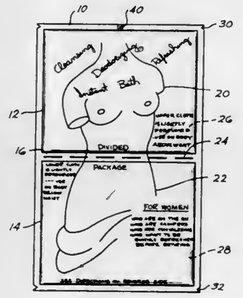
A replaceable tip of a digging tooth for earthmoving equipment or the like has a socket cavity into which a toothlike support is received, the tip being retained on the support by a transverse pin. The possibility of breakage of the tip under severe load forces is reduced by recessing central portions of the contacting surfaces of the tip or support means within the cavity thereby assuring that stresses are directed to the relatively high strength side regions of the tip.

3,623,248
FLEXIBLE FABRIC FORMER AND METHOD
Helen S. Jones, 2512 S. University, Denver, Colo. 80120
Filed Apr. 30, 1970, Ser. No. 33,338
Int. Cl. D06f *83/00, 85/00*
U.S. Cl. 38—141 **7 Claims**



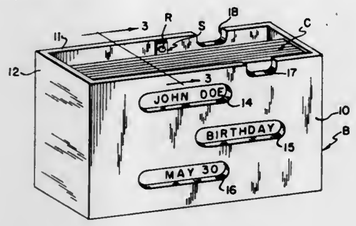
A flexible former and method for shaping collars, lapels and the like from a cut of flat fabric includes a generally cylindrical relatively firm support body comprised of an outer covering layer stuffed with a resilient particulate material, the support body being bendable in a curve along its length to a desired radius to simulate a selected neck size thereby giving a curved shape to the cut of fabric during pressing. The support body has end loops through which a tie member is inserted and tied to hold the support body in the desired U-shaped configuration.

3,623,249
COMPARTMENTED PACKAGE WITH USE-INDICATION DEPICTION
Jean P. Brooks, 42 Sherwood Road, P.O. Box 57, Cockeysville, Md. 21030
Filed Dec. 12, 1969, Ser. No. 884,402
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 R **10 Claims**



A package comprising plural compartments and having a drawing of a human figure or other anatomical depiction overlying the compartments in a manner indicating that the material within any given compartment is for application to the part of the anatomy corresponding to the portion of the depiction overlying that particular compartment.

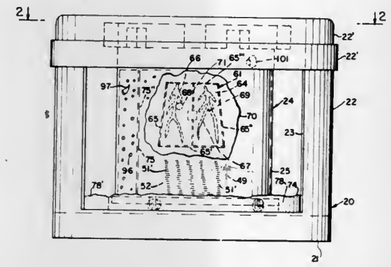
3,623,250
REMINDER INDEX BOX
Stephen B. Misenko, 1350 E. Boston Road, Broadview Heights, Ohio 44147
Filed Mar. 10, 1970, Ser. No. 18,107
Int. Cl. G09f *3/18*
U.S. Cl. 40—16 **2 Claims**



In an open top rectangular card file box with a serially ordered pack of upright form cards, a dependent curved leaf spring attached to the back wall presses the stack against a front wall multiply slot-windowed to display correspondingly located notations on the face of each successively presented front card; aligned front and back wall

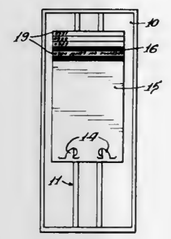
top edge notches and spring convexity facilitating card manipulation, especially in transferring a front card to the pack back.

3,623,251
ROTARY TOY DEVICE
James D. Bosch, Rte. 3, Valley City, N. Dak. 58072
Filed Oct. 22, 1969, Ser. No. 868,454
Int. Cl. G09f *27/00*
U.S. Cl. 40—28.1 **3 Claims**



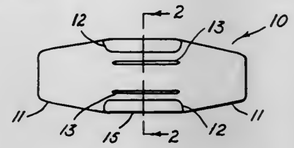
The invention comprises a rotary toy having a housing with a drum rotatably mounted in the housing. The housing has an open window area for viewing the drum. The drum is divided into sky scenes and constructed to give the outward appearance of a thunder and lightning and rain scene, a night time scene and day time scene. The thunder and lightning and rain scene has a box mounted to the side of the drum with a cotton wad surrounding the drum to give the appearance of a cloud and with electric lights in the box and jagged opening in the box to give the outline of lightning bolts, so that when one of the lights in the box is illuminated the illumination through the jagged openings will give the appearance of lightning striking. The drum is adapted to rotate to enable 6 viewers to view the different scenes.

3,623,252
RECORD FILE
Arthur Manoff, Baltimore, Md., assignor to Acme Visible Records, Inc., Crozet, Va.
Filed Nov. 10, 1969, Ser. No. 875,459
Int. Cl. B42f *17/22*
U.S. Cl. 40—104.1 **2 Claims**



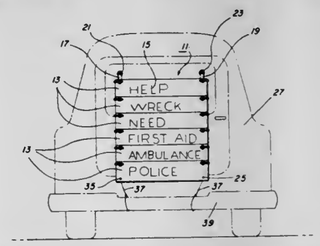
Card holder file for microfiche, the holder file being composed of cards secured in stepped arrangement with their margins bearing a dark color visible through the transparent overlying marginal index portions of the microfiche cards disposed in said holder file.

3,623,253
WATCH CALENDAR
Samuel E. Hohulin, 16 Peine Road, Lexington, Ill. 61753
Filed Nov. 5, 1969, Ser. No. 874,338
Int. Cl. G09d *3/00*
U.S. Cl. 40—107 **1 Claim**



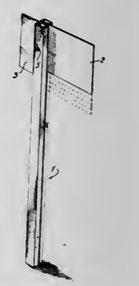
Apparatus adapted to be attached to a watch band to carry a current calendar blank. A single piece of flat metal that can be easily bent to encircle a watch band has retaining ears to removably receive a calendar blank.

3,623,254
CHANGEABLE SIGN EXHIBITOR
Edward W. Parish, Sr., 519 N. Highland St., Memphis, Tenn. 38122
Filed Jan. 8, 1970, Ser. No. 1,518
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 C **11 Claims**



A device for supporting a plurality of interchangeable plates, each having a keyword used for constructing a communicative sentence or phrase. The device of the present invention is directed toward providing the stranded occupants of a motor vehicle in distress a way to intelligently communicate to passersby the extent and nature of the particular problem.

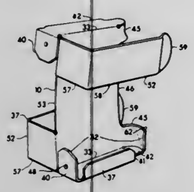
3,623,255
OUTDOOR SIGN SUPPORTING POST
Marcel Girard, 3872 De la Peltrie, Montreal 26, Quebec, Canada
Filed Jan. 7, 1969, Ser. No. 789,496
Int. Cl. G09f *7/18*
U.S. Cl. 40—145 **7 Claims**



This disclosure relates to a sign post comprising a longitudinal central portion and a side portion bent back on opposite sides of said central portion in such a way as

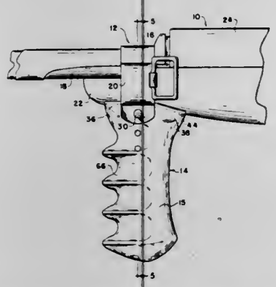
to overlap the edge of a sign blade when such a sign blade is secured to the central portion of the post. Such an arrangement permits to secure two sign blades on opposite sides of the central portion of the post at 180° intervals. A retaining member is also provided for securing an additional sign blade at 90° from the first sign blade.

3,623,256
AMMUNITION MAGAZINE HOLDER
Lewis D. Shiplee III, 818 Concord Road, Tallahassee, Fla. 32303
Filed Apr. 3, 1970, Ser. No. 25,350
Int. Cl. F41c *25/00*
U.S. Cl. 42—50 **7 Claims**



A holder for a pair of box-type ammunition magazines has a pair of receivers with a common wall which is located between and contacts the left side walls of and at the base ends of the magazines. Pocket-type receivers made of resilient material are used in one embodiment and another embodiment has a clamping arrangement in the receivers which permits quick release of either magazine.

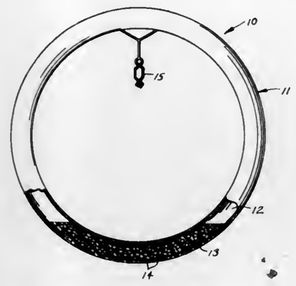
3,623,257
RIFLE HAND GRIP DEVICE
Lonnie J. Ray, Rte. 2, Piney Flats, Tenn. 37686
Filed June 12, 1969, Ser. No. 832,688
Int. Cl. F41c *23/00*
U.S. Cl. 42—71 **9 Claims**



A hand grip device similar to a pistol grip, having projecting means on one end adapted to fit into clamping type front band assemblies of rifles, such as employed on the M1 carbine, and adapted to be clamped thereby to secure the grip device to the rifle.

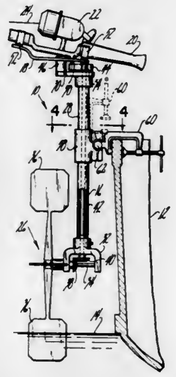
3,623,258
DEVICE FOR RETRIEVING LURES
Harold R. Doane, 1730 Franklin, Astoria, Oreg. 97103
Filed Nov. 7, 1969, Ser. No. 874,900
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **1 Claim**

A circular device having an upper portion and a lead weighted pellet lower portion, the upper portion having a spring clip for securing the device to the fishing line in order that it may descend to the snagged lure or hook.



By manipulation of the line by the fisherman the spring clip portion of the device serves to dislodge the lure that is snagged on the bottom.

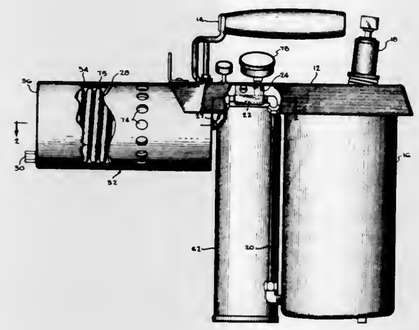
3,623,259
FISHING ROD AGITATOR
Gustav H. Rode, Ridge Road, Terryville, Plymouth, Conn. 06782
Filed July 25, 1968, Ser. No. 747,626
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 **16 Claims**



A device for agitating a fishing pole in response to the relative movement of a body of water includes a water wheel journalled at the lower end of a generally vertically disposed support member adapted for attachment to a boat or the like. The water wheel is drivingly connected to a lever pivotally mounted at the upper end of the support member and oscillates the lever in response to relative movement of the water. Clips on the lever are adapted to engage and releasably retain the handle of a fishing rod to support the rod in a conventional fishing position.

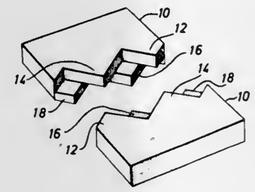
3,623,260
THERMAL INSECTICIDE FOGGER
Robert L. Konle, New Berlin, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed June 26, 1970, Ser. No. 50,121
Int. Cl. A01m *13/00, 19/00*
U.S. Cl. 43—129 **17 Claims**

A thermal fogger having a multiple tank, liquid petroleum gas fuel supply feeding through line means to a common burner outlet for combustion within a heater body, a source of liquid insecticide including lines means comprised of a spiral vaporizer coil located in the heater body and a fog outlet from which the insecticide is discharged as a fog, where the heater body is located next to the fuel tanks and is heat conductive to radiate heat thereagainst for stabilizing during use the liquid fuel temperature and thereby its pressure, further where the fuel combustion in the heater body occurs primarily at the fog outlet end of



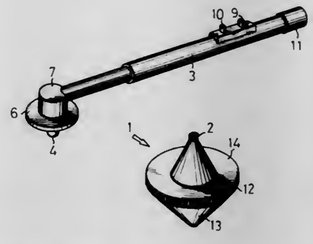
the heater body and propagates as flame in a counterflow manner to the insecticide flow over the vaporizer coil to discharge as products of combustion at the remote end of the heater body from the fog outlet, and where passage means connect the separate fuel tanks to the common burner outlet and include check means formed as part of each tank opening probe so that either fuel tank can be removed from the fogger without leakage from the other tank.

3,623,261
BUILDING UNITS WITH INTERLOCKABLE TOOTHED EDGES
Lennart W. Freese, Stockholm, Sweden, assignor to New-Invent S.A., Geneva, Switzerland
Filed July 27, 1970, Ser. No. 58,491
Claims priority, application Sweden, July 6, 1970, 9,328/70
Int. Cl. A63h *33/08*
U.S. Cl. 46—30 **9 Claims**



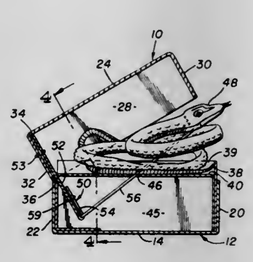
Model building units which may be readily joined together in great numbers to form continuous areas in plan or space. The units are joined edge to edge by means of an interlock-device provided along the interengaging edges. The interlock-devices comprise two rows of uniformly pitched teeth extending on either side of a common dividing plane, the teeth of one row being offset half a pitch in relation to the teeth of the second row. When the building units are pushed together to be joined, the inner side or inside of each tooth, i.e. the side lying in the common dividing plane, engages by friction and/or snap action a corresponding inside of a tooth in an opposite interlock-device, forming a firm, readily detachable joint wherein the holding forces are acting smoothly and uniformly distributed.

3,623,262
TOP TOY
Fumihiko Noda, Tokyo, Japan, assignor to Kabushiki Kaisha Kokusai Boheki, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,227
Claims priority, application Japan, Feb. 18, 1969, 44/14,678, 44/14,679
Int. Cl. A03h *1/00*
U.S. Cl. 46—72 **4 Claims**



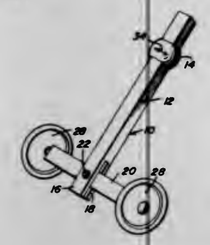
A spinning top may be started by coupling it to the output shaft of an electric motor on a rod which carries a battery and reversing switches for the motor, and by uncoupling the top from the motor when it reaches a desired speed. When the top slows down, it may be accelerated by engagement of its periphery with a disc on the motor shaft while the motor rotates in a direction opposite to the original direction. A centrifugal switch in the top energizes a lamp when the top reaches a certain speed.

3,623,263
ANIMAL SIMULATING AMUSEMENT DEVICE
John A. Frampton, 144 E. Beechwold Blvd., Columbus, Ohio 43214
Filed May 18, 1970, Ser. No. 38,258
Int. Cl. A63h *13/16*
U.S. Cl. 46—146 **1 Claim**



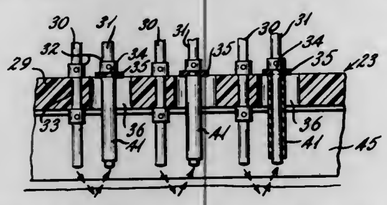
An amusement device, in the form of a gift type box, having a lower base section and an upper cover section which are pivotally connected together to form an openable container for a flexible animal-simulating body, such as a snake. A lever mechanism is connected between the cover section and the creature body to impart a life-like movement to the creature body when the cover is moved to its open position to thus surprise the unwary inquisitor.

3,623,264
PUSH TOY
Salvatore Sapienza, 171½ Garden St., Lawrence, Mass. 01840
Filed Aug. 25, 1970, Ser. No. 66,742
Int. Cl. A63h *33/02*
U.S. Cl. 46—205 10 Claims



A hand toy including an elongated handle provided with a handgrip end portion at one end and a bifurcated end portion at the other end including a pair of laterally spaced furcations whose opposing surfaces are planar and parallel. An elongated axle member has its mid-portion pivotally secured between the furcations for oscillation about an axis disposed at right angles relative to the elongated handle and the axle member and extending between the furcations. A pair of wheels are journalled on the opposite end portions of the axle member for rotation about an axis generally coinciding with the longitudinal axis of the axle member.

3,623,265
METHOD OF FIXING NITROGEN IN THE ATMOSPHERE AND THE SOIL
Don L. Brunton, Amarillo, and Charles W. Osborne, Pampa, Tex., assignors to Nitron, Inc., Pampa, Tex.
Filed Nov. 26, 1969, Ser. No. 880,068
Int. Cl. A01g *7/04*; A01c *1/00*; C01b *21/30*
U.S. Cl. 47—1.3 2 Claims



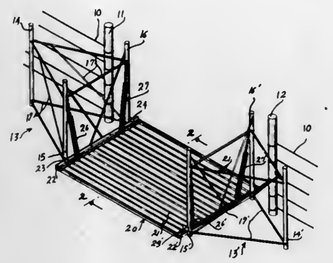
Method and apparatus for producing heat in the form of an arc of electrical energy in the presence of atmosphere to reproduce the process of fixation of nitrogen in the atmosphere and in the ground and convert atmospheric nitrogen to nitrate in a form usable by plants to encourage growth.

3,623,266
SEED TAPE FOR SEEDING
Masakazu Nakayama, Tokyo, Japan, assignor to Toei Sangyo Company Limited, Tokyo, Japan
Filed Mar. 31, 1970, Ser. No. 24,157
Int. Cl. A01c *1/04*
U.S. Cl. 47—56 2 Claims



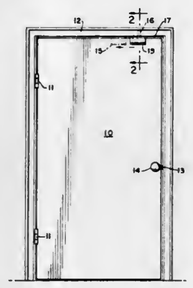
The seed tape of this invention consists of a tape being soluble or decomposed in water, in which plant seeds are wrapped at certain intervals and the outside of which is bound with at least two strings wound helically in opposite directions.

3,623,267
CATTLE GUARD
Joe Williams, P.O. Box 264, Gettysburg, S. Dak. 57442
Filed Jan. 7, 1970, Ser. No. 1,128
Int. Cl. E06b *11/00*
U.S. Cl. 49—131 3 Claims



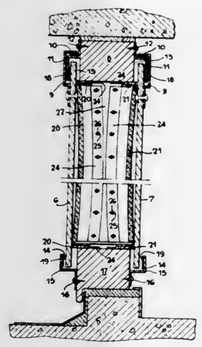
A cattle guard mounted on the existing ground surface in an opening in a fence line is disclosed. Three post-like members connected together by cross braces are positioned on each side of the opening and a rectangular gridiron-like structure is positioned between them. A pair of post-like members are positioned closely adjacent each end of the gridiron-like structure and each is provided with a stop member securely fastened thereto a predetermined distance above the ground surface. A plurality of coil springs have their upper ends connected to the post-like members and their lower ends connected to the gridiron-like structure to yieldingly force it upwardly against the stop members.

3,623,268
DOOR LOCKING DEVICE
Harry C. Zepf, 405 Mariposa Drive, Ventura, Calif. 93001
Filed Mar. 19, 1970, Ser. No. 20,894
Int. Cl. E05b *65/06*
U.S. Cl. 49—394 4 Claims



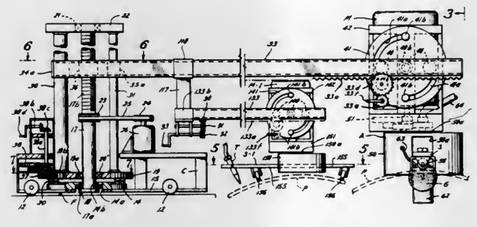
A channel-shaped lock member is slidable along the top edge of a hinged door and a pin-shaped detent projects from the door frame into a clearance space between the frame and the door. The lock member is provided with an open-ended notch in which the detent is lockingly received when the lock member is slid on the door in the direction of the detent, thus holding the door in its closed position.

3,623,269
SLIDING DOOR OR WINDOW
Paul Algrain, 8 Avenue des Frenes, Kraainem, Belgium
Filed Sept. 22, 1969, Ser. No. 859,746
Claims priority, application Belgium, Sept. 27, 1968, 64,103, Patent 721,597
Int. Cl. E05d *13/02*
U.S. Cl. 49—410 8 Claims



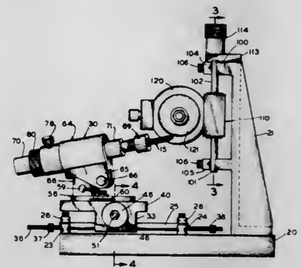
A sliding glass panel comprises a movable portion that slides horizontally in relationship with a frame and a fixed panel. The movable portion comprises a sashless glass pane which is displaceable alongside the frame and externally of the frame. Sealing strips are provided around the door opening in the frame. A handle mounted at the mid point of the sliding glass panel forces through a camming action the glass pane to take a bowed configuration that matches the configuration of the sealing strips for closing the glass panel and the open portion of the frame. The glass panel can either be a door or a window.

3,623,270
APPARATUS FOR CUTTING AND GRINDING OPENINGS IN A CURVED BODY
Amin Melhem Saab, 3737 Hillcroft, Apt. 22, Houston, Tex. 77027
Filed Sept. 22, 1969, Ser. No. 859,699
Int. Cl. B23k *7/04*; B24b *5/36*
U.S. Cl. 51—5 11 Claims



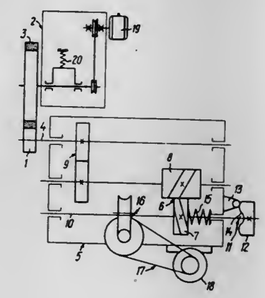
An apparatus for performing operations on pipe or vessels, particularly the cutting of openings in the pipe or vessel with a cutting torch and the grinding of the inner edge of an opening in the pipe or vessel.

3,623,271
MACHINE FOR SHARPENING TAPS
Louis W. Greenblatt, 12 Ladue Manor, St. Louis, Mo. 63124
Filed June 4, 1969, Ser. No. 830,313
Int. Cl. B24b *3/18*
U.S. Cl. 51—92 ND 5 Claims



A device for grinding flutes of taps, having a vertically adjustable, vertically disposed grinding wheel against the periphery of which the tap to be ground can be moved. A turret for holding the tap is adjustable about a horizontal axis, about a vertical axis, and in a lateral path parallel to the axis of the grinding wheel. Within adjustable limits, the turret with the tap is movable back and forth to bring the tap into contact with the grinding wheel for the grinding action to take place at the proper angle to the tap. Graduations are provided to indicate the appropriate angularities. The machine is adjustable to operate with different sizes of taps, different shapes of grinding cuts, and different numbers of flutes.

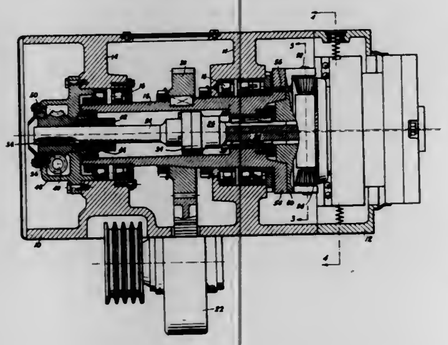
3,623,272
MACHINE FOR CLOSED-CONTOUR GRINDING OF PARTS WITH VARIABLE CURVATURE
Mark Davydovich Flid, Smirnovskaya ulitsa 4a, kv. 65, and Leonid Grigorievich Dibner, Ulitsa Menzhinskogo 9, kv. 19, both of Moscow, U.S.S.R.
Filed Aug. 14, 1969, Ser. No. 850,043
Int. Cl. B24b *5/02*
U.S. Cl. 51—105 R 8 Claims



A workpiece of variable curvature is ground on its surface by a grinding member and the workpiece is driven at variable angular speed to provide substantially constant linear speed of the workpiece at the point of contact with the grinding member. The workpiece is driven from a first helical gear which is in mesh with a second helical

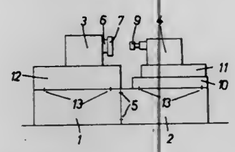
gear fixed on a spindle. The drive shaft which carries the first helical gear is driven in rotation and axially in order to provide the varying angular speed of the second helical gear to drive the workpiece in the manner previously indicated.

3,623,273
APPARATUS FOR ECCENTRIC MACHINING OF ELECTRODES
Lubomir Busniak, Nove Mesto nad Vahom, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia
Filed Mar. 10, 1970, Ser. No. 18,171
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—119 **7 Claims**



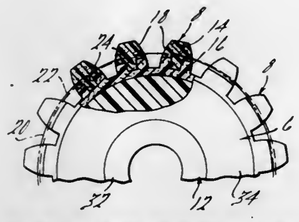
Apparatus for machining electrodes comprising a hollow spindle rotatable about a central axis, a linearly reciprocal rod mounted within the spindle, a support drivingly engaged by the spindle and a bushing mounted on the support for receiving a work tool carrier. The bushing is angularly adjustable about the support by connecting means with the rod which translates the linear motion of the rod into rotary adjustment of the bushing.

3,623,274
INTERNAL GRINDER
Bertrand Voumard, Neuchatel, Switzerland, assignor to Voumard Machines Co. S.A., Neuchatel, Switzerland
Filed Aug. 5, 1969, Ser. No. 847,658
Claims priority, application Switzerland, Aug. 14, 1968, 12,209/68
Int. Cl. B24b 41/02
U.S. Cl. 51—166 FB **8 Claims**



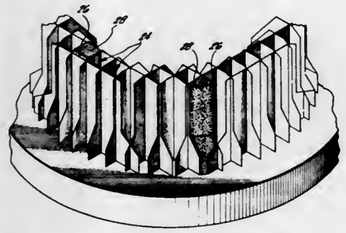
The internal grinder is composed of independent units consisting of base parts, one or more headstock spindle units, one or more grinding spindle units, and with or without a loading and unloading unit, all of which units can be put together in various combinations to construct high-precision internal grinders specifically adapted to certain kinds of operations.

3,623,275
COMPOSITE ABRASIVE FINISHING TOOL
Charles G. Koella, Rochester, Mich., assignor to Michigan Tool Company
Filed Nov. 10, 1969, Ser. No. 875,383
Int. Cl. B24d 5/14
U.S. Cl. 51—206 R **8 Claims**



A gear-shaped abrasive finishing tool and the method of forming such a tool in which at least a portion of the tooth elements thereof are provided with working faces having controlled variations in their abrasive properties so as to provide a selected abrasive finishing action on gears being finished thereby.

3,623,276
MULTICELLULAR LAPPING HEAD
Willard C. Twigg, 999 N. Sepulveda Blvd., Los Angeles, Calif. 90245
Filed Mar. 5, 1970, Ser. No. 16,911
Int. Cl. B24d 5/00, 7/00, 11/00
U.S. Cl. 51—209 **12 Claims**

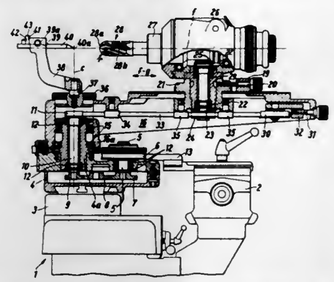


A grinding or lapping head for providing metal workpieces with specular surface finishes is disclosed. Such a lapping head includes a grinding member having a generally annular shape and a supporting or retaining base plate atop which the grinding member is mounted. The grinding member comprises a honeycomb or cellular core embedded in a rigid foam material which serves as a carrier medium for a particulate abrasive substance.

3,623,277
APPARATUS FOR GRINDING VARIOUS SHAPED TEETH ON CUTTER MEMBERS
Albert Bottcher, Scharzfeld, Harz, and Gerhard Hersener, Bad Lauterberg, Harz, Germany, assignors to Franz Kuhlmann KG, Prazisionsmechanik und Maschinenbau, Wilhelmshaven, Germany
Filed July 22, 1969, Ser. No. 843,347
Claims priority, application Germany, July 22, 1968, P 17 52 828.8
Int. Cl. B24b 3/02
U.S. Cl. 51—225 **7 Claims**

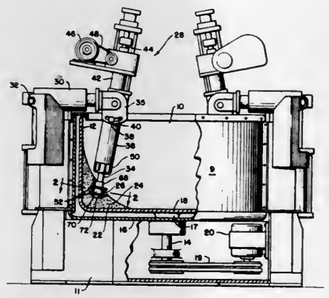
A device for grinding a die-sinking cutter member such that the cutter teeth change without interruption from a spiral arrangement on the calotte of the cutter member to a helical arrangement on the cylindrical or jacket portion of the member. An indexing head provided with a spindle for receiving the cutter member is

adjustably mounted on an arm pivotable on a conventional grinding table, the rectilinear motion of which is transmitted as rotary motion to the spindle on the indexing head through appropriate belt driven shafts. The angle of pivotal movement of the arm is adjusted by means of suitable stops, and upon rectilinear movement



of the traveling table, the arm is caused to pivot in addition to transmitting rotary motion to the spindle on the indexing head, with the result that a spherical tooth of the die-sinking cutter positioned on the spindle of the indexing head is led along a conventional grinding wheel in accordance with its initial spiral shape.

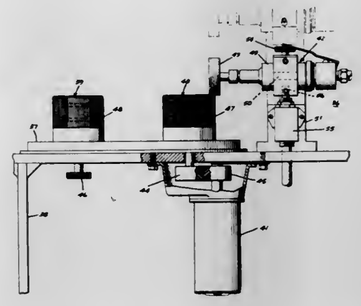
3,623,278
DEBURRING PROCESS
Herman J. Schwartz, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 3, 1969, Ser. No. 881,799
Int. Cl. B24b 1/00
U.S. Cl. 51—317 **6 Claims**



In a mass deburring process, the integrity of a corner of a workpiece is maintained by rotating a centrifugally maintained gritty abrasive wall in a first angular direction about the workpiece and rotating the workpiece in the wall such that the velocity of the corner is about at least as great as the velocity of the abrasive and in a second angular direction substantially opposite to said first angular direction.

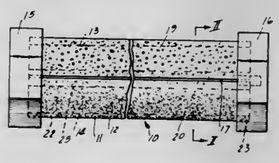
3,623,279
METHOD OF PRODUCING A BRUSH TRACK FOR AN ADJUSTABLE SLIDING BRUSH TRANSFORMER
Harry J. Proxmire, Fort Wayne, Ind., assignor to General Electric Company
Original application Nov. 16, 1967, Ser. No. 683,627, now Patent No. 3,478,290, dated Nov. 11, 1969. Divided and this application June 30, 1969, Ser. No. 853,578
Int. Cl. B24b 1/00
U.S. Cl. 51—328 **4 Claims**

An adjustable sliding brush transformer with a relief-polished brush track. The brush track is formed of a series of convex contact surfaces on successively disposed adjacent wire turns. The series of convex contact surfaces is underspanned by a series of concave surfaces of resin insulating material along the brush track. Electrical contact between the brush and the winding is



achieved by sliding movement of the brush along the convex contact surfaces. The concave-convex brush track is produced by relief polishing a preselected portion of the winding. A polishing disc consisting of a mat of glass fibers or fibers of thermoplastic polyamide impregnated with silicon-carbide grit may be used.

3,623,280
HAND TOOL FOR SHARPENING CUTTING EDGES
William C. Chesnut, 504 Augusta St., Racine, Wis. 53402
Filed May 11, 1970, Ser. No. 35,975
Int. Cl. B24b 9/10; B24d 15/08
U.S. Cl. 51—370 **11 Claims**

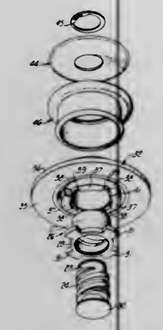


A hand tool for sharpening cutting edges characterized by a curved honing surface formed by a layer of abrasive particles for sharpening edges of the cutting device such as a knife which curved surface enables the sharpening of knife blades having a serrated or waverly cutting edge. In the preferred embodiments the tool has an elongated slot or groove with sidewalls covered by the layer of abrasive particles to provide a point sharpening device. The elongated groove of the tool can be provided as a groove in a solid body member of the tool or as a slot in a tubular body member of the tool. The groove can also be defined by edges of assembled halves forming the body member of the tool, or by the curved surfaces of a plurality of body members assembled to form the tool.

3,623,281
MOUNTING FIXTURE
Robert H. Moffat, 8554 Nevada, Canoga Park, Calif. 91304
Filed June 16, 1969, Ser. No. 833,637
Int. Cl. B24d 17/00
U.S. Cl. 51—377 **15 Claims**

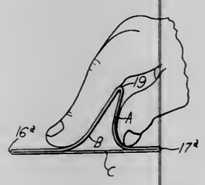
Apparatus for mounting a replaceable sanding or grinding disk on the rotary drive shaft of a power device having a supporting hub provided with annularly arranged

pockets and lugs, the pockets being adapted to receive projections on the disk, a gripping or clamping element having annularly arranged jaws being adapted to engage the projections of the disk, and means operable upon ro-



tation of the shaft of the power device for causing the gripping or clamping means to grip or clamp the projections on the disk in order to securely mount the same on said hub.

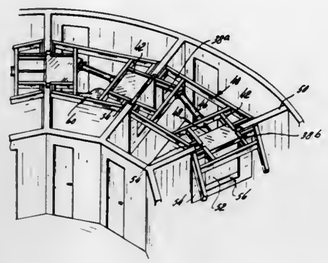
3,623,282
ARTICLE OF MANUFACTURE USEFUL FOR CONDITIONING A SURFACE
Clarence D. Norris III, P.O. Box 20222, Birmingham, Ala. 35216
Filed Feb. 24, 1970, Ser. No. 13,358
Int. Cl. B24d *15/00, 11/06*
U.S. Cl. 51—399 **4 Claims**



An article of manufacture useful for sanding, polishing, waxing or otherwise conditioning the surface of a work piece comprising a triangular shaped body of material, preferably in sheet form, flexible enough to be grasped between the thumb and fingers, so that the third side may be pressed into contact with the work piece. The triangular shaped body may be formed as a flat sheet or strip with structure for joining the ends at one apex of the body, together with fold or score lines thereon to provide the other two apices.

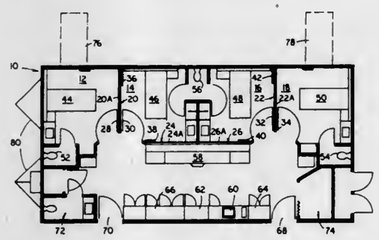
3,623,283
CEILING ENTRANCE DOOR SYSTEM FOR MULTIPHASIC MEDICAL EXAMINATION LABORATORY
John C. Abromavage, Tempe, and James F. George, Phoenix, Ariz., assignors to Advanced Management Engineering & Research Co., Phoenix, Ariz.
Filed Nov. 19, 1969, Ser. No. 878,078
Int. Cl. E04h *3/08;* **E04b** *7/16*
U.S. Cl. 52—19 **2 Claims**

A ceiling entrance door construction and system for use in multiphasic medical examinations screening laboratories of a type where a test sequence phase is conducted in a plurality of juxtaposed wedge shaped test chambers surrounding a central core area wherein each test chamber is adapted to contain all instruments and leads to perform predetermined tests with inexpensive instruments located in each test chamber, expensive equipment being centrally located in the central core and inter-connected with each test chamber via a cable,



with still further expensive equipment mounted on a track above the wedge shaped test chambers adapted for selective vertical placement in or removal from each chamber, the ceiling entrance door and system being sound proof in nature and adapted for electrohydraulic opening or closing in timed sequence with movement of test equipment along the overhead track.

3,623,284
INTENSIVE CARE UNIT
Ronald K. Meyer, Mill Valley, Calif., assignor to Electro/Systems, Inc., Richmond, Calif.
Filed Aug. 15, 1969, Ser. No. 850,542
Int. Cl. A61g *12/00;* **E04h** *3/08*
U.S. Cl. 52—34 **3 Claims**

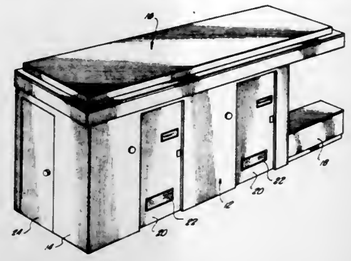


An intensive care unit has pairs of rooms set up so that a portion of the interior of one room may be viewed from a nurse station directly through a transparent portion of a wall thereof. The pair of rooms share a common wall also having a transparent portion, so that a portion of the interior of the other room may be viewed through the transparent portion of the first-mentioned wall and through the transparent portion of the common wall.

3,623,285
BUILDING CONSTRUCTION MODULE
Edward H. Kelly, Los Angeles, Calif., assignor to S.A.C. Electronics, Inc., Los Angeles, Calif.
Filed Sept. 26, 1969, Ser. No. 861,282
Int. Cl. E04h *3/02*
U.S. Cl. 52—36 **4 Claims**

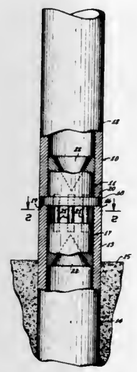
The present invention provides a building construction to be offered in the form of variously sized modules consisting of a plurality of rooms principally to be installed in airports and depots to afford a temporary sleeping or working area for rent. The principal feature of the design

of the building construction is the way in which the interior of each room is oriented so as to optimize the useful space without creating an unnecessarily large size for the overall structure. Each room consists of a bed of size sufficient



to accommodate a seven foot person and is convertible into a desk and working area complete with telephone, storage space for luggage and clothing plus suitable lighting and ventilation.

3,623,286
BREAKAWAY POST
Alfred P. Parduhn, 1924 Plymouth Lane, Oklahoma City, Okla. 73120
Filed Sept. 19, 1969, Ser. No. 859,296
Int. Cl. E01f *9/01;* **E04c** *3/32*
U.S. Cl. 52—98 **9 Claims**



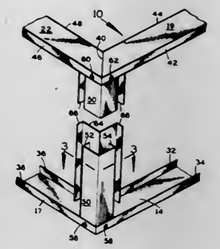
A breakaway post for delineating the presence or boundary of a hazard which post embodies a shearing member having at least a pair of breakaway pillars.

ERRATUM

For Class 52—236 see:
Patent No. 3,623,296

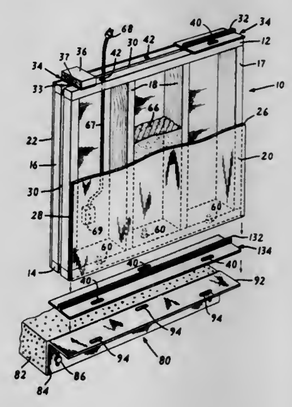
3,623,287
CORNER CONSTRUCTION FOR WALLS
Myron C. Force, North Miami, Fla., assignor to Florida Rolling Mills, Inc., Miami, Fla.
Filed Oct. 13, 1969, Ser. No. 865,724
Int. Cl. E04b *1/343, 1/348*
U.S. Cl. 52—282 **3 Claims**

A corner construction for the walls of a room or building wherein all horizontal and upright members are metal members formed from flat stock of the same size. A first pair of upwardly facing channels form a corner at floor level and a second pair of outwardly facing channels form another corner at ceiling level. These channels are adapted to receive channel-shaped studs to provide support for wall material. At the corners formed by the channels, an outer corner brace is formed by a first upright metal right angle member having inwardly turned edge flanges and secured at its bottom and top ends to the outside flanges of the lower and upper channels. A



second upright metal right angle member having outwardly turned edge flanges is secured at its lower and upper ends respectively to the inside flanges of the lower and upper channels. The right angle members serve to support wall material such as wallboard at the corners of a room, and the right angle members may be made from the same flat stock as the channels to simplify fabrication.

3,623,288
PREFABRICATED BUILDING CONSTRUCTION
Stanley L. Horowitz, 45 Park Ave. E., Merrick, N.Y. 11566
Filed July 23, 1970, Ser. No. 57,469
Int. Cl. E02d *27/00*
U.S. Cl. 52—293 **23 Claims**



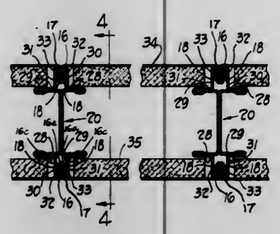
A prefabricated building erected with prefabricated wall members constructed with a framework of horizontal and vertical members and panel skins disposed at opposite sides of the framework and fixedly secured thereto. The outer surfaces of the framework members are provided with grooves in which are received the tongue parts of resilient strip members, the resilient strip members providing seals at the joints along which the respective edges of the wall members are secured to the building structure and to other wall members. The resilient strip members also serve as connecting means at the vertical seam between two adjacent wall members for connecting the wall members together without recourse to use of fastener means which extend through the vertical side edges of the wall members.

3,623,289
FLEXIBLE SPACING DEVICE FOR CONCRETE REINFORCING MATERIALS
John L. Lowery, 955 Magnolia Wood Ave., Baton Rouge, La. 70808
Filed Nov. 12, 1969, Ser. No. 875,995
Int. Cl. E04c *5/16*
U.S. Cl. 52—309 **9 Claims**



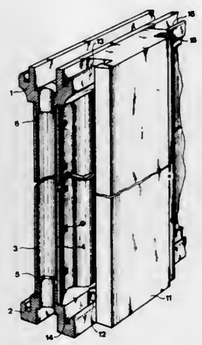
A new and improved flexible spacing device or spacer, used with concrete reinforcing materials, e.g., wire mesh, reinforcing rods, bars and the like, for spacing the latter in fixed parallel plane relative to a wall or surface on which plastic and plastic-like compositions, such as concrete, are to be poured and set to form slabs. The spacing device holds, e.g., the wire mesh or reinforcing rod, which is to be incorporated within the concrete slab, in a predetermined position outwardly from the plane formed by the wall or surface, which can be horizontal, vertical or diagonal, regular or irregular. The spacing device is constituted of an elastic or resilient material, preferably plastic, and comprises a leg, generally a cylindrically shaped portion upon a terminal end of which is provided a notched support surface for holding the wire mesh or reinforcing rods or bars. Preferably, the notched support surface is contained within an enlarged head, and thereon is provided a pair of intersecting notches, containing key slot openings at the bottom portions thereof to form lobed surfaces which interlock with the wire mesh, reinforcing rods and the like. The lower face of the enlarged head is generally flat, preferably to provide a bearing surface for use of a plier-like tool, in securing the spacing device to the wire mesh or concrete reinforcing rod.

3,623,290
PARTITION WALL
Lucien R. Downing, Jr., 1218 Yoder Blvd., Avon Lake, Ohio 44012
Continuation-in-part of abandoned application Ser. No. 535,937, Mar. 21, 1966. This application July 25, 1969, Ser. No. 863,733
Int. Cl. E04b *2/28, 2/78*
U.S. Cl. 52—481 **10 Claims**



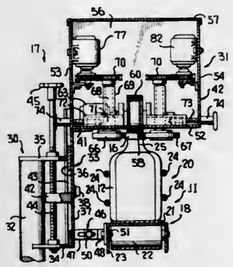
A movable partition wall employing panels which are detachably mounted on studs. The panels have parallel marginal edges along which are disposed continuous tongues with coextensive stops. The studs are provided with spaced fingers extending towards the panels. Each finger is substantially coextensive with the stud and carries a continuous shoulder for interlocking engagement with a stop when the tongues of the panels are inserted between the fingers of the studs.

3,623,291
CONSTRUCTIONAL ASSEMBLY FORMING A WALL, PARTITION AND THE LIKE
Christian Dussel, Toulouse, France, assignor to Etudes et Realisations Appliques a la Construction, de-la-Foire, Luxembourg
Filed Feb. 9, 1970, Ser. No. 9,909
Claims priority, application Luxembourg, Feb. 11, 1969, 57,965/69
Int. Cl. E04b *2/34;* **E04c** *2/32*
U.S. Cl. 52—615 **9 Claims**



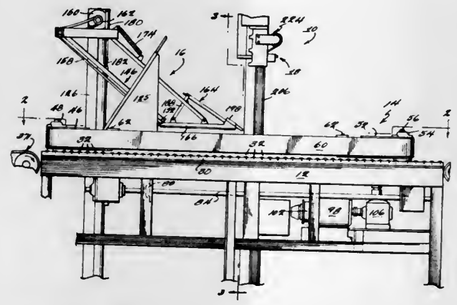
A constructional assembly such as a wall, partition, panel and the like, comprising at least one pair of corrugated sheets arranged facing each other and symmetrically with respect to their central plane, upper and lower girder elements having projecting portions adapted to be gripped between the corrugations of the corresponding upper and lower portions of said sheets, means for clamping the corrugated sheets firmly together, and external facing elements covering said corrugated sheets and fixed on said upper and lower girder elements by hooking means.

3,623,292
CAPPING MACHINE
Charles O. Barnes, Silver Spring, Md., assignor to The Eastern Cap and Closure Company, Baltimore, Md.
Filed May 16, 1969, Ser. No. 825,304
Int. Cl. B65b *7/28*
U.S. Cl. 53—331.5 **4 Claims**



This disclosure relates to a capping machine for applying screw caps to containers. A principal feature of the capping machine is the adaptability thereof to a conventional conveyor system wherein the guide portion of the conveyor system is utilized to hold the container against rotation while the capping machine applies a cap thereto. The capping machine is mounted independently of the conveyor and is adjustable so as to align the same with the conveyor and properly vertically position the same in alignment with the container neck. The capping machine includes a capping mechanism having a plurality of cap rotating members which are individually adjustable for the purpose of both accommodating caps of different diameters and varying the pressure engagement of the cap rotating members with caps.

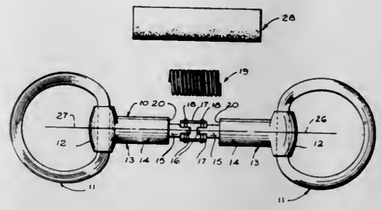
3,623,293
CARTON FLAP CLOSING MECHANISM
Henri A. Boulay, West Warwick, and Joseph Silva, Cranston, R.I., assignors to Bostitch, Division of Textron, Inc., East Greenwich, R.I.
Original application Dec. 8, 1966, Ser. No. 600,163, now Patent No. 3,502,256. Divided and this application Nov. 20, 1969, Ser. No. 877,544
Int. Cl. B65b *7/20*
U.S. Cl. 53—374 **6 Claims**



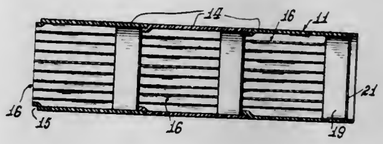
The specification discloses an apparatus for closing and stapling cartons of varying sizes of the type having a pair of end flaps and a pair of side flaps, which when opened are disposed in a coplanar relationship with respect to the side walls of the carton, the dimensions of the flaps measured in the direction of the outward extent thereof being generally equal to one-half the width of the carton. The apparatus includes means for automatically feeding successive open-topped cartons of varying size through the apparatus, during which a flap closing mechanism is operable to close the open top flaps and a staple driving means is operable to drive staples into the closed top flaps to secure them in a closed relation. The staple driving means cooperates with the conveying means for moving successive cartons through the apparatus and with a carton width sensing means to automatically position the carton in stopped relation with respect to the staple driving means in a plurality of different positions at which staples are driven, the arrangement being operable to automatically drive staples into the side flaps and the underlying end flaps only of each successive carton at positions spaced longitudinally in accordance with the width of the carton, the staples associated with each end flap being spaced apart a distance not exceeding a predetermined distance and at least one of which is within approximately one inch from the adjacent end of the carton.

3,623,294
BITS
William Thomas Stone, Walsall, and Lascelles Arthur Lucas, Hertford, England, assignors to Matthew Harvey & Company Limited, Walsall, Stafford, England
Filed Dec. 18, 1969, Ser. No. 886,423
Claims priority, application Great Britain, Dec. 18, 1968, 60,274/68
Int. Cl. B68b *1/06*
U.S. Cl. 54—8 **13 Claims**

A bit for animals is provided with a mouth-piece having rigid end portions connected together for restricted relative angular displacement, and a resilient restoring means which urges the end members to assume a predetermined angular relationship. The relative deflection of the end members may be restricted substantially to a single plane, or to a predetermined range of angular deflection.

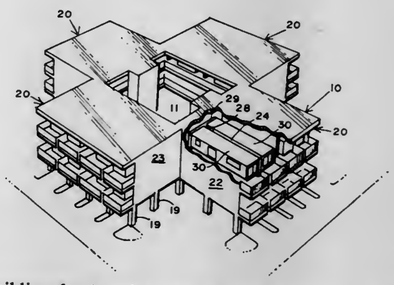


3,623,295
AIR POLLUTION REDUCTION SYSTEM
Walter Shriner, 1133 S. 2nd St., Springfield, Ill. 62704
Continuation-in-part of application Ser. No. 828,080, May 2, 1969, now Patent No. 3,587,210. This application Mar. 23, 1970, Ser. No. 21,914
Int. Cl. B03c *3/30*
U.S. Cl. 55—103 **1 Claim**



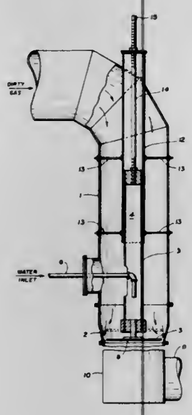
An air pollution reduction system embodying elongated dielectric means to induce electrostatic forces in the path of a polluted fluid stream to cause maximum precipitation of solids in said stream, and the collection of such solids.

3,623,296
BUILDING STRUCTURE FOR HOUSING MOBILE UNITS
Joseph Santoro, 1330 NE. 171st St., North Miami Beach, Fla. 33161
Filed Nov. 10, 1969, Ser. No. 875,286
Int. Cl. E04h *1/04*
U.S. Cl. 52—236 **2 Claims**



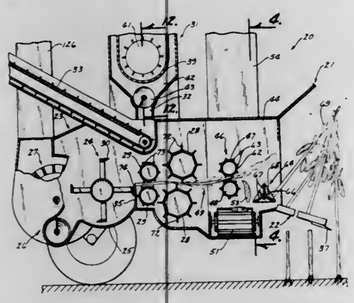
A building for housing mobile units having a plurality of spaces for the mobile units, each space accommodating two mobile units side by side with a wall positioned therebetween and a chase for utilities in the wall, and a corridor on each remaining three sides of the mobile units, a pair of rails embedded in the floor of the building engaged by slotted guide members secured beneath the mobile units fasten the mobile units in the spaces.

3,623,297
FLUE GAS SCRUBBER
Bernard B. Barefoot, 4404 Gateway Drive, Monroeville, Pa. 15146
Filed June 23, 1969, Ser. No. 842,427
Int. Cl. B01d *47/10*
U.S. Cl. 55—257 **1 Claim**



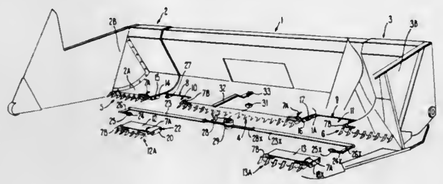
Apparatus and method for removing particulate matter from gases which exit from a cupola, electric melting furnace, basic oxygen furnace, or the like by providing a vertical cylinder with a tapered throat in which a smaller disc is vertically adjusted by overhead mechanism including a hollow rod for increasing or decreasing the cross-sectional area between the periphery of the disc and the tapered throat of the wall. Water is introduced into the hollow rod above the disc and flows downwardly and over the top of the disc surface to the periphery where it is atomized by shearing action caused by downward velocity of gas extracted by an induced draft fan. Pivotal doors may also be used in place of the disc.

3,623,298
TOTAL CORN HARVESTER MACHINE
Thomas E. Hitzhusen, Huxley, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Filed Feb. 12, 1970, Ser. No. 10,939
Int. Cl. A01d
U.S. Cl. 56—2 **4 Claims**



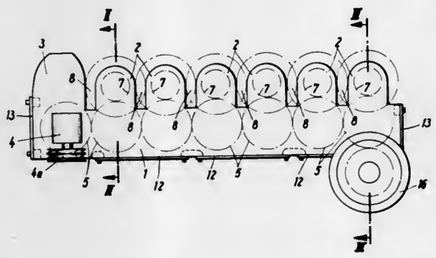
The machine operates to selectively harvest (1) the whole corn plant as ensilage (2) the whole corn ear separately from but concurrently with an ensilage comprised of the residual stalks and leaves or (3) shelled corn separately from but concurrently with an ensilage of refuse material comprised of the stalk, leaves and cobs. Cut corn plants from a front mounted row crop unit are directed butt first into a snapping unit and the picked ears conveyed for selective discharge into a wagon elevator or into a shelling unit. When the ears are harvested, the residual stalks and leaves from the snapping unit are fed into a chopping unit for delivery to a wagon discharge blower. When the picked ears are fed to the shelling unit the shelled corn is directed to the wagon elevator and the corn cobs are delivered to the chopping unit where they are chopped together with the residual stalks and leaves. By eliminating the action of the snapping unit on the corn plants, the whole corn plant including ears, stalk and leaves, is fed into the chopping unit for ensliage discharge.

3,623,299
TELESCOPIC TABLE WITH DETACHABLE KNIFE SECTIONS
Franz J. Herbsthofer, Kassel-Harleshausen, Germany, assignor to Massey-Ferguson G.m.b.H., Staendeplatz, Germany
Filed Dec. 2, 1969, Ser. No. 881,349
Int. Cl. A01d *41/00*
U.S. Cl. 56—2 **8 Claims**



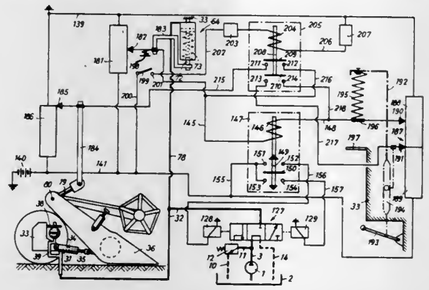
A telescopic table has one or two end sections mounted on the main table section for movement to contracted position. The main table mounts a knife part which, in the extended position, is spaced from knife parts mounted on the end sections. Intermediate knife parts are separably mounted to the header by pin and slot arrangements to interconnect the spaced knife parts such that upon removal thereof and contraction of the header the main table and end section knife parts form a continuous knife.

3,623,300
MOWING MACHINE
Karl-Heinz König and Antonius Hüntrup, Essen, Germany, assignors to H. Vissers N.V., Nieuw-Vennep, Netherlands
Filed Jan. 30, 1969, Ser. No. 795,296
Claims priority, application Germany, Jan. 31, 1968, P 16 32 811.3; Nov. 16, 1968, P 18 09 273.4
Int. Cl. A01d *75/30*
U.S. Cl. 56—6 **5 Claims**



A mowing machine adapted to be attached to a vehicle, as a tractor or the like, which comprises a carrier including cutter discs mounted thereon for rotation about a vertical axis and to overlap each other in their operating areas. A plurality of gear wheels is disposed inside of the carrier and extends to its outer end for rotating the cutter discs, and a plurality of cutter gear wheels is provided, each meshing the corresponding of the gear wheels.

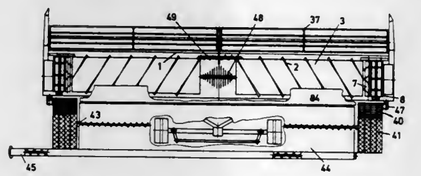
3,623,301
CONTROL APPARATUS FOR THE CUTTING PLATFORM OF A HARVESTING MACHINE
Friedrich-Wilhelm Höfer, Hofingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 2, 1970, Ser. No. 51,952
Claims priority, application Germany, July 23, 1969, P 19 37 346.7
Int. Cl. A01d *67/00*
U.S. Cl. 56—10.4 **13 Claims**



The level of the cutting platform of a harvesting machine on or above ground is determined by setting potentiometers to a desired pressure in the lifting motor of the platform, and to a desired position of the same. When the set pressure or platform position is different from the actual pressure or position, as represented by other potentiometers, voltage differentials are produced and compared, and a lifting motor is accordingly controlled.

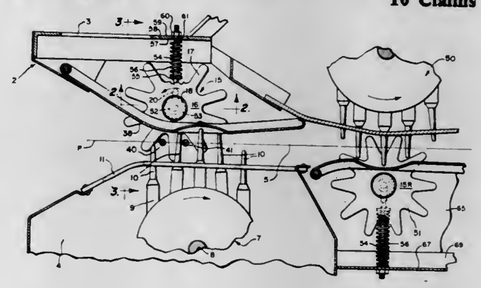
While the cutting platform rests on the ground, the lifting motor carries a selectable part of the weight of the platform. When the actual pressure in the lifting motor approaches in this position a maximum, a control switch is actuated and control means render the position representing potentiometers operative so that the maximum pressure is used for lifting and maintaining the platform above ground. The platform can be provided with ground contour feelers so that a platform level above, but near the ground, is automatically controlled in accordance with the feeler position.

3,623,302
COMBINED HARVESTER-THRESHER MECHANISM
Helwig Schmitt, 41 Ulmenweg, 344 Eschwege (Werra), Germany
Filed May 21, 1970, Ser. No. 39,396
Int. Cl. A01d *41/04*
U.S. Cl. 56—14.6 **19 Claims**



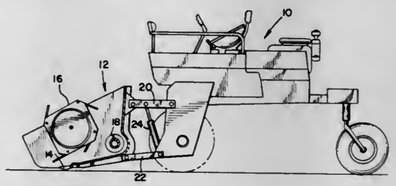
A combined harvester-thresher has a cutter bar and table carrying a threshing mechanism adjacent one end. A two-way conveyor mechanism conveys the cut crop laterally into the threshing mechanism and receives the threshed straw and residual grain after threshing and transfers them to the opposite end of the table for discharge. Separation of the residual grain from the straw takes place during this transfer. Conveyors of the auger type, the rotary finger type and the endless belt and tine type are illustrated. One machine configuration mounts the harvesting and separating assembly at one end of a tractor and has an auger conveyor feeding the separated grain to a chaff remover and a storage tank at the opposite end of the tractor. Another configuration mounts two of the harvesting and separating mechanisms end to end by a joint articulated about a fore and aft axis on a special articulated self-propelled chassis with dual engines, ground drives, chaff removing and grain storage arrangements at the outer ends of the chassis.

3,623,303
COTTON PICKER LOW BOLL LIFTER
Louis Nickla, Memphis, Tenn., assignor to International Harvester Company, Chicago, Ill.
Filed Feb. 12, 1970, Ser. No. 10,830
Int. Cl. A01d *45/18*
U.S. Cl. 56—44 **10 Claims**



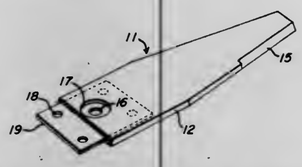
A lifter for low cotton bolls comprising a rotor with radial fingers, the rotor disposed to rotate on an upwardly and forwardly inclined axis and yieldably mounted at the compressor sheet side of the picker throat, the fingers arranged to interdigitate with the passing plants and to lift the bolls to the picker fingers on the opposite side of the throat.

3,623,304
HYDRAULIC SYSTEM FOR SUPPORTING A HARVESTER PLATFORM
Herbert W. Molzahn, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Mar. 30, 1970, Ser. No. 23,646
Int. Cl. A01d *41/06*
U.S. Cl. 56—208 **5 Claims**



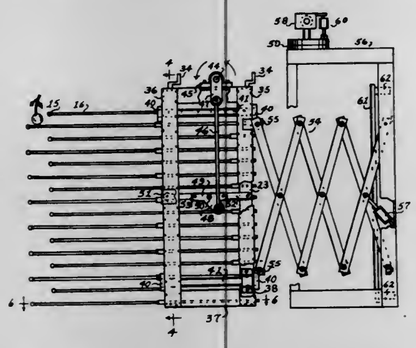
A self-propelled windrower having a wheeled frame and a harvester platform disposed forwardly of the frame for cutting and swathing a crop. The platform is movably mounted on the frame and is floatably supported by a hydraulic system enabling the platform to move upwardly and downwardly in accordance with ground undulations.

3,623,305
MOWER BLADE
Abraham L. Freedlander, Dayton, Ohio, and Robert E. Matthews and Wayne C. Garrett, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio
Continuation of application Ser. No. 759,825, Sept. 11, 1968, which is a continuation of application Ser. No. 625,802, Mar. 24, 1967. This application Apr. 8, 1969, Ser. No. 816,166
The portion of the term of the patent subsequent to Dec. 23, 1986, has been disclaimed
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **1 Claim**



A flexible mower blade adaptable for mounting on a power driven rotary lawn mower and designed for safety which results from the inherent flexibility of the blade. The blade is primarily formed of an elastomeric material such as urethane but has a rigid metal or plastic central mounting portion bonded within the blade for mounting to the lawn mower shaft.

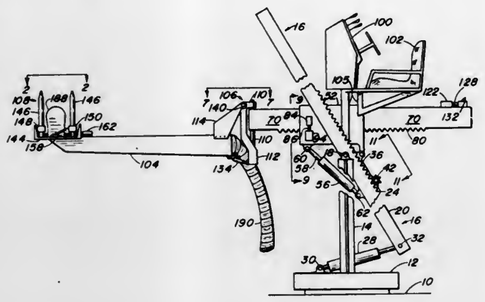
3,623,306
RECIPROCATING FRUIT HARVESTER
Robert H. Reynolds and Elmo M. Reynolds, Hillsborough County, Fla. (both of 810 South Dakota Ave., Tampa, Fla. 33606)
Filed June 3, 1970, Ser. No. 43,124
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 **7 Claims**



The instant device comprises groups of picking heads supported by tubes mounted on support bodies and having means to continuously reciprocate all picking heads in an axially manner, a group of said heads whereas when advanced into a tree a piece of fruit is grasped between said picking heads and rotated to separate said fruit from its stem.

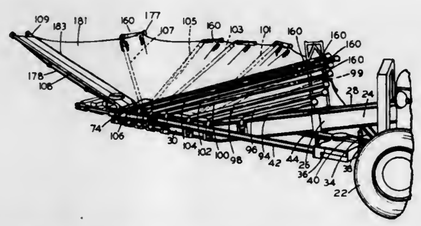
3,623,307
FRUIT PICKING DEVICE
John A. Richter, 3414 Monteen Drive, Orlando, Fla. 32806
Filed June 9, 1969, Ser. No. 831,413
Int. Cl. A01g *19/04*
U.S. Cl. 56—328 R **8 Claims**

A fruit picking device designed to simultaneously remove one or more pieces of fruit from a tree by means of a multifinger picking mechanism. A plurality of rotatably mounted fingers are mounted in parallel rows in the mechanism such that rotational motion is imparted to any piece of fruit entrapped between the rows by a three point



rotating member contact involving members from each row. The picking mechanism is positioned to engage the fruit being picked through the relative cooperating movement of the structural elements comprising the device which serve both a positioning and supporting function.

3,623,308
FRUIT HARVESTER
Cuyler T. Nye, R.D. 3, Lyons, N.Y. 14489
Filed Aug. 6, 1969, Ser. No. 847,901
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 TS **9 Claims**

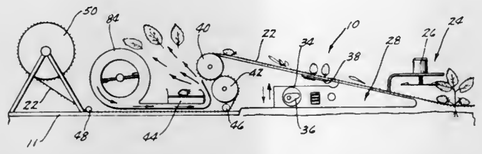


Harvester having an inclined conveyor with an end adapted to lie close to the ground and adapted to be disposed radially with respect to a tree trunk, and having flexible apron bearing arms pivoted on vertical axes on opposite sides of the lower end of the conveyor and adapted to swing from a retracted position extending along the conveyor sides, to fanned out positions around a tree trunk, and having a semi-circular flexible harvest catching apron secured to the arms on each side of the conveyor, power means to open and close the apron, and vibratory inertia tree trunk shaker means disposed beneath the conveyor, with tree trunk clamp means connected by columns extending along the opposite side of said conveyor.

3,623,309
METHOD AND MEANS FOR HARVESTING STRAWBERRIES OR THE LIKE
Elden J. Stang and Ervin L. Denisen, Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa
Filed May 22, 1970, Ser. No. 39,645
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **14 Claims**

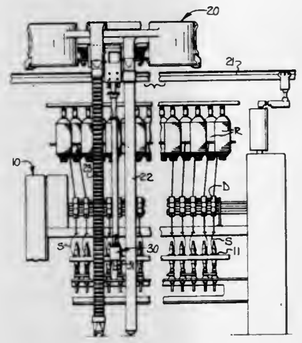
A machine for harvesting strawberries or the like comprising a tractor mounted frame means having rearward and forward ends. A rotary cutting blade means is

mounted on the forward end of the frame means for removing the leaves from the strawberry plants. The frame means includes an inclined platform means extending upwardly and rearwardly from the rotary cutting blade means which is adapted to raise previously positioned flexible netting from the ground and to cause the netting to move over the top of the platform. The platform also includes a plurality of longitudinally extending slots formed therein to permit entrance of the plant pedicels as the plants are moved rearwardly with respect to the platform. A sickle blade is positioned on the frame



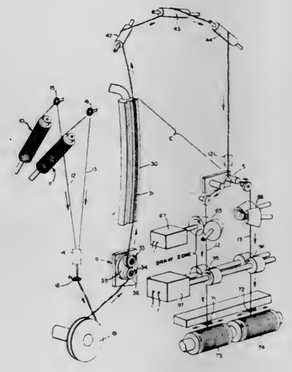
means below the upper surface of the platform and is adapted to cut the plant pedicels below the netting. The berries are conveyed rearwardly on the netting to a conveyor means with the debris being separated therefrom by a blower means. The frame means also includes a powered net take-up means at the rearward end thereof for winding the netting thereon. A method for harvesting the strawberries or the like is also disclosed wherein flexible netting is placed over the strawberry plants prior to the same emerging from the ground. The netting and the machine disclosed herein permits the strawberries to be harvested for fresh use.

3,623,310
ELECTROSTATIC CHARGE SENSITIVE ENDS DOWN DETECTING APPARATUS AND METHOD
William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed May 25, 1970, Ser. No. 41,136
Int. Cl. D01h *13/14, 13/16, 13/26*
U.S. Cl. 57—34 **9 Claims**



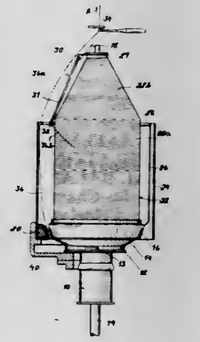
An apparatus and method for detecting and registering the existence of ends down on a textile yarn forming machine such as a spinning machine wherein a detector mounted on and movable with a traveling machine tender scans elements which are electrostatically charged by the formation of ends of yarn, the detector means being responsive to variations in electrostatic charges and sensing such charges as indicative of the absence and presence of yarns formed by the machine.

3,623,311
APPARATUS FOR PRODUCING SYNTHETIC TORQUE YARNS
Emil J. Berger, Jr., Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.
Filed Nov. 3, 1969, Ser. No. 873,202
Int. Cl. D01h *13/26, 13/28;* **D02g** *3/02*
U.S. Cl. 57—34 HS **8 Claims**



Textured synthetic torque-lively yarns are cold drawn to eliminate substantially their tendency to snarl during normal knitting or other fabricating operations. The method produces a new product characterized by excellent stretch properties in the fabricated end product. The new yarn is particularly suited for use in the knitting of stretch hosiery and other fabrics.

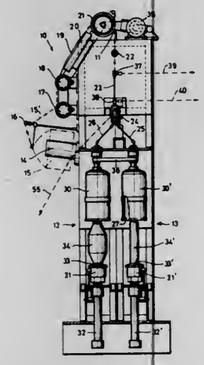
3,623,312
UNWINDING ARRANGEMENT FOR YARN PACKAGES
Hans Gutbrod, Ottobeuren, Germany, assignor to Hamel G.m.b.H., Zwirnerei- und Spinnereimaschinen, Munster, Westphalia, Germany
Filed Dec. 9, 1969, Ser. No. 883,458
Claims priority, application Germany, Dec. 10, 1968, P 18 13 801.7
Int. Cl. D01h *1/10, 7/86, 13/04*
U.S. Cl. 57—58.83 **5 Claims**



To unwind a thread from a yarn package, confined in a balloon-limiting stationary sleeve, with optimum space

utilization, the top of the yarn package projecting above the sleeve tapers frustoconically to define with the surrounding thread balloon a narrow channel within which the thread drawn off the package is guided to the top of a tubular spindle shaft.

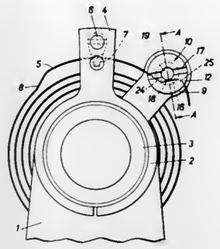
3,623,313
DEVICE FOR REDIRECTING YARN IN TWISTING MACHINES OR THE LIKE
Erich Bucher, Goppingen, Friedrich Eberbach, Albershausen, and Hermann Güttler, Ebersbach, Germany, assignors to Firma Zinser-Textile-Machinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany
Filed Sept. 28, 1970, Ser. No. 75,852
Claims priority, application Germany, Sept. 26, 1969, P 19 48 633.0
Int. Cl. D01h *1/06, 13/04*
U.S. Cl. 57—90 **14 Claims**



In a yarn twisting machine, for redirecting the advancing yarn from a fully wound spool of one winding station to an empty spool of another winding station, there is provided a yarn inlet channel, two yarn outlet channels and a movable, switch valve-type deflector member containing a yarn guide channel, one end of the yarn guide channel is coupled with the downstream end of the yarn inlet channel and the other end of the yarn guide channel is coupled with the upstream end of a selected yarn outlet channel, dependent upon the position of the deflector member. The latter also includes a cutting device for automatically severing the yarn every time a yarn switching operation takes place.

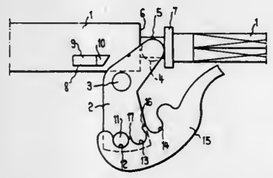
3,623,314
ARRANGEMENT FOR FIXING THE OUTER END OF A SPIRAL BALANCE SPRING
Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et Fils S.A., Le Locle, Neuchatel, Switzerland
Filed Nov. 13, 1970, Ser. No. 89,241
Claims priority, application Switzerland, Dec. 1, 1969, 17,843/69
Int. Cl. G04b *17/32*
U.S. Cl. 58—115 **5 Claims**

This is an arrangement for fixing the outer end of a spiral balance spring which regulates the movement of a timepiece. A stud is mounted in a support plate for adjustment by movement about its own axis. The stud is provided with a hollow passage and a pin is driven into this passage. The head of the pin and a portion of the stem adjacent the head coact with a projection of sector



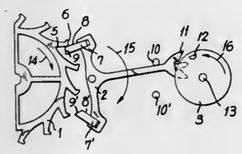
section from the stud to hold the end of the balance spring in position.

3,623,315
WATCH WITH REMOVABLE STEM
Michel Christe, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland
Filed Oct. 27, 1970, Ser. No. 84,273
Claims priority, application Switzerland, Dec. 6, 1969, 18,162/69
Int. Cl. G04b *27/02*
U.S. Cl. 58—67 **4 Claims**



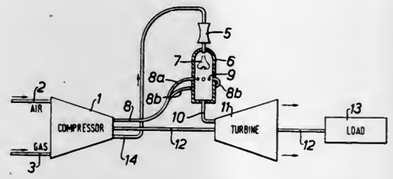
A watch having a winding stem susceptible of taking up three axial positions and a setting lever whose angular position is controlled by the winding stem. On the movement of the watch is mounted a stationary block having an inclined plane adapted to lift the setting lever and to disengage its pin from the groove of the winding stem when the said stem is in its outward position. It is thus rendered possible to take the winding stem out of the movement or to insert it again thereinto.

3,623,316
CLUBTOOTH LEVER ESCAPEMENT
Kenji Abe, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 6, 1970, Ser. No. 25,717
Claims priority, application Japan, Apr. 16, 1969, 44/28,972
Int. Cl. G04b *15/00*
U.S. Cl. 58—116 **3 Claims**



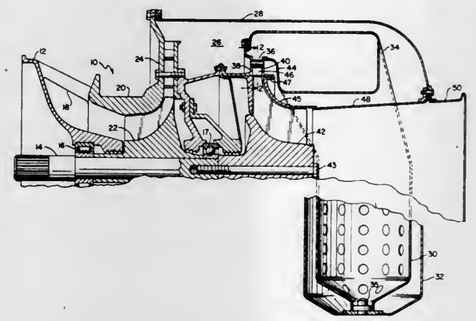
Clubtooth lever escapement with high transmission efficiency having an escape wheel and an anchor and satisfying at least one of $1.0 > L_G/L_{AI} \geq 0.85$ and $1.0 > L_G/L_{AD} \geq 0.85$, where L_G is the length of the impulse face of the escape wheel tooth, L_{AI} is the length of the impulse face of the entry pallet jewel of the anchor and L_{AD} is the length of the impulse face of the exit pallet jewel of the anchor.

3,623,317
GAS TURBINE FOR LOW HEATING VALUE GAS
Richard W. Foster-Pegg, Warren, Pa., assignor to Struthers Energy Systems, Inc.
Filed June 30, 1970, Ser. No. 51,167
Claims priority, application Great Britain, July 2, 1969, 33,449/69
Int. Cl. F02c *3/06*
U.S. Cl. 60—39.46 **2 Claims**



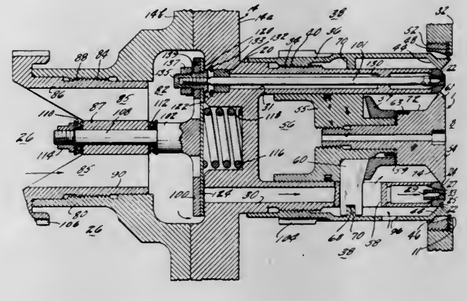
A gas turbine has a compressor, a combustion chamber, and a turbine which drives the compressor and provides additional shaft work, air and low heating value gas being introduced at given circumferentially disposed locations at the compressor intake and being withdrawn at corresponding circumferentially disposed locations at the compressor exhaust, one of said locations at the compressor exhaust providing fuel rich air introduced into and burned in the combustion chamber with additional air from the compressor introduced thereafter, products of combustion from the combustion chamber driving said turbine.

3,623,318
TURBINE NOZZLE COOLING
Wayne C. Shank, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.
Filed June 29, 1970, Ser. No. 50,832
Int. Cl. F02c *3/08, 7/12*
U.S. Cl. 60—39.66 **13 Claims**



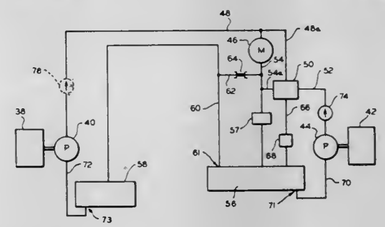
The disclosure illustrates an air-cooled turbine nozzle assembly for use with a centripetal turbine. A simplified one-piece insert baffle comprises folded sheets defining a slot at their free ends to provide impingement cooling of an opening through a series of vanes that make up the nozzle assembly. The baffle with positioning washers defines a through passage for the nozzle vanes which is so positioned that air passes through the nozzles and cools a portion of a duct connected to the turbine nozzle assembly.

3,623,319
CONTROLLABLE INJECTOR FOR ROCKETS
Raymond P. Schneider, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 20, 1967, Ser. No. 619,114
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 **6 Claims**



An injector for two propellants wherein the propellants are provided with variable injection means located at the face of the injector.

3,623,320
DUAL SOURCE HYDROSTATIC DRIVE
Sammy R. Moore, Lubbock, Tex., assignor to Clark Equipment Company
Filed Feb. 9, 1970, Ser. No. 9,803
Int. Cl. F15b *15/18;* **F16h** *39/02*
U.S. Cl. 60—52 **9 Claims**

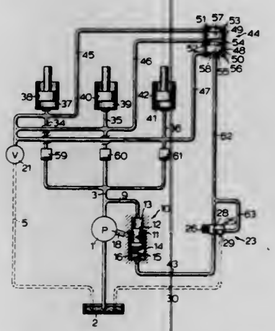


A hydrostatic drive for operating a single device jointly from two power sources, including a pair of hydraulic pumps driven respectively by the two power sources and a hydraulic motor for driving the device. Two reservoirs are provided along with a bypass valve and the necessary conduits so arranged as to provide high efficiency in the operation of the single hydraulic motor jointly by the two hydraulic pumps.

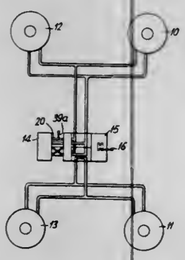
3,623,321
HYDRAULIC REGULATING ARRANGEMENT
Gunther Schwerin, Feilbach, Germany, assignor to Robert Bosch, G.m.b.H., Stuttgart, Germany
Filed Sept. 12, 1969, Ser. No. 857,395
Claims priority, application Germany, Sept. 19, 1968, P 17 28 270.1
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 VS **8 Claims**

A hydraulic arrangement in which a hydraulically-operated device is connected to a pump through a regulating valve. The pump delivers fluid under pressure and

into a pressure line communicating with the regulating valve. A differential piston and cylinder has one face of the cylinder subjected to fluid pressure from the pump. The other side of the differential piston is subjected to the force of a spring and to the pressure prevailing between the regulating and the hydraulically-operated device. A pump adjustment member is mechanically coupled to the piston, so that the pump characteristics are adjusted as a function of the position of the differential piston. The differential piston assumes that position, in which the forces exerted upon the opposite sides of the piston are made equal.



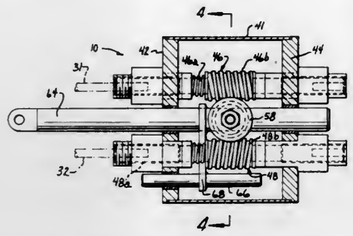
3,623,322
FLUID POWER TRANSMISSION SYSTEM
Roger Harvey Yorke Hancock, Glasgow, Scotland, assignor to National Research Development Corporation, London, SW., England
Filed Feb. 10, 1970, Ser. No. 9,677
Claims priority, application Great Britain, Feb. 11, 1969, 7,330/69
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 R **13 Claims**



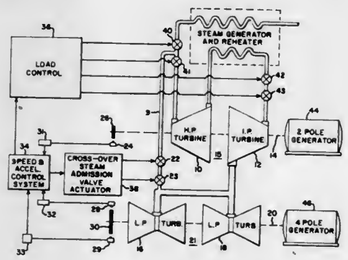
A fluid power transmission system comprising a rotary ball pump having two rows of balls, and means to render inoperative one of the rows of balls so as to alter the pump output, in combination with a plurality of motors drivable by the pumped fluid, and means to couple the motors selectively to the pump output.

3,623,323
SPEED SYNCHRONIZING APPARATUS
Robert L. Fritz and Fred W. Newburgh, Rockford, Ill., assignors to Arrow Machining Service, Rockford, Ill.
Filed Nov. 28, 1969, Ser. No. 880,692
Int. Cl. F01b *21/00*; **F01k** *23/00*
U.S. Cl. 60—97 S **10 Claims**

Two worm shafts, each having a driving connection to an engine, are mounted parallel to a shift rod which is movable to change the speed of the slave engine. A rotatable member is mounted on the shift rod and has worm gears at either end engaged with a respective worm shaft. A friction clutch is associated with each of the worm shafts to prevent imparting of motion to the rotatable member when the shift rod is held against movement. A solenoid-operated lock mechanism is selectively operable to lock the shift rod against movement and render the apparatus inoperative.



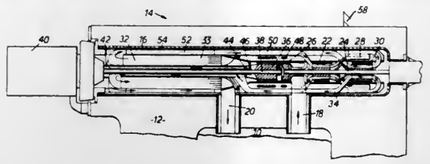
3,623,324
ELECTROHYDRAULIC SPEED CONTROL SYSTEM FOR CROSS COMPOUND TURBINE POWER PLANTS
Markus A. Eggenberger, Schenectady, N.Y., assignor to General Electric Company
Filed July 15, 1969, Ser. No. 841,709
Int. Cl. F01d *13/00*
U.S. Cl. 60—102 **7 Claims**



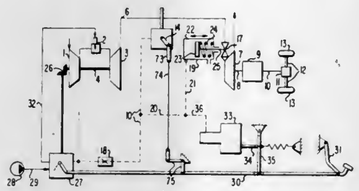
An electrohydraulic speed control system for automatically matching the speed of the low pressure and high pressure shafts of a cross compound steam turbine-generator. The low pressure unit is controlled in response to a speed signal from the high pressure unit which is used as the speed reference for the low pressure shaft speed control. An acceleration catch-up bias signal is supplied to the low pressure acceleration control for accelerating the low pressure shaft to reduce an initially existing speed difference to about zero. A preemergency control channel insures that the turbine will be safely controlled when approaching an overspeed condition.

3,623,325
POWER PLANTS
Albert Jubb, Kenilworth, Robert G. Ward, Coventry, James N. Hurst, Repton, John B. Holliday, Derby, and James W. Ashley, Dorking, England, assignors to Rolls-Royce Limited, Derby, England
Filed Oct. 13, 1968, Ser. No. 772,086
Claims priority, application Great Britain, Nov. 1, 1967, 49,638/67
Int. Cl. F01d *25/28*
U.S. Cl. 60—108 **10 Claims**

The invention relates to a closed cycle gas turbine engine power plant in which the working fluid of the gas turbine engine is heated by a nuclear reactor. The nuclear reactor and the gas engine turbine are contained within a pressure vessel from which the gas turbine engine is removable, independently of the nuclear reactor, for routine servicing and the like.



3,623,326
INSTALLATION FOR THE CONTROL OF A GAS TURBINE ENGINE
Christian Greune, Schongeising, Germany, assignor to Motoren- und Turbinen-Union, Munchen G.m.b.H., Munich, Germany
Filed Dec. 3, 1969, Ser. No. 881,829
Claims priority, application Germany, Dec. 21, 1968, P 18 16 414.2
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 **18 Claims**



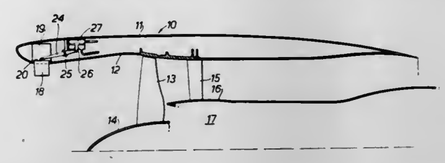
An installation for controlling a gas turbine drive unit, especially for vehicles, in which the guide vanes at the inlet of the output turbine are adjusted as a function of the deviation of the hot gas temperature, downstream of the combustion chamber, from a predetermined rated value.

3,623,327
PROCESS OF GAS GENERATION WITH PROPELLANT ADDITIVE
William A. Duncan, Huntsville, Billy J. Sandlin, Athens, and James A. Murfree, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Original application July 5, 1967, Ser. No. 651,325. Divided and this application Oct. 28, 1968, Ser. No. 772,069
Int. Cl. C06d *5/10*
U.S. Cl. 60—219 **2 Claims**

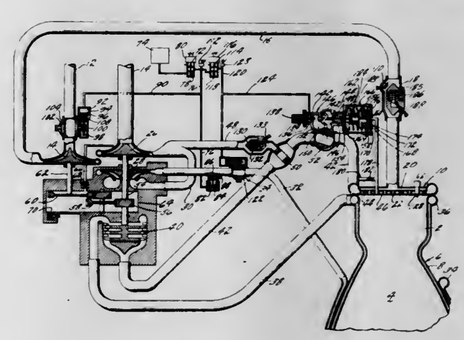
The use of O-methylhydroxylamine as an additive to exothermally decomposing monopropellants to promote the reaction with an oxidizing agent in a gas generation scheme.

3,623,328
GAS TURBINE POWER PLANT
Malcolm Roy Pike, Nottingham, England, assignor to Rolls-Royce Limited, Derby, England
Filed Sept. 8, 1970, Ser. No. 70,103
Claims priority, application Great Britain, Sept. 26, 1969, 47,563/69
Int. Cl. F02k *11/00*
U.S. Cl. 60—226 **6 Claims**

The invention concerns a gas turbine power plant including an outer casing, an air intake adjacent the upstream end of said outer casing, and a ring of angularly spaced apart members mounted for movement between an inoperative position in which the said members are retracted into said outer casing so as not to interfere with the flow of air through the said intake, and an operative position in which the said members extend into the said intake partially to obturate the latter, but so as to permit air to flow between pairs of adjacent members, the extent of obturation by the said members ensuring that the velocity of the air flowing therebetween is increased relative to the increased velocity of the air flowing through the unobturated portion of the intake, but that it remains at a mean value below Mach 1, and powered means for effecting the said movement.



3,623,329
CONTROL SYSTEM FOR LIQUID ROCKET
Robert N. Abild, New Britain, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 12, 1960, Ser. No. 21,831
Int. Cl. F02k *3/00*
U.S. Cl. 60—243 **13 Claims**

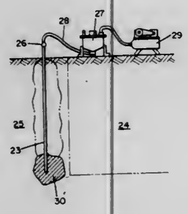


1. In a fuel system for a rocket having an injector and a wall having cooling passages therein, a source of cryogenic fuel, a multistage pump having a low pressure stage and a high pressure stage for delivering the fuel under pressure, a conduit from the low pressure stage to the injector head, a pressure responsive valve in said conduit, a conduit from the high pressure stage to the cooling passages, a shutoff valve in said conduit, a turbine driving said pump stages and a conduit from the cooling passages to the turbine and from the turbine to the injector.

3,623,330
SEALING OFF FORMATION HAVING PORES IN CIVIL ENGINEERING OR ARCHITECTURAL CONSTRUCTION WORK
Sadao Nakade, Itami, and Hirosuke Kubota, Toshiyuki Oshita, and Kuniyoshi Sakane, Osaka, Japan, assignors to Kabushiki Kaisha Takenaka Komuten (or Takenaka Komuten Co., Ltd. in English), Osaka, Japan
Filed Mar. 20, 1969, Ser. No. 808,865
Claims priority, application Japan, Mar. 21, 1968, 43/18,635; July 13, 1968, 43/49,492; Nov. 16, 1968, 43/83,940
Int. Cl. E02d *3/12, 3/14*
U.S. Cl. 61—36 R **16 Claims**

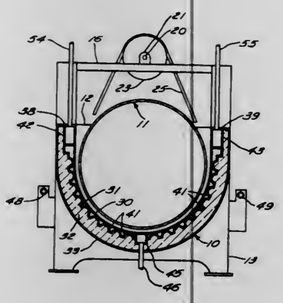
This invention relates to technique of plugging formations in civil engineering and construction, reinforced

underground structure and underground structure required for strengthening the ground thereof, which may be effectively utilized in plugging or in strengthening unstable ground in sealing-off points of water leakage or oil leakage in civil engineering and construction, in preventing gas leaks in soils or in construction, or in increasing bearing capacities of pull-out or push-in piles to be constructed.



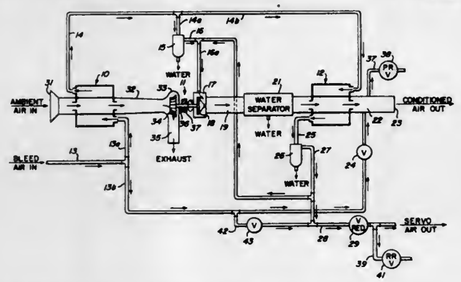
Thus, the invention is intended to provide a technique for plugging formations having interstices and a technique for compacting formations by filling interstices with a solidified substance and also provide a reinforced ground structure and an underground structure for reinforcing the ground, characterized in that a fluidal substance, such as an isocyanate compound, which upon coming into contact with water, reacts thereby to produce water-insoluble solidified substance and liberating a gas, is forced to be present in the interstices in formations such as water leakage regions in civil engineering and construction and a ground or weak ground where water leakage or water seepage is expected, so that it reacts with the water and the resulting insoluble solidified substance is allowed to be intimately bonded to the surfaces of the interstices under the pressure of the liberated gas, thereby sealing-off the interstices easily and effectively.

3,623,331
POULTRY CHILLING
Harold J. Buyens, Western Springs, Ill., assignor to Swift & Company, Chicago, Ill.
Filed Nov. 20, 1969, Ser. No. 878,270
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **9 Claims**



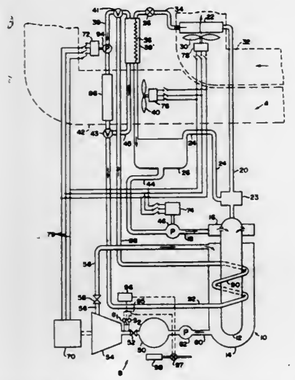
Poultry carcasses are continuously chilled in one or more troughs comprised of a plurality of vessels holding bodies of chilled liquid (water) through which the carcasses are transported. The vessels have an envelope wall construction formed of two spaced metal sheets, thereby providing passageways for fluid refrigerant which is introduced at the bottom and withdrawn from the top of the vessel. The liquid contained in the vessel is swept across the inner surface to provide for conduction of heat through the wall to the refrigerant.

3,623,332
AIR CYCLE AIR CONDITIONING SYSTEM AND METHOD
Joseph F. Fernandes, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Mar. 31, 1970, Ser. No. 24,118
Int. Cl. F25b *9/00*
U.S. Cl. 62—88 **5 Claims**



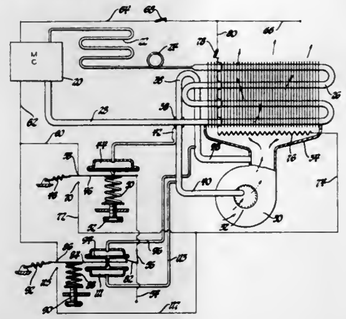
Apparatus and method utilizing compressor bleed air and the like for environmental air conditioning and as conditioned servo fluid. An air cycle machine effects cooling and depressurizing of a portion of bleed air, directing it to a place of use for environmental cooling. Another portion of the bleed air is directed to a place of use as a pressure fluid, in by-passing relation to the air cycle machine. In a reheat heat exchanger the two portions are brought into heat transfer relation, with consequent improvement in the relative humidity characteristics of the first portion and cooling of the second portion. Pressure reducing means provides for expansion of the said second portion and corresponding improvement in relative humidity.

3,623,333
ABSORPTION COOLING SYSTEM
Paul F. Swenson, Jr., Shaker Heights, Ohio, assignor to Swenson Research, Inc., Bedford Heights, Ohio
Filed Sept. 22, 1969, Ser. No. 859,880
Int. Cl. F25b *15/00*
U.S. Cl. 62—104 **13 Claims**



The disclosure is directed to an absorption refrigeration cycle of the type including a refrigerant vaporizer, a condenser and an evaporator. Associated with the refrigeration cycle is a power fluid vapor generator with a vapor turbine receiving power fluid vapor from the generator. Means are provided for conducting the exhaust power fluid vapor from the turbine to the refrigerant vaporizer for vaporizing the refrigerant passing therethrough. First pump means function for pumping refrigerant to the refrigerant vaporizer and a fan means serves to conduct cooling air across the refrigerant condenser. Also, there are means for drivingly connecting the turbine to the fan means and the first pump means.

3,623,334
DEFROST CONTROL RESPONSIVE TO AIR PRESSURE DIFFERENTIAL
John H. Heldorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,862
Int. Cl. F25d *21/02*
U.S. Cl. 62—140 **1 Claim**

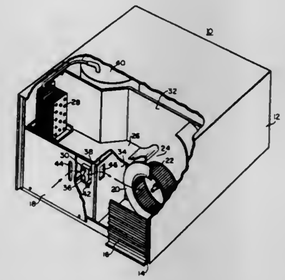


In the preferred form, a tube through which air circulates extends into heat transfer relation with the portion of the evaporator and the suction line. The accumulation of frost within the tube is proportional to the amount of frost which accumulates on the evaporator. A thermostat bulb is mounted in heat transfer relation with the outlet portion of the tube and is normally cooled by the air flow through the tube. It operates a double throw snap switch from the normal refrigerating position to defrost position when the tube reaches a predetermined higher temperature to initiate a defrosting operation. A second control responsive to the difference in pressure in the inlet and outlet portions of the air tube operates a double throw switch which may be connected in parallel with the previously mentioned switch to provide a second defrost air control which operates when the pressure differential increases to a predetermined amount to operate the double throw switch from normal refrigeration position to the defrost position.

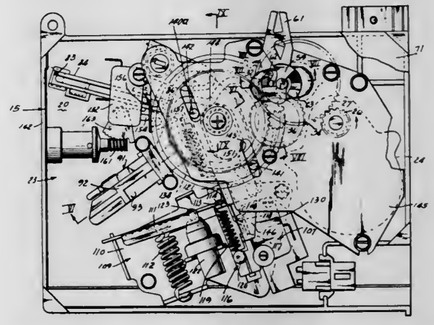
In a second form of the invention air is drawn through a tube located in heat transfer with the evaporator by the vacuum of the intake manifold of a gasoline engine. When frost restricts the air flow through the tube, a fluid motor operates a butterfly valve to restrict the flow of refrigerant out of the evaporator to raise its temperature to evaporate the frost on the evaporator and within the tube.

3,623,335
AIR CONDITIONER WITH TEMPERATURE CONTROLLING MEANS UTILIZING ASPIRATED AIR
Roger A. Shanner, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 6, 1970, Ser. No. 17,134
Int. Cl. F25d *17/00*
U.S. Cl. 62—180 **9 Claims**

The invention provides an air conditioning unit where temperature control of the unit is obtained by the use of aspirated room air moving across a thermostat that senses room temperature and from it controls the operation of the air conditioning unit. The needed aspiration of room air occurs because it is induced by the large amount of return air taken from the room, passed through the evaporator cooling coils and then returned to the room. The aspirated air also moves across the evaporator coils so that the capacity of the air conditioning unit is not reduced by a by-pass of that portion of the room air utilized for temperature sensing.



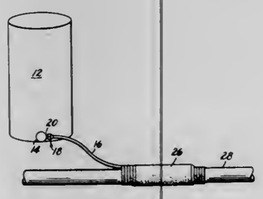
3,623,336
AUTOMATIC ICE MAKER SPEED SHIFTER
William L. Fox, Niles, Ill., assignor to Eaton Yale & Towne Inc., Morton Grove, Ill.
Continuation-in-part of application Ser. No. 762,891, Sept. 26, 1968. This application Nov. 13, 1969, Ser. No. 876,402
Int. Cl. F25c *5/16*
U.S. Cl. 62—233 **10 Claims**



A completely automatic ice cube maker which is driven through successive water fill cycles, freeze cycles and harvest cycles by a continuously operating permanent magnetic synchronous electric motor. Water is delivered to a plastic ice cube tray during the water fill cycle and the water in the tray is frozen during a freeze cycle of predetermined duration. During the harvest cycle the tray is rotated about its longitudinal axis through 360° but at approximately the mid-point of this rotation one end of the tray is arrested momentarily in its movement whereby a twisting action is applied to the tray to dislodge the cubes therefrom. The cubes drop into an ice collection

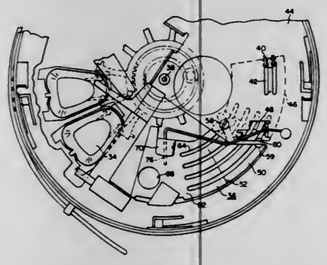
basket and prior to each harvest cycle an ice level sensing mechanism operates to determine whether an excessive quantity of cubes have been collected in the basket and if so operates to deenergize the ice cube maker until the quantity of cubes in the basket has been reduced.

3,623,337
APPARATUS FOR FREEZING LIQUID IN A SECTION OF A PIPE
Harry H. Tremont, Miami, Fla.
(501 Oakridge Drive, Indialantic, Fla. 32903)
Original application Aug. 7, 1968, Ser. No. 750,893, now Patent No. 3,498,071, dated Mar. 3, 1970. Divided and this application Jan. 13, 1970, Ser. No. 2,628
Int. Cl. F25d *3/00*
U.S. Cl. 62—293 **5 Claims**



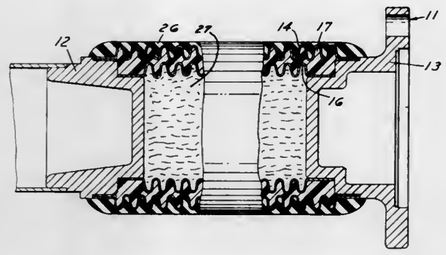
Apparatus for freezing liquid in a section of a pipe which includes a supply line leading from a container of liquified gas along a length of a pipe in which fluid is flowing and means for jacketing the supply line in sealed relation about the section of the pipe so that the liquified gas may be caused to flow through the jacket to extract heat and rapidly freeze the section of the pipe.

3,623,338
AUTOMATIC ICE MAKER WITH CUBE GUARD
Thomas B. Winters, Marysville, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 18, 1969, Ser. No. 877,760
Int. Cl. F25c *7/12*
U.S. Cl. 62—345 **1 Claim**



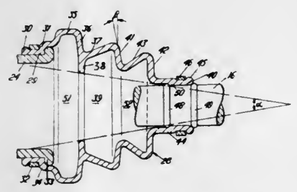
An automatic ice maker of the type having a series of individual, distortable ice pockets movable in a path including a flex station in which the pockets are distorted to loosen the ice cubes in the pockets prior to being dumped, has a cube guard provided in the flex station area and located and disposed to limit the degree to which the cubes can move away from the pockets while in the flex station, and prior to dumping of the cubes.

3,623,339
BELLOWS FLEXIBLE JOINT
George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 28, 1969, Ser. No. 880,525
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 B **8 Claims**



A flexible joint for transferring torque including a multilayered metal cylindrical bellows in which the layers of metal are separated by an elastomeric material. The elastomeric material functions to equalize stresses in the metal bellows and to reduce torsional windup.

3,623,340
RESILIENT SEALING BOOTS FOR UNIVERSAL JOINTS
Otto Maas, Russelsheim am Main, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1969, Ser. No. 877,159
Claims priority, application Germany, Nov. 30, 1968, G 68 09 359
Int. Cl. F16d *3/84*
U.S. Cl. 64—32 **1 Claim**

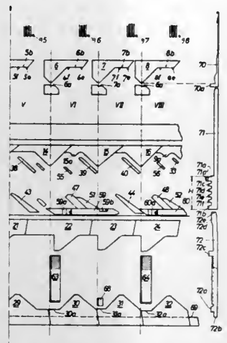


A resilient sealing boot for a universal joint in a motor vehicle drive line has at least two interconnected annular diaphragm portions forming a bellows portion of the boot, and one of these annular diaphragm portions adjacent one end of the boot has on its inner periphery an inwardly directed extension which stiffens the bellows to withstand centrifugal forces acting thereon when the joint is rotated. The extension also divides the bellows portion into two interconnected chambers and serves to retain lubricant in one of the chambers.

3,623,341
NEEDLE CONTROL ARRANGEMENT FOR A CIRCULAR KNITTING MACHINE
Richard Fetzer, Denkendorf, Germany, assignor to Firma Gottlieb Eppinger, Denkendorf, Germany
Filed Aug. 18, 1969, Ser. No. 850,944
Claims priority, application Germany, Aug. 16, 1968, P 18 85 149.9
Int. Cl. D04b *9/18, 9/38*
U.S. Cl. 66—42 **10 Claims**

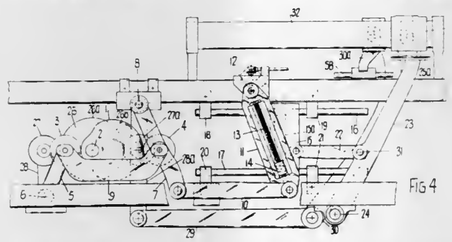
Selected needles are operated by steep guide cams to move earlier to a knit position than the other needles

in order to catch, in addition to the main yarn, also an additional yarn for reinforcing the knitted fabric. The needle movements are either controlled by steep guide



cams cooperating with needle jacks, or by other steep guide cams cooperating with pattern jacks which are aligned with the needle jacks and needles.

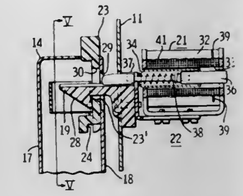
3,623,342
STRAIGHT BAR KNITTING MACHINES
Raymond Blood, Shepshed, Loughborough, and Norman Henry Small, Leicester, England, assignors to William Cotton Limited
Filed Feb. 3, 1970, Ser. No. 8,170
Claims priority, application Great Britain, Feb. 12, 1969, 7,481/69
Int. Cl. D04b *15/64*
U.S. Cl. 66—126 **8 Claims**



Straight bar knitting machine draw mechanism in which a main draw mechanism with a smaller than usual draw cam and including an auxiliary draw lever adjustable through connections to selvedge stop adjustable lead screw mechanism, is connected to a thread carrier drive bar, and an additional draw mechanism comprises an additional draw cam drive with the main draw cam, a cam follower lever, and means connecting the latter to an additional draw lever which is pivotally mounted on the main draw lever, and wherein the additional draw lever is connected to a slurcam drive bar, so that acceleration and deceleration of the thread carriers and slurcocks are governed by respective draw cams of a composite draw mechanism.

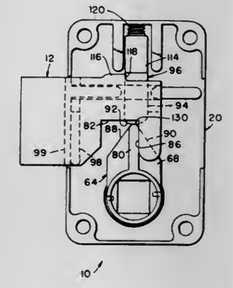
3,623,343
ELECTROMECHANICAL DOOR LOCK FOR LAUNDRY APPARATUS
Clayton L. Haller, Mansfield, Ohio, and Stephen J. Jack, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 7, 1969, Ser. No. 874,754
Int. Cl. D06f *39/14*
U.S. Cl. 68—139 **4 Claims**

Door lock structure for laundry apparatus, particularly, tumble type washing machines or conventional clothes dryers. The structure is characterized by the provision of a latch, the movement of which, is automatically blocked



in order to prevent opening of the door, at certain times during the operation of the apparatus.

3,623,344
DOOR LATCH
George Wartian, East Detroit, Mich., assignor to Wartian Lock Company, St. Clair Shores, Mich.
Filed Nov. 20, 1969, Ser. No. 878,362
Int. Cl. E05b *65/06*
U.S. Cl. 70—134 **2 Claims**

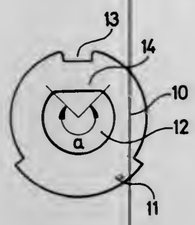


The door latch is of the dead-bolt type in which the bolt may not be retracted except upon pivoting of an actuator provided within the latch housing. The actuator is key operated on one side, normally the exterior surface of the door, and is manually actuatable on the other, or interior, side of the door. The door latch includes a housing in which are mounted the bolt and bolt actuating components. The components are few in number to provide a simple but effective locking device.

3,623,345
INTERMEDIATE DISK OF A CYLINDER LOCK
Kaarlo Henrik Solitanner, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland
Filed Mar. 24, 1969, Ser. No. 809,914
Claims priority, application Finland, Mar. 25, 1968, 814/68
Int. Cl. E05b *15/14, 29/08*
U.S. Cl. 70—366 **3 Claims**

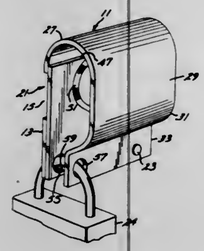
An intermediate disk for a cylinder lock comprising turnable locking disks enclosed in the cylinder of the lock and separated from each other by intermediate disks. The intermediate disks have a central opening for the key of the lock. The cross-section of the key and its turning angle are so chosen, that the cross-section of the key during the operation of the lock moves relative to the intermediate disks within a sector smaller than 360°. In the sector of the intermediate disks which is left uncovered by the cross-section of the key there is

a recess in the rim of the disks for receiving a bar shaped locking member of the lock. In the same sector the central opening of the intermediate disks has a smaller



radial extension than in the first mentioned sector in order to strengthen the portion between the recess and the central opening.

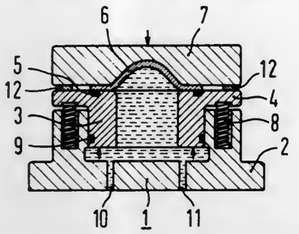
3,623,346
DOORKNOB SHROUD
Joseph Curtin, 1969 Orange Ave., Costa Mesa, Calif. 92627
Filed June 8, 1970, Ser. No. 44,366
Int. Cl. E05b *17/14*
U.S. Cl. 70—424 **5 Claims**



A doorknob shroud to be mounted on a doorknob to block unauthorized access to a keyhole. The shroud includes a housing formed with a back wall having a side opening slot therein for receipt of the doorknob shank. The housing further includes a blocking portion projecting over the keyhole to block access thereto. A retainer is pivotally mounted to the housing for being pivoted to a retaining position projecting across the open end of the slot. Locking means is provided for locking the retainer in its retaining position whereby such retainer may be opened, the housing mounted on a doorknob by passing the doorknob shank in through the open end of the slot, the retainer closed and locked in position to maintain the blocking portion disposed in blocking position over the keyhole.

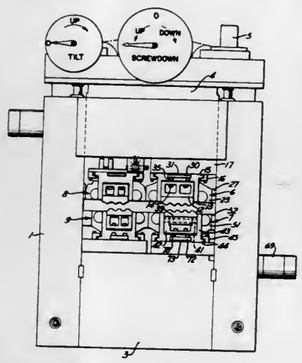
3,623,347
METHOD FOR THE HYDROMECHANICAL DRAWING OF WORKPIECES
Eugen Burk, Traunstein, Germany, assignor to Siemens-Electrogerate G.m.b.H., Berlin and Munich, Germany
Filed May 21, 1969, Ser. No. 826,465
Claims priority, application Germany, May 24, 1968, P 17 52 424.2
Int. Cl. B21d *26/04*
U.S. Cl. 72—60 **7 Claims**

Circular and other blanks of sheet metal and the like workpieces are shaped by hydromechanical drawing with the aid of a rigid container for liquid, a liquid displacing plunger of tubular shape which is movable relative to the container, and a shaping die having a cavity corresponding to the shape to be imparted to the workpiece. After filling the container with liquid up to its rim, the blank is placed on top of the plunger and the die is placed on top of the blank with the die cavity facing the blank. Then the die



and the blank are pressed against the container thus sealing the container and forcing the plunger into the container. This increases the liquid pressure and draws the blank into the die cavity.

3,623,348
ROLLER LEVELER WITH REMOVABLE ROLL UNITS
Elbert Gordon Thompson, State College, and Max F. Alters, Pleasant Gap, Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.
Filed Oct. 27, 1969, Ser. No. 869,603
Int. Cl. B21d *1/02*; B21b *31/08*
U.S. Cl. 72—165 **12 Claims**

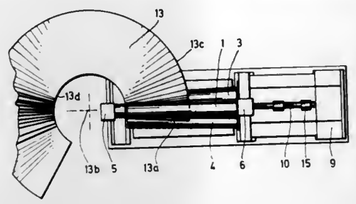


A roller leveler with front and rear frames at the opposite ends of a bed member and top beam member has a vertically spaced pair of roll units extending lengthwise between those members, at least one of which supports between it and the adjacent roll unit a plurality of spaced roll-deflecting means. The roll unit is mounted for longitudinal movement relative to the housing and deflecting means, but releasable means are provided that normally prevent that movement. When released, the roll unit can be slid lengthwise out of the housing without disturbing the deflecting means.

3,623,349
BENDING MACHINES
Christian Häusler, Bruggfeldweg 12, Aesch, Switzerland
Filed June 9, 1969, Ser. No. 831,480
Claims priority, application Switzerland, Aug. 10, 1968, 12,014/68
Int. Cl. B21d *5/14*
U.S. Cl. 72—169 **5 Claims**

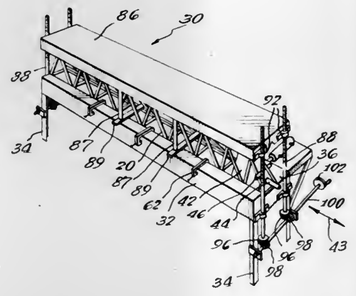
A bending machine for forming a cone from a sheet having the shape of a segment of an annulus, comprising

a slide shoe at one end located between a pair of transport rolls, and a pair of bending rolls arranged one on either side of the transport rolls. The rolls are adjustable to ensure that, as the sheet is being passed through the



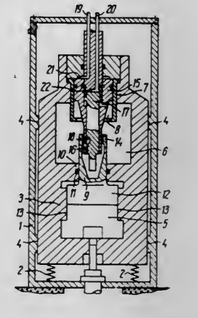
machine, the shorter arcuate edge is passed with a lower speed and formed with a higher curvature relative to the larger arcuate edge, whilst remaining at all times in tangential contact with the slide shoe.

3,623,350
SCAFFOLD STRAIGHTENING METHOD AND APPARATUS
Robert N. Hansen, 616 Wilson Road, Lombard, Ill. 60148; George T. Hempel, Rte. 1, Box 48A, Bartlett, Ill. 60103; and Raymond Noesges, 3521 Louis St., Franklin Park, Ill. 60131
Filed Feb. 2, 1970, Ser. No. 7,552
Int. Cl. B21d *3/10*
U.S. Cl. 72—362 **33 Claims**



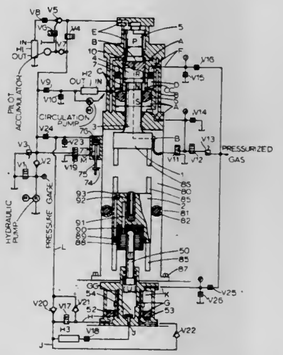
Method and apparatus for use in the refurbishing of elongate scaffolding tower sections which have become bent due to rough handling. Said tower sections are of the type having a generally triangular configuration in section and formed of a pair of elongate base frame members and an elongate apex frame member, which frame members are joined each to the other by a plurality of cross-braces. Said apparatus includes a frame having an elongate bed portion for supporting a tower section to be straightened and first and second die means operably associated with said bed portion engaging the respective frame members such that straightening forces may be applied to the bent portions thereof. In addition, this apparatus also includes means for applying an axial load to the tower section such that the respective frame members may be placed in tension during the application of straightening forces thereto by said die means.

3,623,351
HIGH-SPEED HAMMER
Iosif Lvovich Makhtjuk, Prospekt Truda 60, kv. 11; Petr Pavlovich Matvlets, Ulitsa Fr. Engelsa 70, kv. 24; Igor Vasilievich Fomichev, Ulitsa Koltsovskaya 82, kv. 6; Anatoly Alexandrovich Bocherov, Ulitsa Koltsovskaya 82, kv. 48; Mikhail Andreevich Goncharenko, Ulitsa Kardashova 2, kv. 2; and Viktor Mikhailovich Novikov, Ulitsa Peshestreletskaya 125, kv. 76, all of Voronezh, U.S.S.R.
Filed June 20, 1969, Ser. No. 834,965
Int. Cl. B21j *7/24*
U.S. Cl. 72—445 **3 Claims**



A hammer in which a resiliently supported frame is provided with a stamping space and a working chamber in the latter of which is a high pressure gas serving as an energy carrier. A ram located in the stamping space has a hollow rod extending in sealed relation into the working chamber. A hollow piston extends into the rod and a further piston extends into the hollow piston, both pistons being accommodated in a cylinder coupled to said working chamber. Balls seated in the hollow piston engage the rod until released by movement of said further piston.

3,623,352
HIGH ENERGY FORGING PRESS
Kurt H. Kramer, 601 West Ave., Sewaren, N.J. 07077
Filed Dec. 18, 1969, Ser. No. 886,130
Int. Cl. B21j *9/12*
U.S. Cl. 72—453 **27 Claims**



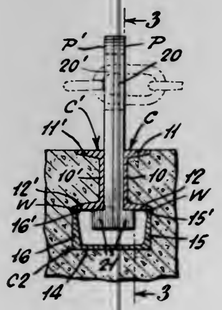
The machine disclosed herein is known as a high velocity impact forming machine. It is provided with two tooling or anvil members and associated equipment assembled in such manner that no multiple pounding or restrike results as the machine is used. The machine has adjusting means for adjusting the energy output from stroke-to-stroke, thus enabling the user to use a sequence of

varying energy forming steps such as breaking scale in hot work, preforming, and blocking. Means is provided by which the tooling is separated immediately after forming so that handling of the formed parts can commence immediately and without pause. Operation cycle time is thus used most efficiently. The structure of the machine is such that relatively low and fully controllable foundation loadings result. The machine can be provided with sufficient die area to accommodate multiple cavity tooling and is provided with means to sustain eccentric loadings from off center work. The machine is capable of stroking when the tooling and workpiece are absent without any deleterious effects on the machine. The machine has completely adjustable tooling daylight from stroke-to-stroke.

3,623,353
VEHICLE FRAME STRAIGHTENING INSTALLATION

David Dinerman, 304 Brandywine Road, Savannah, Ga. 31405

Filed Oct. 14, 1968, Ser. No. 767,223
Int. Cl. B21d 37/10; B21j 13/04
U.S. Cl. 72—456 8 Claims

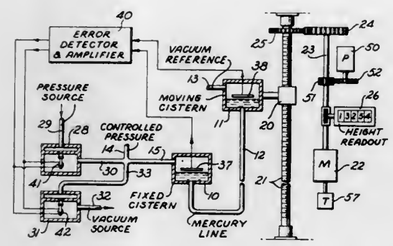


An installation for repairing damaged automotive vehicle bodies and frames comprising a concrete floor having a plurality of slotted anchor-rails embedded therein flush with the surface of the floor and displaced from each other along parallel lines arranged perpendicularly to each other to define one or more repair bays. Each slotted anchor rail is formed of metallic channeling to define a slot having a cross-section of an inverted T, which preferably is constituted by a pair of C-shaped rolled steel channels with the bases thereof disposed vertically back-to-back to define the stem of the T, with the upper flanges thereof extending outwardly in a horizontal plane substantially coincidental with the surface of the floor and the lower flanges thereof embedded in the concrete floor, and a third larger upwardly directed C-shaped channel having the top edges thereof welded to the free lower edges of the smaller channels. Anchor elements of force-exerting units as well as anchor members for flexible force-transmitting lines are adapted to be moved and positioned along the slotted anchor rails, and an especially rugged and readily movable anchoring member may be constituted by a pair of congruously disposed L-shaped plates adapted to be moved within the slotted rail, individually or in unison. Each plate may be formed of an apertured upright portion adapted to be selectively juxtaposed with the adjacent upright portion to define an aligned anchoring aperture near the top thereof, and a lateral flange extending outwardly from the lower end of said upright portion to engage the anchor rail at the top of the base and at the opposite sides of the vertical stem of the T-slot, when the plates are juxtaposed, but which may be disengaged from the slotted rail when the plates are longitudinally displaced from each other.

3,623,354
PRESSURE GAUGE WITH ALTITUDE RATE GENERATOR

Joseph W. Carter, Pomona, Calif., assignor to Schwien Engineering, Inc., Pomona, Calif.

Filed Dec. 10, 1969, Ser. No. 883,860
Int. Cl. G01l 27/00
U.S. Cl. 73—4 R 5 Claims

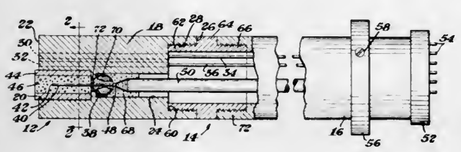


A pressure controller incorporating a pressure gauge such as a manometer or Bourdon tube and providing an output pressure corresponding to altitude. Apparatus for generating pressure change to represent a constant rate of change of altitude. A controller for the altitude or pressure drive motor including a potentiometer driven by the motor to provide a signal proportional to pressure and a tachometer driven by the motor to provide a velocity feedback signal proportional to pressure rate, with the pressure and pressure rate signals combined as the input to the drive motor to produce the output pressure change corresponding to the constant rate of change of altitude.

3,623,355
DIFFERENTIAL THERMAL ANALYSIS CELL ASSEMBLY

Horst G. Langer, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 840,281, July 9, 1969. This application Oct. 8, 1969, Ser. No. 868,272
Int. Cl. G01n 25/00
U.S. Cl. 73—15 6 Claims



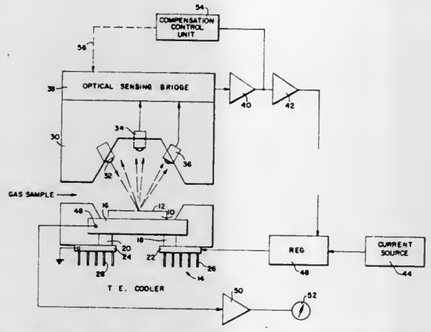
This invention relates to a thermal analysis cell which is capable of supplying meaningful data in a high vacuum which is particularly useful for operations within a mass spectrometer or similar instrument which allows the heating of samples within the confinement of the mass spectrometer. The cell comprises a silver block to guarantee uniform heat throughout the cell. It is insulated against the push-through shaft by a section of boron nitride which is an excellent thermal insulator. The sample is loaded into a glass or metal capillary and pushed into a well in

the end of the silver block and onto a needle which is coupled to a temperature sensor. Means are provided for developing an electrical signal for reference and cell heating furnace control purposes.

3,623,356
DEW POINT HYGROMETER

Arthur Bisberg, Lexington, Mass., assignor to EG & G, Inc., Bedford, Mass.

Filed Dec. 18, 1969, Ser. No. 886,220
Int. Cl. G01n 25/02
U.S. Cl. 73—17 A 14 Claims



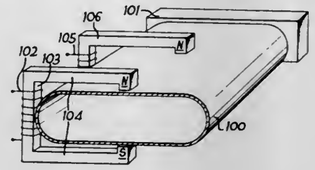
A dew point hygrometer includes means for automatically compensating for the build-up of contaminants on the reflective surface of the hygrometer mirror. In a first embodiment, the hygrometer is periodically compensated under the control of a timing motor which energizes a relay for interrupting the cooling current servo loop and for providing an offset to the bridge circuit of the hygrometer. In addition, the circuit of a second relay, which is responsive to an error signal developed from across the bridge circuit of the hygrometer, is completed so that this may control the circuit of a motor driving a compensating potentiometer in the optical sensing bridge circuit of the hygrometer. In a second embodiment, the compensation is provided continuously. This is accomplished by introducing an oscillation to the cooling current supplied to the thermoelectric cooler of the hygrometer and by detecting the amplitude of the oscillation as detected by the optical sensing bridge circuit of the hygrometer. A compensating resistor in the bridge circuit is then controlled as a function of the magnitude of this amplitude. The oscillation in the cooling current is provided, in one version, by providing an auxiliary alternating current generator which provides an oscillatory current which is added to the cooling current. In a second version, the cooling current servo loop is designed to be self-oscillatory, providing the aforementioned oscillation in the cooling current.

3,623,357
APPARATUS FOR MEASURING THE DENSITIES OF FLUIDS

William Edward Abbotts, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Original application Jan. 25, 1967, Ser. No. 611,632, now Patent No. 3,516,283, dated June 23, 1970. Divided and this application Jan. 28, 1970, Ser. No. 888,101
Claims priority, application Great Britain, Jan. 28, 1966, 4,042/66
Int. Cl. G01n 9/00
U.S. Cl. 73—32 5 Claims

A density meter for measuring the density of a gas, having a hollow cylinder which is set into bell-like vibration when the gas is in contact with the cylinder both internally and externally to avoid differential pressure, or the cylinder walls are so thick that a gas or liquid can be

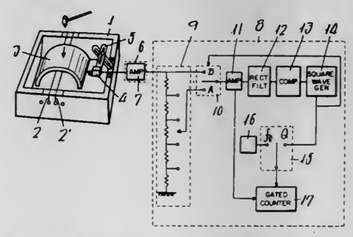


applied to an internal or external surface alone, in each case the predeominant frequency being measured.

3,623,358
METHOD OF NON-DESTRUCTIVE EXAMINATION OF SPECIMENS

Koichi Sugimoto, Osaka, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan

Filed Feb. 20, 1970, Ser. No. 13,038
Int. Cl. G01n 29/00
U.S. Cl. 73—67.2 5 Claims

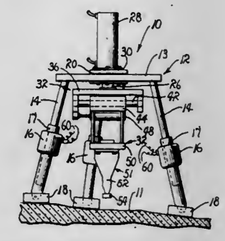


The resonant frequency and the damping factor of a specimen have been used to examine the contents and structural condition of a specimen, by a method of detecting and counting the number of oscillations occurring during selected time intervals during the attenuation of the oscillations.

3,623,359
PENETROMETER

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Isak Kloc, Pasadena, Calif.

Filed Jan. 19, 1970, Ser. No. 3,654
Int. Cl. G01n 3/42
U.S. Cl. 73—84 7 Claims



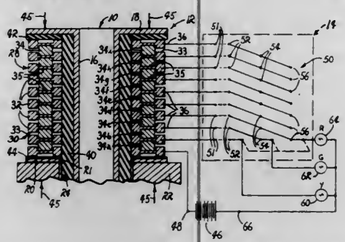
A penetrometer particularly suited for use in empirically determining the load-bearing characteristics of a load-bearing surface inclined with respect to a horizontal plane, characterized by a penetrometer mount rotatably supporting a vertically driven probe, a feature of the invention being the provision means supporting the probe for simultaneous displacement in both vertical and lateral directions, whereby the extent of resulting lateral displacement imposed on the probe, as vertical displacement

operatively is imparted thereto, can be detected and measured for purposes of accurately indicating the true load-bearing characteristics of the surface, regardless of its angle of inclination.

3,623,360
PRESSURE TRANSDUCER

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Charles D. Baker, La Canada, Calif.

Filed Mar. 24, 1970, Ser. No. 22,265
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 A **14 Claims**

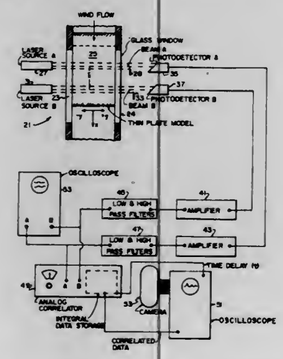


A pressure transducer for use in systems employed in measuring forces of compression, characterized by a plurality of spaced electrical conductive elements having interposed therebetween electrical insulators of a controlled resiliency adapted to be sequentially collapsed through stress induced in the presence of an applied compressive force of a continuously increasing magnitude for thereby accommodating a successive engagement of the adjacent surfaces of the conductors, whereby a series of electrical circuits is completed as the magnitude of the applied force is increased, a feature of the transducer being the employment of a current detector circuit connected with each of the conductors so that as an increasing compressive force is applied, and successive conductors are brought into a contiguous relationship, additional circuits are completed for thus establishing a series of electrical signals indicative of the magnitude of the applied force.

3,623,361
OPTICAL PROBING OF SUPERSONIC FLOWS WITH STATISTICAL CORRELATION

Buford H. Funk, Jr., Huntsville, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 4, 1969, Ser. No. 873,793
Int. Cl. G01m *9/00*; **G01n** *21/46*
U.S. Cl. 73—147 **14 Claims**



Method and apparatus for optical sensing of supersonic flows by correlating deflections in laser beams through the flow. Deflections in the laser beams are converted into meaningful electrical signals by use of a knife-edge before a photodetector, and the knife-edge is rotatable whereby both the translational and rotational motion of turbulent flow structures may be determined.

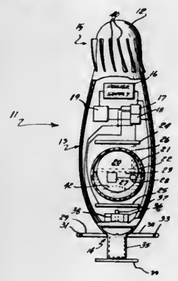
ERRATUM

For Class 73—149 see:
Patent No. 3,624,828

3,623,362
FREE-FALL CURRENT METER

Robert Daniel Gerard, Palisades, N.Y., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 11, 1970, Ser. No. 10,328
Int. Cl. G01c *23/00*; **G01p** *5/08*
U.S. Cl. 73—189 **9 Claims**

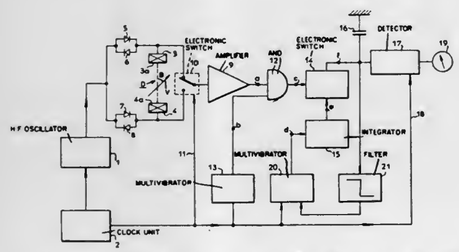


A current measuring device for the continuous recording of current during the free fall and rise of an instrument is provided. The instrument contains recording and direction indicating equipment in its central portion, fins at its tail end to impart rotation and remotely positioned pressure probes at the ballasted nose end for sensing pressure differences indicative of the current encountered on both descent and ascent.

3,623,363
ULTRASONIC FLOWMETER

Jacques Gerard Dory, Goupvray-Esbly, France, assignor to Realisations Ultrasoniques, Paris, France

Continuation-in-part of application Ser. No. 799,212, Feb. 14, 1969. This application Mar. 9, 1970, Ser. No. 17,619
Claims priority, application France, Mar. 6, 1969, 6906227, 6906228
Int. Cl. G01p *5/00*
U.S. Cl. 73—194 A **4 Claims**



An apparatus for measuring the difference between the times of travel in a fluid of two acoustic pulses respectively transmitted at two points of the fluid and received at the two points after travelling through an identical distance

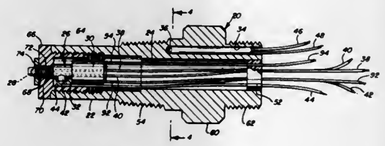
within the fluid, the apparatus comprising acoustic transmitter-receiver means located at the two points, storage means and an electronic switch connected to transmit to the storage means at the instants of reception of the received signals the instantaneous value of a voltage which obeys a predetermined law of variation.

This apparatus may be used as a flowmeter or for detecting a heterogeneous state within a fluid.

3,623,364
PROBE FOR INDICATING THE FLOW OF FLUID

Robert B. Withrow, 3864 Bayside Walk, San Diego, Calif. 92108

Continuation-in-part of application Ser. No. 485,155, Sept. 7, 1965. This application Dec. 16, 1968, Ser. No. 783,956
Int. Cl. G01p *5/10*
U.S. Cl. 73—204 **17 Claims**

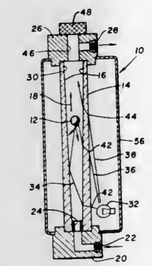


The probe, in one embodiment, comprises a sensor whose resistance varies with the variations in temperature, an electric heater in heat exchange relationship with the sensor, and a casing that isolates the sensor and heater from direct contact with the fluid being probed. In another embodiment, the probe, in addition to the first mentioned sensor, includes an ambient reference sensor and a heater feedback signal sensor, the three sensors being in heat exchange relationship.

3,623,365
PHOTOELECTRIC FLOWMETER

Seymore Lowell, 42 Wood Hollow Road, Albertson, N.Y. 11507, and Stewart Karp, 67 Hickory Lane, Roslyn Heights, N.Y. 11577

Filed May 7, 1970, Ser. No. 48,574
Int. Cl. G01f *1/00*
U.S. Cl. 73—209 **5 Claims**

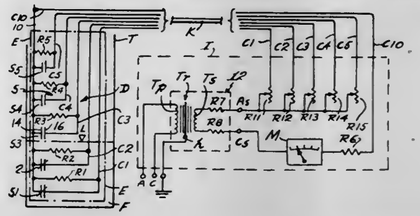


In measuring flow along a flow path between reference proximal and distal ends of said path, the technique of beaming light from the proximal end along the path and blocking select extents of the light from being transmitted to the distal end by a flow-measuring float or element in the flowing fluid so that the light which is transmitted to the distal end is correlated to flow parameters, and utilizing the transmitted light to provide a convenient display of what is being measured.

3,623,366
PRESSURE RESPONSIVE SWITCHES AND SYSTEMS PERTAINING THERETO

William G. Rowell, Canton, Mass., assignor to Former Electric Products Co., Inc., Natick, Mass.

Continuation-in-part of application Ser. No. 819,149, Apr. 25, 1969. This application Apr. 8, 1970, Ser. No. 26,650
Int. Cl. G01f *23/18*
U.S. Cl. 73—301 **28 Claims**

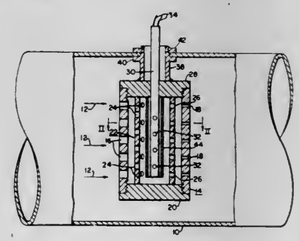


A pressure sensitive switch, contained within a pressure transmitting envelope, has a metallic supporting strip carrying a fixed contact, and a movable contact carried by a parallel flexible metallic strip spaced at its ends from the supporting strip by insulating pads so that the contacts are in close promixity. One end of the flexible strip is fixedly secured in cantilever fashion, while the other end is free to move except as restricted by its spacer. In one particularly useful utilization, levels of liquid or other fluent material are detected and indicated by means of a number of similar pressure-actuated switches disposed at different heights in the fluent material. The switches have a common metallic supporting strip and each switch includes a fixed contact carried by the supporting strip. In another particularly useful utilization, levels of liquid and other fluent material are detected and indicated by means of a number of pressure actuated switches disposed substantially at a common height in the fluid material. The switches have flexible strips of different resiliencies or with different contact gap widths so that closure of switches' contacts will take place at different fluid pressures corresponding to different levels. In both described utilizations, each of the switches is connected to remote level or pressure calibrated indicator means. Indicator lamps connected to a power source by means of the switches can be used for that purpose, or a resistance network whose resistance value changes with the closure of the switches to vary the current through an ammeter.

3,623,367
APPARATUS FOR MEASURING THE AVERAGE TEMPERATURE OF A GAS STREAM

Robert P. Benedict, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

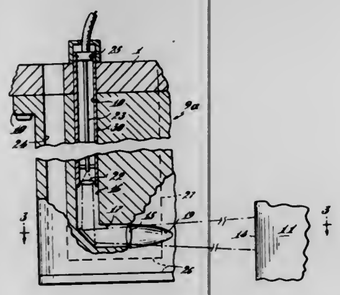
Filed Dec. 23, 1969, Ser. No. 887,683
Int. Cl. G01k *3/06, 13/02*
U.S. Cl. 73—340 **8 Claims**



Apparatus for measuring the average temperature of a hot gas stream, such as a combustion gas stream, having a temperature gradient across the stream at right

angles to its direction of flow. The apparatus includes a probe, adapted to be placed in the gas stream, which has inner and outer apertured chambers for mixing gas samples across the gas stream. The inner chamber contains temperature sensing means, preferably a plurality of parallel-connected electrical temperature sensing devices disposed within a temperature-averaging sleeve. In this manner, fluid samples across the gas stream are mixed before a temperature measurement is taken and serve to heat the sleeve to a uniform temperature. At the same time, the walls of the chambers serve as a radiation and conduction shield for the temperature measuring means such that the true average temperature of the gas stream can be measured without interference from cold walls, luminescent flames and the like.

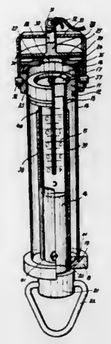
3,623,368
TURBINE ENGINE BLADE PYROMETER
John A. Decker, Jr., Concord, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.
Filed Mar. 9, 1970, Ser. No. 17,806
Int. Cl. F02c *7/00*; G01j *5/08*; G01k *1/12, 13/08*
U.S. Cl. 73—343 R **12 Claims**



In a jet turbine engine an optical passage extends through the stator blade first radially inwardly from the outer turbine wall, thence laterally toward the adjacent path of the moving rotor blades whose surface temperature is to be measured. In the end passage are a sapphire objective lens viewing and receiving infrared from the rotor blade. At the focus of the objective lens is a quartz field lens for focusing the infrared energy on an infrared photodetector within the turbine or a quartz optical fibre leading to a photodetector outside the turbine. As the rotor blades pass the objective lens the photodetector produces a series of electrical pulses whose amplitudes are proportional to the blade temperatures. The pulses are sorted, measured and the temperature of each blade is registered to allow the detection of an individual overheated blade.

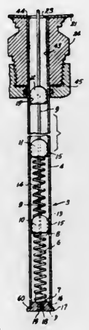
3,623,369
WATER-SAMPLING DEVICE
Ragnar E. Kjellberg, Kroksta, Sweden, assignor to Johan Eric Johansson, Storvik, Sweden
Filed Aug. 27, 1969, Ser. No. 853,394
Claims priority, application Sweden, Sept. 2, 1968, 11,780/68
Int. Cl. G01k *13/12*; G01n *1/10*
U.S. Cl. 73—354 **5 Claims**

A water sampling device, including a vessel capable of being closed and opened by means of a remote controlled valve and adapted to be lowered into lakes, rivers etc. for the purpose of collecting samples of water. The device includes a vessel capable of being opened and closed by a remote controlled valve means, a thermometer for measuring the temperature of the water, and a line for lowering the vessel down to the desired depth. It has a single actuating pump, the piston of which can



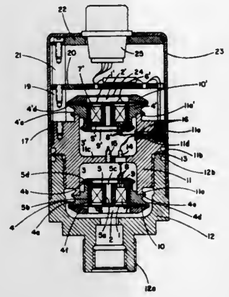
be retained in the position taken after an evacuation stroke. A closing valve cooperates with the evacuation chamber, and the movable valve means has an attachment for the line which can be opened by pulling said line.

3,623,370
HIGH TEMPERATURE BIMETAL THERMOMETER
Robert E. Busch, Elizabeth, Robert W. Freeman, West Orange, and Robert T. Luedeman, Metuchen, N.J., assignors to Weston Instruments, Inc., Newark, N.J.
Continuation of application Ser. No. 725,367, Apr. 30, 1968. This application Jan. 27, 1970, Ser. No. 6,230
Int. Cl. G01k *5/64, 15/00*
U.S. Cl. 73—363.9 **22 Claims**



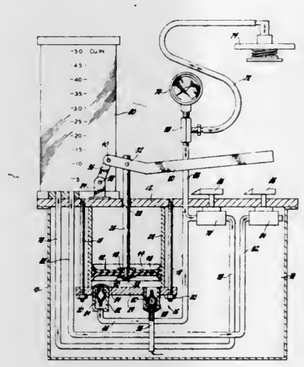
A high temperature thermometer employing a bimetallic temperature sensing element adjacent one end of a sealed housing. An oxygen getter is located adjacent the bimetal element that removes from the atmosphere within said sealed housing trace amounts of oxygen. An indicator is within said sealed housing remote from the bimetallic element and a temperature scale is secured to said housing adjacent said indicator. A force transmitter is connected between the bimetallic element and said indicator to move said indicator in response to thermal expansion of said bimetallic element.

3,623,371
PRESSURE TRANSDUCERS
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed Feb. 24, 1969, Ser. No. 801,260
Int. Cl. G01l *9/14, 19/04*
U.S. Cl. 73—393 **5 Claims**



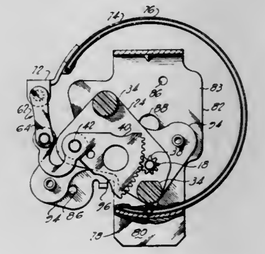
A differential pressure transducer in which a diaphragm forms a separation between two chambers. One of said chambers is subjected to a reference pressure whilst the other chamber is intended to receive the gas whose pressure is to be measured. The displacements of the diaphragm are measured by electromagnetic displacement-detection means having a winding connected to a measuring bridge and constituting one arm of said bridge. The detection means are disposed in one of the chambers which is inaccessible to said gas.

3,623,372
TEST INSTRUMENT FOR AUTOMOTIVE COOLING SYSTEM
Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1969, Ser. No. 876,253
Int. Cl. G01f *17/00*
U.S. Cl. 73—49.7 **2 Claims**



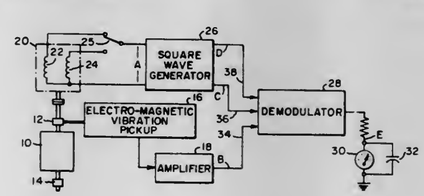
Apparatus for measuring the volume of trapped air within an automobile cooling system having a conventional radiator. A hydraulic pump is fluidly connected to the radiator through a passage in a modified closure cap until a pressure of 15 p.s.i. gage is attained in the radiator as indicated by a gage connected to the pump outlet. The pressurized coolant in the radiator is subsequently depressurized and discharged into a graduated container which measures its volume. The measured volume of coolant dispelled equals the volume of trapped air within the cooling system at 15 p.s.i. gage pressure. The volume of trapped air at atmospheric pressure within the cooling system equals approximately twice the volume of coolant discharged.

3,623,373
BOURDON TUBE TYPE GAUGE
Edmond W. Kraft, Hoffman Estates, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 9, 1970, Ser. No. 9,879
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 **6 Claims**



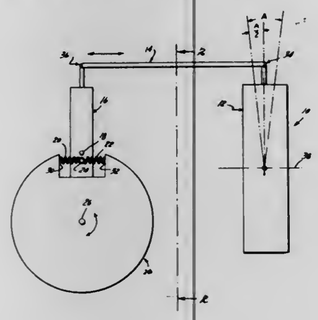
A pressure responsive gauge utilizing a plastic link for translating movement of a pressure responsive Bourdon tube to a dial pointer. If the gauge is used for sensing pressure over atmospheric, a headed snubbing device is used in the inlet to the Bourdon tube. A plastic frame pivotally supporting the pointer shaft and associated gears contains a silicone fluid. A mounting bracket having several sets of mounting holes carries the plastic frame to permit the gauge to be facilely assembled for several different types of movement.

3,623,374
VIBRATION ANALYZING APPARATUS
James A. Bauer, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 19, 1969, Ser. No. 886,695
Int. Cl. G01m *1/22*
U.S. Cl. 73—462 **7 Claims**



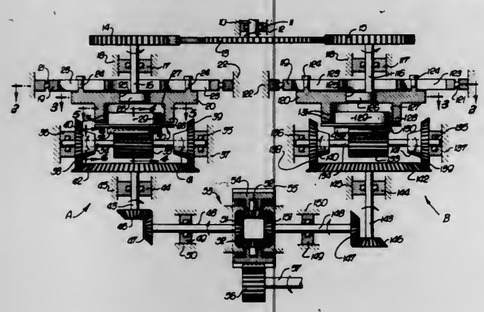
Vibration analyzing apparatus of the wattmeter type, but wherein the wattmeter is replaced by a demodulator circuit which does not require calibration for different operating speeds of a body to be balanced. The apparatus additionally incorporates means including a unique square wave generator for eliminating harmonics other than the fundamental frequency corresponding to the speed of the body being balanced. The means for eliminating harmonics is not a filter in the true sense of the word, but rather is based upon gating harmonic signals with square wave signals whereby the average direct current output due to harmonics will always be zero.

3,623,375
GYRO-NUTATION DAMPER
William H. Woodworth and Jack A. Crawford, China Lake, Calif., and James Parmerlee, Indianapolis, Ind., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 26, 1970, Ser. No. 14,406
Int. Cl. G01c *19/04*
U.S. Cl. 74—5.5 6 Claims



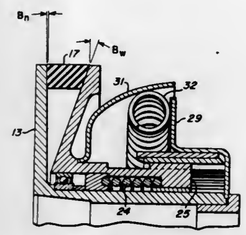
A gyro-nutation damper having a mass and spring combination with a resonant frequency equal to the nutation frequency. The nutation causes the mass to rotate. The rotation is started in first one direction and then the other by springs connected to the mass and the coupling shaft.

3,623,376
CONTINUOUSLY ENGAGED INFINITELY VARIABLE RATIO TRANSMISSION
Bernard J. Call, 2201 Walnut Ave., Manhattan Beach, Calif. 90266
Filed Nov. 12, 1969, Ser. No. 875,735
Int. Cl. F16h *35/00, 29/20, 19/04*
U.S. Cl. 74—125.5 27 Claims



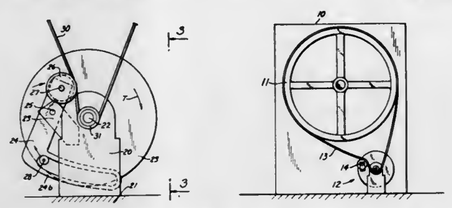
An infinitely variable ratio transmission in which an input shaft drives a pair of continuously engaged gear systems which respectively produce partial rotary motion of an output shaft, the cumulative angular motion of the output shaft being at constant velocity. In each system, a rotary cam reciprocates a follower and a rack carried thereby which oscillates a rack pinion, the latter intermittently rotating gearing through one-way clutches to unidirectionally rotate the output shaft. The cams are out of phase so that the output shaft is driven continuously and at constant velocity. The extent of reciprocation of the followers is adjustable to vary the transmission ratio.

3,623,377
ASYMMETRIC VARIABLE SPEED DRIVE
James A. Lewis and Larry R. Oliver, Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio
Filed May 6, 1970, Ser. No. 35,022
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 8 Claims



A variable speed drive consisting of driving and driven mechanisms having sheaves, and a V-belt for transmitting power between them. The V-belt has an asymmetric trapezoidal cross section, one side face having an angle of zero to six degrees and the other having an angle of 12 to 26 degrees. The angles of the sheave flanges correspond closely to the angles of the belt side faces. A cam housing is secured to the movable flange on the driving side and has a garter spring mounted concentric to the drive shaft which acts against the housing to create axial motion of the movable flange with respect to the fixed one. The optimum design is expressed by a formula relating to the various components of the drive.

3,623,378
CLUTCHING APPARATUS
Charles O. Stanford, Effingham, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed Apr. 6, 1970, Ser. No. 25,752
Int. Cl. F26h *7/08*
U.S. Cl. 74—242.9 6 Claims

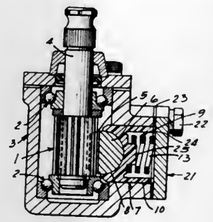


Clutching apparatus employs the reaction torque of a reversible motor to tension a belt for driving engagement with the motor when the motor operates in a first direction of rotation and to release the belt from driving engagement with the motor when the motor operates in a second direction of rotation. The motor frame is mounted to permit a rotation in either direction in response to the reaction torque generated by the rotation of the motor armature. An arm member responds to the movement of the motor frame to rotate a pulley into belt engagement and disengagement positions.

3,623,379
RACK AND PINION ASSEMBLY
Kenneth Bradshaw, Clifton, and James Ernest Buckingham, Hitchin, England, assignors to Cam Gears Limited, Hitchin, England
Filed Aug. 26, 1969, Ser. No. 853,054
Claims priority, application Great Britain, Sept. 20, 1968, 44,735/68
Int. Cl. B62d *1/20*
U.S. Cl. 74—498 5 Claims

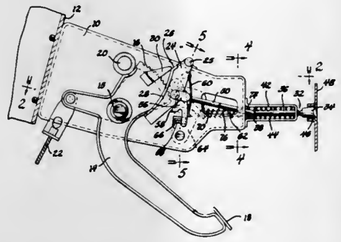
A rack and pinion assembly for automotive steering gear having a cylindrical rack bar supported laterally and

opposite the pinion by a spring urged yoke formed of low friction, semi-rigid plastics material. The yoke has two concave rack bar seats or bearing surfaces. Each seat is fragmental-cylindrical in shape, has a larger radius than the radius of the cylindrical rack bar and a separate axis



disposed laterally from the rack bar axis. The seats are separated by a grease or oil passage in the concave bottom of the yoke. The greater radii and separate axes for the seats accommodate wide tolerance variations, wear, and insure adequate lubrication of the supporting seat areas.

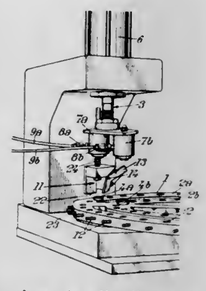
3,623,380
PARKING BRAKE RELEASE MECHANISM WITH RECESSED HANDLE
Eugene Tomczak, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 13, 1970, Ser. No. 54,109
Int. Cl. G05g *5/06*
U.S. Cl. 74—540 3 Claims



A hand-operated release mechanism for a parking brake control in which the release handle is stored in a recess in the instrument panel, is displaced rearwardly into the driver's reach when the parking brake is applied and retracts into the instrument panel recess after the vehicle operator pulls the release handle to disengage the parking brake.

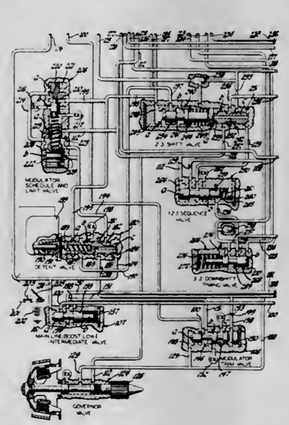
3,623,381
ARRANGEMENTS FOR TREATING, AND IN PARTICULAR ANALYZING, A PLURALITY OF SAMPLES
Jean-Claude Crepin, Paris, France, assignor to Laboratories Choay, Paris, France
Filed Dec. 16, 1969, Ser. No. 885,662
Claims priority, application France, Dec. 16, 1968, 178,476
Int. Cl. B23q *17/00*
U.S. Cl. 74—822 9 Claims

Arrangement for treating a plurality of samples, comprising a distributor adapted to be driven with alternate movements between a "rest position" and a "working position," in which latter it is capable of carrying out at least part of the operations on one of the samples at a fixed station, and a support on which the samples are distributed at predetermined regular intervals, adapted to bring each sample to the aforesaid fixed station in succession, wherein the support carries abutment elements in positions which correspond respectively with those of the samples and the distributor carries a rocking member adapted to repel, at the cost of its inherent rocking action from a position of equilibrium, one of the aforesaid abutment elements to produce a unitary movement



of the plate every time the distributor is moved towards its working position, the aforesaid rocking action being sufficient for said member to be able to act on the following abutment element of the support after being returned to its position of equilibrium and in the course of the following alternate movement of the distributor.

3,623,382
TRANSMISSION CONTROL
Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 17, 1970, Ser. No. 12,027
Int. Cl. B60k *21/06, 29/00*
U.S. Cl. 74—864 8 Claims

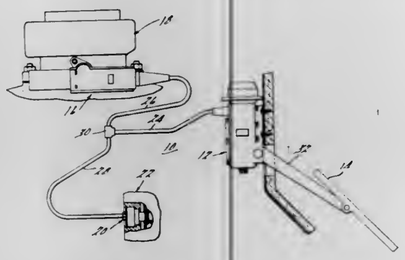


An automatic transmission control providing a shift schedule wherein a shift will occur at a predetermined vehicle speed at light to medium engine throttle openings and will occur at a disproportionately higher vehicle speed at a wider throttle opening.

3,623,383
HYDRAULIC LINKAGE SYSTEM
William L. Sheppard, 36655 Romulus Road, Romulus, Mich. 48174
Filed June 25, 1970, Ser. No. 49,629
Int. Cl. F02d *11/08*
U.S. Cl. 74—865 46 Claims

A hydraulic linkage system particularly suitable for automobiles having an actuating transducer operated by the accelerator pedal for providing fluid in accordance

with the pedal movement to responding transducers for the carburetor and the automatic transmission for the automobile. In a first embodiment, fluid from the master cylinder is delivered directly to the automatic transmis-

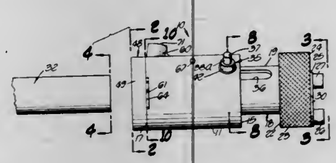


sion. In a second embodiment, the responding transducer for the carburetor has means for compensating for carburetor friction and for providing a compensated fluid pressure signal to the automatic transmission.

ERRATUM

For Class 75—41 R see:
Patent No. 3,624,825

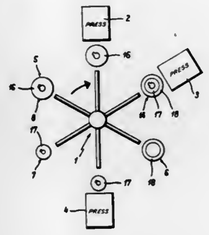
3,623,384
DEVICE FOR REMOVING CABLE INSULATION
Robert W. Murphy, 921 W. Cambridge, Visalia, Calif. 93277
Filed Dec. 29, 1969, Ser. No. 888,779
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 R **10 Claims**



A device for removing insulating material around a conductor in an electrical cable includes a housing having a cutting member at one end. The blade of the cutting member is adapted to engage the insulating material after the housing is slid axially over the end of the cable and is further adapted to slice the insulating material when the cutting member is rotated in the proper direction. Control means are provided to limit the slicing of the blade and to determine the amount of insulating material to be removed.

3,623,385
NOTCHING PRESS
Franz Schnelder, 34 Lessingstr., 732 Goeppingen, Germany; Gunther Grupp, 88 Hauptstr., 7332 Eislingen (Fils), Germany; and Otto Kurz, 3 Reustadt, 7321 Hattenhofen, Germany
Filed Dec. 11, 1969, Ser. No. 884,124
Claims priority, application Germany, Dec. 12, 1968, P 18 14 167.8
Int. Cl. B26d *11/00;* **B26f** *1/14*
U.S. Cl. 83—71 **16 Claims**

A notching press for producing stacks of lamination for conical armature motors wherein a punching tool is displaced radically related to the axis of a saddle stock shaft adapted to receive a sheet metal blank, and means is provided for effecting incremental radial displacement of the saddle stock shaft relative to the tool, wherein the incremental displacement means is operable to produce any one of a plurality of different displacement increments and a programming device is provided operative



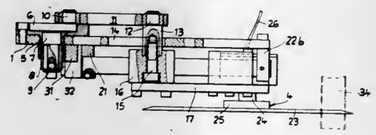
to determine a sequence in which said incremental displacements are selected, the programming device being programmable in dependence on the number of blanks required to form a lamination stack of the required dimensions.

3,623,386
HIGH THROUGHPUT ON-THE-FLY CARD CUTTING APPARATUS
Paul S. Bach, Lakewood, and Edward R. Clark, Long Branch, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,324
Int. Cl. B23d *25/04*
U.S. Cl. 83—151 **10 Claims**

Tabulating cards or the like are cam released in succession from gripper clips carried by an endless belt and caused to drop tail-edge-first a slight distance by gravity to register in respective card-receiving areas or pockets uniformly spaced along an endless means that moves in a path adjacent that of said belt at the time of card release. At each such pocket is a respective cutting tool comprising a movable blade that is moved in a direction perpendicular to the path of said endless means by engagement of a cam follower with a cam surface to cut beveled corners on the trailing edges of each card. After these corners have been cut, the endless means starts to carry the tool

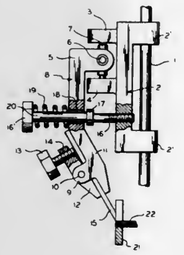
in a curved path around a hub. Due to the resultant temporary acceleration of the tool, the leading edge of each successive card is driven back up and into registry under the gripper clip from which it had been released during the cutting operation while the trailing edge is still supported by the pocket; and as the leading edge registers within the jaw of the clip, a cam recloses the clip to regrip the card so that it will once again be advanced solely under the control of said endless belt.

3,623,387
APPARATUS FOR SEVERING CONTINUOUSLY EXTRUDED THERMOPLASTIC MATERIAL
Gottfried Mehnert, Berlin, Germany, assignor to Conduco A.G., Zug, Switzerland
Filed Oct. 2, 1969, Ser. No. 863,772
Claims priority, application Germany, Oct. 5, 1968, G 68 01 078
Int. Cl. B26d *3/16*
U.S. Cl. 83—355 **13 Claims**



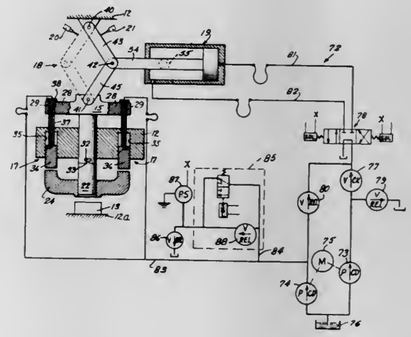
Apparatus for severing one or more continuously extruded tubes of deformable synthetic thermoplastic material in a blow molding machine comprises a carriage supporting one or more rotary circular knives which are driven at a high speed and a crank drive which reciprocates the carriage to thereby rapidly move each knife across and away from the path of a tube. The crank drive receives motion from a double-acting pneumatic cylinder, and each knife is provided with a serrated cutting edge.

3,623,388
RECIPROCATING KNIFE CUTTER FOR THE CUTTING OF FIBER CABLES, FOILS AND THE LIKE
Helmut Göttling, Gottstreu (Weser), and Karlheinz Richter, Lofelden, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Mar. 9, 1970, Ser. No. 17,773
Claims priority, application Germany, Mar. 27, 1969, P 19 15 600.4
Int. Cl. B23d *15/02, 35/00*
U.S. Cl. 83—582 **6 Claims**



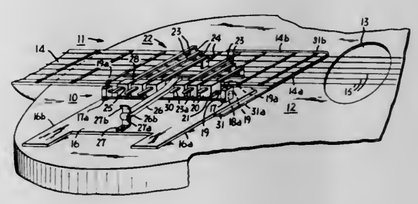
Shearing apparatus for the cutting of foils, fibers and the like with a guillotine-action knife, one blade of which is a stationary, U-shaped blade and the other of which reciprocates across the stationary blade, the holder for the reciprocating blade being mounted on a reciprocable carriage by a three-point suspension consisting of a universal joint at the apex and two resiliently-biased, laterally spaced, adjustable supports at the corners of the base of the three-point suspension.

3,623,389
PUNCHING MACHINE
Alexander Krynytzky, West Seneca, N.Y., Arthur K. Schott, Greensboro, N.C., and Otto Hoffmann, Tonawanda Township, Erie County, N.Y., assignors to Houdaille Industries, Inc.
Original application Nov. 14, 1966, Ser. No. 596,384, now Patent No. 3,529,502, dated Sept. 22, 1970. Divided and this application May 25, 1970, Ser. No. 41,143
Int. Cl. B26d *5/12*
U.S. Cl. 83—617 **6 Claims**



A punching machine has a ram driven by a fluid pressure actuator which is powered by two hydraulic pumps, the outlet of one pump having a relief valve which relieves before punching pressure is reached and which is isolated from the fluid actuator by a check valve, so that the rate of ram movement is reduced before maximum punching pressure is attained. The other pump outlet has an in-line relief valve, upstream of which relief valve there is connected a fluid-pressure actuated workpiece hold down member.

3,623,390
ADAPTOR FOR GUITAR AND SIMILARLY STRINGED MUSICAL INSTRUMENTS
Jack R. Pitt, Jr., 44 Casino St., Freeport, N.Y. 11520
Filed Dec. 7, 1970, Ser. No. 95,569
Int. Cl. G10d *3/02*
U.S. Cl. 84—294 **9 Claims**



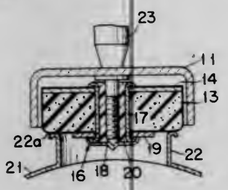
An adapter for use with guitars and similarly stringed instruments is provided with a plurality of vibrating members which are disposed transverse to the strings of the

instrument and positioned so that the heads of the vibrating members can engage the strings of the instrument as it is being played. Means are also provided for mounting the adaptor either on the sounding board or the finger board of the instrument and for moving the vibrating members into and out of playing position. When in use, a sound effect is created by the adaptor similar to the sound achieved when two or more stringed instruments, such as guitars, are strummed or plucked to play the same piece of music at the same time.

3,623,391
TONE HOLE COVERING ASSEMBLY FOR USE IN WOOD-WIND MUSICAL INSTRUMENTS AND A METHOD OF ASSEMBLING THE SAME

Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 18, 1970, Ser. No. 47,336
Claims priority, application Japan, June 20, 1969, 44/48,549
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 **5 Claims**

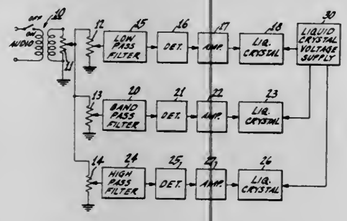


A tone hole covering assembly comprises a pad cup having a supporting rod projecting from the inner bottom surface thereof, a pad secured around a capsule with one end open, the supporting rod being inserted in the capsule, and a hot melt adhesive agent contained in the capsule and connecting the capsule with the supporting rod. The adhesive agent is introduced into the capsule in a powdery form, for example, and is heated while the pad is kept in an engaged relationship with a tone hole socket formed on a musical instrument, and is then cooled to a normal temperature, whereby the pad is secured to the cup in a desired airtightness with respect to the tone hole socket.

3,623,392
VISUAL DISPLAYS UTILIZING LIQUID CRYSTALS

Lawrence Adolph Boyer, Princeton, N.J., assignor to RCA Corporation

Filed Aug. 19, 1970, Ser. No. 68,168
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **9 Claims**

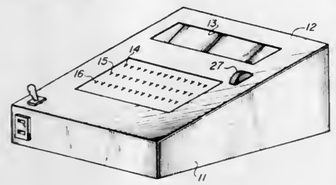


There is disclosed a display for the visual portrayal of sound into colored patterns utilizing liquid crystal devices which change color or alter their response to light according to the magnitude of applied control voltages derived from detecting electrical variations proportional to the frequency and intensity of sound.

3,623,393
DEVICE FOR TEACHING MUSIC

Gennaro J. Vollero, 12 Sycamore St., Bloomfield, N.J. 07003

Filed July 11, 1969, Ser. No. 841,027
Int. Cl. G09b *15/02*
U.S. Cl. 84—470 **6 Claims**

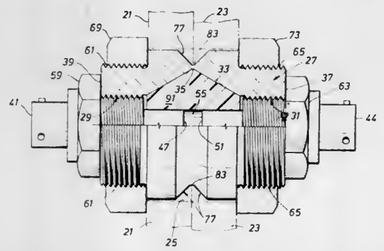


A device for teaching music including a housing having a window through which a continuous tape may be viewed, the tape bearing rows of notes representing various musical scales, three rows of light bulbs beneath the window and tape for selectively illuminating, by means of remote switches, each note in the row of notes on the tape as well as the indicia for a sharp above each note, and for a flat beneath each note, as well as means for transporting the tape without extinguishing the light bulbs.

3,623,394
FRANGIBLE LINK

Thomas O. Payne, Administrator of the National Aeronautics and Space Administration, with respect to an invention of David W. Murphy, Garden Grove, Calif.

Filed Jan. 28, 1970, Ser. No. 6,617
Int. Cl. F16b *35/00*
U.S. Cl. 85—1 **1 Claim**



A frangible connecting link for securing together two separable structural members such as two stages of a multi-stage missile. The link may take the form of a threaded fastener having a through bore with female threads on each end of the bore. Explosive detonators are disposed in each threaded end. Midway between the bores is a V-shaped trough cut about the bore periphery. A V-shaped trough is also cut around the outside periphery of the link with the apices of each trough being in radial alignment. An elastomer ring is molded into the internal trough and is of such shape as to provide a small cylindrical space between opposing faces of the respective detonators. Ignition of either detonator produces a gas pressure within the space and thereby exerts a tensile force between the trough apices via the elastomer ring, thereby causing structural failure along a single plane.

ERRATUM

For Class 87—75 see:
Patent No. 3,623,396

3,623,395
METHOD OF PREPARING SLURRIED EXPLOSIVES MIXTURES

Julius H. Paasch and Conrad W. Ehmke, North Rand, Transvaal, Republic of South Africa, assignors to African Explosives and Chemical Industries Limited, Johannesburg, Transvaal, Republic of South Africa

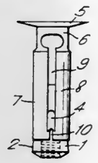
No Drawing. Original application Aug. 15, 1968, Ser. No. 754,113, now Patent No. 3,467,559, dated Sept. 16, 1969. Divided and this application Jan. 30, 1969, Ser. No. 833,210
Claims priority, application Republic of South Africa, Oct. 22, 1965, 65/5,703; Nov. 2, 1965, 65/5,903
Int. Cl. F42b *3/02, 33/02*
U.S. Cl. 86—20 **9 Claims**

Method of preparing a slurried explosives mixture of water, inorganic oxidizing salt, gelling agent, fuel and sensitizer which involves first forming a non-explosive mixture by mixing together all of the components except for the amount of oxidizing salt necessary to render the mixture explosive, to facilitate storage and transport and adding the oxidizing salt to complete the explosives mixture at the point and time of use and charging a borehole.

3,623,396
EXPANSION PLUG

Louis Aackersberg Mortensen, Kongevejen 35 Birkerod, Denmark

Continuation of application Ser. No. 718,708, Apr. 4, 1968. This application Nov. 24, 1969, Ser. No. 872,462
Claims priority, application Denmark, Apr. 5, 1967, 1,943/67
Int. Cl. F16b *13/06*
U.S. Cl. 85—75 **7 Claims**

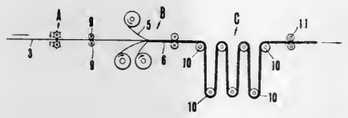


An expansion plug is provided which has an inner part and an outer part, these parts being axially displaceable with respect to each other, and means are provided on these parts for preventing the complete separation thereof and for maintaining the radial displacement of the outer part when the outer and inner parts are in a predetermined axial relationship.

3,623,397
PROCESS FOR MANUFACTURING A WEIGHTED ROPE

Hisashi Hayashi and Yukio Hayashi, both of 2–16 Kagurazaka, Shinjuku-ku, Tokyo, Japan

Filed Mar. 13, 1969, Ser. No. 807,772
Int. Cl. D07b *1/06, 1/16, 5/00*
U.S. Cl. 87—6 **7 Claims**

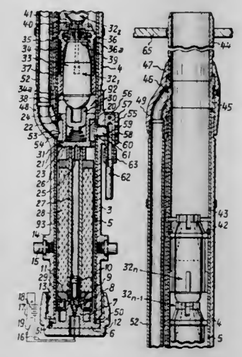


A process for manufacturing a weighted rope or line adapted to be used as the lead line for fishing nets in fisheries. The present manufacturing process for weighted rope making involves the steps of: preparing a weighted elongated core comprising an elongated metal rod covered closely with a tubular member having elasticity, flexibility and shear resistance, with said metal core having thereon longitudinally spaced notched locations at which the rod is ready to be broken under torsional force, tensile force or deflection force; twisting or braiding the weighted core together with strands in the form of a rope; and finally exerting the torsional force, tensile force or deflection force on the finished rope thereby cutting the metal rod at said notched locations so as to provide a weighted rope having weighting pieces which are embedded and arranged longitudinally in the rope in such a manner that they are spaced apart from each other.

3,623,398
MISSILE LAUNCHER WITH MISSILES ON AN AIRCRAFT

Heinrich Meier, Rumlang, and Hansjörg Walch, Niederglatt, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Oct. 13, 1969, Ser. No. 865,654
Claims priority, application Switzerland, Oct. 29, 1968, 16,106/68
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 R **7 Claims**



A row of missiles is arranged in a launcher tube sealed at one end. A propellant charge arranged between the tube seal and the row of missiles generates propellant gases, which are conducted both behind and in front of the row of missiles. The pressure of the propellant gases in front of and behind the row of missiles is of such proportions that the row of missiles is moved slowly through the launcher tube. When the respectively foremost missile passes the point where the propellant gases are conducted in front of the row of missiles, it is accelerated out of the launcher tube. A regulating member is connected to the propellant source and is operated by a device which measures the speed of the aircraft. The pressure of the propellant gases is thereby automatically regulated in accordance with the speed of the aircraft, whereby the rhythm and the muzzle velocity of the missiles are regulated accordingly.

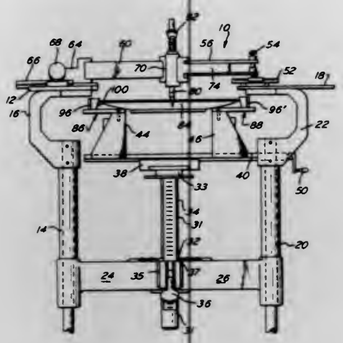
3,623,399
ENGRAVING MACHINE

George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,151
Int. Cl. B23c *1/18*
U.S. Cl. 90—13.6 **5 Claims**

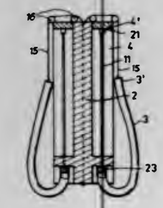
An engraving machine is disclosed having interchangeable sets of jaw extensions which render the machine universal in that curved and flatware may be engraved using

one set of jaw extensions. The jaw extensions are interchangeably attached to vise jaws. The vise jaws are mount-



ed for up and down movement as well as rotary movement.

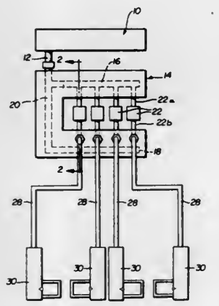
3,623,400
DISPLACEMENT DEVICE
Josef Binhack, 89 Alte Pforzheimer Strasse, D–754 Neuenburg, Germany, and Friedrich Keilholz, 1 Dohlenweg, D–5828 Ennepetal-Voerde, Germany
Filed May 14, 1970, Ser. No. 37,141
Claims priority, application Germany, May 16, 1969, P 19 25 026.1; Aug. 14, 1969, P 19 41 397.9
Int. Cl. F15b *11/00*
U.S. Cl. 91—411 R **19 Claims**



A displacement device composed of at least one piston connected to a fixed point by means of a piston rod and enclosed by a flexible cylinder guided along the piston rod at its head. A displacement unit is connected to and carried by the head of the flexible cylinder. The free end of the flexible cylinder is deflected by at least 90° and preferably 180° to facilitate its storage. Displacement of the cylinder head along the piston rod is achieved by charging the space between the cylinder head and the piston with a fluid pressure medium. To obtain greater displacements, any number of similar displacement devices may be telescoped so that each operates to displace the next succeeding device. The displacement device may be applied to lift and stacking vehicles, elevated work platforms, extension ladders, lifting devices and the like.

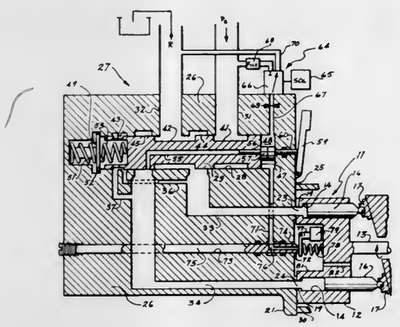
3,623,401
FLUID PRESSURE PROBE SYSTEM
Kenneth V. York, Royal Oak, and Thomas M. Pouch, Farmington, Mich., assignors to Multifastener Corporation, Detroit, Mich.
Filed Mar. 2, 1970, Ser. No. 15,606
Int. Cl. B23d *15/00*
U.S. Cl. 91—47 **4 Claims**

A fluid pressure probe system for generating a signal in response to the location of an article at a selected position at a work station. The system includes a plurality of individual differential responsive transducers connected in parallel to a common pressure manifold so that manifold pressure is normally applied to both sides of each transducer to normally maintain a zero differential pressure. A probe having a vent passage is connected to each transducer between one side of the transducer and the point of connection to the manifold. The outlet of the vent passage is normally closed by a simple ball valve seated in the end of the passage and maintained in its closed position by the pressure within the passage. The



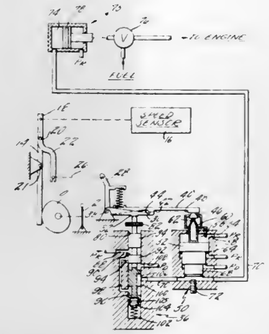
probe is mounted in the work station at a location such that the ball is unseated by the article when the article is in the desired location, thus creating a differential pressure at the transducer. A restricted orifice is located between the point of connection of the vent passage to the transducer and the point of connection of the transducer to one side of the manifold to prevent the pressure drop produced by the venting from triggering any transducers other than the one tow hich the activated probe is connected.

3,623,402
HYDRAULIC MOTOR DRIVE
Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.
Filed July 6, 1970, Ser. No. 52,599
Int. Cl. F15b *11/08, 13/043*
U.S. Cl. 91—421 **13 Claims**



A hydraulic motor drive including a rotary motor and a pilot operated inlet-exhaust valve having a piston mounted therein and a pilot chamber controlled by a governor operated valve responsive to the rate of rotation of the rotary motor.

3,623,403
ISOCHRONOUS GOVERNING SYSTEM CONTROL
Lawrence S. Smith, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,260
Int. Cl. F15b *11/15*
U.S. Cl. 91—458 **11 Claims**

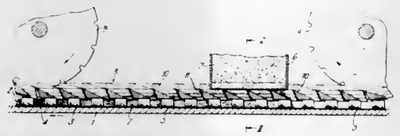


Governing is effectuated by feeding an error signal concomitantly to an integrating valve and a proportional valve each of which provide an output signal to an output mechanism for controlling the device governed by the governing system. The proportional valve may be indexed to the error producing mechanism to anticipate the set value governed by the governing system.

ERRATUM

For Class 92—42 see:
Patent No. 3,624,829

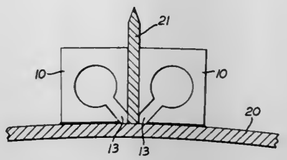
3,623,404
MANUFACTURE OF FILTERS FOR CIGARETTES OR SIMILAR SMOKABLE ARTICLES
Norman W. Jackson, London, England, assignor to Molins Machine Company Limited, London, England
Filed June 13, 1969, Ser. No. 833,020
Claims priority, application Great Britain, June 14, 1968, 28,606/68; Nov. 1, 1968, 51,802/68
Int. Cl. B23d *5/00*
U.S. Cl. 93—1 C **9 Claims**



The invention consists essentially in the use of an extended screen member which moves in unison with the garniture tape of a continuous filter rod forming machine and through which screen member granular or like loose filter material is showered to be guided by the screen member into pockets formed between filter plugs which are carried by and spaced apart along the garniture tape.

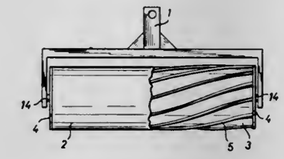
3,623,405
DIE-CUTTING
Thomas D. Bishop, Solihull, England, assignor to The Deritend Engineering Company Limited, Birmingham, England
Filed Dec. 24, 1969, Ser. No. 887,887
Int. Cl. B31b *1/14*
U.S. Cl. 93—58.2 R **2 Claims**

The invention is concerned with the rotary die cutting of cardboard blanks using a sheet metal forme fixed to one roll and having a pattern of cutting rule fixed to the surface of the forme and provides studs located on



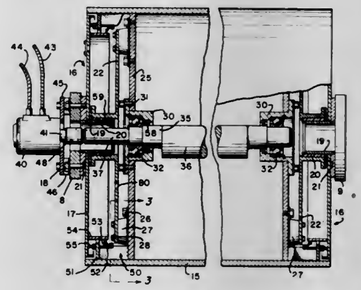
either side of the rule to hold the rule to the forme, the studs being laterally resilient so that the rule is gripped between a pair of studs.

3,623,406
SNOW COMPACTING ROLLER
Klaus F. W. Leben, Berg, Germany, assignor to Leben & Co. KG Vertrieb von Pistenpflegegeraten fur Skiabfahrten, Munich, Germany
Filed Jan. 29, 1970, Ser. No. 6,687
Claims priority, application Germany, Feb. 2, 1969, P 19 06 130.4
Int. Cl. E01c *19/24*
U.S. Cl. 94—50 R **7 Claims**



A roller drum to be towed behind an over-snow vehicle for preparing and conditioning ski runs. The roller drum has a flexible outer sheath which rests in contact only over a limited area of the drum construction so that snow which adheres temporarily to the working surface of the sheath falls off, due to the elastic movement of the flexible sheath.

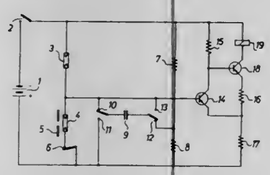
3,623,407
VIBRATORY COMPACTION ROLLER
Seymour Dresher, Morristown, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,689
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 **13 Claims**



A vibratory compaction roller which includes a drum rotatably mounted on a frame. A central shaft having an eccentric weight is rotatably mounted within the drum. A motor rotates the central shaft to cause vibration of the drum. The bearings which mount the central shaft

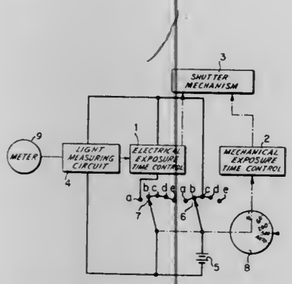
are separate from the bearings which mount the drum on the frame. Shock absorbers are positioned between the drum and the bearings mounting the drum to isolate the frame and the bearings mounting the drum from the drum. A sealed reservoir filled with a lubricant is provided in the drum for continuously lubricating the bearings.

3,623,408
AUTOMATIC EXPOSURE CONTROL ARRANGEMENT FOR PHOTOGRAPHIC APPARATUS
Karl Wagner, Ottobrunn, and Klaus Nicolay, Gruenwald, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 6, 1970, Ser. No. 61,597
Claims priority, application Germany, Aug. 20, 1969, P 19 42 286.7
Int. Cl. G01j *1/02*
U.S. Cl. 95—10 C **8 Claims**



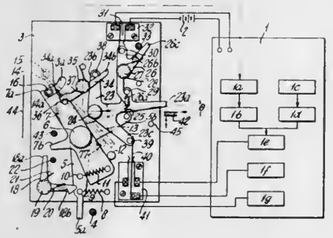
A capacitor, connected in the diagonal of a bridge, is charged to an amount and polarity dependent on the relative brightness of light incident on two series-connected photoconductors that are arms of the bridge. One photoconductor is exposed to direct scene light and the other to scene light through the objective. The capacitor is then connected to the base of a transistor and also to charge (or first discharge and then charge) through the one photoconductor until it reaches a value at which the transistor turns on, thereby turning off a further transistor, the collector of which is connected to the shutter control magnet.

3,623,409
ELECTRICAL OR MECHANICAL CAMERA SHUTTER
Naoyuki Uno, Iruma-gun, Saitama-ken, and Koichiro Watanabe, Tokyo-to, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed May 19, 1969, Ser. No. 825,682
Claims priority, application Japan, July 26, 1968, 43/52,487
Int. Cl. G03b *7/08, 9/58;* **G01j** *1/44*
U.S. Cl. 95—10 C **2 Claims**



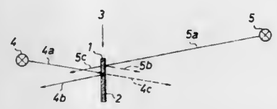
A camera shutter includes an electrical and a mechanical timer. A light measuring network provided with a visual indecator functtons as a light controlled timing network which triggers a solid state switch controlling the electrical timer. A pair of ganged switches selectively connect a battery to the measuring network alone, to the measuring and switch network, or deenergize both networks and is connected to the mechanical shutter speed control knob to energize both networks when the knob is at a position which either disables the mechanical timer or sets it at an exposure less than the minimum electrically actuated exposure time.

3,623,410
CAMERA HAVING ELECTRIC SHUTTER, LIGHT MEASURING AND TIMING NETWORK, AND MEMORY NETWORK
Kunio Mita, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 18, 1969, Ser. No. 834,314
Claims priority, application Japan, June 22, 1968, 43/43,038
Int. Cl. G01j *1/16*
U.S. Cl. 95—10 C **8 Claims**



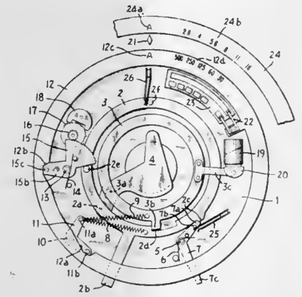
An automatic exposure timing system in a single lens reflex camera with a TTL light measuring system includes a memory device and a shutter timing network. A switch alternatively connects the memory device to the light measuring or timing network. A mirror return release mechanism consecutively actuates the switch to connect the memory device to the timing network and releases the mirror. The mirror retraction sequentially releases the automatic diaphragm and the shutter, and blocks the light measuring photocell. The closing operation of the shutter causes the spring return of the mirror and release mechanism and the actuation of the switch to connect the memory device to the light measuring network.

3,623,411
APPARATUS FOR DETERMINING THE VISUAL INTENSITY OF LIGHT
Hans Gunther, Georg Konigl, Hans Kortner, Klaus Nicolay, and Hubert Hackenberg, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed July 29, 1969, Ser. No. 845,690
Claims priority, application Germany, July 31, 1968, P 17 72 999.6
Int. Cl. G01j *1/14;* **G03b** *7/00*
U.S. Cl. 95—10 B **27 Claims**



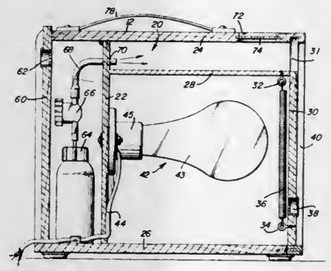
Apparatus for determining the visual intensity of light comprises an indicator including one or more interference mirrors which respectively transmit and reflect light in a first and a second range of the visible spectrum. One side of each mirror is exposed to light from a reference light source and the other side of each mirror can be exposed to light issuing from an unknown source, particularly to scene light, whereby the color of light coming from the mirror or mirrors (including transmitted light from the unknown source and reflected light from the reference source, or vice versa) changes as a function of and indicates changes in the intensity of light from the unknown source.

3,623,412
MANUALLY AND AUTOMATICALLY SETTABLE SHUTTER WITH DISENGAGEABLE GOVERNOR
Kiyoshi Kitai, 54 Tomihisa-cho, Shinjuku, Tokyo, Japan
Filed Oct. 24, 1969, Ser. No. 869,256
Claims priority, application Japan, Oct. 24, 1968, 43/77,108
Int. Cl. G03b *7/08, 9/60, 9/62*
U.S. Cl. 95—10 C **9 Claims**



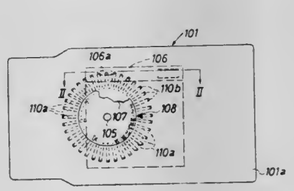
A camera is provided with a shutter actuating mechanism which is alternatively operable in both an "automatic" mode to control the exposure time in dependence upon the brightness of an object being photographed and a "manual" mode to selectively control the exposure time. A programmed governor mechanism is employed to limit the shutter opening speed when the camera is operating in the "automatic" mode and the governor mechanism is automatically rendered ineffective when the camera is operating in the "manual" mode.

3,623,413
APPARATUS FOR PRODUCING A COMPOSITE IDENTIFICATION PHOTO WITH DIAZO DEVELOPING
Thomas W. Richards, 1916 Mimosa Place, Fullerton, Calif. 92631
Filed Feb. 17, 1969, Ser. No. 799,559
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **2 Claims**



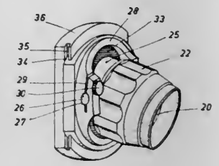
A portable diazo development apparatus including a housing with an exposure light and a manually squeezable bottle containing a developing reagent. By squeezing the bottle, reagent vapor is introduced into the housing of the apparatus thereby developing an exposed light-sensitive paper. A valve is connected to the squeezable bottle for controlling the flow of fluid therethrough.

3,623,414
RECEPTACLE AND FRAME COUNTER MEANS FOR PHOTOGRAPHIC FILM
Alfred Winkler, Munich, Karl Wagner, Ottobrunn, and Karl Bammesberger and Heinz Ernst, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 24, 1970, Ser. No. 31,654
Claims priority, application Germany, Apr. 30, 1969, P 19 21 978.4
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM **10 Claims**



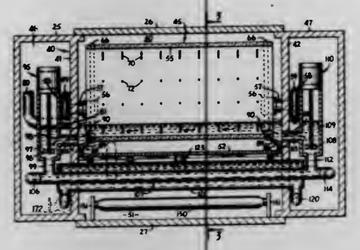
A film frame counter which is installed in a housing constituting a cassette or the body of a still camera for roll film of the type having a row of perforations, one for each film frame. The frame counter comprises an indexible wheel which is mounted on the rear wall of the cassette or camera body and has an annulus of elastic arms one of which is urged against the film by an inclined elastic cam so that it enters an oncoming perforation and indexes the wheel by a step whenever the film is advanced by the length of a frame. The wheel is connected with a numbered disk which travels along a fixed marker to indicate the number of exposed or unexposed film frames.

3,623,415
LENS MOUNT FOR A CAMERA
Josef Atzmüller, Berggasse 39, Linz, Austria
Filed Oct. 7, 1968, Ser. No. 765,412
Int. Cl. G03b *5/06*
U.S. Cl. 95—50 **3 Claims**



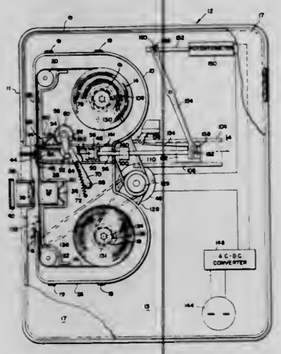
A mounting connects a lens to a lens holder so as to enable a tilting of said lens into a range of positions in which Scheimpflug's rule can be utilized in taking a photograph. The mounting comprises a lens mount carrying the lens, a mounting member connected to the lens mount, a connecting member connected to the lens holder, and an articulated joint connecting the connecting member to the mounting member for pivotal movement on a pivotal axis which intersects the pivotal axis of the camera within the joint, the articulated joint being adapted to be fixed in position.

3,623,416
PROCESSING SYSTEM FOR PHOTOGRAPHIC MATERIAL
Claes Johan Anderberg, Persikogatan 38, Vallingby, Sweden
Filed June 24, 1968, Ser. No. 739,329
Int. Cl. G03d *3/08*
U.S. Cl. 95—93 **22 Claims**



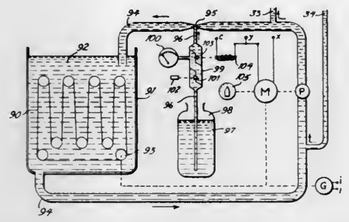
Photographic film is processed in a drum (intermittently rotated in opposite directions) by successive reagents each introduced in limited quantity into the drum and recirculated therethrough in intermittently reversed axial flow directions. The reagents, drum chamber and recirculator are tempered by tempering water also used for washing or rinsing the film in the drum. The reagents and water are supplied from stationary parts of the equipment to the drum by channels providing gravity flow paths from the drum. A controller unit is controlled by programs on cards inserted in the unit to automatically process the film in accordance with the program on the selected card.

3,623,417
SYSTEM FOR UNIFORMLY COATING EXPOSED MOTION PICTURE FILM WITH PROCESSING FLUID
Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 1, 1968, Ser. No. 772,789
Int. Cl. G03b *17/50*
U.S. Cl. 95—89 R **31 Claims**



A motion picture system utilizing a compact multipurpose cassette containing reel means for transporting a strip of film across a film gate and useful during exposure, processing and projection operations. An applicator containing processing fluid is positioned within the cassette in operable relationship with the exposed film strip while it is being transferred from one reel to another. Various unique features are included to insure that a uniform coating of processing fluid is applied to the exposed film strip including means for slidably mounting the applicator within the cassette so that it can be selectively brought into and taken out of contact with the film strip, a self-aligning support plate disposed on the opposite side of the film strip from the applicator, spring means for yieldably restraining the applicator against the film strip, a negator spring to provide a constant force on the processing fluid in the applicator and a motor control system to impart a constant speed to the film strip as it contacts the applicator. Additionally, a folded tape is employed to initially seal the orifice of the applicator when it is spaced from the exposed film strip and which is automatically stripped from the orifice as the applicator is brought into contact with the exposed film.

3,623,418
PHOTOGRAPHIC DEVELOPER REPLENISHMENT
Clarence S. Ost, 118 N. Mansfield Ave., Margate City, N.J. 08402
Filed Aug. 11, 1969, Ser. No. 848,867
Int. Cl. G03d *3/12*
U.S. Cl. 95—89 R **14 Claims**

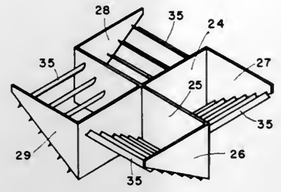


Developer replenisher is added to a bath of photographic developer, in accordance with monitoring of a test strip of photographic material developed by developer sampled from the bath, for the purpose of compensating for any loss in activity that otherwise would occur because of use, aging, or other reason. The photosensitive test strip is transported successively through an exposure chamber wherein it is exposed to actinic light, a development chamber wherein the exposed strip is developed by the sample of developer, and finally a monitoring chamber wherein the developed optical density of the strip determines the amount of light passing from a non-actinic light source to a photoresistive element in an electronic system for controlling the addition of replenisher to the developer bath. The monitored density is checked continuously against a value corresponding to an acceptable plateau of developer activity, and also periodically for any decrease in density as compared with the results obtained when last previously checked, and if deficient is adjusted upward by intermittent addition of replenisher in accordance with the prevailing rate of decrease in density.

3,623,419
HEATER OR VENTILATOR HAVING A REVOLVING DISCHARGE
William A. Taylor, Liberty Township, Ohio (5020 Market St., Youngstown, Ohio 44512)
Filed Sept. 10, 1969, Ser. No. 856,609
Int. Cl. F24f *7/09*
U.S. Cl. 98—39 **3 Claims**

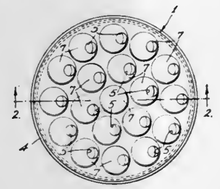
A revolving diverter for use with a heater or ventilating fan of the downward discharging type. The diverter has four openings for directing the air into four streams. Each opening has a number of curved blades which direct

the air stream into a fan-shaped pattern extending from the vertical to a diverging path. The blades are of such



curvature as to deflect the air into the desired stream without turbulence.

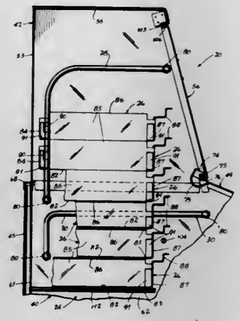
3,623,420
AIR SUPPLY DEVICE
Birger Larkfeldt, Odensjo, and Krister Larsson, Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden
Filed Dec. 24, 1969, Ser. No. 887,946
Claims priority, application Sweden, Feb. 3, 1969, 1,386/69
Int. Cl. G03c *9/00*
U.S. Cl. 98—40 A **9 Claims**



For admitting ventilating air into a room with a low generation of sound, a plate having a plurality of passageways therethrough disposed obliquely to the axis of the opening in which the plate is mounted. Each passageway comprises a frustoconical bore which terminates in the outer surface of the plate in a spherical protrusion whose center of curvature coincides with the axis of the associated bore so that the opening is perpendicular to the axis of the bore and is circular. The preferred embodiment comprises a plurality of such plates which are circular and have a plurality of bores whose axes are parallel to one another so that the direction of injection of air through the plate may be altered by rotating the plate on its circular axis.

3,623,421
HOT DOG STEAMER WITH WATER LEVEL CONTROL UNIT
John F. Schwarz, Affton, and Ralph J. Tinkham, Overland, Mo., assignors to Peabody Galion Corporation, Galion, Ohio
Filed Apr. 24, 1970, Ser. No. 31,576
Int. Cl. A47j *36/24*
U.S. Cl. 99—234 A **13 Claims**

The present structure is a novel hot dog steamer. Open apertured hot dog and other food receiving trays are stacked above a steam generating area. All but the bottom tray are retained against horizontal removal, the bottom tray being manually removable for dispensing of the steamed dogs and other food. Upon removal of the bottom tray, an additional tray of dogs may be stacked on top, thus providing first-in first-out dispensing of the dogs. A bun warmer may replace the upper several trays in the steamer cabinet. Pivotally mounted removable upper and lower doors selectively close the steamer

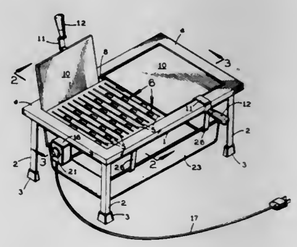


cabinet for hot dogs steaming and provide access, as required. A novel water level control assembly is provided.

ERRATUM

For Class 99—235 R see:
Patent No. 3,624,830

3,623,422
FOOD COOKING GRILL
Edward M. Marshall, 8107 SW. 72nd Ave., Apt. 102E, Miami, Fla. 33143
Filed Oct. 2, 1970, Ser. No. 77,548
Int. Cl. A47j *37/06*
U.S. Cl. 99—400 **7 Claims**

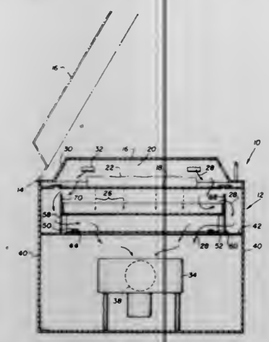


A grill for cooking food simultaneously on the upper and lower sides with a frame supporting a main perforated cooking plate over a detachable electric heat source. One or more manually operated gravity cooking plates for positioning and cooking the upper side of food resting on the main plate. A slot in said main plate for receiving each gravity plate in an angular food removal position and for further movement to gravitate downward to an idle position, including a removable receptacle in said frame for receiving drippings and for retaining an alternate heat source.

3,623,423
COOKING UNIT WITH VARIABLE COOKING TEMPERATURE
Victor M. Berger, 200—17 50th Ave., Bayside, N.Y. 11364
Filed Sept. 16, 1970, Ser. No. 72,629
Int. Cl. A47j *37/06*
U.S. Cl. 99—446 **5 Claims**

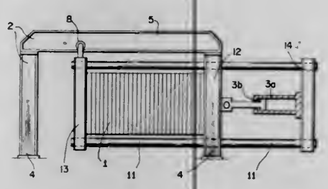
A cooking unit having a smoke removal downdraft in communication with the cooking chamber thereof, said

downdraft also removing heat from the cooking chamber whereby regulation of the volume of said down-



draft results in a corresponding regulation of the cooking temperature within the cooking chamber.

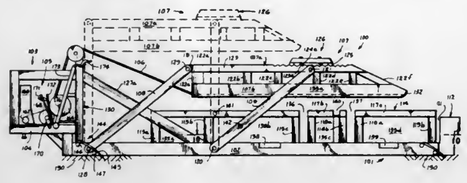
3,623,424
PLATE FILTER PRESS
Oswald Busse and Hugo Klesper, Michelbach, Germany, assignors to Passavant Werke, Michelbacher Hutte, Germany
Filed June 30, 1969, Ser. No. 837,633
Claims priority, application Germany, July 27, 1968, G 67 50 401
Int. Cl. B30b *1/00*
U.S. Cl. 100—214 **4 Claims**



A plate filter press in which the filters are mounted on rods between end plates and the rods extend beyond one of the end plates to a yoke member to which the rods are connected. A pressurized cylinder unit acts between the yoke member and the end plate closest thereto, to urge the end plates toward each other to press the filters.

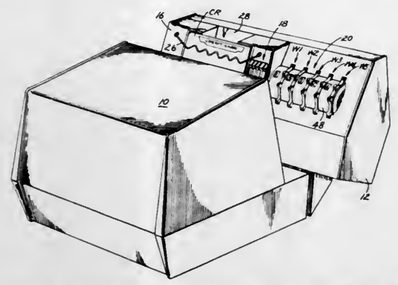
3,623,425
JUNKED METAL COMPRESSING SMASHER
Wesley D. Ballard, 2809 W. Garfield St., Phoenix, Ariz. 85009
Continuation-in-part of application Ser. No. 780,625, Dec. 3, 1969, which is a continuation-in-part of application Ser. No. 555,187, June 3, 1966, now Patent No. 3,413,914, dated Dec. 3, 1968. This application July 11, 1969, Ser. No. 840,902
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **11 Claims**

A junked metal compressing smasher comprises a base or anvil boxed in by said walls and an end stop at rear end and with a cantilevered platform at forward end. The hammer is supported above the base by support arms at a transverse station pivotally connecting base and forward end of hammer, and by support arms of equal length between pivot connections, at a transverse station rearwardly of the first station, pivotally connecting said base and said hammer at equal distances on said hammer as the distance between base stations. Thus, by this pantagraph type connection arrangement the crushing face of the hammer continuously remains substantially in a hori-



zontal plane as it descends. Means cooperative with hoist cable dead ended on the hammer and hoist respectively effect the return of the hammer to a releasably latched upward position after each descent to crush junked metal.

3,623,426
PRINT CONTROL MEANS IN TRAVELING ROLLER BED AND CYLINDER PRINT MACHINES
George A. Gruss, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Continuation-in-part of application Ser. No. 705,092, Feb. 13, 1968, now Patent No. 3,494,282, dated Feb. 10, 1970. This application Oct. 27, 1969, Ser. No. 869,540
Int. Cl. B41j *1/22*
U.S. Cl. 101—45 **12 Claims**

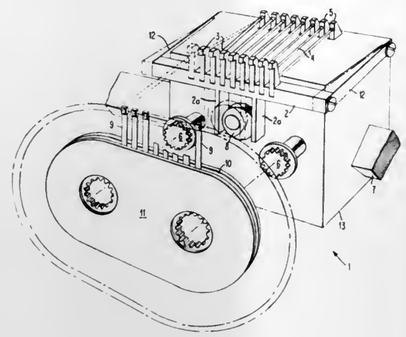


A power operated data recorder in which a hinged rear section serves as a bed of the machine against which a roller platen is designed to act. A variable data printing unit is provided in the movable bed of the machine and includes a plurality of print wheels, settable by manually actuated indexing wheels, for imprinting variable data on the form. The data recorder also includes lock-out means to prevent closing of the movable bed, or movement of the roller platen through a printing stroke, in those instances where the variable data print wheels have not been repositioned from an immediately preceding printing operation. Movement of only a single print wheel is effective to release the locking means to thereby permit operation of the machine.

3,623,427
ROTATING TYPE CARRIER WITH SHIFTABLE HAMMER CARRIER
Gerold Buehrmann, Stuttgart-Botnang, Germany, and Guenter H. Schacht, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 8, 1969, Ser. No. 814,303
Claims priority, application Germany, June 1, 1968, P 17 74 370.3
Int. Cl. B41j *1/20, 9/10*
U.S. Cl. 101—93 **2 Claims**

Printing arrangement for high-speed printers with rotating type carrier and several print hammers, consisting

of a unit which is uniformly moved along the printing line during printing. A minimum relative speed between



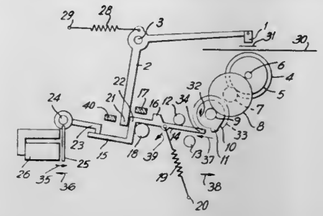
the record carrier and the fired types is obtained by means of a periodically shifted hammer carrier.

3,623,428
FLYING PRINTER
Issei Imahashi, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha
Filed Apr. 29, 1969, Ser. No. 820,199
Claims priority, application Japan, Apr. 30, 1968, 43/28,688, 43/28,690; May 13, 1968, 43/31,814, 43/31,815, 43/38,835
Int. Cl. B41j *9/10, 9/38*
U.S. Cl. 101—93 **21 Claims**

A flying printer having a trigger lever adapted for rotational and linear displacement, a print hammer adapted to effect printing in response to the linear displacement of said trigger lever, a continuously rotating ratchet wheel having at least one tooth extending therefrom for linearly displacing said trigger lever when said trigger lever is disposed in the path thereof, and means for selectively rotating said trigger lever into and out of the path of said ratchet wheel tooth to effect printing.

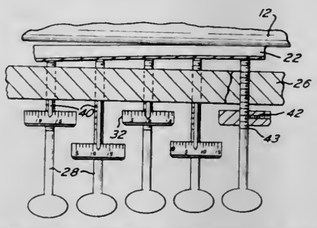
3,623,429
HAMMER LEVER CONSTRUCTION FOR FLYING PRINTER
Issei Imahashi and Shigeyoshi Hirabayashi, Suwa-shi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha
Filed Apr. 29, 1969, Ser. No. 820,198
Claims priority, application Japan, Apr. 30, 1968, 43/34,990
Int. Cl. B41j *9/26, 9/42*
U.S. Cl. 101—93 **2 Claims**

The improvement in flying printers having a continuously rotating print drum, a hammer lever having a hammer mounted at one end thereof for striking said print drum upon the displacement of said hammer lever to effect printing and means for displacing said hammer lever, which includes the provision of a hammer lever stopper disposed to engage said hammer lever at a point spaced from said hammer to stop the displacement of said



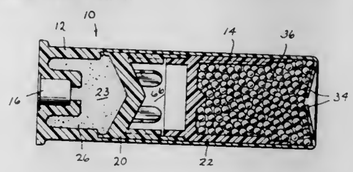
hammer lever immediately before said hammer strikes said print drum.

3,623,430
FOUNTAIN KEYS FOR MULTIPLE POINT CONTROL OF FOUNTAIN BLADE
Joseph Lessun, Levittown, Pa., assignor to Color Control Systems, Inc., Philadelphia, Pa.
Continuation-in-part of application Ser. No. 729,052, May 14, 1968. This application July 9, 1970, Ser. No. 53,357
Int. Cl. B41f *31/06*
U.S. Cl. 101—365 **10 Claims**



A printing press having a plurality of fountain keys with large calibrated dials fixed thereto so that adjacent dials are staggered with respect to each other. Additionally, an attachment kit for a printing press is disclosed. The kit includes a plurality of fountain keys with large calibrated dials disposed thereon with dials on adjacent fountain keys staggered. The housing includes a plurality of staggered apertures. The housing and the fountain keys cooperate so that calibrated dials on each of the fountain keys are exposed through the staggered apertures in the housing. Also a kit comprising calibrated grids for transferring fountain key setups on a first printing press to fountain keys on a second press wherein the spacings between the fountain keys on each of the presses are different.

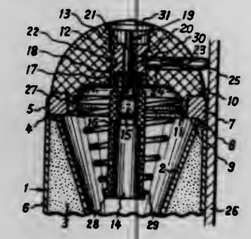
3,623,431
SHOT SHELL
Grover E. Hendricks, Niles, Mich., assignor to Eduardo R. Bermudez, Rolling Meadows, Ill.
Filed July 15, 1968, Ser. No. 744,922
Int. Cl. F42b *7/02, 7/08*
U.S. Cl. 102—42 C **10 Claims**



A shot shell including a cartridge case, a primer, a powder charge, shot and a wad. The wad is formed of

flexible shape-retaining plastic and has a closed air chamber which permits the partial collapse of the wad during detonation of the powder charge.

3,623,432
HOLLOW CHARGE PROJECTILES
Gerhard P. L. Schminke, Oplikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Aug. 21, 1969, Ser. No. 851,808
Claims priority, application Switzerland, Aug. 22, 1968, 127,030/68
Int. Cl. F42c *15/20*
U.S. Cl. 102—56 **2 Claims**

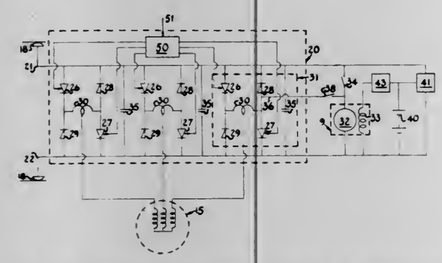


A hollow charge projectile having a projectile head in which a casing is movable between a position of rest in which it extends into the interior of the hollow charge and a working position in which it protrudes from the projectile. A spring is provided for moving the casing from the position of rest into the working position. The spring has the shape of a truncated cone wherein the diameters of consecutive coils of the spring differ by at least twice the diameter of the wire. In the position of rest of the casing, the end of the spring with the smallest coil diameter is directed toward the tip of a conical cavity provided in the hollow charge. The end of the spring with the smallest coil diameter is fastened to the casing and the other end of the spring with the largest coil diameter is fastened to the projectile head.

ERRATUM

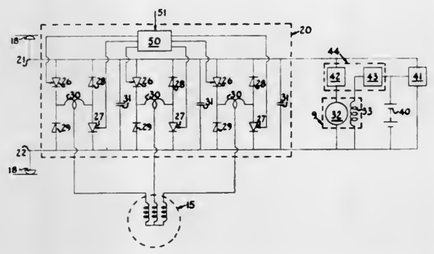
For Class 104—20 see:
Patent No. 3,624,831

3,623,433
CIRCUITS FOR TRACK GUIDED AIR CUSHION VEHICLE PROPULSION SYSTEM
Edward Alfred Keith Jarvis, Hale, England, assignor to Tracked Hovercraft Limited, London, England
Filed Oct. 15, 1969, Ser. No. 866,494
Int. Cl. B60l *9/18, 13/00*
U.S. Cl. 104—148 LM **4 Claims**



A track guided air cushion vehicle is propelled by a linear induction motor. D.C. is supplied along the track, and the air cushion devices are supplied with air from D.C. operated fan motors. An inverter converts the D.C. main supply to A.C. for the linear motor during normal operation. The fan motors are in addition connected to a portion of the inverter in such a way that the inverter can be used optionally as a D.C. chopper to supply D.C. at a progressively increasing voltage for starting the fan motor.

3,623,434
LINEAR MOTOR PROPELLED AIR CUSHION VEHICLE
Edward Alfred Keith Jarvis, Hale, England, assignor to Tracked Hovercraft Limited, London, England
Filed Oct. 15, 1969, Ser. No. 866,581
Int. Cl. B60l *9/18, 13/00*
U.S. Cl. 104—148 LM **4 Claims**

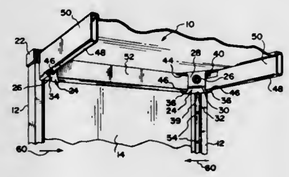


A track guided air cushion vehicle is propelled by a linear induction motor. D.C. is supplied along the track, and the air cushion devices are supplied with air from D.C. operated fan motors. An inverter converts the D.C. main supply to A.C. for the linear motor. If the main D.C. supply fails, the linear motor is arranged to regenerate A.C. which is rectified by rectifiers in the inverter so as to supply D.C. to the fan motor.

ERRATUM

For Class 104—172 S see:
Patent No. 3,623,538

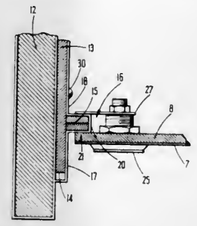
3,623,435
SHELVING UNIT AND FASTENINGS THEREFOR
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Oct. 31, 1969, Ser. No. 873,013
Int. Cl. A47b *3/00, 43/00;* **F16b** *12/00*
U.S. Cl. 108—111 **8 Claims**



Lightweight knockdown steel shelving with securing means adapted to hold shelving and enclosing panel inserts to upright supports thereby forming rigidified shelving units such as a credenza. The securing means includes a corner fastening clip adapted to engage the box flanges of

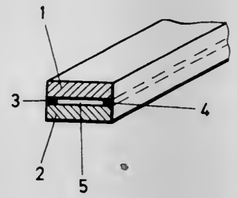
a shelf at a cut-out corner and clamp same to the inside of a corner support having a slot to receive side panels which are thereby held in place by the opposing forces of opposite clips. Provision is made for corner inserts and interlocking bead or finishing strip members at the junctures of side and top panels. Means are provided to connect axially aligned upright supports so that variety of height of shelving units may be obtained.

3,623,436
DOOR FRAME
Wylie W. Barrow, Jr., Chelmsford, Mass., assignor to Teckton, Inc., Waltham, Mass.
Filed Aug. 15, 1969, Ser. No. 850,595
Int. Cl. E06b *1/52*
U.S. Cl. 109—77 **3 Claims**



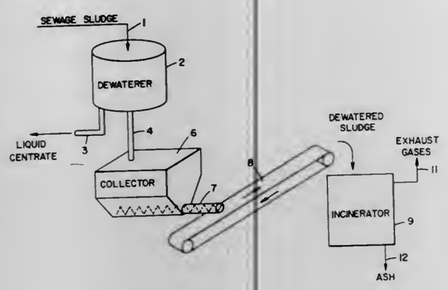
A door frame having a lead filled jamb with a stainless steel hat-shaped cover adapted to engage the edge of a door having a lead inner face and stainless steel outer face.

3,623,437
DEVICE FOR BURNING HOLES INTO CONCRETE, MASONRY, STONE OR METAL
Eduard Lusser, 16 Bahnhofstrasse, 8000 Zurich, Switzerland
Filed Feb. 24, 1970, Ser. No. 13,606
Claims priority, application Switzerland, Feb. 25, 1969, 2,822/69
Int. Cl. F23b *7/00;* **F23d** *21/00*
U.S. Cl. 110—1 R **6 Claims**



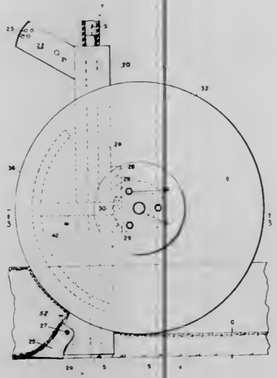
Device for burning holes into concrete, masonry, stones or metal comprising a metallic burning rod which has at least one channel extending over the entire length thereof and which is connected at its rearward end with a source of oxygen under excess pressure, the channel or channels that conduct the oxygen being as seen in cross section in the form of longitudinal slots the length of which is a multiple of the width thereof and the main masses of the rod material as seen in cross section being disposed perpendicularly to the longitudinal side of the slot.

3,623,438
DEWATERING OF SEWAGE SLUDGE
Paul J. Cardinal, Jr., Brisbane, Calif., assignor to BSP Corporation, Brisbane, Calif.
Filed Apr. 2, 1969, Ser. No. 812,609
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **6 Claims**



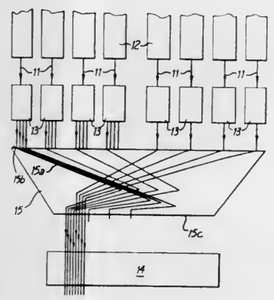
Apparatus and process for dewatering sewage sludge produced in a tertiary raw sewage treating procedure. Successive charges of predetermined amounts of sewage sludge are introduced into a batch-type dewatering device, such as a centrifuge, and processed therein to remove excess fluid. The dewatered sludge is collected and fed as a continuous stream into a sludge incinerator, such as a multiple hearth furnace. Batch dewatering produces a drier sludge cake, thus permitting use of a smaller incinerator for given production rates with substantial reduction in operating costs and capital outlay.

3,623,439
SEED DRILL FURROW OPENER
John E. Hair, Jr., Prescott, and Richard E. Hair, Walla Walla, both of Wash., assignors to Deere & Compnay, Moline, Ill.
Filed Oct. 9, 1969, Ser. No. 865,099
Int. Cl. A01c *5/00*
U.S. Cl. 111—85 **7 Claims**



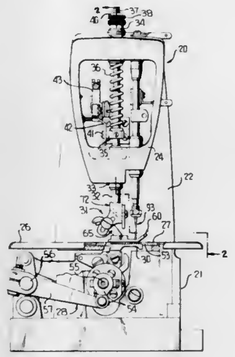
A seed drill in which a furrow opener, serving as the lower portion of the seed delivery tube, is laterally narrow. A pair of press-wheel disks having sharp rims, one at each side of said furrow opener and in close tolerance, is journaled for rotation on axes or an axis substantially at the trailing edge of the said opener and the disks are sufficiently large diametrically to dispose the forward portion of their sharp rims substantially ahead of the leading edge of the furrow opener; the disk axes being vertically adjustable with respect to the said furrow opener. When the said rims are in parallel planes, a soil guard disposed therebetween minimizes the quantity of soil that may pass between the disks.

3,623,440
TUFTING
Robert Spedding, Wilpshire, Blackburn; William Sandford Hasler, Langho, Blackburn, and Raymond Victor Evans, Feniscowles, Blackburn, all of England, assignors to Singer-Cobble Limited, Blackburn, England
Filed Oct. 30, 1968, Ser. No. 771,936
Claims priority, application United Kingdom, Oct. 31, 1967, 49,362/67
Int. Cl. D05c *15/00, 15/18*
U.S. Cl. 112—79 A **7 Claims**



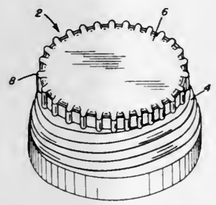
In order to maintain pattern register between moving yarns having dyestuffs applied thereto at intervals therealong during the transverse rearrangement of such yarns, as, say, to give a pattern repeat, the yarns are all caused to move through a like distance as measured in the longitudinal direction of the yarn, during the rearrangement by providing a guide tube for each yarn through which the yarn passes, the said tubes all being of constant length and each serving to transfer a respective yarn from an initial position transversely of a yarn sheet or sheets issuing from a dyeing means to a final position transversely of a yarn sheet or sheets proceeding to a tufting machine or other combining means.

3,623,441
PRESSER MECHANISM FOR SEWING MACHINES
Edgar Schoij, Hinsdale, and Frederick M. Klose, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.
Filed Nov. 21, 1969, Ser. No. 878,635
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **18 Claims**



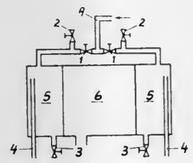
This disclosure relates to a low-inertia adjustable stroke presser foot for sewing machines which is operable to feed the uppermost ply of superimposed plies being sewn to compensate for the drag exerted by the presser foot sole upon the upper ply. The presser foot is automatically driven through its cooperation with the feed dog and effects the feeding of the upper ply at the termination of the work feeding action of the feed dog. The presser mechanism is adjustable to vary the work feeding movement of the presser foot in accordance with the requirements of the fabric being sewn.

3,623,442
KNURLED CLOSURE
Wilburn Coy Willis, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Mar. 14, 1969, Ser. No. 807,189
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 A **6 Claims**



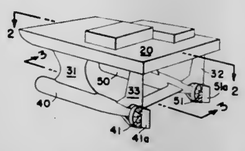
A method of forming an annular knurled band on two surfaces of a container closure by providing a generally cylindrical closure shell having a top panel and a depending annular skirt. Forming a plurality of outwardly directed knurled portions within a plurality of first circumferential arcs by outwardly reforming the arcs to establish in each knurled section a lower portion extending radially outwardly from the annular skirt and an upper portion formed as a continuous extension of the lower portion, extending upwardly and outwardly from the top panel. Forming a plurality of inwardly directed knurl portions in second circumferential arcs in alternating position with the outwardly directed knurl portions by restraining the second arcs against outward movement. The closure having both the outwardly directed and the inwardly directed knurled portions each of substantially uniform transverse width throughout their longitudinal extent. The knurling originates within the upper half of the skirt and terminates at its uppermost level in the upper panel.

3,623,443
UNDERWATER HOUSING STRUCTURE
Gunter Luther (Mulheim), Ruhr, Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany
Filed Nov. 12, 1969, Ser. No. 875,643
Claims priority, application Germany, Nov. 13, 1968, P 18 08 557.9
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 E **4 Claims**



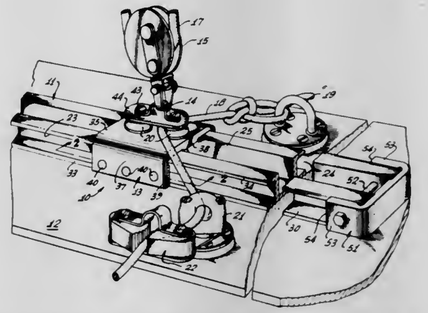
An underwater housing structure including one or more flood tanks and having supply pipes and vent pipes which control the gases for flooding the tanks and arranged so that the gas may be supplied or vented through the highest point of the flood tank. A pressure balance pipe is provided which starts at one end of the gas chamber of the flood tanks and terminates below the flood tank in the water surrounding the outside of the structure.

3,623,444
HIGH-SPEED SHIP WITH SUBMERGED HULLS
Thomas G. Lang, 5354 Calle Vista, San Diego, Calif.
Filed Mar. 17, 1970, Ser. No. 020,204
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **18 Claims**



A high-speed ship is formed of at least one elongate hull section submerged completely beneath the water's surface supporting a platform above the surface waves by a plurality of struts dependent from the platform to provide support and stabilization by reason of their configuration and location. High-speed dynamic pitch stability is ensured by including a stabilizer member on the aft portion of the submerged hull having a horizontally oriented control surface sufficiently sized to locate the greatest composite, vertical pressure surface substantially aft of the ship's centroid. Controlling the angle of the stabilizer member in accordance with changing wave conditions and speed provides a highly stable cargo transport capability as well as superior weapons platform.

3,623,445
SAILBOAT TRAVELER APPARATUS
Tracy S. Holmes, 649 Hightree Road, Santa Monica, Calif.
Filed Apr. 6, 1970, Ser. No. 25,939
Int. Cl. B63h *9/10*
U.S. Cl. 114—204 **8 Claims**

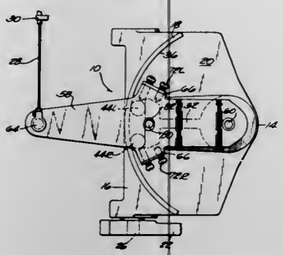


Traveler apparatus including an extruded track having a top groove and oppositely opening side grooves, and a traveler of U-shaped cross section overlying the track with two sets of side rollers in the side grooves and a set of top rollers on the top groove. Each side set comprises three rollers, the center roller of each set being offset downwardly to increase the effective width of the set. The track is attached by bolts through the bottom of the top groove, and a short section of the same shape as the traveler is bolted to each end of the track.

3,623,446
SWIVEL BRACKET LOCK NO BACK STEERING
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 19, 1969, Ser. No. 825,834
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **5 Claims**

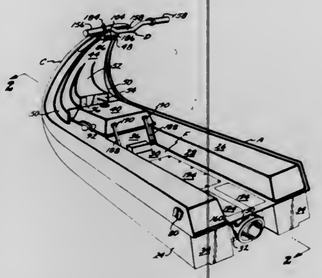
Disclosed herein is an outboard motor steering mechanism including a locking lever fixedly secured to a marine propul-

sion unit mounted for pivotal-steering movement on a swivel bracket, a pair of rollers biased to positively restrain movement of the locking lever with respect to the swivel bracket and a steering arm pivotally connected to the propulsion unit



and having a first set of adjustable members to release one or the other of the rollers and a second set of adjustable members to engage the locking lever after releasing one or the other of the rollers.

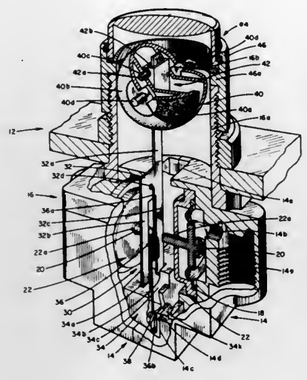
3,623,447
POWERED AQUATIC VEHICLE
Clayton J. Jacobson, 5403 Seacrest Drive, Rolling Hills, Calif.
Filed Jan. 21, 1970, Ser. No. 4,631
Int. Cl. A63h *5/08;* **B63h** *11/00*
U.S. Cl. 115—70 **9 Claims**



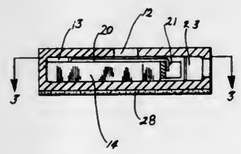
A low-draft hydroplanelike vehicle having a hull of stable design that is power driven by a jet of water, the direction of which jet may be varied by the operator to steer the vehicle. The jet of water is automatically maintained in a substantially horizontal direction to provide a flat thrust in turns even when the vehicle is laterally tilted to a substantial degree. Maintenance of the jet in a substantially horizontal direction due to the geometry of movement of the nozzle from which it is ejected provides maximum forward drive to the vehicle and a minimum tendency for the stern of the vehicle to lift from the water during a tight turn. Upward movement of the stern relative to the water results in the vehicle momentarily being in an unstable condition in which the operator is frequently thrown therefrom. The vehicle is of such design that water will not enter the engine compartment or flood the exhaust in the event the vehicle capsizes, or when the vehicle is stationary.

3,623,448
TWO-POSITION PANEL INDICATOR
John S. Resh, and James D. Vincent, both of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 17, 1969, Ser. No. 877,386
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **5 Claims**

A mechanical panel indicator with a two-position mechanism capable of providing snap action which mechanism is operable under the influence of a motor for causing changes in indicator condition. Adjustment means are provided to selectively allow for maintained or momentary indicator conditions when the influence of the motor is removed.



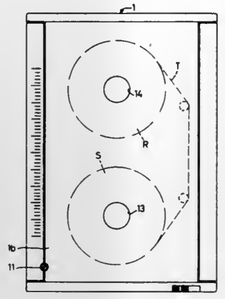
3,623,449
IMPACT ACCELERATION INDICATOR
Robert C. Knutson, Rosemount, Minn., assignor to Vexiler, Inc., Minneapolis, Minn.
Filed Aug. 15, 1969, Ser. No. 850,544
Int. Cl. G01p *15/04;* **G01h** *35/14*
U.S. Cl. 116—114 AH **7 Claims**



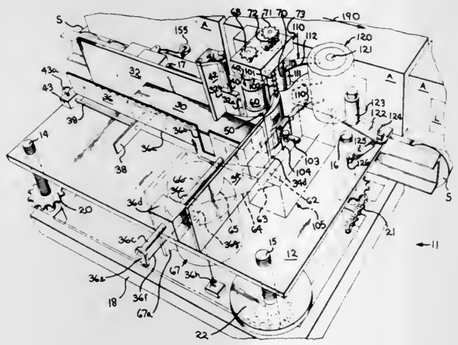
A recording instrument which will produce a visual or electrical signal indicating when a preselected acceleration level has been experienced by the instrument, and will permanently record such impact so that when the instrument is attached to a package, a visual examination of the instrument will indicate whether or not the package has been dropped or subjected to a damaging impact.

3,623,450
CASSETTE FOR MAGNETIC TAPE OR THE LIKE
Imre Siller, Nurnberg, Germany, assignor to Grundig E. M. V. Elektro-Mechanische Versuchsanstalt, InH.: Max Grundig, Furth Bayern, Germany
Filed Jan. 12, 1970, Ser. No. 2,192
Claims priority, application Germany, Jan. 11, 1969, G 69 00 933
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 **11 Claims**

A cassette for convoluted magnetic tape having a flat plastic housing one narrow wall of which is provided with a window located in front of two coaxial indicia bearing wheels which can be adjusted so as to expose a combination of digits or other symbols indicative of the information stored on the tape. The wheels can be rotated independently of each other and are biased apart by a prestressed spring which prevents unintentional changes in the selected combination of observable symbols.

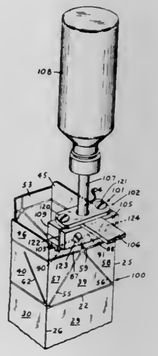


3,623,451
GLUE ROLLER ASSEMBLY
Billy Burgess, Sylvania; John H. Burgess, Sylvania, Ohio; Larry C. Gess, Samaria, Mich.; Robert P. Snyder, Sylvania, and Washington I. McGilvery, Whitehouse, Ohio, assignors to Advance Products, Inc., Whitehouse, Ohio
Filed Oct. 16, 1968, Ser. No. 768,060
Int. Cl. B05c *1/02*
U.S. Cl. 118—62 **9 Claims**



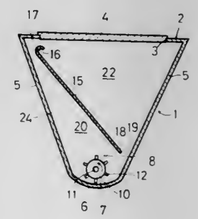
A glue roller and reservoir apparatus for use in applying glue to the surface of a plurality of sequentially moving labels or tickets, said apparatus being inclusive of a vessel reservoir for liquid glue, a hollow rotatable glue applicator sleeve extending vertically upwardly out of said vessel for contact by the labels, a rod telescopically within said glue roller sleeve, said outer surface of said cylindrical roller having a plurality of spaced grooves therein, a bar mounted along side the sleeve having notches defining teeth complementary to said grooves and an arrangement for urgement of adhesive fluid in the vessel between the rod and the inner surface of the cylindrical glue roller whereby it moves upwardly, thence down the outer surface of the glue roller cylinder, the complementary notches and grooves serving to locate the downwardly moving adhesive in a plurality of spaced regions on the exterior surface of the cylinder glue roller.

3,623,452
APPARATUS FOR PRODUCING READILY OPENABLE PLASTIC CONTAINERS
Harold B. Moors, Richboro, Pa., and Frederick E. Bichaylo, Marlton, N.J., assignors to International Paper Company, New York, N.Y.
Original application Oct. 11, 1967, Ser. No. 674,458, now Patent No. 3,525,194, dated Aug. 25, 1970. Divided and this application Oct. 22, 1969, Ser. No. 871,193
Int. Cl. B65b *7/18;* **B05c** *11/10*
U.S. Cl. 118—267 **4 Claims**



The major portion of the raw edge (and adjacent areas) of the pouring spout of a plastic coated gable-top container is wet prior to heat sealing of the gable top and then the gable top is heat sealed to effect a liquidtight container closure. The wetting material, all or most of which should be a volatile liquid, coats the raw edge and penetrates the fibers of the coated stock. A wetting agent and/or a thickening agent is used to achieve wetting and to provide a coating of the wetting material on the raw edge and adjacent areas. The heat sealing step is performed promptly to avoid substantial loss of wetting material from the raw edge. The apparatus contacts the raw edge with a liquid-carrying member, e.g., a suitable sponge, which transfers the wetting material to the raw edge without dripping of wetting material into the container.

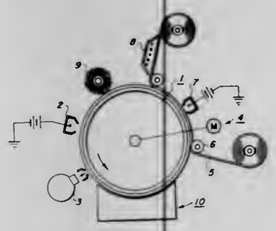
3,623,453
DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY
Ryubun Seimiya, and Tohoru Uchida, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,479
Claims priority, application Japan, Dec. 18, 1968, 43/92314
Int. Cl. B05b *5/04*
U.S. Cl. 118—309 **10 Claims**



A powder cloud developing apparatus comprises a housing having a top wall in which is formed an opening for receiving an image member, and having an inclined sidewall which is contiguous with the top wall. A flow control plate is arranged

opposite the sidewall and defines a flow channel therewith. The plate has a width commensurate with the housing, and terminates adjacent the top wall to define an exit from the channel. A rotor having a length greater than its diameter is positioned horizontally below the plate, but above the bottom of the housing, and is peripherally provided with blades or projections which, upon rotation of the rotor, scramble developer charged between the rotor and the bottom and throw it against opposing surfaces of the flow control plate and the inclined sidewall. An air stream, created either by the bladed rotor or by separate fan means, conveys the developer through the channel and the exit so as to travel across the opening.

3,623,454
FLUIDIZED BED DEVELOPMENT APPARATUS
John S. Bernhard, Pittsford, and Alan F. McCarroll, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Jan. 2, 1970, Ser. No. 78
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 **14 Claims**



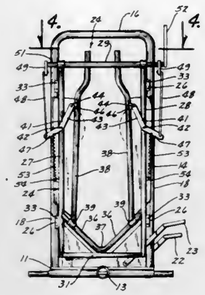
An apparatus for developing a latent electrostatic image wherein the developer material is circulated past the image bearing surface in a fluidized state. The fluidization of the developer material is achieved by the use of a vibrated bed mechanism which agitates the developer into a fluidized state in the development zone. The mechanical agitation or vibration of the fluidizing mechanism is effected through the use of two counter rotating weights which achieve a controlled degree of vibration with a minimum force and vibration being imparted to the xerographic machine in which the development device is utilized.

3,623,455
ARTIFICIAL SEA WATER SOLUTION AND COMPOSITION FOR MAKING THE SAME
William E. Kelley, Euclid, and Vernon C. Goldizen, Cleveland Heights, both of Ohio, assignors to Aquarium Systems, Inc., Wickliffe, Ohio
Continuation-in-part of application Ser. No. 641,481, May 26, 1967, now abandoned. This application Feb. 5, 1969, Ser. No. 796,882
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 **8 Claims**

An artificial sea water solution and a solid composition for making such a solution by dissolving in water. The solution may include, in addition to water, the following ions: sodium, magnesium, calcium, potassium, strontium, manganese, lithium, aluminum, rubidium, zinc, ferric, cobalt, copper, chloride, sulfate, carbonate, borate, orthophosphate, molybdate, thiosulfate, bromide, iodide and ethylene diamine tetraacetic acid.

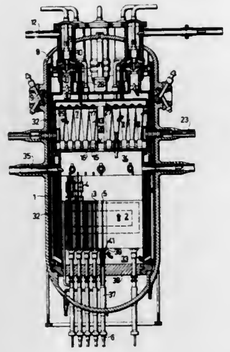
3,623,456
CHUTE GATE
Marvin J. Priefert, R.R. 1, Mt. Pleasant, Tex.
Filed July 2, 1970, Ser. No. 051,823
Int. Cl. A61d *03/00*
U.S. Cl. 119—98 **5 Claims**

The chute gate is attachable to a cattle chute that has a pair of animal-neck-engaging members supported on a main frame for simultaneous vertical movement and lateral movement toward and away from each other within the transverse



confines of the main frame. Movement of the neck-engaging members is accomplished through a manually operated lever system.

3,623,457
STEAM GENERATOR FOR GENERATING SATURATED STEAM FROM SUPERHEATED STEAM AND WATER
Karl Gunnar Dillstrom, Kallangsvagen, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Aug. 15, 1969, Ser. No. 850,389
Int. Cl. F22b *1/08*
U.S. Cl. 122—31 **5 Claims**

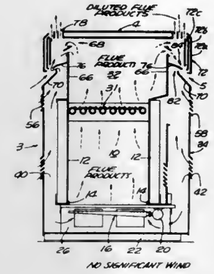


A steam generator for generating saturated steam from superheated steam and water and having a plurality of nozzles which consist of a mixing portion and a flared atomizing portion adapted to atomize and vaporize respectively feed water fed to said nozzles, the arrangement of the nozzles being such that the nozzles are arranged vertically and that the widest portions of the flared vaporizing portions of the nozzles are contiguous to each other, to leave therebetween a space through which the generated saturated steam can leave the generator.

3,623,458
STACKLESS OUTDOOR HEATER ADAPTED FOR SWIMMING POOLS
Leo Block, Temple City, Calif., assignor to Raypak Company, Inc., El Monte, Calif.
Filed Nov. 6, 1969, Ser. No. 874,500
Int. Cl. F22b *15/00*; **F23j** *11/00*
U.S. Cl. 122—264 **17 Claims**

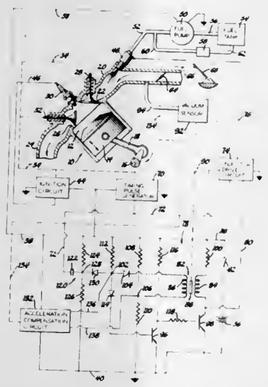
The invention is a heating appliance of the stackless type particularly adapted for heating swimming pool water. Openings are provided at the upper part of the appliance for admitting atmospheric air for combustion and allowing it to

mix with and dilute flue products before being discharged to keep the appliance cool. Around the upper part of the unit is a baffle member in the form of a collar preventing direct effect of wind velocity on the openings. The heater is provided with an air jacket with openings on one or more sides to admit air for combustion and to admit convection cooling air



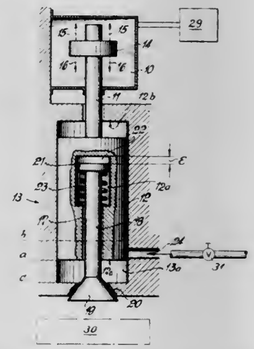
for keeping the unit cool. The openings are so arranged that when the unit is subjected to wind of various velocities the effect is to produce a controlled forced draft of combustion air which insures expelling the flue products from the unit. Baffling is provided to prevent access of driving rain into the flue products area and into the air jacket.

3,623,459
FUEL SUPPLY CONTROL SYSTEM HAVING ACCELERATION COMPENSATION
Colin C. Gordon, Cincinnati, Ohio, and Lester Wilkinson, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 039,720
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **6 Claims**



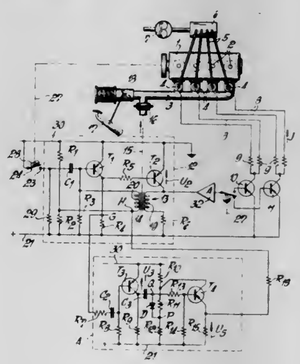
An electronic fuel injection control system for an internal combustion engine includes an acceleration compensation circuit for increasing the amount of fuel applied to the engine during acceleration. In the control system, control pulses are produced in response to the occurrence of trigger pulses. The trigger pulses are developed in synchronization with the operation of the engine. Fuel is applied to the engine at a constant rate for the duration of each of the control pulses. The duration of the control pulses is determined as a function of a bias voltage. During acceleration of the engine, the acceleration compensation circuit varies the bias voltage so as to increase the duration of the control pulses by a substantially constant amount during an initial time period and by a linearly decreasing amount during a subsequent time period. In addition, the acceleration compensation circuit develops an extra trigger pulse in response to the onset of acceleration. Further, the acceleration compensation circuit is completely insensitive to the contact bounce of a sensing switch which detects acceleration of the engine.

3,623,460
FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES
Iwan Komaroff, Ludwigsburg; Hans Zeller, Doeffingen; Gerhard Haug, Stuttgart; Ulrich Streicher, Bamberg, and Walter Schlagmuller, Butthard, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 2, 1970, Ser. No. 015,437
Claims priority, application Germany, Feb. 28, 1969, P 19 10 114.5
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 **9 Claims**



An injection valve which injects fuel directly into the inlet valve for a cylinder in an internal combustion engine comprises a piston which is reciprocable in the chamber of a cylinder member from a neutral position to a retracted position to thereby admit into the chamber a metered quantity of fuel, and thereupon from neutral to an extended position to thereby inject such quantity of fuel into the inlet valve. The piston is moved by an electromagnetic drive which receives signals from an electronic control circuit.

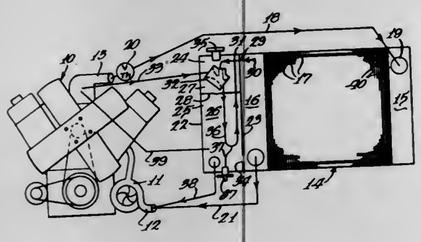
3,623,461
CONTROLLED FUEL INJECTION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES
Friedrich Rabus, Hochdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 3, 1969, Ser. No. 873,609
Int. Cl. F02b *3/10*
U.S. Cl. 123—32 EL **5 Claims**



A fuel injection control arrangement for establishing the opening duration of electromagnetically actuated injection

valves in internal combustion engines. A control circuit generates the control voltage for varying the duration of pulses emitted by a monostable multivibrator which is actuated by a cam-operated switch driven from the crankshaft of the engine. The control voltage has a periodically varying waveform timed with respect to the pulses realized from the monostable multivibrator. Switching transistors within the control circuit are actuated upon expiration of a predetermined time delay after the terminations of the pulses from the multivibrator. One of the switching transistors is driven into saturation for generating a first time delay, and is subsequently operated in the nonsaturated region for generating a subsequent second time delay through which the predetermined opening duration of the valve is realized.

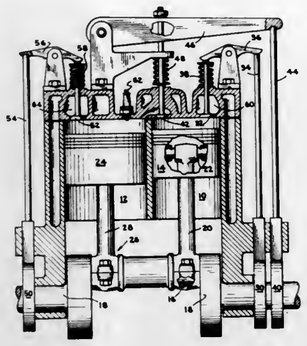
3,623,462
RADIATOR SYSTEM FOR INTERNAL COMBUSTION ENGINE
Joseph H. Anders, and Daniel J. Bosch, both of Racine, Wis., assignors to Modine Manufacturing Company
Filed Dec. 30, 1969, Ser. No. 889,033
Int. Cl. F28d *15/00*; **F01p** *3/22*
U.S. Cl. 123—41.54 **10 Claims**



A liquid coolant radiator for the cooling system of a heat-generating engine and specifically an internal combustion engine with the radiator including an inlet header, an outlet header, tubes interconnecting the headers for flow of liquid in a flow path through the engine and radiator in which the radiator portion of the flow path includes the inlet header, tubes and outlet header, a tank for separating entrained gas such as air, leaked combustion gases and the like with the tank having a space for receiving the gas and from which the gas can then be vented to the atmosphere, a tube interconnecting the tank and the coolant flow path for diverting some of the coolant with the entrained gas into the tank and a fluid flow device for inducing mixed liquid and entrained gas flow into the tank as by applying a suction in order that the gas may be separated from the coolant in the tank and vented to the atmosphere without disturbing the coolant flow in the coolant flow path.

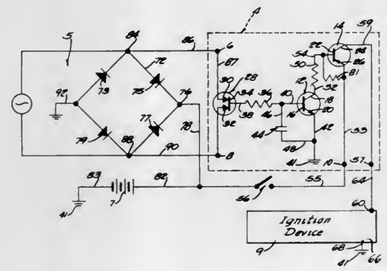
3,623,463
INTERNAL COMBUSTION ENGINE
Gerrit De Vries, 2902 N. Stonehill Drive, Altadena, Calif.
Filed Sept. 24, 1969, Ser. No. 860,515
Int. Cl. F02b *33/22*
U.S. Cl. 123—70 **9 Claims**

A four-stroke cycle internal combustion engine in which induction and compression occur in one cylinder and expansion and exhaust occur in another cylinder of greater volume to thereby increase the expansion ratio. The inlet valve for the compression cylinder, the exhaust valve for the expansion or power cylinder, and a transfer valve between the cylinders are all operated by cams affixed to the crankshaft, eliminating a half-speed camshaft and its timing gear or chain drive, whereby all four processes referred to occur in one revolution of the crankshaft rather than in two revolutions of same as in the conventional four-stroke Otto engine. Further optional features include an insulated piston in the power cylinder which effects further increase in efficiency and a heat exchanger for the compressed charge which utilizes ex-



haust waste heat for effecting a still further increase in efficiency.

3,623,464
IGNITION SAFETY CIRCUIT
Bruce L. Patis, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed June 10, 1969, Ser. No. 831,840
Int. Cl. F02p *11/00*
U.S. Cl. 123—102 **5 Claims**

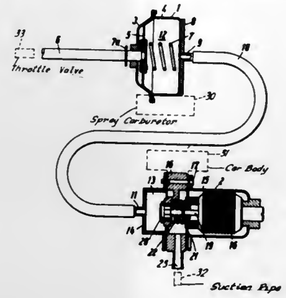


Disclosed herein is a safety circuit for an engine ignition system which includes a semiconductor switch which is in the form of two transistors and which is connectable to the engine alternator, the battery and the high-voltage power supply. The semiconductor switch is responsive to increases in current output from the alternator. When the engine starter rotates the alternator at speeds exceeding 50 revolutions per minute, the switch closes and provides a circuit path connecting the battery to the high-voltage power source to cause ignition voltages to start the engine.

3,623,465
DEVICE FOR DELAYING THE CLOSING OF A THROTTLE VALVE
Erwin Wawrziniok, Ingolstadt, Germany, assignor to Auto Union GmbH, Ingolstadt, Germany
Filed May 24, 1968, Ser. No. 731,816
Claims priority, application Germany, July 25, 1967, A 56351
Int. Cl. F02d *11/08*
U.S. Cl. 123—103 C **1 Claim**

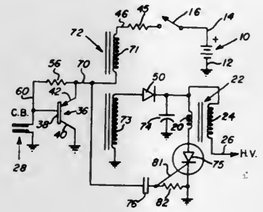
A device for delaying the closing of the throttle valve of an internal combustion engine having a spray carburetor and used for driving a car, has an operating section fixed to the

spray carburetor and a controlling section separated from the operating section and fixed to a part of the car body, the



operating space of the operating section being connected by a hose conduit with the interior of the controlling section.

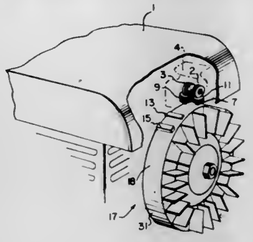
3,623,466
CURRENT TRANSFER ELECTRICAL SYSTEM
William F. Palmer, Lowell Road, Carlisle, Mass.
Continuation of application Ser. No. 707,000, Jan. 19, 1968, which is a continuation of application Ser. No. 501,436, Oct. 22, 1965. This application Aug. 6, 1969, Ser. No. 853,586
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 **4 Claims**



An electrical switching circuit utilizing transistorized components in contact controlled high voltage pulse generation which is applied to a high-ratio transformer through a diode which prevents reverse current. A parallel inductance provides for storage of energy pulses is incorporated directly with the transistor amplifier circuit. In addition a capacitor is connected in parallel across the output of the diode and a silicon controlled rectifier may be serially connected between the capacitor and step-up transformer to provide a capacitor-discharge or high voltage converter. A half-wave as well as full wave contact controlled DC converter together with trigger pulse delay means and any combination thereof using the inductive energy storage principles are disclosed.

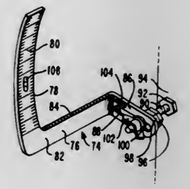
3,623,467
TRIGGERING MAGNET AND COIL ASSEMBLY FOR USE WITH AN IGNITION SYSTEM INCLUDING A PERMANENT MAGNET ALTERNATOR
Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.
Filed Nov. 24, 1969, Ser. No. 879,422
Int. Cl. F02p *1/02*
U.S. Cl. 123—149 D **10 Claims**

A triggering magnet and coil assembly for use with a permanent magnet alternator and ignition system a a spark-ignited engine is disclosed. The ignition system includes a condenser discharge circuit using a silicon-controlled rectifier for controlling the charging and discharging of a condenser; the condenser when discharged being discharged through the primary winding of a step-up transformer having its secondary winding connected to the spark plug of the engine. Triggering signals for the silicon-controlled rectifier are provided by the triggering magnet and coil assembly. The triggering



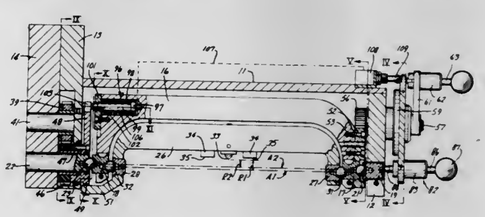
magnet and coil assembly includes a core and two coils arranged and connected to minimize the effect of the leakage field established by the permanent magnets of the alternator.

3,623,468
ARCHERY TACKLE
Robert Neville Crest, 327 San Antonio Road, Arcadia, Calif.
Filed Oct. 23, 1969, Ser. No. 868,797
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 **5 Claims**



Improved archery tackle is provided which comprises, in combination, an archery longbow and an archery bow arm guard and positioner device, preferably releasably connected to said bow. The device includes a transverse portion, a rearwardly extending spacer portion and a generally vertical arm guard portion positionable between the archer's bow arm and the bow string and being integral portions of a single bendable rod. The device may include bubble level(s) and/or distance-measuring indicia to indicate contact points of the bow arm therewith and brace height.

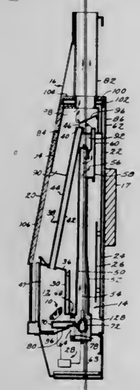
3,623,469
RADIUS DRESSER
Raymond W. Niles, Chelsea, Mich., assignor to Industrial Tectonics, Inc., Ann Arbor, Mich.
Filed Nov. 13, 1969, Ser. No. 876,317
Int. Cl. B24b *53/06*
U.S. Cl. 125—11 AT **14 Claims**



A radius dresser for generating a profile having arcuate portions generated about different centers and/or different

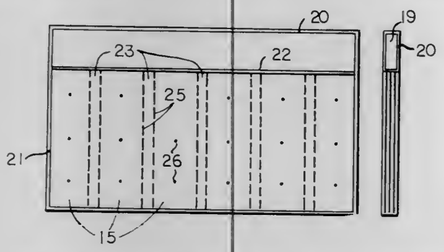
radii of rotation. The dresser includes a first swingable member mounted on a frame for pivotal movement about a first axis and a second swingable member, having a tool thereon, mounted on the first member for pivotal movement about a second axis parallel to and laterally displaced from the first axis. Control means permit the first swingable member to be fixedly connected to the frame or to the second swingable member, the angular oscillation of the second member occurring about the first axis when the first member is nonrotatably connected relative to the second member and about the second axis when the first member is nonrotatably connected to the frame. The control means also include means for permitting the first swingable member to be nonrotatably secured to the frame in a plurality of positions for permitting relative lateral displacement between said axes.

3,623,470
GAS FIREPLACE
Murray O. Wilhoite, Nashville, Tenn., assignor to Temco, Inc., Nashville, Tenn.
Filed Mar. 2, 1970, Ser. No. 15,794
Int. Cl. F24c *3/00*
U.S. Cl. 126—121 **8 Claims**



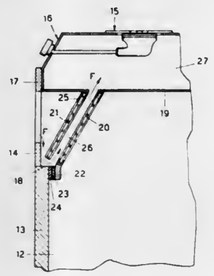
A wall-mounted, gas-fired fireplace unit includes a decorative simulated-log gas burner and a gas-fired, room-heating unit disposed behind the logs within a common decorative cabinet. Room air passes in heat exchange relationship with the exterior of the heating unit, while hot combustion products from the log burner are directly vented to avoid heating room air. A manually operable control system permits the log burner and heating unit to be used separately or together.

3,623,471
WRAPAROUND BATTERY AND HEATER
John C. Bogue, 1036 S. 1st St., Santa Monica, Calif., and Robert I. Sarbacher, 101 Ocean Ave., Arcadia, Calif.
Filed Dec. 15, 1969, Ser. No. 885,261
Int. Cl. F24j *3/00*
U.S. Cl. 126—263 **12 Claims**



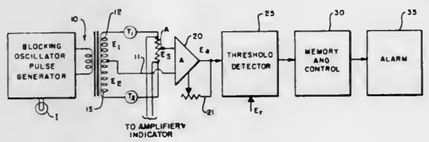
A reserve battery acting as a heating element is designed for heating the contents of a food package or container. The battery is energized at the time the contents are to be heated by releasing the electrolyte into the electrode compartment of the battery. The battery may be designed of flexible electrodes and separator and is readily wrapped around the package or container of the material to be heated. Another configuration may be inserted into a cavity in the package or container. Still another configuration may be sandwiched between two flat objects to be heated. The battery is effectively short circuited upon itself so as to generate heat evenly over the surface of the package or container. In the wraparound configuration of the battery, a special flexible insulating cover is built into the battery to reflect heat which would otherwise escape into the surrounding atmosphere and also provide protection in handling after activation.

3,623,472
COOKING STOVES
Lamberto Mazza, Pordenone, Italy, assignor to Becchi S.p.A., Forli, Italy
Filed Nov. 25, 1969, Ser. No. 879,820
Claims priority, application Italy, Nov. 28, 1968, 10603
Int. Cl. A21b *1/00*; **F24c** *15/04*
U.S. Cl. 126—273 **1 Claim**



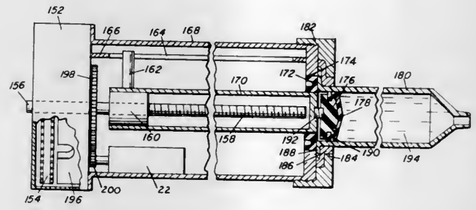
The invention relates to a cooking range with an oven which is provided with an inspection port adjacent a top front edge of the cooking range, the inspection port comprising two parallel-spaced vertically inclined transparent panes between which a passage is defined. Cooling air enters said passage from an inlet in the front of the cooking range and gets vented into the bottom region of the cooking top of the range. The transparent panes can be viewed to see the inside of the oven by a person standing in an upright position.

3,623,473
METHOD FOR DETERMINING THE ADEQUACY OF BLOOD CIRCULATION IN A LIVING BODY
Harold W. Andersen, and Charles H. Harrison, both of Oyster Bay, N.Y., assignors to H. W. Andersen Products, Inc., Oyster Bay, N.Y.
Filed Jan. 6, 1969, Ser. No. 789,255
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R **5 Claims**



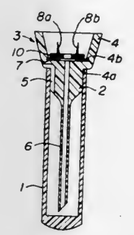
A method for determining the adequacy of blood circulation in a human or animal body by measuring the difference in temperature between at least two suitable points by means of two temperature-sensitive elements excited by voltages of predetermined magnitude and phase, including a reference voltage for comparing the pulses derived from the temperature-sensitive elements and providing for an indication at a signal level different from a threshold level.

3,623,474
ANGIOGRAPHIC INJECTION EQUIPMENT
Marlin S. Heilman, Gibsonia, and Donald Jones, Pittsburgh, both of Pa., assignors to Medrad, Incorporated, Pittsburgh, Pa.
Filed July 25, 1966, Ser. No. 567,643
Int. Cl. A61b *06/00*; **A61m** *05/20*
U.S. Cl. 128—2 R **24 Claims**



An angiographic injector system for producing a controlled rate of flow of injection fluid is described. The injector has a motor-driven piston for ejecting fluid from a syringe cartridge contained within a pressure jacket. The drive motor is operated in accordance with a command voltage which is proportional to the desired rate of flow. Sensing means detects the actual rate of flow and comparison means provides an error signal which controls the motor. Compensating means allow a single control system to operate the drive motor in conjunction with syringes of various sizes, and a tripping circuit halts the motor if the flow rate exceeds the selected rate.

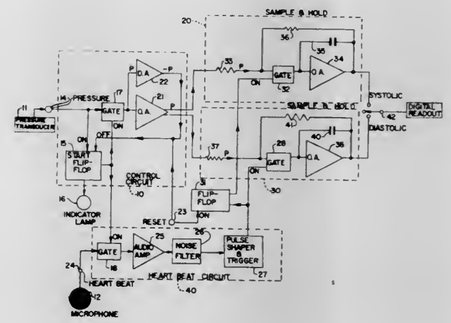
3,623,475
BLOOD COLLECTOR DEVICE
Manuel Sanz, Grand-Lancy, Geneva, and Georges Revillet, Petit-Lancy, Geneva, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.
Filed July 18, 1969, Ser. No. 843,096
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 R **8 Claims**



A tube for use in the automatic collection of a digital blood sample has its mouth fitted with a resilient detachable funnel member which can carry a capillary cannula and in which is held an absorbent annular plug through which pass and project two incisor lancets.

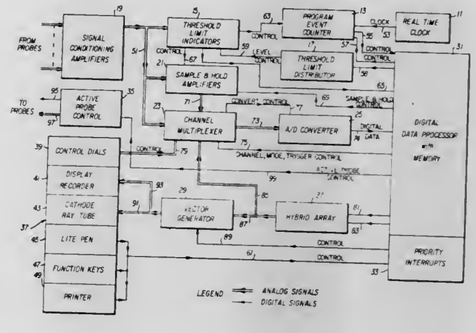
3,623,476
BLOOD PRESSURE MEASUREMENT APPARATUS
Jean J. A. Robillard, Waltham, Mass., assignor to Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 488,579, Sept. 20, 1965, now abandoned. This application Feb. 16, 1970, Ser. No. 10,080
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **11 Claims**

Blood pressure measurement apparatus is disclosed wherein pressure may be applied externally to an artery, such pressure being measured by a continuously variable parameter of an electrical signal. Heartbeat sound-detecting apparatus is coupled to signal the onset and the cessation of heartbeat sounds as the pressure on the artery is being diminished. The value of the pressure representative signal parameter is stored at both the onset and cessation of heartbeat sounds and is available to be read as the systolic and



diastolic blood pressure, respectively. A control circuit responsive to the pressure signal prevents operation of the apparatus if the pressure signal does not exceed the value of occlusion pressure or if the pressure signal decreases at a rate exceeding a predetermined value.

3,623,477
BIOMEDICAL SENSING AND DISPLAY APPARATUS
Robert L. Trent, 50 Front St., Marblehead, Mass.
Filed Apr. 15, 1969, Ser. No. 816,215
Int. Cl. A61b *5/00*
U.S. Cl. 128—2.1 B **16 Claims**

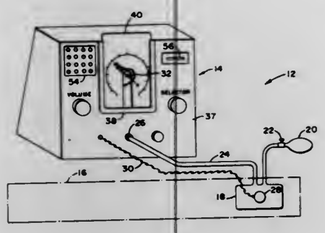


This disclosure describes a biomedical sensing and display apparatus wherein signals detected by a biomedical detecting means, such as electroencephalograph probes, are displayed on a suitable display means. In addition, the detected signals are converted from analog form into digital form and stored in a memory. Electrical system means are provided for comparing the stored signal with later detected signals and displaying the results of the comparison on a display means with the differences between the two signals being intensified. Further, electrical means are provided for applying active signals to some of the probes in order to invoke signals at other probes. In addition, an electroencephalograph probe housing wherein a plurality of probes are mounted in a semihemispherical structure is described. The housing houses microelectronic preamplifier means that are connected to the probes and includes a shielding means to prevent extraneous signals from disturbing the signals detected by the probes.

3,623,478
RECORDING SPHYGMOMANOMETER

Joseph M. Saba, Wayland, Mass., assignor to Technical Resources, Inc., Waltham, Mass.

Filed Dec. 19, 1969, Ser. No. 888,200
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 Q 4 Claims

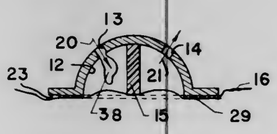


A recording sphygmomanometer adapted to print systolic and diastolic pressure indicia to form a permanent record on a heat sensitive sheet. Microphone impulses from a pressure cuff are amplified to produce current in a heating element mounted on the pointer of a manometer. The record sheet may have a printed scale adjacent the heating element and accurately positioned in relation thereto.

3,623,479
ECG ELECTRODE WITH PARTITION

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 21, 1969, Ser. No. 878,740
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E 6 Claims



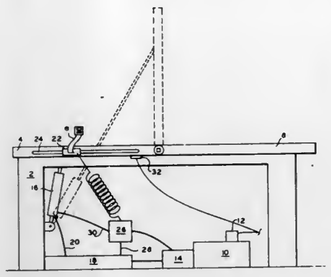
An improved cup-shaped electrode with holes therethrough to allow both ingress of electrically conductive paste and egress of entrapped air, and with a vertical partition mounted between the holes within the electrode cavity to both guide the flow of paste and air in the cavity and to prevent possible interferences therewith by a surface of the human body with which the electrode is in contact. In certain illustrative embodiments, egress holes number more than one, and vertical partitions may number more than one to improve the efficiency of the electrode.

3,623,480
BODY-MANIPULATING APPARATUS

Robert F. Chisolm, c/o F. L. Hart, 1206 May Lane, Bartlesville, Okla.

Filed July 30, 1970, Ser. No. 59,556
Int. Cl. A61h 1/02
U.S. Cl. 128—25 9 Claims

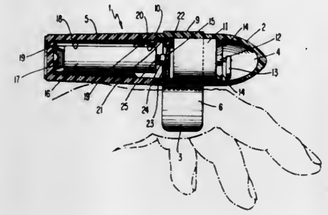
An individual's body-manipulating apparatus has first and second pivotally connected, body-supporting elements with the first element being movable between a first position at which the elements are in a common, substantially horizontal plane and a second position at which the first element is angularly disposed relative to the second element. A power and controlling means is attached to the first body-supporting element on which the portion of the person's body to be manipulated is secured. The controlling means is operably connected to the power means for actuation of the power means and movement of the first element and the individual's body portion in response to a force exerted on the controlling means.



3,623,481
GUM MASSAGE IMPLEMENT AND METHOD OF FINGER MASSAGING GUMS

William S. Curran, 14 N. Chatsworth Ave., Larchmont, N.Y.

Filed July 30, 1970, Ser. No. 59,658
Int. Cl. A61h 1/00
U.S. Cl. 128—36 17 Claims



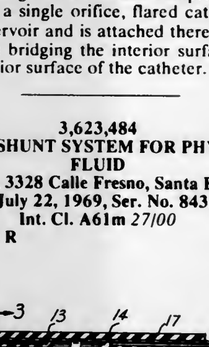
Gum massage implement comprising a portable self-contained vibration-generating member, in combination with a single finger engaging retainer connected with said member for retaining such implement in positive constant finger engaging disposition on a single finger of the user rearwardly of the tip of the finger to transmit vibrations from such member to the finger for single finger vibration massage of the gums; and concomitant method of finger massaging gums by transmitting low amplitude high-frequency vibrations from a portable self-contained vibration-generating external source to a single massaging finger of the user rearwardly of the tip of the finger and placing the resulting vibrating finger in direct contact with a portion of the gums to massage such portion by imparting in turn the force of such vibrations thereto.

3,623,482
GAS-PERCOLATING DEVICE FOR THERAPEUTIC BATH TREATMENTS

Hans Schmidt, Bad Mingolsheim, and Alfons Oestreicher, Helmsheim, both of Germany, assignors to Hans Schmidt jun, Bad Mingolsheim, Germany

Filed Nov. 13, 1969, Ser. No. 876,230
Claims priority, application Germany, Nov. 22, 1968, G 68 08 094.4
Int. Cl. A61h 9/00
U.S. Cl. 128—66 10 Claims

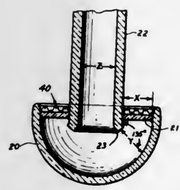
A device for passing a treatment gas into a bathtub or similar container consisting of a grate of plastic at least the upper grate boards of which have a hollow cross section to serve as gas-conducting chambers for passing the treatment gas to and through nozzle openings which are provided in the sidewalls of the adjacent upper grate boards facing each other. The gas may be conducted from a gas source under pressure to the individual upper grate boards either through a pipe which is connected to all of the upper boards or through one of the lower cross boards which likewise has a hollow cross section and is connected by resilient plugs with axial bores to each of the upper boards.



3,623,483
AUTOTRANSFUSOR ATRAUMATIC SUCTION TIP

Richard H. Dyer, Jr., Havertown, Pa., assignor to Trustees of the University of Pennsylvania

Filed July 23, 1969, Ser. No. 843,926
Int. Cl. A61m 1/00
U.S. Cl. 128—276 4 Claims

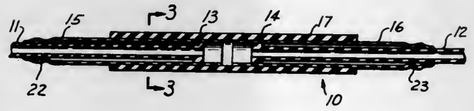


A suction tip for use in the smooth, atraumatic withdrawal of blood from a surgical field which comprises a semispherical reservoir and a single orifice, flared catheter which projects into the reservoir and is attached thereto by means of a plurality of struts bridging the interior surface of the reservoir and the exterior surface of the catheter.

3,623,484
TELESCOPING SHUNT SYSTEM FOR PHYSIOLOGICAL FLUID

Rudolf R. Schulte, 3328 Calle Fresno, Santa Barbara, Calif.

Filed July 22, 1969, Ser. No. 843,517
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R 9 Claims

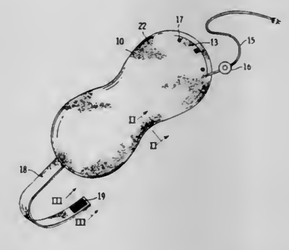


This invention relates to an auxiliary device for use with and in physiological shunt circuits for the drainage of unwanted fluids from one part of the body to another. According to this invention a telescopic section is incorporated into a shunt catheter so that when one end of the system is implanted in an area of the body to be drained (such as the ventricles of the brain) and the other end of the system is implanted in a portion of the body into which the fluid must be drained (such as the heart), then, when there is bodily growth which would require elongation of the system, the telescopic portion will elongate and thus prolong the period before the system or some part of it must be replaced to compensate for normal growth. The catheter incorporating the telescopic section is made in two segments having flanged ends which contact the inside of a silicone rubber cylinder and are fluidtight, but can move longitudinally under tensile loads applied as a consequence of the growth of the child. The flanged ends may be radiopaque in order that the elongation may be checked by X-ray. These ends are held against withdrawal.

3,623,485
HEATING PAD COVER

David Bowen Price, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1970, Ser. No. 7,078
Int. Cl. A61f 7/00
U.S. Cl. 128—402 4 Claims



A fabric cover for a heating pad having an exposed surface of the cover comprising a fabric with a nap of loose closed loop nonmatting plush pile and a strap or extension of the cover, attached at one end to the cover and a strip of Velcro hook material secured at the other end thereof on the side opposite the plush pile surface of the cover so that when the cover, enclosing the pad, and the extension are wrapped about a person, the Velcro hook will come in contact with the plush pile and secure itself thereto to hold the pad about the wearer and provide for infinitely adjustable attachment.

3,623,486
DOUBLE RATE DEMAND PACEMAKER

Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 1, 1969, Ser. No. 862,695
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 8 Claims

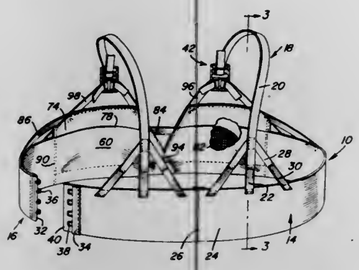


A double rate demand pacer having a bistable magnetic reed switch connected to an RC charging circuit for selectively short-circuiting one of two series-connected resistors. The pacer can be switched between two rates dependent upon the polarity of a magnetic pole brought into its vicinity. A monostable magnetic reed switch is also incorporated in the circuit. A magnetic field of either polarity operates the monostable magnetic reed switch to place the pacer in the continuous mode; as soon as the magnetic field is removed, the pacer reverts to the demand mode with the rate being determined by the polarity of the last-applied magnetic field.

3,623,487
BRASSIERE WITH ADJUSTABLE STRAPS AND CUP SUPPORT

Winton C. Chiu, 1901 E. 23rd St., Oakland, Calif.

Filed Jan. 17, 1969, Ser. No. 791,998
Int. Cl. A41c 3/10; A41d 25/16
U.S. Cl. 128—467 4 Claims

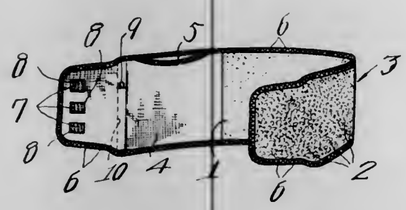


A garment construction employing features incorporated into various garments such as brassieres, swimsuits, dresses, nightgowns, athletic supports for men and the like with the features including a novel buckle structure, adjustable supporting straps, reinforcing cups and a rearrangement of detachable fasteners to facilitate use of the garment.

3,623,488
BELLY-BAND

Takeo Nakayama, 11, 19, 5-chome Minami-senju, Arakawa-ku, Tokyo, Japan

Filed Aug. 15, 1969, Ser. No. 850,581
Int. Cl. A41c 1/00
U.S. Cl. 128—549 8 Claims



A belly-band having a main body formed of a relatively thin rubberized web, a piled rubberized relatively thick textured member adhered to one side of the main body having the same configuration as the main body. The main body and textured member are sewed together along their peripheral edges. Synthetic resin hook pieces are sewed to the other side of the main body, and have bristles on their exposed sides whereby when the band is applied on the belly of a person the piles of the textured member may be interlocked with the bristles of the hook pieces to maintain the belly-band on the belly in a stabilized state.

3,623,489
TOBACCO SMOKING ARTICLE

Alton DeWitt Quinn, Cranford, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,820
Int. Cl. A24b 15/04
U.S. Cl. 131—9 4 Claims

The formation of a shredded tobacco material having intimately mixed therewith a microencapsulated synthetic clove flavoring material wherein the capsules are of such a size as to create an audible crackling sound when burned and the incorporation thereof into smoking articles such as cigarettes, cigars, etc. The capsules may also contain a tobacco flavor enhancer.

3,623,490
TOBACCO-SMOKE FILTERS

Thomas William Charles Tolman, Eastleigh, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

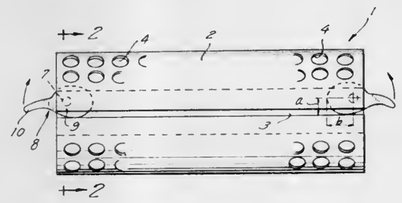
Filed Dec. 15, 1969, Ser. No. 885,275
Int. Cl. A24b 15/02; A24d 01/06
U.S. Cl. 131—267 2 Claims

The invention concerns an improved filter for tobacco smoke comprising fibrous, filamentary or sheet tobacco-smoke filtering material treated with a stable, involatile, free-radical containing substance selected from the group consisting of 9-oxyl-bicyclo-(3,3,1)-nonan-3-one; 1-nitronyl-3-oxyl-4,4,5,5-tetramethyl-2-phenyldihydroimidazole; and 1-oxyl-3-nitronyl-4,5-phenanthro-2-methyldihydroimidazole.

3,623,491
HAIR ROLLER

William Garrett, Elmhurst, N.Y., assignor to Flairescene Ltd., New York, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,830
Int. Cl. A45d 2/24
U.S. Cl. 132—39 7 Claims

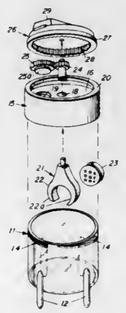


A hair roller which is circumferentially expandable in order to stretch a lock of wound hair, with the expansion of the roller being accomplished without the aid of additional tools.

3,623,492
CONTACT LENS WASHER WITH LENS STORAGE

Dolph G. Frantz, 3212 Dorchester Drive, and William Joseph, 3719 Berkley Drive, both of Montgomery, Ala.

Filed Sept. 24, 1969, Ser. No. 860,742
Int. Cl. B08b 3/04, 11/02
U.S. Cl. 134—143 3 Claims

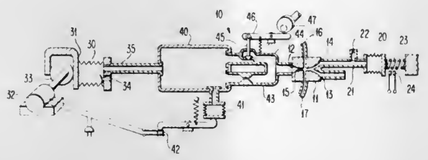


There is a container to hold lens washing fluid. A member is rotatably mounted in a lidlike member mounted on this container. This rotatably mounted member has a lower part that removably receives a perforated case for a contact lens. Mounted on the lidlike member is a turn knob that through gearing mounted in the lid turns the rotatable member carrying the lens case so that washing takes place of the contact lens carried in the perforated case. The container has spaced-apart depending legs between which a lens case carrier may be stored. The turn knob has two compartments with hinged tops for storage of right and left contact lenses.

3,623,493
METHOD AND SYSTEM FOR OPERATING FLUID LOGIC DEVICES

Meredith A. Hunter, Versailles, and Richard E. Languell, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1969, Ser. No. 838,111
Int. Cl. F15c 1/10; F17d 3/00
U.S. Cl. 137—2 13 Claims

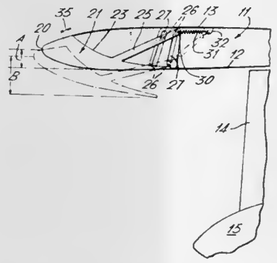


A bistable pure fluid jet logic device is operated at low primary flow levels for efficiently performing information storage functions including switching and data retention, and is operated at substantially greater primary flow level for generating substantial work output without jeopardizing the information stored.

3,623,494
AIR INTAKES FOR GAS TURBINE ENGINES

Michael Poucher, Duffield, England, assignor to Rolls-Royce Limited, Derby, England

Filed Oct. 2, 1970, Ser. No. 77,638
Claims priority, application Great Britain, Oct. 3, 1969, 48,809/69
Int. Cl. F02b 27/02; F02r 11/00
U.S. Cl. 137—15.2 8 Claims



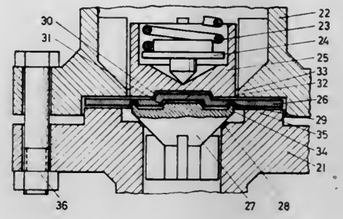
The invention concerns an air intake for a gas turbine engine including an upstream lip which is movable relative to a fixed pod member, displaceable pressure-responsive means associated with the said lip and subjected to opposing forces respectively due to the static pressure within the said intake and to ambient air pressure, the displacement of said pressure-responsive means causing movement of said lip to vary the contraction ratio of the said intake automatically and solely in response to the relative magnitudes of said pressures.

3,623,495
PRESSURE-RELIEF VALVE AND DIAPHRAGM FOR SUCH VALVE

Karl Friedrich Erb, Demollstrasse 3, 8 Munich 19, Germany

Filed Nov. 2, 1967, Ser. No. 680,137
Int. Cl. F16k 17/16
U.S. Cl. 137—69 4 Claims

According to the invention the present pressure relief or safety valve comprises a diaphragm having an oversized thickness but with a groove in such a diaphragm to facilitate the rupture of the diaphragm. The valve may be equipped

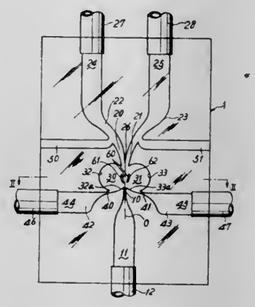


with upper and/or lower grooving means for pressing or cutting such groove into the diaphragm.

3,623,496
FLUID AMPLIFIER WITH SATURATION CHARACTERISTIC

Minoru Kawabata, Chita, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan

Filed Feb. 20, 1970, Ser. No. 12,929
Claims priority, application Japan, Feb. 28, 1969, 44/15738
Int. Cl. F15c 1/14, 1/16
U.S. Cl. 137—81.5 6 Claims



A fluid amplifier with a saturation characteristic, the amplifier consisting of a main fluid inlet conduit supplied with a fluid to be controlled, a plurality of fluid flow outlet conduits disposed downstream of the main fluid inlet conduit at a predetermined distance to receive the controlled flow from the main inlet conduit, a vortex chamber between the main fluid inlet conduit and the fluid flow outlet conduit for producing vortex flow, control fluid inlet nozzles directed into said vortex chamber in the same direction as the vortex flow and supplied with control flow fluid for acting on the vortex flow to control the deflection of the fluid from the main fluid inlet conduit, and airfoillike elements positioned within the vortex chamber in alignment with the fluid flow from the main inlet conduit for limiting the deflection of the fluid flow from the main fluid inlet conduit to maintain a saturated condition of deflected main fluid flow.

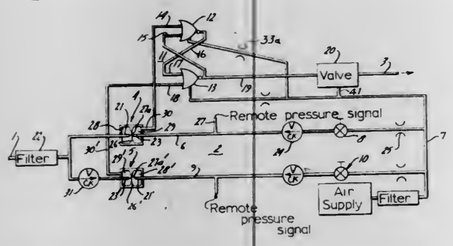
3,623,497
FLUIDIC SWITCH

Donald L. Kaske, Waukesha, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 8, 1969, Ser. No. 882,964
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 10 Claims

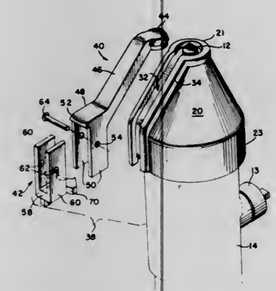
A fluidic differential switch includes a pair of summing impact modulators each having opposed nozzles referred to as

independent and dependent nozzles for reference purposes. The summing impact modulators are reversely connected with respect to a signal input and a reference input. Thus, the outputs of the modulators are connected to a pair of fluidic "Nor" gates, each of which has a pair of input signal means



controlling a main signal stream. The one input for each of the fluidic "Nor" gates is interconnected to a modulator and the other input is interconnected to the output of the opposite "Nor" gate. The switch output is taken from one of the "Nor" gates.

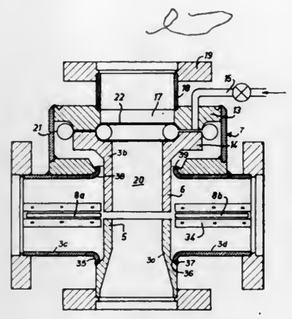
3,623,498
HYDRANT GUARD
Gerald J. Manahan, West Orange, and Otto A. Hoeckel, Lake Hiawatha, both of N.J., assignors to United States Pipe and Foundry Company
Filed May 25, 1970, Ser. No. 40,007
Int. Cl. F16k *35/12*
U.S. Cl. 137—296 **9 Claims**



The present invention relates to a tamperproof hydrant assembly comprising a hydrant having a barrel; a bonnet attached to the barrel and having a hollow top portion extending above and about the operating nut of the hydrant, a skirt portion extending about the bottom thereof and spaced from the barrel, and a groove on the exterior of the bonnet; and locking means comprising strap means seated in the bonnet groove and extending downwardly from the hollow top portion of the bonnet and clamp means removably attached to said strap means and adapted to interlock with the bonnet skirt.

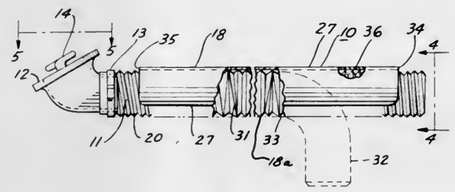
3,623,499
STOP VALVES
Rene Bernard, 15 Avenue Berthelat, Lyon 7,(Rhone), France
Filed June 26, 1969, Ser. No. 836,804
Claims priority, application France, Feb. 7, 1968, 3523
Int. Cl. F16k *3/10, 43/00*
U.S. Cl. 137—329.01 **13 Claims**

A stop valve of the kind including a valve seat and a pair of movable blocking discs selectively movable into position on a valve seat wherein at least one closable opening is provided to enable one disc to be withdrawn therethrough when the other is urged against the seat. The valve body may be of cru-



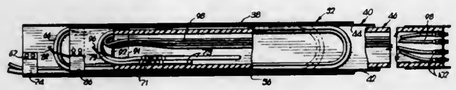
ciform shape formed of thin-walled tubes which are welded together and a piston may be provided to urge either or each disc against the seat.

3,623,500
FLUID CONDUIT CONTROL
Donald D. Hoy, P.O. Box 197, Highland, Mich.
Filed Dec. 29, 1969, Ser. No. 888,619
Int. Cl. B05b *9/02*
U.S. Cl. 137—344 **3 Claims**



My invention provides a selectively adjustable, flexible, expandable and rigid fluid conduit control for aboveground carrying off of fluids, liquids or other matter. The device may be connected to portable houses such as travel trailers, campers, truck campers, or motor homes for carrying off liquids or other waste matter from such houses.

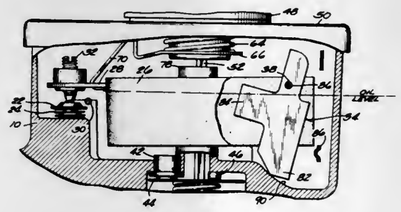
3,623,501
CONTINUOUS HYDRAULIC HOSE STRUCTURE FOR TELESCOPIC BOOM ASSEMBLY
James J. Reimbold, Overland Park, Kans., assignor to A. B. Chance Company, Centralia, Mo.
Filed July 13, 1970, Ser. No. 54,287
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.17 **12 Claims**



A telescopic boom assembly having stacked hydraulic hose structure disposed in configuration in the assembly and

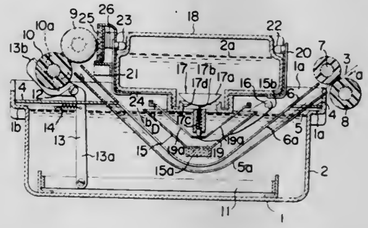
mounted for removal therefrom as a unit. The hose package is adapted for use on extensible boom structure having at least a pair of telescoping boom sections provided with a fluid-actuated extension cylinder and a source of pressurized fluid for operating the same. A plurality of elongated conduit means, each of which is provided with a fluid-conveying passage, are mechanically interconnected in vertically stacked relationship to present a continuous conduit assembly presenting a plurality of separate passages in superimposed relationship. The conduit assembly is constructed and arranged in the boom structure in disposition to prevent flexing thereof in a vertical plane, and clamp means readily accessible from one end of the boom structure secures the conduit assembly to the boom sections in a serpentine, closed loop configuration with the individual loops thereof lying in generally horizontal planes and confined by the sidewalls of a corresponding boom section to preclude kinking of the conduits during extension and retraction of the boom sections and consequent folding and unfolding of the looped portions of the conduits. Appropriate coupling means secure opposite ends of the conduits to the cylinder and the fluid source respectively. A second conduit assembly having a plurality of conduits presenting hydraulic fluid-conveying passages also disposed in vertically stacked, superimposed relationship is normally placed side-by-side with the first conduit assembly to deliver fluid to the outer end of the outermost movable boom section for operating controls or power tools. The second conduit assembly is normally provided with at least four superimposed conduits disposed in vertically stacked, continuous, serpentine loop configuration and secured by appropriate clamps in the same manner as the first-mentioned conduit assembly.

3,623,502
SAFETY FLOAT FOR OIL CONTROL VALVE
Harry L. Giwosky, Milwaukee, Wis., assignor to Controls Company of America, Melrose Park, Ill.
Filed July 6, 1970, Ser. No. 52,602
Int. Cl. F16k *31/28*
U.S. Cl. 137—400 **9 Claims**



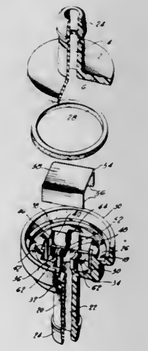
The pivoted main float acts on the inlet valve to regulate flow into the float chamber to maintain a constant level. The auxiliary float carried by the main float has its center of buoyancy under normal conditions located at CB_1, which is to the right of the pivot for the auxiliary float and, as such, merely adds its buoyance to that main float. If the inlet valve should leak, the oil level in the chamber rises and starts to float the other arm of the auxiliary float, causing the center of buoyancy to shift to CB_2, which will cause the auxiliary float to exert additional force on the inlet valve in the closing direction and will also swing the auxiliary float to a position blocking return of the float to the normal position until manually reset. The manually operated knob regulates rotation of the metering disc to control the flow rate through the outlet. The undulating surface engaged by the rollers is a detent mechanism cooperating with the metering disc and knob to index the metering disc and knob to their various operative positions.

3,623,503
DEVELOPING LIQUID FEED DEVICE FOR WET PROCESS ELECTROPHOTOGRAPHIC APPARATUS
Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1970, Ser. No. 31,629
Claims priority, application Japan, Apr. 25, 1969, 44/32510
Int. Cl. G05d *9/00*
U.S. Cl. 137—454 **4 Claims**



A developing liquid feed device to be used in a wet process electrophotographic apparatus for feeding a developing liquid having a toner concentration higher than that of the developing solution in the main developing chamber, comprising a developing liquid feed storage tank having a normally closed valve therein which valve is opened by appropriate means when the tank is mounted upon the main developing chamber permitting the developing liquid therein to be metered into the main developing solution. A premix chamber is floated in the main developing solution beneath the valve in the storage tank to receive the developing liquid passing therethrough. This premix chamber is provided with means for exerting a buoyant force sufficient to overcome the head of the developing liquid and thus maintains the uppermost edge of the premix chamber above the level of the developing solution. When the developing solution is at a predetermined level, the developing liquid in the premix chamber closes off the valve so that there is no metering of the developing liquid from the storage tank, but when the solution drops below the predetermined level, the concurrent dropping of the premix chamber opens the valve, permitting developing liquid to pass through the premix chamber into the main developing chamber until the solution is again raised to the predetermined level.

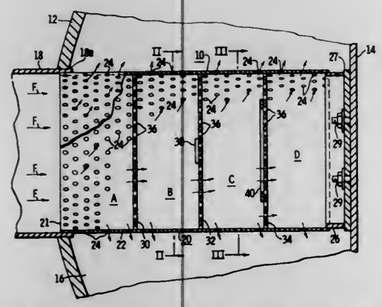
3,623,504
CHECK VALVE ASSEMBLY
Joseph W. Davis, Springfield, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Apr. 14, 1970, Ser. No. 28,305
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **11 Claims**



The following specification describes a check valve assembly in which a plural-sided interconnecting passageway is

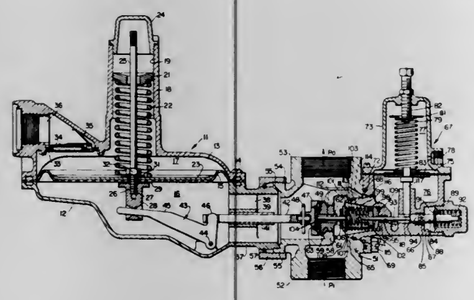
provided between passageways in adjacent couplings. A flexible rectangular diaphragm longer than the distance between two of the sides in the interconnecting passageway is deposited between the two sides so that the diaphragm is bent into a loop or U with the backwall adapted to move against or from the end of one coupling passageway to close or open the same. A stop in the interconnecting passageway prevents excessive inward bending or movement of the diaphragm.

3,623,505
FLOW DISTRIBUTION DEVICE
Eugene J. Barsness, Broomall, Pa., and Stuart P. Simpson, Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 20, 1969, Ser. No. 851,550
Int. Cl. F17c *13/00*
U.S. Cl. 137—592 **5 Claims**



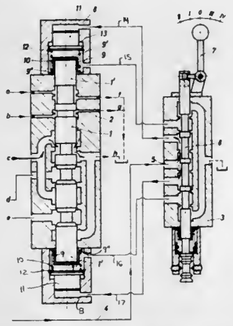
A duct of axially elongated tubular shape having a plurality of outlet openings in its tubular wall and a series of perforated partitions of varying flow resistance along the length of the duct. The partitions add pressure drop to fluid flow therethrough to counteract the changing fluid momentum in the duct as fluid is bled from the outlet openings, thereby giving uniformly distributed flow through the outlets with lower pressure loss than heretofore.

3,623,506
SERVICE REGULATOR WITH HIGH-LOW PRESSURE CUTOFF DEVICE
Joseph A. Bonner, Pittsburgh, and Howard J. Evans, New Kensington, both of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Sept. 22, 1969, Ser. No. 859,712
Int. Cl. F16k *17/22*
U.S. Cl. 137—613 **17 Claims**



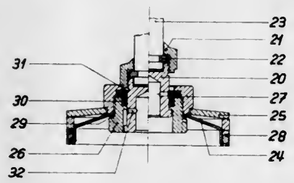
A gas pressure regulator comprises a body having an inlet and an outlet and internal opposed annular valve seats surrounding a flow passage. A main diaphragm controlled valve assembly responsive to downstream gas pressure has a valve head adapted to be located relative to one valve seat to normally provide a substantially constant downstream pressure. A cutoff valve assembly at the other side of said wall comprises a movably mounted valve member adapted to engage the other valve seat.
Independent mechanisms are provided for automatic spring powered movement of said cutoff valve member to closed position when the downstream gas pressure is above or below predetermined limits.

3,623,507
CONTROL ELEMENT FOR HYDRAULIC CYLINDERS
Edmund Vogg, Friedberg, and Wilhelm Renner, Kissing, both of Germany, assignors to Eisenwerk Gebr. Frisch KG Augsburg, Kissing, Germany
Filed Aug. 21, 1970, Ser. No. 65,865
Claims priority, application Germany, Aug. 25, 1969, P 19 43 208.7
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.66 **3 Claims**



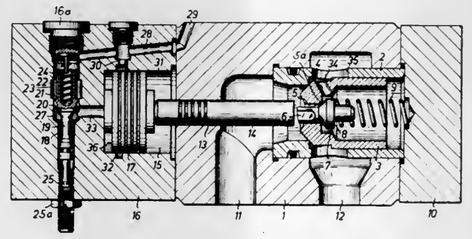
A control element for hydraulic cylinders particularly adapted for actuating working tools mounted on earth-moving machines and the like, wherein the front end of the control element is hydraulically biased against the force of springs to maintain the control element in a neutral position. In order to limit the stroke of the ends of the control element, pistons are provided at the ends which have a diameter larger than a diameter of the ends of the control element, and are displaced longitudinally between a pair of limits within variable springs. The springs are also supported between the inner side of the pistons and supports and caps, loosely placed over the ends of the control element. The caps serve as a collar or strap so that the ends are longitudinally displaced with respect to the control element housing.

3,623,508
SHUTOFF VALVE
Richard Huber, Modling near Wien, Austria, assignor to Istag A.G. Suhr/AG, Suhr, Aargau, Switzerland
Filed June 16, 1969, Ser. No. 833,412
Claims priority, application Austria, June 14, 1968, A 5729/68
Int. Cl. F16k *11/14*
U.S. Cl. 137—630.14 **13 Claims**



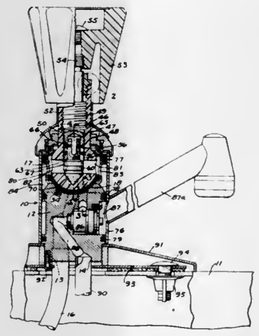
A shutoff valve comprises a valve casing, a plunger constituted of two parts and carrying an axially compressible sealing ring initially biased between the two parts of the plunger, and a plunger operating spindle arranged for further movement in a closing direction after one of said plunger parts in closing position abuts against a shoulder of the valve casing, to increase the axial bias of the sealing ring. The two parts of the plunger are connected to the operating spindle in axially fixed positions by means of a threaded arrangement and they are elastically deformable upon the further movement of the spindle. The plunger parts are axially biased with respect to one another by adjustment of the members of the threaded arrangement.

3,623,509
CHECK VALVE CONTROLLING HYDRAULIC APPARATUS
Gerhard Sesseler, Ludwigsburg; Rainer Hoheisel, Kornwestheim, and Heinz Walter, Ditzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 10, 1969, Ser. No. 883,931
Claims priority, application Germany, Dec. 12, 1968, P 18 14 214.8
Int. Cl. F16k *15/18*
U.S. Cl. 137—630.15 **10 Claims**



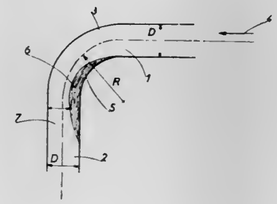
A check valve means including a main check valve and an auxiliary check valve mounted on the main check valve, is slowly opened by first opening the auxiliary check valve and then opening the main check valve. The check valves are controlled by a piston which is at first slowly moved by a throttled flow of fluid to open the auxiliary check valve whereby a pressure surge in the conduit of the check valves is avoided. Thereupon, the piston opens a port through which a pressure fluid is supplied into the cylinder so that the piston is rapidly accelerated and fully opens the main check valve.

3,623,510
SINGLE HANDLE FAUCET VALVE
Terence G. Hare, Union Lake, and Hugh McCormick, Dearborn, both of Mich., assignors to Miller Manufacturing Company, South Field, Mich.
Filed July 25, 1969, Ser. No. 844,869
Int. Cl. F16k *11/06*
U.S. Cl. 137—636.3 **18 Claims**



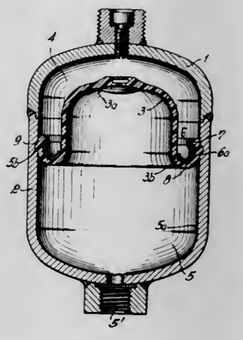
The single handle faucet disclosed herein comprises a faucet body which has a pair of inlets for hot and cold water and a liquid outlet. A valve body is mounted for swinging movement in a single plane within the body and has a spherical surface that is complementary to a similar compressible spherical surface on the faucet body. The valve body has a valve seat therein and passages extend from the spherical surface of the valve body to the valve seat. A valve stem is mounted within the valve body and supports a bib which is movable toward and away from the valve seat. Seals are provided on the valve.

3,623,511
TUBULAR CONDUITS HAVING A BENT PORTION AND CARRYING A FLUID
Leon Levin, Seyssinet, France, assignor to Societe anonyme dite: B.V.S., Grenoble, France
Filed Feb. 16, 1970, Ser. No. 11,692
Int. Cl. F15d *1/02*
U.S. Cl. 138—39 **3 Claims**



A curved pipe is provided having a varying shape but constant area cross section to reduce pressure drop across the bend.

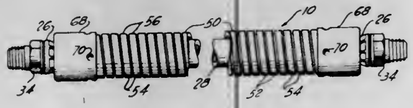
3,623,512
PRESSURE RESERVOIR
Hans Ellwanger, Stuttgart, and Herbert Trautewein, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 26, 1969, Ser. No. 880,233
Claims priority, application Germany, Nov. 29, 1968, G 68 09 162.3
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **3 Claims**



An upper gas chamber and a lower pressure fluid chamber separated from each other by a diaphragm deflectable in direction of the gas chamber in response to pressure fluid admitted into the lower chamber. The diaphragm comprises a peripheral portion which, by means of an annular element, is sealingly pressed against the inner wall of the reservoir. The annular element has an arcuately curved circumferential guide surface which faces towards the fluid pressure chamber such that upon admittance of a fluid pressure in this latter chamber the center portion of the diaphragm is deflected into the gas chamber whereby the peripheral portion con-

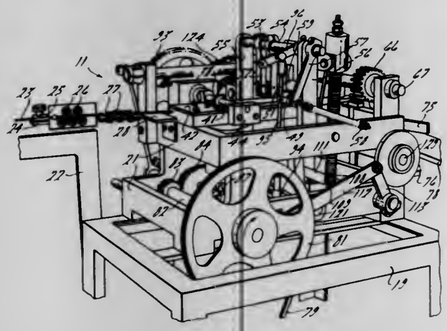
tacts the guide surface of the annular element and is thereby arcuately deformed which avoids acute bending and consequent breaking of the peripheral portion.

3,623,513
HIGH-PRESSURE FLEXIBLE HOSE SHEATH
Henry T. Dinkelkamp, Mount Prospect, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 16, 1970, Ser. No. 11,579
Int. Cl. F16l *9/18, 9/14*
U.S. Cl. 138—114 **7 Claims**



The following specification describes a metal sheath enclosing a high-pressure flexible hose with the sheath arranged in interlocked spiral turns spaced from the hose and axially movable relative to the hose.

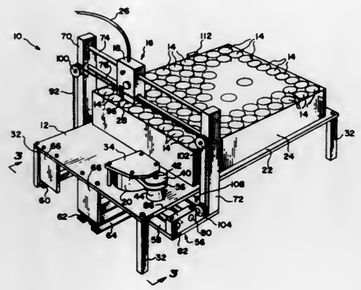
3,623,514
MACHINE FOR THE MANUFACTURE OF WIRE BINDERS
Ernst Pfaffle, Neuffen-Wuerttemberg, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.
Filed Dec. 30, 1969, Ser. No. 889,085
Int. Cl. B21f *3/04, 45/16*
U.S. Cl. 140—71 R **12 Claims**



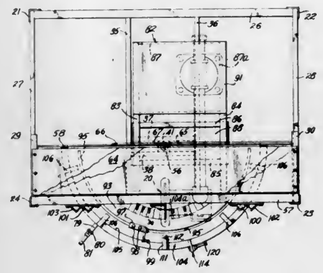
A machine for making zigzag wire binders for notebooks and the like. A rotating disk with projections bends the wire and causes the ends to ride up an internal thread. A coacting wheel with intermittent slots further bends the wire halfway between the first bends to form the zigzag. The latter passes under a top die and between side dies to form a partially curved zigzag binder for entry in the holes of the notebook sheets.

3,623,515
FRACTION COLLECTOR
Warren E. Gilson, 4801 Sheboygan Ave., Madison, Wis.
Filed Sept. 26, 1969, Ser. No. 861,367
Int. Cl. B65b *43/54*
U.S. Cl. 141—130 **5 Claims**

A rectangular array of containers arranged in rows and columns is supported beneath a filling structure. A flexible endless drive member is mounted to move through a pattern corresponding to the array of containers, and the filling structure is drivingly coupled to a segment of the flexible endless drive member. A single drive motor operates the flexible endless drive member sequentially to move the filling structure into registration with each container.



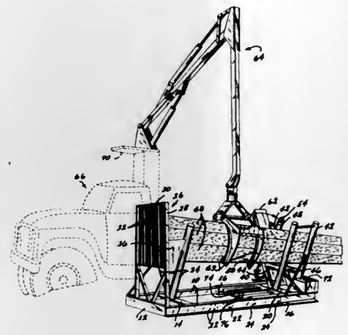
3,623,516
RADIAL SAW TURNTABLE
Chester E. Kirk, Corvallis, Oreg., assignor to Speed Cut Inc., Corvallis, Oreg.
Filed Aug. 1, 1969, Ser. No. 846,828
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 A **3 Claims**



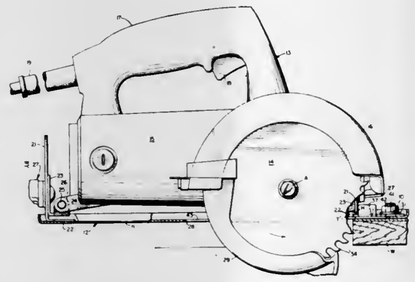
A turntable is provided on which a conventional radial saw is mounted so that the center of the pivotal adjustment of the saw angle is through the straightedge guide at the side of the board-supporting portion of the turntable. This arrangement provides a maximum length of cut at all angular settings of the saw with all of the cuts starting centrally of the board-supporting table.

3,623,517
METHOD AND APPARATUS FOR CUTTING TREES INTO MEASURED SECTIONS
Karl R. Neumann, Ladysmith, Wis., assignor to Omark Industries, Inc., Portland, Oreg.
Continuation of application Ser. No. 801,413, Feb. 24, 1969, now abandoned. This application Oct. 23, 1970, Ser. No. 83,669
Int. Cl. B27b *17/00, 29/00*
U.S. Cl. 143—32 **8 Claims**

An elongated frame carries a headboard at one end, a V-shaped holder with a crossbar adjacent the headboard, and a double V-shaped holder with double crossbars spaced from the headboard a distance equal to the desired lengths of the logs. Tree length logs are supported on the crossbars abutted against the headboard. A chain saw positioned between the V-shaped members of the double V-shaped holder severs the logs. The outside crossbar of the double V-shaped holder is slightly lower than the supported logs so that as the logs are cut the weight of the logs beyond the saw produces an effective downward force to open the cut and prevent binding of the saw. The double V-shaped holder with saw may be adjustable with respect to the backboard to vary the lengths of the severed sections.



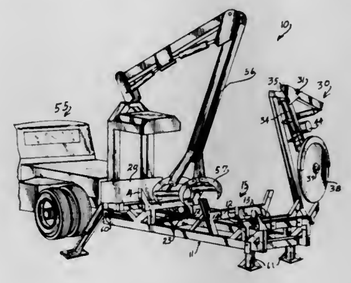
3,623,518
ANTISPLINTER INSERT FOR PORTABLE SAWS
Joseph P. Nicotra, Syracuse, N.Y., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Mar. 9, 1970, Ser. No. 17,760
Int. Cl. B27b *9/00*
U.S. Cl. 143—43 A **6 Claims**



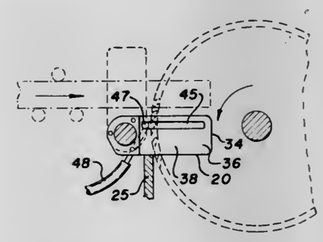
A portable circular saw antisplintering insert for removable association with the shoe plate of the saw including a plate formed with an edge opening slot and designed to firmly bear upon the upper surface of a workpiece in close adjacent relation to the sides and tips of the emerging cutting teeth to prevent tearing and chipping of the upper lamination or formica or like covering of the workpiece and assure a clean finish cutting of such workpieces.

3,623,519
PULPWOOD SLASHER
Thomas H. Radle, Orr, Minn., assignor to Elmer Mrozek, Waukesha, Wis.
Filed Oct. 29, 1969, Ser. No. 872,222
Int. Cl. B27b *11/12*
U.S. Cl. 143—46 R **4 Claims**

A longitudinal frame having a log-supporting surface for the reception of multiple stems of pulpwood positioned and secured thereon by a boom and grapple. A longitudinally movable butt plate at one end of the log-supporting surface engages the adjacent butt ends of the logs to index same into even lengths relative to a circular saw mounted at the other end of the log-supporting surface. The circular saw is mounted for movements in a plane, perpendicular to the log-supporting surface, at any given angle in the plane, through 180° of arc, relative to the log-supporting surface to saw the pulpwood into short common lengths and the boom and grapple is utilized to remove the cut lengths from the supporting surface.



3,623,520
SAW GUIDE APPARATUS
Peter J. Neild, North Vancouver, B. C., Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed Sept. 17, 1969, Ser. No. 858,707
Int. Cl. B27b *11/02, 13/10, 13/12*
U.S. Cl. 143—164 **8 Claims**

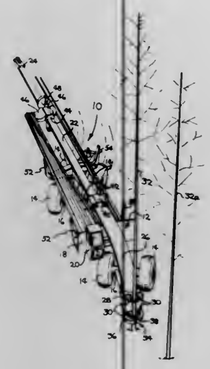


There is disclosed saw guide apparatus for sawing machines and sawing machines incorporating this apparatus. The saw guide apparatus has guide arms to be positioned on opposite sides of a saw blade, and spaced slightly from the surfaces thereof. These arms have surfaces opposed to the blade faces, and there is provided means for directing a liquid through and outwardly from these surfaces so as to apply films of the liquid on to the faces of the blades.

3,623,521
TREE HARVESTER
Dean W. Shields, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 11, 1970, Ser. No. 45,314
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC **9 Claims**

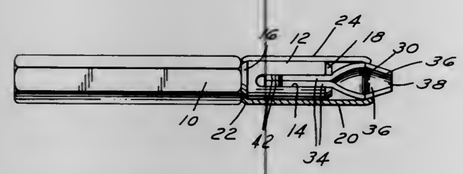
A novel and improved tree-harvesting method and apparatus adapted to cut, delimb, top, sort, transport, and deposit a plurality of trees in two sorted stacks at a desired collection point. The tree harvester features a horizontally oriented mast which is mounted on a mobile vehicle. A butt shear and felling grapple are mounted at one end of the mast and are adapted to grasp and sever a standing tree and pivot it to a substantially horizontal position overlying the mast where it is grasped and securely held by a transfer grapple. A combination delimber and top shear is mounted for longitudinal movement on the top of the mast and is adapted to be

driven along the tree to strip all limbs from the tree and also to remove the top portion of the tree at either a predetermined length or diameter. After the tree has been delimbed and topped, it is dropped by the transfer grapple into one of two sets of collection arms positioned at intervals along opposite sides of the mast and adapted to hold a large number



of delimbed, topped and sorted trees to be transported by the tree harvester to desired collection points where the trees are deposited in separate sorted stacks. The positioning of collection arms on opposite sides of the mast allows the operator to sort the delimbed and topped trees (e.g. according to length or type of wood) and drop them into the appropriate collection arms.

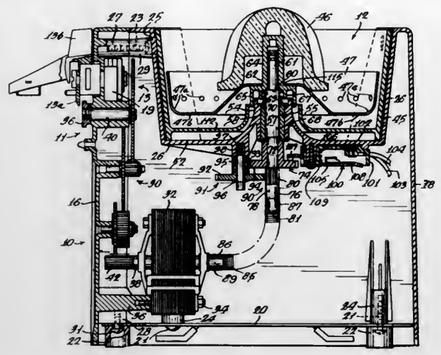
3,623,522
SCREWDRIVER WITH REPLACEABLE NIB
Fritz L. Lindberg, 2726 Mount Elliott Ave., Flint, Mich.
Filed Apr. 22, 1970, Ser. No. 30,776
Int. Cl. B25b *15/00*
U.S. Cl. 145—50 A **7 Claims**



A screwdriver with a replaceable nib for use in production procedures to permit replacement of the nib due to wear without replacement of the entire tool. The basic concept involves a split nib which permits ready removal but adequate retention during use.

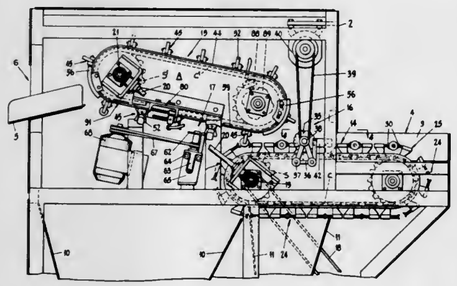
3,623,523
COMBINATION CAN OPENER AND JUICER
Donald R. Meyer, Thiensville, Wis., and Albert C. Tsang, Monroeville, Pa., assignors to John Oster Manufacturing Co., Milwaukee, Wis.
Filed Apr. 17, 1969, Ser. No. 817,054
Int. Cl. A47j *19/00*, **B17b** *7/38*
U.S. Cl. 146—3 E **14 Claims**

A combination can opener-juicer appliance having an electric motor, a speed reduction gear assembly interconnecting the output shaft of the motor and the can opener's feed wheel and a flexible drive cable interconnecting the output shaft of the motor and the juicer's rotating mechanism. The can opener and the juicer include switching devices that are actuated automatically to commence and terminate the operation of their respective mechanism. The components of



a combination can opener-juicer appliance nested together to provide a compact multipurpose appliance with the components of the juicer arranged for easy cleaning.

3,623,524
MACHINE FOR PREPARING ONIONS
Edwin James Buck, Victoria, Australia, assignor to Tripax Engineering Company Proprietary Limited, Victoria, Australia
Filed Dec. 11, 1968, Ser. No. 788,679
Int. Cl. A23n *15/04*
U.S. Cl. 146—43 **12 Claims**

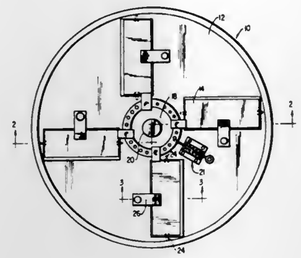


An onion-preparing machine comprising a conveyor adapted to carry onions past two spaced blades to cut a predetermined portion from the top and tail of the onions, a further conveyor adapted to receive the onions from the first-mentioned conveyor and carry them past two further spaced blades which slit the skin and adjacent layers of the onions longitudinally thereof, and two air jets arranged to direct high-pressure air into said longitudinal slits to remove the slit skin and layers from the onions.

3,623,525
ADJUSTABLE RADIALLY ARRANGED FOOD-SLICING ASSEMBLY
Raymond Kieves, 1507 Inkster Blvd., Winnipeg, Canada
Filed May 13, 1970, Ser. No. 36,967
Int. Cl. B26d *4/22*, *4/48*
U.S. Cl. 146—124 **6 Claims**

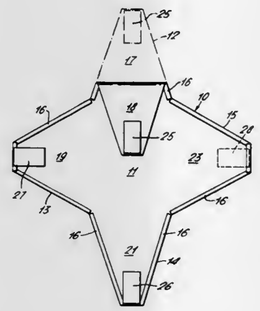
A food-slicing assembly comprising a rotary circular disk having a plurality of pivotally mounted cutting blades positioned in radially arranged elongated slots on the disk. A

concentrically mounted sleeve having a series of inclined surfaces provides adjustment of the acute angle of the blades



with respect to the plane of the disk for the purpose of varying the thickness of the food slices which are produced by slicing a food mass pressed against the disk.

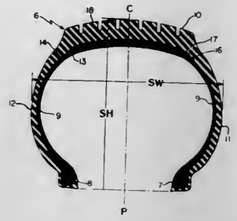
3,623,526
KNOCKDOWN FOLDING PACKAGE
Elwood Frank Robertson, Halifax, Canada, assignor to Flowood Industries Limited, Dartmouth, Nova Scotia, Canada
Filed Dec. 29, 1969, Ser. No. 888,511
Claims priority, application Canada, Sept. 23, 1969, 062,763
Int. Cl. B65d *65/06*
U.S. Cl. 150—52 R **3 Claims**



A knockdown folding package is provided which is formed from a single blank of flexible lightweight material. The package includes a central area and a plurality of flaps (for example, four flaps) extending outwardly from the central area. The flaps may be folded one upon the other to provide a central compartment to hold articles. Means for releasably retaining the flaps in a folded condition are provided associated with the flaps, such means preferably consisting of "Velcro" coupling members.

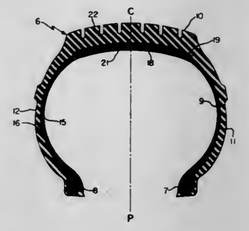
3,623,527
PNEUMATIC TIRE
Kevin B. O'Neil, Akron, Ohio, and Paul E. Helms, Jr., Fort Knox, Ky., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 22, 1970, Ser. No. 30,732
Int. Cl. B60c *9/06*, *9/18*
U.S. Cl. 152—354 **16 Claims**

A bias-belted tire having carcass, or tire body plies with reinforcing cords of polyester or nylon, and annular belts



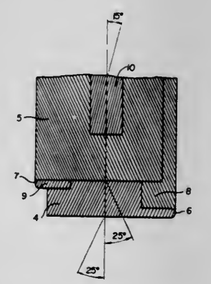
with metallic reinforcing cords circumferentially embedded in the area of the tread.

3,623,528
BIAS-BELTED PNEUMATIC TIRE
Frederick J. Kovac, Bath, and Kevin B. O'Neil, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1970, Ser. No. 18,425
Int. Cl. B60c *9/02*
U.S. Cl. 152—356 **6 Claims**



A bias-belted pneumatic tire having a pair of carcass plies sandwiched between a pair of belts for annularly reinforcing the tire.

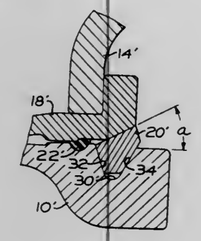
3,623,529
BREAKER STRUCTURES OF RADIAL TIRES
Fulcieri Fausti, Monza, Italy, assignor to Pirelli, S.p.A., Milan, Italy
Filed Dec. 30, 1969, Ser. No. 889,257
Claims priority, application Italy, Jan. 4, 1969, 11174A/69
Int. Cl. B60c *9/20*
U.S. Cl. 152—361 **5 Claims**



The disclosure relates to an invention in a pneumatic tire for a vehicle which tire has a radial carcass and a tread provided with a breaker structure. The breaker structure comprises a plurality of radially disposed strips formed of cords disposed at various angles relative to the midcircumferential

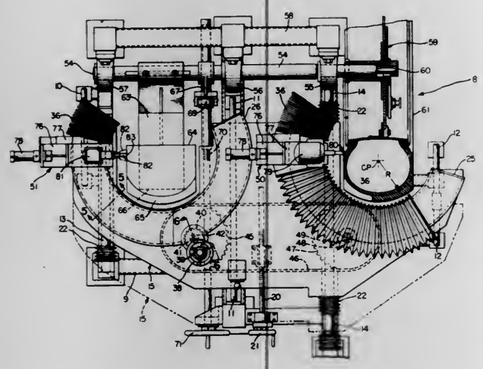
plane of the tire. The breaker strips are arranged and folded relative to each other to produce such stiffness as to cause substantially absolute adherence of the tire to the travelling surface at low or high ground speeds.

3,623,530
LOCKRING FOR TIRE RIMS
Marvin E. Beyers, and Charles C. Sons, Jr., both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 7, 1969, Ser. No. 839,406
Int. Cl. B60c *15/02*
U.S. Cl. 152—410 **1 Claim**



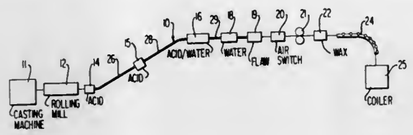
A lockring which fits between the rimbase and removable bead seat band of the rim for a large pneumatic tire and having surfaces mating with surfaces of the bead seat band and rimbase disposed at angles with which result in great frictional contact when the tire is inflated. This produces a wedging effect and eliminates the need for "drivers" which are interengaging lugs on the rimbase and removable bead seat band to prevent relative rotation of these parts.

3,623,531
TREAD PATTERN DUPLICATING MACHINE
Christopher E. Christie, Akron, Ohio, and William J. Head, Rollingen, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 20, 1970, Ser. No. 56,564
Int. Cl. B29h *17/40*
U.S. Cl. 157—13 **14 Claims**



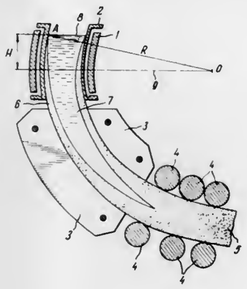
A machine for cutting a tread design, or a series of configured grooves in a molded blank tread of a tire. A precast or molded pattern with a predetermined tread design, and a tire with a blank tread are mounted on the machine for unitary rotation in parallel planes. The machine has a sensor and cutter which are mounted in corresponding spaced relation from the pattern and tire, respectively. The cutter moves in cutting relation with the blank tread in corresponding relation to movement of the sensor over the pattern, such that the tread design on the molded pattern is duplicated on the tread of the tire.

3,623,532
CONTINUOUS PICKLING OF CAST ROD
Daniel B. Cofer; Enrique Calixto Chia; John E. Burnitt, and Theodor W. Kaltenberg, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.
Filed Mar. 20, 1969, Ser. No. 808,976
Int. Cl. B22d *45/00*
U.S. Cl. 164—76 **11 Claims**



A system for continuously quench-pickling cast rod from a continuous casting machine wherein molten metal is poured into a mold of a casting device and cooled and solidified into a continuous solid bar, the bar is elongated and reduced in its cross-sectional area to form continuous rod, and the rod is arranged in a coil. The surface of the hot rod from the rolling mill is contacted with a pickling fluid, such as a citric acid solution, after the rod leaves the rolling mill and before the rod is arranged in a coil, to simultaneously quench and pickle the rod.

3,623,533
METHOD OF MOLTEN METAL HEIGHT CONTROL IN CURVED MOLD CONTINUOUS CASTING
Viktor Nikolaevich Khorev, ul. Bazhova, 130, kv. 107; Georgy Lukich Khimich, ul. Lenina, 53, kv. 92, and Vitaly Maximovich Niskovskikh, ul. Festivalnaya 21, kv. 60, all of Sverdlovsk, U.S.S.R.
Original application Mar. 1, 1967, Ser. No. 619,622, now abandoned. Divided and this application Jan. 8, 1970, Ser. No. 1,527
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **2 Claims**

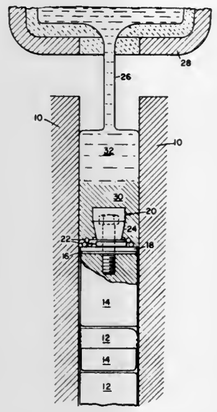


Continuous casting with a curved mold mounted so that when casting metal the meniscus thereof is above the horizontal plane passing through the center of curvature of the mold by a height H as determined by the relationship

$$H = R \sin \sqrt[3]{\frac{4K^2}{RV}}$$

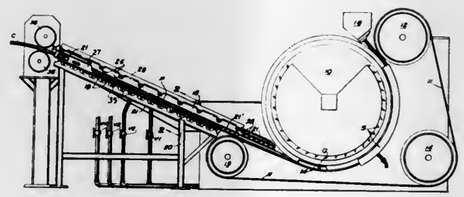
where
R is the radius of curvature of the mold;
K is the coefficient of crystallization of the molten metal; and
V is the casting speed.

3,623,534
METHOD FOR STARTING A CONTINUOUS CASTING
Thomas H. Brennan, Upland, Calif., assignor to American Pipe and Construction Co., Los Angeles, Calif.
Original application Feb. 15, 1968, Ser. No. 705,762, now abandoned. Divided and this application Aug. 19, 1970, Ser. No. 65,273
Int. Cl. B22d *11/08*
U.S. Cl. 164—82 **1 Claim**



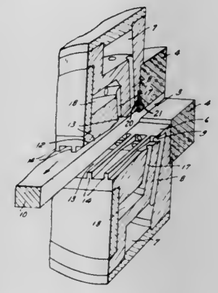
A heat sink casting is cast around the exposed portion of a conventional starting bolt, stud or pin to prevent the starting bolt, stud or pin from being softened and failing when the cast or strand is started. The heat sink casting may be cheaply made concurrently with the drawing of the spectrograph sample which is taken of each heat.

3,623,535
HIGH-SPEED CONTINUOUS CASTING METHOD
George E. Lenaeus, Carrollton; Daniel B. Cofer, Carrollton, and John H. Murphy, Atlanta, all of Ga., assignors to Southwire Company, Carrollton, Ga.
Filed May 2, 1969, Ser. No. 821,299
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **4 Claims**



A high-speed continuous casting apparatus and method wherein the method includes partially solidifying a molten metal in a mold defined between the peripheral groove of a rotating casting wheel and a flexible band until the metal shrinks and draws away from the casting wheel, thereupon removing the band from the casting wheel and subsequently cooling the metal to complete its solidification. The apparatus includes the combination of a casting wheel having a peripheral groove with a portion of its length closed by an endless band to form a casting mold and an auxiliary cooling means for cooling the metal to complete its solidification. This allows the casting wheel to be rotated at that rotational speed which causes the metal to pass from the casting wheel as, or shortly before or after, the metal shrinks away from the casting wheel.

3,623,536
METHOD AND MOLD FOR CONTINUOUSLY CASTING METALLIC ELEMENTS
Gunther Moritz, Bad Godesberg, Germany, assignor to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany
Filed Nov. 7, 1969, Ser. No. 874,794
Claims priority, application Germany, Nov. 12, 1968, P 18 08 418.9
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 **11 Claims**



A mold for continuous casting of metallic elements has a passage which is oriented substantially vertically and has an upper open end and a lower open end so that metal introduced into the upper open end in molten state will solidify within the passage and advance therewithin in solidified form towards and beyond the lower open end. The passage is so configurated that its inner circumferential wall is spaced from the outer surface of the solidified metal element which forms and advances within the passage. The cross section of the passage first diverges and then converges in the direction from the upper open end to the lower open end. Cooling water conduits are provided in the mold and communicate with the passage in the convergent portion thereof, being so arranged that in this portion they cool only the mold and thereby indirectly the solidified metal element, whereupon the water runs along the inner circumferential wall of the passage to the throat or narrowest part of the convergent-divergent cross section where it contacts and directly cools the advancing metal element. The injection of water through the conduits into the convergent portion of the passage produces a venturi action and the resulting underpressure in the passage is utilized to draw air, a desired gas and/or lubricating fluid into the passage.

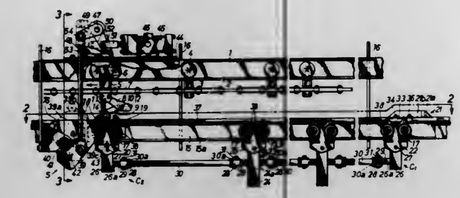
3,623,537
CASTING OF INGOTS
Roger Mervyn Hilton, and John Frances Xavier Watkinson, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England
Filed Nov. 13, 1969, Ser. No. 876,616
Claims priority, application Great Britain, Nov. 14, 1968, 54,159/68
Int. Cl. B22d *37/00*
U.S. Cl. 164—133 **11 Claims**

Splash during teeming ingots is minimized by locating a foam pad in the ingot mould prior to use.

3,623,538
POWER AND FREE CONVEYOR SYSTEM
Takao Wakabayashi, Osaka; Koji Ota, Kyoto, and Yukio Soma, Osaka, all of Japan, assignors to Nakanishi Metal Works Co., Ltd., Osaka, Japan
Filed May 26, 1969, Ser. No. 827,619
Claims priority, application Japan, ay 30, 1968, 43/37272; May 31, 1968, 43/37130; May 31, 1968, 43/37131; June 3, 1968, 43/38108; Aug. 30, 1968, 43/62532
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **7 Claims**

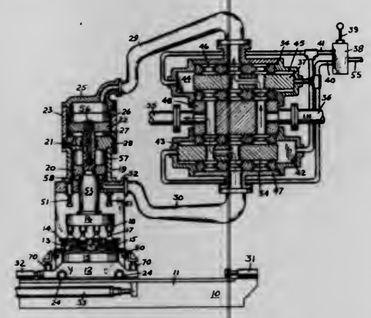
A power and free conveyor system that has a number of carriers and consists of a leading main free trolley and a rear subtrolley provided with a rear cam for forcing up a pusher.

Pushers are attached at regular intervals to the driving chain, which is guided by the power rail. The pushers are provided with rollers and are linked to the forward tilting dog of the main free trolley. Next to the free rail, which guides the free trolley, is a subrail, upon which are both side rollers of the



pusher. At a fixed point on the free rail the carrier stopper is arranged which forces up the pusher to release the engagement of the pusher and the free trolley. At carrier-diverting points are pusher-ascending rails, while on the diverting side behind the pusher ascending rail, the pusher-guiding apparatus is provided.

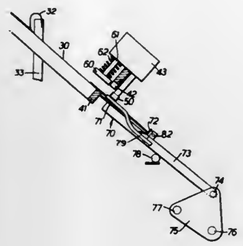
3,623,539
IMPACT SAND MOLDING MACHINE
Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operation, Inc., New York, N.Y.
Filed Feb. 14, 1969, Ser. No. 799,423
Int. Cl. B22c *15/08*
U.S. Cl. 164—173 **3 Claims**



The present disclosure is directed to a machine for making green sand molds by an impact mechanism which imparts an impact from an impact head driven by the explosive force of suddenly released compressed air in such a way that the molding head strikes the sand and imparts its kinetic energy by way of an impulse to the sand, thereby packing the sand around the patterns. It has been discovered that by using the impulse principle in molding, the sand is uniformly packed and uniform mold hardness results.

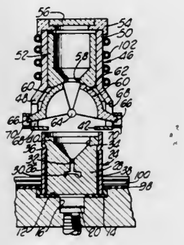
3,623,540
MACHINE FOR CASTING AND TRIMMING BATTERY PLATE GRIDS
Alan John Goodwin, and Norman Shanks, both of Swinton, England, assignors to Chloride Overseas Limited, Swinton, Manchester, England
Filed June 20, 1969, Ser. No. 834,964
Claims priority, application Great Britain, June 21, 1968, 29,680/68
Int. Cl. B22d *31/00*, **B26d** *7/16*
U.S. Cl. 164—262 **12 Claims**

A machine for trimming and stacking lead-acid battery electrode grids has a single pair of blades for cutting off first the feet and bottom edge, and then the top edge of each casting. The grids are delivered from the casting mould on to a sloping slide on which each grid slides down past the blades to an upper stop for the first cut and then to a lower stop for the second cut. The lower stop has a transfer plate on which



the grid is swung up to a vertical position to join a stack suspended on a pair of rails.

3,623,541
METAL CASTING APPARATUS
William L. Schmitz, 835 Huntington Drive, San Marino, Calif.
Filed Oct. 29, 1969, Ser. No. 872,310
Int. Cl. B22d *27/16*
U.S. Cl. 164—337 **6 Claims**

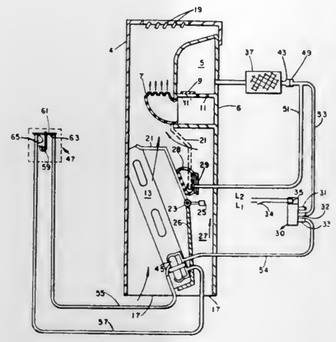


A crucible having a bottom outlet opening with heating means disposed about the sidewall and downwardly as far as the outlet, mold supporting means beneath the crucible outlet, a gate for closing and opening the outlet, the underside of the bottom of the crucible being concave and the gate comprising a pair of upwardly convex members in movable sealing engagement with the underside of the crucible bottom and having the same curvature as the concave underside, whereby the outlet and gate are located in the heating zone provided by the heating means.

3,623,542
CONTROL OF AIR-CONDITIONING APPARATUS
Daniel A. Fragnito, Solvay, and William C. Heck, Dewitt, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 31, 1969, Ser. No. 872,907
Int. Cl. B60h *1/00*
U.S. Cl. 165—1 **4 Claims**

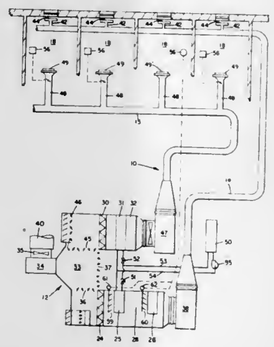
A control system for air-conditioning apparatus adapted to be placed in communication with a source of primary air and operable for conditioning the air in an area. During normal operation of the air-conditioning apparatus, controls regulate the operation thereof in response to the temperature of the

air in the area. The controls include a normally open valve, the closure thereof being operable to interrupt the flow of



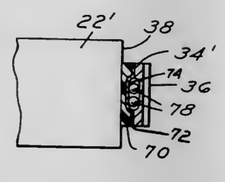
conditioned air from said apparatus, irrespective of the area demand as sensed by said controls.

3,623,543
DUAL CONDUIT AIR-CONDITIONING SYSTEM
William S. Ostrander, Chamblee, Ga., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Apr. 2, 1970, Ser. No. 25,124
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 **4 Claims**



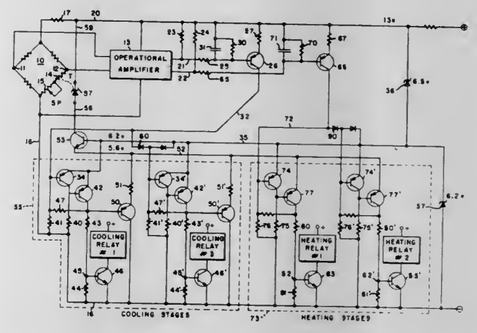
An air-conditioning system including first and second central station apparatus for supplying conditioned primary and secondary air, respectively, to a plurality of enclosed areas in a building. A constant volume of secondary air is supplied to a preselected area. The temperature of the area is sensed and the first central station apparatus is operated to provide a constant volume of primary air to each of the enclosed areas at a temperature related to the temperature sensed in the preselected enclosed area. Secondary air is supplied to each of the other areas simultaneously with the supply of secondary air to the preselected area, the volume thereof being regulated to provide a desired temperature condition in each of the areas.

3,623,544
GAS TURBINE HEAT-EXCHANGING SYSTEM USING FLEXIBLE LOCATING MEMBERS FOR TORQUE TRANSMISSION
Arthur F. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Original application Aug. 29, 1968, Ser. No. 756,236. Divided and this application Nov. 5, 1969, Ser. No. 871,255
Int. Cl. F28d *19/02*
U.S. Cl. 165—8 **5 Claims**



A porous ceramic regenerator core fabricated in the shape of a twelve-sided regular polygon is surrounded by a metal ring gear having gear teeth on its exterior surface. Locating members transmit driving torque from the ring gear to the core while permitting the core to move radially and axially relative to the ring gear. Narrow slots can be cut into the outer edge of the ceramic core to relieve thermally induced stresses.

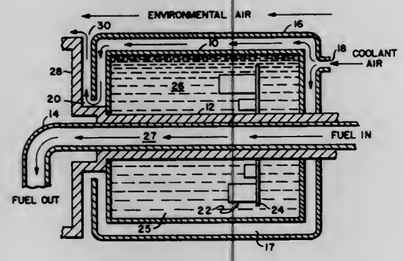
3,623,545
AUTOMATIC CHANGEOVER HEATING-COOLING SYSTEM HAVING SINGLE SEMICONDUCTOR ANTICIPATOR FOR BOTH HEATING AND COOLING
Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed July 16, 1970, Ser. No. 55,321
Int. Cl. G05d *23/30*
U.S. Cl. 165—26 **6 Claims**



A modulating type of thermostat controls an automatic changeover heating-cooling temperature-regulating system that sequentially adds units of cooling or units of heating as called for by the thermostat. The modulating thermostat utilizes a thermistor type of temperature sensor to control a bridge circuit and amplifier. The thermostat includes a heat anticipator in the form of a semiconductor current-carrying means such as a Zener diode that is in heat exchange relationship with the temperature sensor. The semiconductor current-carrying means acts as a constant voltage drop regardless of the amount of current flowing therethrough so that the heating effect of the semiconductor means is a linear function of the amount of current flowing therethrough. This

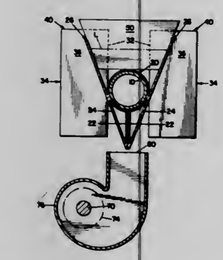
semiconductor element provides the anticipation for both heating and cooling, the element being biased with an intermediate current at the control system dead band between heating and cooling, the current therethrough being reduced as cooling is required and increased as heating is required.

3,623,546
COOLING SYSTEM FOR AN ELECTRONIC ASSEMBLY MOUNTED ON A GAS TURBINE ENGINE
Clifford R. Banthin, Redding; Dennis F. Sharp, Shelton, and Ernest M. Mihalyak, West Haven, all of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Nov. 10, 1969, Ser. No. 875,145
Int. Cl. F02b *11/02*
U.S. Cl. 165—51 **5 Claims**



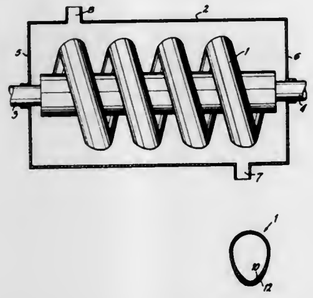
The illustrated embodiment shows a cooling system for electronic equipment mounted on a gas turbine engine. The system combines air, engine fuel, and a thermally conductive electrically dielectric fluid to provide cooling under extreme heat environments. Electronic equipment is placed in a thermally conductive fluid within an annular container which is horse-collared on a fuel line. The container is double walled and coolant air is directed through the space between the walls. Thus cooling results from coolant air and engine fuel, and is made more efficient by the fluid.

3,623,547
COMBINATION HEATER AND HUMIDIFIER
Samuel Wallans, 201 W. Euclid St., Hartford, Conn.
Filed July 7, 1969, Ser. No. 839,525
Int. Cl. F24f *3/14*
U.S. Cl. 165—60 **2 Claims**



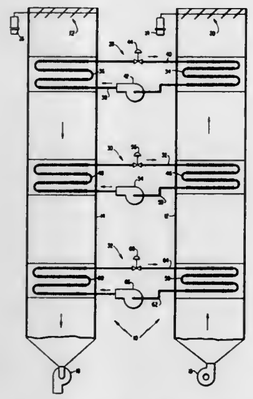
A combination heater and humidifier of the baseboard type which includes an elongated evaporation water trough or reservoir sitting on and in thermal contact with a line conveying the heating medium whereby water introduced into the water trough is evaporated therefrom by means of the heat directly conducted thereto from the heating medium line.

3,623,548
ROTARY COIL FOR HEAT EXCHANGERS AND SIMILAR DEVICES EQUIPPED WITH SUCH COIL
Ralph W. Cook, 311 Main St., Dunedin, Fla., and Samuel A. Mencacci, 30 Ahornenlaan, Wilrijk-near-Antwerp, Belgium
Filed Sept. 29, 1969, Ser. No. 861,831
Int. Cl. F28f *13/14*
U.S. Cl. 165—87 **9 Claims**



A rotary coil for heat exchangers and similar devices, having a substantially airfoil-shaped cross section.

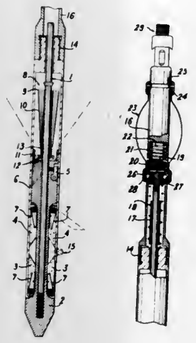
3,623,549
HEAT EXCHANGE METHODS AND APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Aug. 14, 1970, Ser. No. 63,759
Int. Cl. F28d *15/00*
U.S. Cl. 165—107 **4 Claims**



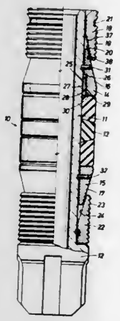
Heat exchange apparatus and methods in which liquids having different phase change characteristics absorb heat from a relatively hot gas at one location and give up the heat to a relatively cool gas at a second location.

3,623,550
APPARATUS FOR PLUGGING CASED PETROLEUM PRODUCTION WELLS
Guy de Lajarte, Toulouse, and Jacques de Saint Palais, Saint Gaudens, both of France, assignors to Entreprise de Recherches et d'Activites Petrolieres (Elf), Paris, France
Filed Feb. 16, 1970, Ser. No. 11,587
Claims priority, application France, Feb. 26, 1969, 6905030
Int. Cl. E21b *23/06, 33/126*
U.S. Cl. 166—125 **1 Claim**

An umbrella unit which is screwed to an actuating tool and lowered into the production tubing of an oil well by means of a wire line is fitted with a set of upwardly directed and a set of downwardly directed spring-actuated knives which are outwardly and radially displaceable within the well casing so as to lock said umbrella against the casing wall in the required plugging position, the umbrella proper being then caused to open out radially and filled with gravel or like material. A spoon comprising a reservoir tube filled at the wellhead with cement grout is lowered by means of a wire line, the cement grout being discharged through bottom openings by means of a glass window which is broken by means of a striker piece upon impact of the bottom of the spoon on the gravel.

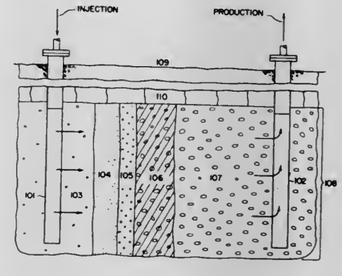


3,623,551
ANCHORING APPARATUS FOR A WELL PACKER
Ervin Randermann, Jr., Beasley, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Jan. 2, 1970, Ser. No. 56
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—134 **5 Claims**



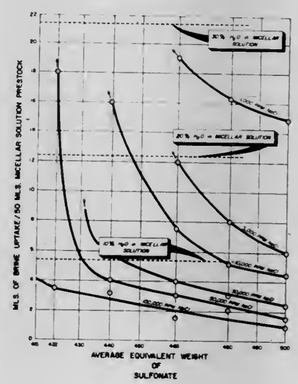
Means for anchoring a well packer in a well casing, including an expander cone movable in one longitudinal direction along a mandrel and a first clutch means to prevent movement of the mandrel relative to the expander cone in the opposite direction, slips shifted outwardly by the expander cone by movement of the slips relative thereto in said one direction, and a second clutch means to prevent movement of the slips relative to the expander cone in said opposite direction.

3,623,552
RECOVERY OF OIL BY LOW-PRESSURE MISCIBLE GAS INJECTION
Juris Vairogs, Tulsa, Okla., assignor to Cities Service Oil Company
Filed Nov. 13, 1969, Ser. No. 876,548
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **6 Claims**



An oil miscible gas such as carbon dioxide is injected into a subterranean oil reservoir to maintain a reservoir pressure near the critical pressure of the gas. Under predetermined conditions of temperature and pressure the miscible gas-crude oil mixture exhibits a three-phase vapor-liquid phenomena which enhances the recovery of oil from the subterranean reservoir. A miscible gas-rich liquid phase is formed between the oil-rich liquid phase and miscible gas-rich vapor phase and exhibits a density and viscosity intermediate between that of the oil and gas regions. This phenomenon creates a unique fluid distribution and mobility relationship which provides for a significant increase in the efficiency of the displacement of the oil from the gas-swept reservoir.

3,623,553
FLOODING WITH MISCIBLE-TYPE FLUID SLUGS HAVING DIFFERENT BRINE TOLERANCES
David N. Burdge, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Continuation-in-part of application Ser. No. 665,078, Sept. 1, 1967, now abandoned. This application Mar. 16, 1970, Ser. No. 19,573
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **11 Claims**



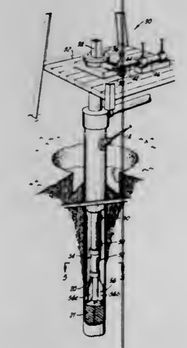
Micellar dispersions useful in flooding subterranean formations and desirably having a particular brine tolerance permitted by the components within the micellar dispersion are obtained by utilizing low average equivalent weight surfactants to obtain a high brine tolerance and increasing average

equivalent weight surfactant to obtain lower brine tolerances. These dispersions are injected and displaced through the formation to give improved oil recoveries.

3,623,554
METHOD OF PLUGGING SALINE FORMATIONS
Samuel A. Pence, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 30, 1970, Ser. No. 33,487
Int. Cl. E21b *33/138*
U.S. Cl. 166—293 **8 Claims**

An improved method of plugging underground formations containing NaCl in aqueous solution by employing NaF.

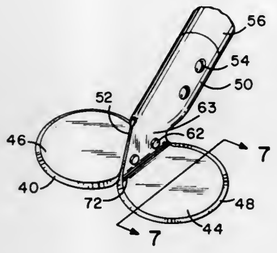
3,623,555
SUBTERRANEAN DRILLING METHOD
Carroll F. Knutson, 5223 Reiter Ave., Las Vegas, Nev., and Bruce G. Bray, 2900 Bryant St., Las Vegas, Nev.
Filed Jan. 20, 1970, Ser. No. 4,289
Int. Cl. E21b *3/04, 7/00, 43/26*
U.S. Cl. 166—299 **4 Claims**



A method of forming a subterranean cavity communicated with the surface through a drilled hole which includes the steps of drilling a hole from the surface of the ground to the subterranean situs at which the cavity is to be located, suspending an explosive at the lower end of the hole on a flexible suspending member extended downwardly in the hole from the surface, packing the hole around the suspending member with a stemming material, detonating the explosive, and then drilling out the stemming material in the hole to communicate the cavity formed by the explosion with the surface.

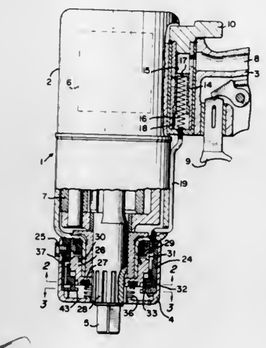
3,623,556
WEEDING AND CULTIVATING TOOL
Monte E. Adams, 4650 Maple Ave., La Mesa, Calif.
Filed July 23, 1969, Ser. No. 843,950
Int. Cl. A01b *1/10, 1/22*
U.S. Cl. 172—371 **9 Claims**

A weeding and cultivating tool having edge abutting, dual disclike cutting blades with handle shank connecting portions that are integral with the blades and are bent upward at the abutting edges to provide a centered support that has a narrow thickness in the forward and reverse direction of movement of the blades. Each blade is substantially normal to the shank portions and extends at a slight downward angle from normal at the radius bend to resist permanent distortion from bending and twisting of the blades and shank when forced through the earth. The disclike cutting blades have continuous cutting edges around their open periphery that merge at the shank portions to form front and rear cutting crotches that extend into the central shank portions. In one embodiment, the lower surface of each disclike cutter has a front to rear concave curvature which, when formed with said radius bend, results in compound curvature which further resists permanent distortion of the blades and shank. The entire



tool, except for its handle, can be formed from a single metal blank or in the alternative from two joined metal blanks.

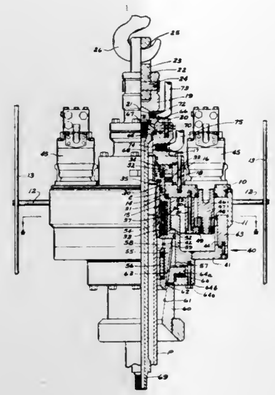
3,623,557
TURN-OF-THE-NUT WRENCH SHUTOFF SYSTEM
Edward L. Allen, Athens, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed June 29, 1970, Ser. No. 50,446
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **8 Claims**



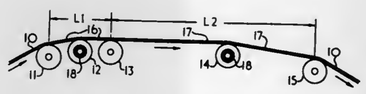
A power wrench having a pressure operated shutoff valve moved to its closed position by a high-pressure signal. A mechanism measures the speed of the spindle and creates an intermediate pressure signal when the spindle speed is slowed to a selected slow speed. This intermediate pressure signal activates an angle measurement mechanism which begins measuring the angle of rotation of the spindle and in response to a selected angle creates a high-pressure signal operative to close the shutoff valve and stop the wrench.

3,623,558
POWER SWIVEL FOR USE WITH CONCENTRIC PIPE STRINGS
Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.
Filed Sept. 8, 1970, Ser. No. 70,425
Int. Cl. F21b *3/02*
U.S. Cl. 173—57 **10 Claims**

A power swivel for use with concentric drill pipe strings to enable rotation of an outer pipe string while operatively connected to a stationary inner pipe string for supplying power fluid to a turbine drill carried by the inner string.



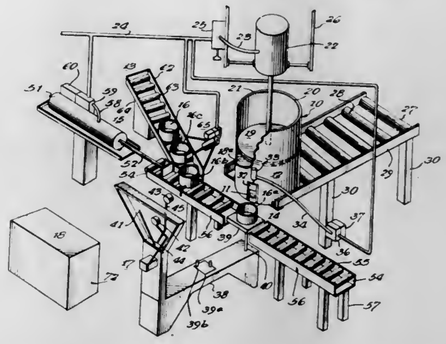
3,623,559
METHOD AND APPARATUS FOR WEIGHT MEASUREMENT
Hugh L. Folkes, St. Leonard's-on-Sea, England, assignor to The Dunlop Company, London, England
Filed Feb. 10, 1970, Ser. No. 10,181
Claims priority, application Great Britain, Mar. 8, 1969, 12,334/69
Int. Cl. G01g *11/14*
U.S. Cl. 177—1 **10 Claims**



The invention is concerned with the weighing of a belt or similar elongated flexible articles, by supporting the belt at spaced-apart position to provide two portions of different lengths. A load-sensing device is associated with each portion. The force exerted on each load-sensing device includes a force produced by tension in the belt. By arranging for the tension-produced force component to act in the same direction for each load-sensing device, the responses from the load-sensing devices can be combined to cancel out loading of the belt due to tension, to give the actual weight of the belt per unit length. The invention can be used for weight measurement of unloaded belts and similar articles, for control in manufacture for example, and for weight measurement of conveyors carrying freight.

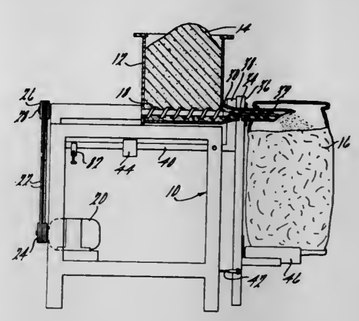
3,623,560
AUTOMATIC INK-WEIGHING MACHINE
Leslie F. Stone, Westchester, Ill., assignor to The Richardson Company, Melrose Park, Ill.
Filed Nov. 10, 1969, Ser. No. 875,021
Int. Cl. G01g *13/00*
U.S. Cl. 177—52 **5 Claims**

An apparatus for automatically filling containers with viscous materials which employs a piston-pressure system and guillotine-type valve means to feed such material to open-ended containers with negligible spillage and is



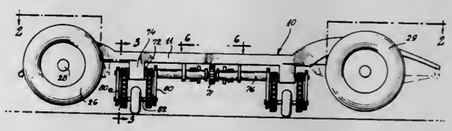
operated by control means providing automatic delivery of such containers for filling, the cycling of which is designed to maximize the avoidance of spillage.

3,623,561
BAG-FILLING MACHINE
John F. Green, Red Oak, Iowa, assignor to Douglas & Lomason Company, Detroit, Mich.
Filed Apr. 27, 1970, Ser. No. 32,250
Int. Cl. G01g *13/08, 13/12*
U.S. Cl. 177—81 **4 Claims**



An auger-type valve bag-filling machine having an electrical control circuit adapted to operate the auger to fill the bag until a predetermined, but less than the desired total, weight of product is reached, whereupon a timer circuit is energized which then maintains the auger in operation for a timed interval to complete filling of the bag.

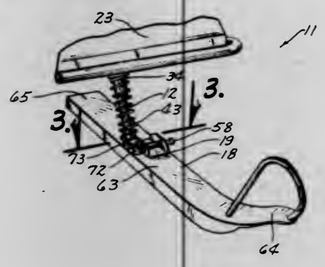
3,623,562
AUTOMOBILE-PARKING SYSTEM
Svatopluk Paul Pitra, 507 East 73 St., New York, N.Y.
Continuation-in-part of application Ser. No. 732,801, May 13, 1968, now abandoned. This application Jan. 2, 1970, Ser. No. 313
Int. Cl. B60s *9/18*
U.S. Cl. 180—1 A **7 Claims**



A lateral drive assembly for an automotive vehicle has four parking wheels carried by parking legs which are rotatable

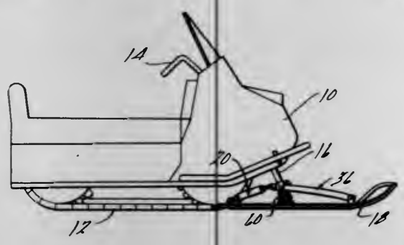
between lowered vertical positions and elevated positions. The parking wheels are operatively coupled to the main drive shaft of the vehicle via gear trains which are disengaged from the main shaft when the parking legs and parking wheels are elevated. The parking legs and wheels are rotated between lowered and elevated positions by mechanisms independent of the gear trains which couple the parking wheels to the main shaft.

3,623,563
SUPPORT MEANS FOR SNOWMOBILES
Frank T. Gostomski, 1053 N. Beech St., Wahoo, Nebr.
Filed Oct. 21, 1969, Ser. No. 868,015
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **7 Claims**



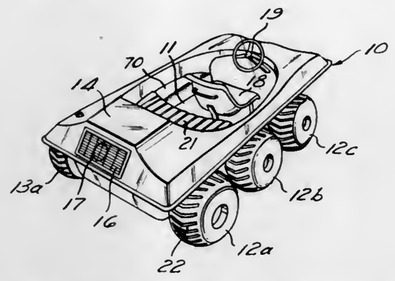
A support means adapted for use with snowmobiles is provided which comprises two laterally aligned support shafts depending from one end of the snowmobile; each of the support shafts has a bracket formed on the lower end thereof. Axles extend horizontally from the lower ends and are adapted to secure either skis or wheels thereon. Resilient plugs are affixed to the brackets, the lower ends of which are disposed proximate the top surfaces of the skis. The resilient plugs prevent the skis from rotating more than a present distance and absorb some of the initial shock in rough terrain.

3,623,564
SNOW VEHICLE FRONT SUSPENSION
William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.
Filed Oct. 31, 1969, Ser. No. 872,992
Int. Cl. B62m *27/02*; **B62b** *17/04*
U.S. Cl. 180—5 R **12 Claims**



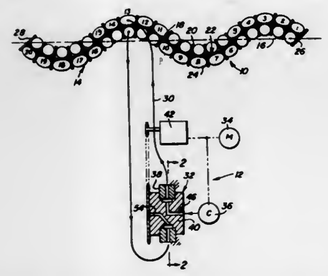
A ski-mounting assembly for snow vehicles and the like comprising a conventional shock absorber and a rigid arm member disposed longitudinally in line with each other above the ski, the shock absorber and the arm members being connected at the outer ends thereof to the ski by fixed pivots, and being interconnected at the inner ends thereof by a movable pivot, the shock absorber and the arm member extending angularly upwardly toward each other from the fixed pivots at a relatively flat angle with respect to the ski, the arm member being supported by a coil spring preferably disposed substantially at the center of the ski, and means being provided on the arm member preferably directly over the spring for attaching the assembly to the snow vehicle.

3,623,565
RECREATIONAL VEHICLE
Eugene T. Ward, Highland Heights; Richard Sklar, Cleveland Heights, and Harvey H. Pierman, Chardon, all of Ohio, assignors to Action-Age, Inc., Warrensville Heights, Ohio
Filed Aug. 4, 1969, Ser. No. 847,119
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.2 **14 Claims**



An all-terrain recreational vehicle as disclosed which is capable of operating on water, on very soft terrain and on rough terrain. Three low-pressure tires are journaled on each side of a watertight fiber-reinforced plastic body. All wheels are driven by a rear mounted engine and steering is accomplished by declutching and braking the wheels on one side or the other of the vehicle. The wheels are journaled directly on the plastic body without separate framing making it possible to have a low operating center of gravity. Overload slip clutches at each wheel prevent excessive strain from being applied to the suspension system or the power-transmission system. A belly pan formed of tough abrasion resistant plastic is mounted on the underside of the vehicle body for impact and abrasion resistance. The transmission system includes parallel chain drives extending along each side of the vehicle, each driven by the engine through a separate clutch and brake mechanism. The clutch and brake mechanisms are selectively operated for steering by hydraulic pressure developed in response to steering wheel movement and are operated simultaneously by a hydraulic-brake system for braking. The engine is mounted on a floating frame to minimize noise and vibration transmission and to provide tensioning of the primary drive chains. The throttle system is arranged for direct actuation in combination with a governor which acts only to prevent overspeeding.

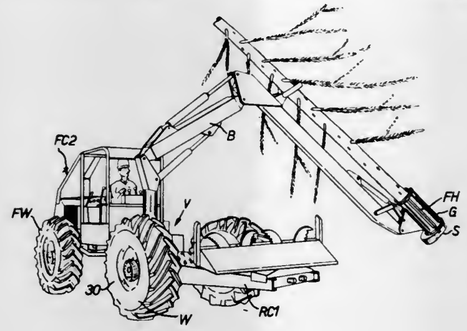
3,623,566
UNDULATING BODY PROPULSION SYSTEM
Arthur Orloff, Nunda, N.Y., assignor to Guthrie B. Stone, Honeoye, N.Y., a part interest
Filed Nov. 14, 1969, Ser. No. 876,902
Int. Cl. B62d *57/00*
U.S. Cl. 180—7 **15 Claims**



An elongated flexible body undergoes undulations to propel a vehicle frame. A rotating control assembly regulates

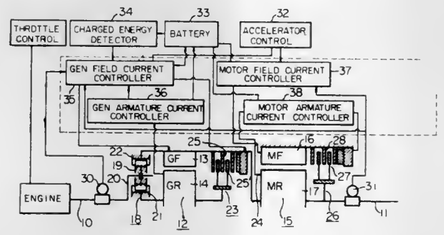
longitudinal expansion and contraction of cells into which the body is internally partitioned to produce a sinusoidal configuration changing in phase at a controlled rate relative to the axis of the sinusoidal curvature extending through the center of mass of the body.

3,623,567
COUPLING FOR ARTICULATED VEHICLE INCORPORATING STABILIZER
Ian McKenzie, Etobicoke, Canada, assignor to Canadian International Paper Company; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaupre, Quebec, Canada, part interest to each
Filed Oct. 27, 1969, Ser. No. 869,651
Int. Cl. B60d *1/00*
U.S. Cl. 180—14 R **6 Claims**



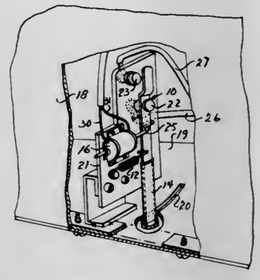
An articulated vehicle having a front and rear chassis interconnected by a coupling which permits movement of the chassis relative to one another about each of a vertical and horizontal axis and spring means interposed between members of the coupling, to resist movement of one chassis relative to the other chassis about a horizontal axis. The coupling for interconnecting the chasses consists of internested inner and outer shell-like housing members having adjacent correspondingly mating surfaces substantially rectangular in cross-sectional view transverse to the length of the vehicle, the adjacent surfaces being provided with enlargements and depressions correspondingly oriented and having a spring material interposed between the members in the space between the enlargements and depressions. The spring member is an elastomeric material and the depressions and enlargements have correspondingly adjacent arcuate outer faces which bear against the elastomeric material.

3,623,568
ELECTROMECHANICAL POWER TRAIN SYSTEM FOR AN AUTOMOTIVE VEHICLE
Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed May 29, 1969, Ser. No. 871,816
Claims priority, application Japan, May 31, 1968, 43/37230
Int. Cl. B60l *11/14*
U.S. Cl. 180—65 A **1 Claim**



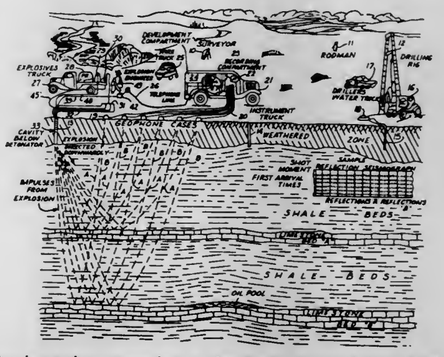
An electromechanical power train system for an automotive vehicle having a driving engine in which an electric generator driven by the engine for generating an electric energy for a battery and an electric drive motor for driving a propeller shaft are incorporated together with an electronic controller for controlling the operation of the constituted devices with speed reduction gear. The engine may be smaller for always operating at full throttle open for preventing the discharge of the detrimental exhausted gas.

3,623,569
MOTOR VEHICLE ANTITHEFT MEANS AND METHOD
Floyd A. Wilkins, 22055 Donald St., East Detroit, Mich.
Filed Dec. 29, 1969, Ser. No. 888,713
Int. Cl. B60r *25/00*
U.S. Cl. 180—114 **5 Claims**



Motor antitheft means and method are disclosed comprising secretly locating a normally open manually actuable electrical switch means on a motor vehicle so that its location thereon is known only to an authorized user of said motor vehicle, electrically incorporating said switch means in the ignition circuit of said motor vehicle so that the latter is rendered incapable of being energized upon use of the ignition key or upon bypassing of the ignition switch by hot wiring until said switch means is actuated from its normally open position to a close position by said authorized user, holding said switch means in said close position upon and during energization of said ignition circuit to maintain said ignition circuit energized until the ignition key is turned to off position, and upon deenergization of said ignition circuit, actuating said switch means to its normally open position to render said ignition circuit incapable of being energized upon use of the ignition key or upon bypassing of the ignition switch by hot wiring.

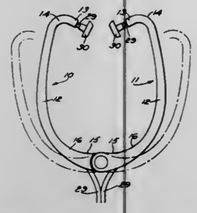
3,623,570
APPARATUS METHOD OF GEOPHYSICAL EXPLORATION
William P. Holloway, 1404 E. 5th Ave., Austin, Tex.
Continuation-in-part of application Ser. No. 394,358, Sept. 3, 1964, and a continuation-in-part of 504,529, Oct. 24, 1965, now abandoned. This application July 7, 1969, Ser. No. 842,814
Int. Cl. G01v *1/00*
U.S. Cl. 181—.5 NC **7 Claims**



The invention comprises a detonator lowered into water and housing a succession of explosions for emanating energy

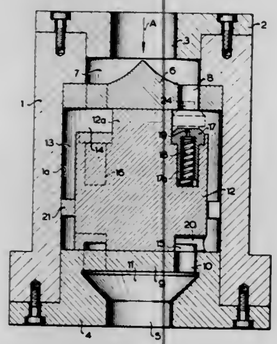
waves to pass downwardly into the earth and includes a barrel and sequentially fuel and combustion-supporting gas which are ignited, the explosion creating pressure to open a foot valve to pass therebelow, the valve seat being yieldably urged seated upwardly, a purge valve then admitting purge gas into the barrel to urge the residual burnt products through bleed passage means to condition the barrel for a successive explosion.

3,623,571
STETHOSCOPE
Alan French, Warwick, R.I., assignor to Avid Corporation, East Providence, R.I.
Filed Nov. 13, 1970, Ser. No. 89,254
Int. Cl. A61b *7/02*
U.S. Cl. 181—24 **6 Claims**



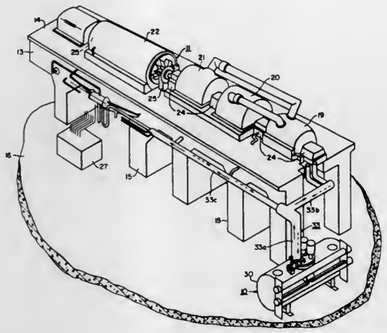
This specification discloses a stethoscope comprising a frame including a pair of arms providing short legs at one end and longer legs at the other end. The longer legs are pivotally connected with a ratchet associated with the pivotal connection to yieldably maintain an adjusted position of the arms. The arms are of plastic and are of an open channel construction provided by a closed U or box cross section. A sound tube of rubber is positioned on the channel of each arm and projects from the end of the short leg with the projecting end carrying an ear piece. The sound tubes enter the channels of the arms at the pivotal connection and there are no sharp or abrupt turns in the tubes from their point of entry to the ear pieces.

3,623,572
SOUND DAMPING ARRANGEMENT
Werner Mrosek, Rheydterstrasse 134, 404 Neuss, Germany
Filed Nov. 19, 1970, Ser. No. 90,915
Claims priority, application Germany, Feb. 19, 1970, P 20 07 527.8
Int. Cl. F16l *55/04*; **F01n** *1/20*
U.S. Cl. 181—47 A **11 Claims**



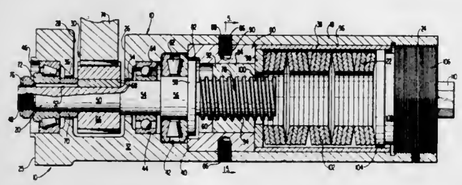
A tubular element conveys fluid through a passage having an enlarged passage portion. Accommodated in the passage portion axially spaced from one another is a pair of plates each provided in the respective outer margin with a concentric annulus of apertures. An insert is accommodated between the plates and defines with the wall of the element an annular clearance. Its respective end faces face the plates and are each provided with recesses communicating with the clearance and with one of the apertures. A plurality of depressions are provided in the upstream one of the endfaces and register with respective apertures and a plurality of closing members are each received in one of the depressions closing the same except for a reduced cross-sectional area. Biasing means yieldably biases the respective closing member into closing position in which it resiliently closes partially the respectively associated aperture.

3,623,573
LUBRICATION SYSTEM
Michael Csanady, Jr., Ridley Park, and Frederick W. Kramer, Wallingford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,706
Int. Cl. F01m *5/00*
U.S. Cl. 184—6 R **6 Claims**



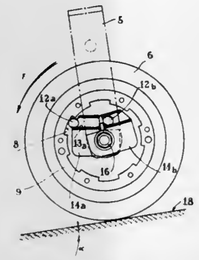
A lubrication system for a machine, having bearings rotatably supporting one or more journals, such as in a turbine or generator. The system comprises a lubricant reservoir having an open top portion and closed side and bottom portions. The reservoir may be a cylindrical reservoir or an underground reinforced concrete reservoir which would be lined with a material impervious to the oil. The lubricant conduits are cut and fitted outside of an independent of the reservoir. The conduits and pumping equipment are then mounted on inner and outer surfaces of a plate to form a unitary plate structure. The plate structure is lowered onto a shelf portion surrounding the open portion of the reservoir. The conduits inside of the reservoir are secured by adjustable supports to the reservoir. The plate structure is detachably secured to the reservoir thereby enclosing the reservoir.

3,623,574
COUNTERBALANCE MECHANISM
Robert L. Gardner, Gulf Breeze, Fla., assignor to Vitro Corporation of America, New York, N.Y.
Filed Nov. 19, 1969, Ser. No. 877,907
Int. Cl. F16d *65/00*
U.S. Cl. 188—1 R **7 Claims**



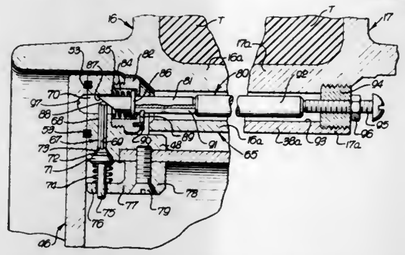
A counterbalance mechanism that achieves its counterbalancing force by the rotation of a shaft which places load upon a spring column. A screw-type drive moves a block axially along the shaft to compress the column, thereby imposing the counterbalance load. This screw-type drive, therefore, limits the application of the counterbalancing force to only one direction of rotation, corresponding to placing a load on the spring column. Also, the counterbalancing force increases in proportion to the number of revolutions the shaft is rotated. The counterbalancing mechanism is ideally suited to oscillating loads, such as the movement of a radar antenna, so that when the antenna moves in one direction, away from its neutral position, one of a pair of counterbalance mechanisms can provide the counterbalancing force; while, when the antenna rotates in the opposite direction, the other of the pair of counterbalancing mechanisms can provide the opposite counterbalance force.

3,623,575
SELF-LOCKING WHEEL
Raymond Joseph, Schiltigheim, and Roger Manin, Paris, both of France, assignors to Ateliers Reunis Schiltigheim, (Bas-Rhin), France and Guitel Etienne-Mobilor, Gervais, (Seine Saint-Denis), France
Filed Dec. 24, 1969, Ser. No. 887,968
Claims priority, application France, Dec. 31, 1968, 182347
Int. Cl. B60t *7/12*
U.S. Cl. 188—31 **7 Claims**



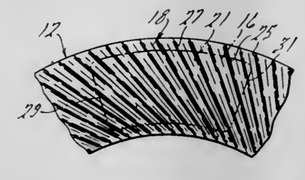
A wheel for a vehicle which incorporates an automatic locking device comprising two movable locking members. The body of said wheel comprises a space containing said locking members normally disposed on either side of a vertical plane containing the wheel axis, said locking members being mounted for free movement on a support rigid with the wheel support, for example, its mounting strap or fork, a series of notches being provided on the other hand along the outer periphery of said space containing said pair of locking members so as to receive one or the other locking member when said locking member is caused to move in one or the other direction by gravity as a consequence of the inclination of their support beyond a certain angle to the vertical.

3,623,576
COOLING SYSTEM FOR WHEELS AND BRAKES OF AIRPLANE LANDING GEAR
Richard C. Waring, Pittsburg, Calif.; Earle B. Williams, Everett, Wash., and Loren H. Williams, Sacramento, Calif., assignors to Inventors Associates, Pittsburg, Calif.
Filed July 23, 1969, Ser. No. 843,988
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **26 Claims**



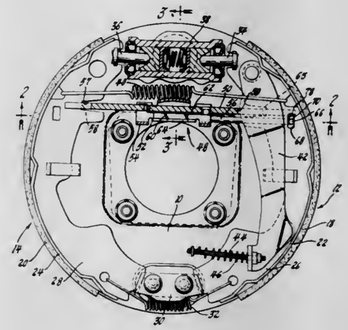
A cooled wheel and brake assembly in which a container for a coolant is combined with the assembly, a gaseous coolant being discharged through expansion chambers to cool the wheel assembly, the coolant discharge being under the control of valves which are operated by heat-responsive actuators, the coolant being released into the expansion chambers on demand.

3,623,577
CORRUGATED ROTOR FOR DISK BRAKES
Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company
Filed Nov. 13, 1969, Ser. No. 876,547
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **6 Claims**



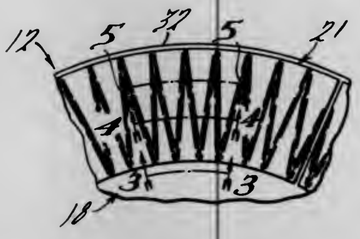
A disk brake assembly having two embodiments of rotors each of which provides a plurality of separate braking surfaces with airgaps disposed between the braking surfaces. The braking surfaces and airgaps are disposed at an angle to the edge of the brake pad so that the brake pad edge is always in contact with at least two of the braking surfaces.

3,623,578
COMBINED SELF-ADJUSTER AND PARKING BRAKE ACTUATING MECHANISM
Robert W. Plume, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 1, 1970, Ser. No. 51,526
Int. Cl. F16d *65/54*
U.S. Cl. 188—79.5 P **2 Claims**



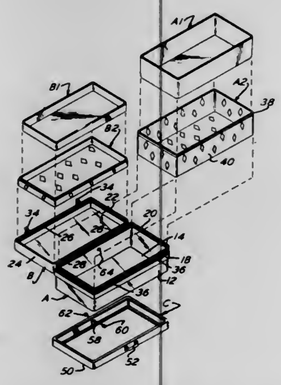
An improved combination parking brake actuating and self-adjuster mechanism for a drum brake wherein a rigid strut engages a cable operated lever pivoted upon the first shoe and transmits parking brake actuating force to the second shoe. A one-way clutch mechanism is connected to the first shoe through a lost motion connection and is movable upon the strut in one direction only so as to extend the effective length of the strut assembly during parking brake actuation and thereby reposition and hold the shoes in further apart relationship to adjust for lining wear.

3,623,579
FABRICATED ROTOR FOR A DISK BRAKE ASSEMBLY
Paul G. Hendrickson, Ann Arbor, and Earl W. Elster, Allen Park, both of Mich., assignors to Kelsey-Hayes Company
Filed Sept. 26, 1969, Ser. No. 861,321
Int. Cl. F16d 65/12
U.S. Cl. 188—218 XL 4 Claims



A disk brake assembly embodying a ventilated, fabricated rotor. The rotor is made up of three formed pieces. The first two pieces form oppositely facing annular braking surfaces and the third piece is corrugated, holds the other two pieces together and forms with these pieces a number of radially extending cooling air gaps.

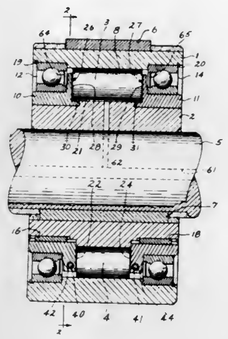
3,623,580
CONVERTIBLE APPEARANCE TRAVELING CASE
Benjamin E. Toller, 109 Roberts Road, Brookhaven, Pa.
Filed Feb. 17, 1970, Ser. No. 12,055
Int. Cl. A45c 3/00, 3/08
U.S. Cl. 190—41 C 6 Claims



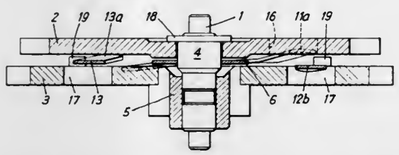
A convertible appearance traveling case including a transparent outer plastic casing, both lid and body, with interfitting inner containers adapted to be snapped within the lid and body shells and having interchangeable sheaths therebetween.

3,623,581
OVERRUNNING DEVICE
William G. Livezey, 719 East Kessler Blvd., Indianapolis, Ind.
Filed Sept. 14, 1970, Ser. No. 71,697
Int. Cl. F16d 41/07
U.S. Cl. 192—45 9 Claims

Herein disclosed is a cam and roller-type of overrunning device which may be used as either a clutch or brake. The device includes a full compliment of interspersed long and short rollers and a cam whose cam faces each have a composite contour for camming the rollers which are normally biased toward engagement by tickle springs operating on the long rollers. The composite contour has a constant or decreasing angle of attack for overrun and an increasing angle of attack for engagement with backstops being provided for limiting travel of the rollers on overrun.



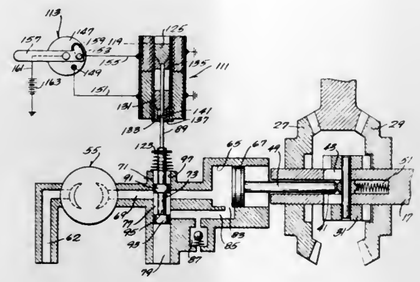
3,623,582
FREE-WHEEL MECHANISM
Urs Giger, Solothurn, and Edwin Fernand Jakob-Schild, Grenchen, both of Switzerland, assignors to Eta A. G. Ebauches-Fabrik, Grenchen, Switzerland
Filed Jan. 12, 1970, Ser. No. 2,270
Claims priority, application Switzerland, Jan. 16, 1969, 571/69
Int. Cl. F16d 41/18
U.S. Cl. 192—46 4 Claims



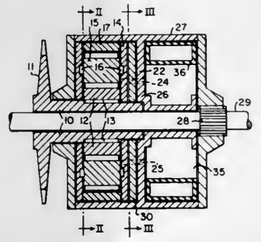
A freewheel mechanism with a pair of coaxial wheels and yielding wedging members cooperating with indentations of the wheels and interlocking the latter for rotary motion when the driving wheel moves in one direction, while allowing the driving wheel to rotate alone freely in the reverse direction. The wedging members are themselves rigid and form part of a single punched piece inserted between the wheels on their common arbor and comprising a hub portion and resilient radial arms, each of which connects a wedging member to the hub portion. Each radial arm has built-in torque and is merely subjected to a pull when the wedging member carried thereby transmits a torque from the driving wheel to the driven wheel.

3,623,583
ELECTRICALLY OPERATED CONTROL MECHANISM FOR A HYDRAULIC SHIFTING MECHANISM
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation of application Ser. No. 627,106, Mar. 30, 1967, now abandoned. This application Mar. 10, 1969, Ser. No. 809,465
Int. Cl. F16d 25/061
U.S. Cl. 192—51 27 Claims

Disclosed herein is a marine propulsion unit or device including a hydraulic mechanism which is operative to effect shifting of a clutch from a fail-safe forward drive condition to either of a neutral or reverse condition. Also disclosed herein is an electrically operated control mechanism for the hydraulic mechanism, which control mechanism is also designed to fail safe in forward drive.
The control mechanism includes aligned, neutral and rearward drive solenoids which are selectively energizeable to afford neutral and reverse drive and which are operably associated with a single plunger carrying a spool valve embodied in the hydraulic system.



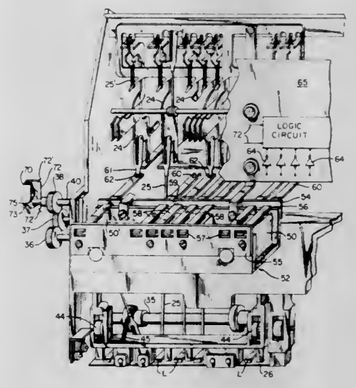
3,623,584
TORQUE CONVERTER TRANSMISSIONS
Charles L. Hill, Olney, Ill., assignor to Cash Baron Corp., Olney, Ill.
Filed Aug. 13, 1970, Ser. No. 63,389
Int. Cl. F16d 31/04, 31/08
U.S. Cl. 192—56 F 7 Claims



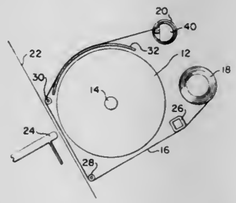
A torque converter transmission comprising input and output shafts with a primary gear connected for rotation with the input shaft and a torque plate connected through a calibrated torque spring to a driven member connected to the output shaft. One or more fluid pump gear means are rotatably mounted on the torque plate and meshed with the primary gear to cause the torque plate to rotate with the primary gear when the pump gear is restrained from rotation. The torque spring permits limited relative rotation between the torque plate and the driven member and such rotation controls the restriction in the hydraulic circuit between the outlet port of the pump means and a reservoir of hydraulic fluid so that for a predetermined maximum input torque, the pump gear is restrained from rotation. A movable control valve plate is interposed in the outlet restriction to adjustably control the outlet restriction for a given relative rotation of the torque plate and driven member, thus controllably predetermining the maximum input torque for direct transmission between input and output shafts.

3,623,585
KEYBOARD PRINTER CHARACTER SELECTION UNIT
Roy G. Mason, Mountainview, Calif., assignor to Datel Corporation, Falls Church, Va.
Filed Jan. 21, 1969, Ser. No. 792,471
Int. Cl. B41j 5/30
U.S. Cl. 197—19 5 Claims

In the linkage employed to control displacement of a print head for a keyboard printer to advance different characters into the printing position, an electromagnetic character selection unit is mounted in direct association with the linkage to control displacement of the print head through energization of a selected combination of solenoids over a limited time interval of each print cycle. Armature plates in the selection unit are quickly and accurately responsive to energization of the solenoids in activating the linkage, and the need for separate restoring elements or holddown mechanisms is avoided by an electronic switch which is correlated in opening and closing with the print cycle timing member whereby the solenoids can be deenergized well in advance of the end of each cycle and be self-restoring ahead of the next cycle.

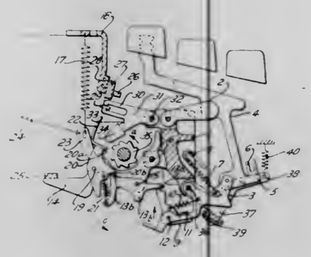


3,623,586
RIBBON SPOOL
Orville H. Shellabarger, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Aug. 27, 1969, Ser. No. 853,348
Int. Cl. B41j 35/00; B65h 75/28
U.S. Cl. 197—175 12 Claims



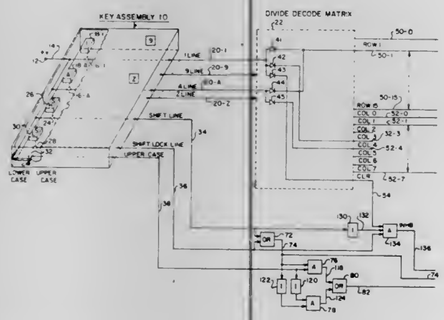
A clamping device for securing and maintaining in position the leader of a ribbon or the like in a tubular spool wherein the clamping action is derived from the interengagement of a core and a plurality of camming surfaces in the spool, the core being freely rotatable within the spool. The spool has, formed in its wall, a longitudinal slot for receiving the ribbon leader, and an adjacent indent portion adapted to cam the core against an inside surface of the spool and also against the indent portion for the length of the leader. The leader is held between the camming surfaces of the spool and the core by reason of the pulling forces on the leader as the spool is rotated, there also being additional slots in the spool cooperating with spacers for initiating release of the ribbon from the spool.

3,623,587
TYPE ACTION DRIVE
Manfred Link, Nurnberg, Germany, assignor to Triumph Werke Nurnberg AG, Nurnberg, Germany
Filed Apr. 18, 1969, Ser. No. 817,376
Claims priority, application Germany, Apr. 20, 1968, P 17 61 226.9
Int. Cl. B41j 23/06
U.S. Cl. 197—17 10 Claims



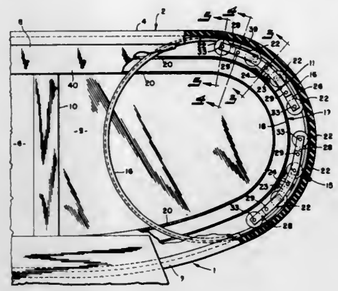
Each type action of a typewriter has a drive member connected with the type bar and a coupling member pivotally mounted on the drive member and cooperating in a coupled position with a power roll. The coupling member has a camming surface cooperating with an adjustable guide means mounted on the supporting frame of the typewriter, and camming the coupling member out of engagement with the power roll. By adjustment of the guide means different impacts of the type bar can be obtained, as required by types having different surface areas, or if particularly great numbers of copies have to be made.

3,623,588
ELECTRONIC KEYBOARD WITH UPPER- AND LOWER-CASE CAPABILITY
Ronald Thomas Prodan, Rowayton, Conn., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.
Filed Apr. 1, 1969, Ser. No. 812,204
Int. Cl. B41j 25/24
U.S. Cl. 197—71 6 Claims



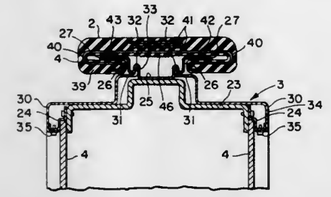
An electronic keyboard with upper- and lower-case capability which utilizes the same decode circuit for both cases. The shift operation is accomplished by the modification of a single bit from the decoder output. The shift operation may be inhibited under selected conditions, such as when a nonalphabetic key is depressed while the keyboard is in a shift-lock condition. The keyboard may also be switched from a state where it normally generates upper-case characters to a state where it normally generates lower-case characters and the code output from the keyboard may be easily altered.

3,623,589
ROTATING SUPPORT MEMBER FOR MOVING HANDRAIL
Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 4, 1970, Ser. No. 8,447
Int. Cl. B66b 9/12
U.S. Cl. 198—16 11 Claims



Handrail support member located at ends of balustrades consists of a hoop or rim which rotatably supports the handrail during movement between its upper and lower runs. Each hoop is supported by a plurality of rollers which may be rigidly mounted on the newel support frame or suspended therefrom by load equalizing lever arms to obtain a more uniform distribution of bearing pressure around the inner periphery of the hoop thus reducing contact stresses.

3,623,590
MOVING HANDRAIL SYSTEM
Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 19, 1970, Ser. No. 3,795
Int. Cl. B66b 9/12
U.S. Cl. 198—16 16 Claims

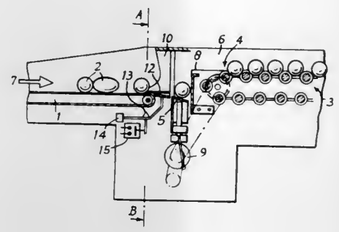


A moving handrail system for a passenger conveyor in which the handrail has hinged edges folded under flanges of a balustrade guide member with the edges of the handrail being retained in position by supporting plates. The handrail is driven by a sheave having a circumferential rib extending between the edges and engaging a driving face of the handrail. The hinged construction provides for bending and flexing the handrail in either direction as it passes around a drive sheave and takeup sheaves.

3,623,591
DEVICE FOR ORDERING ROLLABLE ARTICLES, DELIVERED IN A DISORDERED DELIVERY FLOW
Heinrich Koch, Bad Salzuflen; Kurt Hermsmeier, Obernbeck, and Karl-Heinz Northoff, Herford, all of Germany, assignors to Henry Y. Kuhl and Paul R. Kuhl, Flemington, N.J.
Filed June 10, 1969, Ser. No. 831,906
Claims priority, application Germany, June 11, 1968, P 17 56 576.3
Int. Cl. B65g 47/00
U.S. Cl. 198—24 13 Claims

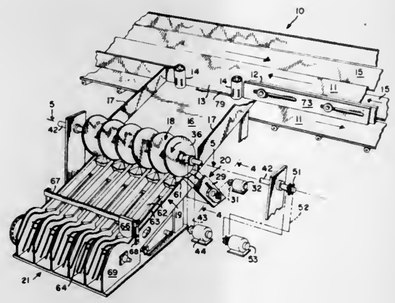
This invention relates to devices for ordering rollable articles, such as eggs, delivered from a disordered delivery flow

by means of angled lifting plates which lift one article at a time out of the delivery stream to a point at which they can roll over the top of a guide wall onto a subsequent conveyor. The lifting plates are specially shaped so as to lift only one



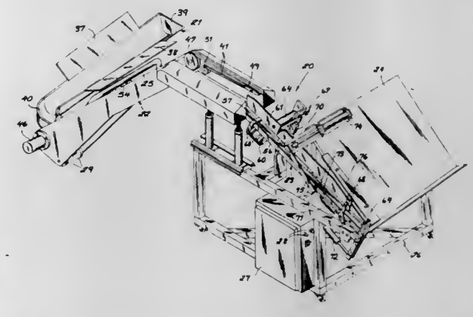
article at a time and a common drive is provided for the lifting plates and a subsequent conveyor. Control means is provided for preventing operation of the drive until all lifting plates have articles thereon.

3,623,592
FRUIT FEED SYSTEM AND METHOD
Earl R. Anderson, Los Gatos, Calif., assignor to Brex Corp., Los Gatos, Calif.
Filed July 18, 1968, Ser. No. 748,134
Int. Cl. B65g 47/26
U.S. Cl. 198—30 11 Claims



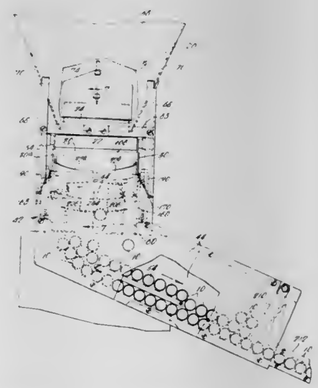
A fruit feed system comprising a bulk supply conveyor for rollable fruit articles from which fruit is fed through a discharge opening past a bridge preventing means into an inclined hopper or tray. A row of fruit is elevated from this tray and presented to a selective fruit admitting and rejecting mechanism comprising wobble plates which reject any fruit in the row presented to it which is not properly aligned with one of the passages through the wobble plate system, and admits only one fruit between each pair of wobble plates for feeding thereby on demand to the feed end of one of a plurality of single-file fruit feed mechanisms which incorporate means for feeding one fruit at a time from the discharge end thereof to a suitable processing mechanism such as a grader, a pitter or the like. Means is provided for selectively blocking any one of the single-file feed mechanisms, and when this occurs, the fruit is maintained in the row in an agitated condition, and the fruit between the wobble plates remain in place in agitated condition, ready to feed on demand. Subsequent fruit is presented repeatedly to the wobble plates for admission but no feed occurs when no fruit is in demand. The system includes means for determining the beginning of operation of the wobble plates, and optionally selecting the amount of "wobble" provided by oscillation of the wobble control means.

3,623,593
DEVICE FOR ORIENTING AND STACKING FRUSTOCONICAL ARTICLES
Hugh Van Melle, Islington, Ontario, and Herbert Rees, Toronto Willowdale, Ontario, both of Canada, assignors to Husky Manufacturing & Tool Works Limited, Toronto, Ontario, Canada
Filed Mar. 16, 1970, Ser. No. 19,798
Int. Cl. B65g 47/24
U.S. Cl. 198—33 7 Claims



A series of frustoconical plastic cups coming from an injection-molding machine alight on a vibratile trough directing them onto a pair of ascending, parallel conveyor belts between which they are suspended with their smaller end down. At the output end of the conveyor the belts are twisted and spread apart to release the cups which are picked up by a vibratile chute for stacking against an end stop. The latter may be preceded by a detent retractable under the control of a photocell, disposed upstream along the chute, which detects the trailing end of a stack of cups and closes a gate to prevent the advance of further cups past the cell while a lifting fork raises the stack to the level of an adjoining table onto which the stacked cups are swept by a swingable arm. The trough may be tiltable into a reverse position to guide scrap away from the elevating conveyor at the beginning of a series of molding operations.

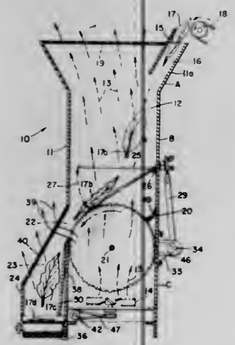
3,623,594
CAP-FEEDING APPARATUS
Jacob Ravn, and David McArel, both of Phoenixville, Pa., assignors to The West Company, Phoenixville, Pa.
Filed Oct. 23, 1969, Ser. No. 868,750
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 9 Claims



Cap-feeding apparatus for caps having a top and a skirt depending from the outer edge of the top comprising a hopper section for caps disposed in a random fashion and having a discharge opening, a discharge tray disposed below said discharge opening, first vibrating means for effecting actua-

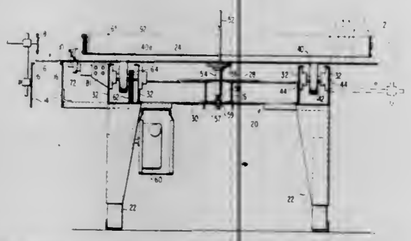
tion of said discharge tray, a selector tray below said discharge tray for receiving caps discharged from said discharge tray, said selector tray including first orientation means for orienting all of the caps in a top-up or top-down position and second orienting means operable to reposition caps so that all caps discharged from said selector tray are oriented in the same way, an accumulator section to receive caps from the selector tray, second vibrating means for effecting vibration of said selector tray and effect discharge of caps to said accumulator section, and sensing means in said selector tray and accumulator section, for sensing caps therein and operable to control actuation of said second vibrating means in response to load of caps sensed.

3,623,595
TOBACCO LEAF ORIENTING MACHINE
Richard T. Brown, Route 4, Box 251; Burnice H. Brown, Route 4, and Harold D. Brown, Route 4, Box 311, all of Darlington, S.C.
Filed Dec. 18, 1969, Ser. No. 886,112
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 R **14 Claims**



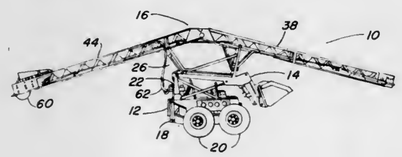
A vertically elongated chamber has a current of air blowing upwardly therethrough so that leaves deposited into the chamber are subjected to a combined effect of gravity and airflow and heavy stems of the leaves are thus oriented downwardly; conveyor means in the chamber translate the leaves laterally so that the leaves move, stem first, through an outlet passage at one side of the lower portion of the chamber. The leaves then fall onto a discharge conveyor with their stems oriented in the same direction. A zone of reduced pressure at the upper end of the chamber prevents the leaves being blown out the top of the chamber. Kicker means within the chamber above the conveyor means aid in separating leaves which may be stuck together.

3,623,596
ACCUMULATING TABLE
Francis J. Garvey, Newfield, N.J., assignor to Garvey Products Corporation, Blue Anchor, N.J.
Filed Feb. 5, 1970, Ser. No. 8,854
Int. Cl. B65g *37/00*
U.S. Cl. 198—103 **9 Claims**



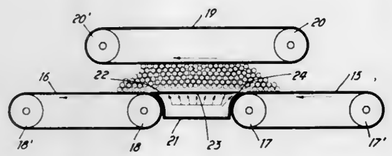
In a rotary accumulating table, a relatively thin and flexible metallic disk is rotated on a vertical axis and at its point of tangency to a supply conveyor peripherally spaced rollers bear respectively on the upper and under surfaces of the disk to flex its margin into accurate coplanar level with the conveyor surface. The disk is supported by a set of other rollers which are peripherally spaced around the disk margin and are mounted on radially directed brackets which are interchangeable in different lengths to permit ready substitution of disks of different diametric sizes.

3,623,597
CONVEYOR UNIT MOUNTING SYSTEM
Charles J. Arndt, Marion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Filed June 15, 1970, Ser. No. 46,183
Int. Cl. B65g *41/00*
U.S. Cl. 198—109 **7 Claims**



An improved conveyor system for conveying building materials such as brick, stone, roofing materials, mortar, concrete mix and the like includes first and second conveyor support members pivotably joined at one end of each to form a conveyor unit which may be folded at approximately its center. A mechanically spliced conveyor belt is supported by both the first and second conveyor support members and is driven in continuous movement by an appropriate drive means. The conveyor unit is mounted on a front-loading vehicle typically comprising a body riding on wheels or treads. Pivotably mounted to the body is a supporting assembly and scoop arrangement capable of being hydraulically rotated about a horizontal axis by hydraulic means. Firmly mounted to the supporting assembly is a vertical support structure. Mounted on the vertical support structure adjacent one end is the first conveyor support member; with the second conveyor support member being partially mounted to the same end of the first conveyor support member. Hydraulic jack members are attached to the supporting assembly and the second conveyor support member to provide means to rotate the second conveyor support member about a horizontal axis at the point of attachment of the first and second conveyor support member.

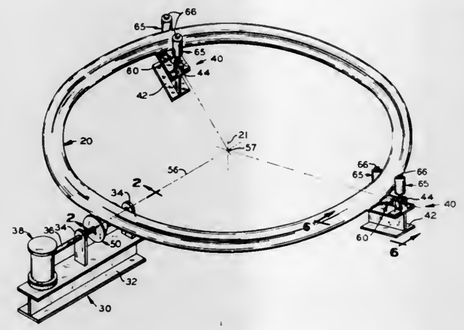
3,623,598
GUIDING MEANS FOR CONVEYING ROD-SHAPED OBJECTS AND ESPECIALLY CIGARETTES
Henri Anfossi, Orleans, Loiret, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France
Filed July 24, 1968, Ser. No. 747,133
Claims priority, application France, July 25, 1967, 115545
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 **4 Claims**



A method for ensuring the cohesion of a stream of rod-shaped objects and especially cigarettes comprising a plurality of adjacent layers of the said objects and for permitting the displacement of the said stream by propulsion means which

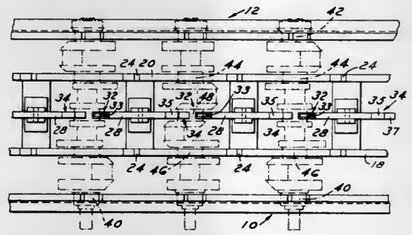
are adapted to produce action solely on one of the two outer layers comprising the step of exerting a pressure of fluid on the other outer layer in the direction of the first of the said layers.

3,623,599
NONSLIPPING ROLLER SUPPORTS FOR A ROTATABLE RING
Donald L. Tillman, 805 West Wayne St., Maumee, Ohio
Filed Nov. 3, 1969, Ser. No. 873,180
Int. Cl. B65g *29/00*
U.S. Cl. 198—209 **18 Claims**



An apparatus for supporting and guiding a rotatable ring of polygonal cross section comprising at least one V-type shaped roller-supporting means and at least two other roller-supporting means angularly spaced around the circumference of the ring. The one V-type shaped roller means has two radially spaced nonslipping pure rolling points of contact between its conical flanges and the ring so that a straight line through these two points intersects the axis of the roller means on the axis of rotation of the ring. One or more of the roller means may be driven to rotate the ring. A plurality of concentric rings may be employed and may be commonly or separately driven at either the same angular velocity or at different angular velocities. The rings may be hollow for the conduction of electricity and/or fluids to stations mounted on the ring or rings, and the ring may have lugs or flanges for operating limit switches, cams and/or the engagement of braking means.

3,623,600
CONVEYING AND STORING SYSTEM FOR ELONGATED ARTICLES
Bryce D. Dell, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 8, 1969, Ser. No. 882,942
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **7 Claims**

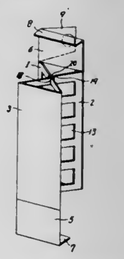


Crankshafts for reciprocating engines are transported and stored by a mechanical conveyor. The conveyor is made up of a pair of stationary side members that have a plurality of inclines separated by a plurality of risers on the upper surfaces thereof. A pair of vertically movable intermediate members are located between the side members. The intermediate members also have a plurality of inclines separated from each other by risers, and the inclines thereof are positioned to overlap the risers of the side members. Vertical movement of the intermediate members moves the crankshafts along the conveyor. Blocking mechanisms attached to the intermediate members prevent the crankshafts from moving to the succeeding riser when a crankshaft already is located on the succeeding riser.

ERRATUM

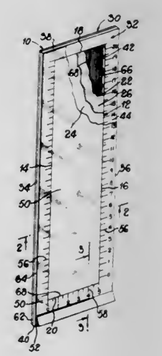
For Class 206 see:
Patent No. 3,624,832

3,623,601
TAPE ROLLS HOLDING AND DISPLAY BOX
Seiichi Okutani, Osaka, Japan, assignor to Nitto Electric Industrial Co., Ltd.
Filed Nov. 6, 1969, Ser. No. 874,652
Claims priority, application Japan, Nov. 14, 1968, 43/83637
Int. Cl. B65d *5/50, 5/52;* **A47f** *1/14*
U.S. Cl. 206—45.14 **5 Claims**



A selectively openable and closeable display box or carton for holding a plurality of rolls of tape for display. The carton has a front panel with a plurality of window openings therein and a back panel provided with a corresponding plurality of window openings. A fold line is provided along the longitudinal center portion of each of the front and back panels across the series of window openings. Sidewalls connect the opposite ends of the front and back panels along integral corner folds of the carton. The front and back panels are adapted to fold inwardly along their respective longitudinal fold lines, whereby they are moved toward each other and releasably held with their fold lines adjacent one another so that rolls of tape can be held in the opposed window openings.

3,623,602
COMBINATION PACKAGE AND TEMPLATE FOR THIN-LAYER CHROMATOGRAPHIC PLATE
Anthony S. Valente, Bernardsville, N.J., assignor to Quantum Industries, Inc., Fairfield, N.J.
Filed Oct. 8, 1969, Ser. No. 864,817
Int. Cl. B65d *73/00;* **B01d** *15/08;* **G01n** *31/08*
U.S. Cl. 206—46 R **10 Claims**



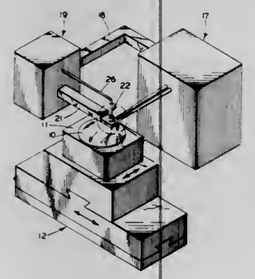
A thin-layer chromatographic plate is packaged between a backing member and a pliable plastic film adhered to mar-

ginal portions of the backing member around the perimeter of the plate, the marginal portions of the backing member carrying indicia including a spotting guide juxtaposed with an end of the plate and a migration gauge juxtaposed with at least one side of the plate.

3,623,603
MAGNETIC IDENTIFICATION AND SEPARATION OF SMALL PARTS

Bernard G. Casner, Emmaus; Ray T. Goulstone, Allentown, and Peter R. Hance, Allentown, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Aug. 31, 1967, Ser. No. 664,703, now Patent No. 3,572,400. Divided and this application Jan. 9, 1970, Ser. No. 7,292
Int. Cl. B07c *5/344*
U.S. Cl. 209—74 **4 Claims**



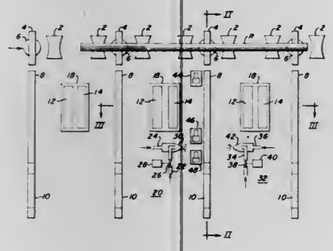
In the manufacture of a number of small parts, selected areas of the surface of a sheet are inspected and defective areas are magnetically identified with a specially formulated, relatively high-viscosity magnetic fluid. The sheet is the divided into a number of small parts and those parts formed from defective areas of the sheet are magnetically separated from the remaining parts.

In this method, air pressure is applied to a free piston located within the barrel of a pen that forces the magnetic fluid through the capillary tip of the pen onto the selected surface areas. Methods and apparatus are provided for controlling the size and shape of the magnetic mark.

3,623,604
STRAIGHTNESS MONITOR

William L. Roberts, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Filed Apr. 6, 1970, Ser. No. 25,809
Int. Cl. B07c *3/12*
U.S. Cl. 209—80 **5 Claims**



Lengths of rounds roll down parallel runners and over tolerance strips spaced away from and parallel to the plane of the runners. Out of straightness sections of the rounds contact the tolerance strips actuating circuitry for marking the length as to its straightness tolerance.

3,623,605
PROCESS FOR THE FLOTATION OF FLUORITE

Giovanni Perri, and Gianfranco Aquili, both of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

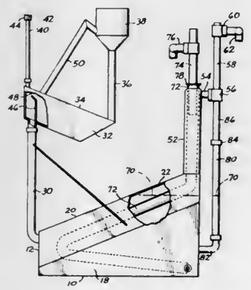
Filed Jan. 9, 1970, Ser. No. 1,851
Claims priority, application Italy, Jan. 9, 1969, 11310A/69
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **7 Claims**

Improvement in flotation of calcium fluoride from clay-containing ores which comprises conditioning the flotation slurry with an alkyl phenol ethoxide and a fatty acid ethoxide prior to adding the usual flotation reactants. Flotation slurry may be prepared from common calcium fluoride crude ore or from clay slime discarded from prior flotation processes.

3,623,606
SEPARATOR FOR IMMISCIBLE LIQUIDS

Dale L. Turnidge, Route 1, Box 223, Jefferson, Oreg.

Filed Oct. 13, 1969, Ser. No. 865,635
Int. Cl. B01d *21/24*
U.S. Cl. 210—94 **14 Claims**

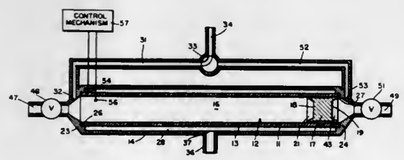


An inverted trough forms the top of or is housed in a container and is inclined upwardly from its infeed end to its outfeed end. The infeed end of the trough communicates with a source of a mixture of immiscible liquids to be separated, through an infeed conduit assembly which includes a gas bleed and an infeed rate monitor. The outfeed end of the trough communicates within an outfeed conduit for delivering the separated lighter density liquid to storage. A transparent interface-monitoring conduit interconnects the container below the outfeed end of the trough and the outfeed conduit above the outfeed end of the trough, for visual inspection of the interface of the immiscible liquids. A vertically adjustable drain conduit extends from the bottom of the container to an elevation above the trough but below the outlet end of the outfeed conduit, for adjusting the elevation of said interface.

3,623,607
FILTER ASSEMBLY

John F. Loos, San Diego, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

Filed July 28, 1969, Ser. No. 845,473
Int. Cl. B01d *35/16*
U.S. Cl. 210—106 **11 Claims**



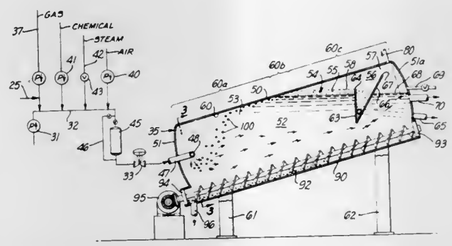
A self-cleaning filter assembly is described including a free piston which moves periodically to clean a surface of the

filter element, or to flush concentrated fluids or solids from the filter assembly. Movement of the piston is accomplished automatically by a valve arrangement which directs pressurized fluid to an appropriate side of the piston.

3,623,608
WATER CLARIFIER AND SEPARATOR

Logan C. Waterman, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Original application Oct. 31, 1968, Ser. No. 772,081. Divided and this application Feb. 20, 1970, Ser. No. 12,916
Int. Cl. C02c *1/30*
U.S. Cl. 210—221 **18 Claims**

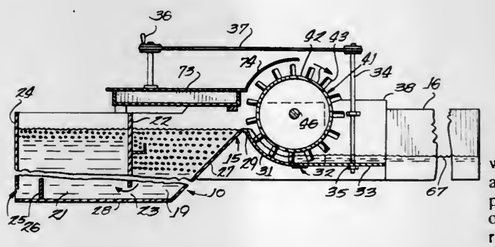


A clarifier for oil-contaminated water from a desalter or other source, the water being clarified by gas flotation effected in a closed vessel having an upper-inclined wall guiding the oily waste material to a collection zone of the vessel without the use of mechanical surface skimmers. The flotation is usually effected at a pressure other than atmospheric. The oily waste material and the separated gas may be further treated for recovery of valuable products, as by being returned to the desalter or to refinery equipment.

3,623,609
SKIMMER FOR SEPARATING FLOWING LIQUIDS FROM WATER

John A. Ainlay, 3330 Grant St., Evanston, Ill.

Filed Dec. 2, 1969, Ser. No. 881,396
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **17 Claims**

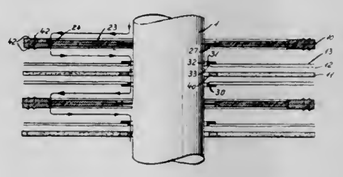


A floating, seagoing skimmer has a separating chamber communicating at its lower end with the body of water into which it is placed, a weir at the front of the chamber having a forwardly extending curved surface which terminates in a skimming edge and a rotating vaned impeller whose path of movement is disposed relatively closely to the curved surface of the weir so as to carry the combined floating liquid and water over the weir and into the separating chamber. The top of the weir is substantially above the water surface so as to create a hydrostatic head for causing waterflow out of the bottom of the chamber and the number of vanes in the impeller, its speed of rotation and its depth of penetration are such as to move the combined floating liquid and water with a minimum of turbulence. The skimming edge ahead of the weir is adapted to be held somewhat below the interface of the floating liquid and water surface.

3,623,610
REVERSE OSMOSIS APPARATUS

Ole Jentoft Olsen, and Rud Frik Madsen, both of Nakskov, Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Oct. 23, 1969, Ser. No. 868,860
Claims priority, application Denmark, Oct. 25, 1968, 5179/68
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 **7 Claims**

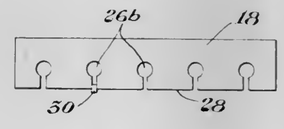


In an apparatus for reversed osmosis comprising a plurality of disc-formed semipermeable membranes arranged in a pile the liquid to be treated is conducted alternatively outwardly and inwardly along the membranes. Between the membranes combined distance rings and guide plates are arranged which respectively separate the membranes and conduct the liquid along the membranes. In each combined distance ring and guide plate holes are provided inside the distance ring for conducting the liquid from one side of the guide plate to the other and at the center of the pile the liquid is transferred from one membrane to the next membrane through gaps between the membranes and a central bolt which clamps the pile together axially.

3,623,611
MICRODIALYZER APPARATUS

William H. Riley, and Richard H. Reitz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 10, 1969, Ser. No. 875,020
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **5 Claims**



A device for use in performing equilibrium dialysis studies with very small volumes of solution (0.100 ml. or less, for example). The device is of sandwich construction with a permeable membrane being sandwiched between two layers of elastic, fluid-impervious material which contain fluid-receiving pockets and which are disposed under pressure between fluid-impervious rigid platelike outer wall elements.

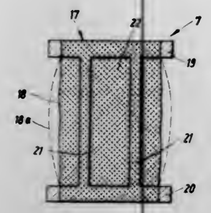
3,623,612
FILTER

Franz Ernst, Aglasterhausen, Germany, assignor to Chemie und Filter GmbH, Heidelberg, Germany

Filed Feb. 24, 1970, Ser. No. 13,704
Claims priority, application Germany, Mar. 8, 1969, P 19 11 808.2
Int. Cl. B01d *29/14*
U.S. Cl. 210—356 **5 Claims**

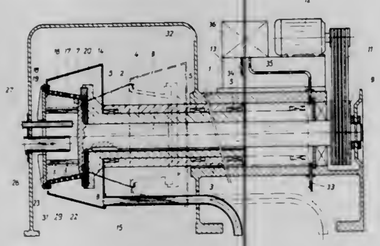
The invention relates to a filter for pipes of the type used for carrying water for industrial uses. The filter has a filter element which comprises a rigid, cylindrically shaped skeleton frame and a sheet material sieve internally of the

frame. The sieve is attached only to the top and bottom portions of the frame and has the property such that it is deformable from a slack state to a tensioned state under the effect of fluid pressure. The sieve has restoring properties



which cause damped vibrations thereof during the transition from the tensioned state to the slack state. A transparent collecting container beneath the filter element has a light filtering color or tint for preventing the growth of algae in the container.

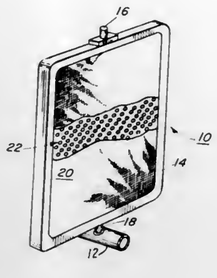
3,623,613
CENTRIFUGE
Johann P. Quetsch, Berghausen, Germany, assignor to Ernst Heinkel Maschinenbau GmbH, Stuttgart, Germany
Filed Mar. 4, 1970, Ser. No. 16,337
Claims priority, application Germany, Mar. 5, 1969, P 19 11 147.8
Int. Cl. B01d *53/00*
U.S. Cl. 210—370 **8 Claims**



Centrifuge for separating liquid and solid components from a suspension, wherein the centrifuge is provided with a centrifugal drum and a filter bag insertable therein. A boundary edge of the filter bag is attached to the discharge end of the centrifugal drum and the other boundary edge is attached to a mushroom-shaped or buffer-type bottom piece; the centrifugal drum and the bottom piece are arranged coaxially with respect to each other and are rotatable together. In addition, the drum and bottom piece are relatively axially movable with respect to each other during rotation. A lid is mounted to the bottom piece and contacts the discharge end of the drum when the bottom piece is located at the bottom of the centrifugal drum during the centrifuging process itself. The lateral walls of the centrifugal drum are tapered conically to a minor extent toward the bottom at an angle which allows removal of the centrifugal drum from the filter bag in a satisfactory and easy manner.

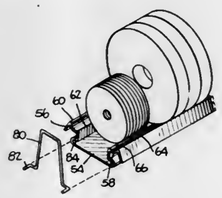
3,623,614
FILTER LEAF CORE
Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.
Filed Dec. 11, 1968, Ser. No. 789,642
Int. Cl. B01d *25/04*
U.S. Cl. 210—486 **5 Claims**

A core for a filter leaf for use in a pressure filter tank includes a pair of thin rubber sheets bonded to opposite faces of a fiber glass reinforcing panel. Each outer sheet has a multiplicity of outwardly extending studs in the form of tabular



protrusions which define therebetween a plurality of fluid-distributing troughs.

3,623,615
TAPE REEL STORAGE APPARATUS
Albert A. Kawachi, 150-76 Village Road, Jamaica, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,575
Claims priority, application Japan, July 9, 1968, 43/58691; July 9, 1968, 43/58692
Int. Cl. A47b *81/06*
U.S. Cl. 211—40 **7 Claims**

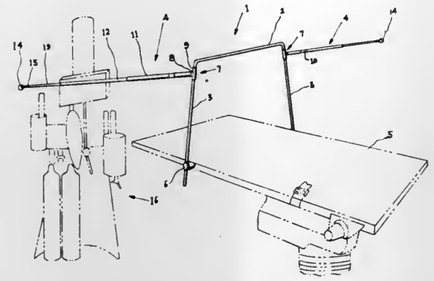


Disc-shaped reels of photographic film or data processing tapes are stored in side-by-side position on a horizontally elongated rack having longitudinally extending parallel supports for storing individual reel cases on their rims in a vertical position. Provided on the rim of the reel case is at least one projection extending outwardly from the rim. A reel case is removed from the rack by rotating the case until the projection contacts a rack support, at which time continued rotation causes the reel case to pivot and roll over the rack support and out of the rack space. In a further embodiment the parallel supports provide a pair of spaced outer ridges and a pair of spaced inner ridges adapted for supporting reels of various diameter sizes.

3,623,616
ANESTHESIA SCREEN
Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,354
Int. Cl. A47l *5/00*
U.S. Cl. 211—86 **1 Claim**

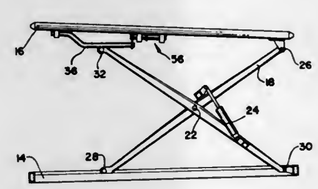
An anesthesia screen is formed of an adjustable frame on which a sheet is suspended to separate a patient on an operating table from an anesthesiologist with his equipment. The frame is a crossbar with spaced, downward extending legs in the shape of an inverted U, the lower portion of each

leg being adjustably secured to one side of the operating table. From an upper portion of each leg a telescoping arm is



laterally extendible, each arm being adapted to support a sheet.

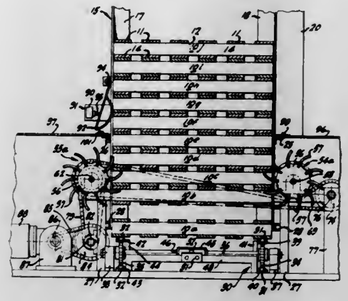
3,623,617
CARGO-HANDLING DEVICE HAVING A TILT-ADJUSTING SYSTEM
Laszlo Nemessanyi, Glen Head, N.Y., assignor to Tridair Industries, Redondo Beach, Calif.
Filed Apr. 20, 1970, Ser. No. 29,964
Int. Cl. B60p *1/12*
U.S. Cl. 214—1 D **11 Claims**



A cargo-handling device having a load-supporting bed that can be elevated from a parallel first position to a second parallel second position and then tilted by a tilt-adjusting system to a nonparallel third position to match an adjacent plane surface for loading or off-loading of cargo. The bed can be returned to the first position and restored to its parallel orientation from the nonparallel third position without further actuation of the tilt-adjusting system.

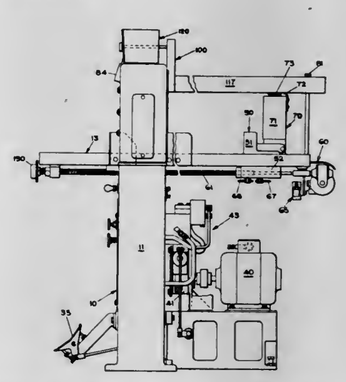
3,623,618
PALLET STORAGE AND DELIVERY MECHANISM
Stanley B. Shaw, Sunol, Calif., assignor to C T Supply Co., Fremont, Calif.
Filed Oct. 20, 1969, Ser. No. 867,776
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 K **9 Claims**

A downstacker mechanism for storing and delivering pallets one by one to a conveyor for transport thereby to a palletizer machine operative to assemble for packaging empty containers of the type commonly known as cans or tin cans. The mechanism includes a vertically oriented storage magazine in which pallets are retained in stacked juxtaposition one above another. Associated with the storage magazine are a plurality of pallet-support and delivery devices mounted for rotational movement about horizontal axes, and each having a plurality of outwardly extending fingers angularly spaced from each other for selective engagement with pallets comprising such stack thereof so as to control movement of the stack through the magazine. Motor means drivingly connected with the devices synchronously



displaces the same step by step so as to cause the same to release in turn each successive lowermost pallet in the stack upon demand from a discharge conveyor onto which such pallets are delivered.

3,623,619
PAPER CUTTER MAGNETIC SPACER
Homer Loper, Muskegon, Mich., assignor to The Challenge Machinery Company, Grand Haven, Mich.
Filed Apr. 27, 1970, Ser. No. 31,927
Int. Cl. B23q *5/00*
U.S. Cl. 214—1.6 **11 Claims**

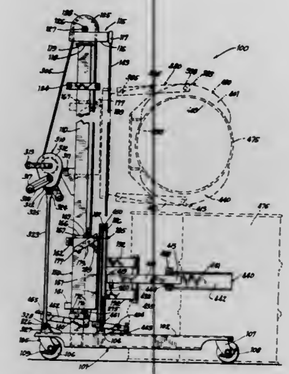


A cutter especially adapted for cutting stacks of paper stock employing a powered back gauge. An elongated magnetic memory track extends along the path of movement of the gauge and the gauge carries a transducer capable of sensing or modifying the program thereon, such program determining automatically the stopping points for the back gauge during a cutting operation. Means are provided for physically shifting the memory track to compensate for mechanical and electrical lag or response time of the apparatus.

3,623,620
DEVICE FOR ELEVATING AS WELL AS TIPPING OR TILTING DRUMS, BARRELS, CONTAINERS, AND THE LIKE
Howard H. Vermette, No. 7 143rd St., Hammond, Ind.
Filed Nov. 4, 1969, Ser. No. 874,007
Int. Cl. B60p *1/04*
U.S. Cl. 214—313 **20 Claims**

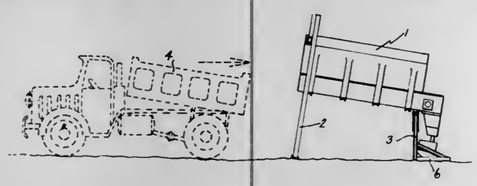
A device for elevating, as well as for tipping or tilting drums, containers and the like for dumping the contents

therefrom, which device includes an upright or post supported on a base and a carriage member slidable on the upright and operated by means of a winch which raises and lowers the carriage member on the upright. The carriage supports a rotatable pulley which carries article-gripping means



for engaging the drum container or the like, the article-gripping means is hydraulically adjustable so that the drum or article may be tightly gripped during the elevation thereof and also during the tipping or the tilting thereof. The hydraulic gripping means is provided with a safety valve to prevent premature release of the drum or article gripped thereby.

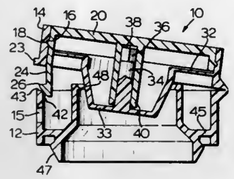
3,623,621
STORAGE SUPPORT FOR EQUIPMENT USED ON A DUMP TRUCK
Fred K. Tarrant, Sr., Saratoga Springs, N.Y., assignor to Tarrant Manufacturing Company
Filed Feb. 16, 1970, Ser. No. 11,392
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **8 Claims**



An arrangement for storing bulky equipment of the type installed and used on a dump truck and removed from the truck during nonuse periods consists of a support pivotally connected at the rear of the equipment and adapted to rest on the ground and a pair of front legs having transverse arms which fit in openings at the front of the equipment. The arms are inserted in the openings after the truck has raised the front of the equipment to an elevated position so that when the truck body is subsequently lowered the front legs engage the ground to maintain the equipment elevated above the dump truck and the truck can be moved forwardly leaving the equipment at rest, supported by the pivotal support and front legs.

3,623,622
SAFETY LOCKING CLOSURE
Peter Sullivan, Toronto, Ontario, Canada, assignor to Westhem Corporation Limited, Weston, Ontario, Canada
Filed July 13, 1970, Ser. No. 54,440
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **10 Claims**

A safety locking closure for a container, comprising a base portion and a cap hinged to the base. The base has an aperture giving access to the container, and the cap can swing to close or open the aperture. A pivotally mounted locking disc on the cap is torsion-biased into a given orientation, and when in this orientation a locking tooth carried on an arm secured to the disc engages a portion of the base portion and



locks the cap in its closed position. The disc can be rotated away from the given orientation which withdraws the tooth from engagement with said portion, thus freeing the cap to be opened.

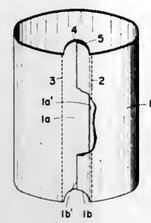
3,623,623
CHILDPROOF SAFETY PACKAGE
Lothar J. Bauer, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Windsor, Ontario, Canada
Filed Sept. 5, 1969, Ser. No. 855,629
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **16 Claims**

A childproof safety package including a container having a spring member secured thereto with a cap engaging portion surrounding the discharge opening of the container, the cap engaging portion being yieldable along the container axis. A plurality of container locking elements are located a fixed axial distance from the normal unstressed position of the cap engaging portion such that the cap engaging portion is resiliently yieldable toward the container locking elements from its normal position. A safety cap is mounted on the container having a plurality of cap locking elements engageable with a disengageable from the container locking elements by combined axial and rotative motion of the cap relative to the container, and the cap engaging portion of the spring member engages the inner surface of the end wall of the cap when the locking elements are engaged to bias the cap against axial movement from locked engagement with the container.

3,623,624
THERMOCONTRACTILE CAPSULE
Masaaki Fujio, 500 Central National Bank Bldg., Des Moines, Iowa
Filed July 2, 1970, Ser. No. 51,849
Int. Cl. B65d *41/02*
U.S. Cl. 215—38 A **4 Claims**

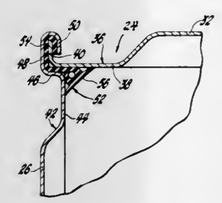
A capsule made of thermocontractile material and having at least a pair of lines of perforations from side to side along

which the capsule may be torn open. The capsule is provided



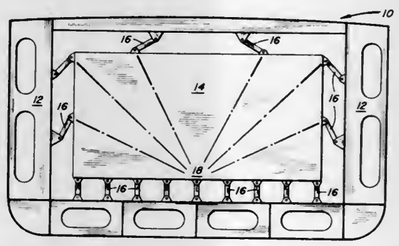
with a part adapted to introduce and ensure the tearing action along the perforated lines.

3,623,625
FOOD COMPARTMENT LINER WITH FOLDED EDGES AND VINYL SEAL
Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 19, 1969, Ser. No. 859,505
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R **1 Claim**



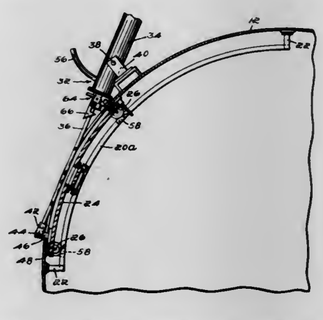
In preferred form, a food compartment liner for domestic refrigerators having sheet metal walls with contiguous edges joined by folding tabs on one edge of the two adjacent walls over a turned edge of the other wall. A seal between the edges hermetically seals the joint and covers the intersection of the walls. U-shaped channels along contiguous edges of the walls coact to recess the intersection or corner of the walls and locate the folded edge connection within the liner's outline as defined by intersecting planes of the walls.

3,623,626
SUPPORTING MEANS FOR INDEPENDENT TANKS
Thomas F. Bridges, Port Washington, N.Y., assignor to John J. McMullen Associates, Inc., New York, N.Y.
Filed July 31, 1969, Ser. No. 846,454
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 **12 Claims**



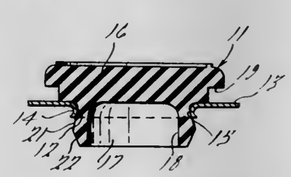
A system for supporting tanks housed in the holds of ships, which tanks serve to transport cargo at relatively high or relatively low temperatures and which tanks, as a consequence, are subject to substantial contractions and expansions. The supporting system comprises a plurality of supporting arms positioned around the tank so that the length of each arm is substantially at a right angle with respect to an imaginary line drawn between the arm and the center of contraction and expansion of the tank. In another embodiment of the invention, the length of each supporting arm increases as the distance between the arm and the center of contraction and expansion increases. In a further embodiment of the invention, the coefficients of expansion of the respective supporting arms are varied in such a manner that the arms nearest the center of contraction and expansion of the tank have a lower coefficient of expansion than do the arms most remote from the center of contraction and expansion. In still a further embodiment of the invention, the individual supporting arms are provided with insulation bushings between the arms and the tank, these bushings serving to regulate the thermal gradient across the arms and thus to regulate the contraction and expansion characteristics of same.

3,623,627
DOOR CONSTRUCTION FOR A PRESSURE VESSEL
Alan S. Bolton, Orange, Mass., assignor to Rodney Hunt Company, Orange, Mass.
Filed Aug. 22, 1969, Ser. No. 852,205
Int. Cl. B65d *43/20*
U.S. Cl. 220—41 **8 Claims**



Means for closing and sealing an opening in the wall of a pressure vessel, including a door member carried on tracks attached to the inside of the vessel wall. The door is movable along the tracks between an open position allowing access through the opening into the interior of the vessel, and a closed position blocking the opening. The opening is surrounded by a seal assembly which includes a grooved member on the inside surface of the vessel wall. When in the closed position, the door member is urged against the grooved member by cam members on the tracks. A flexible seal contained by the grooved member is thereafter urged into contact with the adjacent surfaces of the closed door to provide a pressuretight seal between the door member and the vessel wall.

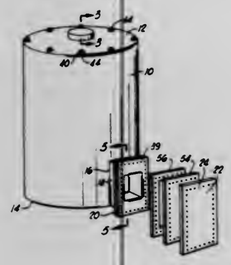
3,623,628
OIL FILLER PLUG
Brian F. Rericha, Westmont, Ill., assignor to Microdot Inc., New York, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,464
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 B **4 Claims**



The oil filler cap is molded from an oil-resistant elastomer to have a circular top which is shouldered on the bottom side

to provide a gripping edge for ease of removal. A cylindrical sleeve extends downwardly from the top having a diverging outer surface which provides a downward urge and locking seal with the reversely turned edge at the oil filler opening in an engine rocker arm cover which is sealed thereby.

3,623,629
TANK LINER
John A. Hendershot, 6508 E. 57th Pl., Tulsa, Okla.
Filed Feb. 27, 1969, Ser. No. 803,003
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **7 Claims**



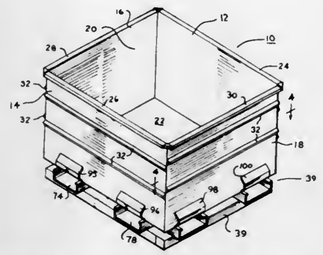
A corrosion-resistant and leakproof liner for tanks formed of flexible material and suitable for use on a variety of tanks having different sized cleanout openings. The liner has a transversely extending tubular neck portion having transverse dimensions corresponding to the transverse dimensions of the smallest standard cleanout opening of a tank of a particular size. The tubular neck portion of the liner is extended through the cleanout opening and then overlaps the flange provided on the outer end of the cleanout opening neck. When the transverse dimensions of the cleanout opening are larger than the transverse dimensions of the tubular neck portion of the liner, a lightweight support is positioned in the cleanout opening and supports the tubular neck portion of the liner to prevent collapse of the tubular neck portion of the liner and maintain a cleanout opening for the tank.

3,623,630
INFILTRATED POWDERED METAL COOKING UTENSIL
John E. Rode, 514 W. Main St., Ligonier, Pa.
Filed Apr. 29, 1969, Ser. No. 820,145
Int. Cl. A47j *27/00*
U.S. Cl. 220—64 **5 Claims**

The invention concerns a powdered metal cooking utensil with the powdered metal member having at least a region through which heat is transferred to the material and with the said region being infiltrated by a metal having a higher coefficient for heat conductivity than the powdered metal.

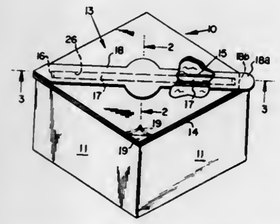
3,623,631
FRUIT MEASURING AND TRANSPORTING TANK
Jene F. Ford, Goshen, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.
Filed June 19, 1969, Ser. No. 834,809
Int. Cl. B65d *7/44, 21/02*
U.S. Cl. 220—69 **11 Claims**

A fruit measuring and transporting tank having four sidewalls and a bottom forming a rectangular container and horizontally disposed bars mounted on the sidewalls for holding the sidewalls in an inwardly deflected position to resist the pressure of the container contents against the sidewalls, and a pallet for supporting the container. The pallet consists of a horizontal frame and a pair of pockets disposed between the frame and the bottom of the container on each side for receiving the forks of a forklift truck. An adjustment mechanism mounted in the center of the pallet deflects the



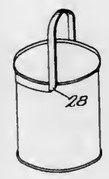
bottom upwardly or downwardly to obtain the desired location for the fruit-measuring instrument.

3,623,632
COMBINATION FOOD CONTAINER AND IMPLEMENT FOR EXTRACTING THE CONTENTS
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,935
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.2 **3 Claims**



A sealed container for foods in whatever suitable form, having an implement such as, for example, a straw, a spoon, or a fork, carried within a groove positioned entirely within the perimeter of one flat wall of the container. The groove has a depth such that the implement is positioned within the container yet sealed therefrom, and a tearable sealing member covers the groove to seal off the outside air. said one wall is additionally provided with a recess communicating with the groove for insertion of a finger to dislodge the implement.

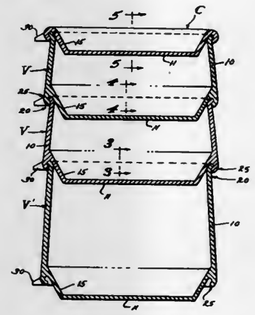
3,623,633
FLEXIBLE HANDLE FOR CONTAINERS AND METHOD OF PRODUCING CONTAINER HANDLES
Arthur W. Kinn, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Apr. 20, 1970, Ser. No. 30,171
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **12 Claims**



A handle for a container consisting of an elongated flexible strip having opposite ends secured at spaced locations to the

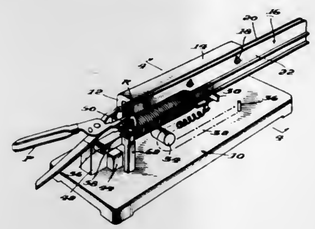
peripheral surface of the container in a manner that the length of the unsecured portion of the strip is greater than the peripheral dimension between the spaced locations. A double fold is produced in the elongated strip, between the spaced locations, to define a first position locating the unsecured portion of the strip substantially flush with the peripheral surface of the container. The adhesive securement terminates along lines which are angularly related to the elongated axis of the strip so that the unsecured upper edge of the strip is shorter than the unsecured lower edge. The strip is movable to an operative position by unfolding and reversing the strip along the adhesive termination lines to produce a handle which extends above the container.

3,623,634
MODULAR CONTAINER
Johanness Norgard, 555 Barry Apt. Hotel, Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 873,195
Int. Cl. B65d *21/02*
U.S. Cl. 220—97 R **6 Claims**



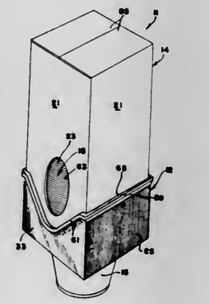
A sectional container for storing and dispensing of a multiplicity of articles, especially articles such as medication pills that are accounted for in numbers, and comprised of like and/or identical vessels that are composed in cooperative coupled relation and preferably with one top closure, to thereby establish a straight cylinder or like compartmented container with normal ends.

3,623,635
PLIERS-OPERATED RETAINING-RING DISPENSERS
Hans Erdmann, Maplewood, N.J., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.
Filed June 23, 1970, Ser. No. 49,141
Int. Cl. B23q *7/08*
U.S. Cl. 221—23 **19 Claims**



A dispenser for split retaining rings of both the internal and external forms designed to be operated by a conventional pliers-type ring pickoff and applying or assembling tool, comprising a magazine rail (shown to be horizontally disposed but which can also be disposed at any other convention angle) for maintaining a supply of the retaining rings to be dispensed in column formation; a support for said magazine rail; spring feed means for feeding the column of rings longitudinally along and towards one end of the magazine rail; a slide mounted for reciprocatory travel in a path which intersects and is further so related longitudinally with respect to the ring column as to effect movement of each then endmost ring of the column from an in-column position to an offset, relatively raised position in which the apertures conventionally provided in the ring ends are accessible to the plier tips; and a nonyieldable coupling operative between each so-offset ring of the column and said slide for effecting reciprocatory travel of the slide and thereby movement of the next endmost ring of the column to said offset position as aforesaid responsive to said so-offset ring being picked off (dispensed) by said pliers. Also disclosed are various means for adjusting the magazine rail in accordance with the various sizes of the rings to be dispensed, and for supporting the pliers during the ring picking off (dispensing) operation in manner as substantially reduces operator fatigue.

3,623,636
ONE-PIECE CUP DISPENSER
Giacinto C. D'Ercoli, Park Forest, Ill., and Joseph Petricek, Sr., La Mirada, Calif., assignors to Solo Cup Company, Chicago, Ill.
Filed Aug. 21, 1969, Ser. No. 851,824
Int. Cl. B65d *83/00*
U.S. Cl. 221—64 **2 Claims**

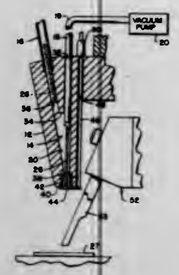


A cup dispenser comprises a one-piece, molded plastic holder having a hollow opening into which is telescoped a lower end of an elongated packing container or package having a stack of nested cups therein. Cams in the opposite sidewalls of the holder project inwardly to deflect flexible sidewalls of the container to define a restricted opening or throat having a dimension less than the diameters of rims for the cups with the result that the cups are held against sliding through and from the container. The lowermost cup may be grasped and pulled past the restricted throat with the cup rim deflecting radially inwardly as the cup is withdrawn. Stripper means in the form of inwardly extending projections may be provided on the holder beneath the cam for directly engaging and deflecting the cup rim prior to release of the lowermost cup from the holder.

3,623,637
VACUUM CHUCK AND METHODS OF TRANSFERRING WORKPIECES
Marion F. Miller, Villa Park, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 29, 1969, Ser. No. 888,238
Int. Cl. B23q *7/04*
U.S. Cl. 221—211 **15 Claims**

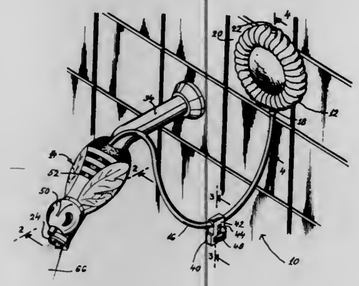
A workpiece is drawn by vacuum through a passage in a housing and into a chamber into which a chuck having a bore through its length and a workpiece engaging end is slidably extended. The end of the workpiece which enters the chamber last is drawn by vacuum into, and held within, the bore at the workpiece engaging end of the chuck. The chuck,

and therefore the workpiece, is then advanced through a gate in a second passage to the outside of the housing to deliver



the workpiece to a workpiece-receiving tool. The chuck is then retracted in preparation for the next operation.

3,623,638
LIQUID DISPENSER FOR SHOWER BATH
Sabine Henning, and Lotte Bachmann, both of 33-18 69th St., Jackson Heights, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,051
Int. Cl. B67d *3/00*
U.S. Cl. 222—78 **3 Claims**



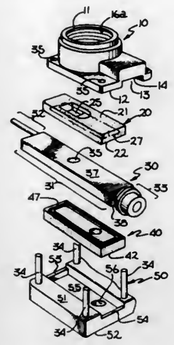
An assembly for discharging liquid into a water shower spray includes a flat, circular container mountable removably on a bathroom wall, a flexible tube connected to the container, a manually operable valve on the tube, and an elongated flexible shell which clamps on a shower fixture. The tube extends through the shell and is secured therein. The tube has a liquid discharging end supported by shell just above the shower spray.

ERRATUM

For Class 223—114 see:
Patent No. 3,623,640

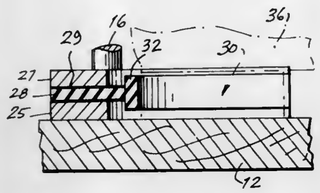
3,623,639
POWDER-DISPENSING DEVICE
Robert C. McShirley, 917 Verdugo Circle Drive, Glendale, Calif.
Filed July 21, 1970, Ser. No. 56,770
Int. Cl. B67d *1/16*
U.S. Cl. 222—108 **10 Claims**

Device for dispensing a measured volume of powder, having a cap member superimposed on a base member and defining at their mating surfaces a horizontally extending channel in which a metering member slides, the metering member containing a vertically extending passageway therethrough of the measured volume. The top and bottom of the channel are lined with resilient members such as plastic inserts each having a low-friction surface bearing against the metering member and defining a continuous



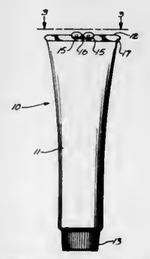
peripheral trough to prevent escape of powder from the channel. The device is particularly adaptable for dispensing spherical alloys with partical sizes of a few microns.

3,623,640
DEVICE FOR REMOVING SHOES
Edward Zalejski, 84-19 Penelope Ave., Middle Village, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,841
Int. Cl. A47j *51/02*
U.S. Cl. 223—114 **1 Claim**



A device for removing shoes from a person's feet includes a baseboard having a pair of spaced blocks in which are U-shaped cutouts. Flexible T-shaped rubber strips are secured in the blocks for engaging heels of a person's shoes when they are inserted into the cutouts in the blocks. Instead of T-shaped strips, the heel grippers may have cooperating movable arms carried by elastic blocks on the baseboard.

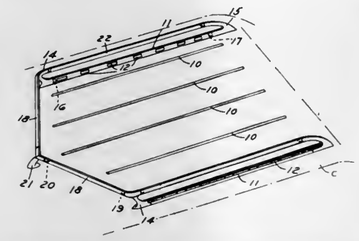
3,623,641
CONTAINER WITH SUCTION-CUP HANGER
Douglas R. Hansen, P.O. Box 1041, and Donald L. Cook, P.O. Box 382, both of Santa Monica, Calif.
Filed July 30, 1969, Ser. No. 846,020
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **7 Claims**



A squeeze-tube container having a tubular body with a suction cup secured thereto for suspending the container

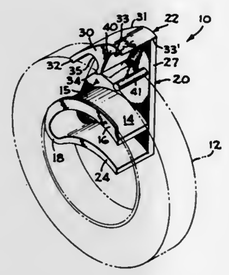
from a surface such as a shower-bath wall. Preferably, a pair of suction cups are flexibly but permanently attached to a sealing lip at one end of the tube. The inverted container is thereby easily attached to a wall surface, and can be hinged away from the wall when a closure cap is removed to dispense a product such as shampoo in the tube.

3,623,642
MODULAR LUGGAGE RACK
James Stephen, Royal Oak, Mich., assignor to James Stephen, Royal Oak, Mich. and Helm Design & Manufacturing, Inc., Detroit, Mich.
Filed Apr. 30, 1969, Ser. No. 820,527
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 E **24 Claims**



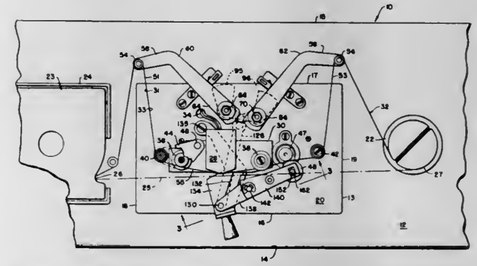
A modular luggage rack comprising a bed having a plurality of spaced longitudinally extending strips fixed to the car top and side rails fixed to the car top. Each of the side rails has longitudinally spaced elongated openings. Stanchions can be provided at the ends of the side rails and in turn support upper side rails and crossrails. Alternatively end plugs can be provided on the ends of the side rails. Ski racks can be mounted in the openings of the side rails. A luggage bag can also be attached to the rack through the openings in the side rails.

3,623,643
TAPE DISPENSER
Akira Ikeda, Los Altos Hills, Calif., assignor to Sam I. Ishigo, San Jose, Calif.
Continuation-in-part of application Ser. No. 802,382, Feb. 26, 1969. This application May 21, 1969, Ser. No. 826,500
Int. Cl. B26f *3/02*
U.S. Cl. 225—65 **8 Claims**



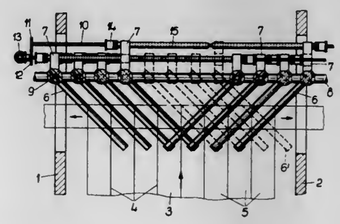
A tape dispenser for use with a roll of tape having a curved interior surface, and an exterior surface concentric to such interior surface. The dispenser comprises an arcuate, resilient bearing member arranged to engage the interior surface of the roll of tape, a tape-cutting assembly arranged to engage the exterior of the roll of tape, and a mounting structure for retaining the bearing member and the tape-cutting assembly in positions for engaging the interior and exterior surfaces, respectively, of the roll of tape.
The application of force on the mounting structure below the bearing member to urge it toward the bearing member flexes the mounting structure at its junction with the bearing member and raises the cutting assembly away from the bearing member for mounting the tape dispenser on the roll of tape or for removing the tape dispenser from the roll of tape. The cutting assembly includes a guide disposed transversely to the exposed surface of the roll of tape to prevent the free end of the roll of tape, after the severance of the end of the roll of tape, from falling back onto the roll of tape. Thus, a free end for convenient gripping is assured. In addition, the cutting edge of the cutting assembly projects upwardly and outwardly, and below the cutting edge is an oppositely directed projection with a curved surface therebetween, for providing an exposed, unobstructed free end portion for the roll of tape for easy grasping and gripping. An indentation on the curved surface between the cutting edge and the lower oppositely directed projection further facilitates the grasping of the free end of the roll of tape.

3,623,644
WEB-HANDLING APPARATUS
Alf J. Olsen, Elk Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Feb. 26, 1970, Ser. No. 14,480
Int. Cl. G03b *1/56*
U.S. Cl. 226—89 **20 Claims**



A pair of guide members disposed on opposite sides of a transducer head hold a record tape in a tortuous course between a takeup reel and a supply reel. A pair of arms are rockably arranged for straightening the path by moving said guide members simultaneously and are controlled by springs and by a cam which is manually responsive. A link couples the cam and said arms and carries a follower which is engaged in a cam track in said cam.
A pinch roller is responsive to said cam through the agency of a linkage to said follower and moves between a tape disengaged position and a position in which the tape is held in capstan contact as the guide members move between straight and tortuous course conditions.

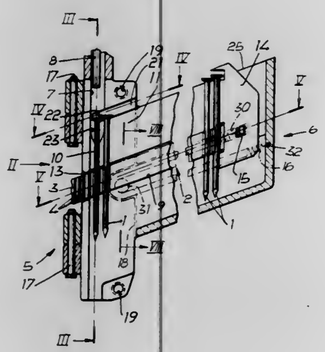
3,623,645
UNIT FOR ROTARY-PRESS REVERSING BARS
Karl A. Klingler, Frankenthal, Pfalz, Germany, assignor to Schnellpressenfabrik Frankenthal Albert & Cie, Frankenthal/Pfalz, Germany
Filed July 15, 1969, Ser. No. 841,929
Claims priority, application Germany, July 19, 1968, P 17 61 899.4
Int. Cl. B65h *23/32*
U.S. Cl. 226—197 **1 Claim**



In a printing press, the reversing bars are each secured at one end to a retaining unit in a manner which permits the

selective shifting of the orientation of the bars through an angle of 90°.

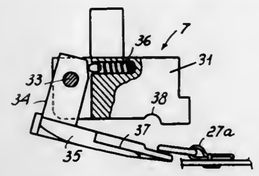
3,623,646
FASTENER-INSERTING MACHINE
Adolf Cast, Oberlenningen, and Kurt Reich, Nurtingen, both of Germany, assignors to Karl M. Reich Maschinenfabrik, Nurtingen, Germany
Continuation-in-part of application Ser. No. 718,676, Apr. 4, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 884,985
Int. Cl. B25c *1/00*
U.S. Cl. 227—136 **17 Claims**



A fastener-inserting machine such as a nail gun, screw driving gun, or the like with a driving channel for the drive rod and a feed channel for a fastener strip carrying a row of fasteners on one lateral side of a carrier strip. The feed channel extends to and through the driving channel and has a lateral wall recessed from the wall of the driving channel so that during the strokes of the drive rod in the driving channel or its rotation therein when serving as a screw driver, the drive rod will not engage with the carrier strip. For severing headed fasteners such as nails or screws one at a time from the carrier strip and shifting at least the fastener head laterally into the driving channel, a groove in the wall of the driving channel in which the head is at first located has an inclined guide surface, whereby when in a nail gun the fastener is moved forwardly directly by the drive rod or—either in a nail gun or in a screw driving gun—the fastener is so moved by a separate shifting member which is driven by the drive rod only during a fist part of its forward stroke and before the drive rod itself engages with the fastener, the fastener head is laterally deflected by the inclined guide surface into the driving channel.

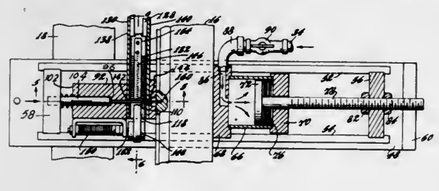
3,623,647
MACHINE FOR SECURING ARTICULATED FASTENERS TO ARTICLES
Adalberto Sussman Steinberg, Milan, Italy, assignor to A.C.F.A. Accessori Calzature Fibbie Affini di Adalberto Sussman Steinberg & C.S.r.l.
Original application Mar. 7, 1968, Ser. No. 711,253, now abandoned. Divided and this application June 2, 1970, Ser. No. 54,038
Int. Cl. B21j *15/34*
U.S. Cl. 227—149 **1 Claim**

This disclosure relates to a machine for securing articulated fasteners to articles, comprising a supporting frame, a container having a substantially cylindrical wall on said frame, a revolving body within said container having an axis of rotation coaxial with said cylindrical wall, a substantially cylindrical skirt member within said container spaced from said cylindrical wall thereof to define a narrow gap therebetween, said skirt member having a top edge defining a helically extending arraying guide, a setting-die, a conveying guide having one end confluently arranged with respect to an end portion of said arraying guide and another end thereof



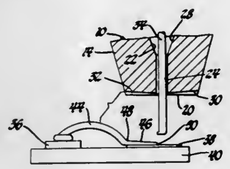
facing said setting-die, brush means secured on said revolving body to impart a random circular motion to fasteners loaded into said container and slide them along said arraying guide, motor and transmission means for imparting motion to said revolving body and said setting-die.

3,623,648
DECORATIVE GRILL PIN SETTING MACHINE
Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa.
Filed Oct. 2, 1969, Ser. No. 863,177
Int. Cl. B25c *7/00*
U.S. Cl. 227—153 **7 Claims**



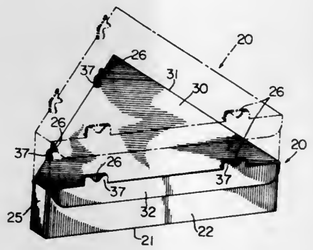
An automatic pin-setting machine including a plurality of air cylinder operated plungers, a track for individually feeding grill bar retaining pins to the plungers and means reciprocally affixed to the air cylinders to individually drive the pins into the periphery of a wooden sash member in spaced relationship to receive and retain a decorative window grill.

3,623,649
WEDGE BONDING TOOL FOR THE ATTACHMENT OF SEMICONDUCTOR LEADS
Wayne H. Keisling, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 9, 1969, Ser. No. 831,511
Int. Cl. B23k *1/20*
U.S. Cl. 228—15 **5 Claims**



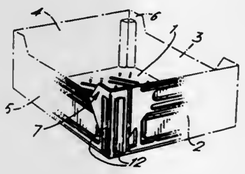
A bonding tool and method is disclosed for bonding the ends of a threadlike wire lead to two spaced-apart regions of a semiconductive device or other electronic article. One form of this invention includes a bonding tool having a tip for use with a reel of lead wire. The tip has an outwardly extending tapered groove on its working surface for producing an elongated wedge-shaped bond with the thinnest section of the wedge at the end of the bond adjacent to the reel. The unbonded wire adjacent the thinnest wedge section, extending from the source reel, is readily detached from the bonded portion with a light tug.

3,623,650
CARTON AND BLANK FOR MAKING SAME
Richard M. Watts, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 31, 1969, Ser. No. 873,021
Int. Cl. B65d *5/24*
U.S. Cl. 229—31 R **22 Claims**



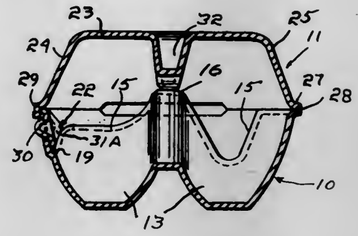
A carton having a bottom wall, a plurality of vertical sidewalls, and a top wall foldably connected to one of the sidewalls. The top wall has extension flaps foldably connected thereto which are held against the exterior top portions of associated sidewalls by a plurality of tabs extending from the top edges of the sidewalls and cooperating fastening tongues defined by nonrectilinear cuts in the top wall. The exteriorly arranged extension flaps prevent outward bulging of their associated sidewalls and the tabs and fastening tongues also cooperate to enable easy vertical stacking of a plurality of cartons by restraining an adjoining carton against lateral movement.

3,623,651
TRAYS FOR THE STORAGE OF ARTICLES
Betty Muriel Marcan, Burrough's Grove, Pump Lane, Little Marlow, Burkinghamshire, England
Filed Sept. 29, 1969, Ser. No. 861,559
Claims priority, application Great Britain, Sept. 30, 1968, 46,254/68
Int. Cl. B65d *5/30*
U.S. Cl. 229—35 **14 Claims**



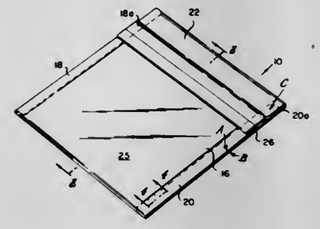
A tray for the storage of articles, such tray having collapsible sidewalls, that is to say they are capable of being folded or hinged with respect to the base of the tray until they are flat therewith, said sidewalls being formed firstly with means for interengaging them, in the erection of the tray, in the vicinity of the corners thereof, and secondly with means adapted to form supports at or adjacent the corners of the tray for receiving and supporting the bottom of another tray placed on top.

3,623,652
MOLDED CARTONS
Harold A. Doughty, Cape Elizabeth, Maine, assignor to United Industrial Syndicate, Inc., Portland, Maine
Continuation-in-part of application Ser. No. 794,117, Jan. 27, 1969, now abandoned. This application Oct. 9, 1969, Ser. No. 868,279
Int. Cl. B65d *85/32*
U.S. Cl. 229—44 R **16 Claims**



A molded construction is disclosed that has a cover section hinged to the bottom section with one section having a front wall provided with one or more holes each to receive a locking projection of a portion with which the other section is provided and which is adapted to enter behind the front wall when the carton is closed. The section having the aperture front wall has at least one internal pocket receiving and confining the locking portion of the other section. The locking portion may be a hinged flap and may be connected to the front of the cover section.

3,623,653
FOOD PACKAGE CONSTRUCTION
William Anthony Work, Coon Rapids, Minn., assignor to American Can Company, New York, N.Y.
Original application Sept. 25, 1968, Ser. No. 762,501, now Patent No. 3,536,501, dated Oct. 27, 1970. Divided and this application Sept. 4, 1970, Ser. No. 69,543
Int. Cl. B65b *25/06*
U.S. Cl. 229—87 F **3 Claims**

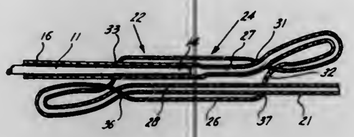


A construction for a food package consisting of two laminate members. Each laminate member consists of an inner layer, disposed adjacent to the food product, and an outer layer bonded to the inner layer. The inner layers are heat sealed together to enclose the food product in the laminate members. The bonds and tensile strengths of the layers are such that pulling the laminate members apart to open the package results in a delamination of one of the laminate members and the tearing of its inner layer to provide access to the food product.

3,623,654
WHIP DEVICE
Gary G. Henry, 4417 Wellington Ave., Sioux City, Iowa
Filed Mar. 13, 1970, Ser. No. 19,210
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 R **3 Claims**

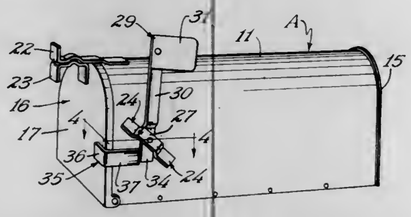
The whip includes a shaft of a fiber glass construction having a handle section and an outer end section including a ter-

minal portion. A tubular braided polyethylene cover includes a pair of end sections and an intermediate section integrally formed with a knot unit. The knot unit includes an outer tubular body portion and a pair of inner tubular portions connected to corresponding ends of the outer body portion and constituting extensions of the cover end sections. The pair of inner portions are in a side-by-side relation within the outer



body portion and project in opposite directions from the outer body portion. The shaft is inserted within one of the cover end sections with the shaft terminal portion projected within the inner tubular portion corresponding thereto. The terminal portion is thus enclosed by a double thickness of the braided cover to prevent the free end thereof from protruding outwardly through the cover.

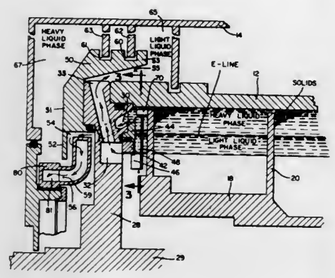
3,623,655
MAILBOX
Peter P. Tieszen, Reedley, Calif., assignor to Samuel Tieszen and Waldo H. Pust, Savage, Mont., part interest to each
Filed Apr. 16, 1970, Ser. No. 29,173
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **7 Claims**



A mailbox is provided, having a door opening normally closed by a door hingedly connected to the mailbox along the horizontal lower edge of the door. A signal standard is pivoted to one side of the mailbox to pivot between horizontal and vertical position. An arm is provided having a concavo-convex end, the arm being secured to the door and extending below the lower end of the signal standard in horizontal position thereof. When the signal standard is pivoted to vertical signaling position while the door is closed, the signal standard swings between the arm and the mailbox wall and is engaged by the end of the arm to hold the signal arm in vertical position.

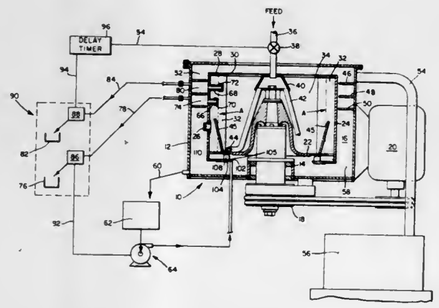
3,623,656
THREE-PHASE CENTRIFUGE
Andre C. Lavanchy, Devon, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Jan. 30, 1970, Ser. No. 7,285
Int. Cl. B04b *1/00, 7/00, 11/00*
U.S. Cl. 233—7 **13 Claims**

Solids and two liquids, each having different specific gravities, are separated in a centrifuge having a helical screw conveyor mounted within an elongated bowl tapered at one end. A group of solids discharge openings is disposed at the tapered end, and two groups of concentrically arranged liquid discharge openings, one for each separated liquid, are disposed at the other end of the bowl. One group of liquid discharge openings has an annular ring dam mounted adjacent thereto to serve as a weir; the second group of liquid discharge openings has an annular channel disposed adjacent thereto for receiving the separated liquid discharged therethrough, and a skimmer passage disposed within the channel for receiving the liquid within the channel. Optionally, the centrifuge contains a plurality of radially extending ribs mounted adjacent to the two groups of liquid discharge openings for controlling the rotational speed of the separated liquids with respect to the bowl immediately prior to discharge of the liquids. Also, a scraper member is



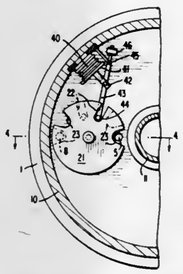
mounted on the screw conveyor for the removal of solids which have accumulated on the inner annular surface of the bowl, and a vane is rigidly mounted between adjacent flights of the conveyor to exclude the lighter of the two separated liquids from the space adjacent to the solids discharge openings.

3,623,657
CENTRIFUGE APPARATUS
Charles Edward Trump, Bedford, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 743,075, July 8, 1968, now Patent No. 3,560,125. This application Aug. 6, 1970, Ser. No. 62,241
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **12 Claims**



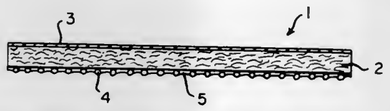
A heavy-phase material and a light-phase material separate into two concentric layers, the heavy-phase material accumulating adjacent to the peripheral wall of the bowl. A control device regulates the position of the interface or line of separation between the layers, the control device including a conduit extending inwardly from an opening in the bowl wall to the desired position, and a detecting device. The conduit conducts a sample of the material to the detecting device for sensing a change in specific gravity at that position. Depending upon the direction of change, the detecting device either temporarily closes a feed valve controlling the introduction of feed mixture into the bowl, or actuates a recycle pump for recycling extracted heavy-phase material back into the bowl.

3,623,658
APPARATUS FOR CONTROLLING THE DISCHARGE OF SEPARATED MATERIAL IN CENTRIFUGAL DRUMS OF CENTRIFUGAL SEPARATORS
Rudolf F. Garbaty, Hans-Salb-Str. 81, 2000 Hamburg/Glashutte, Germany
Filed May 16, 1969, Ser. No. 825,342
Claims priority, application Germany, May 17, 1968, P 17 57 532.5
Int. Cl. B04b *11/00, 15/00*
U.S. Cl. 233—20 R **10 Claims**



The discharge of separated components from centrifugal drum separators is controlled so that only a given component issues from its given outlet, despite changes in the proportions of the separated components. The centrifugal pressure in the drum is detected, to determine the position of the interface and to make appropriate outlet adjustments, or else a float that moves with the interface makes the needed outlet adjustments.

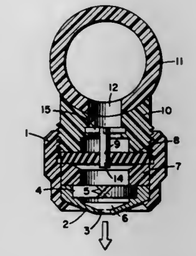
3,623,659
ARTICLES OF MANUFACTURE CONTAINING ENCAPSULATED, VAPORIZABLE CORE MATERIAL
Theodore Maierson, Dayton, and George E. McGowan, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Dec. 29, 1969, Ser. No. 888,609
Int. Cl. A61l *9/04*
U.S. Cl. 239—56 **10 Claims**



This disclosure is directed to articles of manufacture, e.g., table cloths, shelf paper, etc., which are disposable paper or other fibrous articles containing as encapsulated core material any liquid or solid whose vapor state is functional in respect of a task to be performed, and on at least one major surface thereof a plastic material having a density ranging from about 0.85 to about 0.95 grams per cubic centimeter and being permeable to vapor but impermeable to liquids. Thus, e.g., upon rupture of capsules containing a liquid insect repellent, the repellent vapor passes through the plastic upper layer, yet the more concentrated repellent liquid is kept from contact with any food or the substances which may be present in contact with the plastic surface layer.

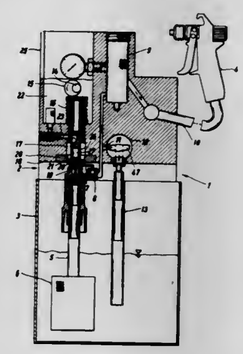
3,623,660
DRIPPROOF VALVE FOR PREVENTING THE LEAKAGE OF LIQUID PRODUCTS
Angelo Manlio Vavassori, and Enrico Pozzi, both of Milan, Italy, assignors to ELICOPTER Societa Trasporti Aerei S.p.A., Milan, Italy
Filed Dec. 12, 1969, Ser. No. 884,567
Claims priority, application Italy, Mar. 27, 1969, 14692A/69
Int. Cl. B05b *15/02*
U.S. Cl. 239—114 **1 Claim**

Dripproof valve for preventing the leakage of liquids, consisting of a diaphragm or membrane provided with at least one opening or hole having an elastically deformable lip or border, slidingly coupled with a pin passing through said opening or hole. The membrane is made of an elastic material such as rubber, an elastomeric synthetic material or the like. The lipped opening consists of a circular hole disposed



in the middle of the membrane. Coupled with the membrane is a disc of rigid material, provided with an opening corresponding to the opening in the membrane. The valve is applied to a nozzle for the spraying of liquids, being particularly suited for soil or crop spraying.

3,623,661
FEED ARRANGEMENT FOR SPRAY PAINTING
Josef Wagner, 7991 Friedrichshafen-Fischbach, Germany
Filed Feb. 26, 1970, Ser. No. 014,359
Claims priority, application Germany, Feb. 28, 1969, P 19 10 093.7
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 **6 Claims**

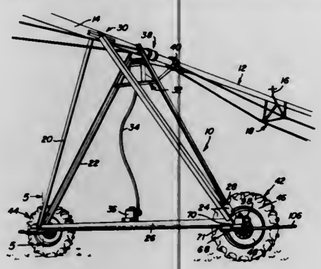


A unitary spray device having a paint-containing reservoir, a diaphragm pump and a feed line communicating from said pump to a spray gun. An air vent relief valve is positioned in the unitary device intermediate the pump and the spray gun. The air vent valve has a conduit terminating proximate the paint intake means of the reservoir.

3,623,662
CIRCULAR IRRIGATION SYSTEM WITH WORM GEAR DRIVE
Richard F. Reinke, P.O. Box 272, Deshler, Nebr.
Filed Dec. 11, 1969, Ser. No. 884,117
Int. Cl. B05b *3/12*
U.S. Cl. 239—177 **7 Claims**

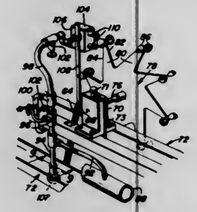
A worm gear drive assembly for driving the wheeled support assemblies for an elongated irrigation pipe including a motor having an output controlled in response to bending or deflection of the pipe and a forwardly and rearwardly extending shaft with a drive worm gear on each end thereof en-

gaged with a worm wheel for driving the supporting wheels. Each supporting wheel is connected to the frame structure in such a manner that it may be oriented for driving the pipe in a direction transverse to the longitudinal axis thereof or in a



position perpendicular thereto to enable the irrigation pipe to be towed or pulled in a direction parallel to its longitudinal axis to facilitate movement from one area to be irrigated to another.

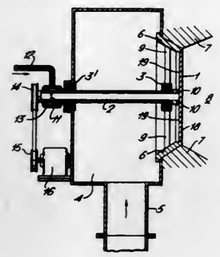
3,623,663
IRRIGATION SYSTEM
Walter J. Koinzan, Elgin, Nebr.
Filed Mar. 3, 1970, Ser. No. 15,982
Int. Cl. B05b *3/04*
U.S. Cl. 239—177 **23 Claims**



A self-propelled irrigation system consisting of an elongated water-distributing pipe pivotally mounted at one end in engagement with a water supply and supported throughout the length thereof by a plurality of mobile support towers selectively propelled by water-powered motors. The outermost tower runs continuously at a predetermined speed and, through a cable system, provides for an intermittent movement of the towers inwardly thereof, the movement of each tower controlling the movement of the tower controlling the movement of the tower immediately inward thereof through a selective opening and closing of water valves. The apparatus can be reversed, and incorporates an automatic cutoff system should excessive misalignment occur.

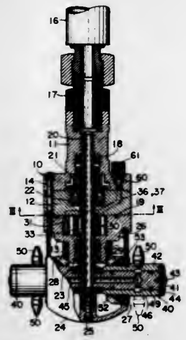
3,623,664
ROTARY-TYPE OIL BURNER
Shoichi Tsuji, Tokyo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 30, 1970, Ser. No. 6,996
Claims priority, application Japan, Feb. 5, 1969, 44/8569
Int. Cl. B05b *3/02*
U.S. Cl. 239—214.11 **6 Claims**

An oil burner wherein a liquid fuel film is formed on a rotary plate having a plurality of toothed profiles along the circumference thereof, and air is made to pass along the rotary passage which is encircled by the toothed profiles of said rotary plate and a burner ring (or a burner tile) installed at a position close to the outer side of said rotary plate, so that liquid fuel may be made into fine particles by means of said air coming into contact with the liquid fuel film at the edge



of the toothed profiles and at the same time groups of fine fuel particles may be uniformly mixed in said air.

3,623,665
AUTOMATICALLY REVOLVED WASHING APPARATUS
Takara Sugino, Toyama-ken, Japan, assignor to Sugino Cleaner Wks., Ltd., Toyama-ken, Japan
Filed Jan. 16, 1970, Ser. No. 3,310
Claims priority, application Japan, Feb. 10, 1969, 44/9856
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 **3 Claims**

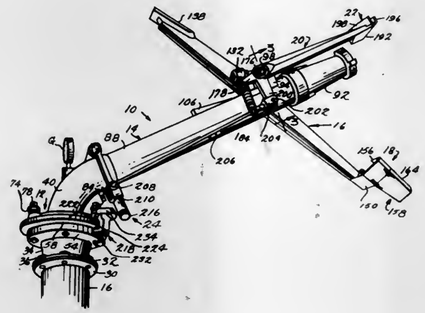


A washing apparatus is provided which comprises means for adjusting the revolving speed of nozzles about an axis of a head body. The revolution of the nozzles, which are revolved by the reaction forces of the jet flow of flushing water through the nozzles, operates a gear pump provided in the head body. The pressure load upon the gear pump is adjusted from the outside of the head body so that the revolving speed of the nozzles about the axis of the head body can be adjusted apart from the speed of the jet flow of the washing water through the nozzles.

3,623,666
SPRINKLER HEAD
Larry P. Meyer, E. Peoria, Ill., assignor to L. R. Nelson Mfg. Co., Inc., Peoria, Ill.
Filed July 30, 1970, Ser. No. 59,391
Int. Cl. B05b *3/08*
U.S. Cl. 239—230 **6 Claims**

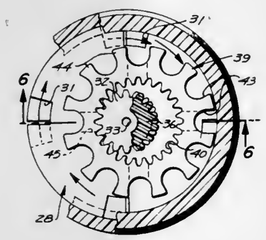
A high capacity agricultural irrigation sprinkler head of the type which is rotated in step-by-step fashion by an oscillating impulse arm having a reactant element providing a stream engaging reactant surface area for effecting both the oscillating movement of the impulse arm and the incremental rotational movements of the sprinkler body, the reactant element is mounted on the impulse arm for resiliently biased pivotal movement to automatically compensate for changes in water

pressure and nozzle outlet size through a wide range to produce a generally constant oscillatory arm speed and a generally constant intermittent rotational speed by varying the angle of deflection or angle of divergence of the stream in response to variation in the energy of the stream engaged thereby. The sprinkler head also includes a reversing arm having a reactant element which is moved into and out of the stream by an over-riding cam mechanism, the reactant element being normally biased out of the stream and retained in



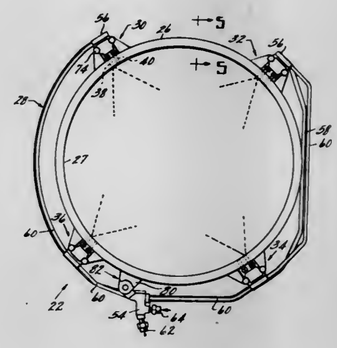
the stream when initially moved therein by the cam mechanism solely by the action of the stream thereon against its normal bias, the reactant element of the reversing arm including a portion providing a reactant surface area for effecting the reversing movement which is similarly mounted on the reversing arm for resiliently biased pivotal movement to likewise automatically compensate for changes in water pressure and nozzle outlet size to produce a generally constant reversing speed by varying the angle of deflection of the stream in response to variation in the energy of the stream.

3,623,667
MOTOR FOR ROTARY SPRINKLERS
Robert B. Costa, Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Mar. 11, 1970, Ser. No. 18,525
Int. Cl. B05b *3/04*
U.S. Cl. 239—237 **6 Claims**



A motor for rotary sprinklers in which a fixed member and a rotatable member are disposed coaxially and are surrounded by a drive ring; the external surfaces of the fixed and rotatable members and the internal surface of the drive ring having two sets of intermeshing teeth which differ in ratio so that, for each rotation of the drive ring, the rotatable member turns in the same or opposite direction with respect to the drive ring a predetermined small amount. The intermeshing members are contained in a chamber having inlets positioned to direct water circumferentially against the drive ring to cause rotation and an outlet through the rotatable member terminating in a sprinkler nozzle.

3,623,668
WASH MANIFOLD
Wilbert B. Freid, Swampscott, and David J. Tapparo, Danvers, both of Mass., assignors to General Electric Company
Continuation of application Ser. No. 710,171, Mar. 4, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 12,903
Int. Cl. B64c *15/10*
U.S. Cl. 239—265.17 **8 Claims**



A manifold spray assembly having an annular housing adapted to be removably secured to the inlet end of a gas turbine and support a plurality of nozzle assemblies adapted to spray a fluid into the intake airstream of a gas turbine compressor for cleaning, preservation, or thrust augmentation purposes. The nozzles are recessed within the annular housing so as not to interfere with the gas turbine intake airflow and are connected to a fluid inlet fitting through connector blocks and conduits.

3,623,669
SPRAY GUN
Billy L. Woods, 3818 West Ocotillo, Phoenix, Ariz.
Filed July 10, 1969, Ser. No. 840,713
Int. Cl. B05b *7/04*
U.S. Cl. 239—307 **1 Claim**

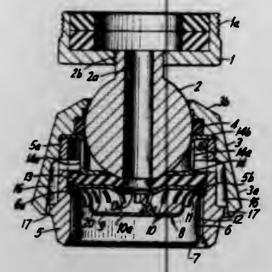


A dual-spray gun having a pair of discharge nozzle supply openings discharging in a flexible disposable nozzle having a mixing chamber so as to prevent gun clogging and time wasted in cleaning the gun after each spraying operation.

3,623,670
AERATOR AND SPRAY DEVICE
Alfred W. Wakeman, Durham, and Walter C. Beard, Middlebury, both of Conn., assignors to The Waterbury Pressed Metal Company, Waterbury, Conn.
Filed June 17, 1970, Ser. No. 46,844
Int. Cl. E03c *1/084*
U.S. Cl. 239—428.5 **8 Claims**

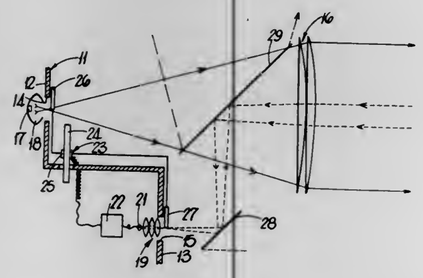
A fitting forms a passage for flow of liquid from a supply duct through a rounded body of the fitting, and a liquid aerator is carried by a support which swivels on the rounded body from a first position to a second position, the support defining spray channels for the liquid. The support also carries means operable in said first position to direct flow of liquid from the fitting passage to the aerator inlet while blocking

flow from this passage to the spray channels, such means being operable in the second position of the support to direct



flow of liquid from the fitting passage to the spray channels while blocking flow from this passage to the aerator inlet.

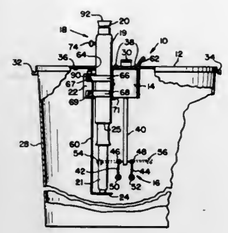
3,623,671
LIGHTING SYSTEMS FOR ROAD VEHICLES
Robert Arthur Hargroves, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 20, 1969, Ser. No. 835,101
Claims priority, application Great Britain, July 5, 1968, 32,140/68
Int. Cl. F21v *11/18*
U.S. Cl. 240—7.1 R **4 Claims**



A lighting system for a road vehicle including a projector and a receiver. A lens for directing light from the projector to form a beam of light illuminating the road in front of the vehicle, and said lens also focusing light form an oncoming vehicle into the receiver. Shutter means operable by the receiver in response to light from the oncoming vehicle for controlling the beam to avoid dazzling the driver of the oncoming vehicle, and optical control means in the light passed between the lens and the projector and the receiver. The optical control means reflects light incident upon it in one direction and transmits light incident upon it in the other direction and so controls passage of light from the projector to the lens, and the passage of light from the lens to the receiver.

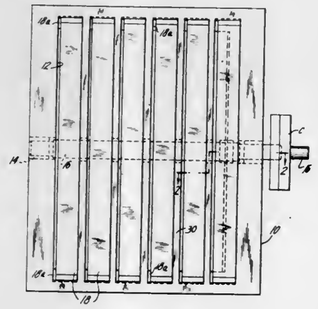
3,623,672
DISPOSING APPARATUS FOR BURNED-OUT OR DEFECTIVE FLUORESCENT TUBES
William De Frank, 165 Fern Castle Drive, Rochester, N.Y.
Filed June 3, 1969, Ser. No. 829,974
Int. Cl. B02c *19/12, 4/32, 11/08*
U.S. Cl. 241—36 **10 Claims**

The entire disposing unit is mounted on the lid of a standard 20-gallon can. The apparatus includes an inlet chute having a passageway for receiving a fluorescent tube, an electric motor connected to a rotatable tube-breaking chain, and a stop positioned a predetermined distance below the outlet opening of the inlet chute. The inlet chute includes an upwardly telescoping protective tube for enclosing (when in its upwardly extended position), substantially the entire fluorescent tube, as a safety feature. Also included is a switch in series with the motor and biased to an open position; the



switch can be closed to energize the motor only by raising the telescoping protective tube.

3,623,673
REFUSE REDUCER
Irwin Math, Beechhurst, and Melvin Schrier, Bronx, both of N.Y., assignors to International Patents of Development, Kings Point, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,043
Int. Cl. B02c *7/16, 13/06*
U.S. Cl. 241—36 **13 Claims**

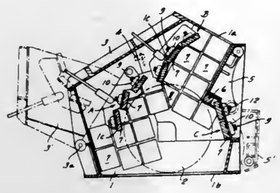


A refuse reducer, particularly for compactors, in which a plurality of blades displaced from each other angularly and spaced axially along a common shaft, are rotated through slotted passages within a stationary frame. Each of the blades have two elongated main parts assembled together with spring loading so as to tightly occupy the slots of the stationary frame. With rotation of the blades, shearing action is realized, for reducing the refuse, at the cutting edges on the slots of the stationary frame and the edges of the moving blade.

3,623,674
HAMMER CRUSHER
Gunter Alt, Saargemuender Strasse 59, Auersmacher (Saar), Germany
Original application Nov. 1, 1967, Ser. No. 679,762, now Patent No. 3,531,055. Divided and this application May 7, 1970, Ser. No. 35,423
Int. Cl. B02c *13/02, 13/282*
U.S. Cl. 241—189 R **9 Claims**

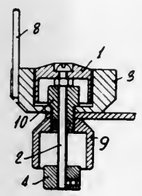
A hammer crusher wherein the internal surfaces of the housing **1** and breaker plates *A*, *B*, *C*, are provided with tessellated armors composed of rectangular and/or triangular metallic sections **7**, **8** having slotted projections **9** extending through openings in the housing and breaker plates and receiving elastic wedges **10**. The feed inlet **1***a* is adjacent to a

chute **5** which is hinged to the housing, and the hammers **22** of the rotor **2** are held against radial and axial movement.



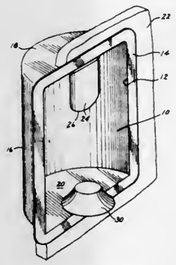
The end plates **31** of the rotor are provided with protective shoes **19** in front of the hammers.

3,623,675
DEVICE FOR WINDING UP THE INITIAL THREAD SUPPLY AT THE END OF A BOBBIN
Michele Ratti, 21016 Luino, Luino, Italy
Filed Oct. 27, 1969, Ser. No. 869,705
Claims priority, application Italy, Oct. 30, 1968, 23,139
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 PW **5 Claims**



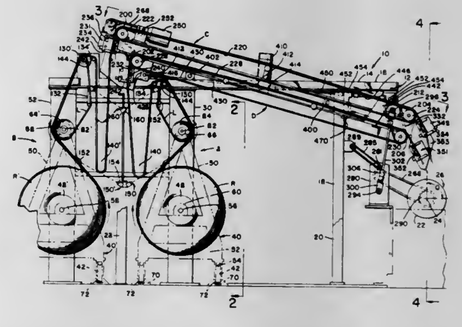
A device for winding up the initial thread supply at the end of a bobbin comprises a drum which is pushed up into a position to be engaged by the thread traveling between the thread supply and the bobbin. The thread turns the drum and runs the drum back down in a screw-threaded connection, thereby to disengage the thread from the drum after the thread has rotated the drum a certain number of rotations. A one-way screw-threaded connection is provided, comprising a ball which is urged by an inclined surface against the screw thread on a shaft carried by the drum, so that upward movement of the shaft disengages the ball and downward movement entrains the ball with the screw thread.

3,623,676
HOLDER FOR ROLLS OF BATHROOM TISSUE OR THE LIKE
Robert E. Eckels, 2101 Youngfield, Golden, Colo.
Filed Nov. 12, 1969, Ser. No. 875,730
Int. Cl. A47k *10/22, 10/32*
U.S. Cl. 242—55.53 **6 Claims**



A holder for a roll of bathroom tissue or the like includes an open side container having a top downwardly directed stub shaft and a bottom upwardly directed conical stub shaft for holding a roll vertically therebetween. The upper shaft holds the top of the roll in upright position, and the space between the shafts permits the roll to be placed on and removed from the lower shaft. The lower shaft holds the bottom of the roll in a friction grip preventing accidental unwinding of the tissue.

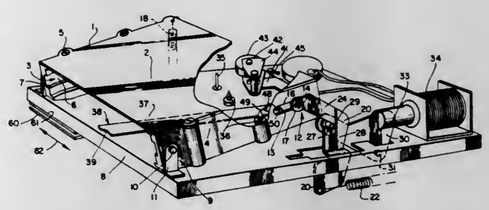
3,623,677
TIRE PLY SERVER
Paul E. Appleby, Cuyahoga Falls, and James C. McGarr, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 3, 1969, Ser. No. 873,492
Int. Cl. B65h *17/18*
U.S. Cl. 242—67.3 **23 Claims**



An apparatus for delivering to a drum of a tire-building machine one or more successive lengths of ply-forming material from large supply rolls in which by controlled movement, a leading edge or edges of said lengths are placed in predetermined contact or proximity to the drum by automatic means.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,623,678
CASSETTE TAPE PLAYING
Robert W. Housman, Winthrop, and Koichiro Hori, Melrose, both of Mass., assignors to Automatic Radio Manufacturing Company, Inc., Melrose, Mass.
Filed Feb. 17, 1969, Ser. No. 799,669
Int. Cl. G11b *23/10, 15/66*
U.S. Cl. 242—198 **11 Claims**



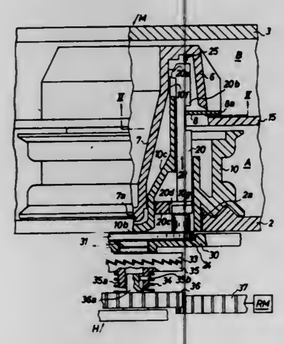
A cassette tape player, especially suitable for use in a vehicle, includes a cartridge guide assembly formed with a generally rectangular insertion opening for receiving a cassette that is inserted in a direction that has a horizontal and slight upward component and then guides the cassette downward into registration with the mechanism that drives and effects scanning of the magnetic tape. The invention includes a relatively simple mechanism for shifting among the

different functions, such as play, fast forward and fast reverse.

3,623,679
PHOTOGRAPHIC APPARATUS AND FILM MAGAZINE THEREFOR

Karl Neudecker, Munich; Johann Zanner, Unterhaching, near Munich; Alois Schwitz, Unterhaching, near Munich; Rudolf Blank, Cologne Dunnwald, and Ehgartner Gabriele, Pullach, near Munich, all of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 20, 1969, Ser. No. 878,373
Claims priority, application Germany, Sept. 13, 1969, P 19 46 514.6; Apr. 25, 1969, Germany, P 19 21 278.3
Int. Cl. G03b *1/04*; **G11b** *15/32*
U.S. Cl. 242—194 **22 Claims**

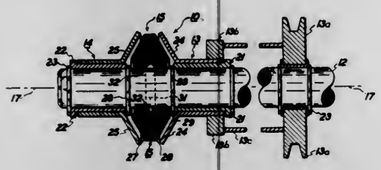


A magazine for motion-picture film which comprises a casing having first and second chambers for convoluted exposed and unexposed film, a core member rotatable in the first chamber and coaxial with unexposed film in the second chamber to respectively collect and pay out exposed film during rotation in first and second directions, and a blocking device including a sleeve movable axially of but rotatable with the core member and a disk mounted in the casing. A spring biases the sleeve into engagement with the disk to hold the core member against rotation in the second direction. A rotary output member of a drive in the camera moves the sleeve axially and away from engagement with the disk when the magazine is properly attached to the camera whereby the core member can be rotated in either direction as long as the magazine remains attached to the camera.

3,623,680
CLUTCH/BRAKE MECHANISM

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 27, 1969, Ser. No. 837,144
Int. Cl. G11b *15/30*
U.S. Cl. 242—201 **1 Claim**



A commuter wheel is mounted on a threaded shaft between two pulleys. The pulleys are free to rotate on the shaft but are braced against movement along the axis of the shaft. The direction of shaft rotation determines which pulley is driven by the commuter wheel. The device is used to wind and rewind a tape between two spools.

3,623,681
AIRCRAFT LOCATION MARKER

Clifford E. Ashline, Atlanta, Ga., assignor to Res-Q-Mark International Inc.

Filed Feb. 10, 1969, Ser. No. 798,093
Int. Cl. B64d *25/20*
U.S. Cl. 244—I R **7 Claims**

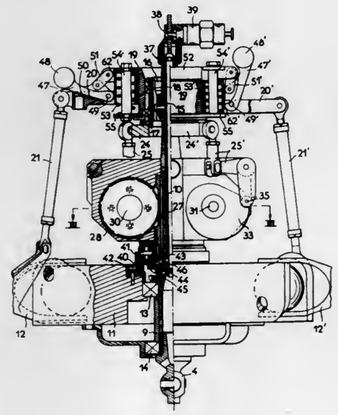


A folded flexible conspicuous signal panel or parachute with apparatus to eject it from an aircraft and unfold it while attached to a tether and to automatically release the panel or parachute from the tether at a predetermined distance from the aircraft after it is unfolded.

3,623,682
ROTARY WING AIRCRAFT

Marcel Kretz, Paris, France, assignor to Giraviens Dorand, Suresnes, France

Filed Sept. 23, 1969, Ser. No. 860,380
Claims priority, application France, Sept. 27, 1968, 167938
Int. Cl. B64c *11/34*
U.S. Cl. 244—17.13 **8 Claims**



The described invention is of a rotary wing aircraft having an automatically controlled pulloff and landing capability, in which the craft is suspended from the rotor through a stationary shaft and a universal joint, and in which, upon the shaft, are arranged the rotor hub, a mechanical programming mechanism operable by rotation of the rotor relative to the shaft, a blade pitch-control mechanism of which the operation is controlled by the programming mechanism, and a ground-proximity probe arranged to initiate operation of the program on contact with the ground, all so as to render automatic the pulloff and landing controls.

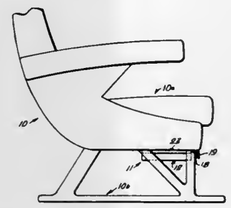
ERRATUM

For Class 244—118 see:
Patent No. 3,624,833

3,623,683
UNDERSEAT LIFE SAVING EQUIPMENT CONTAINER FOR AIRCRAFT

William B. Bennett, 1525 N.E. 149th St., North Miami, Fla.

Filed Aug. 11, 1970, Ser. No. 62,805
Int. Cl. B64d *25/04*
U.S. Cl. 244—122 **7 Claims**

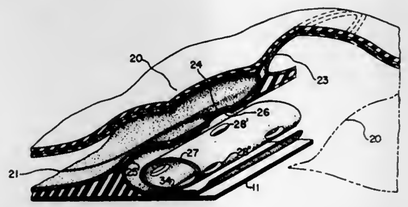


A novel life-saving equipment container for use with passenger chairs of the type used in commercial aircraft, including means for its removable attachment close up against the underside of the chair seat. The attachment means is in the form of front-to-back guide tracks affixed to the underside of the seat and cooperative with a shallow equipment container drawer having forwardly extending handle means conveniently accessible to a seated passenger for withdrawal of the container drawer preparatory for use of the life-saving equipment. The handle comprises a forwardly extending part of a flat cover member adapted to hermetically seal the life-saving equipment in the drawer prior to use of the equipment.

3,623,684
DEICING DEVICE

Ralph O. Kline, Stow, Ohio, assignor to The Goodyear Tire Company, Akron, Ohio

Filed Feb. 18, 1970, Ser. No. 12,407
Int. Cl. B64d *15/18*
U.S. Cl. 244—134 A **17 Claims**



An improved deicing device or ice guard, preferably in the form of an inflatable deicing cover of flexible material including pneumatically responsive means for breaking or fracturing ice formations, such as extensible inflation tubes, and a manifold structure having an outer chamber with orifices therein and at least one inner chamber with similar orifices or openings therein to conduct and distribute an inflation media to the ice breaking means. The manifold structure provides an unrestricted passage for the inflation and deflation of the deicing device.

3,623,685
HANDLINE OR FISHPOLE HOLDER

Newell E. Thomson, Gorham Bridge Road, Florence, Vt.

Filed July 18, 1969, Ser. No. 842,974
Int. Cl. A01k *97/10*
U.S. Cl. 248—38 **1 Claim**

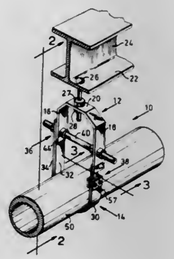
A device for supporting a fishing pole or hand line in an elevated position, the device comprising a tubular stake into which there is inserted a flexible rod that protrudes upwardly therefrom, the upper ends of the rod and stake each having a saddle across which a handline or fishing pole may be rested, the lower ends thereof being inserted into the ground.



3,623,686
PIPE HANGERS

Aurelien P. Dupuis, 39 Stanley St., Sudbury, Ontario, Canada

Filed Nov. 20, 1969, Ser. No. 878,406
Int. Cl. F16l *3/12*
U.S. Cl. 248—60 **4 Claims**



A pipe hanger comprises a headpiece having first and second spaced apart and downwardly extending legs. A resilient cradle strap, usefully comprising a plurality of plies, is permanently secured at one end to one of the legs of the headpiece, while at its other end, the cradle strap carries a hooklike member which is received in a restricted transverse opening or slot in proximity to the lower end of the second leg of the headpiece for detachable securement of that end of the cradle strap to the headpiece, the hooklike member being urged by the resilience of the cradle strap against movement out of such an opening and preferably requiring the cradle strap to be deformed outwardly to permit such movement. A resilient tongue which must also be manually depressed before the hooklike member can be removed from the slot is usefully provided further to prevent accidental detachment of the cradle strap from the headpiece.

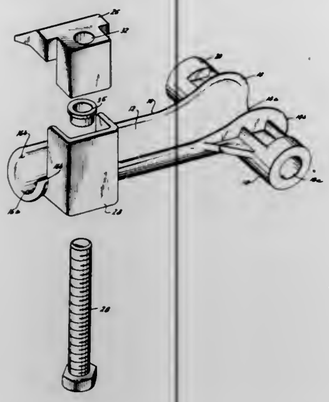
3,623,687
INSULATOR TOP CLAMP

Carl B. Nordstrom, Kingston, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed June 15, 1970, Ser. No. 46,251
Int. Cl. F16l *3/10*
U.S. Cl. 248—74 R **2 Claims**

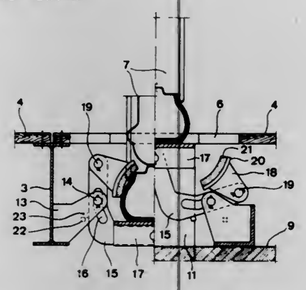
An insulator top clamp for connecting a cable to the top of

an insulator having a cable-receiving channel with a lip at one end with means for attaching the clamp to the insulator



for pivotal movement at that end and a jaw member at the remaining end for connecting the cable to the clamp.

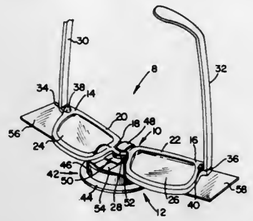
3,623,688
SECURING MEANS IN VEHICLE-TRANSPORTING PLATFORMS
Bo Kent Ansund, Gothenburg, Sweden, assignor to Trascandica A. G., Uetikon am See, Switzerland
Filed July 6, 1970, Ser. No. 52,526
Claims priority, application Sweden, July 18, 1969, 10,214/69
Int. Cl. B60p *7/06*
U.S. Cl. 248—119 R **4 Claims**



The invention relates to a securing arrangement in platforms for transporting vehicles such as cars in a cargo ship, said arrangement comprising a plate adapted to support a vehicle wheel and being movable vertically relatively to the platform and also being pivotally secured to one end of a bellcrank lever projecting outwardly on either side of the plate, said bellcrank lever being pivotally journaled on a journal pin on a bracket secured to a firm part of the platform, said bellcrank lever at the other end being provided with a pivotable locking member having clamping means for the wheel and the arrangement being such that as the lever with the locking member is swung inwardly towards the wheel when the plate is lowered relatively to the platform then the wheel will be locked.

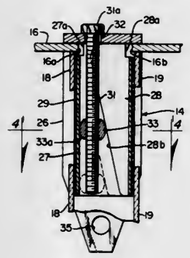
3,623,689
EYEGLASS FRAME ALIGNMENT HOLDER
Donald L. Johnston, 7324 Calumet, Hammond, Ind.
Filed July 14, 1969, Ser. No. 841,400
Int. Cl. F16m *11/04*
U.S. Cl. 248—187 **10 Claims**

An eyeglass frame alignment holder adapted to retain a pair of eyeglasses in place thereon and to exert a slight but continuous force urging the outer margin of the eyeglass frame toward a rearward position and generally into coplanar alignment with the nosepiece. One described form of the invention is a holder in which retainer means in the form of a clip is provided for engaging the frame in the vicinity of the bridge to prevent rearward movement thereof, and in which two inclined leaf or wing portions are provided which are adapted to engage the spectacle frame adjacent its outer



margins near the point where the earpieces or temples are hingedly joined to the lens frame. The holder may be a piece of polished or felt-covered spring steel which, after a period of time, gradually returns the eyeglass frame to its original configuration. The clip may be a separate piece or may be integrally formed from the material comprising the wings, and the holder may includes a mounting base, or may include only the wings and the clip so as to provide increased portability without loss of effect.

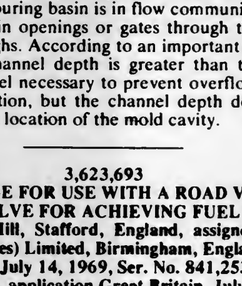
3,623,690
RELEASABLE HOLDDOWN DEVICE
Dale L. Bargman, Jr., Broomfield, Colo., assignor to Colorado Leisure Products, Inc., Broomfield, Colo.
Filed Dec. 24, 1969, Ser. No. 887,900
Int. Cl. B60p *7/08*
U.S. Cl. 248—361 **15 Claims**



A releasable holddown device specifically suited for a variety of vehicle-transported loads has an anchoring unit releasably insertable into a hole such as the stake pocket of a vehicle bed including an attaching member adapted to connect to the load. The anchoring unit includes movable wedge members normally retained in a retracted position and expandable laterally away from one another into anchored engagement against the supporting wall of the hole by selectively controlling the movement of an actuating member therebetween and in such a way as to affect full surface engagement between wedge members and the supporting walls.

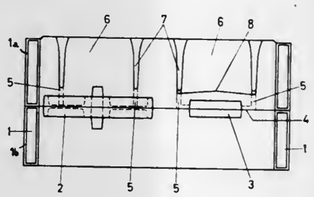
3,623,691
COLLAPSIBLE EASEL
Percy Frederick Albee, Jr., Barrington, R.I., assignor to Q-Panel Corporation
Filed Mar. 2, 1970, Ser. No. 15,365
Int. Cl. A47g *1/24*
U.S. Cl. 248—454 **6 Claims**

A collapsible easel having a frame into which two of its legs telescopically contract, a third leg pivotally attached to the easel whereby the frame may be tiltably supported at various angles both forwardly and rearwardly, a reversible panel having magnetic cork, slate, or other material on its opposite faces detachably mounted on the frame, external channels in the sides of the frame into which auxiliary structural members may be intermatingly attached, one such



structural member being in the form of extension arms with paper chart clips along their extent, the vertical arms also having hooks at their tops to which a projection screen may be attached and due to the versatility provided by the frame being adjustable to both forward and rearward angles, the screen may be used in conjunction with movie, slide and overhead projectors.

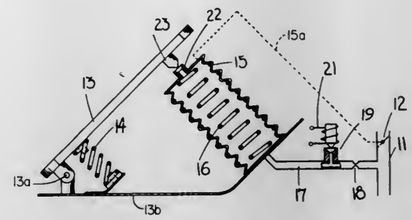
3,623,692
CASTING MOLD
Erwin Buhrer, Breitenaustrasse 164, Schaffhausen, Switzerland
Filed May 26, 1969, Ser. No. 827,793
Claims priority, application Switzerland, May 27, 1968, 7864/68
Int. Cl. B22c *9/08*
U.S. Cl. 249—107 **3 Claims**



There is disclosed a casting mold with at least one pouring basin arranged at the top or upper side of the upper part of the mold. This pouring basin is in flow communication with a number of pour-in openings or gates through the agency of channels or troughs. According to an important aspect of the invention, the channel depth is greater than the minimum depth of a channel necessary to prevent overflow during the pouring-in operation, but the channel depth does not drop below the highest location of the mold cavity.

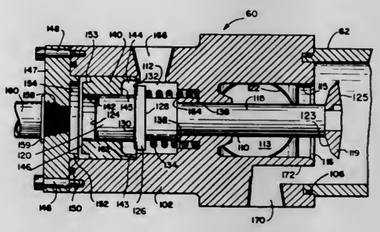
3,623,693
ASSEMBLAGE FOR USE WITH A ROAD VEHICLE THROTTLE VALVE FOR ACHIEVING FUEL ECONOMY
William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 14, 1969, Ser. No. 841,253
Claims priority, application Great Britain, July 25, 1968, 35,484/68
Int. Cl. F15b *9/10*; **F16k** *31/12*
U.S. Cl. 251—26 **1 Claim**

In a road vehicle the throttle pedal is servo assisted, but the servo assistance is removed under predetermined conditions so that the drive has to press the pedal harder. The predetermined conditions can be chosen so that if pinging occurs the driver receives a signal that he must ease back on



the throttle pedal so as to regain the servo assistance. In this way fuel economy can readily be obtained.

3,623,694
FLUID-OPERATED VALVE
Seymour Goldberg, Lexington, Mass., assignor to EG&G, Inc., Bedford, Mass.
Continuation-in-part of application Ser. No. 22,425, Mar. 25, 1970. This application Aug. 31, 1970, Ser. No. 68,196
Int. Cl. F16k *31/143*
U.S. Cl. 251—61.4 **20 Claims**

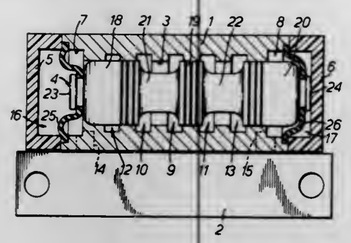


A fluid-operated valve for controlling the flow of pressurized fluid to and from a fluid-operated device, such as a hydraulic cylinder, is provided. The valve design provides an initially large operating force to open the valve and a subsequent lesser operating force to move the valve to its fully open position. In addition, the valve is designed for automatic closing when a predetermined back pressure occurs in the fluid-operated device. The valve includes a fluid control chamber for receiving pressurized fluid to control the pressure required to operate the valve.

3,623,695
FLUID FLOW CONTROL VALVES
John W. Hislop, Owen Road, Wolverhampton, Staffordshire, England
Filed Jan. 21, 1970, Ser. No. 4,725
Claims priority, application Great Britain, Jan. 21, 1969, 3277/69
Int. Cl. F16k *31/12*, *11/07*; **F16f** *1/32*
U.S. Cl. 251—75 **5 Claims**

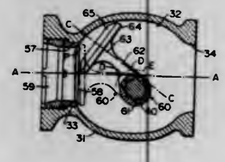
A fluid flow control valve comprising a spool which is reciprocable axially between two alternative extreme positions each determined by abutment of the spool against a stop fixed in the valve, and at least one resilient diaphragm of which the central zone is anchored to and concentrically of the spool, the peripheral zone is anchored to and between the ends of the wall of a concentric chamber in the valve and the area exceeds the cross-sectional area of the chamber by

an amount such that, when the spool is in either of its alternative extreme positions, the diaphragm portion between the



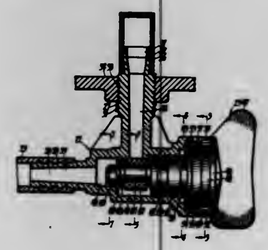
said zone is deformed into a cup shape and resists axial displacement of the spool away from the stop.

3,623,696
ECCENTRIC, SEALLESS, ROTARY VALVE FOR FLOW CONTROL
Hans D. Baumann, Foxborough, Mass., assignor to Masoneilan International, Inc., Norwood, Calif.
Continuation-in-part of application Ser. No. 703,318, Feb. 6, 1968, now abandoned. This application Dec. 30, 1969, Ser. No. 889,030
Int. Cl. F16k *1/20*
U.S. Cl. 251—85 **11 Claims**



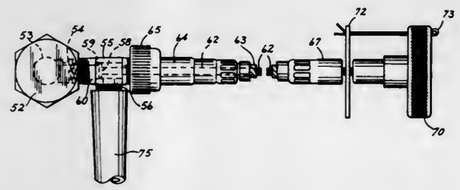
A rotary-type control valve with gradual opening and closing characteristics and having a valve member rotatable eccentrically in the valve chamber relative to a port seat with an annular face engaged by the face of the valve member to provide a metal-to-metal seal for blocking fluid flow through the valve. Power and manual operating means are connected to the control valve which, as a unit, can be installed and removed from suitable connecting means in a conduit.

3,623,697
COCKS OR TAPS
George Alfred Braisby Austin, Noble Park, Victoria, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 4, 1969, Ser. No. 873,866
Int. Cl. F16k *31/524*
U.S. Cl. 251—261 **3 Claims**



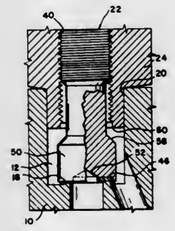
A tap, particularly for use on petrol engines and the like for control of the flow of petrol to the engine, is provided with a body portion having a fluid inlet and a fluid outlet, and an operating spindle extending into the body portion. The spindle carries an eccentrically disposed journal having a resilient sealing bush, and on rotation of the spindle, the sealing bush engages and seals the fluid inlet in the body portion. Fluid-sealing means are provided between the body portion and the spindle to prevent leakage of fluid along the spindle, and means are provided on the body portion and the spindle to limit rotational movement of the spindle and to provide means for securing the spindle in the body portion.

3,623,698
REMOTE CONTROLLED OIL AND LIQUID DRAIN VALVE
John R. Couper, Loveland, and Myer J. Schaffner, Arvada, both of Colo., assignors to EZ Serve, Inc., Arvada, Colo.
Filed Jan. 30, 1970, Ser. No. 7,058
Int. Cl. F16k *31/46*
U.S. Cl. 251—294 **3 Claims**



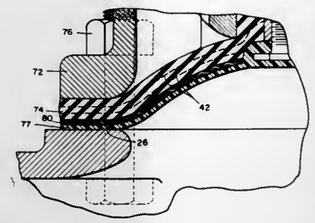
A drain valve for oil and other liquids includes a plug for the outlet for such liquids having a passage therethrough, a connector in the passage in the plug and valve with a downwardly directed outlet part controlling the passage in the connector. A flexible, sheathed cable extends from the valve to an accessible location, preferably under the hood, for opening and closing the valve. Means are provided for biasing the valve in closed position.

3,623,699
VALVE WITH RAISED SEALING SEAT ABUTTING A SOFT ANNULAR RING AND STEM
Stephen Matousek, and Ulrich H. Koch, both of Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed May 7, 1969, Ser. No. 822,678
Int. Cl. F16k *25/00*
U.S. Cl. 251—330 **10 Claims**



This invention concerns a valve having a soft annular ring embedded in the inner end of the valve stem intermittently to seal against a raised seat in the fluid flow passage of the valve. The valve body includes certain conventional structure such as a flow passage terminating in an inlet and an outlet, bonnet means having a stem projecting therethrough into the passage and a handle on the outer end of the stem. The annular ring is made thicker than the height of the raised valve seat to prevent severing of the ring.

3,623,700
DIAPHRAGM VALVE
Henry W. Boteler, East Greenwich, R.I., assignor to Grinnell Corporation, Providence, R.I.
Filed Nov. 5, 1969, Ser. No. 874,231
Int. Cl. F16k *7/16*
U.S. Cl. 251—331 **1 Claim**



A diaphragm valve having gas-conducting channels which are located between the inert diaphragm and the resilient backing sheet and which extend from the interior of the valve across the clamped margins of the diaphragm and backing sheet to the edges thereof to carry to the outside of the valve any gas which may pass through the diaphragm and buildup between it and the backing sheet.

ERRATUM

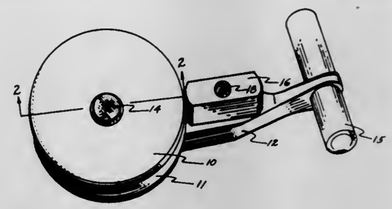
For Class 254—122 see:
Patent No. 3,623,707

3,623,701
DEVICE FOR INSTALLING ROPE ON A FLAGPOLE
Paul M. Dudley, 16 Ponderose Drive, Hampton, Va.
Filed June 10, 1970, Ser. No. 45,067
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R **7 Claims**



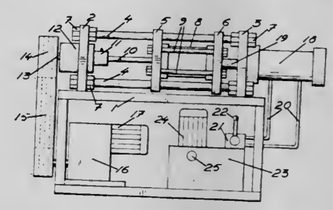
The entrance to the socket carried by the upper end of the rod is placed close to one side of the periphery of the pulley and the spring, disposed in the socket, is lifted out and forced around the upper peripheral portion of the pulley by pulling downwardly on the string attached to the lower end of the spring. The string is then released and the weight of the portion of the spring which extends outwardly beyond the other side of the pulley causes the spring to fall downwardly, drawing with it the string. The rope to be installed is then attached to the string and the string is pulled back over the pulley drawing with it the attached rope.

3,623,702
WIRE PULLING TOOL
John W. Wassell, Sr., Box 79, Route 3, Severn, Md., and Paul D. Wiser, 2660 Johnson Road, Boothwyn, Pa.
Filed June 23, 1969, Ser. No. 835,360
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R **2 Claims**



A tool for facilitating the pulling of strands between spaced supports to which the strands are to be attached which consists generally of a handle with a grooved pulley mounted thereon and a rotatable key mounted on the handle adjacent the pulley which may be turned from an open position to permit placing a loop of the strand over the pulley to a closed position to prevent the strand loop from leaving the pulley when not in taut condition and the method of pulling strands using said tool which includes the steps of fastening the ends of strands being fed from storage rolls to one support adjacent the storage rolls, looping said strands over the pulley, pulling the tool with the strands looped over the pulley to a second support and finally fastening the strands thus pulled to the spaced supports.

3,623,703
MACHINE FOR MIXING AND PLASTICATING OF PLASTICS, RUBBER AND OTHER HIGHLY VISCOUS MATERIALS AT CONTROLLED PRESSURE, FRICTION AND SHEAR CONDITIONS
Henrik Nielander, Schaufelbergerstrasse 58, 8055 Zurich, Switzerland
Filed Dec. 5, 1969, Ser. No. 882,613
Claims priority, application Switzerland, Dec. 10, 1968, 18219/68
Int. Cl. B01f *9/00*
U.S. Cl. 259—3 **21 Claims**

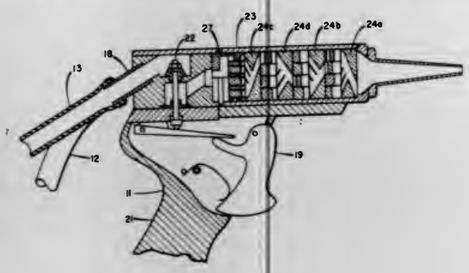


A mixing and plasticating machine which comprises a mixing and plasticating cylinder and a mixing and plasticating rotor with passages, the shaft of said mixing and plasticating rotor being connected to a rotary drive outside the mixing and plasticating cylinder. The mixing and plasticating cylinder and the mixing and plasticating rotor are axially movable in relation to each other. By means of this relative axial motion of rotor and cylinder the inside wall of the mixing and plasticating cylinder is scraped off by the mixing and plasticating rotor and the material in the cylinder is pressed through said passages at friction and shear.

3,623,704
STATIC MIXING DEVICE
Max Skobel, Edison, N.J., assignor to Dow Corning Corporation, Midland, Mich.
Filed Aug. 3, 1970, Ser. No. 60,465
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **8 Claims**

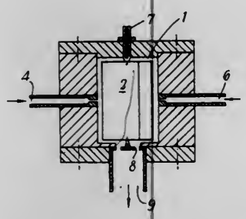
A static mixing device for mixing two liquid components by sequentially combining, dividing and recombining streams

including a sequential series of sets of parallel dividing and recombining elements, each element having a single point of entry or exit at one end and multiple points of exit or entry



on its opposite end, all liquid paths through each element having substantially equal mean lengths. The device may be made extremely small and is adapted for hand-held operation.

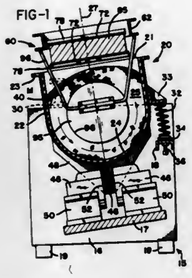
3,623,705
SOLUTION MIXING APPARATUS
James Arthur Townsley, and Roy Trunley, both of Ilford, England, assignors to Ilford Limited, Ilford, England
Filed Nov. 8, 1968, Ser. No. 774,448
Claims priority, application Great Britain, Nov. 9, 1967, 51121/67
U.S. Cl. 259—8 **1 Claim**



This application describes an apparatus for the continuous mixing of liquids which comprises a cylindrical mixing chamber which contains axially supported at both ends thereof a free running paddle which has a plurality of blades the length of which is substantially the length of the mixing chamber, two or more liquid inlet jets equidistantly spaced around the circumference of the mixing chamber at the same level, each jet being arranged to discharge liquid tangentically into the mixing chamber in the same rotational direction and there being a restriction-free exit aperture from the mixing chamber positioned axially at one end of the mixing chamber, the other end being closed.

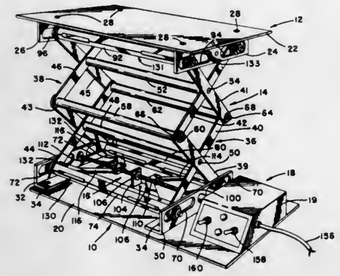
3,623,706
VIBRATORY APPARATUS
Max Isaacson, Dayton, Ohio, assignor to Vibrodyne, Inc., Dayton, Ohio
Filed June 22, 1970, Ser. No. 48,114
Int. Cl. B01f *11/00*
U.S. Cl. 259—29 **9 Claims**

An open-top tub or container is supported by springs to effect orbital movement of a load of parts and media within the container. An endless belt conveyor has a lower run positioned adjacent the open top of the container, and a permanent magnet is disposed within the conveyor to attract parts upwardly from the treating media for transport by the conveyor to a discharge station. A pivotal frame supports the conveyor and magnet for movement as a unit between a parts-removing position adjacent the container and an upper retracted position, and wheels support the conveyor and magnet for horizontal movement as a unit to provide for removing parts from a plurality of containers. An optional directing member is also supported by the frame for corresponding movement between an upper retracted position



and a lowered position within the media to assure that the parts orbit upwardly within the container and into the field of the magnet.

3,623,707
LABORATORY JACK
Edward M. Klopp, Seville, Ohio, assignor to The Chemical Rubber Company, Cleveland, Ohio
Filed Nov. 5, 1969, Ser. No. 874,233
Int. Cl. B66f *3/22*
U.S. Cl. 254—122 **5 Claims**

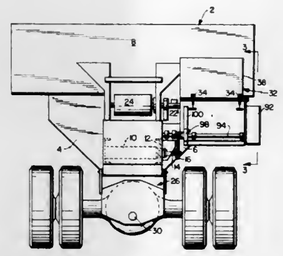


A platform jack apparatus of the type using scissors-type mechanisms. The platform or load support is carried on the scissors mechanisms and means are provided for selectively actuating the scissors mechanisms to raise and lower the platform. The actuating means comprises a rotatably driven screw rod carrying nut members thereon. Connecting bars or links extend from the nut members to the lower ends of the scissors mechanisms so that rotation of the screw rod produces vertical movement of the platform. The relationship between the screw rod, the connecting links, and the scissors mechanisms is such that for any one load, the force input required is substantially constant throughout the platform's range of movement.

3,623,708
SYSTEM AND MEANS FOR SELECTIVELY MIXING CONCRETE AND INCORPORATING DRY ADDITIVES THEREIN
Robert C. Futty, Willow Street, and John L. Kugle, Lancaster, both of Pa., assignors to IRL Daffin Associates, Incorporated, Lancaster, Pa.
Filed Apr. 1, 1969, Ser. No. 811,828
Int. Cl. B28c *7/04*
U.S. Cl. 259—164 **17 Claims**

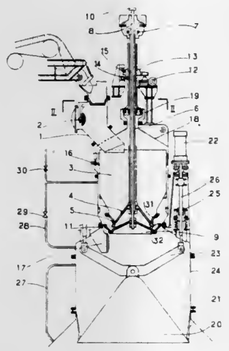
A novel system and means for selectively mixing concrete and incorporating dry additives therein is disclosed. The basic raw materials for the concrete itself are supplied, in dry form, from a truck into an auxiliary mixing trough associated with the truck. Dry, solid additives, preferably in granular

form, although finer modulus material may also be used, are then incorporated into the concrete batch being prepared in the mixing trough for the purposes of imparting antifreeze, water-reduction, and/or coloring properties to the selected batch. A novel apparatus is utilized for delivering the dry additives to the concrete batch, the novel apparatus incorporating a hopper assembly into which the dry additives are placed. The hopper assembly contains a unique mixing agita-



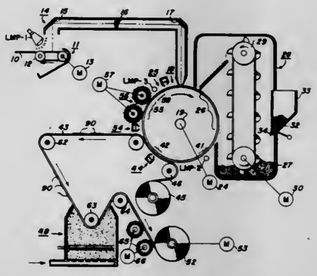
tor means for mixing and breaking up the dry additive ingredients. Disposed below the mixing agitator means is a controlled feed means which selectively controls the amount of dry additives passed out from the hopper into a lateral conveyor means which preferably comprises an enclosed, auauger arrangement. The dry additives, in selective and controlled portions, are conveyed by the auger arrangement into the auxiliary mixing trough whereupon such dry additives are incorporated into the concrete batch.

3,623,709
APPARATUS FOR CHARGING AND FOR DISTRIBUTING CHARGES IN SHAFT FURNACE
Robert Dorville, Paris, France, assignor to Societe Industrielle Delattre-Levivier S.I.D.L., Paris, France
Filed July 14, 1970, Ser. No. 54,677
Claims priority, application France, Aug. 22, 1969, 6,928,827
Int. Cl. F27b *1/20*
U.S. Cl. 266—27 **3 Claims**



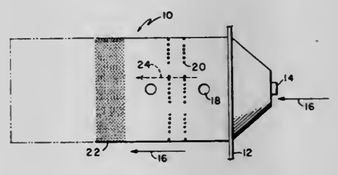
Apparatus for charging and distributing a charge in a shaft furnace having a fluidtight envelope above the furnace, a large bell providing a seal at the base of this envelope and distributing the charges in the furnace, a rotary cone situated above the large bell and closed at the bottom by a rotatable small bell, a lower small bell situated between the two preceding bells, means for opening the bells, and a device for charging the rotary cone, the rotary cone being in a fluidtight envelope which the nonrotatable small bell closes, the small bells are coaxial and vertically displaceable, the rotatable small bell can pass through a seal for the nonrotatable small bell and the envelope has a stop for arresting the cone.

3,623,710
FIXING ARRANGEMENT
Robert H. Detig, Old Tappan, N.J., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,558
Int. Cl. G03g *13/20, 15/20*
U.S. Cl. 263—6 E **2 Claims**



Method and apparatus for affixing electroscopic toner images onto a support in which a quantity of particulate material is heated to a temperature sufficient to produce at least a partial melting of the particular toner material to be fused and the toner material on the support is then contacted with the heated particulate material to induce a transfer of the thermal energy in the particulate material to the toner material on the support.

3,623,711
COMBUSTOR LINER COOLING ARRANGEMENT
Rolf A. Thorstenson, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed July 13, 1970, Ser. No. 54,302
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 A **3 Claims**

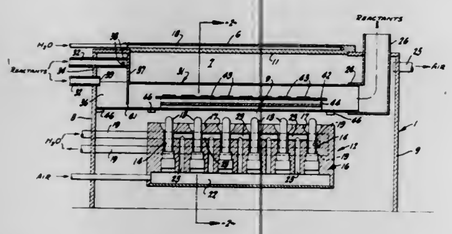


The liner of a combustion chamber is provided with perforations through which coolant air passes. The perforations are sized so that a transpiration cooling effect results and the shape of the perforations is such that a component of flow of coolant air is produced along the thermally exposed surface of the liner. Thus, air passing through the perforations provides the combination of transpiration cooling and film cooling.

3,623,712
EPITAXIAL RADIATION HEATED REACTOR AND PROCESS
Michael A. McNeilly, and Walter C. Benzing, both of Saratoga, Calif., assignors to Applied Materials Technology, Inc., Santa Clara, Calif.
Filed Oct. 15, 1969, Ser. No. 866,473
Int. Cl. F27b *5/00*
U.S. Cl. 263—41 **9 Claims**

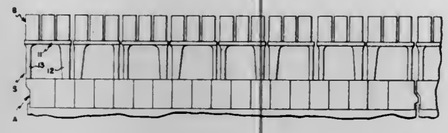
Apparatus and process for vapor depositing epitaxial films on substrates. A gaseous reactant is introduced into a reaction chamber formed from a material, such as quartz, which

is transparent and nonobstructive to radiant heat energy transmitted at a predetermined short wavelength. A graphite susceptor, which is opaque to and absorbs the radiant heat energy, is positioned within the reaction chamber and supports the substrates to be coated. The susceptor is heated



while the walls of the reaction chamber remain cool to preclude deposition of epitaxial film on the walls. To insure uniform heating of the susceptor, the same may be moved relative to the radiant heat source which, in the preferred embodiment, comprises a bank of tungsten filament quartz-iodine high intensity lamps.

3,623,713
KILN CAR DECK STOOL
Norman E. Denison, 19800 Frazier Drive, Rocky River, Ohio
Filed Apr. 6, 1970, Ser. No. 25,739
Int. Cl. F27d *5/00*
U.S. Cl. 263—47 R **12 Claims**

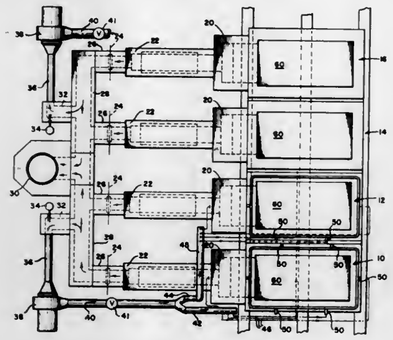


A three- or four-legged deck stool of castable refractory composition for supporting brick or other objects to be fired on a kiln car, has, as an object-supporting top integral with the legs, a nearly square plate with evenly spaced, parallel, round-bottomed V-grooves defining therebetween like ridges having coplanar respective narrow flat longitudinal lands providing bearing surface for object support. Every second ridge includes a series of longitudinally equispaced upwardly tapering like shaped hot gas passage holes longitudinally offset from holes in adjacent series; each hole opening upwardly symmetrically through the land and sloping walls on each side thereof. For building brick firing, the stools are preferably fabricated of a petalite or cordierite or equivalent castable refractory composition, and so proportioned, with a slight spacing between adjacent stools, as to provide an effectively continuous object supporting plane coextensive with but spaced from the car top, and effectively longitudinally continuous from car to car in a tunnel kiln.

In subjecting a number of objects to the action of hot gases, as in firing brick, tile and other ceramic objects, or for heating objects for other purposes, it is necessary to provide support equipment on which the objects may be arrayed, spaced in relation to each other and also vertically above a movable support such as a kiln car, so that a required application, distribution and circulation of hot gases to or about the objects is obtained.

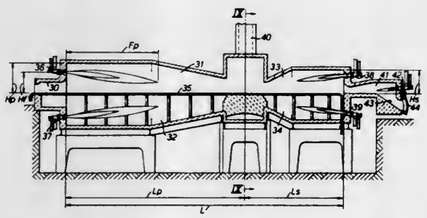
In the case of tunnel kiln firing, the objects are supported on a kiln car by spacing means of refractory composition, such as deck stools; and the present invention, though having broader application, is herein described in terms of kiln car deck stools for supporting building brick to be fired. With known suitable refractory compositions, for a given support or stool structure there is usually a compromise made in the actual composition and processing of the refractory material used between load supporting strength, brittleness, refractory character, and the heat shock resistance obtained in the final refractory stool.

3,623,714
METHOD OF AND APPARATUS FOR OPERATING A FURNACE
Benjamin C. Firmin, Wexford, Pa., assignor to Rust Furnace Company, Pittsburgh, Pa.
Filed Dec. 2, 1969, Ser. No. 881,534
Int. Cl. F23m *11/02*; **F27b** *17/00*; **F27d** *21/00*
U.S. Cl. 263—50 **11 Claims**



A method of and apparatus for operating a furnace, such as of the soaking pit, walking beam or car types, wherein the furnace enclosure is formed by stationary elements or walls as well as at least one movable element or wall. The movable portion of the enclosure is spaced from the stationary portion to provide clearance for relative movement therebetween. The waste gases of combustion are diverted while en route to an exhaust stack, are cooled to a suitable temperature, and are directed into and through the space between the stationary and movable portions to create a pressure barrier therebetween. In this manner, superatmospheric waste gases within the furnace are contained and the atmosphere within the furnace is maintained so that it will not have a deterent effect on the surface of the ingots, slabs or billets being heated, i.e. it does not add to the scale problem.

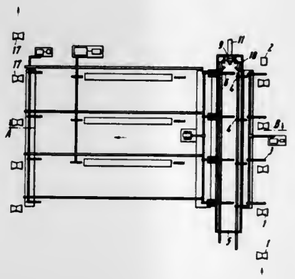
3,623,715
FURNACE METHOD FOR REHEATING BILLETS OR SLABS
James Alan Costick, Whitstable; William Robert Laws, Worcester Park, and Frank Michael Salter, Chatham, all of England, assignors to The British Iron and Steel Research Association, London, England
Filed Jan. 21, 1970, Ser. No. 4,517
Claims priority, application Great Britain, Feb. 4, 1969, 5,966/69
Int. Cl. F27b *9/02*
U.S. Cl. 263—52 **2 Claims**



A slab-reheating pusher furnace has a preheating zone followed by a major soak zone. A burner in the preheating zone

is arranged so that the flame travels in the same direction as the slabs and a burner in the soak zone is arranged so that the flame travels in the opposite direction. The length of the preheating zone is greater than the length of the soak zone and various other dimensions of the furnace are specified which result in an increased throughput.

3,623,716
METHOD AND APPARATUS FOR HARDENING PIPES INTERNALLY AND EXTERNALLY
Werner Fritsch, Sault Ste. Marie, Ontario, Canada; Anton Dunnewald, Haan, Germany; Hans Ribken, Sault Ste. Marie, Ontario, and Friedrich Wilhelm Kruppert, Ontario, Canada, assignors to Mannesmann Tube Company Ltd., Sault Ste. Marie, Ontario, Canada
Filed July 18, 1969, Ser. No. 843,052
Int. Cl. C21d *1/62*
U.S. Cl. 266—6 R **14 Claims**

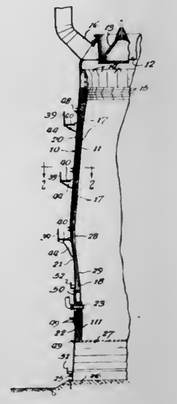


An apparatus for hardening long pipes internally and externally has a tank arranged to be filled with a cooling medium and being sufficiently large to receive the pipe on its interior, a cooling medium nozzle disposed near one end of the tank and supplied with cooling medium; the nozzle has a body and a tip arranged for introducing cooling medium in the pipe in such a manner that a part of the tip is within and peripherally spaced from the end of the pipe at which the cooling medium is introduced, whereby cooling medium may be drawn from the exterior of the pipe to the interior through the space thus defined; and pipe loading and unloading means for delivering a pipe into the tank and for supporting it in the tank while it is being hardened and for subsequently unloading the pipe after it has been hardened.

3,623,717
SELF-SUPPORTING BLAST FURNACE SHELL AND METALLIC LINING FOR BLAST FURNACE
Lawrence G. Maloney, Munster, and William E. Slagnley, Crown Point, both of Ind., assignors to Inland Steel Company, Chicago, Ill.
Filed Aug. 7, 1968, Ser. No. 750,968
Int. Cl. C21b *7/00*
U.S. Cl. 266—25 **12 Claims**

A one-piece, integral blast furnace shell, the totality of which is self-supporting and which extends continuously, without interruption from the top of the stack to the bottom of the hearth. No mantle; no columns.

A fluid-cooled internal metallic lining for a blast furnace. The lining extends continuously, without interruption, and without sharp angular changes, from the top of the stack to

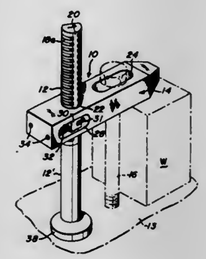


the lower part of the bosh. The lining is movably mounted to accommodate thermal changes in furnace.

ERRATUM

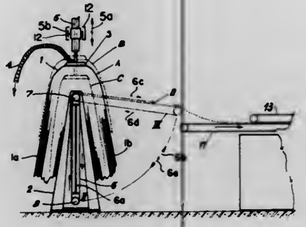
For Class 266—27 see:
Patent No. 3,623,709

3,623,718
CLAMP ASSEMBLY
Eugene J. Thomeczek, Sr., Dayton, Ohio, assignor to Northwestern Tools, Inc., Dayton, Ohio
Filed June 16, 1969, Ser. No. 833,263
Int. Cl. B23g *3/02*
U.S. Cl. 269—91 **18 Claims**



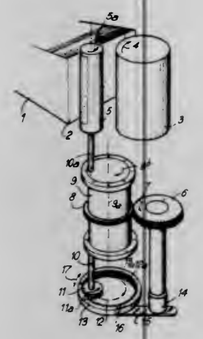
A clamping unit of the invention comprises an elongated rodlike rack having at least one longitudinally extended series of slots, the slots being angled generally transverse to and spaced at selected intervals along a portion of the rod length. A clamping bar mounted on and movable along said rack includes means for a releasably fixed engagement thereof with the means defining at least one of said slots.

3,623,719
METHOD AND APPARATUS FOR TRANSFERRING FLAT, FLEXIBLE SHEETS ONTO A CONVEYOR
Jiri Dokoupil, Oberursel/Taunus, and Jiri Zubik, Oberstedten/Taunus, both of Germany, assignors to Maschinenfabrik Turner A.G., Oberursel/Taunus, Germany
Filed Oct. 3, 1969, Ser. No. 863,585
Claims priority, application Germany, Oct. 7, 1968, P 18 01 674.5; July 18, 1969, Germany, P 19 36 717.0
Int. Cl. B65h *5/02*
U.S. Cl. 271—12 **22 Claims**



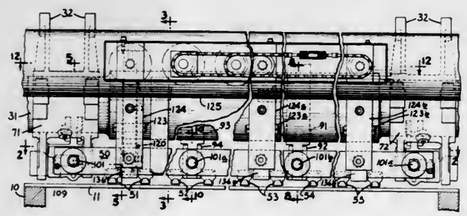
The present invention relates to a method and apparatus for transferring flat, flexible sheets, especially leather from a storage position to a conveyor, wherein the sheets are first placed on a movable surface while maintaining such surface in a substantially vertical position and then tilting the surface toward said conveyor. The apparatus for performing such method comprises a movable, tiltable surface supported on a frame and sheet suction means movable back and forth between a sheet storage position and a position above the frame, said surface comprising at least one endless belt or a series of rollers actively driven, said rollers being rotatably supported on shafts rigidly connected to each other and one of the shafts being operatively connected to tilting means which tilt the movable surface constituted by said belt or rollers back and forth through a tilting angle to direct the sheet toward said conveyor.

3,623,720
HIGH-SPEED LABELLING MACHINE
Romuald Rene Della Vite, Nogent sur Marne, France, assignor to Societe Francaise Anonyme dite: Societe Francaise d'Etiquetage Virey & Garnier, Nogent sur Marne, France
Filed Mar. 23, 1970, Ser. No. 21,708
Claims priority, application France, Nov. 20, 1969, 69.39913
Int. Cl. B65h *3/10*
U.S. Cl. 271—27 **6 Claims**



The present invention relates in general to high-speed labelling machines and is concerned more particularly with the device incorporated in machines of this type for picking up labels from the label box or magazine and delivering them to a transfer cylinder adapted subsequently to deliver the labels to a gumming or gluing device before distributing them to the periphery of a turret adapted to lay the labels to the containers, bottles or other articles to be labeled.

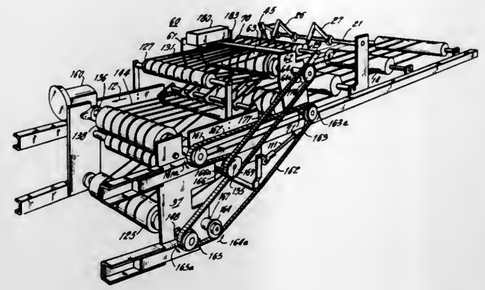
3,623,721
MEANS FOR OVERCOMING FAN-OUT IN LITHOGRAPHIC PRESS
Walter S. Smith, Naperville, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 27, 1969, Ser. No. 869,565
Int. Cl. B65h *9/12*
U.S. Cl. 271—53 **12 Claims**



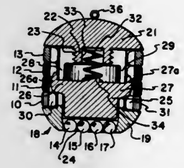
An infeed gripper mechanism including an oscillated transfer assembly for transferring a sheet from a feed table to a constantly running impression cylinder by means of a series of gripper pads which grip the leading edge of the sheet and which are biased into aligned reference position. Fixed but adjustable stops are provided on the frame in the path of movement of the gripper pad mounting means for displacing certain of the pads from reference position so that the pads occupy an arcuate, or bowed, locus upon gripping the sheet. Subsequent restoration of the pads to reference position upon leaving the stops thus imparts a reverse bow to the leading edge of the sheet to overcome fan-out at the trailing edge. In the preferred embodiment, the pad mounting means is in the form of a pad bar to which all of the pads are secured and which is deformed into bowed shape upon obstruction by the fixed stops. Also in the preferred embodiment each of the fixed stops is in the form of a lever having a stop surface adjusted by a manually rotated positioning screw and with an overpowered spring effectively in series to protect against damage or breakage in the event a foreign object is interposed.

3,623,722
AUTOMATIC SWITCH FOR STREAM DIVERTER
Christer Sjogren, River Edge, and John F. Green, West Milford, both of N.J., assignors to AB Bonnierforetagen, Stockholm, Sweden
Filed Aug. 31, 1970, Ser. No. 68,193
Int. Cl. B65h *29/58*
U.S. Cl. 271—64 **17 Claims**

A stream diverter for signature streams and the like including a mechanism for gripping and temporarily halting the stream to form a gap therein. Sensing means, upon detection of the presence of the gap in a predetermined location, activates a deflector bar and a pivotable roller assembly to move the cooperating diverter elements between either an upper or lower position for diverting the signature stream to either an upper or lower conveyor level, respectively. Immediately after movement of the pivotal roller assembly and deflector lever, the gripping means is released to permit the flow of signatures to resume. The diverter is adapted to operate in either direction with equal effectiveness.

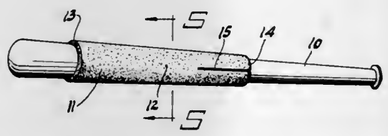


3,623,723
FINGER MANIPULATION GAME
Charles E. Helbach, 2937 South 2910 West, Granger, Utah
Filed July 16, 1969, Ser. No. 842,174
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **7 Claims**



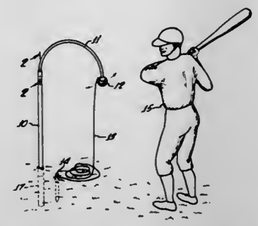
A game having three-dimensional objects that are placed around the fingers of a player. Objects having a characteristic corresponding to the objects on the fingers are randomly positioned to be simultaneously viewed by the viewer and the objects on the fingers are manipulated by the user to transpose the positions of the objects on the fingers as necessary, until they correspond with the randomly positioned objects.

3,623,724
BAT BALANCER
Leon A. Lande, 1054 Riverbank, Lincoln Park, Mich.
Filed Feb. 9, 1970, Ser. No. 9,839
Int. Cl. A63d *15/10*
U.S. Cl. 273—26 B **9 Claims**



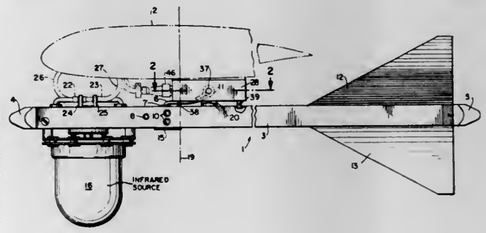
A bat balancer comprising a frustoconically shaped weight sleeve member which is adapted to be slid onto a baseball bat from the knob end thereof. The bat balancer adds weight to a bat but maintains the balance of the bat by adding an equal amount of weight above and below the balance point of the bat.

3,623,725
BATTING PRACTICE DEVICE
Robert L. Setten, Sr., 282 Magnolia, Orange, Calif.
Filed Jan. 31, 1968, Ser. No. 702,097
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **4 Claims**



A batting practice device that includes a spring arm carrying a ball and allowing the ball to be oscillated to present a moving target, the connection to the ball being separable when the ball is struck. A cord secured to the ball limits its travel and permits retrieval. The spring arm is a resilient plastic tube releasably connected at one end to the ball and having its other end frictionally fitted into a vertical pole mounted in the ground.

3,623,726
AERIAL TOW DART DEPLOYABLE FROM A TARGET DROVE WITH A BALLISTICALLY ACTUABLE DEPLOYMENT STATION
Abraham L. Pittinger, Scottsdale; Rex V. Taylor, Tempe, and Raymond W. Thomas, Phoenix, all of Ariz., assignors to Talley Industries, Inc., Mesa, Ariz.
Filed Dec. 9, 1968, Ser. No. 782,301
Int. Cl. F41j *9/06*
U.S. Cl. 273—105.3 **9 Claims**

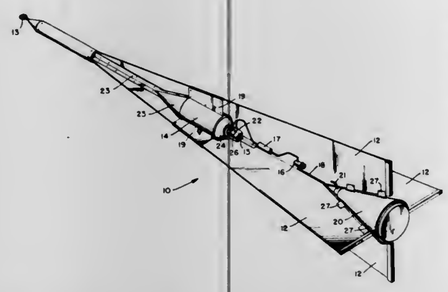


An aerial tow dart is provided which is towable by a target drone and is deployable from and jettisonable by the drone. The tow dart emits a homing signal for attracting a missile to the dart rather than to the drone, and is deployed such that the drone and tow dart are separated by a distance sufficiently small that both appear as a single target to the gunnery operator firing the missile. In one embodiment, the tow-cable is carried within the tow dart and fed through a pair of snubbing posts within the tow dart for regulating payout of the tow-cable. A ballistically actuable deployment station for each tow dart is mounted on the target drone and is responsive to control signals for initiating operation of the source of homing signals in the tow dart, releasing and deploying the tow dart, and releasing the tow-cable to jettison the tow dart.

3,623,727
TOW TARGET INCLUDING A CONTROLLABLE SOURCE OF HEAT RADIATION
Ephraim Regelson, Mariposa, and William S. Roney, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 1, 1969, Ser. No. 838,139
Int. Cl. F41j *5/08*
U.S. Cl. 273—105.3 **2 Claims**

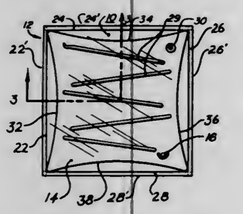
An aerial tow target consisting essentially of two

orthogonal triangular airframes has been augmented with a



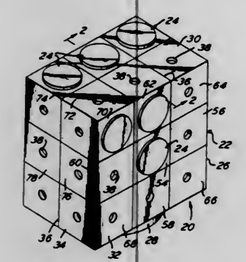
butane burner or the like to provide a target for radiation seeking missiles.

3,623,728
INFLATABLE PILLOW WITH GAME BOARD
A. Eddy Goldfarb, 19434 Londelius St., Northridge, Calif.
Filed Mar. 14, 1969, Ser. No. 807,177
Int. Cl. A63b *67/14*
U.S. Cl. 273—109 14 Claims



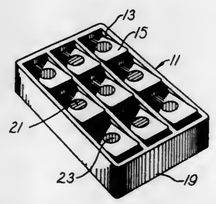
A play device in the form of a flexible envelope inflatable into a functional pillow and having at least a portion of its walls transparent. The envelope encloses a rigid game board and one or more play or game pieces which may be positioned or moved relative to the board by manipulating the inflated pillow to effect play of the game.

3,623,729
THREE-DIMENSIONAL BOARD GAME APPARATUS
Joseph J. Wetherell, New York, N.Y., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1970, Ser. No. 14,604
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 R 2 Claims



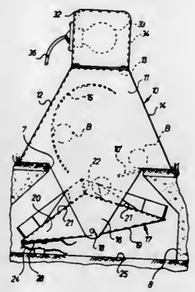
A game apparatus for playing a three-dimensional game with a plurality of game pieces. The game pieces are divided into a plurality of groups of similar number, each of the groups being a different color. Each game piece comprises a flat disc having a stem which extends transversely to one of the flat surfaces of the disc at the center thereof. The apparatus also includes a support member which is a rectangular, hollow, transparent member having five rectangular playing surfaces, four of which are disposed vertically and depend from the four edges of the periphery of the fifth of the surfaces which is horizontally disposed. Each of the surfaces includes a plurality of squares which are disposed in aligned rows and columns. The rows of each of the four vertically disposed surfaces are aligned with the rows of the other vertical surfaces. The columns of each of the four vertical surfaces are aligned with the rows and columns of the horizontal surface. Each of the squares has an opening at the center thereof so that any one of the discs may be removably secured to the square by insertion of the stem of the disc in the opening. The support member has a bore formed in its sixth surface, said bore rotatably receiving a projection carried by a base member.

3,623,730
CARD GAME AND METHOD OF PLAYING SAME
Adolph E. Goldfarb, 19434 Londelius St., Northridge, Calif., and Rene Soriano, Los Angeles, Calif., assignors to said Goldfarb, by said Soriano
Filed Aug. 11, 1969, Ser. No. 849,090
Int. Cl. A63f *3/02*
U.S. Cl. 273—132 4 Claims



A card game and method of playing same which comprises two sets of playing cards, each set differentiating from the other by indicia thereon, and a tray having a plurality of individual compartments therein for containing the cards when distributed throughout the tray, allowing the cards to be readily removed from each compartment during the playing of the game. The game is played by selected moving of cards from compartment to compartment within the tray in a given number of moves to effect a result where only cards of one set are exposed to the players.

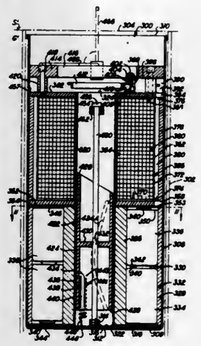
3,623,731
GOLF PUTTING GAME
Edgar Forcier, 4155 44th Avenue, Ville St. Michel, Quebec, Canada
Filed July 23, 1970, Ser. No. 57,686
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—176 FA 8 Claims



A golf-putting game comprising an elongated playing surface with a teeing area at one end and a plurality of holes

disposed in at least two rows, one on each side of, and generally parallel to, the longitudinal centerline of the playing surface, such that the sight angle from the teeing area to the successive holes of any given row is progressively smaller with increasing distance of the holes from said teeing area, in combination, for each hole, with a score-indicating lamp actuated into an on-state upon passage of a first ball through the hole and into an off-state upon passage of a second ball through the hole, whereby the player upon playing the successive holes of a row, experiments increasing difficulty in so doing and runs the risk of cancelling his own score if he plays two balls into a given hole. A ball catcher, containing a deflector, is provided around each hole. The movement of a pivotable baffled ramp located in each hole closes and opens an electrical circuit to control the state of the indicating lamp. Golf balls are returned to the tee area by an inclined alley which cooperates with a discharge outlet in each hole.

3,623,732
GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS
Maurice E. Peeples, P.O. Box 235, Kingsland, Ga.
Continuation-in-part of application Ser. No. 699,229, Jan. 19, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 885,216
Int. Cl. A63b *57/00*
U.S. Cl. 273—179 A 25 Claims



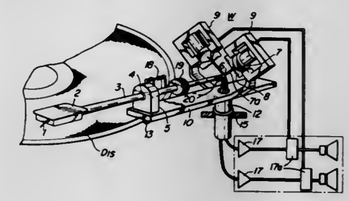
A golf ball putting hole which automatically ejects golf balls putted thereinto includes the following features: (1) an electromagnet powered by an annular arrangement of rechargeable batteries surrounding the golf ball ejecting armature and resting on the lower end wall of the hole (2) a coil spring secured to the lower end of the armature and supporting same above the lower end wall of the hole and (3) a detachable closure member secured to the upper end of the hole and supporting a flag pin.

3,623,733
GOLF PRACTICE APPARATUS
John J. Cavanaugh, 77 W. Washington St., Chicago, Ill.
Filed Nov. 13, 1969, Ser. No. 876,385
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B 1 Claim



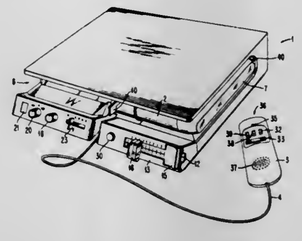
Apparatus for practicing swinging of a golf club which comprises a body cage member and a hitting track member to inculcate upon the user proper hip movement during the swing and movement of the golf club head in the proper path when contacting a golf ball. The body cage member is adjustable both vertically and laterally to accommodate a golder's hips. The track member is adjustable to different distances from the cage member to accommodate the different lengths of the various clubs. The track member's alignment is also adjustable to develop various golf club swings, e.g., an inside-out swing.

3,623,734
PICK-UP DEVICE FOR RECORD PLAYERS
Naraji Sakamoto, Toyonaka-shi, and Toshiyuki Goto, Kadoma-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Sept. 16, 1969, Ser. No. 858,357
Claims priority, application Japan, Sept. 21, 1968, 43/68616
Int. Cl. G11b *3/10*
U.S. Cl. 274—1 R 11 Claims



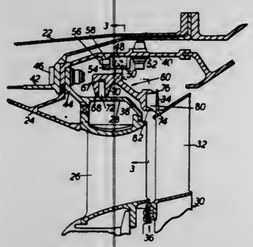
A pickup device for record players which enables a stylus under a light pressure to perfectly trace the grooves on a disc even if the disc is warped or eccentric, whereby high-fidelity reproduction of the recorded sound can be obtained.

3,623,735
DICTATING AND TRANSCRIBING APPARATUS WITH AUTOMATIC AND SEMIAUTOMATIC OPERATOR-CONTROLLED FACILITIES
Chester M. Fackler; Fred W. Johnson, and Bruno F. Wehmer, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 19, 1968, Ser. No. 699,259
Int. Cl. G11b *27/10*
U.S. Cl. 274—4 J 16 Claims



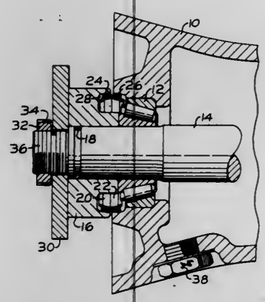
The invention concerns dictating and transcribing apparatus using a magnetic belt record media and having a variety of automatic and semiautomatic features. The dictating and transcribing units are arranged for loading and unloading of a magnetic belt and have an automatic phasing feature for establishing initial synchronism of the driving lead screw and the belt for accurate tracking of a signal transducer in relation to the belt during recording and transcribing operations Certain procedures are provided to insure compatibility of the units with different kinds of record media.

3,623,736
SEALING DEVICE
James A. Petrie, Littleover, and Willie Williamson, Shelton Lock, both of England, assignors to Rolls Royce Limited, Derby, England
Filed Sept. 16, 1969, Ser. No. 858,309
Claims priority, application Great Britain, Sept. 26, 1968, 45,753/68
Int. Cl. F16j 15/48
U.S. Cl. 277—27 5 Claims



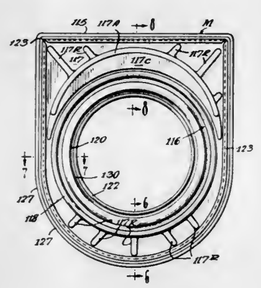
A sealing device mounted for axial movement on a stationary portion of a gas turbine engine and arranged to seal against the blade shroud of the high-pressure turbine of the engine. The sealing device is annular in form and has two lips defining an annular channel and a number of radial lands extending between the lips thereby defining a plurality of equispaced recesses. In operation the recesses in combination with the blade shroud form a number of chambers which are subjected to a variable pressure, the chambers being in communication with a source of high-pressure gas. If the clearance between the sealing device and the blade shroud decreases the pressure in the chambers increases and vice versa, the resultant pressure on the sealing device acting to maintain the clearance at a substantially constant value.

3,623,737
FACE SEALS
Edwin J. Eckert, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 29, 1969, Ser. No. 888,288
Int. Cl. F16j 15/34
U.S. Cl. 277—92 10 Claims



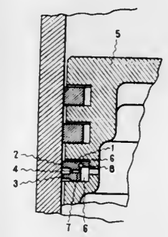
A formed, sheet-metal face seal is provided which utilizes loading means to bring seal faces of relatively rotatable parts into operative, fluidtight engagement. The seal comprises a frustoconical annulus having a generally radially extending flange joined to the larger diameter end, which flange defines a face for sealing against a relatively rotating surface.

3,623,738
REAR SEAL
Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.
Continuation-in-part of application Ser. No. 697,131, Jan. 11, 1968, now abandoned. This application Mar. 11, 1970, Ser. No. 18,605
Int. Cl. F16j 15/32
U.S. Cl. 277—132 4 Claims



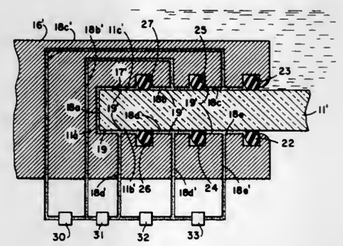
Dustguards of rubber mat form are provided having a rigid outer frame portion of the size and shape of the dustguard slot, having a circular bellows portion spaced from the outer frame portion and integrally connected thereto by a planar intermediate web portion, the bellows portion terminating in a semirigid ring portion capable of maintaining substantial circular stability during limited axial and transverse shifting accommodated by the bellows portion. The web is of less axial thickness than the frame and ring portions. The ring terminates in an integral flexible wiping finger of circular form and slightly smaller in diameter than the journal seat. The web portion is provided with an array of generally radial ribs that resist stretching and thereby assist in maintaining the ring portion circular even during severe transverse shifting of the journal. The rigid outer frame has a pair of seal fins extending around each major face region thereof. In one form, a metal frame insert is incorporated in the mat to impart desired rigidity.

3,623,739
OIL SCRAPER RING
Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,228
Claims priority, application Japan, Feb. 17, 1969, 44/11055
Int. Cl. F16j 9/20
U.S. Cl. 277—163 1 Claim



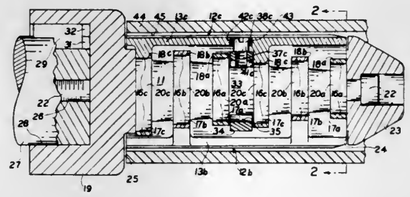
An oil scraper ring for the piston of an internal combustion engine which has two axially spaced outer, approximately cylindrical faces and an oil window radially therethrough between the faces is provided with an expander in an annular groove of the inner circumferential face radially approximately aligned with one of the outer faces which is axially wider than the other outer face for uniform pressure distribution between the two faces.

3,623,740
SEAL FOR A STEEL-GLASS JOINT
Edgar N. Rosenberg, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 24, 1970, Ser. No. 66,256
Int. Cl. F16j 15/14
U.S. Cl. 277—237 5 Claims



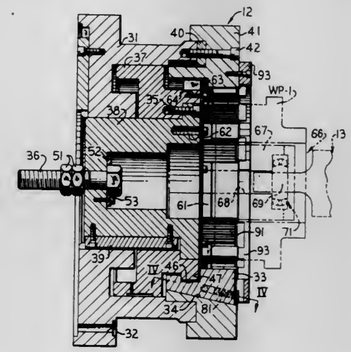
A cylindrical submersible housing is connected to a hemispherical glass shell in a manner to minimize failure-producing tensile forces usually attendant such a juncture. An annular channel provided in the housing receives a cylindrical extension of the hemispherical shell. The small space formed between the inner walls of the annular channel and the cylindrical extension is filled with oil, at least one pair of gland-"O"-ring combinations hydrostatically isolate the fluid from the interior and exterior of the submersible. The oil and gland-"O"-ring combinations cooperate to hold the cylindrical extension from contacting the inner walls of the annular channel to eliminate lateral, tensile forces otherwise produced when a brittle material, such as glass, is subjected to high bearing forces. Higher pressure compensation is provided by a plurality of pairs of gland-"O"-ring combinations forming adjacent liquid-filled annular spaces each in fluid communication with one of a plurality of pressure regulators setting the pressure differential between adjacent annular spaces below that at which failure occurs across a gland-"O"-ring combination.

3,623,741
BIDIRECTIONALLY OPERABLE TORQUE ACTUATED EXPANDABLE CORE CHUCK
George E. Reeder, Jr., Newark, Del., and Soma M. Rohosy, West Chester, Pa., assignors to Beloit Corporation, Beloit, Wis.
Filed Nov. 12, 1969, Ser. No. 875,984
Int. Cl. B23b 31/40
U.S. Cl. 279—1 DA 6 Claims



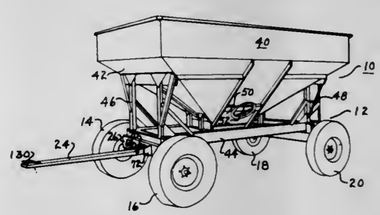
A plurality of elongate chucking members equiangularly disposed about a rotatable central camshaft provide a bidirectionally operable cylindrical core chuck which can be expanded radially by simultaneous outward movement of such members relative to the rotational axis of the camshaft. Each of the chucking members includes two spaced coaxial mounting yokes supported by corresponding circular cams located along the camshaft and offset from the rotational axis thereof A positioning ring concentric with the chuck axis is provided with radial guide pins which maintain the chucking members in equiangular relation to each other as they are moved outwardly in unison as a result of torque development between the camshaft and any one of the chucking members.

3,623,742
JAW CHUCK
Wilmer E. Funk, Roanoke; Howard M. Hilgers, East Peoria, and Eugene R. Martin, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 4, 1969, Ser. No. 855,287
Int. Cl. B23b 31/12
U.S. Cl. 279—65 11 Claims



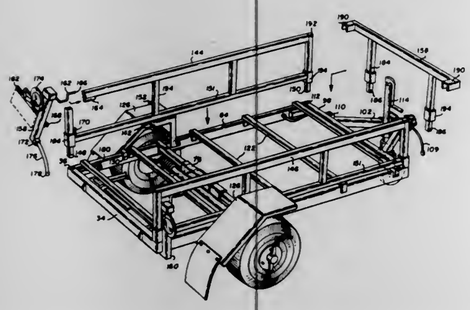
A chuck assembly for securing generally cylindrical workpieces which have rough surfaces or which are otherwise not uniform or concentric. A relatively large number of jaw members are arranged in respective register with ramp surfaces at circumferentially spaced locations about an interior bore of the chuck. A draw bar is associated with each of the jaw members by means of a ring member for positioning the jaw members and initially engaging them upon the workpiece. An actuator block is arranged for axial engagement with the workpiece and is associated with the ring member for further shifting the jaw members and increasing their engagement with the workpiece during operation.

3,623,743
TOWED VEHICLE TONGUE ASSIST STRUCTURE
John D. Rohrer, North Manchester, Ind., assignor to Parker Industries Inc., Silver Lake, Ind.
Filed Sept. 8, 1969, Ser. No. 855,866
Int. Cl. B60d 1/00
U.S. Cl. 280—103 10 Claims



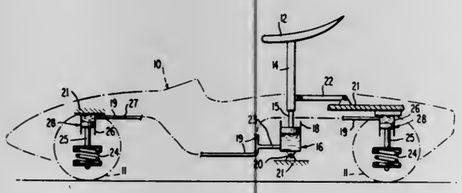
A tongue assist structure for a towed vehicle in which a tongue mounting fixture is pivotally secured to the front axle assembly of the vehicle and a tongue is pivoted horizontally to the fixture, and in which a leaf spring means is secured to the underside of the fixture and extends longitudinally along the underside of the tongue for urging the tongue in a substantially horizontal position.

3,623,744
COLLAPSIBLE TRAILER APPARATUS
Melvin C. Bertness, Santa Cruz, and Arnold E. Lyle, Capitola, both of Calif., assignors to Bermaco Enterprises, San Jose, Calif.
Filed Dec. 11, 1969, Ser. No. 884,240
Int. Cl. B62d *23/00*
U.S. Cl. 280—106 12 Claims



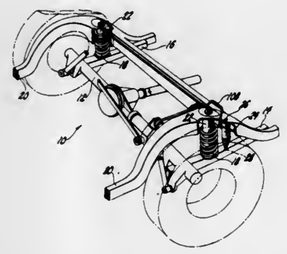
A collapsible trailer assembly including a plurality of lightweight rigid components which, when assembled in a predetermined order, interlock to form the superstructure of a trailer vehicle which can be fully assembled by a person of average strength and dexterity without the use of tools and without the use of bolts, screws or other ordinary fastening means.

3,623,745
LOAD LEVELER
Robert W. Taylor, P.O. Box 9355 Southern University, Baton Rouge, La.
Filed June 2, 1969, Ser. No. 829,581
Int. Cl. B60g *11/58*
U.S. Cl. 280—124 5 Claims



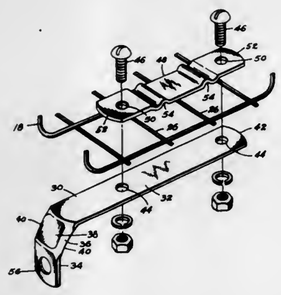
An automobile including in combination, a chassis, wheels rotatably supporting the chassis, and spring assemblies connected between the chassis and wheels. The spring assembly of each wheel comprises a spring connected at one of its ends to a wheel and an hydraulic ram connected between the other end of the spring and the chassis. A fluid displacement cylinder communicates with the rams and is carried by the chassis. The piston of the fluid displacement cylinder is connected to an air foil which creates a negative lift to apply a downward force on the piston which functions to add a simulated weight to the chassis and compress the springs of the wheel assemblies and to displace fluid from the fluid displacement cylinder to urge fluid to the rams to raise the chassis with respect to the springs. Thus, as the force exerted by the wing adds to the weight of the vehicle and causes contraction of the wheel springs, the chassis is maintained a predetermined distance from the ground by the rams.

3,623,746
SELF-PUMPING VEHICLE HEIGHT CONTROL ASSEMBLY
Michael E. Zielinski, Washington, D.C., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 23, 1970, Ser. No. 31,253
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 5 Claims



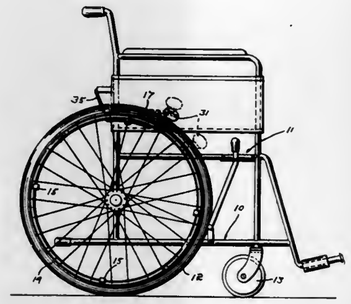
A pump assembly including a piston attached to the vehicle unsprung mass for reciprocal movement within a cylinder secured to the sprung mass supplies pressure fluid to suspension lift units. Downward movement of the piston draws fluid into the pump assembly from a reservoir and upward movement of the piston compresses the fluid for discharge through a pressure port to the lift units. A pressure relieve valve is provided for dumping the fluid to the reservoir when the lift units are sufficiently pressurized. The pump assembly further includes a balanced control valve operative to bypass fluid from the pressurized lift units back to the reservoir when the vehicle is lightly loaded and blocks flow from the lift to the reservoir when the vehicle is heavily loaded. The balanced valve is biased closed with a spring force varying with movement of the pump piston.

3,623,747
AXLE BRACKET FOR SADDLE BASKET
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed Nov. 10, 1969, Ser. No. 875,432
Int. Cl. B62j *9/00*
U.S. Cl. 280—202 7 Claims



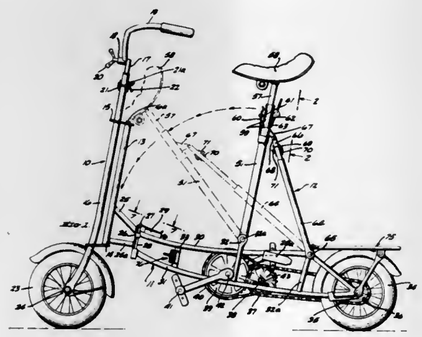
The saddle basket mounting means includes an axle-supported rigid bracket on which a clamp plate member is mounted, said clamp plate member being grooved and designed to impose two different forms of clamping action upon the bottom wires of the basket, thereby ensuring a tight, motionless, noiseless mount for the basket.

3,623,748
OCCUPANT ACTUATED MEANS FOR PROPELLING A WHEELCHAIR
Dewey O. Haynes, 16 Cushman Road, Brighton, Mass.
Filed Sept. 16, 1969, Ser. No. 858,415
Int. Cl. B62m *1/14*
U.S. Cl. 280—242 10 Claims



A wheelchair is disclosed that has a dual rim unit attached to each of its main wheels, each unit slidably supporting a device provided with a friction member engageable with the unit and a handgrip for effecting such engagement, the device being attached to the chair to limit its sliding movement relative to the unit.

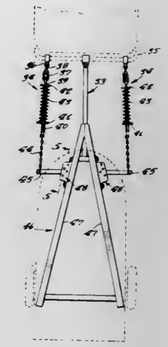
3,623,749
PORTABLE BICYCLE
Falle R. Jensen, 44 W. Del Amo Blvd., Long Beach, Calif.
Filed Dec. 29, 1969, Ser. No. 888,347
Int. Cl. B62k *15/00*
U.S. Cl. 280—278 6 Claims



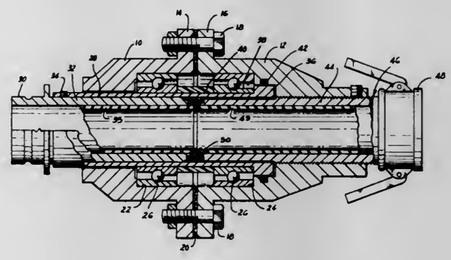
A portable bicycle of substantially U-shaped structure including a front wheel assembly removably attached to a bottom assembly, a seat assembly pivotally affixed to the bottom assembly, and a clamp joining the bottom assembly and front wheel assembly permitting the front wheel assembly to be removably attached substantially parallel to the bottom assembly.

3,623,750
TRAILER HITCH, NO SWAY TRAILER HITCH
David M. Allen, Rte 1, Box 37, Bremen, Ky.
Filed Aug. 4, 1969, Ser. No. 847,204
Int. Cl. B60d *7/00*
U.S. Cl. 280—446 B 2 Claims

A trailer hitch having a three-point connection between a towing and towed vehicle, and which comprises spring-stretchable connections on opposite sides and a nonstretchable center connection; the side connections being attached at their rear ends to forwardly pivotable bars.



3,623,751
SWIVEL JOINT
Clarence E. Hulbert, Jr., 1810 Columbia, West Columbia, Tex.
Filed Apr. 4, 1969, Ser. No. 863,725
Int. Cl. F16l *27/00*
U.S. Cl. 285—55 1 Claim

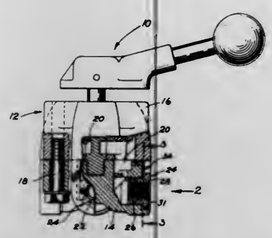


A swivel joint particularly useful in a conduit for conveying abrasive materials, the joint comprising a housing having a pair of longitudinally spaced-apart radial thrust bearings mounted therein, the housing being rotatable with a coupling on one end and rotatable with respect to another coupling on the other end, the coupling on the other end having affixed thereto a mandrel on which the bearings are mounted, the whole being lined with a resilient abrasive-resistant material.

3,623,752
SELF-LOCKING PIPE ADAPTER
James O. Brown, Fullerton, Calif., assignor to DeLaval Turbine California Inc., Trenton, N.J.
Filed Dec. 19, 1969, Ser. No. 886,465
Int. Cl. F16l *21/08, 25/00, 29/00*
U.S. Cl. 285—91 1 Claim

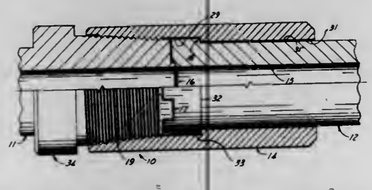
An internally threaded adapter fitting for connecting a pipe, or the like, to a body to place the pipe in fluid communication with a passage in the body. The fitting is disposed in bore terminating in the fluid passage. The fitting is held against axial movement in the bore and is also held against rotation in the bore so that a pipe can be threaded into the fitting, or unscrewed therefrom. With this construction, fittings have different internal threads can be secured in the

bore to accommodate different pipe threads. Consequently, it is not necessary to manufacture and stock bodies threaded



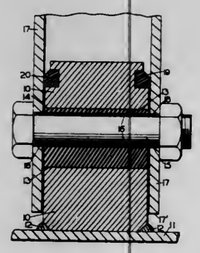
to match different pipe threads, it being necessary only to manufacture and stock one body and fittings having different threads.

3,623,753
PIPE COUPLING FOR A SEALED FLUID CONDUCTOR
Ralph L. Henry, Midland, Tex., assignor to Smith International, Inc., Midland, Mich.
Filed Dec. 8, 1969, Ser. No. 883,008
Int. Cl. F16l *19/00*
U.S. Cl. 285—330 **5 Claims**



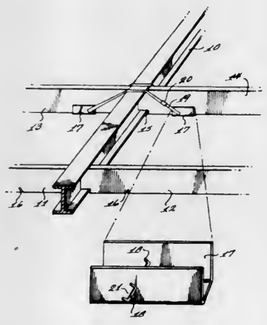
A pipe coupling for sealed fluid conductors comprised of first and second members having a complementary seal means and a complementary clutch means formed thereon with each member being held together by a collar. The collar has a shoulder which engages a complementary shoulder located on one member and a box which engages a pin located on the second member so as to enable a compressive force to be developed between the collar and the box, with the force being imposed upon the seal means to thereby effect the seal and at the same time transmit tension loads, while the clutch enables transmission of torque to be effected in either rotational direction.

3,623,754
CUSHIONING MOUNTING ASSEMBLY FOR VEHICLE GUARD CANOPY POST
James C. Moore, Clackamas, Oreg., assignor to Portland Wire & Iron Company, Portland, Oreg.
Filed Nov. 4, 1970, Ser. No. 86,817
Int. Cl. F16b *9/00*
U.S. Cl. 287—20 **3 Claims**



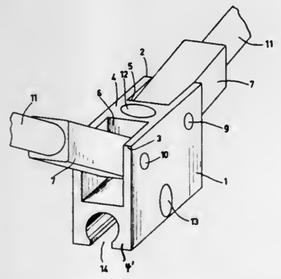
A solid base member, rigidly secured on the vehicle, extends up, with slight all around clearance, into the bottom end of the tubular post for the canopy. A cross slot through the base member contains a cushioning mounting for a bolt which in turn supports the post. The cross slot and cushioning mounting are so shaped as to allow limited upward and sideward travel of the bolt and post relatively with respect to the base member but considerable cushioned travel relatively downwardly. A special resilient ring, secured at the top of the base member, engages the inside of the post and normally prevents metal-to-metal contact between base member and post, but the slight all around clearance makes the resilient mount act as a fixed connection upon very limited lateral swing of the post.

3,623,755
JOIST HANGER
George D. Ratliff, Jr., 2314 Forest Drive, Pittsburgh, Pa.
Filed June 27, 1969, Ser. No. 837,263
Int. Cl. F16b *9/00*
U.S. Cl. 287—20.94 **5 Claims**



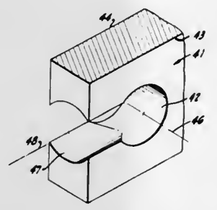
An improved joist hanger for supporting steel, wooden or other joists from beams, such as I-beams, wherein a separate bracket is attached at a distance from the beam to each of a pair of conventional joists abutting opposite sides of a conventional girder or beam, and a strap with its ends fastened together links the two brackets over the beam so that both joists are supported vertically by the beam and continually pulled toward it to improve the load distribution of the joists as well as to generally improve the support characteristics of a floor or other structure comprised of such joists and beams.

3,623,756
ASSEMBLY KIT WITH SOCKET MEMBER
Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed June 17, 1969, Ser. No. 833,943
Claims priority, application Germany, July 6, 1968, P 17 84 104.2, July 17, 1968, Germany, P 17 75 221.5
Int. Cl. F16c *11/00*
U.S. Cl. 287—92 **7 Claims**



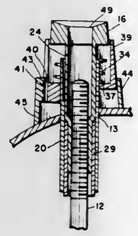
A plurality of bar-shaped structural elements are provided in an assembly kit. A socket member serves for connecting at least two of these structural elements to one another and comprises first and second connecting means each of which is operative for releasably engaging an end portion of one of the structural elements and connecting the same to the socket member. At least one of the connecting means enables movement of the associated structural element relative to the socket member in a predetermined direction and plane.

3,623,757
LOCK MOUNTING
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company
Continuation of application Ser. No. 618,055, Feb. 23, 1967, now abandoned. This application May 22, 1969, Ser. No. 828,437
Int. Cl. E05c *19/00*
U.S. Cl. 292—1 **3 Claims**



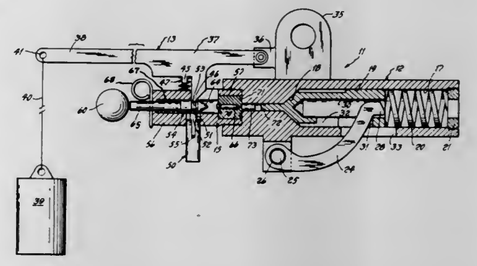
A socket to receive a lock unit is provided in a door stile or panel and is bounded by opposing surfaces of revolution defined by a right line generatrix moving parallel to and centered on an axis itself parallel to the side surfaces of the door panel, the curved surfaces merging with the edge surface of the door panel and having a great enough radius to break through at least one side surface of the door panel.

3,623,758
SAFETY KIT ASSEMBLY FOR AUTOMOBILE DOOR LOCKS
Frederick Trinca, 6412 83rd St., Middle Village, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,740
Int. Cl. E05b *1/00*
U.S. Cl. 292—347 **5 Claims**



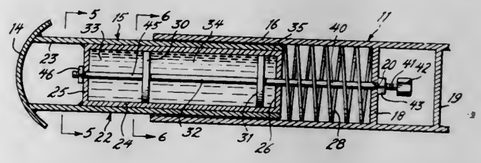
Kit members used to replace and convert conventional push-pull automobile door latches with operating vertical reciprocatable spindle means against internal accidental release or external unauthorized release. The conventional latch knob is first removed, thereby exposing the threaded end of the spindle at the usual opening formed in the door sill for connection with the kit members. The kit comprises a guide sleeve, a latch knob with a hollow shank with bifurcated end portions to thread on the exposed end of the spindle, shroud means around the latch knob with an opening to permit under knob engagement by suitable means, and a highly flexible grommet coupled with the shroud around the latch knob conformable to the exterior top surface of the door sill. The guide sleeve being snapped into place in response to downward pressure exerted on a split ring tool member against the bias of a tension spring and discarded prior to connection of the latch knob on the spindle with the coupled shroud and grommet. The guide sleeve having an adapter sleeve with elongated longitudinal slots carried thereby when an enlarged spindle hole is encountered in some makes of automobiles.

3,623,759
OCEANOGRAPHIC RELEASE HOOK
Seymour Adler, Oxon Hill, Md., and Jason H. Taylor, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 4, 1970, Ser. No. 16,449
Int. Cl. B64d *17/38*; **B66c** *1/36*
U.S. Cl. 294—83 AE **7 Claims**



A direct-action release means primarily for use with free-fall-type ocean bottom corers which includes a spring-loaded, cartridge-actuated piston that supports the load and frees a hook when a trip weight reaches the bottom is disclosed. Pressure from an exploded cartridge displaces the piston which supports the free end of the release hook, permitting that end to fall out of a slot in the piston and release the equipment suspended from the hook.

3,623,760
AUTOMOTIVE SAFETY DEVICE
Richard E. Beswick, Box 294 Mae Ave., Pemberton, N.J.
Filed Feb. 26, 1970, Ser. No. 14,409
Int. Cl. B60r *19/08*
U.S. Cl. 293—86 **7 Claims**



A shock-absorbing construction for vehicles including the combination of both fluid shock-absorbing means and resilient mechanical shock-absorbing means.

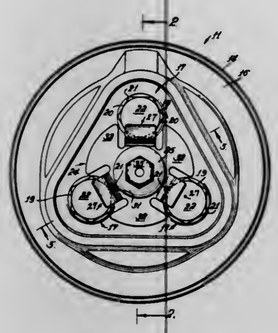
ERRATUM

For Class 294—83 AE see:
Patent No. 3,623,759

3,623,761
LOCKING PLATE FOR CAPSCREWS HOLDING ROLLER BEARING END CAP TO THE OUTER END OF AN AXLE JOURNAL
Rudolph E. Nadherny, Naperville, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.
Filed July 1, 1970, Ser. No. 51,646
Int. Cl. B62d *27/00*
U.S. Cl. 295—36 R **20 Claims**

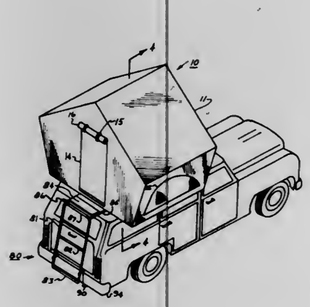
A spring steel centrally bowed and apertured locking plate has three radially extending arms for locking engagement

with the hexagonal heads of three equiangularly spaced capscrews securing an end cap of a roller bearing to the outer end of a railway car axle journal. The locking plate is held in place by a grease fitting extending through the aperture and threaded into the end cap. In one embodiment the arms are arranged to bear against the flat sides of the heads of the capscrews and to overlie them with radially extending wedge-shaped leaves therebetween for locating the locking plate



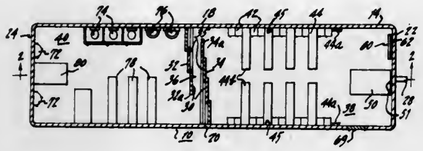
with respect to these heads. In another embodiment the arms are wedge shaped with their radial edges upturned to bear against the flat sides of the heads of the juxtaposed pair of capscrews. The upturned edges are serrated for locking engagement with corners of the hexagonal heads and a tab extends from the central section to lock the grease fitting. In a further embodiment short arms intermediate the radial arms also lock the capscrews.

3,623,762
PENTHOUSE CAR CAMPER
James D. Fagan, 631 Deerwood St., Columbia, S.C.
Filed June 11, 1970, Ser. No. 45,395
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **6 Claims**



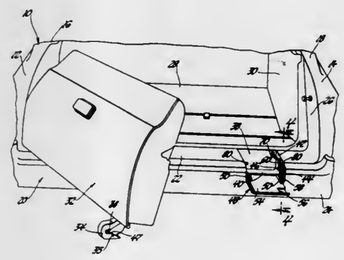
A collapsible tent camper detachably mounted on the roof of an automobile comprising a main platform, foldable mattress platforms along opposing sides of the main platform, and a flexible tent cover overlying all of said platforms in their open position and supported thereover by a superstructure and collapsible frame of novel design. Integrally mounted on the superstructure is a collapsible table which in its collapsed position cooperates with the folded side platforms to form a storage compartment for transporting camping equipment. Provision is also made for a permanently installed ladder pivotally connected to the rear of the main camper platform.

3,623,763
TRANSPORTABLE HYGIENIC FACILITY
David Francis Boyd, Sr., Schenectady, and Clyde Edward Cole, Delmar, both of N.Y., assignors to Boycol Incorporated, Albany, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,322
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 **7 Claims**



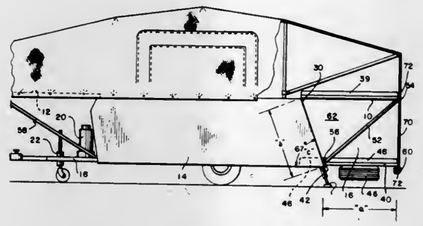
A transportable hygienic facility comprising a wheeled frame means, a structural unit mounted on the frame means and defining an enclosure, and partition means dividing the enclosure into a plurality of communicating rooms. One of the rooms contains dressing facilities and another of the rooms contains bathroom facilities. The partition means are preferably retractable. The enclosure optionally contains panels which are pivotable between a substantially horizontal first position and a substantially vertical second position adjacent to a wall of the structural unit. Some panels can be used in the second position for providing graphic representation and other panels in a like position can be used as a picture screen, which panels can be used in the first position as, inter alia, athletic tables.

3,623,764
CLOSURE INSTALLATION
John L. Jacobus, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 13, 1970, Ser. No. 36,948
Int. Cl. B60j *5/10*
U.S. Cl. 296—50 **3 Claims**



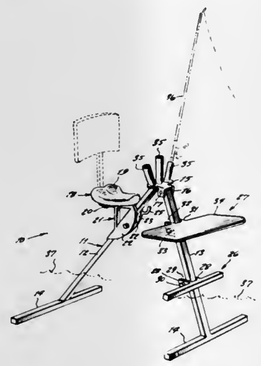
A closure installation for a step recess in a bumper structure on a vehicle body, the latter including an access opening and a primary closure or tailgate swingable relative to the opening between a closed position wherein a hinge-latch support structure portion of the tailgate projects into the bumper structure recess and respective ones of two open positions as a door or as a drop gate, the closure installation including a secondary closure on the bumper structure movable between open and closed positions relative to the recess in the latter, link means between the bumper structure and the secondary closure and a control pin on the support structure operable to activate the link means to close the secondary closure behind the tailgate when the latter is moved to the closed position from either open position and to open the secondary closure in advance of the tailgate when the latter is moved from the closed to either of the open positions.

3,623,765
FOLDING TENT CAMPING TRAILER
Duane C. Bowen, 103 Insurance Bldg., 208 N. Market, Wichita, Kans.
Filed Dec. 15, 1969, Ser. No. 884,843
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 **20 Claims**



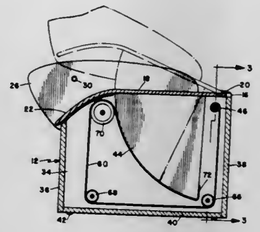
An extra double bed in a folding tent camping trailer is suspended under one of the beds cantilevered from the top of the boxlike trailer body. The external paneling supporting the mattress of the extra lower bed is formed at least partly from the paneling of the adjacent trailer wall, which is hinged down. The tent shelter has fabric flaps depending from around the upper bed and forming all or part of the walls of the lower bunk.

3,623,766
PORTABLE FISHING CHAIR
Joseph G. Funk, General Delivery, Ewing, Nebr.
Filed Oct. 1, 1970, Ser. No. 77,181
Int. Cl. A47c *7/62*
U.S. Cl. 297—188 **7 Claims**



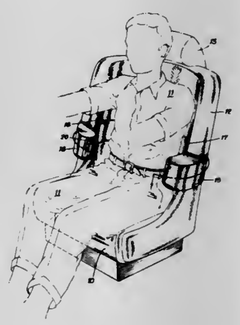
A convenient chair for use by a fisherman while fishing in wading waters so that the fisherman may rest his feet, the device comprising a frame of generally A-shaped configuration and comprised of a pair of legs pivotable so to spread apart the lower ends thereof, one of the legs supporting an adjustable seat, the other leg supporting an adjustable footrest and an adjustable tray, the apex of the frame including several holders into which the handle end of the fishing rod may be inserted so to free the fisherman's hands.

3,623,767
INVALID LIFTING SEAT
Gordon L. Condon, La Mesa, Calif., assignor to Invalift Incorporated
Filed Aug. 22, 1969, Ser. No. 852,429
Int. Cl. A47c *1/00*
U.S. Cl. 297—330 **1 Claim**



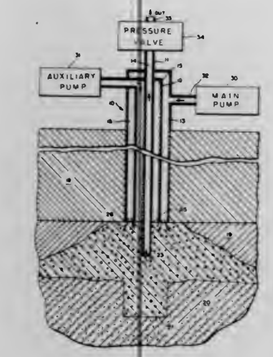
A powered seat which assists an invalid in moving between seated and standing positions, under full control of the invalid. The structure is adaptable to various configurations of a chair, or to an attachment for a toilet without requiring any modification of the toilet itself. The seat is hinged in such a manner that the invalid is raised or lowered almost vertically, with no danger of sliding off the seat.

3,623,768
VEHICULAR SAFETY SEAT
Erwin L. Capener, San Jose, and Julius Roth, Portola Valley, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Aug. 5, 1970, Ser. No. 61,273
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 **4 Claims**



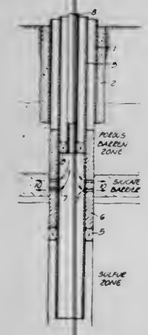
A vehicular safety seat having a seat portion, a backrest provided with a pair of movably mounted arms having forward portions which, on severe vehicular impact, are driven inwardly under pressure of released gases to a body-restraining position adjacent the torso of an occupant of the seat and immediately over his thighs, at least one of said arms carrying adjacent the forward end thereof a folded air bag which is simultaneously inflated by said gases to provide a protective pillow between the chin and the thighs of the occupant which does not obstruct his vision. The pillow deflates and the arms are retracted to a nonprotective position immediately upon cessation of the impact, thereby affording unrestricted movement on the part of the seat occupant.

3,623,769
METHOD AND APPARATUS FOR SOLUTION MINING
Robert Lee James, Winnetka, and William Lawrence Donovan, Palatine, both of Ill., assignors to Armour & Company, Chicago, Ill.
Filed June 29, 1970, Ser. No. 50,373
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **12 Claims**



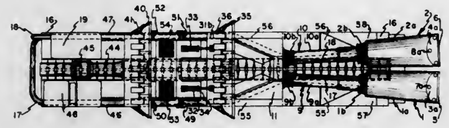
A system for solution mining of minerals with heated solvent includes a single-bore hole provided with a string of pipe having a central conduit, an intermediate annular conduit surrounding the central conduit and an outer annular conduit enclosed by a casing. Prior to production recovery of the mineral, both the outer annular conduit and the intermediate annular conduit may be used for undercutting the mineral cavity if desired by pumping water through both conduits while recovering through the central conduit. The change from the undercutting to the production stage may be accomplished without loss of well pressure by pumping an oil-water-clay composition, herein sometimes referred to as a gel, an oil-water-clay gel, or an oil gel having a density less than that of water into the intermediate conduit without capping its bottom orifice to thereby thermally insulate the central conduit from the outer conduit. In production, heated water is pumped down the outer annulus and the chilled solution is recovered from the central conduit.

3,623,770
METHOD TO IMPROVE PRODUCTION OF SULFUR
Hugh J. Ayres, Duncan; Ronney R. Koch, Duncan, Okla., and John G. Cook, New Orleans, La., assignors to Halliburton Company, Duncan, Okla.
Filed May 21, 1969, Ser. No. 826,532
Int. Cl. E21c *41/14*
U.S. Cl. 299—6 **20 Claims**



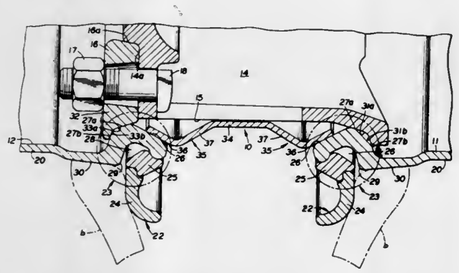
A method of mining sulfur in a subterranean formation containing a sulfur-bearing zone and a porous zone adjacent said sulfur-bearing zone comprising introducing a silicate solution into the porous zone and allowing the solution to set into a relatively firm and impermeable mass and then contacting the sulfur-bearing zone with a heated fluid whereby said impermeable mass prevents loss of heated fluid into said porous zone.

3,623,771
DRILL-AND-BLAST EXCAVATING APPARATUS AND METHOD
Edward J. Sosnowicz, Colwyn, Pa., and Frank M. Willis, Sewell, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 25, 1970, Ser. No. 49,662
Int. Cl. E01g *3/02*; **E21c** *37/00*
U.S. Cl. 299—12 **20 Claims**



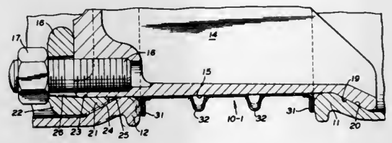
Drill-and-blast excavating apparatus has a powered carriage having a forward end which confronts a face in a geological formation; supporting arm members pivotally mounted on the carriage; drill-and-blast modules pivotally and rotatably mounted on the supporting arm members, the modules being adapted to drill holes in the face, load the holes with charges of condensed secondary explosive, and thereafter deliver energy to the charges in the holes to initiate the charges; explosives supply and feeding means communicating with the modules; a ventilating unit; at least one pair of gathering arms and a conveyor associated therewith mounted on the lower, chassis portion of the carriage; and protective shielding means including one or more transverse barriers mounted on the carriage behind the supporting arm members and drill-and-blast modules and forward of the explosives supply means, and adapted intermittently to engage the surrounding surfaces of an underground opening as a seal to effect pressure and noise attenuation. A process comprising performing substantially concurrent groups of drill-load-blast sequences in substantially continuous succession while removing muck and airborne fumes, and attenuating blast pressure and noise in an environmental transition region behind the face to the extent that blast pressure and noise levels in a zone behind the transition region, e.g., a zone up to about 50–100 feet from the face, are within prescribed safe limits of human tolerance.

3,623,772
DUAL WHEEL SPACER
William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio
Filed Jan. 21, 1970, Ser. No. 4,705
Int. Cl. B60b *11/06*
U.S. Cl. 301—13 SM **6 Claims**



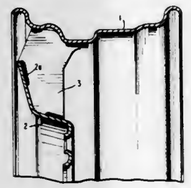
Spacer for use in mounting dual tires on a truck wheel. Spacer is axially deformable having side portions or wings which are radially deflectable yet will positively maintain clearance between the tires.

3,623,773
DUAL WHEEL SPACERS
William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio
Filed July 2, 1969, Ser. No. 838,447
Int. Cl. B60b *11/06*
U.S. Cl. 301—13 R **3 Claims**



Spacer for use in mounting dual tires on a truck wheel. Spacer has a circumferentially extending medial portion which is transversely compressible yet will positively maintain clearance between the tires.

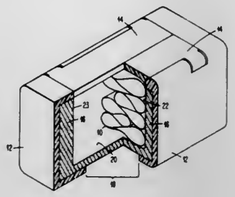
3,623,774
WHEEL, ESPECIALLY FOR MOTOR VEHICLES
Gunter Funke, Deufringen (Württ), and Manfred H. Burckhardt, Waiblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed May 16, 1969, Ser. No. 825,159
Claims priority, application Germany, May 18, 1968, P 17 55 523.6
Int. Cl. B60b *1/10*
U.S. Cl. 301—64 R **4 Claims**



A wheel, especially for motor vehicles, in which the wheel dish is connected with the wheel rim by connecting ribs constructed as blades in such a manner that upon rotation of the wheel, when driving in the normal forward direction, air is supplied from the inside toward the outside of the wheel.

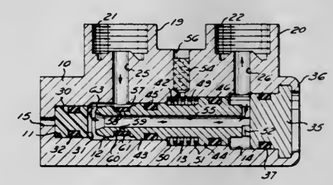
3,623,775
LOADING AND UNLOADING AN ENDLESS WEB IN A CARTRIDGE
Paul J. Arseneault, Longmont; Louis B. Feierabend, Boulder; William R. Golz, Longmont; Otto R. Luhrs, Boulder, and James T. Smith, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,109
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 **9 Claims**

Two cartridges are shown herein which have the capability of storing a folded endless loop of tape. The cartridges are designed so that by pneumatic pressure the loop of tape may be unloaded from the cartridge by a controlled unfolding and reloaded into the cartridge by a controlled folding. Two cartridges are shown, one containing a porous wall to permit the appropriate air flow to control the folding and unfolding, and



the other containing air passages in nonporous walls to control the folding and unfolding.

3,623,776
BRAKE PRESSURE PROPORTIONING VALVE
Ellis M. Wellman, Erie, Pa., assignor to The Weatherhead Company
Continuation of application Ser. No. 813,820, Apr. 7, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,155
Int. Cl. B60t *11/34*, *8/26*
U.S. Cl. 303—6 C **7 Claims**

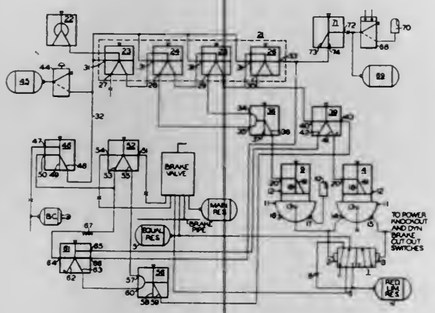


A brake pressure proportioning valve includes an internal bore and a differential area piston slidably mounted within the bore. Under low-pressure conditions, fluid communication is established between the inlet and outlet pressures. When the inlet and outlet pressure increase, the piston moves against the biasing force of a spring to a displaced position to tend to cause the end of the internal bore to seat against a plug to isolate the inlet pressure from the outlet pressure. Any further increase in the inlet pressure increases the outlet pressure only a fractional amount of the inlet pressure increase due to the differential area piston. A ring-type check valve prevents the piston from being hydraulically locked in its displaced position.

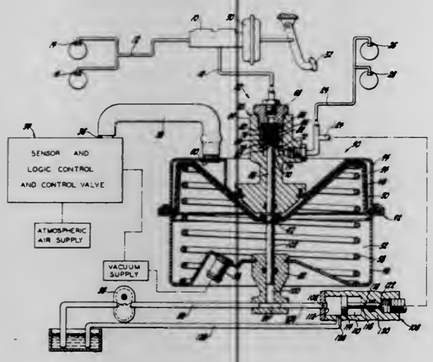
3,623,777
FLUIDIC BRAKE CONTROL SYSTEM HAVING SAFETY AND OVERSPEED CONTROL MEANS FOR RAILROAD TRAINS
Ronald A. Sarbach, Columbus, Ohio, and Shantilal N. Shah, Pittsburgh, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Nov. 12, 1969, Ser. No. 875,805
Int. Cl. B60t *7/14*, *13/66*
U.S. Cl. 303—19 **13 Claims**

A fluidic brake control system for a railway train interlocked with the conventional airbrake control system in which both "safety" and "overspeed" control of a bistable element is provided to control interface devices capable of effecting either a release of the train brakes or producing a penalty brake application. A safety control circuit employs a multistage binary counter to provide timing and sequencing whereby the operator is required to periodically acknowledge a counter-controlled warning signal by resetting the counter to prevent occurrence of the impending penalty which is imposed by reason of the counter proceeding to its final stage.

In the event the counter reaches its final stage due to the warning signal not being acknowledged in the prescribed manner, the bistable element is triggered to initiate and latch in the penalty until conditions of a logic circuit are satisfied to reset the bistable element which is accordingly conditioned to effect a release of the brakes. The overspeed control circuit employs timing means separate from the counter but employs the counter to initiate the penalty by setting its final stage to the penalty state irrespective of the normal counter sequence.

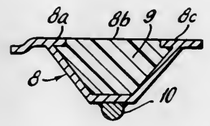


3,623,778
PRESSURE MODULATOR WITH ADDITIONAL SUPPORT PRESSURE
Robert A. Horvath, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 18, 1969, Ser. No. 877,609
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **6 Claims**



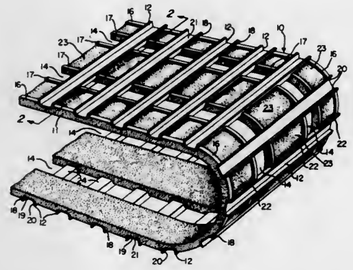
A brake apply pressure modulator in a vehicle wheel brake antilock system which receives signals from an antilock sensor and signal generator and acts to limit, decrease, and permit increase of the brake apply pressure in accordance with the antilock signals. Additional support pressure is provided in accordance with the brake apply pressure existing so as to prevent the modulator from functioning as a brake apply pressure limiter when the vehicle is being braked at high brake pressures without requiring the antilock functions to be operative.

3,623,779
ENDLESS-CHAIN TRACKS FOR VEHICLES, SUCH AS SNOW REMOVAL VEHICLES AND THE LIKE
Alfred Schmidt, Jr., St. Blasien, Germany, assignor to Firma Ing. Alfred Schmidt, St. Blasien, Germany
Filed Nov. 13, 1969, Ser. No. 876,314
Claims priority, application Germany, Nov. 14, 1968, P 18 08 902.6
Int. Cl. B62d *55/26*
U.S. Cl. 305—13 **8 Claims**



The chain members of the endless-chain track comprise a baseplate which in the area of the snow accumulation and lump formation is provided with an opening covered by a hollow cleat. The cleat and the opening are filled with an adhesion-inhibiting material, such as rubber, plastics, and the like. The uppermost portion of the casing may support a projecting piece for improving the adhesion of the track to ground.

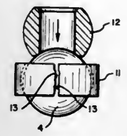
3,623,780
BELT TRACK
Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 10, 1969, Ser. No. 883,716
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **11 Claims**



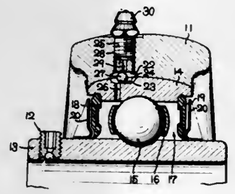
An endless vulcanized belt track for track vehicles, such as snowmobiles, having a body of elastomeric material and a plurality of spaced rigid elongated traction elements extending generally transversely of the belt track. The traction elements are secured onto the body to form an integral structure with a substantial projecting portion available to provide ground contact. The integral traction structure eliminates the need for attaching elements such as bolts or rivets.

3,623,781
BEARING ASSEMBLY AND METHOD OF MAKING SAME
William J. Roos, New London, N.H., assignor to MPB Corporation
Original application Mar. 15, 1968, Ser. No. 713,443, now Patent No. 3,449,201, dated Mar. 10, 1970. Divided and this application Sept. 18, 1969, Ser. No. 870,993
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 **4 Claims**

A bearing assembly having an inner bearing member with an outer spherical bearing surface and an outer race of plastic material wherein said race is molded about a spherical-shaped die having a diameter at least as large as the inner bearing member, split or fractured, and then positioned about the inner bearing member.

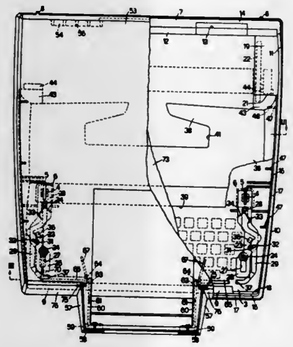


3,623,782
DEVICE FOR PREVENTING SPIN OF OUTER RACE IN BEARING UNIT
Tokio Nakanishi, and Tetsuo Hayashi, both of Osaka, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan
Filed Mar. 30, 1970, Ser. No. 23,719
Int. Cl. F16c *1/24*
U.S. Cl. 308—187 **4 Claims**



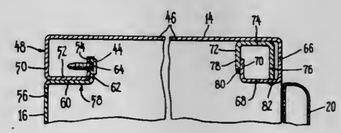
A device for preventing the spin of the outer ring relative to the housing in a bearing unit adapted to make a spherical fit so as to be capable of self-alignment.

3,623,783
COVER AND CARRYING CASE FOR A PORTABLE TYPEWRITER
Reginald R. Gallant, Bristol, Conn., assignor to Ing. C. Olivetti and C., S.p.A., Ivrea, Italy
Filed Feb. 24, 1970, Ser. No. 13,567
Int. Cl. A47b *21/00*
U.S. Cl. 312—208 **5 Claims**



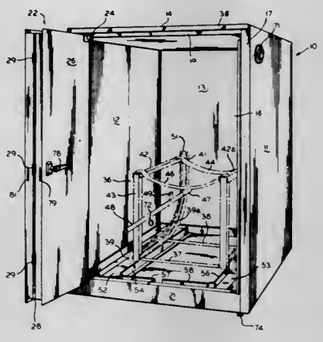
The base of the cover of a portable typewriter forms a part of the carrying case. The outer shell is another part of the carrying case and is provided with a rigid handle having two depressible keys to disengage the shell from the base. The inner shroud is a part of the machine cover and is latched to the base through a pair of levers operable through the aperture of the keyboard on the inner shroud.

3,623,784
CABINET JOINT STRUCTURE
John W. Neufeld, Beaconsfield, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Nov. 5, 1969, Ser. No. 874,188
Int. Cl. A47b *43/00*
U.S. Cl. 312—263 **5 Claims**



A metal cabinet comprises a plurality of intersecting panels are which joined together without spot-welds and without exposed raw metal edges by providing the panels with internesting flanges that are internally interconnected by metal screws to provide a smooth exterior surface having a single seam. One of the panels may have an interior wall which terminates in a flange that abuts the other panel wall to provide additional rigidity and a similar smooth joint structure on the interior of the cabinet having a single seam.

3,623,785
SAFETY CABINET FOR STORING DRUMS
Clarence E. Williams, Chicago, Ill., assignor to Justrite Mfg. Co., Chicago, Ill.
Filed July 25, 1969, Ser. No. 844,844
Int. Cl. A47b *81/00*
U.S. Cl. 312—307 **10 Claims**

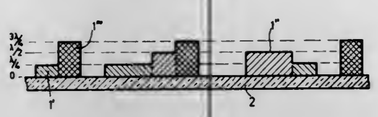


A cabinet for storing drums. The cabinet is equipped with tracks and stoppers making it possible to handle the drums on a cradle in the cabinet. The cabinet is safety fused to automatically cause its door to close under inclemently hot ambient conditions.

3,623,786
SYNTHETIC PHASE HOLOGRAM
Hans Dammann, Schonberg Rauhbank, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 747
Claims priority, application Germany, Jan. 4, 1969, P 19 00 344.2
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **6 Claims**

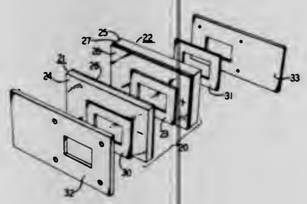
A synthetic hologram made up of groups of rectangular elements each group extending a different distance above a

substrate, where the distances of the groups of elements above the substrate are equal to interval multiples of one-



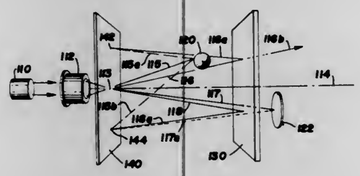
fourth wavelength of the radiation used to reconstruct the hologram.

3,623,787
HOLOGRAPHIC SYSTEM
Raymond E. Straile, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 30, 1969, Ser. No. 795,165
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **1 Claim**



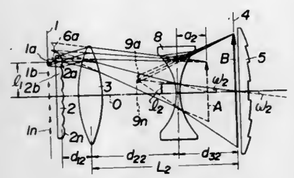
The specification describes a holographic recording system employing, as the recording medium, a photoconductive semiconductor.

3,623,788
LOW ANGLE HOLOGRAPHIC APPARATUS
Kenneth A. Snow, Greece, and Richard E. Vandewarker, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,147
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **13 Claims**



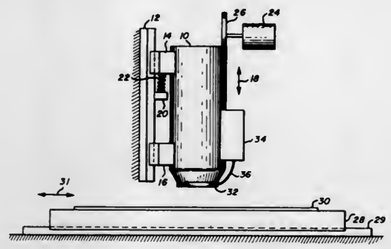
Apparatus forms a reflective subject hologram for use with a source of heterochromatic light in the subsequent reconstruction process. The apparatus provides for causing the rays reflected from the subject to interfere with reference rays, at the holographic surface, at a low angle. The low angle is formed by projecting a divergent laser beam through the surface of the hologram, the reference rays being subsequently retroreflected to the hologram surface to interfere with the rays reflected from the subject.

3,623,789
SYMBOL INDICATION DEVICE
Motoaki Kawazu, and Yoshio Fukushima, both of Tokyo, Japan, assignors to Kabushiki Kaish Ricah, Tokyo, Japan
Filed July 22, 1970, Ser. No. 57,271
Claims priority, application Japan, Aug. 9, 1969, 44/63190
Int. Cl. G02b *23/12, 3/08*
U.S. Cl. 350—9 **7 Claims**



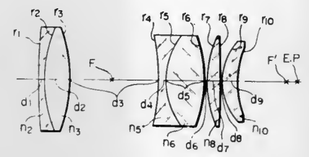
A symbol indication device comprises a symbol plate having a plurality of symbols thereon and a microlens plate having a number of microlenses, equal in number and position to the respective symbols, arranged in a plane and serving as projecting lenses for the pictures of the symbols. A field lens refracts rays emerging from the microlens plate so that the symbols form images in the same location. A concave lens is positioned at a location such that the rays from the field lens are within the focal length of the concave lens, and a screen is positioned so that the pictures of the symbol are directed thereon through the field lens and the concave lens. A condenser lens converges rays emerging from the screen. Any one of the symbols can be selectively illuminated by a light source to have its picture projected on the screen.

3,623,790
CAPACITANCE CONTROLLED AUTOMATIC FOCUSING SYSTEM
Stanley A. Buckstad, San Jose, Calif., and Woodrow L. Hayes, Rye, N.H., assignors to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,366
Int. Cl. G02b *7/04*
U.S. Cl. 350—46 **3 Claims**



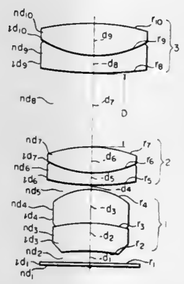
In those optical systems in which a lens is moved parallel to the film to either record information on the film or read information from the film, any variation in the distance between the film and the lens will degrade the optical focus. The disclosed embodiment of the present invention is a system for maintaining the distance from a lens to a film in such an optical arrangement constant. A metallic member is supported on the lens housing and the film is supported on a metallic table. The lens housing is mounted for movement by means of a servomotor toward and away from the film. The capacitance between the metallic member and the metallic table is sensed and a voltage proportional thereto is supplied to drive the servomotor to position the lens housing to maintain the capacitance constant.

3,623,791
ULTRAWIDE FIELD EYEPIECE
Toshifumi Uetake, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 8, 1970, Ser. No. 1,415
Int. Cl. G02b *9/34, 25/04*
U.S. Cl. 350—220 **1 Claim**



Ultrawide field eyepiece for a microscope having field lens elements and eyelens elements spaced a distance behind the field lens element with an airgap therebetween. The field lens elements comprise doublet lens elements having cemented achromatic surfaces and positive refractive power as a whole. The eye lens elements comprise thick meniscus lens elements having cemented surfaces of negative refractive power and lens element(s) of positive refractive power spaced a short distance from the thick meniscus lens elements behind the same. The foremost concave surface of the meniscus lens elements is directed toward the objective lens to be used together. The radius of curvature of the front convex surface of the rear convex lens element forming a part of the meniscus lens elements, the difference in the refractive index between the front and rear lens elements of the meniscus lens elements, the difference in the Abbe's number between the front and rear lens elements of the field lens elements, and the distance between the field lens elements and the eyelens elements satisfy certain predetermined conditions, respectively, so that ultrawide field is obtained while the eyepoint distance is made appropriately great and the missing of light in the marginal annular region of the field of view is prevented.

3,623,792
OBJECTIVE LENS FOR A MICROSCOPE
Toshifumi Uetake, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 11, 1970, Ser. No. 10,397
Int. Cl. G02b *9/12, 21/02*
U.S. Cl. 350—229 **1 Claim**

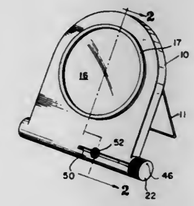


Objective lens for a microscope of dry system high magnification having a leading lens element or group of which the lens element forming the air contacting surface at the image side is made of a glass having a high refractive index equal to or higher than 1.72 and a low index of dispersion equal to or higher than 50, the refracting surface at the object side of the lens element or group immediately succeeding the leading lens element or group being made convex toward the object while the amount of the airgap between the rearmost lens element or group and the lens element or group immediately preceding the rearmost than element or group is made equal to or greater than 0.7 times the focal length of the entire optical system of the objective lens, so that the various aberrations particularly the astigmatism and the curvature of field are widely compensated for.

ERRATUM

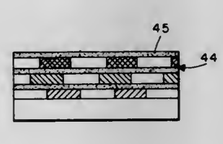
For Class 350—96 R see:
Patent No. 3,624,834

3,623,793
ADJUSTABLE MAGNIFYING MIRROR
Barron C. Merten, and Germain G. Pins, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Mar. 2, 1970, Ser. No. 15,770
Int. Cl. G02b *5/10;* **F15b** *7/00*
U.S. Cl. 350—295 **15 Claims**



An adjustable magnifying mirror in which a flexible reflector is mounted by an airtight seal over a recess formed in a housing. A chamber is provided in the housing and carries a plunger movable therein. The chamber is connected through an air passage to the recess whereby movement of the plunger creates a differential pressure between the recess and the atmosphere causing the reflector to deform and change its magnification.

3,623,794
SPECTRAL ZONAL ENCODER
Steven L. Brown, Woburn, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.
Filed Dec. 19, 1968, Ser. No. 785,311
Int. Cl. G02b *5/22*
U.S. Cl. 350—316 **9 Claims**

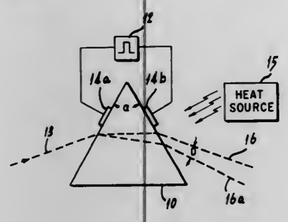


This disclosure concerns spectral zonal encoders for impressing image information carried by electromagnetic radiation in one or more predetermined spectral zones on spatial carriers, and fabrication methods therefor. One illustrated multizone encoder is a lamination of three grating filters comprising three photoresist grating patterns filled with dye-vehicle filter materials having preferential absorption in different regions of the visible spectrum.

3,623,795
ELECTRO-OPTICAL SYSTEM

George William Taylor, Princeton, and Arthur Miller, Princeton Junction, both of N.J., assignors to RCA Corporation

Filed Apr. 24, 1970, Ser. No. 31,601
Int. Cl. G02f 1/26
U.S. Cl. 350—150 12 Claims

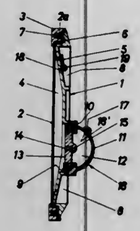


The sharp change in optical properties of ferroelectric and other materials at or near their transition temperature (in the case of ferroelectric material, this may be their ferroelectric—paraelectric transition temperature, Curie point) is made use of in light deflectors, light valves and the like. The material is heat biased as, for example, by the application of an alternating voltage of an amplitude sufficient to produce the TANDEL or an analogous effect, to a value close to its transition-temperature. An electrical pulse may then be applied to the material for causing sufficient additional heating to raise the temperature of the material to a different value such as one above the transition temperature. The change in optical properties which results may be employed to deflect or otherwise affect a beam of light applied to the material.

3,623,796
MIRROR WITH ADJUSTABLE FOCAL LENGTH

Jose Schweiger, Birmensdorf, Switzerland, assignor to Schweiger & Schweiger AG, Zug, Switzerland

Filed Aug. 1, 1969, Ser. No. 846,695
Claims priority, application Switzerland, Oct. 30, 1968, 16173/68
Int. Cl. G02b 5/10; F15b 7/00
U.S. Cl. 350—295 11 Claims

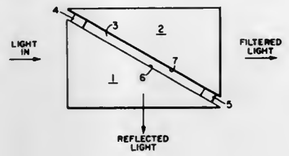


A mirror comprising a substantially concave housing with a light-reflecting resilient membrane airtightly secured to the edge of the housing across its base. Mounted on the housing is a compressible suction pump operative to create a partial vacuum in the interior of the housing such that the light-reflecting membrane is drawn inwardly into the housing to thus assume a substantially concave shape and to thereby adjust the focal length of the mirror.

3,623,797
INTERNALLY REFLECTING BARRIER CONTROL FILTERING APPARATUS

Harold Albert Daw, 2030 Guthrie Place, Las Cruces, N. Mex.

Filed Feb. 6, 1970, Ser. No. 9,308
Int. Cl. G02b 5/24
U.S. Cl. 350—311 6 Claims

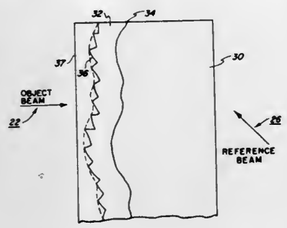


Filtering apparatus is provided for isolating a very narrow optical frequency range in the order of a spectral line width. Features include a fixed geometry of a light input member relative to a barrier member as well as an appropriate selection of the media of these two members. The media of the input member can be any material that is more refractive than the barrier member and it has a flush interface with the barrier member disposed at such an angle that the interface angle of incidence is greater than the critical angle of the two members. Thus, all light wavelengths other than the wavelengths of particular concern, are internally reflected in the input member. To permit the desired optical frequency bank to pass, the barrier member is formed of a media having a capacity for absorbing input light in the immediate vicinity of a wavelength that falls within the narrow frequency pass band. The absorption produces an irregularity in the refractive dispersion curve for the barrier media. When the angle of incidence and the interface of the input and in barrier members is fixed sufficiently close to the critical angle for this interface, the irregularity varies the relative refractive index sufficiently to vary the relationship of the critical angle with the angle of incidence and permit the narrow band to pass into the barrier member and on into the output member.

3,623,798
BLAZED HOLOGRAM FABRICATION

Nicholas K. Sheridon, Clarkes Crossing, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,648
Int. Cl. G02b 27/22; B44f 1/04
U.S. Cl. 350—3.5 30 Claims

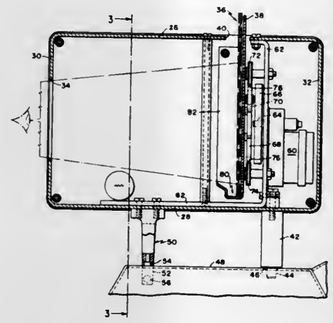


Production of a modified blazed hologram is disclosed that will exhibit a single-wavelength image when illuminated by a white, i.e., multiwavelength light source. One embodiment includes coating a sheet of ground glass on the ground side thereof with a photoresist material. This photoresist is exposed in the presence of object and reference coherent light waveforms and subsequently developed. Blazed fringes will form on the irregular surface thereof. When reilluminated with a light beam similar in form and wavelength to the reference beam, the positive first order image is reconstructed without distortion. Images of different orders will appear randomly diffused as will other wavelengths.

3,623,799
TECHNIQUES FOR OBJECTIVELY MEASURING VISUAL ACUITY

Michel Millodot, Providence, R.I., assignor to Biometrics, Inc., Cambridge, Mass.

Filed Feb. 5, 1970, Ser. No. 8,846
Int. Cl. A61b 3/02
U.S. Cl. 351—32 25 Claims

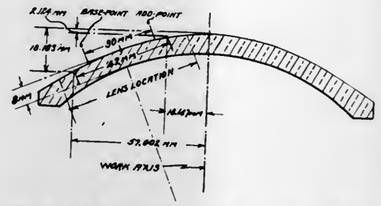


A technique for measuring either binocular or monocular visual acuity in which the subject's eye or eyes are stimulated by an oscillating target designed to induce an easily measured, large, regular, pendular movement of the subject's eyes. The image of the target is reduced dimensionally during the test until the subject no longer can resolve the markings on the target at which time the pendular, repetitive eye movements stop completely, thus providing a clear indication that the patient's threshold of resolution has been reached.

3,623,800
OPHTHALMIC LENS OF CHANGING POWER

David Volk, 3336 Kersdale Road, Pepper Pike, Ohio

Continuation of application Ser. No. 518,848, Jan. 5, 1966, which is a continuation-in-part of application Ser. No. 292,380, July 2, 1963, now Patent No. 3,239,967, dated Mar. 15, 1966. This application Oct. 16, 1969, Ser. No. 867,433
Int. Cl. G02c 7/06
U.S. Cl. 351—169 5 Claims



An optical lens is provided, having a convex aspheric front surface useful for the correction of presbyopia. This front surface is a nonaxial portion of a convex surface of revolution, all meridian sections of which are identical elliptical arcs and all sections of this surface other than those sections normal to the axis of revolution being noncircular, the axis of revolution of said convex surface coinciding with a straight portion of the modified evolute of said elliptical arc. This front surface is characterized by having a substantially constant difference in principal curvatures at all points along all meridional sections providing a substantially constant astigmatism at all points outside the vertical principal meridian, while both principal curvatures along any elliptical arc meridian section change continuously and regularly by substantially equal amounts to provide an accelerating surface. This novel front surface is intended for use in a lens having a negatively curved spherocylindrical back surface optically coacting with the front surface and at least neutralizing the constant astigmatism of the front surface.

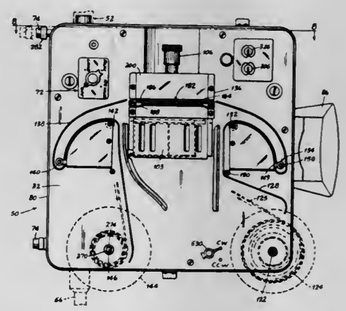
ERRATUM

For Class 352—91 see:
Patent No. 3,623,989

3,623,801
FILM PROJECTOR

Richard P. Gundlach, Belleville, Ill., assignor to Gamco Industries, Inc., Big Spring, Tex.

Filed Apr. 7, 1969, Ser. No. 814,127
Int. Cl. H03b 1/00
U.S. Cl. 352—173 11 Claims

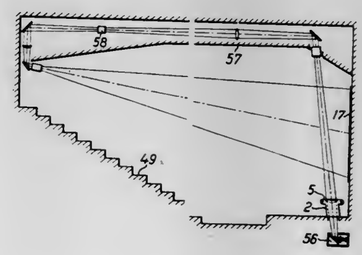


A projector for projecting intelligible matter from one or two films. In order to reduce wear on the film, the film is taken from a supply reel and fed to a takeup reel by sensing arms which sense the tension in guided film loops and control supply and takeup motors to control the play out and take up of the reels.

3,623,802
OVERHEAD PROJECTOR

Erwin Hubner, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

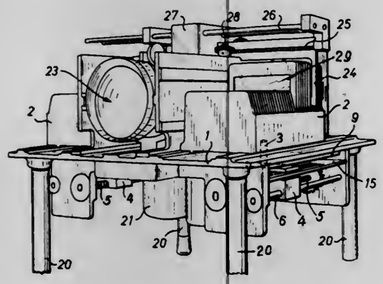
Filed Mar. 14, 1969, Ser. No. 807,368
Claims priority, application Germany, Mar. 29, 1968, P 17 72 094.4
Int. Cl. G03b 1/48, 21/14, 21/00
U.S. Cl. 353—23 9 Claims



In the image-forming bundle of light rays of an overhead projector at least one further objective is arranged in addition to the projecting objective, which further objective serves as an intermediate optical system. Reflecting means

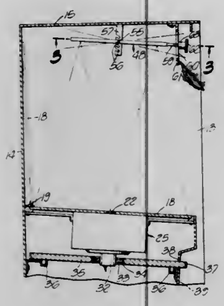
are provided in the path of the light rays; and the objectives and the reflecting means are mounted structurally separate from the table which carries the supporting plate for the writing foil so that the view for the writer and for the audience is not obstructed.

3,623,803
PROJECTION APPARATUS
Thomas Ganz, Zurich; Leonard Ellerkamp, Adliswil, and Walter Ryter, Zurich, all of Switzerland, assignors to Ganz & Co., Zurich, Switzerland
Filed Sept. 22, 1969, Ser. No. 859,763
Claims priority, application Switzerland, Sept. 27, 1968, 14532 1/68
Int. Cl. G03b 23/02
U.S. Cl. 353—25 8 Claims



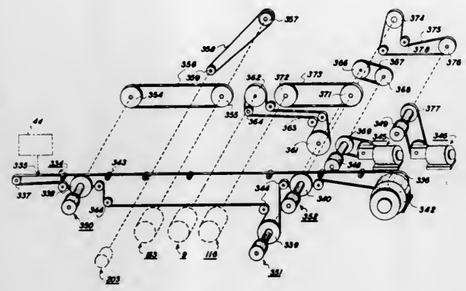
A projection apparatus for changing slides having at least one slide-cassette which is movable relative to the optical system. The slide-changing mechanism is equipped with electrical control means for an individual picture selection in such way that advance of the cassette is interrupted when the desired position is reached.

3,623,804
MICROFILM PROJECTOR APPARATUS
Francis F. Spreitzer, 4415 W. 62nd St., Los Angeles, Calif.
Filed Oct. 18, 1968, Ser. No. 768,641
Int. Cl. G03b 21/28
U.S. Cl. 353—77 24 Claims



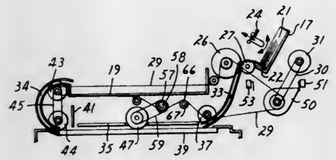
Microfilm projector apparatus having closely spaced viewing and writing surfaces shrouded by a lightshielding hood open only across the front face thereof. The projector, rotatable about its own axis to orient the image for most convenient viewing, is concealed from view beneath the viewing surface and projects the image through a small area of that surface onto an inverting mirror. Movement of the image-carrying film strip in either direction is regulated by a single knob controlling a variable-speed reversible motor drive for the film feed.

3,623,805
DRIVE MECHANISM FOR IMAGING APPARATUS
Raymond K. Egnaczak, Williamson, and Charles H. Myers, Palmyra, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,636
Int. Cl. G03g 15/00
U.S. Cl. 355—3 16 Claims



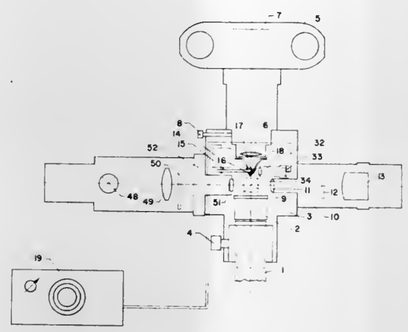
An electrical-mechanical drive mechanism is employed in a photoelectrophoretic imaging system to propel a flat plate electrode on which images are formed along a generally linear path and to rotate roller electrodes that contact the flat plate during its travel. The angular speed of the rollers and the translational speed of the flat plate are synchronized to minimize disturbing an image on the flat plate electrode. Separate drive mechanisms rotate the rollers prior to the arrival of the flat plate adjacent a roller to overcome inertia of the roller and to perform operations secondary to the imaging process.

3,623,806
ORIGINAL DOCUMENT FEEDER WITH REGISTERING GATE AND MOVABLE PLATEN
Jerome M. Short, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1969, Ser. No. 867,634
Int. Cl. G03g 15/04
U.S. Cl. 355—14 4 Claims



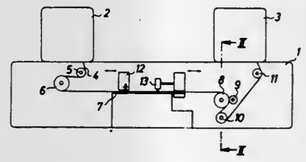
An original document feeding attachment for a reproducing machine having a exposure station including a transparent supporting member in which a registering member is adapted to be positioned over the exposure station of the reproducing machine to define therewith a portion of a guide path between a document supply tray and a document receiving tray. The attachment includes a feeder for removing one document at a time from a stack of documents in the supply tray and transporting the document to a position beneath the registering member. Means are provided for registering the removed document with the exposure station and registering member including a registration gate movable relative to the registering member into and out of the document guide path to obstruct the document guide path. The document may then be carried to the receiving tray when the machine has completed the necessary exposures.

3,623,807
APPARATUS FOR TAKING PHOTOMICROGRAPHIC PICTURES
Fritz Gabler; Leo Heraut, and Karl Kropp, all of Vienna, Austria, assignors to C. Reichert Optische Werke A.G., Vienna, Austria
Filed Sept. 8, 1969, Ser. No. 856,021
Int. Cl. G03b 27/70
U.S. Cl. 355—18 3 Claims



A microscope adapter to mount a camera, the adapter including a fully reflecting mirror and a partially reflecting mirror in its optical path. Mirrors permit instrument adjustment through auxiliary viewing apparatus. A motor connected to the fully reflecting mirror oscillates the same to provide shuttering.

3,623,808
PHOTOGRAPHIC-COPYING APPARATUS
Wilhelm Baasner, and Boris Koleff, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 24, 1970, Ser. No. 31,653
Claims priority, application Germany, Apr. 25, 1969, P 19 21 281.8
Int. Cl. G03b 27/46
U.S. Cl. 355—40 10 Claims



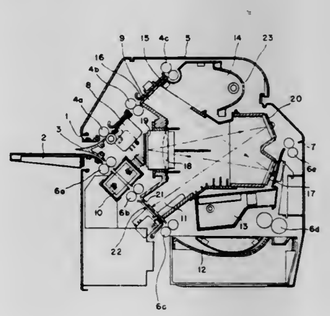
A photographic copying apparatus wherein a web of photosensitive material is moved stepwise to place successive increments into registry with a printing station. The web is driven by a roller which can be suddenly arrested in response to detection of bits of information encoded on a carrier which travels in synchronism with the web or forms an integral part of the web. The shaft of the roller is rotated by the driven element of a clutch and carries a gear whose teeth are engaged by a pawl which is controlled by a device serving to detect successive bits on the carrier whereby the pawl holds the roller against rotation during intervals which are required for exposure of photosensitive material to printing light.

3,623,809
OPTICAL SYSTEM WITH POLARIZING FILTERS FOR LINE FOLLOWER HEAD
Kenneth Victor Diprose, and Arthur Stuart Forbes, both of Bath, England, assignors to Hancock & Co. (Engineers) Limited, Buckinghamshire, England
Filed Dec. 23, 1969, Ser. No. 887,486
Int. Cl. G03b 27/70
U.S. Cl. 355—66 5 Claims



An optical system for a line follower head which avoids geometric errors and reflections, in which the beam from a light source is passed through a first polarizing filter to polarize the beam in one plane, then through a semireflecting surface to beam deflecting means to cause the beam to scan the outline carried on a substrate, the diffused and reflected light from the substrate being passed back along the same axis to the semireflecting surface and the light reflected therefrom being passed through a second polarizing filter set in quadrature with first polarizing filter to a photosensitive element.

3,623,810
TUBULAR LIGHT SOURCE FOR A FLOW-TYPE DUPLICATING MACHINE
Masaya Ogawa, Osaka, and Yorio Yamanoi, Toyokawa-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 11, 1969, Ser. No. 798,394
Claims priority, application Japan, Feb. 15, 1968, 43/11374
Int. Cl. G03b 27/76
U.S. Cl. 355—67 1 Claim

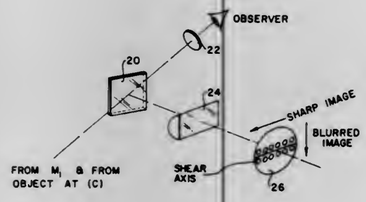


A tubular light source for a flow-type duplicating machine provides an image with uniform brightness by making its luminous-brightness stronger around both its sides than around its middle along its longitude. A plurality of electrically conductive materials are disposed more densely in the middle portion of the light than around its end portions.

3,623,811
ELECTROOPTICAL RANGEFINDER MEANS

David B. Lederer, and David E. Perlman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 751,080, Aug. 8, 1968. This application Oct. 30, 1970, Ser. No. 85,699
Int. Cl. G01c 3/08
U.S. Cl. 356—4 8 Claims



This invention relates to an electrooptical rangefinder of the split field type which produces, along a shear axis, two split images of the object whose range distance is to be determined, the degree of adjustment necessary to bring the two split images into symmetrical alignment being a function of the range distance.

A plurality of *n* photosensitive transducer pairs are located on opposite sides of the shear axis, and adapted to receive the illumination reflected from the two split images. Electrical circuitry is coupled to the plurality of *n* photosensitive transducer pairs to provide a plurality of *n* signals, the signal for each discrete pair being arbitrarily denominated a logical ZERO or a logical ONE indicative of the balanced or unbalanced state of illumination experienced by a photosensitive transducer pair respectively.

Logic circuitry is coupled to the electrical circuitry to receive the plurality of logical signals and derive an output signal when a predetermined number of the photosensitive transducer pairs receive balanced illumination, which output signal, by reason of the fact that the split images are in alignment, is a function of the range distance.

ERRATUM

For Class 356—103 see:
Patent No. 3,624,835

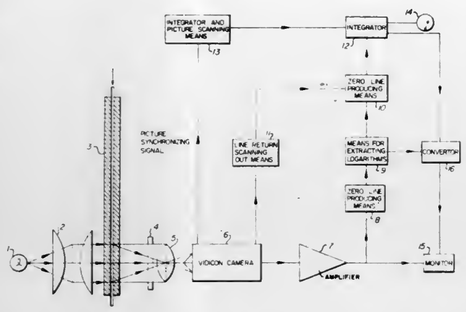
3,623,812
METHOD FOR THE AUTOMATED ELECTRONIC DENSITOMETRIC EVALUATION OF SEPARATED MATERIAL MIXTURES, USING CARRIERLESS ELECTROPHORESIS

Kurt Hannig, Krailling, and Hanns Wirth, Hohenpeissenberg, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed Oct. 3, 1969, Ser. No. 863,520
Claims priority, application Germany, Oct. 3, 1968, P 18 00 993.3
Int. Cl. B01k 5/00; G01n 21/30
U.S. Cl. 356—105 11 Claims

The present invention relates to a method for the automated electronic densitometric evaluation of separated material mixtures, using carrierless electrophoresis, in which the distribution pattern of the light-absorbing or -reflecting mixture components, for example in the form of an enlarged or reduced optical image, is scanned in accordance with the flying point principle, the scanned points are converted into current pulses and the current pulses belonging to the scanned line are integrated.

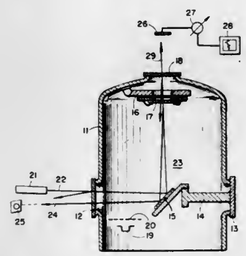
Throughout the specification, reference is made to a "Vidicon" tube as an element in the apparatus and process of the present invention. This term is utilized to indicate conventional and well-known electronic television recording tubes.



3,623,813
METHOD FOR MONITORING TEMPERATURE VARIATIONS OF RADIATION-PERMEABLE SUBSTRATES FOR SUPPORTING THIN COATINGS APPLIED BY VACUUM DEPOSITION

Dionys Hacman, Trubbach, Switzerland, assignor to Balzers Patent-Und Beteiligungs AG, Furstentum, Liechtenstein

Filed Dec. 18, 1968, Ser. No. 784,721
Claims priority, application Switzerland, Dec. 21, 1967, 18037/67
Int. Cl. G01b 9/02
U.S. Cl. 356—108 1 Claim



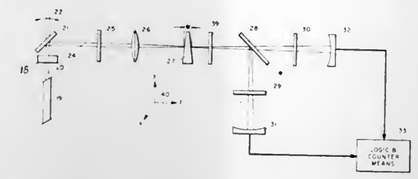
The temperature variations of radiation-permeable substrates, for supporting thin coatings applied by vacuum deposition, are monitored by illuminating the substrate with light having a sufficient length of coherence, such as light form a LASER or a MASER. The light rays reflected from two boundary surfaces of the substrate are combined on a receiving surface and brought into interference. The distribution of light intensity on the receiving surface, and the variations with respect to time of the light intensity, determine the thermal expansion of the substrate and thus its temperature. As light is also reflected from the surface of the coating, it is possible to monitor the thickness of the coating being applied.

3,623,814
LIGHT BEAM DEFLECTION SENSOR

Carl F. Buhrer, Oyster Bay, N.Y., assignor to General Telephone & Electronics Laboratories, Inc.

Filed Apr. 1, 1969, Ser. No. 811,804
Int. Cl. G01b 11/26
U.S. Cl. 356—114 11 Claims

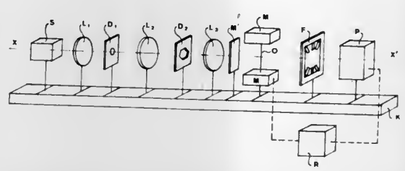
A deflection sensing system for measuring the deflection of a collimated beam of light having a component of plane polarized light. A wedge of birefringent crystal with thickness varying linearly in the direction of deflection of the beam is positioned in the path of the beam. The beam of light emerging from the wedge contains a continuously changing degree of elliptical polarization. The amount and direction of change in elliptical polarization which is proportional to the amount and direction of deflection of the light beam is then measured.



3,623,815
DEVICE FOR MEASURING THE DIAMETER OF FIBERS AND THREADS OF SMALL THICKNESS USING A CONVERGENT COHERENT LIGHT BEAM

Andre Fontanel, Asnieres, and Gerard Grau, Paris, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Hauts de Seine, France

Filed July 3, 1969, Ser. No. 838,809
Claims priority, application France, July 4, 1968, 157985
Int. Cl. G01b 11/10
U.S. Cl. 356—159 16 Claims

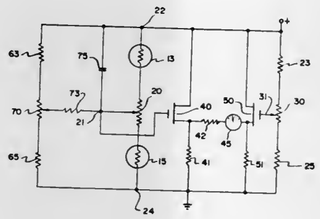


An optical device for measuring the diameter of thin fibers using a converging beam of coherent light and including means for supporting the fiber in the convergent light beam, means for rotating the fiber around its longitudinal axis and translating the fiber in orthogonal directions, and recording means for recording the diffraction diagram of the fiber.

3,623,816
SYSTEM FOR MEASUREMENT OF RELATIVE COLOR INTENSITIES

William H. Slavik, Oak Lawn, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 19, 1969, Ser. No. 800,581
Int. Cl. G01j 3/46, 3/48, 1/42
U.S. Cl. 356—176 6 Claims

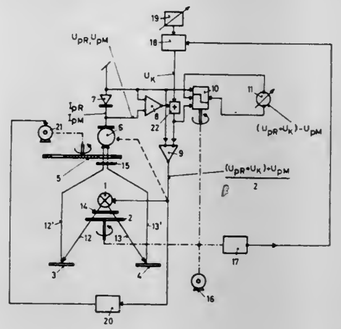


A portable meter for tracking any two colors of light emitted from a color cathode-ray tube at all brightness settings includes first and second light-dependent resistors connected in two arms of a bridge circuit in series with one another across a source of DC voltage with the other two arms of the bridge circuit consisting of equal resistors connected in parallel across the light-dependent resistors. The tap of a potentiometer connected between the light-dependent resistors and the tap of a potentiometer connected between the resistors to opposite sides of a DC meter through insulated gate field effect transistors. Light impinging upon each of the light-dependent resistors is passed through a color and a neutral density filter, permitting light of only one color to strike the associated resistor. Provision is made for adjustment of the bridge balance through the potentiometers for conditions of high light, low light and, through an additional arm of the bridge for darkness; so that the meter output is accurate over a wide range of brightness conditions.

3,623,817
COMPARISON DENSITOMETER INCLUDING MEANS TO MAINTAIN THE DETECTOR OUTPUT AT A MEANS VALVE

Tino Ceiio, Buchs, Zurich, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed Feb. 24, 1970, Ser. No. 13,650
Int. Cl. G01j 3/48; G01n 21/22
U.S. Cl. 356—179 12 Claims



This invention relates to a densitometer for measuring small differences in density. The densitometer comprises a light source providing a reference light beam for imaging on a reference object and a measuring light beam for imaging on an object whose density relative to that of the reference object is to be measured. Light reflected from the two objects is transmitted to a photodetector via an optical chopper that sequentially interrupts the transmitted beams. The photodetector produces sequential pairs of voltages which are applied to a logarithmic element in the form of a diode which produces pairs of logarithmic voltages for application to a polarity reverser which changes the polarity of one logarithmic voltage of a pair relative to the other voltage of the same pair. The voltages of each pair are then applied to an indicating instrument where they are utilized to give an indication of the difference in density between the two objects. The pairs of logarithmic voltages produced by the logarithmic element are also applied to a control circuit which controls either the intensity of the source or the amplification of the photodetector so that the voltages produced by the photodetector and applied to the logarithmic element are always within a predetermined range of amplitudes.

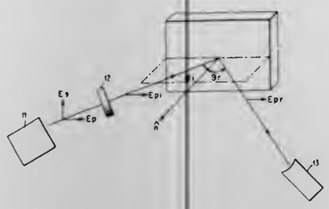
3,623,818
MEASUREMENT OF CARRIER CONCENTRATION OF SEMICONDUCTOR MATERIAL

Edward E. Gardner, Shelburne, Vt.; William A. Keenan, Poughkeepsie, and Paul A. Schumann, Jr., Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,002
Int. Cl. G01n 21/48; G01t 1/16
U.S. Cl. 356—209 4 Claims

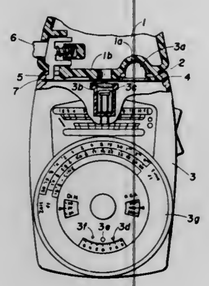
Carrier concentration of a semiconductive material is measured by directing monochromatic light at the material. The

light is polarized with its electric vector in the plane of incidence. The angle of incidence is varied until a minimum in reflectivity occurs. The angle at which the minimum occurs,



referred to as the pseudo-Brewster angle θ_B, is related to the carrier concentration, whence the carrier concentration may be determined by comparison with a series of standards or by calculation.

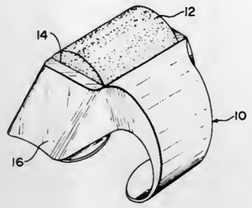
3,623,819
UNIVERSALLY APPLICABLE PHOTOMETER WITH ADAPTERS FOR REDUCING THE MEASURING ANGLE
Erwin Pfaffenberger, and Hans Forsterling, both of Erlangen, Germany, assignors to P. Gossen & Co. GmbH, Erlangen, Germany
Original application Apr. 19, 1967, Ser. No. 631,947. Divided and this application July 22, 1969, Ser. No. 870,961
Int. Cl. G01j *1/42*
U.S. Cl. 356—218 **2 Claims**



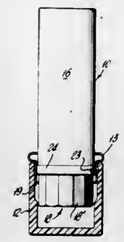
The present disclosure relates to a universally applicable light-measuring device, especially photometer, which comprises a main measuring device, e.g. an exposure meter, and easily exchangeable auxiliary measuring devices or adapters for reducing the measuring angle which, when individaully attached to the main measuring device, form therewith new unitary devices, as to outer appearance and function. All adapters have identical bottom portions with two hooklike extensions to be received in corresponding recesses in the main measuring device. One of the extensions is resiliently journaled and may be displaced by a pushbutton for disconnecting the adapter from the main device.

3,623,820
METHOD AND MEANS FOR INSTANTLY FILLING AND SEALING AN ENVELOPE
Alfred G. B. Prather, P.O. Box 53, 5700 Lincoln Ave., Lanham, Md.
Filed Feb. 24, 1970, Ser. No. 13,612
Int. Cl. B43m *11/06*
U.S. Cl. 401—8 **4 Claims**

The finger ring device having an open finger band with substantially stiff but flexible ends is adapted for placing on a finger of either hand so that a wetting sponge mounted on the head of the ring may be brushed over the gummed strip of the open flap of an envelope simultaneously with the insertion of the contents into this envelope, which is being held in the other hand, and the flap is then turned down and the letter instantly sealed, without making any extra strokes of the hand to reach for a wetting device and returning it to its resting place, after insertion of the contents and before sealing the envelope, the result being two filled and sealed envelopes in the time previous methods required to fill and seal just one. Thus in mass mailings, e.g., a saving in time and labor of 50 percent is accomplished by using this simple device and method.



3,623,821
COSMETIC CONTAINER
Melvin Gould, Hamden, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed Nov. 24, 1969, Ser. No. 879,138
Int. Cl. A45d *40/06*
U.S. Cl. 401—86 **7 Claims**

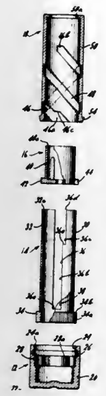


The invention contemplates an improved refill cartridge and insert-sleeve construction for use in lipstick or the like containers having outer decorative casings, the sleeve being permanently assembled into the bore of the base part of the outer decorative casing. The particular feature of the invention resides in provision of such circumferential uniformity of the sleeve fit in the outer decorative casing that inherently weak plastic outer casings are smoothly cylindrically supported and permanently engaged, without imposing such circumferential stress as to rupture the casing. At the same time, improved detent and locking structure coacts between removably fitted parts of the cartridge and casing to assure smooth detent action without damage to keyed parts or surfaces.

3,623,822
LIPSTICK CASE
Emil Davidson, 14 Tunstall Road, Scarsdale, N.Y.
Filed Dec. 1, 1969, Ser. No. 881,015
Int. Cl. A45d *40/06*
U.S. Cl. 401—78 **1 Claim**

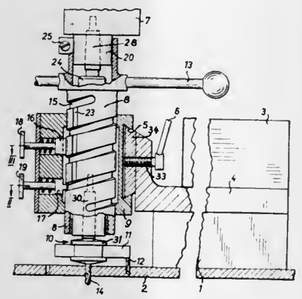
A lipstick case having a cylindrical case and a base which are connected for relative rotation and are effective, in conjunction with an internal shell, to displace a cup which receives a lipstick in order to extend and retract the lipstick in relation to the case. Locking arrangements are provided

for releasably securing the cup in a loading position to facilitate the loading into the case of a lipstick and in a



retracted position to preclude inadvertent extension of the lipstick during periods of nonuse.

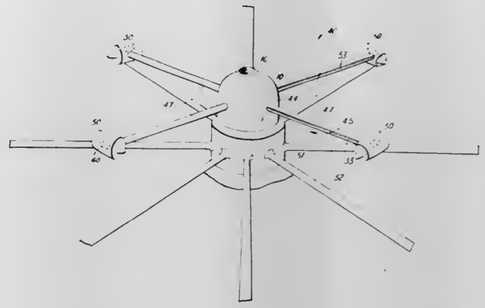
3,623,823
PORTABLE APPARATUS FOR PRODUCING CIRCULAR OPENINGS IN WORKPIECES
George Val, Daellikon, Switzerland
Filed Oct. 8, 1969, Ser. No. 864,583
Claims priority, application Switzerland, Oct. 14, 1968, 15313/68
Int. Cl. B23b *45/14, 47/18*
U.S. Cl. 408—76 **9 Claims**



A portable apparatus for producing circular openings in workpieces, by use of a magnetic stand for supporting a spindle. A spindle is connected with the stator of a motor, the rotor thereof driving a shaft carrying a circle cutter. The spindle is threaded and can be rotated to be advanced axially relative to the workpiece during machining. The pitch of the spindle thread is selected to absorb reaction forces and permit freeing of the cutter in case it should bind.

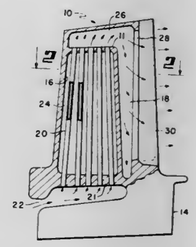
3,623,824
GAS TURBINE POWER PLANT
Geoffrey Light Wilde, and Donald Eyre, both of Derby, England, assignors to Rolls-Royce Limited, Derby, England
Filed July 23, 1969, Ser. No. 844,086
Claims priority, application Great Britain, Aug. 5, 1968, 37,309/68
Int. Cl. F02c *7/02*; F02k *3/02*
U.S. Cl. 416—21 **5 Claims**

A gas turbine power plant, especially for a helicopter, has two gas turbine gas generators arranged back-to-back on a common axis, each gas turbine gas generator being located in a main flow duct which also houses a free radial-flow turbine in flow series with the gas generator. A fan duct coaxially surrounds the main flow duct and houses two centrifugal flow



fan rotor stages drivingly connected to the free turbine. The fan exhaust drives turbofans mounted at the tips of hollow arms of a rotor which is also provided with rotary bladed arms.

3,623,825
LIQUID-METAL-FILLED ROTOR BLADE
William F. Schneider, West Haven, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Nov. 13, 1969, Ser. No. 876,295
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **8 Claims**

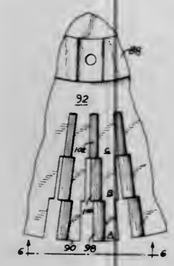


A hollow turbine blade is filled with a liquid metal which is cooled by means of a plurality of tubes through which coolant air is passed. The walls of the turbine blade are in contact with the liquid metal which acts as the heat exchange mechanism, the air acting as the system coolant.

3,623,826
TURBINE PUMP WITH IMPROVED ROTOR AND SEAL CONSTRUCTIONS
Arman Mandell, Chicago, and Gordon Osterstrom, Winnetka, both of Ill., assignors to Sargent-Welch Scientific Company, Skokie, Ill.
Filed Oct. 27, 1969, Ser. No. 869,842
Int. Cl. F04b *19/16*; F04d *29/00*
U.S. Cl. 416—237 **1 Claim**

A high-vacuum axial flow turbine pump having novel oil seal and rotor constructions. The rotors are machined from a single blank of material and include a row of inclined blades divided into a plurality of segments each defined by a pair of inclined faces, offset from but parallel to the inclined faces on an adjacent segment of the blade. The improved oil seal closely surrounds an end portion of the impeller shaft containing a plurality of the rotors, and includes a pair of seal elements having inwardly directed annular faces, and a pair of oil collector grooves, one associated with each seal ele-

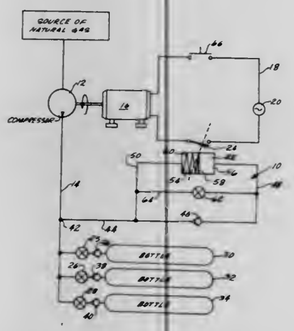
ment, with the axially innermost groove having a foam or like insert therein for picking up oil and transferring it by capillary action and gravitational force to an outlet in a lower portion of the seal.



3,623,827
PROTECTIVE CIRCUIT FOR PRESSURE CHARGING OF NATURAL GAS AND THE LIKE

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Mar. 16, 1970, Ser. No. 19,903
Int. Cl. F04b *49/10*
U.S. Cl. 417—9 4 Claims

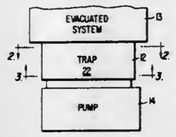


A protective fluid circuit is in fluid circuit with the high-pressure side of a compressor for natural gas and controls the energization of the power source for the compressor such that when there is a drop in the pressure on this side, as when there is a leak, the compressor is inactivated. The protective circuit includes a check valve which opens when the pressure upstream of the valve is slightly more than the pressure downstream of the valve, the upstream side of the check valve being in pressure communication with the high-pressure side of the compressor. A pressure-sensitive switch of the balanced-pressure-type is in parallel fluid circuit with the check valve, with the outlet of the valve providing one source of pressure and the inlet of the valve providing the other source of pressure. The pressure-sensitive switch controls a switching element in the circuit to the compressor's power source that when the valve closes, the switching element opens the circuit to the power source to inactivate the compressor. For starting the compressor, a selectively actuatable bypass valve is disposed across the pressure-sensitive switch to supply compressor pressure on both sides of the switch and prevent it from opening the circuit to the compressor power source.

3,623,828
TRAP FOR PREVENTING DIFFUSION PUMP BACKSTREAMING

Harold Shapiro, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1968, Ser. No. 789,045
Int. Cl. F04f *9/06*
U.S. Cl. 417—152 10 Claims

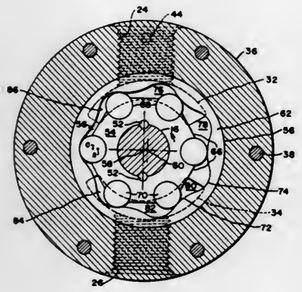


An oil-backstreaming trap is located in a vacuum line between an oil diffusion pump and the evacuated system so that gases from the system are drawn through the trap on the way to the pump. First and second baffle plates extend partially across the cross-sectional area of the trap and are spaced apart from each other along the direction of gas flow. The surface of the baffle plate closest to the evacuated system is smooth. The other baffle plate surfaces are roughened to form a large plurality of raised and depressed portions such as are formed by milling the roughened surfaces to form a large plurality of pyramid-shaped elements. In this manner, oil vapor from the diffusion pump which tends to backstream into the evacuated system, is coalesced on the roughened surfaces to form oil drops which then fall back into the diffusion pump.

3,623,829
INTERNAL GEAR SET

John D. Shaw, Concord, and Edward H. Gervais, Melrose, both of Mass., assignors to W. H. Nichols Company, Waltham, Mass.

Filed Nov. 12, 1969, Ser. No. 875,905
Int. Cl. F01c *1/10, 1/00*
U.S. Cl. 418—171 6 Claims



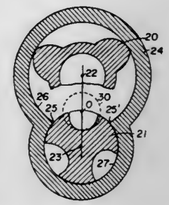
An internal gear set comprising an inner gear having a number of radially projecting cylindrical tooth members engaging a conjugate internally toothed outer gear. The latter has one more tooth than there are tooth members on the inner gear and is mounted eccentrically to the inner gear so that the gears move conjugately relative to one other.

3,623,830
ROTOR WITH HELICAL TEETH FOR DISPLACING COMPRESSIBLE FLUID

Ernest Wildhaber, Brighton, N.Y., assignor to Bird Island, Inc., Boston, Mass.

Filed Apr. 1, 1970, Ser. No. 24,484
Int. Cl. F01c *1/16;* F04c *1/10, 17/12*
U.S. Cl. 418—201 5 Claims

This rotor has helical teeth of concave profile extending principally inside of its cylindrical pitch surface. Said profile is tangent to the root surface of the teeth. The pitch point (0, FIG. 2) radially in line with the point (33) of tangency has a larger distance (0–37) from the outer end of the profile than (0–33) from the root circle, on one side of the teeth. The increase is at least 10 percent of the distance (0–33) from the root circle. Said profile is preferably a circular arc in sections normal to the teeth.



CHEMICAL

3,623,831
PROCESS FOR DYEING TEXTILE MATERIAL OF MIXTURES OF POLYESTER AND CELLULOSE FIBRES

Rudolf Lowenfeld, Buchschlag, and Uwe Kosubek, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 28, 1969, Ser. No. 820,020
Claims priority, application Germany, Apr. 30, 1968, P 17 69 278.3
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 5 Claims

Textile materials consisting of mixtures of polyester and celluluose fibers are dyed equal shades by (a) impregnation with an alkaline solution containing (1) a coupling component, (2) a diazoamino or tetrazoamino compound or an antidiazotate, and (3) wetting or dispersing agents, (b) drying the material, (c) impregnation with an acid solution containing a disperse dye, (d) drying the material and (e) subjecting it to a heat treatment.

3,623,832
PROCESS FOR THE DYEING AND PRINTING OF POLYAMIDE AND POLYURETHANE TEXTILE FIBRES WITH MIXTURES OF NITRODIPHENYLAMINO DYESTUFFS

Daniel van Assche, Binningen, Basel-Land, and Josef Frauenknecht, Therwil, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed July 9, 1970, Ser. No. 53,679
Claims priority, application Switzerland, July 18, 1969, 11,033/69
Int. Cl. D06p *3/24*
U.S. Cl. 8—25 36 Claims

A process for the dyeing and printing of natural polyamide fibres and synthetic polyamide and polyurethane fibres using a mixture of two dyes of the nitrodiphenylamino series, each of which contains a single sulphonic acid group plus a sulphonamide group which may be unsubstituted or substituted by an alicyclic, aromatic or heterocyclic radical.

3,623,833
METHOD FOR DYEING CELLULOSE TRIACETATE USING ANIONIC DYES

Amerigo Wildermuth, Milan, and Ferdinando Marchi, Cesano Maderno, Italy, assignors to Aziende Colori Nazionali ACNA S.p.A., Milan, Italy

No Drawing. Filed Mar. 7, 1969, Ser. No. 805,366
Claims priority, application Italy, Mar. 11, 1968, 13,808/68
Int. Cl. D06p *1/20, 3/40*
U.S. Cl. 8—40 5 Claims

A process for dyeing textile materials of cellulose triacetate which comprises carrying out the dyeing at a temperature between 105° and 140° C. under pressure in an aqueous dyeing bath containing at least one water-soluble anionic dye, glycerin triacetate and between 10 and 120 g./l. of a salifying agent selected from the group consisting of sodium chloride and sodium sulphate.

3,623,834
DYE SOLUTION OR PRINT PASTE CONTAINING CHLORINATED HYDROCARBON WITH AN ALCOHOL, KETONE, DIOXANE, ALKANOIC ACID AMIDE, TETRAMETHYL UREA OR PYRIDINE AND POLYAMIDE DYEING THEREWITH

Marcel Seuret, St. Kilda, Melbourne, Victoria, Australia, and Willi Leutenegger, Bottmingen, Basel-Land, and Hans E. Wegmuller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

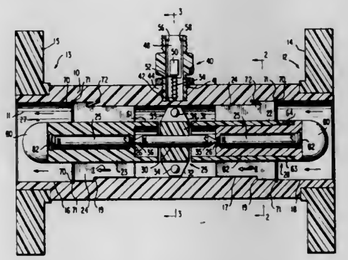
No Drawing. Filed Jan. 3, 1967, Ser. No. 606,553
Claims priority, application Switzerland, Jan. 5, 1966, 102/66
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 9 Claims

Synthetic linear polyamides are dyed or printed with a short chain chlorinated alkane solution containing any one of an alkanol, cycloalkanols, aralkanols, alkanone, cycloalkanone, alkylene glycol monoalkyether, furfuryl alcohol, tetrahydrofurfuryl alcohol, alkanediols, dioxane, N,N-dialkylamides of short chain alkanoic acids, N,N,N'-tetramethyl urea, pyridine or mixtures thereof.

3,623,835
GAS FLOWMETER

Charles L. Boyd, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed June 11, 1969, Ser. No. 832,343
Int. Cl. G01f *1/06*
U.S. Cl. 73—231 9 Claims



A magnetic flowmeter of the turbine type wherein the rotor blades are substantially diamagnetic except for the

inclusion of magnetic slugs in the tips thereof. The rotor is mounted within the flowmeter housing by means of a combination jewel and magnetic bearing at each end of the rotor axle. The bearings are statically held within the flowmeter by cross-vane assemblies which engage the flowmeter housing and are held against rotation by a pair of dowel pins. One of the bearings may be axially adjustable with respect to the cross-vane assembly and rotor axle to provide for optimum bearing clearances.

3,623,836
PROCEDURE FOR THE PREPARATION OF SODIUM PERBORATE MONOHYDRATE
Jose Luis Denaeyer and Willy Kegelart, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium
No Drawing. Filed July 16, 1969, Ser. No. 842,340
Claims priority, application Belgium, July 17, 1968, 61,080
Int. Cl. C01b *15/12*
U.S. Cl. 23—60 **3 Claims**

Monohydrated sodium perborate is prepared by dehydrating sodium perborate tetrahydrate continuously in a fluid bed dryer by the action of hot air which is at a temperature not lower than 180° C. Sodium perborate monohydrate thus product has excellent strength against attrition.

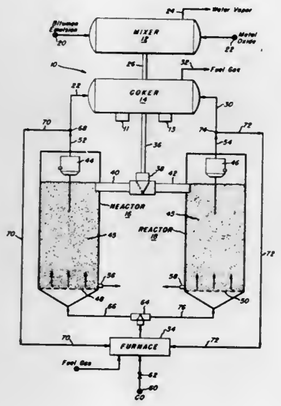
3,623,837
PROCESS FOR PRODUCING FINE PARTICLE SIZE ALUMINA HYDRATES
Allan C. Kelly, Palo Alto, and Leo R. Barsotti, Pleasanton, Calif., and Robert B. Emerson, Baton Rouge, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,283
Int. Cl. C01f *7/14*
U.S. Cl. 23—143 **9 Claims**

Fine particle size alumina hydrates, consisting essentially of a mixture of nordstrandite and bayerite, are made. The mixture is obtained by subjecting a sodium aluminate solution of high alumina and sodium hydroxide concentration to dilution under controlled conditions. The precipitated alumina hydrates consist essentially of a mixture of nordstrandite bayerite which, due to the fine particle size distribution and high surface area, provide an excellent catalyst base upon calcination. Thermal treatment of the mixture at elevated temperatures results in an activated alumina of essentially eta structure.

3,623,838
PROCESS FOR THE PRODUCTION OF LEAD OXIDES
Wilhelm Kunz, Cologne-Mulheim, and Walter Breckheimer, Bensberg, Germany, assignors to Lindgens & Sohne, Cologne-Mulheim, Germany
No Drawing. Filed Dec. 19, 1968, Ser. No. 785,386
Claims priority, application Austria, Jan. 3, 1968, A 71/68
Int. Cl. C01g *21/06, 21/10*
U.S. Cl. 23—146 **9 Claims**

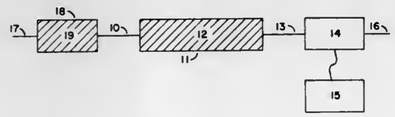
The red modification of lead oxide, which is convertible to Pb_3O_4 by oxidation at below about 500° C. or to the yellow modification of PbO by oxidation at above about 550° C., is produced. The raw oxide produced is in a highly reactive form having low abrasion and satisfactory free flowing properties and is free of added bonding agent. Production is effected by adding about 4 to 10% water to raw lead oxide particles containing less than about 30% metallic lead, the raw lead oxide not containing a substantial amount of particles of more than 20 microns diameter. The mixture of water and raw lead oxide is granulated, and the granules are dried.

3,623,839
METHOD OF MAKING ALKALINE EARTH METAL CARBIDE
Edmond L. d'Ouville, Evergreen Park, and Robert F. Marschner, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 21, 1968, Ser. No. 754,365
Int. Cl. C01b *31/32;* **F27b** *15/00*
U.S. Cl. 23—208 **4 Claims**



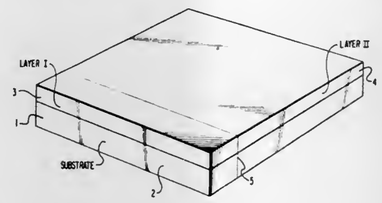
Calcium oxide is mixed with an aqueous bitumen emulsion to form a dry, powdery solid. This solid is then coked at a temperature between about 500° and 1500° C., and then heated in an inert atmosphere to a temperature between about 1500° and 1800° C. to form solid calcium carbide.

3,623,840
ANALYTICAL METHOD AND APPARATUS FOR ANALYSIS OF LABILE HYDROGEN CONTAINING COMPOUNDS
Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 479,109, Aug. 12, 1965. This application Jan. 2, 1969, Ser. No. 788,432
Int. Cl. G01m *23/12;* **G21h** *5/00*
U.S. Cl. 23—230 R **26 Claims**



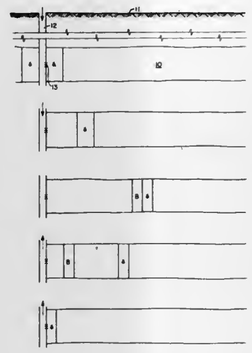
A method for analyzing for labile hydrogen in hydrogen-containing compounds in mixtures by passing the mixture over a tritium-containing substrate to effect exchange of said labile hydrogen with said tritium, detecting and measuring the radioactivity of the resulting tritium-containing compounds and using the radioactive measurement to determine the amount of the labile-hydro-containing compound in the mixture and an exchange column and system therefor.

3,623,841
SEPARATION BY THIN-LAYER CHROMATOGRAPHY WITH A TWO-LAYER PLATE
Friedrich Kraffczyk, Herbert Halpaap, and Roland Helger, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed July 15, 1969, Ser. No. 841,712
Claims priority, application Germany, July 19, 1968, P 17 92 083.1
Int. Cl. B01d *15/08;* **G01n** *31/04, 33/16*
U.S. Cl. 23—230 B **26 Claims**



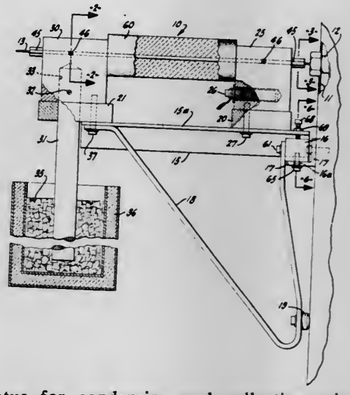
Thin-layer chromatographic plates are provided with two layers, one for the removal of interfering constituents and the other for the separation of amino acids.

3,623,842
METHOD OF DETERMINING FLUID SATURATIONS IN RESERVOIRS
Harry A. Deans, Houston, Tex., assignor to Esso Research Company
Filed Dec. 29, 1969, Ser. No. 888,668
Int. Cl. E21b *47/00;* **G01n** *33/24*
U.S. Cl. 23—230 EP **10 Claims**



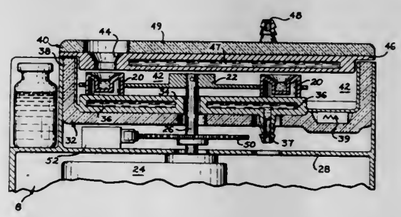
A method for determining the relative amounts of fluid phases in a subterranean oil-bearing formation in which one of the phases is mobile and the other is essentially immoble. A carrier fluid-reactant solution is injected into the formation by means of a well. The carrier fluid is substantially insoluble in the immoble fluid and miscible with the mobile fluid. The reactant forms at least two tracers within the formation, one of which may be unconsumed reactant. The tracers have different partition coefficients between the carrier fluid and immobile phase. After measurable quantities of the two tracers are produced by the reactant, the carrier fluid-tracer solution is displaced through the formation to a point of detection which preferably is the injection well. By applying the principles of chromatography to measured chromatographic properties of the process, the fluid saturations of the formation can be determined.

3,623,843
APPARATUS FOR CONDENSING ORGANIC VAPORS OF GAS CHROMATOGRAPHIC FRACTIONS
Robert G. Brownlee, East Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Sept. 10, 1969, Ser. No. 856,712
Int. Cl. B01n
U.S. Cl. 23—252 **3 Claims**



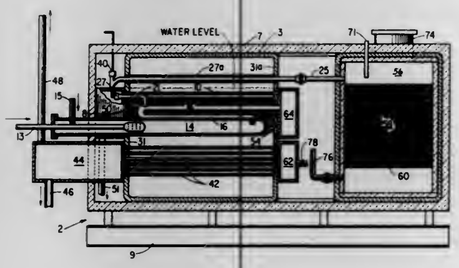
Apparatus for condensing and collecting microgram and larger amounts of organic vapors present in a gas chromatography effluent without engendering fog droplets. The apparatus comprises a length of small aluminum tubing adapted to receive an open-ended capillary or other glass tube into which the gas sample is passed for condensation, said aluminum tube being mounted at the sample receiving end in a heated aluminum block and, at the other end, in a refrigerated aluminum block spaced from the heated block, and with the intervening length of tubing between the blocks being thermally insulated so as to provide an even temperature gradient along said length ranging from vaporization to condensation temperatures. The organic vapors present in the sample directed into the glass tube are condensed therein, while any inert carrier components thereof are discharged from the open, downstream end of the tube.

3,623,844
INCUBATOR AND PROCESS TURNTABLE FOR CHEMICAL ANALYSIS APPARATUS FOR MICRO SAMPLES
Erik W. Anthon, Kensington, Calif., assignor to American Optical Corporation, Southbridge, Mass.
Filed July 17, 1969, Ser. No. 842,594
Int. Cl. B01f *3/12;* **B01l** *1/00;* **G01n** *31/00*
U.S. Cl. 23—253 **2 Claims**



A serum sample incubator and process turntable in which samples are disposed in an insulated and humidity-controlled atmosphere and agitated as they are rotated and indexed relative to an analysis apparatus.

3,623,845
PACKAGE SULFUR PLANT
John W. Palm, Tulsa, Okla., assignor to Amoco Production Company
Filed Dec. 4, 1969, Ser. No. 882,072
Int. Cl. B01j *9/04;* **C01l** *7/04;* **F27b** *19/02*
U.S. Cl. 23—262 **9 Claims**



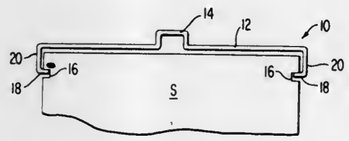
A compact apparatus free from external piping is described having within a single elongated shell a boiler and condenser sections within a single compartment and one or more catalytic reaction chambers operating on feed gas preheated within said compartment to reaction temperature. An arrangement is described whereby a portion of the hot gas in the boiler section is mixed with the uncondensed gas from the discharge end of the condensing section to form a feed gas at the proper temperature for the reactor.

3,623,846
PARTICLE SIZE CONTROL
Arthur P. Haag, Moraga, and Meyer Weiner, Orinda, Calif., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Dec. 12, 1969, Ser. No. 884,655
Int. Cl. B01j *17/26, 17/30;* **C01g** *23/02*
U.S. Cl. 23—294 **12 Claims**

Method and apparatus for controlling particle size during condensation or desublimation of a material such as titanium trichloride is described. The technique involves injecting a vapor stream into an enlarged chamber maintained at a temperature below the condensation temperature of a material in the vapor stream. An inert gas is intermittently puffed through apertures in the enlarged chamber for buoying particles of material condensed from the vapor into the entering vapor stream so that additional material condenses thereon, thereby enlarging the particle size.

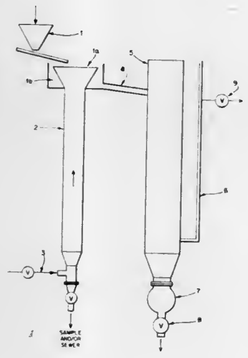
3,623,847
SEED HOLDER FOR USE IN HYDROTHERMAL SYNTHESIS OF QUARTZ
David W. Gehres and Paul L. Negley, Carlisle, Pa., assignors to Aiken Industries, Inc., % P. R. Hoffman Company, Division of Aiken Industries, Inc., Carlisle, Pa.
Filed Oct. 26, 1967, Ser. No. 678,442
Int. Cl. B01j *17/04;* **C01b** *33/32*
U.S. Cl. 23—301 **3 Claims**

Quartz is grown by hydrothermal synthesis in a vertical autoclave on a number of separate seed plates which may be of unequal length but which are held in seed racks having equally spaced tiers. The ends of each seed plate are provided with bent wire holders engaging slots in the sides of the seed plates and extending outwardly from the ends of the seed a variable distance so that each seed and holder assembly of a single tier is the same length to be accommodated in the equally spaced tier. The central portion of each wire holder is bent to form an outwardly extending projection to engage recesses in the tier



plates of the seed rack. After rocks are grown on the seeds plates the seeds may be recovered by slicing the grown rock. Thus, the seed and holder assembly can be used over and over.

3,623,848
PROCESS FOR BRINE MANUFACTURE
Harry Mueller Fisher, deceased, late of Gilbertsville, Ky., by Mary E. C. Fisher, administratrix, and Jesse Gyger Grier, Gilbertsville, Ky., assignors to Pennwalt Corporation, Philadelphia, Pa.
Continuation-in-part of abandoned application Ser. No. 559,214, June 21, 1966. This application Oct. 29, 1969, Ser. No. 871,796
Int. Cl. C01d *3/08;* **B01j** *11/02*
U.S. Cl. 23—312 **3 Claims**



A process for increasing the concentration of a depleted sodium chloride brine solution by introducing salt of about minus 6 U.S. sieve size and containing calcium sulfate as an impurity into the top of a vertical salt-bed free first column through which brine at a pH of above about 3.5 is flowing upwardly at a linear flow rate between about 15 and 25 feet per minute, the brine in the first column then overflowing into a second salt-bed free column where the linear downwardly flow rate is between about 0.1 and 3 feet per minute, whereby the salt particles are partially dissolved in the first column until they are carried over into the second column where they fall freely through the downwardly flowing brine solution until essentially completely dissolved at a point above a trap for undissolved calcium sulfate, thereby producing as effluent from the second column a concentrated brine solution low in calcium ion concentration.

3,623,849
SINTERED REFRACTORY ARTICLES OF MANUFACTURE
John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968. This application Aug. 25, 1969, Ser. No. 852,816
Int. Cl. C22c *29/00;* **B22f** *9/00*
U.S. Cl. 29—182.8 **8 Claims**

This invention relates to the powder metallurgy of sintered refractory compound materials and also to a method for producing such materials, for example, cemented refractory carbides, characterized metallographically by a uniform dispersion of finely divided refractory compound particles throughout a metal matrix.

3,623,850
COMPOSITE CHILL CAST IRON ROLLING MILL ROLLS HAVING INCREASED RESISTANCE TO THE SPALLING
Paul J. Horvath, Jr., Whitehall, Pa., assignor to Bethlehem Steel Corporation
No Drawing. Filed Mar. 24, 1969, Ser. No. 810,025
Int. Cl. B32b *15/18;* **C21d** *9/38*
U.S. Cl. 29—196.1 **4 Claims**

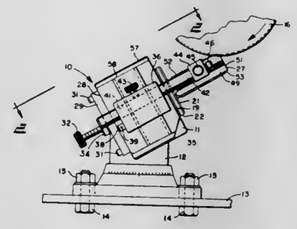
A composite chill cast iron roll in which the chill area has a composition of about 3.20% to about 3.40% carbon, about 0.55% to about 0.65% manganese, about 1.45% to about 1.65% silicon, about 4.00% to about 4.40% nickel, about 0.90% to about 1.10% chromium, about 0.50% to about 0.70% molybdenum and about 0.03% to about 0.08% magnesium, about 0.07% phosphorus, about 0.02% sulfur, the remainder iron and incidental impurities and the core is a low alloy cast iron composition of about 3.40% to about 3.50% carbon, about 0.50% to about 0.60% manganese, about 1.25% to about 1.35% silicon, about 0.30% to about 0.50% chromium, about 0.75% to about 1.25% nickel, about 0.15% phosphorus, about 0.10% sulfur, the remainder iron and incidental impurities.

3,623,851
DISTILLATE HYDROCARBON FUEL OIL COMPOSITIONS WITH ANTI-CORROSION PROPERTIES
Robert J. Konig and Marvin S. Rakow, Brunswick, N.J., assignors to Cities Service Oil Company, New York, N.Y.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,913
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—63 **13 Claims**

An additive which, when incorporated in a distillate hydrocarbon fuel oil, imparts to said fuel oil composition anti-corrosion properties, and the distillate hydrocarbon fuel oil composition containing said additive. The additive is comprised of a synergistic mixture of (a) a diamide obtained by condensing one mole of a dicarboxylic acid with two moles of an N,N-dialkyl hydrocarbylenediamine and (b) a diamide obtained by condensing one mole of a dicarboxylic acid with one mole of a hydrocarbylenediamine having an aromatic hydrocarbon substituent on one amino nitrogen and one mole of a hydrocarbylenediamine wherein one of the amino nitrogens is part of a heterocyclic ring.

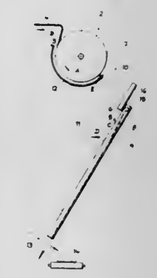
3,623,852
APPARATUS FOR GRINDING THREAD CUTTING TOOLS
Raymond P. Bushnell, Akron, Ohio
(200 Granger Road, Medina, Ohio 44256)
Filed Oct. 16, 1969, Ser. No. 866,868
Int. Cl. B24b *19/00, 7/00*
U.S. Cl. 51—225 **7 Claims**

Apparatus for grinding thread cutting tools in which a tap holding fixture is mounted for movement in substantially the same plane as the plane of rotation of the grinding wheel and has a wheel dresser for shaping the periphery of the grinding wheel to a predetermined concave



radius so that a land of the tap can be ground with a selected chamfer by moving the tap with the land positioned in the tap holding fixture into tangential engagement with the grinding wheel.

3,623,853
METHOD AND APPARATUS FOR PRODUCING FILAMENTS FROM VITREOUS MATERIAL
Heinz Keib, Wertheim am Main, Germany, assignor to Schuller, Werner Hugo Wilhelm, Munich-Grunwald, Germany
Filed Aug. 29, 1969, Ser. No. 854,134
Claims priority, application Germany, Sept. 7, 1968, P 17 96 143.2
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **15 Claims**

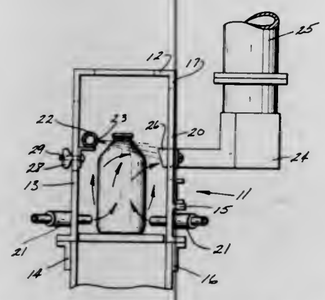


A drop of viscous molten vitreous material is exuded from an orifice communicating with a supply of such material. So exuded, the drop will descend under the influence of gravity while drawing behind it a length of filament of the vitreous material. The descending drop is contacted with a curtain of liquid which is being propelled transversely to the direction of descent at such velocity as to deflect, accelerate and sever the drop and proximal portions of the filament from the remainder of the length of filament. This is accomplished by a liquid supply conduit having a plurality of liquid ejecting nozzles which force the filaments into a rotary filament drawing surface.

3,623,854
VAPOR TREATMENT OF CONTAINERS WITH FINISH AIR BARRIER
Charles A. Frank, Bridgeton, N.J., assignor to Owens-Illinois, Inc.
Filed Aug. 28, 1968, Ser. No. 756,024
Int. Cl. C03c *15/00, 17/00*
U.S. Cl. 65—30 **3 Claims**

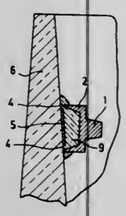
A treatment hood designed to be used in conjunction with a conveyor on which bottles or like articles are moved in succession through the hood. Tin chloride or

titanium chloride vapor is introduced into the hood at a point below the midpoint of the containers or articles to be coated and such treatment is prevented from impinging on the neck or finish of the container. A cross-



air barrier is directed across the width of the hood to sweep just below the neck of the container and be directed toward an exhaust system positioned along the length of the conveyor.

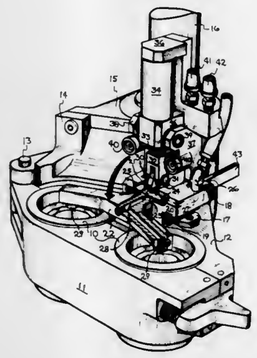
3,623,855
METHOD OF SECURING A METAL SUPPORTING MEMBER TO A GLASS WALL BY MEANS OF GLAZE
Albert Boon, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 3, 1969, Ser. No. 813,231
Claims priority, application Netherlands, Apr. 10, 1968, 6805156
Int. Cl. C03c *27/00, 29/00*
U.S. Cl. 65—43 **5 Claims**



A method of securing metal supporting members having cavities to inside glass surfaces of a cathode ray tube by grinding down the edges contiguous with the cavities at two opposite locations before filling the cavities with a suspension of a sealing glass. After drying, sintering and cooling the glass the members are placed in a jig for positioning each member so that the center lines for the two oppositely located sections that have been ground down extend along lines which are at right angles to the main strain lines in the glass where the member is to be located. The members are then pressed against the glass surfaces so that only the cavity edges that were not ground down contact the glass surfaces, and the entire assembly is then placed in an oven to liquefy the glass. The liquefied glass flows around the edges of the member and causes the members to adhere to the glass surfaces.

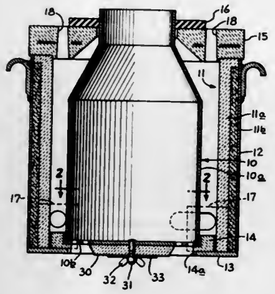
3,623,856
MOLD SPRAY APPARATUS
Robert H. Keller, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Feb. 2, 1970, Ser. No. 7,535
Int. Cl. C03b *39/00*
U.S. Cl. 65—169 **8 Claims**

Automatic lubrication spray of glass forming molds is accomplished by mounting a spray mechanism on one side of the mold, positioned so as to give clearance into the mold cavity for the charge of glass and the seating of baffles. The spray mechanism is controlled as to the quantity of spray which is sprayed into the molds by a selection of the precise spray nozzle. The application of the spray is carried out through the use of a pivoted arm which is motor driven to position the arm such that



the spray nozzle carried by the arm is positioned above the mold in co-axial alignment with the vertical axis of the mold cavity at the time the lubricant is sprayed. The motor functions to move the arm into spray position and then to retract the arm out of the way to permit the other forming operations to be carried with respect to the glass which is introduced into the mold, normally at a time slightly after the spray has occurred.

3,623,857
GLASS MELTING POT
Norman Emerson McFadden, Defiance, Ohio, Walter Merton Perry, Darien, Conn., and Dennis Lee Ramge, Waterville, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.
Filed Mar. 22, 1968, Ser. No. 715,371
Int. Cl. C03b *5/22*
U.S. Cl. 65—347 **5 Claims**



A glass melting pot of the type which has a multiplicity of apertures in the bottom thereof to permit the drawing of a multiplicity of continuous glass filaments therefrom. The main body of the pot is made of a high melting point nickel-chromium-iron base alloy, wherein iron is a minor constituent, and the apertures are fitted with tips made of one or more noble metals such as platinum.

3,623,858
METHOD OF PELLETIZING SERPENTINE CHRYSOTILE FINES AND PELLETED PRODUCTS THEREOF
Arthur Matthias Smith, Baltimore, Md., and William C. Streib, North Plainfield, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,685
Int. Cl. C05d *9/00*
U.S. Cl. 71—62 **6 Claims**

A method of pelletizing serpentine chrysotile mineral fines with mineral acid, and the pelleted product of the action of the mineral acid with the serpentine chrysotile mineral.

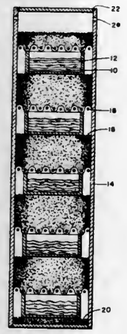
3,623,859
PROCESS OF MAKING ACICULAR, STABLE MAGNETIC IRON PARTICLES
Frederick Thomas Aldridge, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.
No Drawing. Filed May 22, 1970, Ser. No. 39,882
Int. Cl. C22b *5/12;* **C21c** *15/00;* **B22f** *9/00*
U.S. Cl. 75—.5 AA **6 Claims**

Acicular iron particles are made by doping an acicular ferric oxide with bismuth and reducing the doped oxide to iron at a relatively low temperature. The particles are stabilized by reoxidizing the surface slightly.

3,623,860
TUNGSTEN-RHENIUM ALLOY POWDER
Richard F. Cheney, Harry D. Martin, and Donald S. Parsons, Towanda, Pa., assignors to GTE Sylvania Incorporated
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,363
Int. Cl. B22f *9/00;* **C22b** *57/00*
U.S. Cl. 75—.5 AB **5 Claims**

A particulate tungsten-rhenium alloy powder having an average particle size of from about 0.5 to about 4 microns and having an homogeneous distribution of tungsten and rhenium in each particle is disclosed. Additionally, a process for producing the tungsten-rhenium alloy powders is disclosed. The process comprises forming an aqueous solution of tungsten and rhenium sources, spray drying said solution and heat treating the resulting powder under controlled atmospheric and temperature conditions.

3,623,861
PRODUCTION OF METAL POWDERS
Alan Arias, Cleveland, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 28, 1969, Ser. No. 853,855
Int. Cl. B22f *9/00;* **C21b** *15/02*
U.S. Cl. 75—.5 B **8 Claims**



Producing metal powders of controlled particle size by reducing oxides with the vapor of a reactive metal in a vacuum.

3,623,862
USE OF RARE EARTH ELEMENTS FOR REDUCING NOZZLE DEPOSITS IN THE CONTINUOUS CASTING OF STEEL PROCESS
Arthur F. Spengler, Jr., Park Forest, and William P. Young, La Grange, Ill., assignors to International Harvester Company, Chicago, Ill.
No Drawing. Filed June 24, 1968, Ser. No. 739,157
Int. Cl. C21c *7/06;* **B22d** *11/00*
U.S. Cl. 75—57 **20 Claims**

A continuous casting process wherein rare earth metals or rare earth silicides or other alloys of the rare earth metals are used to deoxidize steel to thereby prevent the clogging of tundish metering nozzles and permit the uninterrupted continuous casting of large production steel heats.

3,623,863
GAS POLING OF COPPER
James M. Henderson, New Brunswick, and Walter Johnson, South Plainfield, N.J., assignors to American Smelting and Refining Company, New York, N.Y.
Filed Nov. 21, 1967, Ser. No. 684,745
Int. Cl. C22b *9/08, 15/00, 15/14*
U.S. Cl. 75—76 **4 Claims**

This application is concerned with a procedure for poling copper with natural gas. A pool of molten oxygen-bearing copper ready for poling is established in a substantially closed tilting furnace and the natural gas is injected into the pool beneath the molten surface of the metal at a rate which is sufficient to provide a positive pressure and at least about 2% methane, by volume on the dry basis, in the furnace atmosphere; such injection of the natural gas being continued until the oxygen content of the copper is reduced to a desired amount.

3,623,864
MACHINABLE ALLOY
George A. Majesko, Glen Ridge, N.J., assignor to Wilbur B. Driver Company
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,045
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 **3 Claims**

A freely machinable alloy comprising, as expressed in percent by weight:

Nickel: 50.0%–52.0%
Selenium: 0.1%–0.4%
Manganese: 0.5%–2.0%
Iron: Balance

ERRATA

For Classes 96—1.5 thru 260—606.5 OP see:
Patent Nos. 3,624,226 thru 3,624,260

3,623,865
PROCESSES FOR PRODUCING PHOTOGRAPHIC IMAGES UTILIZING LEUCOPHTHALOCYANINES AND PHOTOSENSITIVE MATERIALS AND PRODUCTS RELATED THERETO
Laura K. Case, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.
No Drawing. Filed Mar. 16, 1967, Ser. No. 623,534
Int. Cl. G03c *1/00, 5/04, 5/24*
U.S. Cl. 96—27 **45 Claims**

This disclosure relates to an image reproduction system comprising a leucophthalocyanine and a photosensitive material, in which the photosensitive material becomes reversibly activated upon exposure to activating radiation but preferably remains essentially chemically unchanged after such exposure (hereinafter called a photoconductor). A leucophthalocyanine is a material which is known to the art to be capable of being reduced to a phthalocyanine dye. A negative image from

an original is produced by either of two methods: (1) exposing a substrate comprising (a) a leucophthalocyanine and (b) a photoconductor, to an image pattern of activating radiation, and (2) exposing a photoconductor containing substrate to an image pattern of activating radiation and subsequently contacting said exposed substrate with a leucophthalocyanine. A positive photographic print is produced from an original with only one exposure by contacting the negative print of processes such as described above with a suitable receptive substrate. The leucophthalocyanine from the unexposed areas of the negative print is thereby transferred to the receptive substrate and then a positive image is developed on the receptive substrate. Acid catalysis is preferably used in the above-described processes to improve photographic speed. It has also been found that a very short exposure to one wavelength of activating radiation, e.g., ultraviolet light, will activate the photosensitive substrate comprising a leucophthalocyanine and a photoconductor so that the photosensitive substrate is now sensitive to different wavelengths of radiation to which the substrate is ordinarily not sensitive, e.g. visible light. Therefore, a very brief exposure of this photosensitive substrate to an image pattern of activating radiation may be followed by a flooding of such substrate to visible light to produce a visible image.

3,623,866
STABILIZATION OF PHOTOCHROMIC COPY
Alexander Averbach, Skokie, Ill., assignor to A. B. Dick Company, Niles, Ill.
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,800
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **4 Claims**

The stabilization of copy produced by exposure of a photochromic layer formed of heteropoly acids of molybdenum and tungsten and a reducing agent wherein the layer after exposure is wet with an aqueous alkaline solution of an alkaline material.

3,623,867
PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE RAY TUBE SCREEN STRUCTURE
Theodore Alexander Saulnier, Lancaster, Pa., assignor to RCA Corporation
No Drawing. Filed Oct. 6, 1969, Ser. No. 864,197
Int. Cl. G03c *5/00, 7/06*
U.S. Cl. 96—36.1 **10 Claims**

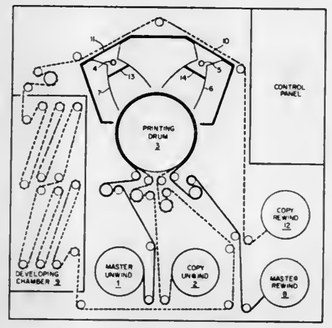
A process for preparing a luminescent screen structure of a cathode ray tube comprising

(1) coating a supporting surface such as the inner surface of the faceplate of the tube, with a photosensitive polymeric film containing 0.06 to 0.50 weight part, light scattering particles per part polymeric material,
(2) exposing the film to a light image,
(3) removing the still soluble portions of the film,
(4) overcoating the retained film portions with a layer containing particles of screen structure material
(5) and then removing the retained film portion and overcoating thereon.

3,623,868
GELABLE PHOTOPROCESSING SOLUTIONS
Alvin Cronig, Shaker Heights, Ohio, assignor to Itek Corporation, Lexington, Mass.
No Drawing. Continuation-in-part of application Ser. No. 757,114, Sept. 3, 1968. This application Dec. 17, 1969, Ser. No. 886,002
Int. Cl. G03c *5/24, 5/38*
U.S. Cl. 96—48 **13 Claims**

Gelable photoprocessing solutions are disclosed which comprise a photoprocessing solution and an amount of a heat-reversible gel forming mixture of xanthan gum and locust bean gum sufficient to cause gelation of the solution. These solutions are easily gelled, in which state they are useful for developing, fixing, washing, etc. exposed photographic films.

3,623,869
METHOD FOR IMAGING DIAZOSULFONATE PHOTOREPRODUCTION MATERIALS
Robert S. Allard, Chicopee Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Hampshire County, Mass.
Filed Oct. 27, 1969, Ser. No. 869,483
Int. Cl. G03c *1/56, 5/00*
U.S. Cl. 96—49 **2 Claims**



Disclosed are a process for forming images in reversal diazosulfonate photoreproduction material at elevated temperature, and means for maintaining the material at elevated temperature during the imaging step.

3,623,870
TECHNIQUE FOR THE PREPARATION OF THERMALLY STABLE PHOTORESIST
Robert K. Curran, Stirling, Michael R. Goldrick, East Orange, and Robert E. Kerwin, Westfield, N.J., assignors to Bell Telephone Laboratories, Incorporated. Murray Hill, N.J.
No Drawing. Filed July 22, 1969, Ser. No. 843,779
Int. Cl. G03c *1/58*
U.S. Cl. 96—49 **8 Claims**

A thermally stable photoresist is obtained by reacting a polyamic acid with a dichromate photosensitizer, exposing the resultant product to a light source, developing with a 1-methyl-2-pyrrolidinone-solvent mixture and baking the resultant composition. The resultant photoresist may be used to produce photolithographic images with resolutions of 2μ that are thermally stable at temperatures in excess of 500° C.

3,623,871
PHOTOGRAPHIC COLOR PROCESS UTILIZING 2-PYRAZOLIN-5-ONE COUPLERS
Raphael Karel van Poucke, Berchem, and Marcel Jacob Monbaliu, Mortsel, Belgium, and Hans Glockner and Ernst Meier, Munich, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
No Drawing. Filed June 27, 1969, Ser. No. 837,300
Claims priority, application Great Britain, July 18, 1968, 34,340/68
Int. Cl. G03c *1/40*
U.S. Cl. 96—56.5 **8 Claims**

Photographic color material comprising in a light-sensitive silver halide emulsion layer or in a non-light-sensitive water-permeable colloid layer in water-permeable relationship with the said emulsion layer a magenta-forming color coupler of the 2-pyrazolin-5-one type

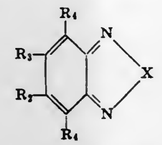
wherein said color coupler contains in the 1-position a phenyl group carrying at least one haloalkyloxy group, haloalkylthio group or haloalkylsulphonyl group. The photographic color materials as a result of the select color coupler have narrow spectral absorption curves and, therefore, show little side absorption in the undesirable regions of the spectrum and, additionally, have good moisture and light stability.

3,623,872
STABILISATION OF DEVELOPED PHOTOGRAPHIC IMAGES
Werner Berthold, Kiel, and Anita von König, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 16, 1970, Ser. No. 33,115
Claims priority, application Germany, Apr. 29, 1969, P 19 21 740.0
Int. Cl. G03c *5/38, 5/30, 1/06*
U.S. Cl. 96—61 **4 Claims**

Exposed and developed photographic silver images can be stabilised by treating the layer containing the exposed image with a compound which reacts with the silver halide in the unexposed and undeveloped areas of the layer to form a light-insensitive reaction product. Fading of the silver images thus produced is prevented by performing the development in the presence of heterocyclic carboxylalkyl mercapto compounds.

3,623,873
DEVELOPMENT PROCESS IN PRESENCE OF A NITRO-SUBSTITUTED BENZOTHIADIAZOLE OR BENZOSELENADIAZOLE
John Colin Brown and Roy Anthony Cheer, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
No Drawing. Filed June 25, 1970, Ser. No. 49,902
Claims priority, application Great Britain, June 26, 1969, 32,425/69
Int. Cl. G03c *5/30, 1/34*
U.S. Cl. 96—66.5 **5 Claims**

This application describes a process for the production of a photographic record which comprises developing photographic material having a gelatino silver halide emulsion containing a developable silver image in a silver halide developing solution the process being characterised in that it takes place in the presence of a compound of the formula:



where X represents a sulphur or selenium atom, at least one of R_1, R_2, R_3 or R_4 is a nitro group and the remainder are each selected from a hydrogen or a halogen atom, or an alkyl, aralkyl, alkoxy, mono- or di-alkylamino, acylamino or a nitro group.

3,623,874
PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE MATERIAL CONTAINING DISAZO DYES
Alfred Froehlich, Marly-le-Grand, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,866
Claims priority, application Switzerland, Apr. 8, 1968, 5,167/68
Int. Cl. G03c *1/10*
U.S. Cl. 96—73 **10 Claims**

Photographic material for the silver dye bleaching process containing cyan dyestuffs of this constitution: [1,8-aminohydroxy- or 1,8-dihydroxy-naphthalene-mono- or disulfonic acid radical]—N=N-p-benzene radical—N=N—[radical of a 2-hydroxy-3-naphthoic acid arylamide containing at least one water solubilizing group in the aryl radical]. These dyestuffs have a very low absorption in the blue and green spectral regions, are fast to diffusion, are well soluble, are stable towards cations, are fast to light and are easy to bleach.

3,623,875
BACKGROUND COLORATION INHIBITION IN DIAZOSULFONATE PHOTOREPRODUCTION
Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,902
Int. Cl. G03c *1/56, 1/60*
U.S. Cl. 96—91 **6 Claims**

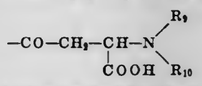
Inclusion of a neutral salt of an aromatic sulfinic acid in a reversal diazosulfonate photosensitive composition prevents background coloration.

3,623,876
SILVER HALIDE EMULSIONS CONTAINING YELLOW-FORMING COLOR COUPLERS
Francis George Hunt, Marsh, England, assignor to Ilford Limited, Ilford, Essex, England
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,486
Claims priority, application Great Britain, May 1, 1969, 22,354/69
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **2 Claims**

This application describes a yellow color coupler of the formula:



wherein B_2 is a ballasting group of the general formula:



wherein R_9 is an acyl group and R_{10} is an alkyl, cycloalkyl, aralkyl, aryl or substituted aryl group, R_6 is alkyl, aralkyl, aryl or substituted alkyl, aralkyl and aryl and R_7 and R_8 are each selected from alkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, halogen, hydrogen, sulphonamide, substituted sulphonamide or acylamide but not more than one of R_7 or R_8 is hydrogen.

3,623,877
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING ALKALINE EARTH METAL SALTS OF COLOR COUPLERS
Richard Kenneth Langley, Brentwood, and James Arthur Townsley and Roy Trunley, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
No Drawing. Filed July 18, 1969, Ser. No. 843,175
Claims priority, application Great Britain, July 24, 1968, 35,339/68
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **4 Claims**

This application describes a process for the incorporation into a gelatino silver halide emulsion of a color coupler containing a carboxylic acid group which is characterised in that it comprises reacting an alkali metal salt of the color coupler with a water-soluble alkaline earth metal salt or magnesium salt in the presence of gelatin or a colloid medium compatible with gelatin to form a dispersion of the color coupler in the colloid medium and incorporating the said dispersion in the gelatino silver halide emulsion.

3,623,878
SILVER HALIDE EMULSION CONTAINING COPOLYMER OF GLYCIDYL METHACRYLATE AND VINYL MONOMER AS HARDENER
Fumihiko Nishio, Nobuo Tsuji, Kinji Ohkubo, Kotaro Yamasue, and Tatsuya Tajima, Minami Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-machi, Japan
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,627
Claims priority, application Japan, Mar. 28, 1968, 43/20,260
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 19 Claims

A photographic light-sensitive element comprising at least one gelatin layer wherein the gelatin layer contains an aqueous solution or dispersion of a copolymer of glycidyl methacrylate or glycidyl acrylate, and a vinyl monomer. The copolymer lends enhanced hardening properties to the gelatin.

3,623,879
PROCESS OF FORMING A CONTINUOUS TONE PHOTOGRAPHIC IMAGE
Arthur D. Ketley, Clifton L. Kehr, and Jennie Lee Touchette, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Oct. 11, 1968, Ser. No. 766,948
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 21 Claims

This invention is directed toward forming a silverless continuous tone photographic image having a scale index between 0.5 and 1.5 and a gamma of 0.5–1.5 (see "Kodak Notes on Practical Densitometry," Pamphlet No. E59, pp. 1–17, Eastman Kodak Co., Rochester, N.Y., for definitions), from a supported pigment or dye filled liquid photosensitive composition consisting essentially of a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule, a photosensitizer and a pigment or dye by selectively insolublizing portions of the composition on exposure to actinic radiation and removing the unexposed liquid portion of the composition from the support.

3,623,880
METHOD OF DYEING PHOTOSENSITIVE POLYMERS AND MATERIALS SO DYED
Joseph L. Sannella and John F. I. Sharp, Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.
No Drawing. Filed Dec. 20, 1968, Ser. No. 785,797
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R 22 Claims

A method of dyeing photosensitive polymeric materials in nonpolar solvents with water-soluble dyes by including a polar solvent, whereby the dye and polymer remain dispersed upon evaporation of the solvent, the polymer remains accurately photosensitive, and the dye is not leached from the light-struck portion of the polymer in strong developing solvents, a photosensitive polymer dyed with acid violet dye, and graphic arts plates coated with such dyed photosensitive polymer.

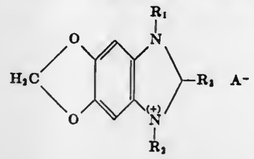
3,623,881
SILVER HALIDE EMULSIONS SENSITIZED WITH TRICARBOCYANINE DYES CONTAINING A 1-PIPERAZINYL GROUP
Arthur Fumia, Jr., Hilton, and Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 860,395, Sept. 23, 1969. This application Mar. 25, 1970, Ser. No. 22,708
Int. Cl. G03c *1/10*
U.S. Cl. 96—127 9 Claims

Novel tricarbocyanine dyes are provided having a 1-piperazinyl group group attached to the meso carbon atom of the methine linkage of the dye. Light sensitive silver halide grains are spectrally sensitized with the tricarbocyanine dyes of this invention.

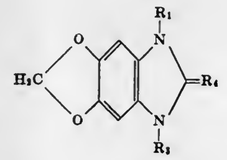
3,623,882
BENZIMIDAZOLE DERIVATIVES AND THEIR USE IN PHOTOGRAPHY
Johannes Götze, Bergstrasse-Neukirchen, Germany, and Henri Depoorter, Mortsel, and Theophiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 6, 1969, Ser. No. 864,199
Claims priority, application Germany, Oct. 26, 1968, P 18 05 548.6
Int. Cl. G03c *1/14*; C09b *23/02*; C07d *49/38*
U.S. Cl. 96—137 2 Claims

A substituted benzimidazole compound for photographic silver halide emulsions is provided in a compound according to the following general formulae:

I



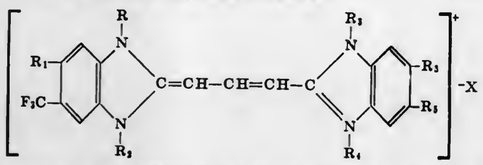
II



in which
R_1 is an alkyl group;
R_2 is a saturated or unsaturated aliphatic group;
R_3 is a methyl or methylthio group or a methine chain;
R_4 is one of the usual cyclic ketomethylene radicals of cyanine chemistry;
A^- is any anion, A being absent if R_2 contains an acid group in which case a betaine structure is present.

3,623,883
SILVER HALIDE EMULSION CONTAINING BENZIMIDAZOLE CYANINE DYES
Konrad Jerzy Bannert and Douglas James Fry, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
No Drawing. Continuation-in-part of abandoned application Ser. No. 551,217, May 19, 1966. This application Feb. 3, 1970, Ser. No. 8,443
Claims priority, application Great Britain, Mar. 16, 1966, 11,553/66
Int. Cl. G03c *1/10*
U.S. Cl. 96—137 1 Claim

Cyanine dyes of the general formula:



wherein R_1 represents a halogen atom or a lower alkyl or amine group, R and R_3 are the same or different and represent lower alkyl groups, R_2 and R_4 are the same or different and represent alkyl, hydroxyalkyl, aralkyl, carboxy-substituted aralkyl, carboxy-substituted alkyl, a group $-(CH_2)_nSO_3H$ wherein n is an integer from 1 to 6, an acylsulphonamido alkyl group of the formula $-(CH_2)_nSO_2NHCOR_8$ where n is an integer from 1 to 6 and R_8 is an alkyl group, or an alkyl or aralkyl sulphonamido alkyl group of the formula $-(CH_2)_nSO_2NHR_9$ where n is an integer from 1 to 6 and R_9 is an alkyl or aralkyl group, R_5 represents a hydrogen or a halogen atom or an alkyl or amino group, R_6 represents a hydrogen or halogen atom or a trifluoromethyl, cyano or alkoxycarbonyl group, except that when R_1 and R_5 each represent a chlorine atom and R_6 represents a trifluoromethyl group R_2 and R_4 do not represent the same alkyl group. A process for production of the dyes and a photographic gelatino silver halide emulsion containing them are also disclosed.

3,623,884
ANIMAL FOOD PRODUCTS
Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 22, 1969, Ser. No. 827,030
Int. Cl. A23k *1/16*
U.S. Cl. 99—2 AB 1 Claim

This invention relates to the use of levulinic acid in combination with potassium sorbate as an antimycotic to preserve meat and meat-like animal foods which are characterized by high degrees of palatability, nutrition and caloric value.

3,623,885
EXTRUSION OF PROTEINACEOUS MATERIALS
Mokhtar M. Hamdy, Minneapolis, Minn., assignor to Archer Daniels Midland Company, Minneapolis, Minn.
No Drawing. Filed Dec. 13, 1968, Ser. No. 783,731
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 6 Claims

In the extrusion of meat substitute products from oil seed proteinaceous materials, the extrusion of compositions containing up to about 5% fat is improved by the addition of small amounts of finely divided α-cellulose to the extrusion mix. By this means, the fat can be more economically introduced prior to extrusion rather than in a post extrusion step.

3,623,886
AMINO ACID-ENRICHED GRAINS AND PROCESS OF PREPARATION
Hisateru Mitsuda, Kyoto, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed May 19, 1969, Ser. No. 825,503
Claims priority, application Japan, May 20, 1968, 43/33,885, 43/33,886, 43/33,887; Aug. 24, 1968, 43/60,799
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 15 Claims

Amino acid-enriched grains resistant to the loss of amino acid by washing are produced by treating the grain (such as polished rice) with an aqueous or acidic solution of amino acid, soaking or spraying the amino acid-enriched grain with dibenzoylthiamine, cetyl-B_1 or thiamine naphthalene-2,6-disulfonic acid, steaming so as to gelatinize the surface layer of the grain and then drying. Preferred enriching amino acids are lysine and threonine.

3,623,887
FLOUR MIXES AND BAKED PRODUCTS CONTAINING FATTY ALCOHOL-ENHANCED EMULSIFICATION MIXTURES
Bruce D. Buddemeyer, Kansas City, Mo., Melvin S. Fish, Bethesda, Md., and David Philip Leonard, Overland Park, and Hubert H. Miers, Shawnee Mission, Kans., assignors to The Paniplus Company, Kansas City, Mo.
No Drawing. Filed Apr. 3, 1968, Ser. No. 718,380
Int. Cl. A21d *2/16*
U.S. Cl. 99—91 21 Claims

There are disclosed flour mixes for preparing baked flour products wherein the quality of the resulting baked product is enhanced by an emulsification composition consisting of a mixture of at least one fatty alcohol having from about 12 to 24 carbon atoms and one or more of three different types of aliphatic ester constituents which are (a) an acyl lactylic acid type ester; (b) a fatty alcohol mono-ester of an aliphatic dicarboxylic acid; (c) an ester constituent (i) of a mono- to di-fatty acid ester of an aliphatic alcohol, (ii) a polyoxyalkalene derivative of these type (i) esters, or (iii) any of the succinylated, lactylated or acetylated derivatives of the type (i) esters; and (d) mixtures of any of these three different types of ester constituents; and with the fatty alcohol being present in the emulsification composition to the extent of from about 1% of to about equal to the weight of the ester constituent.

3,623,888
STABLE LIQUID SHORTENING AND METHOD OF PRODUCING SAME
Edward J. Reid, Brea, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.
No Drawing. Continuation-in-part of application Ser. No. 660,181, Aug. 14, 1967. This application Apr. 24, 1970, Ser. No. 31,770
Int. Cl. A23d *5/00*
U.S. Cl. 99—118 18 Claims

A true pourable, liquid shortening which remains clear down to temperatures of about 60° F. and produces high and stabilized consistent volume baked goods irrespective of prebaking batter temperature is prepared by combining a liquid triglyceride oil, a crystal inhibitor and an emulsifying amount of an acyl lactylic acid mixture, a fatty acid mono-diglyceride and a free saturated fatty acid, containing 16 to 22 carbon atoms.

3,623,889
CONFECTION AND PROCESS FOR PREPARING SAME
Roderick Falconer, Reading, and Ernest John Hughes, Hitchin, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed June 26, 1968, Ser. No. 740,840
Claims priority, application Great Britain, June 29, 1967, 30,168/67
Int. Cl. A23g *1/00, 3/00, 5/00*
U.S. Cl. 99—134 18 Claims

Particles of fat containing effervescent material are dispersed in water ices and ice cream for release of effervescence when the ice and fat melt on consumption.

3,623,890
FROZEN FOOD CONFECTION AND METHOD FOR MANUFACTURE THEREOF
Robert B. Klein, Des Plaines, Ill., assignor to Kraftco Corporation, New York, N.Y.
No Drawing. Filed Apr. 1, 1968, Ser. No. 717,959
Int. Cl. A23g *5/00*
U.S. Cl. 99—136 4 Claims

A food composition is provided which is suitable for freezing to provide a frozen confection. The food composition comprises a crystal conditioning agent selected from mixtures of glycerin and propylene glycol. The crystal conditioning agent is provided at a level sufficient to attain a desirable soft, non-brittle, almost pliable structure in the food composition when the food composition is frozen.

3,623,891
PACKAGE AND METHOD FOR FORMING SAME
Frank O. Coffey, Glenview, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Mar. 28, 1969, Ser. No. 811,347
Int. Cl. B65b *25/06*
U.S. Cl. 99—178 11 Claims

A package for cheese is provided from metal foil wrapping material which has been coated on at least one of

its larger surfaces with a material which is corrosion resistant. The package is formed so that the lowermost edge portion of the package is turned under to provide a cuff.



The package is particularly adapted for wrapping cheese. The coating is preferably acid-impervious and is also preferably a thermoplastic material that can be heat sealed to itself at appropriate locations.

3,623,892
METHOD OF PREPARING A FROZEN FOWL PRODUCT
Carl H. Koonz, Downers Grove, and Eldon J. Strandine, Chicago, Ill., assignors to Swift & Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 602,709, Dec. 19, 1966. This application Aug. 11, 1969, Ser. No. 871,394
Int. Cl. A22c *21/00;* A23b *1/06*
U.S. Cl. 99—194 **9 Claims**

A frozen poultry product is prepared in a manner which enables easy access to the body cavity of the poultry without the necessity of defrosting. The posterior opening of an eviscerated fowl is maintained in a dilated position by inserting a tube therein, which tube may contain giblets, and through which the fowl cavity may be stuffed.

3,623,893
PRESSURE INFUSION FOOD STABILIZATION
Conrad E. Mauge, New Rochelle, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,686
Int. Cl. A23b *1/04, 7/02*
U.S. Cl. 99—204 **4 Claims**

Using superatmospheric pressure to infuse a food with solution of stabilizing solutes, while attaining a moisture reduction to a more stable level, foreshortens the requisite period for treatment and effects a more uniform treatment with fewer changes in food texture.

3,623,894
TREATING MILK
Ernst-Gunnar Samuelsson, Lund, Sweden, assignor to Food Innovation AB, Norrkoping, Sweden
No Drawing. Filed Dec. 17, 1968, Ser. No. 784,465
Claims priority, application Sweden, Dec. 21, 1967, 17,566/67
Int. Cl. A23c *3/02*
U.S. Cl. 99—212 **3 Claims**

Off-flavor development caused by heating milk is prevented by adding to the milk a compound which dissociates to provide oxidizing ions containing a halide.

3,623,895
METHOD OF PREPARING WATER-REPELLENT MOLDED ARTICLES FROM INORGANIC MATERIALS
Siegfried Nitzsche, Ewald Pirson, and Michael Roth, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,815
Claims priority, application Germany, Nov. 3, 1967, P 16 71 281.5
Int. Cl. C09k *3/18*
U.S. Cl. 106—2 **2 Claims**

Emulsions of mixtures of monomethylpolysiloxane and dimethylpolysiloxane are added to inorganic materials which cure upon addition of water to improve the water repellency of the ultimate cured product.

3,623,896
MARINE ANTIFOULANT WITH COPPER, COBALT OR MANGANESE TEREPHTHALATE
Hans A. Leipold, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed June 15, 1967, Ser. No. 646,203
Int. Cl. C09d *5/14*
U.S. Cl. 106—15 **1 Claim**

Compositions of matter including cobalt, copper, and maganese salts of terephthalic acid, the cobalt, copper, and manganese having a valence of two for use as marine antifoulants.

3,623,897
NOVEL FOAMABLE GLASS COMPOSITIONS COMPRISING COPPER
Gerald E. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 16, 1969, Ser. No. 833,648
Int. Cl. C03c *3/04*
U.S. Cl. 106—54 **3 Claims**

The invention pertains to novel sinter glass and foam glass made from an intimate blend of a copper glass and a brosilicate glass.

3,623,898
INTERIOR PLASTER COATING COMPOSITION
Nicholas A. Limberis, Bonita Springs, Fla., assignor to Durable-Dri-Hard-Wall, Inc., Miami, Fla.
No Drawing. Filed Oct. 9, 1969, Ser. No. 865,170
Int. Cl. C04b *11/10, 11/12*
U.S. Cl. 106—109 **4 Claims**

A dry plaster composition for use as an interior surface coating comprising 33–38 weight percent gypsum, 7.5–10 weight percent quicklime, 45–55 weight percent silica and 1.25–2.50 weight percent white portland cement.

3,623,899
IMINE MODIFIED CARBON BLACK COMPOUND FOR LOW FRICTION COMPOSITES
Paul Lagally, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,382
Int. Cl. C08h *17/08;* C09c *1/56*
U.S. Cl. 106—307 **6 Claims**

A cyclic imine and carbon black compound is provided which can be used as a reinforcing agent for a polyolefin material.

3,623,900
METHOD OF FACING TIRES WITH COLORED SIDEWALLS
Nelson Jonnes, Stillwater, and Robert J. Huberty, Mendota Heights Township, Dakota County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 10, 1969, Ser. No. 790,468
Int. Cl. B44c *1/08;* B44d *1/092*
U.S. Cl. 117—9 **5 Claims**

A method for forming tire sidewall facings by applying a liquid coating material in a recess formed in the tire and allowing the coating material to cure. The coating material comprises an epoxy resin and curing agent reactive with an epoxy resin, which react together to form a durable elastomeric material having high adhesion to vulcanized tire rubber.

3,623,901
FORMATION OF CHROMIUM-CONTAINING COATINGS ON BOTH SIDES OF STEEL STRIP WITH ONE COATED SIDE HAVING A BRIGHT FINISH
Julius V. D. Forstmann, Allentown, and Richard M. Willison, Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Filed Nov. 18, 1968, Ser. No. 777,550
Int. Cl. C23c *9/00, 11/04*
U.S. Cl. 117—22 **20 Claims**

In a method of forming a chromium-containing coating on steel strip, a chromium-containing powder is applied uniformly to one side of the strip and compacted thereon. The thus-prepared strip is coiled and diffusion treated in a protective atmosphere, preferably of hydrogen, and including a halogen-containing gas at a temperature and for a time sufficient to form a stainless steel coating on both sides of the strip.

3,623,902
METHOD OF MOVING A WORKING STATION WITH REFERENCE TO A SUBSTANTIALLY VERTICAL SURFACE
Paul Hammelmann, 17 Zum Sundern, 474 Oelde, Westphalia, Germany
Filed Feb. 26, 1969, Ser. No. 803,126
Claims priority, application Germany, Feb. 28, 1968, P 15 56 454.2
Int. Cl. B08b *3/02;* B05c *5/00*
U.S. Cl. 117—104 R **3 Claims**



Method and arrangement for moving a working station with reference to a substantially vertical surface, particularly the external surface of a ship hull. A vehicle is advanced in a horizontal path adjacent to and along the surface and a working station, movably supported on the vehicle, is simultaneously moved in a substantially vertical path with reference to the travelling vehicle between an upper and a lower end position whereby it moves along a substantially vertical strip of the surface. On reaching one or the other of its end positions, the working station is rapidly shifted in the direction of advancement of the vehicle and thereupon again moved in a substantially vertical path with reference to the travelling vehicle along another substantially vertical strip of the surface which is directly adjacent to but does not overlap over the first vertical strip.

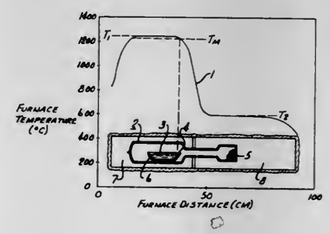
3,623,903
METHOD FOR PRODUCING LIGHT-CONDUCTING SYSTEMS, PARTICULARLY FOR ULTRAVIOLET LIGHT
Helmut Dislich, Mainz-Gosenheim, and Alfred Jacobsen, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany
No Drawing. Continuation of application Ser. No. 640,514, May 23, 1967. This application May 12, 1970, Ser. No. 36,696
Claims priority, application Germany, June 8, 1966, J 31,023
Int. Cl. C03c *25/02;* G02 *1/10*
U.S. Cl. 117—124 E **2 Claims**

Light conducting systems, particularly for ultraviolet light are produced by coating quartz glass rods and fibres with a synthetic resin having an index of refraction which is smaller than the material to be coated; the synthetic resin comprising a transparent, highly fluoridized, aliphatic synthetic substance, preferably a mixed-polymerizate made from tetrafluoroethylene and hexafluoropropylene.

3,623,904
ELASTOMERIC COMPOSITION CONTAINING SILICON CARBIDE FOR USE AS AN ABLATIVE COATING
James A. Ramseyer, Linwood, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 669,307, Sept. 20, 1967, which is a continuation-in-part of application Ser. No. 600,066, Dec. 9, 1966. This application Feb. 10, 1969, Ser. No. 798,188
Int. Cl. B32b *15/08, 27/20;* B44d *1/36*
U.S. Cl. 117—135.1 **7 Claims**

A method for protecting the surface of aerospace vehicles from the eroding effects of turbulent gases and extremely severe temperatures which method consists of coating the surface of the vehicle with an organosiloxane elastomer which has included therein specific quantities of powdered silicon carbide, silica and a high temperature decomposing fiber which melts at a temperature above 3000° F.

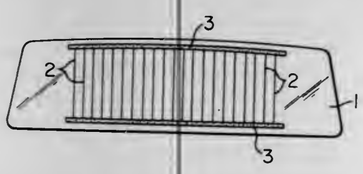
3,623,905
GALLIUM COMPOUNDS WITH REDUCED SILICON CONTAMINATION AND A METHOD OF MANUFACTURING THEM
Shinichi Akai, Toyonaka, and Takashi Shimoda, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 4, 1969, Ser. No. 873,783
Claims priority, application Japan, Nov. 6, 1968, 43/81,104; Nov. 27, 1968, 43/87,143; July 24, 1969, 44/58,563; July 29, 1969, 44/60,182
Int. Cl. B44d *1/02, 1/18;* H01l *7/36*
U.S. Cl. 117—201 **11 Claims**



This invention relates to a method of manufacturing gallium compounds such as GaAs, GaP, $Ga_{1x-x}In_xAs$, $Ga_{1-x}Al_xAs$, $GaAs_{1-x}P_x$ and $Ga_{1-x}In_xP$, with a reduced level of silicon contamination, x being a number ranging

from 0 to 1, inclusive of 0 and exclusive of 1, and gallium compound crystals prepared by the method. The method comprises such a step that when manufacturing a gallium compound in a sealed fused silica reaction tube, at least one of silicon, a silicon compound, boron, a boron compound, aluminum and an aluminum compound is added into the vessel supporting the melt of the compound, particularly the fused silica vessel, and at the same time oxygen or a metallic oxide which is unstable at the temperature of the furnace and which can form a gallous oxide (Ga_2O) atmosphere is added into the sealed fused silica reaction tube, whereby silicon in the melt is removed and a thin film of a stable oxide is formed around the melt to suppress silicon contamination for a long time. The vapor of gallous oxide reduces the concentration of free silicon in the melt, while the film of a stable oxide around the melt remarkably reduces the free space where gallous oxide can be freshly produced, silicon contamination being thus suppressed for a long time. Besides for the reduction of silicon contamination, this method can further be used for the doping with an impurity other than silicon.

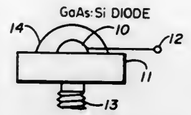
3,623,906
ELECTRICALLY HEATABLE GLASS PRODCT AND A METHOD FOR THE PRODUCTION THEREOF
Kazuyuki Akeyoshi, Yamato-shi, Kanagawa-ken, and Naonori Hayashi, Tokyo, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
Filed Oct. 21, 1968, Ser. No. 769,044
Claims priority, application Japan, Nov. 9, 1967, 42/71,632
Int. Cl. B44d *1/20*; C09j *1/00*
U.S. Cl. 117—211 **13 Claims**



A glass product which can be electrically heated for removal therefrom, or/and prevention of deposition thereon, of ice, frost and fog, which is suited for use in the window of the vehicle and particularly in the rear window of the automobile. The product consists of a single tempered glass sheet, a plurality of narrow strips of resistance composed of electroconductive frit as fired onto at least one surface of said glass sheet in mutually parallel relation at intervals of about 3 centimeters, and at least a couple of bus bars electrically connected to said strips of resistance. The bus bars are respectively made of a solder which is composed predominantly of *Pb*, *Sn*, *Zn* and *Sb*, and are directly fired onto said glass surface so that they intersect and connect with the ends of said strips of resistance near the corresponding edges of the glass sheet.

3,623,907
DOPED STRONTIUM HALIDE PHOSPHOR AND DEVICE FOR INFRARED TO VISIBLE LIGHT CONVERSION
Roderick K. Watts, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 19, 1969, Ser. No. 859,251
Int. Cl. B44d *1/02*
U.S. Cl. 117—224 **38 Claims**

Strontium chloride ($SrCl_2$) is doped with approximately 20% ytterbium (Yb) and approximately 1% of either erbium (Er) or holmium (Ho) and applied to the surface of a gallium arsenide:silicon doped diode. When

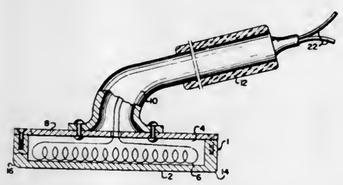


the diode is energized, the infrared energy which is emitted is converted to visible light by the doped strontium chloride phosphor.

3,623,908
ERASURE PROCESS FOR DRY TRANSFER PIGMENTED INKS
Stanley R. Hermann, Xenia, and Charles T. Fellows, Kettering, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,294
Int. Cl. B32b *35/0*; C09j *5/00*
U.S. Cl. 134—4 **15 Claims**

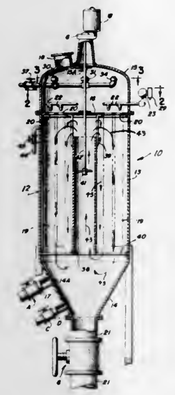
An erasure process for the substantial removal of a dry transfer pigmented ink from an encoded medium which comprises applying a composition comprising an elastomeric material and a volatile organic solvent to the encoded surface of a medium as a substantially continuous thin film. The volatile organic solvent is then evaporated from the composition thereby leaving a thin, substantially dry elastomeric film on the surface of the medium. The elastomeric film is then removed from the encoded surface thereby removing dry transfer pigmented ink from the medium contacted by the elastomeric film without any substantial damage to the erased medium.

3,623,909
METHOD OF REMOVING A COATING FROM A SURFACE
Josephine V. Jones, 2303 Piedmont Place, Wichita Falls, Tex. 76308
Filed May 26, 1970, Ser. No. 40,606
Int. Cl. B08b *7/00*
U.S. Cl. 134—5 **3 Claims**



An apparatus and method of removing paint by heat, which utilizes a heating element to heat a sheet of material, which preferably includes a metal foil and a mesh-like material such as cotton or fabric mesh to enable the heating of the paint through the metallic foil and mesh to cause the softening and liquifying of the paint to such a degree that under heat and pressure it will be directed into the mesh or fabric, and upon cessation of heating the paint for a short time, the heated paint will adhere to the mesh to enable the removal of the mesh containing the paint from a painted surface. The sheet of metallic foil, which is preferably aluminum foil, prevents the electrical heating element from becoming coated with heated paint. Also the foil acts as an efficient heat conductor to heat the paint.

3,623,910
METHOD AND APPARATUS FOR LAUNDERING DUST COLLECTORS
Roland B. Calhoun, Glencoe, and Robert H. Ernest, Hinsdale, Ill., assignors to Flex-Kleen Corp., Chicago, Ill.
Filed Nov. 28, 1969, Ser. No. 880,640
Int. Cl. B08b *3/02, 3/04*; B01d *46/04*
U.S. Cl. 134—34 **16 Claims**



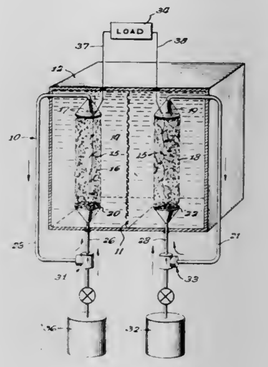
A method and apparatus is provided for laundering the interior walls and filter media of a conventional dust collector of the type that utilizes flexible bags for filtering air-borne solids. The apparatus includes a set of sprinkler heads located in the top clean air plenum for introducing fresh cleaning water in the fashion of a hard and uniform rain. The incoming water funnels into the bags and flows in backwashing relation therethrough to progressively fill the collector tank and produce a ring of water discharging outwardly through the bags and progressively sweeping the length of each bag. A draft tube is provided centrally in the intake air plenum and is equipped with an impeller to produce a circulation pattern travelling parallel to the bags.

3,623,911
HIGH-RATE CONSUMABLE METAL ELECTRODES
Harry G. Oswin, Chauncey, N.Y., assignor to Leesona Corporation, Warwick, R.I.
No Drawing. Filed Mar. 3, 1969, Ser. No. 803,954
Int. Cl. H01m *13/00*
U.S. Cl. 136—83 **9 Claims**

Zinc electrodes containing a minor amount of a metal which is capable of creating cation vacancies in a zinc oxide lattice such as gallium or tin are described. The gallium or tin additive helps to prevent passivation of the zinc during rapid discharge of the electrodes in an electrochemical cell and reduces the amount of cell electrolyte needed for efficient performance. The gallium or tin is preferably introduced into the zinc by means of alloying, e.g., by electrolytic co-reduction of zinc and gallium and/or tin compounds.

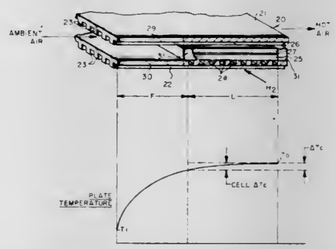
3,623,912
FUEL CELL WITH FLUID CIRCULATING MEANS
Bernard William Wessling, Winthrop, Mass., assignor to Brunswick Corporation
Filed Jan. 30, 1969, Ser. No. 795,286
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 D **2 Claims**

This disclosure describes a new fuel cell and a three dimensional fuel cell electrode. The fuel cell comprises an electrolyte and a pair of three dimensional electrodes made of catalyzed micron-size metal filaments fabricated into skeletons. The hydrogen and oxygen gases are bubbled up through their respective electrodes in a direction closely prallel to the electrode's axes. By bubbling the gases through the electrodes in this manner a large



number of three phase reaction sites are obtained for a given volume of electrode material. These reaction sites lead to higher energy and power densities while requiring less catalyst material and lower initial cost. This fuel cell utilizes a three dimensional electrode whereas conventional fuel cells are limited to utilizing effectively only a two dimensional electrode surface.

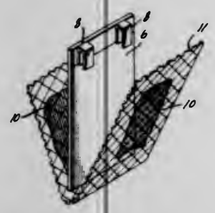
3,623,913
FUEL CELL SYSTEM
Otto J. Adlhart, Newark, and Peter L. Terry, Madison, N.J., assignors to Engelhard Minerals & Chemicals Corporation
Filed Sept. 18, 1969, Ser. No. 859,111
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **16 Claims**



In an air-breathing fuel cell stack, the air sweep simultaneously supplies oxidant and maintains the temperature and water balance in the cell. The individual cells of the stack contain an immobilized stable acid system as the electrolyte. A bipolar thermally conductive plate having a cooling fin on one side is disposed between and in contact with electrodes of adjacent cells. Gas flow channels on each of the electrode-contacting surfaces of the plates intercommunicate on the active area of the electrodes for distribution of the fuel and air over the electrodes. In a compact system, especially adapted for use

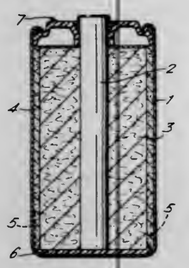
in remote areas, the fuel cell assembly is used in combination with a hydrogen generator.

3,623,914
METAL ANODE PACKAGE
William N. Carson, Jr., Schenectady, N.Y., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 19, 1970, Ser. No. 12,646
Int. Cl. H01m *29/04*
U.S. Cl. 136—120 FC 4 Claims



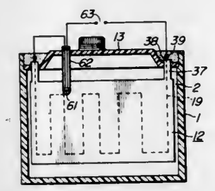
A salt package is provided for use with mechanically rechargeable primary metal-air cells. The salt package is formed from a binder-salt mixture spread as a dry solid on a portion of the nonconductive webbing which serves as a cell separator and which surrounds the replaceable metal anode. The binder, which rapidly disintegrates when wetted, is selected to be nonreactive with cell components and to provide a durable solid when dry. Means for simultaneous insertion of the salt package and replaceable anode are provided.

3,623,915
ELECTRIC DRY CELLS
Ching-Koon Pun and Ching-Chau Poon, both of P.O. Box 5538, Kowloon, Hong Kong
Filed July 16, 1969, Ser. No. 842,274
Claims priority, application Great Britain, July 11, 1969, 35,369/69
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 7 Claims



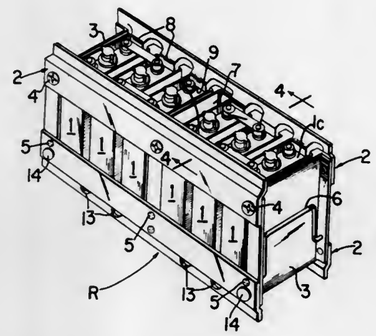
An electric dry cell having the open end of its cup electrode closed by a moulded plastics plug which is gripped around its periphery by the inturned end of the cup and has a central aperture embracing the rod electrode, annular spaces filled with sealing material being provided respectively between the periphery of the plug and the wall of the cup electrode, and between the rod electrode and the wall of the central aperture in the plug.

3,623,916
STORAGE BATTERY WITH HEATER
Tadao Toyooka and Takeo Nishida, Toyonaka-shi, and Hiroshi Ichihara, Fujisawa-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan
Filed Feb. 27, 1968, Ser. No. 708,676
Claims priority, application Japan, Mar. 2, 1967, 42/18,199, 42/18,214, 42/18,215, 42/18,216, 42/18,217, 42/18,218, 42/18,220, 42/18,221, 42/18,222, 42/18,223; Mar. 8, 1967, 42/20,258; Mar. 27, 1967, 42/19,752, 42/19,753
Int. Cl. H01m *45/02*
U.S. Cl. 136—161 1 Claim



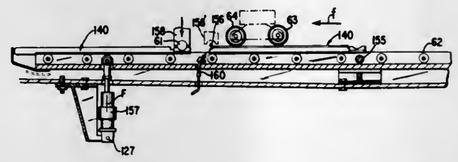
A storage battery comprising electrode plate groups including anode plates and cathode plates, a battery casing for accommodating said electrode plate groups and electrolyte, a closure covering said battery casing, and face heaters so treated as to be of electrolyte-resistance and provided in said battery casing, wherein said electrolyte is effectively heated to prevent the electromotive force from being decreased due to a decrease in temperature of said electrolyte, thereby producing a constant electromotive force.

3,623,917
RACK FOR STORAGE BATTERIES
Rene Chassoux, Talence, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romaninville, France
Filed Dec. 29, 1969, Ser. No. 888,375
Claims priority, application France, Dec. 31, 1968, 183,133
Int. Cl. H01m *1/04*
U.S. Cl. 136—171 17 Claims



A mounting rack for quick and effective mounting and support of a group of parallelepiped-shaped accumulators, particularly of the type having metal casings with recessed upper and lower end faces which embodies end pieces linked by longitudinal members which latter have inwardly facing hooking or clamping elements engaged with the casing edges defined by the recessed upper and lower end faces with the bottom parts of the hooking or clamping elements resting on the surfaces of the casing end faces. Thus, the group of accumulators are quickly assembled on the hooking or clamping elements of the lower longitudinal members and thereafter the upper longitudinal members are positioned to engage the upper casing edges and then secured to the end pieces as by bolting to provide a rigid secure support rack for the group of accumulators.

3,623,918
APPARATUS AND METHOD FOR MANUFACTURING SPIRAL WINDINGS OF ELECTRODE AND SEPARATOR STRIPS FOR ELECTROCHEMICAL GENERATORS
Jean Pierre Cailley, Ambares, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Filed Dec. 18, 1969, Ser. No. 886,196
Claims priority, application France, Dec. 20, 1968, 179,750
Int. Cl. H01m *37/00*
U.S. Cl. 136—175 16 Claims



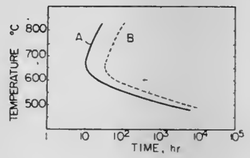
A spiral winding of superposed electrode and separator strips for electrochemical generators embodying wound electrodes and separators is effected by arranging a stack of electrode and separator strips in appropriate order on a guide rollable along a supporting bench to move the stack into proximity of a winding mandrel, whereat leading portions of the separator strips projecting forwardly of the stack on the guide are directed to and engaged by the mandrel which is then rotated causing spiral winding up of all the strips of the stack on said mandrel while simultaneously effecting translational displacement of the guide on the bench so that the guide accompanies the stack during the winding without occurrence of any translational movement of the stack in relation to the guide. Simultaneously, with this translational displacement of the guide a pivoting movement is imparted to the bench about an pivotal support whose axis is parallel to that of the mandrel so that at each instant during winding on the mandrel the electrode and separator strips of the stack on the guide arrive substantially tangentially to the spiral thereof being wound on the mandrel.

3,623,919
METHOD FOR TREATING THE SURFACE OF A FERROUS MATERIAL
Hisami Suzuki, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
Filed May 6, 1969, Ser. No. 822,215
Claims priority, application Japan, May 16, 1968, 43/33,319
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.14 R 2 Claims

A method for treating the surface of a ferrous material comprising polish-deoiling said surface, and immersing the material at room temperature in an iodine-bearing atmosphere which may be gaseous, or liquid to form a treated surface layer having excellent resistance to seizure and which inhibits peeling. The resistance to seizure of the treated surface may be further improved by low temperature heat treatment which disperses the iodine in the surface layer and causes greater penetration.



3,623,920
METHOD FOR PRODUCING A STAINLESS STEEL RESISTIVE TO HIGH TEMPERATURE AND NEUTRON IRRADIATION
Tatsuo Kondo and Toshihiko Kikuyama, Tokaimura, and Ryukichi Nagasaki, Mito-shi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Mar. 17, 1969, Ser. No. 807,528
Int. Cl. C21d *1/80*
U.S. Cl. 148—12.3 1 Claim



By subjecting a stainless steel of AISI 300 series to cold working of at least 10 percent, and a strain aging at 500° C.–800° C., and then to recrystallization treatment at 650° C.–950° C., a stainless steel has been obtained that has high-temperature yield strength approximately twice that of the conventional austenite steel of the same composition, is resistant to embrittlement due to high temperature reactor irradiation, and yet retains ductility and microstructure stability.

3,623,921
COMPOSITION FOR PREVENTING BRAZE AND DIFFUSION FLOW
Cecil Behringer, Edina, Minn., and George J. Kamin, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,583
Int. Cl. C23c *1/12*
U.S. Cl. 148—22 12 Claims

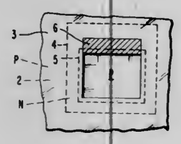
A solid material containing a rare earth compound suspended in a fugitive carrier is useful in preventing braze and diffusion flow by applying the slurried compound to the material to be brazed or diffusion coated

in a continuous layer by conventional methods. Alternative compositions are suspensions of rare earth compounds in a fugitive carrier and refractory metal oxides, admixed with rare earth compounds and mixtures thereof suspended in a fugitive carrier.

3,623,922
ALLOY WHITE CAST IRON
William M. Williams and Jean Claude Farge, Montreal, Quebec, Canada, assignors to Noranda Mines Limited
Continuation-in-part of application Ser. No. 575,461, Aug. 26, 1966. This application May 27, 1968, Ser. No. 732,143
Claims priority, application Great Britain, Sept. 20, 1965, 40,027/65
Int. Cl. C22c *37/00*
U.S. Cl. 148—35 **9 Claims**

A manganese-copper molybdenum alloy white cast iron has a substantially uniformly distributed martensitic structure and a high and uniform hardness in excess of 500 Brinell and a high resistance to abrasion and impact. A preferred range of alloying components includes between 2.5 and 5% manganese, between about 2% and about 4% carbon, up to about 2% silicon and at least one of the group consisting of 0 to 2.5% copper and 0 to 1% molybdenum wherein the total amount of copper plus molybdenum is not less than 0.1%, the balance being essentially iron and incidental impurities commonly found in cast iron.

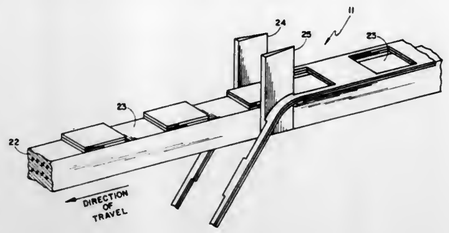
3,623,923
JUNCTION TRANSISTOR USING A THIN LAYER OF SEMICONDUCTOR MATERIAL OF A DIFFUSION-PROOF SUBSTRATE
David P. Kennedy, Wappingers Falls, and John A. Perri and Jacob Riseman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 3, 1968, Ser. No. 756,806
Int. Cl. B01j *17/00*; H01l *3/00, 7/00*
U.S. Cl. 148—175 **2 Claims**



Planar transistor having reduced junction area for small capacitance. A thin layer of semiconductor material is placed on a substrate material which is a nearly impenetrable barrier against diffusion by normally used impurity atoms. The depth of the junction is limited to approximately the thickness of the thin layer of semiconductor material, thus limiting the junction area and capacitance.

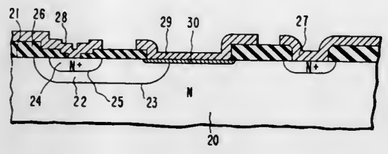
3,623,924
ELECTRICALLY INSULATING TAPE AND METHOD OF APPLYING SAME
Theo A. de Winter, Methuen, Edward J. Lucas, Wayland, and William A. Lanyi, Boxford, Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Dec. 15, 1969, Ser. No. 884,905
Int. Cl. H01b *7/03, 13/06*
U.S. Cl. 156—51 **4 Claims**

An electrically insulating tape comprising a thin ribbon of flexible electrically insulating material with adhesive on one flat surface and in contact with a low release backing material. Openings spaced one from another are provided along the length of the tape. Upon removal of the backing material, the tape is applied to an elongated surface having a dimension less than the width of the open-



ings and trimmed to leave on the elongated surface only those portions of the tape intermediate the openings.

3,623,925
SCHOTTKY-BARRIER DIODE PROCESS AND DEVICES
Robert T. Jenkins, Pasadena, and Garth H. Wilson, Los Altos, Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.
Filed Jan. 10, 1969, Ser. No. 790,318
Int. Cl. H01l *7/44*
U.S. Cl. 148—188 **14 Claims**



A Schottky-barrier diode capable of exhibiting superior reverse-bias operating characteristics and particularly suitable for large-scale integration can be fabricated by a method compatible with standard semiconductor processing techniques. Briefly, a highly conductive metallic layer overlying a region of semiconductor material is heated to a temperature sufficient to enable solid-state diffusion to occur between the semiconductor and metal, but below the eutectic point of both. A metal-semiconductor junction is thereby formed, wherein the junction lies below the original surface of the semiconductor region but has an edge at the surface, and unwanted impurities are prevented from interfering with operation.

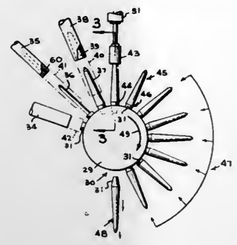
ERRATUM

For Class 156—51 see:
Patent No. 3,623,924

3,623,926
ULTRASONIC METHOD AND APPARATUS FOR ASSEMBLY OF THERMOPLASTIC MEMBERS
Thomas B. Sager, Plymouth Valley, Pa., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed Mar. 26, 1969, Ser. No. 810,692
Int. Cl. B29c *27/08*; B32b *31/16*
U.S. Cl. 156—73 **14 Claims**

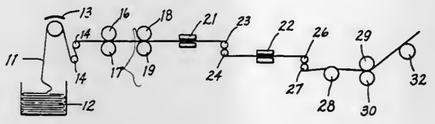
A method and means for continuously sealing of members together such as members made of plastic wherein

there is provided an automatic feeder system and a nested rotating horn which produces provides ultrasonic energy



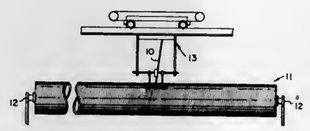
or kinetic energy in the form of shear waves so that the vibration direction of the horn is in shear.

3,623,927
METHOD OF MAKING CROSS-LAPPED SPREAD WEBS
George A. Watson, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
Original application Jan. 3, 1967, Ser. No. 606,984, now Patent No. 3,515,621, dated June 2, 1970. Divided and this application July 25, 1969, Ser. No. 871,079
Int. Cl. B32b *5/02, 31/04*
U.S. Cl. 156—161 **5 Claims**



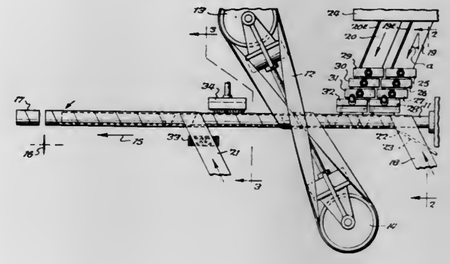
Making non-woven fabrics which look like woven cloth by striating a web of crimped parallel filaments, setting the striated web, and cross-lapping the striated web.

3,623,928
SELF-BONDED FILAMENT WOUND ARTICLE AND PROCESS FOR MAKING SAME
Robert C. Winckhofer and Gene C. Weedon, Richmond, Va., and Robin B. Mumford, Middletown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 11, 1969, Ser. No. 806,172
Int. Cl. B31c *1/00, 13/00*
U.S. Cl. 156—175 **7 Claims**



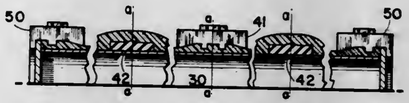
The article is manufactured by winding a filament composed of polymers wherein one polymer is dispersed as fibrils in a lower melting point polymeric matrix onto a mandrel followed by bonding of the filaments together through heating them to a temperature above the melting point of the matrix-forming polymer but below the melting point of the dispersed fibrils and permitting them to both self-bond and self-compact due to shrinkage thereof.

3,623,929
METHOD FOR PRODUCING SPIRAL WOUND CONTAINER
Thomas M. Wannamaker, Bastrop, La., and Charles I. Carter and Rupert O. Rogers, Mobile, Ala., assignors to International Paper Company, New York, N.Y.
Original application Oct. 7, 1966, Ser. No. 585,174, now Patent No. 3,428,239. Divided and this application Dec. 19, 1968, Ser. No. 813,347
Int. Cl. B65h *81/08*
U.S. Cl. 156—190 **7 Claims**



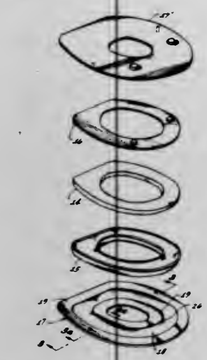
A method and apparatus for producing spiral wound containers in which a plurality of plies, coated on at least one surface with a thermoplastic coating with the inner ply coated on its inner surface with a slip or sanitary coating, are overlapped along adjoining edges and spirally wound onto a mandrel heated and adhesively secured with a thermoplastic coating to form a multi-ply spirally wound tube and the spirally wound tube is cut into can length units, the ends of the units are flared and can ends are attached.

3,623,930
COMPOSITE REINFORCED PLASTIC PIPE
James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Continuation-in-part of applications Ser. No. 641,962, and Ser. No. 641,963, now Patent No. 3,470,917, both May 29, 1967, which is a continuation-in-part of application Ser. No. 546,676, May 2, 1966, now Patent No. 3,483,986. This application Nov. 24, 1967, Ser. No. 685,402
Int. Cl. B32b *1/08*
U.S. Cl. 156—250 **6 Claims**



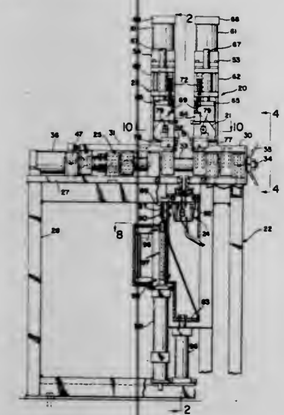
A method for forming bell and spigot fittings on a reinforced plastic pipe in which the bell fitting is formed by building up a reinforced plastic wall structure on a mandrel configured to produce a generally tubular pipe portion and an outwardly expanded bell housing portion. The spigot fitting is then formed about the wall structure of the pipe by suitable location of the bell portion of the mandrel. By appropriate location and configuration of the spigot forming molds, it is possible to form more than one complete pipe segment on one mandrel. Further, certain advantages may be obtained if the same resin used to form the reinforced plastic wall structure is used to form the spigot fitting and in addition other advantages may be obtained if the wall structure and the spigot structure are cured simultaneously.

3,623,931
METHOD OF MAKING PLASTIC CUSHION PRODUCT
Hollis L. Van Hosen, 586 Mountain View, Apt. 1, Palm Springs, Calif.
Filed Nov. 13, 1967, Ser. No. 682,012
Int. Cl. C09j 5/08
U.S. Cl. 156—306 12 Claims



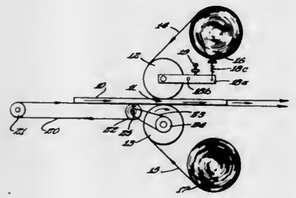
A plastic cushion product comprising a flexible polyvinyl chloride skin and a closed-cell polyurethane core which is preferably directly bonded to the polyvinyl chloride skin.
A preferred method of making the plastic cushion products comprising: molding and curing the vinyl chloride at temperatures above about 255° F. for a time sufficient to produce an open polyvinyl chloride shell of desired thickness and just sufficient to cure the polyvinyl chloride to its gild or gel stage; molding polyurethane foam at a temperature of at least 350° F. into a shape substantially conforming to the polyvinyl chloride shell; curing a second amount of vinyl chloride at the temperature and time conditions previously described to form a polyvinyl chloride cover such that the polyvinyl chloride shell and cover mate to form a completely enclosed structure; heating the completely enclosed polyvinyl chloride structure containing the polyurethane foam to a temperature of at least 350° F. to completely cure the polyvinyl chloride. The final cure bonds the polyvinyl chloride shell and cover into a substantially continuous skin and bonds the polyvinyl chloride shell and cover to the polyurethane foam to form an essentially unitary cushion product.

3,623,932
TUBE SPLICER
Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 25, 1970, Ser. No. 14,100
Int. Cl. B29h 15/04; G03c 15/04
U.S. Cl. 156—503 46 Claims



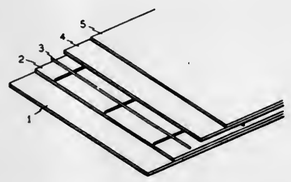
A machine for splicing rubber inner tubes. The machine has a pair of heated knives which move in parallel, generally rectangular, vertical pathways to cut exposed, aligned ends of a clamped tube immediately prior to moving and squeezing the freshly cut ends together in splicing engagement. Each knife moves vertically to a position for engaging an adjacent tube end, and then transversely across the tube. Immediately upon cutting disengagement with the tube, the knife again moves vertically and to a position out of interfering relation with the moving clamps which bring and hold the tube ends in compressive, splicing engagement.

3,623,933
LAMINATOR
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed July 5, 1966, Ser. No. 562,866
Int. Cl. B32b 31/04
U.S. Cl. 156—552 4 Claims



An automatic laminator for the lamination of sheet-form product wherein lamination occurs automatically upon the introduction of the product to a nip and a laminating apparatus and in which lamination discontinues upon passage of the product through the nip. Adjustment means are provided preventing movement of the laminating film through the laminating nip except under circumstances in which the product to be laminated is present in the nip.

3,623,934
FIRE-RESISTANT LAMINATED SHEETING
Philippe Madou, 25 Avenue Roosevelt, Gent, Belgium
Filed July 13, 1970, Ser. No. 54,468
Int. Cl. B32b 21/10, 5/22
U.S. Cl. 161—5 F 2 Claims



A fire-resistant laminated sheeting consisting of an aluminum sheet, a fire-resistant Kraft paper sheet, a metallic reinforcing grating, a sheet of asbestos, and a vinyl synthetic resin film, the layers of the laminate being bonded together by a synthetic fire-resistant bonding agent.

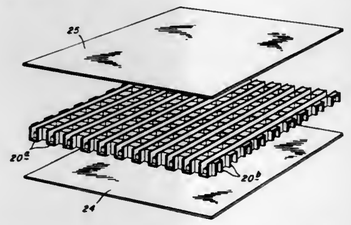
3,623,935
FLUID-ENTANGLED NONWOVEN FABRIC
William T. Allman, Jr., Charlotte, N.C.; James H. Winger, Charlotte, N.C., and William A. Burn, Jr., Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.
Continuation of Ser. No. 516,858, Dec. 28, 1965, Pat. No. 3,357,074
Filed Dec. 4, 1967, Ser. No. 687,654
Int. Cl. B32b 5/12
U.S. Cl. 161—57 2 Claims

A nonwoven fabric comprising a plurality of layers of generally parallel fiber-containing strands, the strands of one of said layers being disposed at varying inclinations with respect to the strands of an adjacent layer along the length of the fabric, and the fibers of said strands being entangled with



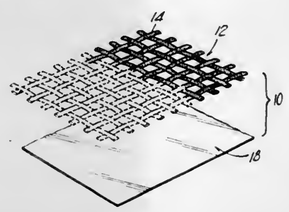
fibers of adjacent strands both in the same layer and in a different layer.

3,623,936
HONEYCOMB CORE CONSTRUCTION FOR PANELS
Peter Hotz, Wilkinsburg Borough, Pa., assignor to United States Steel Corporation
Filed July 20, 1967, Ser. No. 654,722
Int. Cl. B32b 3/12
U.S. Cl. 161—68 2 Claims



A honeycomb core for fabricated metal panels. Core is formed of channels having openings which interfit with similar reversed channels. Facing sheets have face-to-face contact with webs of channels. Panel has continuous edge-to-edge passages both lengthwise and crosswise.

3,623,937
SCREEN LAMINATE
Glen P. Gasaway, Buford, Ga., assignor to Johnson & Johnson
Filed Mar. 26, 1968, Ser. No. 716,106
Int. Cl. B32b 17/04, 17/10
U.S. Cl. 161—89 3 Claims



This invention resides in a film-screen structure defined by a screen construction of polyvinyl chloride coated fiber glass yarn heat-bonded to a polyvinyl chloride film.

3,623,938
MINERAL AGGREGATE INSULATION BOARD
Kenneth Lee Jenkins, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed May 7, 1970, Ser. No. 35,569
Int. Cl. B32b 3/26, 19/00
U.S. Cl. 161—159 11 Claims

A strong, mineral aggregate insulation board of lowered thermal conductivity is provided by incorporating 40–80 percent by weight of ultrafine particles of expanded volcanic glass that is 60 mesh and finer particle size, and 5–30 percent by weight of mineral fiber. Short absorbent vegetable fibers are included in the board for strength. Sizing agents are also often added to impart water resistance to the board, and additional adhesive tack materials, or binders, are sometimes added to further increase board strength.

3,623,939
CRIMPED SYNTHETIC FILAMENT HAVING SPECIAL CROSS-SECTIONAL PROFILE
Terumichi Ono; Tsuneo Haga; Yasuo Takagi; Kotaro Fujioka, and Hiroshi Saito, all of Nagoya-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed June 28, 1968, Ser. No. 741,068
Claims priority, application Japan, June 30, 1967, 42/41747; 42/41748; 42/41754
Int. Cl. D02g 3/00
U.S. Cl. 161—173 6 Claims



Crimped synthetic filament characterized by having special cross-sectional profile remarkably deformed from circular or polygonal ones of the conventional synthetic filaments. Peculiarity of the profile, being provided with at least tripartite branches extending from a central portion, is defined by the relations among number of crimps, measure of the cross-sectional profile, width and length of branches and areas of the cross section and of the smallest circumscribed circle.
A manufacturing method characterized by using a spinneret having orifices of special profiles and definition of the ejecting position of coagulating air.
Durable resilience to bending, enhanced covering effect of the filaments obtained with effective elimination of waxy touch or remarkable pill formation distinguished from conventional synthetic filaments are brought about by the invention.

3,623,940
INSULATED WIRE AND MANUFACTURE THEREOF
Harold M. Gladstone, Millington, and Leonard D. Loan, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 16, 1969, Ser. No. 833,473
Int. Cl. H01b 7/00
U.S. Cl. 161—175 2 Claims

Abrasion-resistant, fire-retardant conductive wire utilizes a single insulating layer of irradiation cross-linked PVC. Cross-linking is brought about by means of a difunctional monomer. Plasticizers necessary in ordinary cross-linked PVC may be eliminated in certain compositions.

3,623,941
POROUS OBJECTS FOR WRITING INSTRUMENTS
Elden Lucerne Goodenow, Los Angeles; James O'Sullivan, Culver City, and Daniel William Seregely, Los Angeles, all of Calif., assignors to The Gillette Company, Boston, Mass.
Original application June 27, 1966, Ser. No. 560,405, now Patent No. 3,558,392. Divided and this application Dec. 22, 1969, Ser. No. 886,899
Int. Cl. B43k 1/00
U.S. Cl. 161—175 5 Claims

Directed to an elongated, coherent and self-supporting object of predetermined contour and cross section composed of

a large number of longitudinally extending strands of filamentary thermoplastic devoid of added resinous binder between strands, some of said strands being heat-set or lightly sintered together to provide a plurality of longitudinally extending and interconnected channels of virtually capillary size, the pore volume of the object being between 25 percent and 95 percent of the total bulk volume of the object, its bulk density being lower than the density of the filamentary thermoplastic before the strands thereof were heat-set to the predetermined contour and cross section. An elon-

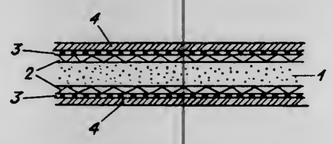


gated object as above stated, particularly adapted for use as a writing instrument tip and ink feeder, containing added resinous binder which discontinuously bonds the heat-set strands and imparts strength and nonbrushing life to the tip while pore volume of such tip is maintained at between 15 percent and 70 percent of the total volume of the tip and effective ink absorption and capillary flow of ink through the tip is maintained to permit fine-line writing for a prolonged time. Ink conveying channels of between 1 and 10 mils in average transverse dimension are preferred.

3,623,942
METHOD OF DAMPING VIBRATION AND ARTICLE
Kenneth B. Yerrick, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed July 9, 1970, Ser. No. 53,695
Int. Cl. B32b *25/20*; C08f *11/04*; E04b *1/98*
U.S. Cl. 161—206 **2 Claims**

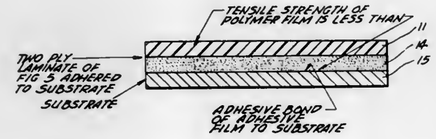
The vibration of two interacting members are dampened by interposing between the two members by an elastomer which is prepared by milling 100 parts by weight of a polydiorganosiloxane gum containing phenyl radicals, 40 to 70 parts by weight of a reinforcing silica filler, $CH_3(C_6H_5)_2SiNHX$ where X is a hydrogen atom or $-Si(C_6H_5)_2CH_3$ and from 0.1 to 5 parts by weight of an organic peroxide and heating the milled mixture above 100° C. until a cured elastomer is obtained. The articles prepared by the method have the vibration dampened.

3,623,943
MULTILAYER COMPOSITE PLATE
Dietrich Altenpohl, Feldmeilen, and Jean Schrade, Zurich, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Filed June 1, 1970, Ser. No. 41,923
Claims priority, application Switzerland, June 6, 1969, 8621/69
Int. Cl. B32b *15/08*
U.S. Cl. 161—218 **4 Claims**



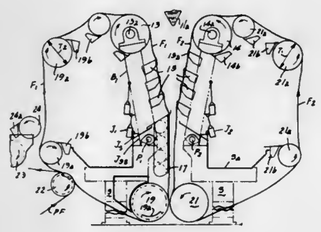
A multilayer composite plate having at least one cover layer from a nonferrous metal has a core made from a polyolefin layer with a melting region over 120° C., an adhesive layer of ethylene interpolymer containing a carboxyl group connects the polyolefin layer with the metal cover layer, and an intermediate layer from polyethylene with a melting region below 120° C. placed between the polyolefin layer and the adhesive layer.

3,623,944
PRESSURE SENSITIVE ADHESIVE COATED POLYMERIC FILM LAMINATES
Irwin J. Davis, Plainfield, N.J., assignor to Compac Corporation (c/o Laird Industries Inc.), New York, N.Y.
Filed July 1, 1964, Ser. No. 379,504
Int. Cl. B41m *3/14*; B26b *27/08*
U.S. Cl. 161—242 **6 Claims**



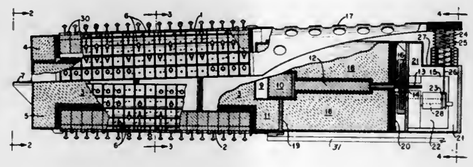
A pressure sensitive adhesive comprising a two-ply laminate, wherein the upper lamina comprises a friable polymeric film and the lower lamina, which is bonded to and in intimate face-to-face contact with said upper lamina, comprises a film of a tacky, pressure sensitive adhesive; the said polymeric film having a tensile strength, at its breaking point, which is less than the strength of the adhesive bond formed between the said pressure sensitive adhesive film and any solid substrate to which said pressure sensitive adhesive film may be adhered, thereby resulting in the mechanical rupture of said upper lamina polymeric film when an attempt is made to remove the laminate from said solid substrate; the latter assembly being particularly suited for use as a tamperproof decal or label.

3,623,945
WIRE-MOUNTING ARRANGEMENT ON A TWIN-WIRE VERTICAL PAPERMAKING MACHINE
Paul E. Tommeraasen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed July 25, 1969, Ser. No. 845,010
Int. Cl. D21f *1/00*
U.S. Cl. 162—273 **6 Claims**



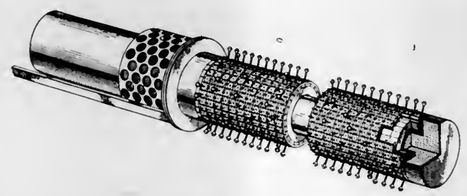
A paper-machine-forming section wherein a web is formed between two generally vertically travelling wires trained over a plurality of guides in the forming section, the guides being arranged to define a serpentinelike path of travel for the opposed wire runs carrying a newly forming web therebetween. The plurality of guides (breast rolls and foils) are all mounted for their respective functions on a pair of selectively movable beams which permit rapid wire change or the like as desired with a single operation and similarly a rapid startup after such a wire change without the necessity of individually repositioning and readjusting the individual guide means. the movable beams are rigidly attached to the breast rolls and pivotally attached to a frame. Hydraulic pistons attached to the beam and to the frame accomplish the pivotal movement of the beam. A stop member attached to the frame limits the extent of the beam's pivotal movement.

3,623,946
NUCLEAR REACTOR
Robert R. Hobson, and Thomas E. Griffin, both of San Jose, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed June 22, 1965, Ser. No. 467,821
Int. Cl. G21c *7/00*
U.S. Cl. 176—29 **9 Claims**



A nuclear reactor comprising:
an elongated cylindrical core longitudinally divided into quadrants, each core quadrant being neutronically subcritical;
means for flexibly fastening together two diametrically opposed quadrants at one end of said core and for retaining the remaining two quadrants in a fixed position;
means for driving the free ends of said flexibly fastened quadrants apart and for returning them together;
means for controlling the reactivity of said reactor core; and,
means for removing the energy generated by said reactor core.

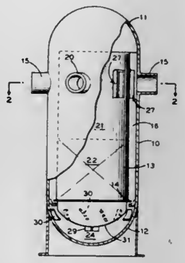
3,623,947
NUCLEAR REACTOR AND THERMIONIC CONVERTER CELLS THEREFOR
Robert R. Hobson, and Thomas E. Griffin, both of San Jose, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed June 22, 1965, Ser. No. 467,822
Int. Cl. H02n *3/00*; G21c *1/00*
U.S. Cl. 176—39 **12 Claims**



A nuclear thermionic converter has a vertical stack of annular or ring-shaped nuclear fuel members. Within the ring-shaped members is reflector material. Thermionic diodes are mounted on the periphery of the fuel rings, with the emitters being in contact with the fuel. The collectors are filled with moderating material and the reactor is cooled by heat radiation.

3,623,948
PRESSURIZED-WATER NUCLEAR REACTOR
Erroll W. Dotson, Louisville; John H. Kidwell, Alliance, and Gerald D. Lindstrom, North Benton, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Apr. 25, 1968, Ser. No. 724,026
Int. Cl. G21c *15/24*
U.S. Cl. 176—50 **8 Claims**

A pressurized-water nuclear reactor wherein the incoming relatively cool water entering the reactor is distributed for temperature equalization and controlled flow through the reactor core so as to minimize overheating of localized portions of the core.



3,623,949
PROCESS FOR THE PREPARATION OF 1-CHLORO-2-HYDROXYPROPYLPHOSPHONIC ACID
Janos Kollonitsch, Westfield, and Stephen Marburg, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Sept. 9, 1969, Ser. No. 856,472
Int. Cl. C12b *1/00*
U.S. Cl. 195—1 **3 Claims**

Racemic 1-chloro-2-hydroxypropylphosphonic acid, salts and ester derivatives thereof are prepared by reacting propenylphosphonic acid, hydrogen peroxide, and chloride ion in the presence of the enzyme chloroperoxidase. The chlorohydrin compound is useful in preparing antibacterial materials.

3,623,950
ENZYMATIC DEHAIRING PROCESS
Rolf Monsheimer, Darmstadt-Eberstadt; Ernst Pfleiderer, Darmstadt-Arheilgen, and Helmut Uhlig, Rossdorf/Darmstadt, all of Germany, assignors to Rohm Gesellschaft mit beschrenkter Haftung, Darmstadt, Germany
Filed Apr. 10, 1969, Ser. No. 815,236
Claims priority, application Germany, Apr. 13, 1968, P 17 69 160.0
Int. Cl. C12b *1/00*
U.S. Cl. 195—6 **4 Claims**

Process for dehairing skins and hides by treatment thereof, at a pH less than 5, with a mold-fungus protease showing its optimum effect at a pH below 5, with pepsin, with papain, or with a combination of these enzymes.

3,623,951
METHOD FOR PRODUCING L-GLUTAMIC ACID
Hideo Fukuda, Takasago; Toshihiko Kanzaki, Takarazuka; Hisayoshi Okazaki, Suita; Muneharu Doi, Suita, and Masaru Suzuki, Sakai, all of Japan, assignors to Takeda Chemical Industrfes, Ltd., Higashi-ku, Osaka, Japan
Filed Feb. 8, 1966, Ser. No. 525,831
Claims priority, application Japan, Feb. 10, 1965, 40/7633
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **9 Claims**

L-glutamic acid is obtained by cultivating *Brevibacterium thiogenitalis* in a culture medium containing an assimilable carbon source, a digestible nitrogen source and inorganic compound, and recovering L-glutamic acid from the culture broth.

3,623,952
METHOD OF PRODUCING L-SERINE BY FERMENTATION
Koji Kubota, and Teruo Shiro, both of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Nov. 20, 1968, Ser. No. 777,459
Claims priority, application Japan, Mar. 8, 1968, 43/76617; Nov. 29, 1967, 42/15102
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 8 Claims

When certain strains of Brevibacterium helvolum, Arthrobacter citreus, Corynebacterium sp., and *Candida pulcherrima* are cultured aerobically at pH 5–9 on an otherwise conventional aqueous medium containing 0.5 percent to 4 percent by weight glycine, L-serine accumulates in the culture broth and is readily recovered in high yields.

3,623,953
METHOD FOR ISOMERIZING GLUCOSE SYRUPS
William P. Cotter; Norman E. Lloyd, and Charles W. Hinman, all of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
Filed Oct. 7, 1968, Ser. No. 765,654
Int. Cl. C21b *1/00*
U.S. Cl. 195—31 9 Claims

The present invention is directed to a method for enzymatically isomerizing glucose in glucose-containing liquors. The presence of relatively small amounts of water-soluble salts of sulfurous acid during the enzymatic isomerization of glucose in glucose-containing liquors reduces color formation therein and increases the stability of the glucose-isomerizing enzyme.

3,623,954
PROCESS FOR MAKING 6-HYDROXY-3-KETO-Δ1,4-STEROIDS OF THE PREGNANE AND ANDROSTANE SERIES
Klaus Kieslich, Berlin, and Wolfgang Koch, Darmstadt-Arheilgen, both of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany
Filed Jan. 28, 1970, Ser. No. 12,878
Claims priority, application Germany, Jan. 27, 1969, P 19 04 544.4
Int. Cl. C07c *167/00*
U.S. Cl. 195—51 R 18 Claims

6-hydroxy-3-keto-$\Delta^{1,4}$-steroids of the pregnane or androstane series are made by fermenting a 3β-hydroxy or 3β-acyloxy-5,6-epoxy steroid of the pregnane or androstane series which is saturated in the A-ring with bacteria of the genus Bacillus, Mycobacterium or Arthrobacter or enzymes thereof.

3,623,955
PURIFICATION AND RECOVERY OF ALKALINE PROTEASE USING CATIONIC-EXCHANGE RESIN
Leonard Keay, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 14, 1968, Ser. No. 752,461
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R 6 Claims

Aqueous solution of alkaline protease, for example, a clarified beer from micro-organism production of enzymes or redissolved enzyme mixture, is treated with selected cationic-exchange resins to eliminate undesirable colored materials and any amylase present. Alkaline protease is absorbed, amylase and most pigmented impurities are not.
Use of low ionic strength solutions for absorption and neutral pH solutions, usually also of relatively low ionic strength, for elution, permits elimination of pigmented impurities and maximum protease recovery.

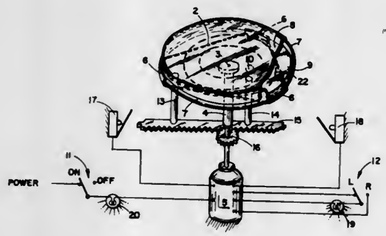
3,623,956
PREPARATION OF MICROBIAL ALKALINE PROTEASE BY FERMENTATION WITH BACILLUS SUBTILIS, VARIETY LICHENIFORMIS
George Kalabokias, Seclin, France, assignor to Societe Rapidase, S.A., Seclin, France
Filed Jan. 21, 1970, Ser. No. 4,739
Int. Cl. C12d *13/06*
U.S. Cl. 195—66 R 6 Claims

Alkaline protease is prepared by culturing a micro-organism of the species *Bacillus subtilis*, variety *licheniformis* in a nutrient medium with frequent incremental additions of carbohydrate.

3,623,957
PREPARATION OF MICROBIAL ALKALINE PROTEASE BY FERMENTATION WITH BACILLUS SUBTILIS, VARIETY LICHENIFORMIS
Louis I. Feldman, Spring Valley, N.Y., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Jan. 21, 1970, Ser. No. 4,737
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R 10 Claims

Alkaline protease is prepared by culturing a selected micro-organism of the species *Bacillus subtilis*, variety *licheniformis* in a nutrient medium optionally in the presence of cottonseed protein, and thereafter separating the alkaline protease thereby produced from said medium.

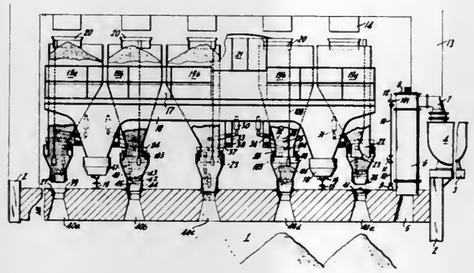
3,623,958
AUTOMATED STREAKING DEVICE FOR ISOLATING MICRO-ORGANISMS ON AN AGAR SURFACE
James E. Fitzgerald, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Mar. 20, 1969, Ser. No. 808,914
Int. Cl. C12b *1/02*
U.S. Cl. 195—103.5 R 5 Claims



Micro-organisms are streaked on an agar surface by causing a ball, the surface of which contains micro-organisms, to rotate relative to the agar plate in a nonoverlapping pattern. As the ball rotates, the micro-organisms are deposited on the agar surface so that by the end of the rotation cycle, micro-organisms are deposited in isolated amounts.

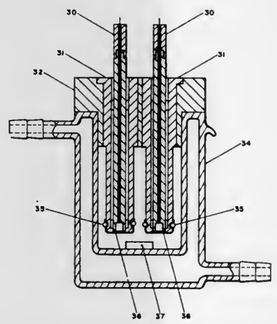
3,623,959
METHOD AND APPARATUS FOR CHARGING MATERIAL INTO A COKING FURNACE UNIT
Johannes Knappstein, Recklinghausen, Germany, assignor to Firma Carl Still, Recklinghausen, Germany
Filed Mar. 26, 1969, Ser. No. 810,588
Claims priority, application Germany, Mar. 26, 1968, P 17 71 040.6
Int. Cl. C10b *31/04*, *37/02*
U.S. Cl. 201—40 9 Claims

In a coking furnace unit having a multiplicity of furnace chambers, coal is supplied from a plurality of bunkers mounted on a movable support member. After the closure members are removed from the inlets to the furnace chambers, the bunkers are moved into sealing engagement with the inlets for supplying coal into the chambers. The charging of coal into the furnace chambers and the levelling of the coal within the chambers is carried out to avoid the emission of smoke, soot and dust from the furnaces and to maintain at



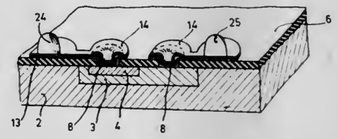
a minimum the period during which the furnaces are open to receive air from the atmosphere.

3,623,960
GLUCOSE DETERMINATION METHOD
David L. Williams, Reading, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.
Filed Apr. 7, 1970, Ser. No. 26,362
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 4 Claims



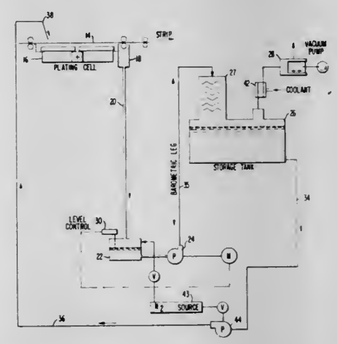
An electrochemical apparatus especially applicable for clinical use in determining glucose concentrations in solutions thereof comprising (1) a sample reservoir, (2) a glucose oxidase member consisting essentially of a well closed at the bottom by a dialysis membrane and containing an anode, glucose oxidase and a buffer solution, (3) a reference member consisting essentially of a well closed at the bottom by a dialysis membrane and containing an anode and buffer solution, (4) a cathode, (5) means for positioning the members and the cathode in the sample reservoir, (6) means for applying a voltage between the cathode and the anodes, and (7) means for measuring the electrical currents produced. The process for using the apparatus comprises adding a buffered glucose solution to the sample reservoir, immersing the cathode and the members into the solution, adding a quinone either to the members or to the glucose solution, applying a voltage between the cathode and the anodes and measuring the currents produced.

3,623,961
METHOD OF PROVIDING AN ELECTRIC CONNECTION TO A SURFACE OF AN ELECTRONIC DEVICE AND DEVICE OBTAINED BY SAID METHOD
Karel Jakobus Blok van Laer, Mollenhutseweg, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 12, 1968, Ser. No. 697,410
Int. Cl. C23b *5/48*; B01j *17/00*; H01l *3/00*
U.S. Cl. 204—15 4 Claims



A method of making copper bump contacts on a monolithic integrated circuit is described. The semiconductor is first contacted by aluminum through a hole in a covering oxide. Next, finally divided nickel is vapor-deposited onto the aluminum. Preferably, before provision of the nickel layer, the aluminum is alloyed to the semiconductor and recoated with fresh aluminum. Finally, copper is electroplated onto the nickel to form the bump. A feature is the use of the nickel as an etch-resistant mask for selective removal of the underlying aluminum.

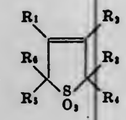
3,623,962
REDUCING ELECTROLYTIC SLUDGE FORMATION
Louis C. Beale, Grosse Ile, Mich., assignor to National Steel Corporation
Filed July 31, 1968, Ser. No. 749,017
Int. Cl. C23b *5/58*, *5/68*
U.S. Cl. 204—28 18 Claims



Method and apparatus for decreasing sludging in a stannous-tin electrolyte used in continuous-strip electroplating by continuous deaeration of the electrolyte which removes gases absorbed when the electrolyte is exposed to ambient atmosphere and by decreasing the opportunity for the electrolyte to absorb oxygen. A barometric leg, or other suitable pressure isolation means, is arranged to separate the path for continuous replenishment of electrolyte into an atmospheric pressure loop and a subatmospheric pressure loop. Desorption performance and efficiency is increased by operation at or below the vapor pressure of the electrolyte at the operating temperature for the system and by use of a vapor condenser on the vacuum side of the deaeration means used. Improved results are obtained by providing an inert gas shield during collection of electrolyte splash-over and carryout from the plating cells and also by injection of an inert gas into the electrolyte after deaeration and prior to exposure of the electrolyte to ambient atmosphere. The inert gas steps operate to reduce the opportunity for oxygen absorption.

3,623,963
PROCESS FOR THE MANUFACTURE OF PERFLUORALKYLSULPHONYL FLUORIDES
Peter Voss, Leverkusen-Wiesdorf, and Hans Niederprum, Monheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 6, 1970, Ser. No. 17,303
Claims priority, application Germany, Mar. 13, 1969, P 19 12 738.9
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 1 Claim

Process for manufacturing perfluoralkylsulphonyl fluorides which consists in electrolyzing cyclic unsaturated sulphones of the formula

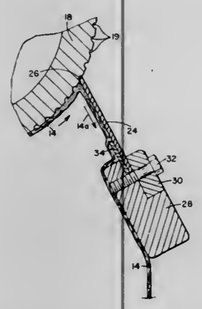


in which R_1, R_2, R_3, R_4, R_5 and R_6 independently of one another denote hydrogen or a C_1–C_6-alkyl group, in hydrofluoric acid.

3,623,964
PROCESS FOR THE MANUFACTURE OF SULFUR HEXAFLUORIDE
Hiroshi Ukihashi, Tokyo; Yoshio Oda, Yokohama, and Manabu Suhara, Yokohama, all of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
Filed June 29, 1970, Ser. No. 50,892
Claims priority, application Japan, July 3, 1969, 44/52141
Int. Cl. B01k *1/00*
U.S. Cl. 204—61 8 Claims

Elemental sulfur is introduced into a cell containing an electrolyte of the composition $KF \cdot nHF$ (wherein n=0.9 to 3), and electrolysis is carried out with use of a carbon anode to produce sulfur hexafluoride.

3,623,965
CATHODIC PROTECTION OF PRINTING APPARATUS
Erling B. Owren, Foster, R.I., assignor to Cranston Print Works Company, Webster, Mass.
Filed Oct. 8, 1969, Ser. No. 864,731
Int. Cl. B41f *9/10*; C23f *13/00*
U.S. Cl. 204—148 6 Claims

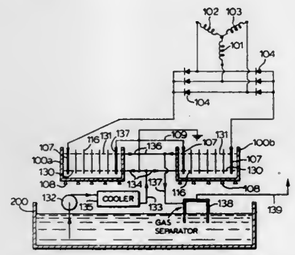


A rotary printing machine for fabrics which includes a color box containing a printing paste constituting a liquid electrolyte, a rotatable print roll having an engraved cylindrical outer printing surface, a rotatable brush roll in the color box for supplying to the printing surface an excess of printing paste as the print roll rotates, a steel doctor blade with a horizontally extending longitudinal edge positioned against the printing surface to remove the excess printing paste for gravity flow across one side of the blade in a direction perpendicular to its edge and a printing cylinder traversing and pressing a fabric web against the print roll printing surface following supplying of the printing paste thereto by the brush roll and after removal of the excess by the doctor blade. The doctor blade has a more electropositive strip of metal, such as magnesium, or aluminum, in electrical contact with the steel doctor blade spaced from the edge thereof and extending generally throughout the length thereof on said one side for flow of the excess printing paste thereacross in electrical contact therewith, thereby providing a sacrificial anode to prevent electrolytic corrosion and pitting of the doctor blade edge.

3,623,966
PHOTODIMERIZATION OF ACRYLONITRILE
William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Mar. 5, 1970, Ser. No. 16,973
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 10 Claims

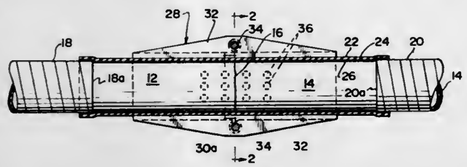
Acrylonitrile is photodimerized to 1,2-dicyanocyclobutane in the presence of an activator of $Mo(CO)_6$ or $W(CO)_6$. Preferably, a promoter such as triphenylphosphine is employed in combination with the activator.

3,623,967
ELECTROLYTIC APPARATUS FOR THE PRODUCTION OF ALKALI METAL CHLORATE WITH GROUNDING MEANS
Richard M. O. Maunsell, Toronto, Ontario, Canada, assignor to Electric Reduction Company of Canada, Ltd., Islington, Ontario, Canada
Filed Nov. 10, 1969, Ser. No. 875,257
Claims priority, application Great Britain, Nov. 8, 1968, 52,999/68
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 5 Claims



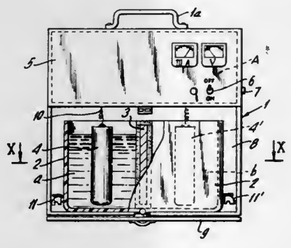
Electrolytic apparatus includes a power supply, at least two bipolar cells and at least one cell tank so arranged that the liquor in the cell tank is at ground potential, thereby avoiding the necessity and expense of insulating the cell tank from ground and also protecting certain components against corrosion.

3,623,968
SACRIFICIAL ANODE AND PIPE PROTECTED THEREBY
Alvin W. Bohne, Long Grove, Ill., assignor to The Tapecoat Company, Inc.
Filed Jan. 2, 1968, Ser. No. 695,182
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 21 Claims



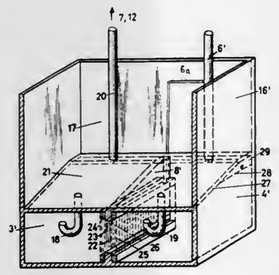
A sacrificial anode and protective coating to be applied at the joints of welded sections of mill-coated pipe for the purpose of coating the exposed mill-wrap coating cutback and cathodically protecting the pipeline against corrosion especially in underground installation. The preferred anode includes a tubular shell of sacrificial anodic material electrically contacted by integral or intermediate contacts with the pipe and having a longitudinal seam for opening and closing the anode to place it around the pipe and corrosion and electrical-resistant coating material material and around the cutback. The outer surface of the anode can have a coating of a salt material suitable for forming an electrolyte with water in the surrounding soil. In a preferred and easily installable form, the anode comprises a pair of shell halves having a coating material secured to the inner surface thereof and extending longitudinally beyond the shell halves to overlap the coating material of the pipe sections at the ends of the cutback.

3,623,969
PORTABLE APPARATUS FOR PROCESSING WATER
Tomotsuru Hushihara, Tokyo, Japan, assignor to Sandeigurafe Co., Ltd., Tokyo, Japan
Filed July 15, 1968, Ser. No. 744,886
Claims priority, application Japan, Oct. 2, 1967, 42/63216
Int. Cl. B01k *3/00*, *3/10*
U.S. Cl. 204—271 2 Claims



A method of processing water is comprised of the steps of filling water into two separate chambers formed by dividing a container made of a nonconductive material with a common porous wall and then passing direct current between electrodes each located within one of the chambers for separating the water into acidic water and alkaline water.

3,623,970
COMPACT OZONIZER FOR WATER LINES
Georg Haas, Wilheln Strasse 24, Bad Durrheim, Germany
Filed Jan. 29, 1969, Ser. No. 794,853
Claims priority, application Germany, Jan. 30, 1968, P 12 78 956.9
Int. Cl. C01b *13/12*, *13/04*; C22d *1/02*
U.S. Cl. 204—314 2 Claims

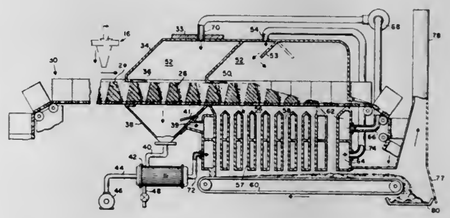


A unitary combination of an electrolyte cell and converter for liberated oxygen to ozone, with means for proportioning ozone dosage in accordance with rate of water flow in a conduit. Anode and cathode chambers are closed off at their upper portions and electrolyte levels therein vary with pressure of gases and may differ by resulting hydrostatic head.

3,623,971
USE OF CARBONATES AS pH CONTROLLER
Clement W. Bowman, Corunna, Ontario, Canada, assignor to Cities Service, Ltd., Calgary, Alberta, Canada; Imperial Oil Limited; Altantic Richfield Corporation and Royalite Oil Company, Limited, part interest to each
Filed Dec. 19, 1969, Ser. No. 886,763
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 9 Claims

The process described involves recovery of bitumen from bituminous sand in which the bituminous sand is slurried with a fluid, usually water, the resulting slurry is introduced into a separation zone containing a body of water and bitumen is floated to the top of the body of water and recovered therefrom in the form of a bituminous emulsion. The pH of the system is controlled and processability improved by the addition of calcium carbonate in amounts between about 0.01 and about 1.0 weight percent. The use of calcium carbonate is especially beneficial in situations where bituminous sands are exposed to the atmosphere for a substantial period of time before being treated for recovery of bitumen therefrom. In such instances, calcium carbonate is preferably applied to the bituminous sand immediately following exposure to the atmosphere and serves to prevent undesirable reduction of pH of the sand prior to further treatment.

3,623,972
TAR SAND RETORTING
John D. Bennett, Richardson, Tex., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Oct. 11, 1968, Ser. No. 766,694
Int. Cl. C10g *1/02*; C10b *53/06*
U.S. Cl. 208—11 8 Claims

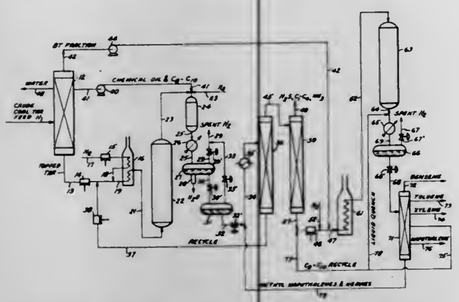


The particular embodiment described herein as illustrative of one form of the invention utilizes a system for retorting bituminous sands which includes a horizontal bed of such materials moving first through a retorting zone, and then a burning zone. Vertical openings are formed in the bed to provide for the flow of gases through the bed in the retorting operation. Heat exchangers utilize the heat of educted hydrocarbons and burning coke to supply heated gas to the retorting system.

3,623,973
PROCESS FOR PRODUCING ONE- AND TWO-RING AROMATICS FROM POLYNUCLEAR AROMATIC FEEDSTOCKS
Mehmet Orhan Tarhan, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Filed Nov. 25, 1969, Ser. No. 879,641
Int. Cl. C10g *13/06*, *37/02*; C07c *3/58*
U.S. Cl. 208—60 10 Claims

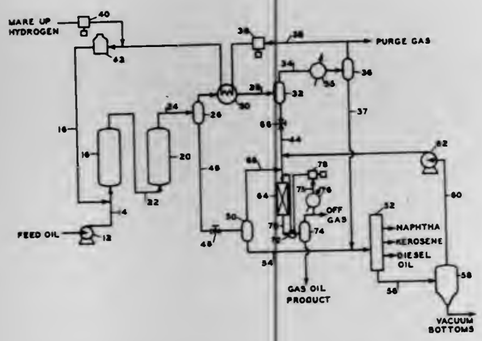
In a process for upgrading a topped-tar fraction of coal tar, topped-tar feedstock containing largely polynuclear aromatic hydrocarbons is hydrocracked in a hydrogen atmosphere in a first reaction zone at a temperature and pressure sufficient to hydrocrack the large molecules to three- and two-ring aromatic-naphthenes. The hydrocracked feed which also contains olefins, is catalytically hydrotreated in a second reac-

tion zone to saturate the olefins, and the feed is then catalytically treated in a third reaction zone at a temperature, pressure and hydrogen to hydrocarbon feed mol ratio sufficient to hydrocrack the three- and two-ring compounds to two- and one-ring aromatics, while, at the same time, naphthenes



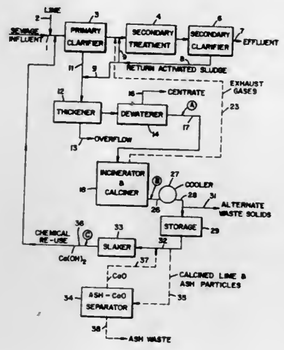
are dehydrogenated to aromatics, the alkyl aromatics are hydrodealkylated to nonsubstituted aromatic compounds, and substantially all oxygen, nitrogen and sulfur compounds unreacted in the first and second treatment zones are hydrorefined.

3,623,974
HYDROTREATING A HEAVY HYDROCARBON OIL IN AN EBULLATED CATALYST ZONE AND A FIXED CATALYST ZONE
William R. Mounce, Cranbury, and Roger P. Van Driesen, Hopewell, both of N.J., assignors to Cities Service Research and Development Company, New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,814
Int. Cl. C10g *37/06*
U.S. Cl. 208—97 **4 Claims**



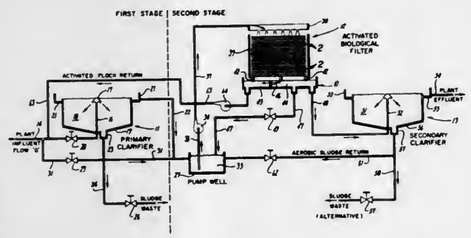
A process is shown for the hydrotreating of a heavy hydrocarbon feed in an ebullated-bed reaction zone and the fixed bed hydrotreating of a vacuum gas-oil fraction of the liquid product from the ebullated-bed reaction zone. The process comprises: treating the heavy hydrocarbon feed at high pressures above 1,700 p.s.i.g. and temperatures above 750° F. with hydrogen in the presence of the ebullated catalyst bed; withdrawing the treated liquid hydrocarbon from the reaction zone; reducing the pressure of said withdrawn liquid to 1,500 p.s.i. to flash off a hydrocarbon vapor stream containing hydrogen leaving a reduced pressure liquid hydrocarbon stream; fractionating the reduced pressure liquid stream to obtain a gas-oil fraction containing sulfur; and contacting the gas-oil fraction with the reduced pressure hydrocarbon vapor stream in the presence of a fixed bed of hydrotreating catalyst in a second reaction zone maintained at 1,500 p.s.i.g. to thereby hydrotreat the gas-oil fraction.

3,623,975
PLURAL PURPOSE SLUDGE INCINERATING AND TREATING APPARATUS AND METHOD
Paul J. Cardinal, Jr., and Robert J. Sherwood, both of Brisbane, Calif., assignors to Envirotech Systems, Inc., Brisbane, Calif.
Filed Mar. 14, 1969, Ser. No. 807,254
Int. Cl. C02c *5/02*
U.S. Cl. 210—6 **15 Claims**



Apparatus and procedure utilizing only a single furnace for incinerating and recalcining sewage sludge and lime sludge obtained from a tertiary raw sewage treating procedure. The carbon dioxide level adjacent the discharge end of the furnace is minimized to obviate recarbonation of the recalcined lime particles discharged from the furnace. The lime particles and ash particles are allowed to form in the furnace in their natural sizes so that they may be separated mechanically. Alternatively, the ash particles and lime particles are slaked together for reuse in the sewage treatment procedure.

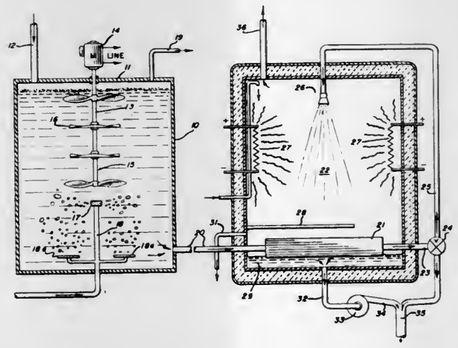
3,623,976
LIQUID WASTES TREATMENT METHOD
Joseph O. Cessna, Modesto, Calif., assignor to Del-Pak Media Corporation
Filed Oct. 30, 1969, Ser. No. 872,515
Int. Cl. C02c *1/04*
U.S. Cl. 210—7 **5 Claims**



A liquid wastes treatment system, including a two-stage, high-rate, activated, biological filter is disclosed. An activated floc, similar to that found in activated sludge processes, is built up in the biological filter by recycling substantial quantities of aerobic sludge from a secondary clarifier to the biological filter and by metering the solids wasted from the treatment system to maintain the mixed liquor, suspended solids level in the filter effluent in excess of about 1,500 mg./l. Underdrain flow from the secondary clarifier is a substantial percentage of plant influent flow and is recycled without extended mixing with plant influent or aeration prior to distribution over the biological filter. The filter media is preferably an array of lathes formed to provide many horizontal surfaces on which floc will form. When a two-

stage system is employed, including a primary clarifier, wasting is preferably accomplished by returning activated floc and biological slime sloughed from the biological filter to the primary clarifier and wasting solids from the primary clarifier, which also results in improved primary clarification.

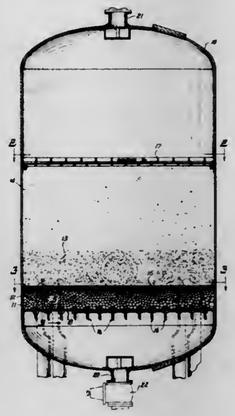
3,623,977
SEWAGE TREATMENT PROCESS
George W. Reid, Norman, Okla., assignor to FMC Corporation, San Jose, Calif.
Continuation-in-part of application Ser. No. 867,174, Oct. 17, 1969, now abandoned. This application June 25, 1970, Ser. No. 49,825
Int. Cl. B01d *1/02*; C02c *1/02*
U.S. Cl. 210—12 **13 Claims**



The method of treating waste materials such as aqueous sewage involves the steps of simultaneously comminuting and oxidizing waste suspended in an aqueous medium while said waste is being held under flow equalizing and Biochemical Oxygen Demand (B.O.D.) equalizing conditions, preheating aqueous waste withdrawn from said oxidizing zone for delivery to a radiant heating zone to a temperature level for pasteurization of said waste and above the vaporization temperature of water at the gas pressure maintained in said radiant heating zone, subjecting at least part of the preheated aqueous waste, introduced into said radiant heating zone under conditions to break up the liquid into droplet form, to direct radiant heat whereby the aqueous portion of said aqueous waste is immediately converted to vapor, the unsatisfied B.O.D. of the solid waste is substantially eliminated and viable material is destroyed, and separately discharging inert ash solids and the mixture of gases and vapor produced in said radiant heating zone.

3,623,978
METHOD AND APPARATUS FOR CLARIFYING LIQUIDS
Ronald A. Boze, New Orleans; Otis J. Waguespack, Metairie, and Robert W. Kerrigan, New Orleans, all of La., assignors to Robert-Boze, Inc., New Orleans, La.
Filed Apr. 6, 1970, Ser. No. 25,695
Int. Cl. B01d *23/16*
U.S. Cl. 210—54 **10 Claims**

Method and apparatus for clarifying a liquid passed through a filter bed having relatively fine and relatively coarse layers, in which a polyelectrolyte is introduced into the liquid before it is introduced into the filter to flow from the coarse to the fine layer, migration of coarse to fine particles is prevented by one foraminous barrier and breakup of



the fine uppermost layer is prevented by another foraminous barrier.

3,623,979
COMPOSITION AND PROCESS FOR INHIBITING CORROSION IN OIL WELLS
Jim Maddox, Jr., and William Schoen, both of Houston, Tex., assignors to Texaco, Inc., New York, N.Y.
Filed June 29, 1967, Ser. No. 649,822
Int. Cl. C23f *11/10, 11/14*; C07d *49/34*
U.S. Cl. 252—8.55 E **6 Claims**

Amide condensation products of polymeric acid and 1-aminoalkyl-2-alkyl-2-imidazoline for use in compositions of oil-soluble, brine-dispersible corrosion inhibitors. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals, in contact with sweet and sour petroliferous well fluids, form persistent films which afford excellent protection against corrosion, even at elevated temperature.

3,623,980
PRODUCT FOR PERMANENTLY ATTACHING LONG CHAIN MOIETIES TO TEXTILE MATERIALS
Arthur W. Lanner, Terrace Park, and Kenneth R. Ericson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 31, 1967, Ser. No. 642,320
Int. Cl. D06m
U.S. Cl. 252—8.75 **2 Claims**

A composition comprising a water dispersible reaction product of a primary alkyl amine having an alkyl chain containing from about 12 to about 30 carbon atoms and from about 1.25 to about 2 moles of epichlorohydrin per mole of amine; an additive selected from the group consisting of borax, urea, anionic detergent and mixtures thereof; if desired, a highly alkaline material such as sodium hydroxide; and the balance water; process for utilizing said compositions to treat textile materials especially materials which have been treated with anionic optical brighteners.

3,623,981
COMPOSITE BEARING MATERIALS
Jeremy Peter Giltrow, Bordon; Patricia Ann Grattan, Farnborough; George Henry Kinner, Aldershot, and John Keith Lancaster, Reading, all of England, assignors to National Research Development Corporation, London, England
Filed May 6, 1968, Ser. No. 727,001
Claims priority, application Great Britain, May 4, 1967, 20,693/67
Int. Cl. F16c 33/12
U.S. Cl. 252—12.2 7 Claims

Composite bearing materials having markedly reduced wear are obtained by incorporating carbon fibers of high tensile strength and Young's Modulus in a metal matrix. Advantageously a lamellar solid, for example molybdenum sulfide, may also be added. These materials may be manufactured by depositing metal by an electroless method on chopped carbon fibers and compacting the composite by heat and pressure, alternatively the composite may be compacted by powder metallurgical methods. The lamellar solid, if required, is added before compacting by heat and pressure.

3,623,982
RUST-INHIBITED CALCIUM BASE GREASES
William Patrick Scott, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed May 15, 1968, Ser. No. 729,425
Int. Cl. C10m 5/22, 5/20
U.S. Cl. 252—33.3 8 Claims

This disclosure concerns calcium base greases containing a rust-inhibiting amount of a combination of lead naphthenate and didodecyl dimethyl quaternary ammonium nitrite (or nitrate). Preferably, the grease contains, also, a fatty imidazoline alkyl diamine dicaprylate. These greases are particularly suitable for use in salt-water environments.

3,623,983
PENETRATING OIL COMPOSITION
Warren C. Pattenden, and Robert E. Emond, both of Mooretown, Ontario, Canada, assignors to Esso Research and Engineering Company
Filed Dec. 18, 1968, Ser. No. 784,937
Int. Cl. C10m 1/40
U.S. Cl. 252—33.4 9 Claims

Penetrating-oil compositions are prepared in which a mineral base oil having a viscosity between about 140 and 600 S.U.S. at 100° F. is compounded with ingredients tending to impart penetrating properties, rust inhibition and rust-dissolving properties thereto. The base oil may be blended, if desired, with a mineral distillate solvent oil, with between about 3 and about 25 percent of a rust preventive, which is a mixture of alkali metal petroleum sulfonates and carboxylic acids obtained by the oxidation of paraffin wax, and with between about 0.5 and about 25.0 percent of the mono or diesters or mixed mono and diesters of phosphoric acid and a long chain fatty alcohol in which the aliphatic chain of the alcohol contains a minimum of nine carbon atoms per molecule and wherein, before the reaction of the alcohol with the phosphoric acid, from 1 to 6 moles of an alkylene oxide of two or three carbon atoms per molecule is reacted with each mole of the alcohol. The final blended penetrating-oil composition has a viscosity of between about 50 and 200 S.U.S. at 100° F.

3,623,984
STABILIZATION OF ORGANIC MATERIALS WITH PARAPHENYLENE DIAMINE DERIVATIVES
Donald D. Carlos, Crown Point, Ind., and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company
Filed Aug. 16, 1968, Ser. No. 753,083
Int. Cl. C10m 1/38, 1/32
U.S. Cl. 252—47.5 7 Claims

This disclosure is directed to a class of novel compounds having excellent antioxidant properties. The disclosure also relates to the use of new paraphenylene diamine derivatives for the stabilization of organic materials which tend to deteriorate due to oxidation reactions. Typical of such organic materials are liquids such as lubricating oils, alcohols, polyphenyl ethers, etc., semisolids, exemplified by greases; and solids such as high molecular weight polymers.

3,623,985
POLYSUCCINIMIDE ASHLESS DETERGENTS AS LUBRICATING OIL ADDITIVES
Yngve G. Hendrickson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Mar. 29, 1967, Ser. No. 626,704
Int. Cl. C10m 1/32
U.S. Cl. 252—51.5 A 4 Claims

Compositions having three alkenyl succinimides bonded through an amine nitrogen to a central nucleus such as a triazine or phosphorous acid derivative. The compositions find use as detergents and dispersants in lubricating oils.

3,623,986
LIQUID DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY
Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 29, 1968, Ser. No. 748,237
Claims priority, application Japan, Aug. 4, 1967, 42/49787
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 1 Claim

A liquid developer for use in electrophotography and being of the type in which a toner is dispersed in a carrier liquid, said carrier liquid consisting of an organic solvent having a high electric resistance of at least $10^{10}\Omega$cm. and a low dielectric constant of a maximum of 3, said toner being selected from the group of toners of the following types (a),(b),(c) and (d):

a. Toners of the type in which pigment particles are coated, by the kneading technique, with a homopolymer of a monomer selected from the group consisting of polymeric monomers having an epoxy radical (-0-) and polymeric monomers having a carbinol radical,

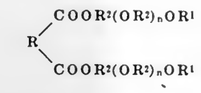
b. toners of the type that said homopolymer is graft-copolymerized to said pigment particles,

c. toners of the type in which the pigment particles are coated, by the kneading technique, with a copolymer in which is contained, by copolymerization, a monomer selected from the aforesaid group of polymeric monomers, and

d. toners of the type in which said copolymer is graft-copolymerized to the pigment particles.

3,623,987
FUNCTIONAL FLUIDS
Robert Alan Cameron Ker; Robert Carswell; John Lavington Clarke, and Peter Anthony Burt, all of London, England, assignors to Costrol Limited, London, England
Filed Jan. 8, 1970, Ser. No. 3,553
Claims priority, application Great Britain, June 18, 1964, 25,326/64
Int. Cl. C09k 3/02
U.S. Cl. 252—79 19 Claims

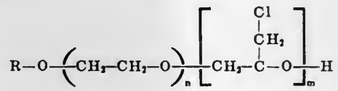
This invention is for improvements in or relating to hydraulic fluids and is particularly concerned with liquids employed as the power-transmitting medium in hydraulic brake systems for vehicles, for example, motor cars and airplanes. The hydraulic fluid of the invention contains at least 50 percent by weight of at least one ester of the formula



wherein R is an alkylene group of from two to eight carbon atoms, R^1 is an alkyl of from one to six carbon atoms or a phenyl radical, R^2 is ethylene, propylene or butylene and n is an integer of from zero to three.

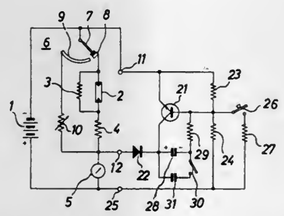
3,623,988
USE OF POLYETHER-SUBSTITUTED CHLOROHYDRINS AS A LOW-FOAM, CAUSTIC STABLE CLEANING AGENT
Dean R. Weimer, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Continuation-in-part of application Ser. No. 696,126, Jan. 8, 1968, now abandoned. This application June 8, 1970, Ser. No. 44,536
Int. Cl. C11d 1/66
U.S. Cl. 252—89 7 Claims

A new use for known polyether-substituted chlorohydrins having the structural formula



where R is a C_4—C_{20} n-alkyl group attached to the oxygen atom through a primary or secondary carbon atom, n is a number from 5 to, and including, 25, and m is a number from 1 to, and including, 5. The new use is as a low-foam, caustic stable, nonionic surfactant cleaning agent especially effective for spray cleaning metal and for rinsing in mechanical dishwasher applications wherein the cleaning agent is an aqueous solution of the polyether-substituted chlorohydrins defined by the structural formula above. The newly observed low-foam, highly wetting characteristics of these materials also render them very useful as a rinsing aid in mechanical dishwashers, where even moderate foaming cannot be tolerated.

3,623,989
FADE-IN AND FADEOUT ARRANGEMENT FOR MOTION PICTURE CAMERAS
Helmut Mayr, and Richard Pelte, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 4, 1970, Ser. No. 16,308
Claims priority, application Germany, Mar. 7, 1969, P 19 11 772.7
Int. Cl. G03b 21/36
U.S. Cl. 352—91 11 Claims



Fade-in and fadeout is accomplished by varying the current through a moving coil instrument which controls the diaphragm opening. The timing circuit which controls the fade-in and fadeout has a capacitor connected from the collector to the base of the transistor which causes the changes in current. Since the transistor has a load resistance, changes in potential at the collector are transmitted to the base, thereby increasing the time constant of the timing circuit.

3,623,990
LIQUID DETERGENT COMPOSITION
Cushman Merlin Cambre, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 26, 1967, Ser. No. 649,019
Int. Cl. C11d 3/06, 3/08, 1/84
U.S. Cl. 252—137 9 Claims

Stable, liquid detergent compositions for cleaning hard surfaces containing particulate materials (e.g., abrasives), water, alkylbenzenesulfonate detergent, zwitterionic synthetic detergent and electrolyte, which preferably comprises a detergency builder.

3,623,991
DESCALING DETERGENT COMPOSITION
Philip M. Sabatelli, Cincinnati, Ohio; Edwin R. Loder, Cincinnati, Ohio; Charles A. Brungs, Ft. Wright, Ky., and Carmen R. Sarge, Ft. Thomas, Ky., assignors to Chemed Corporation, Cincinnati, Ohio
Filed June 10, 1969, Ser. No. 832,019
Int. Cl. C02b 5/02; C11d 7/34
U.S. Cl. 252—180 4 Claims

A descaling detergent composition is disclosed which includes in combination, a tetra-alkali metal pyrophosphate, an alkali metal tripolyphosphate, and a water-soluble alkali metal polyelectrolyte polymer. Articles may be effectively descaled by an aqueous solution of the present descaling detergent with greater scale removal and better hard water control than related compositions known to the art.

3,623,992
ROCK SALT COMPOSITION AND METHOD
Richard Kolasinski, Richmond, Mich., assignor to Diamond Crystal Salt Company, St. Clair, Mich.
Filed June 1, 1970, Ser. No. 42,470
Int. Cl. C01d 3/22; C02b 1/48, 1/76
U.S. Cl. 252—182 8 Claims

A rock salt product for rejuvenating fouled ion exchange resin beds, said rock salt having a particle size within the range from about No. 8 U.S. standard screen size to about five-eighths inches U.S. standard screen size, comprising, in weight percent, about 0.1 percent to about 0.5 percent sodium bisulfate, about 0.1 percent to about 0.5 percent monosodium phosphate, about 0.1 percent to about 0.5 percent water, and a balance of said rock salt.

3,623,993
ALUMINA DESICCANT FOR DRYING UNSATURATED ORGANIC GASEOUS COMPOUNDS
Michael J. Pearson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Apr. 20, 1970, Ser. No. 29,895
Int. Cl. C01f 7/02; C09k 3/00
U.S. Cl. 252—194 5 Claims

An active alumina composite characterized by having the capability of drying and simultaneously inhibiting polymerization of organic gaseous polymerization-susceptible compounds is provided. The novel composite comprises a transition alumina substrate having a substantially chi-rho and eta structure and an alkali-modified surface, the composite containing about 3–25 percent by weight of a compound having the empirical formula $MAl(OH)_2CO_3$, where M is K or Na.

3,623,994
VERY SHORT LUMINESCENT DECAY-TIME PHOSPHOR
Martin Robert Royce, and Joseph Stanley Martin, Jr., both of Lancaster, Pa., assignors to RCA Corporation
Filed Oct. 31, 1969, Ser. No. 872,832
Int. Cl. C09r 1/68; H01j 29/20
U.S. Cl. 252—301.4 R 5 Claims

A short-decay-time ultraviolet-emitting phosphor consisting essentially of yttrium aluminum oxide activated by cerium. The phosphor may be described by the molecular formula $YA10_3$:Ce. The disclosure includes a cathode-ray tube having a viewing screen structure comprised of the new phosphor.

3,623,995
ACTIVE MEDIUM FOR A LIQUID LASER AND METHOD OF PREPARATION THEREOF

Kenneth W. French, Mineola, N.Y., assignor to GTE Laboratories Incorporated

Filed Sept. 9, 1968, Ser. No. 758,225
Int. Cl. C09k *1/08, 1/16;* **H01s** *3/00*
U.S. Cl. 252—301.4 **9 Claims**

An active medium for a liquid laser containing selenium oxychloride solvated neodymium ions in a solution of phosphorous oxychloride and a Lewis acid. The liquid active medium is prepared by first dissolving a neodymium compound in a mixture of selenium oxychloride and a Lewis acid and then evaporating the solution to form a solid. The resulting solid material is then added to a mixture of phosphorous oxychloride and a Lewis acid.

3,623,996
STRONTIUM THIOGALLATE PHOSPHORS COACTIVATED BY CERIUM AND NEODYMIUM

Robert L. Amster, New York, N.Y., assignor to GTE Laboratories Incorporated

Filed July 1, 1969, Ser. No. 838,171
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.4 S **12 Claims**

A short-persistence phosphor consisting of strontium thiogallate coactivated by cerium and neodymium. This phosphor is cathodoluminescent and is suitable for use in short-persistence cathode-ray tubes. Strontium thiogallate singly activated by neodymium is also disclosed.

3,623,997
WALL-SEALING TREATMENT FOR MINUTE CAPSULES AND MINUTE CAPSULES HAVING WALLS OF SEALED POLYMERIC MATERIAL

Thomas C. Powell, West Alexandria, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

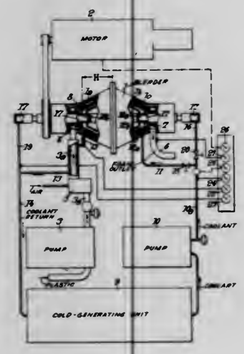
Filed June 6, 1966, Ser. No. 555,279
Int. Cl. B01j *13/02;* **B44d** *1/02;* **A61k** *9/04*
U.S. Cl. 252—316 **13 Claims**

A method is provided for treating preformed, solvent-swollen, capsule walls, en masse, with an organic solvent solution of waxy material. The capsule walls, on being subsequently dried, retain an amount of the treatment material which serves to modify physical characteristics of the capsule wall by providing a degree of hydrophobicity thereto.

3,623,998
FOAM-MAKING INSTALLATIONS

Henri J. Bourne, Trept, France, assignor to Tunzini Amelioraci, Paris, France

Filed July 26, 1968, Ser. No. 747,891
Claims priority, application France, July 27, 1967, 115995
Int. Cl. B01d ; B01f ; B01j *13/00*
U.S. Cl. 252—359 E **10 Claims**

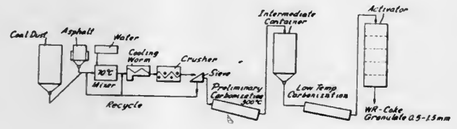


The present invention relates to an installation for making foams which comprises a blender comprising an annular mixing chamber of revolution through which said mixture circulates from the upstream end to the downstream end thereof, said annular mixing chamber being bounded by two respectively outer and inner coaxial walls preferably bearing protuberances thereon and possessed of relative rotating motion. The outer and inner walls are respectively subjected to the actions of two separate cooling circuits each equipped with individual means for adjusting its effectiveness, said two cooling circuits and the individual adjustment means thereof being so devised as to enable said outer and inner walls to be maintained substantially at the same temperature within the full speed range of said blender, said temperature being lower than a critical index temperature above which the physical properties of the mixture are affected.

3,623,999
PROCESS OF MAKING A BALL-SHAPED ADSORPTION COKE

Harald Juntgen; Joachim Karweil, and Dieter Zundorf, all of Essen, Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Sept. 29, 1969, Ser. No. 864,274
Claims priority, application Germany, Oct. 1, 1968, P 18 00 238.5
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 **14 Claims**



A carbonaceous material of a grain size below 100 μ is mixed with a reversibly softening binding agent at a temperature above the softening point of the binding agent and in the presence of water or water vapor. There results a doughy mass which is comminuted to the desired grain size. The comminuted material is then subjected to a preliminary low temperature carbonization followed by carbonizing or coking the material and then activating it.
The process permits obtaining of small size substantially ball-shaped adsorption coke in a highly economical manner.

3,624,000
NOVEL CATALYST FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 11, 1969, Ser. No. 857,230
Int. Cl. C08d *1/14*
U.S. Cl. 252—429 B **1 Claim**

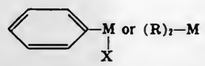
There is disclosed a process for the polymerization of butadiene and butadiene in mixture with other conjugated diolefins to form polymers containing at least 90 percent of the butadiene units in the cis-1,4 configuration comprising contacting at least one diolefin under polymerization conditions with a catalyst system comprising (A) at least one compound selected from a group consisting of trialkylaluminum compounds and tetraalkyllithium aluminum compounds (B) at least one compound selected from a group consisting of nickel salts of carboxylic acids, nickel tetracarbonyl and organic complex compounds of nickel selected from a group consisting of bis(alpha-furyl) dioxime nickel, nickel acetylacetonate, bis(salicylaldehyde) ethylene diimine nickel and nickel salicylaldehyde and (C) at least one compound selected from a group consisting of metal fluoroborates, metal fluorophosphates, metal fluoroantimonates and organic derivatives of fluorophosphates and fluoroantimonates wherein the metal is selected from a group consisting of lithium, beryllium, calcium, magnesium, nickel and cobalt.

3,624,001
POLYMERIZATION CATALYSTS

Gert G. Eberhardt, Philadelphia, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 23, 1965, Ser. No. 504,071
Int. Cl. B01j *11/00;* **C08f** *7/04, 19/00*
U.S. Cl. 252—431 **19 Claims**

Substantially soluble olefinic polymerization catalysts are obtained with an organo-calcium or -barium compound of the structure



where M is calcium or barium, X is chlorine, bromine or iodine and R is a hydrocarbon radical having 1–30 carbon atoms and a nonaromatic, tertiary chelating diamine.

3,624,002
RELATIVELY CONCENTRATED SOLUTIONS OF LITHIUM ALKYL ALUMINATES AND THEIR PREPARATION

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Ex, Pa.

Filed Mar. 27, 1969, Ser. No. 811,247
Int. Cl. C07f *5/06*
U.S. Cl. 252—431 R **23 Claims**

Solutions of lithium alkylaluminates soluble in concentrations higher than 6 percent by weight are prepared by combining certain specific alkyl lithium compounds with certain specific trialkylaluminum compounds, dialkylaluminum hydrides or dialkylaluminum chlorides in the presence of an alkane solvent or a mixture of an alkane with up to about 66 percent of an aromatic hydrocarbon solvent.

3,624,003
ZEOLITIC DESICCANT BODIES AND PROCESS FOR PREPARING SAME

Robert Mark Conde, Tonawanda, N.Y., and Wilfred Drost, Mobile, Ala., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,612
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **8 Claims**

Adsorbent bodies suitable for use in drying refrigerants comprise an agglomerate core of zeolitic molecular sieve crystals having thereon over substantially its entire outer surface a hardened permeable coating of a thermally deactivated boehmite alumina, said coating being hardened by having impregnated therein cured potassium silicate.

3,624,004
PROCESS FOR THE PRODUCTION OF ACTIVE CARBONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 16, 1968, Ser. No. 706,145
Int. Cl. C01b *31/08, 31/10*
U.S. Cl. 252—445 **15 Claims**

Process for the production of active carbons by the controlled oxidative activation with carbon dioxide of pyrolyzed salts of aromatic acids including monocarboxylic acids such as benzoic acid; polycarboxylic acids such as terephthalic, isophthalic, trimesic, or trimellitic acids; polynuclear carboxylic acids such as naphthoic acid; and polycarboxylic acids, such as coke acid. Carbons having surface areas in excess of 2000 m.²/g. may be obtained. The active carbons are particularly suitable for water purification.

3,624,005
GRAPHITE-GLASS COMPOSITIONS AND METHOD OF MAKING SAME

Yves Georges Godron, Paris, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Aug. 23, 1962, Ser. No. 218,844
Claims priority, application France, Aug. 29, 1961, 871811
Int. Cl. H01b *1/06;* **H01c**
U.S. Cl. 252—506 **6 Claims**

Compositions which can be shaped, machined, polished, cut, which have the same level of conductivity as graphite even for high contents of glass, which resist oxidation much better than graphite, and which have good water resistance, are made by impregnating graphite with glass which makes with graphite, when molten, an interior angle less than 45°. These compositions are superior to both glass and graphite for many uses. The invention reveals a group of glasses which have the property of wetting graphite. These compositions are useful as electric motor brushes, bearings and rods, bars, and plates.

3,624,006
STABLE OPACIFIED LIQUID DETERGENT COMPOSITIONS

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Corporation, New York, N.Y.

Filed July 7, 1969, Ser. No. 839,670
Int. Cl. C11d *1/34, 3/1066*
U.S. Cl. 252—529 **1 Claim**

Stable, opaque aqueous detergent compositions comprising alkali metal polyphosphate, alkylbenzene sulfonate, higher molecular weight fatty acid alkanolamide and a phosphate ester of an ethoxylated linear or branched chain aliphatic alcohol in the ranges of proportions as set forth hereafter.

3,624,007
ELECTRICAL CONTACT MATERIAL AND METHOD OF MAKING AND UTILIZING THE SAME

Edward Meyer, Russell, Pa., assignor to Sylvania Electric Products Inc.

Original application Dec. 14, 1967, Ser. No. 690,513, now Patent No. 3,523,357, dated Dec. 14, 1967. Divided and this application Jan. 7, 1970, Ser. No. 1,261
Int. Cl. H01b *1/02;* **C09c** *1/62*
U.S. Cl. 252—513 **2 Claims**

A composition of matter comprised of a powdered metal and a powdered glass formed by intimately mixing the two powdered materials together with a binder material, pressure forming into an article and sintering the article to its final form. The article is used ideally as an active electrical element and may be sealed to glass without any intermediate sealing material being utilized.

3,624,008
CATALYST AND METHOD FOR THE POLYMERIZATION OF ETHYLENE OXIDE

Adolfas Damusis, Detroit, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed June 30, 1969, Ser. No. 837,883
Int. Cl. C08g *23/14, 23/06*
U.S. Cl. 260—2 A **9 Claims**

A novel catalytic system comprising (a) a divalent alkaline earth metal, (b) anhydrous ammonia and (c) an organic dioxide is used to polymerize ethylene oxide to hard, granulated polymers having a final average molecular weight of from about 1 million to 10 million. The polymers are prepared by contacting the ethylene oxide with a suspension comprising the catalyst system and a nonsolvent for the polymer, thereby forming low-molecular weight polymers which are then built up by the addition thereto of further amounts of the oxide.

3,624,009
METHOD FOR RECLAIMING COMMERCIALLY USEFUL FIBERS AND RESIN FROM SCRAP MATERIAL
Wilbur B. Sussman, Dayton; Craig D. Belcher, Cincinnati, and George E. Brown, Jr., Cincinnati, all of Ohio, assignors to Fiber Process, Inc., Piqua, Ohio
Continuation-in-part of application Ser. No. 687,299, Dec. 1, 1967, now abandoned. This application Nov. 4, 1969, Ser. No. 873,800
Int. Cl. C08f *47/24*
U.S. Cl. 260—2.3 10 Claims

Scrap fabrics supported synthetic resin are first washed with solvent under controlled heat, pressure and agitation to produce as a first product clean, dried, resin and solvent free fibers. The polymer solution extracted from the washing stage is treated in one or more stages to produce as a second product granular, clean, dried resin compound. Clean solvent is recovered for recirculation through the system.

3,624,010
SILICONE FOAMS
Norman G. Holdstock, Scotia, N.Y., assignor to General Electric Company
Continuation of application Ser. No. 598,193, Dec. 1, 1966, now abandoned. This application Feb. 12, 1970, Ser. No. 10,063
Int. Cl. C08f *47/10*; C08j *1/22*
U.S. Cl. 260—2.5 7 Claims

An organopolysiloxane foam is made by mixing a carboxyalkylpolysiloxane, a diisocyanate and a tertiary amine; allowing the composition to foam; then curing the foamed composition. The foamed product makes an excellent thermal barrier, electrical insulator and shock absorbing mounting for electronic circuits.

3,624,011
CEMENT FOR NIPPLE JUNCTIONS OF CARBON ELECTRODES
Fritz Schipke, Meitingen uber Augsburg, Germany, assignor to Siemens-planiawerke Aktiengesellschaft fur Kohle-Fabrikate, Meitingen uber Augsburg, Germany
Continuation of application Ser. No. 561,497, June 29, 1966, now abandoned. This application Aug. 7, 1970, Ser. No. 62,135
Claims priority, application Germany, June 30, 1965, S97,909
Int. Cl. C08f *45/52*; C08q *51/14*
U.S. Cl. 260—9 R 5 Claims

Described is a carbonaceous cement for nipple junctions between carbon electrodes. The cement comprises, by weight, a mixture of 20 to 30 percent of a furfuraldehyde thermosetting condensation resin having a viscosity of 50 to 500 cp. 25 to 60 percent pitch having a melting point of 120 to 180° C. (according to Kramer-Sarnow), 10 to 40 percent carbon filler material, and 5 to 25 percent dextrin. The mixture is of a plastic consistency so as to be pressable into the shape of pins and is useful at relatively low operating temperatures.

3,624,012
PROCESS FOR PREPARING HALOGENATED COPOLYMERS OF OLEFINICALLY UNSATURATED CYCLOALIPHATIC MONOANHYDRIDES WITH CYCLIC MONOETHERS
Leslie C. Case, 14 Lockeland Road, Winchester, Mass.
Filed Nov. 21, 1969, Ser. No. 878,895
Int. Cl. C08f *3/70, 27/02*
U.S. Cl. 260—17.4 20 Claims

An improved two-step process for the preparation of halogen-containing copolymers with hydroxylic and/or carboxylic acid end groups is described. This process involves the addition of halogen to polyester-ether copolymers derived from olefinically unsaturated cycloaliphatic dicarboxylic acid monoanhydrides.

3,624,013
HEAT-HARDENABLE WATER-DISPERSIBLE RESINS DERIVED FROM POLYHYDRIC POLYETHERS AND MIXTURES THEREOF WITH BENZOGUANAMINE-FORMALDEHYDE CONDENSATES PARTICULARLY ADAPTED FOR ELECTRODEPOSITION
Kazys Sekmakas, Chicago; Edward A. Gauger, Jr., Chicago, and Lester A. Henning, Arlington Heights, all of Ill., assignors to DeSoto, Inc.
Filed Feb. 10, 1967, Ser. No. 615,048
Int. Cl. C08g *17/007, 17/16, 37/34*
U.S. Cl. 260—18 20 Claims

Aqueous dispersions especially adapted to be electrodeposited at the anode to form corrosion resistant coatings after baking to cure the same are formulated based on water-dispersible condensation resins which are formed by esterifying a first part of the hydroxy functionality of a linear polyhydric polyether with a monocarboxylic acid such as a drying oil fatty acid. A second part of the hydroxy functionality is then consumed by reaction with a monoanhydride such as trimellitic anhydride providing a polycarboxylic intermediate which is reacted with a monoepoxide such as ethylene oxide, propylene oxide, butylene oxide or a glycidyl ester of a tertiary carboxylic acid to reduce the acid number to a value below 50 and to generate hydroxy functionality remote from the linear backbone of the polyether. The condensation resin is dispersed in water with the aid of a small amount of nitrogenous base, such as ammonia or an amine and the dispersed resin is heat-hardening per se. Cure is preferably effected using a water dispersible and nonwater-soluble heat-hardening benzoguanamine-formaldehyde resin which deposits in direct proportion to its concentration and which increases the resistivity of the film which is deposited to provide an opportunity for limiting film thickness at the voltage selected for electrodeposition.

3,624,014
REACTIONS PRODUCTS OF AN ORTHO-SILICATE AND A HYDROXY TERMINATED DIENE POLYMER AND THE PREPARATION THEREOF
Robert A. Moore, Park Forest, and Patrick W. Ryan, Chicago Heights, both of Ill., assignors to Atlantic Richfield Company
Filed Aug. 23, 1968, Ser. No. 754,982
Int. Cl. C08f *21/01*
U.S. Cl. 260—18 S 10 Claims

Stable polymeric gels are obtained as reaction products of tetraalkyl ortho-silicates, such as tetraethyl ortho-silicate, and an intermediate polyhydroxy polymer having an average of at least about 1.8 predominantly primary, terminal, allylic hydroxyl groups per molecule. These intermediate polyhydroxy polymers are addition polymers containing 0 to about 75 percent by weight of the residue of an alpha-monoolefin of two to about 12 carbon atoms, such as styrene or acrylonitrile, and about 25 to 100 percent by weight of the residue of a 1,3-diene of four to about 12 carbon atoms, such as butadiene. The intermediate polyhydroxy polymer has the majority of its unsaturation in the main carbon chain, has a viscosity at 30° C. of about 5–20,000 poises, and has a number average molecular weight of about 400 to 25,000. The equivalent ratio of tetraalkyl ortho-silicate to the intermediate polyhydroxy polymer can be varied broadly, such as from about 0.25 or lower to 3 or more, and preferably is about 1 to 2. Reaction resulting in gel formation occurs at ambient temperatures, such as 20° C., or higher, in contact with a catalytic amount of an alkanoic acid metal salt of tin, lead or cobalt, such as stannous octoate or dibutyl tin dilaurate. These polymeric gels vary from sticky gels to firm gels and, as they can be prepared at ambient temperatures, have utility in coatings and in casting of heat-sensitive articles. They can be mixed with asphalt or with rubber for use in rubber articles as rubber floor tile. These stable polymeric gels are also suitable, as prepared, for use as potting and encapsulating compounds.

3,624,015
FINISH/POLISH FOR WHITE LEATHER
James R. Vaughn, and Mary V. Durkin, both of Greensboro, N.C., assignors to Dow Corning Corporation, Midland, Mich.
Filed Apr. 9, 1969, Ser. No. 814,799
Int. Cl. C08c *11/70*; C08f *45/52*
U.S. Cl. 260—28.5 R 8 Claims

A finish/polish for white leather is disclosed which is an aqueous emulsion consisting essentially of (1) 5 to 15 percent by weight of a silicone-acrylate graft copolymer which consists essentially of 20 to 50 percent by weight of a silicone which consists essentially of 88 to 97 mol. percent of dimethylsiloxane units and 3 to 12 mol. percent of methylvinylsiloxane units, and 50 to 80 percent by weight of an acrylate which consists essentially of 58 to 62 percent by weight of ethyl acrylate, 32 to 40 percent by weight of methylmethacrylate and 2 to 6 percent by weight of a compound selected from the group consisting of methacrylic acid, acrylic acid and acrylonitrile, (2) 0.1 to 1.5 percent by weight of a leveling agent, (3) 2 to 4.5 percent by weight of ethylene glycol or a glycol ether, (4) 10 to 20 percent by weight of titanium dioxide, (5) 0 to 10 percent by weight of a wax, and (6) the balance water. The finish/polish can also contain as an optional ingredient from 1 to 3 percent by weight of a siloxane copolymer which consists essentially of 20 to 40 mol. percent of trimethylsiloxane units and 60 to 80 mol. percent of monomethylsiloxane units. The finish/polish of this invention does not tend to rub off and is, therefore, longer lasting, is essentially self-shining needing little or no buffing and provides a smooth finish with little or no evidence of powder or streaking.

3,624,016
POLYURETHANES AS TEXTILE ASSISTANTS
Baak W. Lew, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
Filed Sept. 2, 1969, Ser. No. 854,788
Int. Cl. C08g *22/04*
U.S. Cl. 260—29.2 TN 11 Claims

Essentially water-soluble methylolated low molecular weight polyurethanes formed from polyol carbonates and amines are described, and a method for treating fabrics with these methylolated polyurethanes or with methylolated polyol urethanes to enhance the abrasion resistance, crease recovery, softness and other properties of the fabrics is disclosed.

3,624,017
FAST CURING SILOXANE RELEASE EMULSIONS
Martin E. Sorkin, Greensboro, N.C., assignor to Dow Corning Corporation, Midland, Mich.
Filed Nov. 24, 1969, Ser. No. 879,547
Int. Cl. B32b *7/06*; C08g *47/04*; D21h *1/28, 1/34*
U.S. Cl. 260—29.2 M 8 Claims

Emulsion copolymers of from 80 to 98 mol. percent dimethylsiloxane and from 2 to 20 mol. percent $RSiO_{3/2}$ will cure on substrates under the influence of SiOH condensation catalysts in 30 seconds or less at 200° F. to give release values of less than 50 g. per inch. For example, an emulsion of a copolymer made by emulsion copolymerizing cyclic dimethylsiloxanes and methyltrimethoxysilane in amount to give 96 mol. percent dimethylsiloxanes and 4 mol. percent monomethylsiloxane will cure on paper in 20 seconds at 200° F. to give a release to J and J adhesive tape of 26 g. per inch.

3,624,018
CEMENTITIOUS COMPOSITIONS AND METHODS
Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 486,530, Sept. 10, 1965, now Patent No. 3,511,313. This application Mar. 6, 1970, Ser. No. 17,290
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 E 5 Claims

The sealing of void spaces, e.g. as in geological formations and/or between metal shapes is accomplished with a liquid slurry of a particulate, water-soluble organic polymer in an organosolvent The mixture of the polymer and solvent has a controlled set time to allow the emplacement of the slurry as a liquid. The slurry then sets to form a sealing cementitious material.

3,624,019
PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS
Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed Dec. 15, 1970, Ser. No. 92,031
Int. Cl. C08f *47/16, 47/18*
U.S. Cl. 260—29.6 H 6 Claims

Water-soluble vinyl addition polymers and gums may be rapidly dissolved in water by first dispersing these polymers into a water-in-oil emulsion and then inverting these emulsions in water. The inversion of the emulsion releases the polymer into water as a solution.

3,624,020
MODIFIED AQUEOUS DISPERSIONS
Wolfgang Klebert, Leverkusen; Karl Schafer, Krefeld, and Wolfram von Langenthal, Cologne-Bickendorf, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 27, 1967, Ser. No. 671,153
Int. Cl. C08f *1/00*
U.S. Cl. 260—29.6 6 Claims

A process for preparing modified aqueous dispersions of polymers and copolymers by reacting an aqueous dispersion of the polymers or copolymers with the reaction product of a high molecular weight compound containing at least two active hydrogen atoms and an excess of an organic polyisocyanate.

3,624,021
POWDERED GLASS FOR USE IN DRAFTING SURFACES AND IN A DIAZO TYPE MATERIALS
Andrew M. Barba, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 48,575, Aug. 10, 1960, now abandoned. This application July 6, 1965, Ser. No. 469,914
Int. Cl. C08c *11/28, 11/32*
U.S. Cl. 260—32.8 N 3 Claims

Sheet material, useful for drafting, and diazo-type materials, having dispersed therein glass powder in a particle size range of 1 to 20 microns.

3,624,022
ROOM TEMPERATURE CURING ORGANOPOLYSILOXANES
Marcus E. Ross, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Continuation-in-part of application Ser. No. 1,841, Jan. 9, 1970, now abandoned. This application Apr. 1, 1970, Ser. No. 24,825
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 14 Claims

Compositions comprising 100 parts of a hydroxyl-terminated polymer of RR_fSiO- units, in which R is a lower alkyl radical and R_f is a beta-perfluoroalkylethyl radical, 0.5–20 parts of a silane of the formula $R'SiX_3$, in which R' is a phenyl or vinyl radical or mixtures thereof and X is a methoxy or ethoxy radical; and 0.1 to 10 parts of certain metal salts of carboxylic acids, such as stannous octoate, will cure at room temperature to give reversion resistant fluorosilicone elastomers.

3,624,023
TRANSPARENT SILICONE RUBBER VULCANIZABLE UNDER AMBIENT CONDITIONS
James V. Hartlage, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Apr. 9, 1970, Ser. No. 27,170
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 3 Claims

A mixture of a fume silica treated with bis(trimethylsilyl)amine, a hydroxyl endblocked phenyl methyl polysilox-

ane, and alkoxy silicon compound and a curing catalyst cure at ambient conditions to a transparent silicone rubber useful as an encapsulant for electrical components.

3,624,024
FLAME RETARDANT POLY(TETRAMETHYLENE TEREPHTHALATE) MOLDING COMPOSITIONS

John R. Caldwell, and Marvin A. McCall, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,789
Int. Cl. C08g 51/04
U.S. Cl. 260—40 R 9 Claims

Compositions moldable into a self-extinguishing article comprising poly(tetramethylene terephthalate) and a brominated additive.

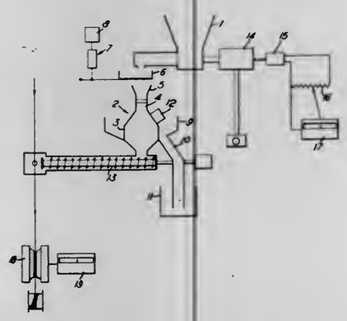
In a first aspect of the invention, talc is added to the composition, and the article molded from this composition has an unexpectedly high heat distortion temperature. In one embodiment of the first aspect of the invention an antimony containing compound is added to the poly(tetramethylene terephthalate), brominated additive and talc. In this first aspect of the invention the brominated additive comprises brominated diphenyl, brominated diphenyl ether, or brominated diphenyl carbonate.

In a second aspect of the invention antimony trioxide is optionally added to poly(tetramethylene terephthalate) and a brominated additive to provide a composition from which an article can be molded that is increasingly flame retardant and talc is optionally added to the composition to provide an article that has an unexpectedly high heat distortion temperature. In this second aspect of the invention the brominated additive can comprise tetrabromophthalic anhydride, an ester of tetrabromobisphenol A, a tetrabromophthalic imide or a bistetrabromophthalic imide.

3,624,025
METHOD AND APPARATUS FOR OBTAINING CONSTANT CROSS SECTION EXTRUDATES WITHOUT MAKING MEASUREMENTS THEREON

Reginald James Twist, St. Helens, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Sept. 3, 1969, Ser. No. 854,906
Claims priority, application Great Britain, Sept. 9, 1968, 42,815/68
Int. Cl. B29f 3/06, 3/10
U.S. Cl. 264—40 5 Claims



The operation of an extrusion machine is controlled to obtain a constant cross section in the extrudate without the need to make measurements upon it. The machine is fed by a controlled feeding device which discharges into a reservoir that has a capacity sufficient to ensure that the machine is choke fed, and the reservoir is provided with means, such as a narrow neck, to amplify variations in the level so that unacceptable changes are immediately indicated. Signals representing a rate of feed to the reservoir and the line speed are obtained and the relationship between the feed rate and the speed of the machine and between the feed rate and the line speed are adjusted respectively to maintain a constant level in the reservoir and to establish a constant relationship so that the rate of extrusion of material is kept constant.

3,624,026
STABILIZATION OF RADIAL BLOCK COPOLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 24, 1969, Ser. No. 819,529
Int. Cl. C08f 1/84, 15/04
U.S. Cl. 260—41 18 Claims

Disclosed herein are stabilized compositions comprising a radial block copolymer admixed with the following additives: organic phosphite, metal alkyldithiocarbamate, benzotriazole, thiodipropionic acid ester, and carbon black.

3,624,027
MANUFACTURE OF POLYMERS AND RESULTING POLYMERS

Jean Pierre Wauquier, Le Vesinet; Jean Gaillard, Carrieres/Seine; Maseh Osgan, Paris, and Marc Mollard, Colobes, all of France, assignors to Institut due Francais du Petrole des Carburanto et Lubrifiants, Haute de Seine, France

Filed Oct. 23, 1968, Ser. No. 770,097
Claims priority, application France, Oct. 27, 1967, 126282; Oct. 31, 1967, 126,694
Int. Cl. C08g 43/00
U.S. Cl. 260—45.9 R 14 Claims

Stabilized polymers and copolymers of saturated cyclic ethers, such as epoxypropane, are obtained by contacting the ether with a catalyst obtained by reacting a trivalent metal compound with a divalent metal compound, such as an organo-aluminum-zinc compound, and stopping the reaction by adding an amine or amide to the reaction system. Aniline is a particularly preferred polymerization stopper. The catalytic residue must be left in the polymerizate.

3,624,028
PROCESSING OF FLAME-RESISTANT POLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 12, 1970, Ser. No. 36,699
Int. Cl. C08f 45/58
U.S. Cl. 260—45.75 R 8 Claims

The processability temperature limit for polymers containing flame retardants such as antimony oxide and bis(halogenated cyclohexyl) halogenated alkanes is raised by the addition of an aromatic ester.

3,624,029
HALOGEN-CONTAINING POLYMERIC RUBBER COMPOSITIONS HAVING IMPROVED SCORCH RESISTANCE

Masaaki Inagami, Yokohama-shi, and Keiji Komuro, Tokyo, both of Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed June 5, 1969, Ser. No. 830,701
Claims priority, application Japan, June 12, 1968, 43/39904
Int. Cl. C08d 11/04; C08f 45/60
U.S. Cl. 260—45.9 R 4 Claims

A halogen-containing polymeric rubber composition having improved scorch resistance, said composition comprising 100 parts by weight of a halogen-containing polymeric rubber having incorporated therein, as a antiscorching agent 0.1–5.0 parts by weight of at least one compound of the formula

$SH—R—(X)_n$

wherein R is selected from the group consisting of the aliphatic, alicyclic and aromatic hydrocarbon radicals, X is selected from the group consisting of amino, imino and carboxyl radical, and n is a number from 1 to 2. and 0.5 to five parts per weight of an amino-containing cross-linking agent.

3,624,030
ORGANOSILSESQUIOXANES

Pierre A. Pruvost; Michel L. Bourbon, and Michel Vialle, all of Rhone, France, assignors to Societe Industrielle des Silicones, Paris, France

Original application Feb. 26, 1969, Ser. No. 804,366, now Patent No. 3,489,782, dated Dec. 13, 1970, which is a continuation of application Ser. No. 558,614, June 20, 1966, now abandoned. Divided and this application Nov. 13, 1969, Ser. No. 876,557
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 VA 22 Claims

Solventless, time-stable, polymerizable polycondensates of at least 75 mol. percent $RSiO_{1.5}$ units where R is methyl, vinyl or a hydrogen atom and up to 25 mol. percent of the units are SiO_2, $(CH_3)_2SiO$, $CH_3(H)SiO$ or $(CH_3)_3SiO_{0.5}$, are useful intermediates which react with other silicones and organic polymers to find use in making electrical insulation, laminating compounds and molding compounds.

3,624,031
PROCESS FOR PRODUCING A POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4'-DICARBOXYLATE

Hidehiko Kobayashi, Tokyo; Hiroshi Komoto, Saitama-ken, and Masatsugu Yoshino, Saitama-ken, all of Japan, assignors to Asahikasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1968, Ser. No. 786,471
Claims priority, application Japan, Dec. 27, 1967, 42/83210; Apr. 12, 1968, 43/24189
Int. Cl. C08g 17/013, 17/015
U.S. Cl. 260—47 C 4 Claims

A linear polyethylene-1,2-diphenoxylethane-4,4'-dicarboxylate having a favorable heat-stability, whiteness and a high crystallization velocity capable of being die molded in a short time like "Delrin" is produced by reacting a 1,2-bis-para-carboalkoxy-phenoxyethane having an acid value of 0.03 or less with ethylene glycol in the presence of an ester interchange catalyst, such as a strontium or barium salt of mono-carboxylic acid having one to four carbon atoms or an orthoborate compound of the formula:

$Sr[B(OCH_2CH_2OH)(OR_3''')]_2$ or
$Ba[B(OCH_2CH_2OH)(OR_3''')]_2$

wherein R''' is selected from the group consisting of cyclohexyl, phenyl, cresyl and diphenyl, until methanol or longer evolves, and subsequently continuing the reaction until the desired degree of polymerization is attained at an elevated temperature under a reduced pressure in the presence of, as a polycondensation catalyst, an organotin compound having the formula

$R_mSn X_{(4-m/P)}$

wherein R is an aliphatic radical having one to four carbon atoms, a 3- to 6-membered alicyclic radical or an aromatic radical, X represents —R, —OR, —OH, SnR_3,

$$-O-\overset{O}{\overset{\|}{C}}-R'' \quad \text{a halogen, } =O, \text{ or} \quad -O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-O-$$

(in which R' represents a di-valent aliphatic radical having one to four carbon atoms, or a di-valent aromatic radical and R'' is an aliphatic radical of one to four carbon atoms), m is an integer of one to four, P represents a numerical valence of the X radical and (4—m/P) is an integer of zero to three. A molded article obtained from said polymer has favorable mechanical properties, particularly a high Rockwell Hardness. Further, fibers obtained from said polymer possess a favorable tenacity, elongation, elastic recovery, boil shrinkage and maximum heat shrinkage stress.

3,624,032
EPOXY COMPOSITIONS CURED WITH CARBOXYLIC ACID ANHYDRIDES AND METALLIC SALT OF ACETYLACETONE

James J. Miyashiro, Woodstock, and Alfred W. Seiling, Crystal Lake, both of Ill., assignors to Morton International, Inc.

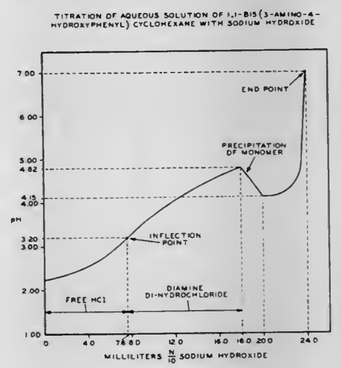
Filed Apr. 24, 1969, Ser. No. 819,519
Int. Cl. C08g 30/12
U.S. Cl. 260—47 EC 14 Claims

A curable epoxy composition comprising an epoxy resin, a polycarboxylic acid anhydride curing agent, and, as a cure catalyst, a polyvalent metal complex of acetylacetone said composition, having improved storage stability, and thermoset properties, and a process for the preparation thereof.

3,624,033
LOW-TEMPERATURE PROCESS FOR THE PRODUCTION OF POLYAMIDES

Henry W. Steinmann, Sparta, and Edward T. Pollard, Middlesex, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,248
Int. Cl. C08g 20/22, 33/04
U.S. Cl. 260—47 CZ 6 Claims



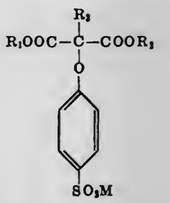
Polyamides are rapidly produced at relatively low temperatures (e.g., ambient temperatures) by polymerization reaction of diamines with diacyl halides. An aqueous solution of a diammonium salt (e.g., a diamine dihydrohalide) and a solution of an equivalent amount of a diacyl halide (e.g., a diacyl chloride) in a water-immiscible solvent (e.g., methylene chloride) are intimately mixed at medium to high shear rate followed by the rapid addition, with continued agitation, of an aqueous solution of an amount of an acid-acceptor e.g., an alkali metal monocarboxylate) sufficient to liberate the diamine and neutralize the byproduct hydrogen halide.

3,624,034
SULFOPHENOXY MALONATE COMPOUNDS AND CATIONIC DYEABLE COPOLYESTERS CONTAINING SAME

John A. Price, Swarthmore, and Mary J. Stewart, Riddlewood, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 867,375, Oct. 17, 1969. This application May 15, 1970, Ser. No. 37,838
Int. Cl. C08g 17/14
U.S. Cl. 260—49 10 Claims

Sulfophenoxy malonate compounds and copolyester resins utilizing said malonate compounds comprising the condensation product of (a) an aromatic dicarboxylic acid or its lower alkyl diester, (b) an aliphatic glycol, and (c) a minor amount of a substituted acid or ester thereof represented by the formula:



wherein R_1 and R_2 are both hydrogen or lower alkyl radicals, R_3 is hydrogen or a lower alkyl radical, and M is a metal.

3,624,035
POLYETHER-MELAMINES AND PROCESS OF MANUFACTURE
Hans von Portatius, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed July 13, 1965, Ser. No. 471,702
Claims priority, application Germany, July 24, 1964, P 14 95 369.6
Int. Cl. C08g *9/30*
U.S. Cl. 260—67.6 R **9 Claims**

Polyether-melamine resins produced by the reaction of hemiformals and/or hemiacetals of polyvalent alcohols, possibly in mixtures with monovalent alcohols, with melamine, possibly in mixtures with urea, and in the presence of acid or basic catalyst.

3,624,036
INVERT EMULSION POLYMERIZATION OF ACROLEIN UTILIZING COMMERCIAL MONOMER
George T. Kekish, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Jan. 27, 1969, Ser. No. 794,352The portion of the term of the patent subsequent to July 22, 1986, has been disclaimed.
Int. Cl. C08f *3/40*
U.S. Cl. 260—67 **7 Claims**

The present invention is directed towards an invert emulsion process for the polymerization of an α,β ethylenically unsaturated aldehyde, and in particular is directed to the homopolymerization of an acrolein-water mixture which permits the use of commercial acrolein monomer containing 100–1,000 p.p.m. of a quinone-type inhibiter such as hydroquinone. Specifically this process is an improvement over U.S. Pat. No. 3,069,389 Welch (Union Carbide) by the selection of a specific determinative C_5–C_8 saturated aliphatic cut or individual alkane components thereof such as n-pentane, n-hexane, n-heptane, n-octane, and corresponding branched chain compounds such as iso-octane as the nonaqueous diluent or nonsolvent. This is coupled with a specific redox catalyst system embodying a dual oxidant consisting of persulfate/hydroperoxide and a reducing component consisting of polyacrolein bisulfite adduct. Increased commercial yields ranging up to 40 percent over prior art processes as well as clean directly usable polymer are obtained. Additionally, the utilization of commercially inhibited acrolein monomer assists in safety regimen involving tank car transporting acrolein since the hydroquinone inhibitor damps the potential explosive qualities of the monomer. Finally, the lack of necessity of removing hydroquinone from the input to the polymerization deletes a cost step from the former process.

3,624,037
PROCESS OF CURING AMINOPLASTS
Othmar Freitherr Von Ettingshausen, Essen, Germany, assignor to Th. Goldschmit, A. G., Essen, Germany
Filed Mar. 25, 1969, Ser. No. 810,385
Int. Cl. C08g *9/10, 9/30*
U.S. Cl. 260—67.6 R **3 Claims**

Aminoplasts are cured in the presence of N-methylethanolamine acetate or di[N-methylethanolamine]-oxalate.

3,624,038
PHENOL FORMALDEHYDE RESIN CONSISTING OF AN ARYL OR ALKYL SUBSTITUTED PHENOL-HCHO CONDENSATE AND AN ALKALINE EARTH METAL CARBOXYLATE SALT OF A HYDROXY RING SUBSTITUTED AROMATIC OR PHENYL SUBSTITUTED ALIPHATIC ACID
Charles Leslie Weidner, Cranbury, N.J., assignor to Johnson & Johnson
Continuation-in-part of application Ser. No. 672,464, Oct. 3, 1967, now abandoned. This application Nov. 5, 1970, Ser. No. 87,336
Int. Cl. C08c *11/34*; **C08g** *5/08, 37/10*
U.S. Cl. 260—53 R **9 Claims**

This application discloses a new oil-soluble phenol-formaldehyde resin which comprises a reacted condensation catalyst consisting essentially of an alkaline earth metal salt of a hydroxy ring substituted monobasic aromatic or phenyl terminated aliphatic acid. The catalyst first acts to catalyze the condensation process and then is available to act as an accelerator in the event the resulting resin is to be used for curing compositions such as pressure-sensitive adhesives. Reactive and nonreactive resins of this invention, corresponding adhesives, and various catalysts such as zinc salicylate and others, are disclosed.

3,624,039
FLUORINATED KETONE INTERPOLYMERS WITH ALDEHYDES AND MIXTURES OF ALDEHYDES AND EPOXIDES
Henry O. Colomb, Jr., South Charleston, and Robert D. Lundberg, St. Albans, both of W. Va., assignors to Union Carbide Corporation
Filed Dec. 31, 1964, Ser. No. 422,494
Int. Cl. C08g *3/00, 15/00*
U.S. Cl. 260—64 **13 Claims**

Interpolymers of fluorinated ketones and at least one member selected from the group consisting of aldehydes, epoxides and ketones other than such fluorinated ketones.

3,624,040
PROCESS FOR THE PRODUCTION OF POLYETHYLENE TEREPHTHALATE
Herman Rath, Neu-Isenburg; Hans-Jochen Rothe, Offenbach/Main, and Otto Friedrich De Riz, Doernigheim/Main, all of Germany, assignors to Vickers Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen
Continuation-in-part of application Ser. No. 636,276, May 5, 1971, now abandoned. This application Mar. 27, 1970, Ser. No. 23,477
Int. Cl. C08q *17/015*; **C07f** *9/90*
U.S. Cl. 260—75 R **11 Claims**

Process for polycondensing di(alkylene glycol) terephthalate by use of metal compounds as catalysts in which the metal compound is an antimony complex of the formula

$$[SbX_n]\cdot\frac{n-3}{m}Z,$$

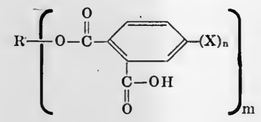
where X signifies a halogen or thiocyanate, n is a whole number from four to six, preferably, five, and Z is selected from the group consisting of di(pyridyl) ethylene and di(morpholino) ethane bases of basicity (+valence) m=2, and mixtures of said bases.

3,624,041
THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS CONTAINING SODIUM FLUORIDE
Johannes Brandrup, Neu-Isenburg; Gunter Freund, Hofheim-Taunus; Ludwig Brinkmann, Frankfurt/Main, and Horst Pfister, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany
Filed June 24, 1970, Ser. No. 49,567
Claims priority, application Germany, July 1, 1969, P 19 33 235.5
Int. Cl. C08g *39/04*
U.S. Cl. 260—75 H **4 Claims**

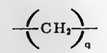
Thermoplastic moulding compositions suitable for injection moulding on the basis of linear saturated polyesters of aromatic dicarboxylic acids with diols to which 0.005 to 5 percent by weight sodium fluoride has been added to improve the processing properties.

3,624,042
CARBOXY TERMINATED POLYMER AND CURED DERIVATIVE THEREOF
Hyman R. Lubowitz, Pasadena; Charles Kuchar, Glendora; Harold L. Greenberg, West Covina, and Raymond M. Price, Glendora, all of Calif., assignors to Aerojet-General Corporation, Azusa, Calif.
Original application Nov. 29, 1962, Ser. No. 241,058. Divided and this application Aug. 18, 1965, Ser. No. 505,080
Int. Cl. C08g *17/14*; **C07c** *69/80*
U.S. Cl. 260—75 N **10 Claims**

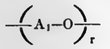
A cured rubber composition comprising the reaction product of a liquid carboxy-terminated polymeric adduct having the generic formula



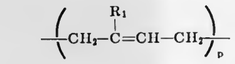
wherein X is a halogen, n is an integer of from 1 to 4, m is an integer of from 2 to 3; wherein when m has a value of 2, R is a polymeric divalent organic radical selected from those having the formula



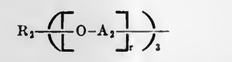
where n q is an integer having a value from about 60 to about 600,



wherein A_1 is a lower alkylene radical and r is an integer having a value from 20 to about 200; and



wherein R_1 is selected from the group consisting of hydrogen and methyl and p is an integer having a value of from about 12 to about 120; and wherein when m is 3, R is a trivalent radical of the formula



wherein A_2 is a lower alkylene radical, r is an integer having a value of from about 8 to about 75, and R_2 is a trivalent alkylene radical, b filler, and an effective amount of a curing agent.

3,624,043
METHOD FOR THE PREPARATION AND USE OF A CATALYST FOR THE PRODUCTION OF POLYESTERS, MORE PARTICULARLY HIGH MOLECULAR WEIGHT LINEAR POLYESTERS AND CATALYST THUS OBTAINED
Francesco Siclari, Cesano Maderno; Giuseppe Messina, Limbiate, and Edgardo Horak, Barlassina, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy
Filed Dec. 16, 1968, Ser. No. 784,248
Claims priority, application Italy, Dec. 23, 1967, 24346 A/67
Int. Cl. C08g *17/00*
U.S. Cl. 260—75 **8 Claims**

Method for the preparation of finely and evenly divided elemental antimony for use as catalyst in polyester manufacturing, wherein powdered antimony is subjected to mechanical size reduction operations, and then is dispersed in a liquid medium.

3,624,044
URETHANE POLYMERS
Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Original application Feb. 15, 1966, Ser. No. 527,492, now Patent No. 3,327,096. Divided and this application May 21, 1969, Ser. No. 826,675
Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 AR **5 Claims**

Urethane polymers comprising the reaction product of (1) an organic polyisocyanate and (2) the product resulting from the reaction of (a) elemental phosphorus (b) an epoxide or an epithioalkane and (c) an alcohol or an alkanethiol said reaction being carried out in the presence of a catalytic quantity of a base. The aldehyde and/or alkylene oxide treated reaction product when combined with organic polyisocyanate also produce novel urethane polymers.

3,624,045
CROSSLINKED HEAT RECOVERABLE THERMOPLASTIC POLYURETHANES
Edward C. Stivers, Atherton, Calif., assignor to Raychem Corporation, Redwood City, Calif.
Filed Oct. 22, 1965, Ser. No. 502,623
Int. Cl. C08g *22/04, 53/20*; **B01j** *1/10*
U.S. Cl. 260—77.5 **5 Claims**

This disclosure describes a class of thermoplastic polyurethane rubbers having heat-activated dimensional memory characteristics. Cross-linking of thermoplastic urethanes is carried out both by chemical means and by high-energy radiation.

3,624,046
POLYSULPHYDRYL HOMOPOLYMERS, AND METHODS OF PREPARING AND APPLYING SAME
Roger Charle, Soisy sur Montmorency; Gregorire Kalopissis, Paris; Andre Viout, Paris; Jean Gascon, Paris, and Constantin Aretos, Paris, all of France, assignors to L'Oreal, Parris, France
Continuation of application Ser. No. 565,371, July 15, 1966, now abandoned. This application Apr. 21, 1970, Ser. No. 28,272
Claims priority, application France, 27374
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 UA **5 Claims**

A polymer having a polyanhydride homopolymer polymer chain and amide bonded mercapto side chains that will react with keratin fibers.

3,624,047
PRODUCTION OF α,α-DISUBSTITUTED β-PROPIOLACTONE POLYMERS WITH CONTROLLED MOLECULAR WEIGHT
Yasuhiro Ogawa, Suita, and Norio Awata, Settsu, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1969, Ser. No. 887,780
Claims priority, application Japan, Dec. 26, 1968, 43/96225
Int. Cl. C08g *17/017*
U.S. Cl. 260—78.3 **5 Claims**

The molecular weight distribution of poly(beta-lactones) is controlled by polymerizing the lactones in the presence of an anionic initiator and allyl halides or benzyl halides.

3,624,048
POLY(MALEIC ACID) SULFONATES AND THEIR PRODUCTION
John H. Blumbergs, Highland Park; John J. Rizzo, Trenton, N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,556
Int. Cl. C08f *27/06, 29/34*
U.S. Cl. 260—78.4 R **5 Claims**

Poly(maleic anhydride)s are sulfonated to produce more soluble detergent builders without loss of detergency building properties.

3,624,049
THE PREPARATION OF POLY (ETHYLENE TEREPHTHALATE) USING TRIVALENT ANTIMONY COMPOUNDS AS CATALYSTS
John J. Ventura, Estontown, and James Mackey, Colonia, both of N.J., assignors to M & T Chemicals, Inc., New York, N.Y.
Filed June 23, 1969, Ser. No. 835,793
Int. Cl. C08g *17/06*
U.S. Cl. 260—78.4 E **16 Claims**

A process for preparing polyethylene terephthalate wherein dimethyl terephthalate is reacted with ethylene glycol to form an ester of ethylene glycol and terephthalic acid or where terephthalic acid is reacted with ethylene glycol to form an ester of terephthalic acid and ethylene glycol where the resulting ester is polycondensed in the presence of a polycondensation catalyst, the improvement comprising carrying out the condensation or polymerization of the ester in the presence of a catalytic amount of a trivalent antimony compound exhibiting two direct carbon to antimony bonds and one direct bond from an antimony atom to oxygen; to oxygen linking an organic radical to said antimony atom; to oxygen linking another antimony atom to said antimony atom; or to a halogen atom.

3,624,050
PROCESS FOR PRODUCING POLYIMIDES VIA POLYAMIDE ACIDS WITHOUT USE OF SOLVENTS
Jorg Strickrodt, Heinrich Stoerl Strasse 39, 3011 Laatzen, and Ullrich Konig, Holbeinstrasse 12, 334 Wolfenbuttel, both of Germany
Filed Jan. 28, 1970, Ser. No. 6,594
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **4 Claims**

Process for producing polyimides by treating a dianhydride and a diprimary amine at a temperature in the range of 20° C. to 120° C. in the absence of a solvent and with continuous mixing to form a polyamide acid and converting the polyamide acid to the corresponding polyimide by heating the polyamide acid at a temperature in the range of 0 to 20° above the maximum temperature difference shown by the polyamide acid under differential thermal analysis.

3,624,051
PROCESS FOR POLYMERIZING AND COPOLYMERIZING VINYL CHLORIDE IN AQUEOUS EMULSIONS
Johann Bauer; Gerhard Beier, and Joseph Heckmaier, all of Burghausen-Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
Filed Aug. 23, 1968, Ser. No. 754,975
Claims priority, application Germany, Aug. 28, 1967, W 44668
Int. Cl. C08f *3/30, 1/13*
U.S. Cl. 260—78.5 **4 Claims**

This invention relates to a process for making pastable polymerizates of vinyl chloride or of pastable copolymerizates containing at least 80 weight percent polyvinyl chloride, by polymerizing or copolymerizing vinyl chloride in aqueous emulsion, that is by polymerization or copolymerization of vinyl chloride which is dispersed in water by means of emulsifiers. The process is performed in the presence of water-soluble salts of aliphatic branched saturated monocarboxylic acids containing $-CH_2-$ groups in the alpha position to the carboxyl groups, with at least 8 carbon atoms per molecule, as emulsifiers.

The term "pastable" polymerizates or copolymerizates" means that the polymerizates or copolymerizates can be dispersed in the known manner in plasticizers, if desired by also using organic thinners which dissolve or swell the polymerizates or copolymerizates not at all or only a little, during the formation of pastes or plastisols or organosols.

3,624,052
HIGH MOLECULAR WEIGHT POLY(PROPYLENE SULFIDE)
Riad H. Gobran, Levittown, and Stephen W. Osborn, Yardley, both of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Jan. 8, 1962, Ser. No. 165,034
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 R **3 Claims**

Elastomeric propylene sulfide polymers prepared with a diethyl zinc-water catalyst or a diethyl zinc-hydrogen sulfide catalyst system are described.

3,624,053
TRIFLUOROVINYL SULFONIC ACID POLYMERS
Hugh Harper Gibbs, Wilmington, Del., and Richard Normal Griffin, Wayne, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 24, 1963, Ser. No. 290,184The portion of the term of the patent subsequent to June 26, 1979, has been disclaimed.
Int. Cl. C08f *13/00*
U.S. Cl. 260—79.3 R **3 Claims**

1. A normally solid ion exchange resin polymer of trifluorovinyl sulfonic acid containing units of the structure

$$-CF_2-\underset{\displaystyle SO_2X}{\overset{\displaystyle |}{CF}}-$$

where X is a member of the class consisting of hydrogen, alkali metals, ammonium ions and amine ions.

3,624,054
CROSSLINKABLE LOW CHLORINE- AND-SULFUR-CONTENT POLYETHYLENE
Oliver A. Barton, Florham Park; James H. Carroll, Verona; Frank S. Elkins, Passaic, and John G. Miller, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 870,391
Int. Cl. C08f *27/06, 27/02, 13/00*
U.S. Cl. 260—79.3 R **2 Claims**

Cross-linked low chlorine- and sulfur-content sulfochlorinated polyethylene has superior properties over both cross-linked polyethylene and cross-linked high chlorine- and sulfur-content sulfochlorinated polyethylene. In addition, it possesses processing advantages over polyethylene and highly chlorosulfonated polyethylene.

3,624,055
CURABLE COPOLYMERS OF EPISULFIDE MONOMERS
Riad H. Gobran, Levittown, and Stephen W. Osborn, Yardley, both of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Continuation-in-part of application Ser. No. 165,034, Jan. 8, 1962, and a continuation-in-part of 267,799, Mar. 25, 1963, now abandoned. This application May 18, 1964, Ser. No. 368,382
Int. Cl. C08f *25/00;* **C08g** *23/00, 25/00*
U.S. Cl. 260—79.7 **13 Claims**

Copolymers essentially composed of a major portion of monomeric units derived from one or more monomers which are free from ethylenic unsaturation, have at least three carbon atoms and have a polymerizable thiiranyl group; and a minor portion of monomeric units derived from one or more monomers having both a polymerizable thiiranyl group and a polymerizable ethylenically unsaturated group are disclosed. The monomers free from ethylenic unsaturation may be, for example, ethylene sulfide, propylene sulfide, the 1,2- and 2,3-butylene sulfides, vinyl cyclohexane sulfide, 2-benzyl thiirane, paramethyl styrene episulfide, styrene sulfide, cyclohexene episulfide, and isobutylene sulfide. The ethylenically unsaturated monomers may be, for example, allylthioglycidyl ether, thioglycidyl acrylates, thioglycidyl alkacrylates such as thioglycidyl methacrylate, vinyl cyclohexene episulfide, and butadiene monoepisulfide. The monomers are polymerized through the thiiranyl groups thereof. The copolymers can be cured through the ethylenically unsaturated groups thereof to produce elastomers having good physical properties and solvent resistance.

3,624,056
OLEFIN INTERPOLYMERS PREPARED WITH A CATALYST SYSTEM OF A TITANIUM COMPOUND, ALKYL ARYL HALIDE AND DIARYL MAGNESIUM
Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Sept. 28, 1965, Ser. No. 491,038
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.6 **11 Claims**

Conjugated and nonconjugated polyunsaturated hydrocarbon monomers are interpolymerized with α-olefins with a catalyst comprising a reducible compound of titanium, an alkyl aluminum halide and a diaryl magnesium compound.

3,624,057
POLYMERIZATION WITH MULTIFUNCTIONAL INIATORS PREPARED FROM VINYLSILANES OR VINYLPHOSPHINES AND ORGANOMONOLITHIUM COMPOUNDS
Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 30, 1969, Ser. No. 795,364
Int. Cl. C08d *1/32;* **C08f** *1/56, 15/04*
U.S. Cl. 260—83.7 R **7 Claims**

Multifunctional polymerization initiators are prepared by reacting an organomonolithium compound with a polyvinylsilane compound or polyvinylphosphine compound.

3,624,058
POLYMERS OF VULCANIZABLE ALKYL ESTERS OF ACRYLIC ACID AND ALLYL CHLOROACETATE
August H. Jorgensen, Jr., Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed May 6, 1968, Ser. No. 727,083
Int. Cl. C08f *15/20*
U.S. Cl. 260—86.1 **8 Claims**

Allyl chloroacetate is copolymerized with alkyl esters of acrylic acid to provide elastomers containing less than about 10 percent allyl chloroacetate which are essentially gel free, and in a vulcanized state have improved resistance to heat.

3,624,059
PROCESS AND CATALYST FOR THE POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS
Felix Bloyaert, Boitsfort/Bruxelles; Andre Delbouille, Bruxelles, and Jacques Stevens, Braine L'Alleund, all of Belgium, assignors to Solvay & Cie
Filed Feb. 3, 1965, Ser. No. 430,207
Claims priority, application France, Feb. 7, 1964, 963,086The portion of the term of the patent subsequent to Sept. 3, 1985, has been disclaimed.
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—88.2 **4 Claims**

A method of polymerizing and copolymerizing olefins with a novel catalyst comprising (a) the reaction product of an inorganic compound of a polyvalent metal having a valence of at least three, e.g., $TiCl_4$, and a solid, bivalent metal hydroxylated inorganic phosphate, e.g., $Ca_5(PO_4)_3OH$, or hydroxychloride, e.g., Mg(OH)Cl, (b) a metal, a hydride, or an organometallic compound of metals of Groups IVB , VB and VIB, e.g., $Sn(C4H9)_4$, and (c) a Group IIIB or VB halide, e.g., $AlCl_3$.

3,624,060
BINARY CATALYST SYSTEMS FOR THE POLYMERIZATION OF UNSATURATED ALICYCLIC MONOMERS
William Allen Judy, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 31, 1969, Ser. No. 795,693
Int. Cl. C08f *19/04*
U.S. Cl. 260—88.2 **12 Claims**

There is disclosed a process for the ring opening polymerization of certain unsaturated alicyclic compounds such as cyclobutene, cyclopentene, cyclooctene, cyclooctadiene and the like which comprises subjecting such compounds to a two component catalyst system, the first component being an alkali metal compound of tungsten hexahalide or an alkyl amine derivative of tungsten hexahalide; the second component being an aluminum alkyl, an aluminum halide, an aluminum alkyl hydride or a tin alkyl halide.

3,624,061
PROCESS
Donald E. Hostetler, Monroeville, Pa., assignor to Dart Industries Inc.
Continuation of application Ser. No. 232,588, Oct. 23, 1962, now abandoned. This application Oct. 18, 1966, Ser. No. 587,399
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 R **2 Claims**

Ethylene/propylene random copolymers are formed by reacting a minor amount of ethylene and a major amount of propylene in the reactor in the presence of hydrogen and a diethyl aluminum chloride and a cocrystallized $TiCl_3$·$AlCl_3$ catalyst under a pressure of from about 200 to about 500 p.s.i.g. which is sufficient to maintain at least part of the propylene in the liquid phase in the reactor.

3,624,062
PHENOXARSINYL ETHERS OF POLYMERIC POLYHYDROXY COMPOUNDS AND PREPARATION
Joseph E. Dunbar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 1, 1969, Ser. No. 881,285
Int. Cl. C08f *3/34*
U.S. Cl. 260—91.3 VA **20 Claims**

Polymeric polyhydroxy compounds, e.g., cellulose, starch, cellulose loweralkyl ethers, cellulose lowerhydroxyalkyl ethers, cellulose loweralkyl lowerhydroxyalkyl mixed ethers, carboxymethylcellulose and its water-soluble salts and polyvinyl alcohol are reacted with 10,10'-oxybisphenoxarsine to provide corresponding 10-phenoxarsinyl ether derivatives. The 10-phenoxarsinyl ether derivatives exhibit antimicrobial properties.

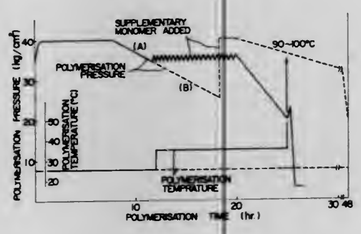
3,624,063
ETHYLENE POLYMERIZATION USING CATALYST OF CONTROLLED PARTICLE SIZE
Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 10, 1969, Ser. No. 840,836
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—93.7 **5 Claims**

A process for producing particle-form olefin polymer in which the size of the silica-supported chromium oxide catalyst is selected to regulate the molecular weight distribution of the polymer.

3,624,064
POLYMERIZATION OF FLUOROETHYLENES
Yasushi Toyoda, Nishiki-shi, and Nobuo Bannai, Nishiki-Machi, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed May 3, 1968, Ser. No. 726,366
Claims priority, application Japan, May 15, 1967, 42/30735
Int. Cl. C08f *3/22, 15/06*
U.S. Cl. 260—92.1 **3 Claims**

The temperature in the suspension polymerization of fluoroethylene is maintained below its critical temperature

during the initial period of the process and is raised above the critical temperature after polymer particles have been formed. In a variation of this method, a supplementary quantity of the monomer is added to the process, beginning at the



time the temperature is raised, in a manner to avoid causing large variation in the polymerization pressure. In a further variation of this method, the temperature is raised to a value from 60° to 150° C. in the final period of the polymerization.

3,624,065

WATER-SOLUBLE BASIC TRIALKYL AMMONIUM PHENYLAZOPYRIMIDINE

Bernhard Spiess, Offenbach am Main, and Gunther Trapp, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 5, 1968, Ser. No. 781,596

Claims priority, application Germany, Dec. 16, 1967, F 54327

Int. Cl. C09b *21/36, 45/00*; **D06p** *1/10*

U.S. Cl. 260—146 D **5 Claims**

Water-soluble basic monoazo dyestuffs of the trialkylammoniumphenylazopyrimidine series which are suitable for dyeing or printing of textile fibrous materials consisting of native or regenerated cellulose, acetate rayon, polyamides, polyesters, polyacrylonitrile or polyvinylidenecyanide to yield yellow dyeings having good fastness to light and wet processing.

3,624,066

2-(8-CYCLOHEXYLOCTYL OR 7-CYCLOHEXYLHEPTYL)-4-(4-SULFOPHENYLAZO)-1-NAPHTHOL

Louis F. Fieser, Belmont; Sydney Archer, Bethlehem, Mass., and Roman R. Lorenz, East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Original application Oct. 25, 1966, Ser. No. 589,204. Divided and this application Oct. 17, 1969, Ser. No. 870,808

Int. Cl. C07c *107/06*

U.S. Cl. 260—197 **2 Claims**

A process of reacting 2-Q-1-naphthol with a diazotized salt of sulfanilic acid to form a 2-Q-4(4-sulfophenylazo)-1-naphthol; reducing the azo compound to form 4-amino-2-Q-1-naphthol; oxidizing said 4-amino compound to form 2-Q-1,4-dihydro-4-imino-1-oxonaphthalene; and hydrolyzing said 4-imino compound under acidic conditions to form 2-Q-1,4-naphthoquinone where Q is (8-cyclohexyloctyl or 7-cyclohexylheptyl).

3,624,067

DISAZOCOMPOUNDS CONTAINING A DICARBOXIMIDO, PYRROLIDINONO, PIPERIDONO, OR PHTHALIMIDINO GROUP

Max A. Weaver, and James M. Straley, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 683,112, Nov. 15, 1967, Continuation-in-part of application Ser. No. 686,834, Nov. 30, 1967. This application Jan. 26, 1970, Ser. No. 5,936

Int. Cl. C09b *31/06, 31/14*; **D06p** *1/08*

U.S. Cl. 260—152 **9 Claims**

Disazocompounds containing a dicarboximido, pyrrolidinono, piperidono or phthalimidino group bonded to a nuclear carbon atom of a benzene diazocomponent and having a phenolic coupling component are useful as dyes for hydrophobic textile materials such as polyester fibers on which the compounds give yellow to orange dyeings which exhibit superior fastness to light and sublimation.

3,624,068

DI(CARBOXYLIC ACID ESTER)-PHENYL-AZO-NAPHTHOL DYES

Johannes Dehnert, and Gerhard Gnad, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 27, 1968, Ser. No. 779,652

Claims priority, application Germany, Dec. 1, 1967, P 16 44 074.7

Int. Cl. C07c *107/08*; **C09b** *29/30*

U.S. Cl. 260—199 **4 Claims**

Acid dyes derived from aminobenzene dicarboxylic acid esters and 1-hydroxy-7-amino-naphthalene-3-sulfonic acid, particularly for dyeing wool or textile material of synthetic linear polyamides.

3,624,069

PROCESS OF PREPARING A GELLABLE COLLOIDAL CELLULOSE SULFATE AND PRODUCT

Richard G. Schweiger, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

Continuation-in-part of Ser. No. 347,351, Feb. 26, 1964 Filed June 28, 1965, Ser. No. 467,738

Int. Cl. C08b *5/14*

U.S. Cl. 260—215 **21 Claims**

Water-soluble gellable sulfate esters of cellulose are prepared by soaking cellulose in a lower N-dialkyl amide and then contacting said cellulose with a sulfur trioxide-lower N-dialkyl amide sulfation complex.

3,624,070

GRANULAR GELATINIZABLE QUATERNARY AMMONIUM STARCH ETHERS AND PROCESS OF MAKING SAME

Walter G. Hunt, Bridgeton, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Original application Apr. 29, 1963, Ser. No. 276,200, now abandoned. Divided and this application Feb. 11, 1966, Ser. No. 526,710

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **21 Claims**

The invention relates to the preparation of granular, gelatinizable quaternary ammonium starch ethers from starch and an amine alkene halide and to such starch ethers.

3,624,071

OXIDATIVE PREPARATION OF 2,3-DIHYDRO-1,4-BENZODIAZEPINES

Earl Reeder, Nutley, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed May 13, 1968, Ser. No. 728,821

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 BD **8 Claims**

2,3,4,5-Tetrahydro-benzodiazepines are converted into 2,3-dihydro-1,4-benzodiazepines by treatment with a selected oxidizing agent. Suitable oxidizing agents include diethylazodicarboxylate, quinones such as 2,3-dichloro-5,6-dicyanobenzoquinine, 5,6chloranil and alkali metal hypohalites, such as alkali metal hypoiodites, e.g., sodium hypoiodite.

3,624,072

DERIVATIVES OF 5H-DIBENZ[B,F] AZEPINE-4-CARBOXYLIC ACIDS

Norbert Gruenfeld, Bronx, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Continuation-in-part of application Ser. No. 693,114, Dec. 26, 1967, and a continuation-in-part of 851,761, Aug. 20, 1969. This application July 13, 1970, Ser. No. 54,603

Int. Cl. C07d *41/08, 87/40, 87/42*

U.S. Cl. 260—239 D **15 Claims**

5H-Diebenz[b,f]azepines-4-carboxylic acid, the 10,11-dihydro and other substituted derivatives thereof are antiinflammatory agents. They can be prepared, among other ways, through treatment of the appropriate 4,5-oxalyl-5H-dibenz[b,f]azepine with aqueous base followed by hydrogen peroxide. Esterification, N-acylation and/or amidation can optionally follow. Typical embodiments are 3-methoxy-10,11-dihydro-5H-dibenz[b,f]azepine-4-carboxylic acid and 3,7-dichloro-5H-dibenz[b,f]azepine-4-carboxylic acid.

3,624,073

PROCESS FOR PREPARING 5-SUBSTITUTED-1,4-BENZODIAZEPINES

George Francis Field, West Caldwell; Leo Henryk Sternbach, Upper Montclair, and William Joseph Zally, Union City, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 665,716, Sept. 6, 1967, now abandoned. This application Apr. 2, 1968, Ser. No. 718,259

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 BD **3 Claims**

A process for producing pharmaceutically valuable 5-substituted-1,4-benzodiazepines from 1,4-benzodiazepin-5-ones and intermediates therein.

3,624,074

PROCESS FOR PREPARING N-ACYL URETHANES

Erwin Schmidt, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Sept. 3, 1968, Ser. No. 757,092

Claims priority, application Germany, Sept. 4, 1967, P 16 68 013.0

Int. Cl. C07b *103/02*; **C07d** *25/02, 27/08*

U.S. Cl. 260—239 A **5 Claims**

N-acyl urethanes useful as cocatalysts for lactam polymerization are obtained by reacting organic acid amides, such as carboxylic acid amides, carbamic acid esters or ureas, with trihalogeno-acetic acid esters, whereby trihalogeno-methane is split off. The process is preferably catalyzed by amines, especially by tertiary or sterically hindered amines.

3,624,075

DIBENZAZEPINE ACETIC ACID DERIVATIVES

Konrad Fitzi, Neuallschwil, and Alfred Sallmann, Bottmingen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,801

Claims priority, application Switzerland, Feb. 29, 1968, 3055/68

Int. Cl. C07d *41/08, 87/38, 87/46*

U.S. Cl. 260—239 D **7 Claims**

Derivatives of 10,11-dihydro-5H-dibenz[b,f]azepine-acetic acids and salts thereof with a base are prepared by various methods; the compounds have anti-inflammatory, analgesic and antipyretic activity and absorb irritating rays of ultraviolet light; they are the active ingredients of pharmaceutical compositions and are useful for treating inflammatory diseases; an illustrative embodiment is 5-methyl-10,11-dihydro-5H-dibenz[b,f]azepine-3-acetic acid.

3,624,076

1-ACYL-5-PHENYL-1H-1,5-BENZODIAZEPINE-2,4-[3H,5H]-DIONES

Karl-H. Weber, Gau-Algesheim; Karl Zeile, Ingelheim/Rhine; Rolf Giesemann, Bingen/Rhine, and Peter B. Dameberg, Ingelheim/Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

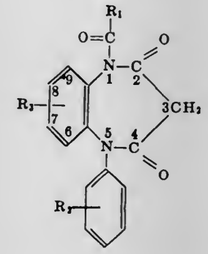
Filed Apr. 28, 1969, Ser. No. 819,940

Claims priority, application Austria, Apr. 29, 1968, A4165/68

Int. Cl. C07d *53/04*

U.S. Cl. 260—239.3 **17 Claims**

1-Acyl-5-phenyl-1H-1,5-benzodiazepine-2,4-[3H,5H]-diones of the formula



wherein R_1 is hydrogen, straight-chain alkyl of one to 15 carbon atoms, halomethyl, methylamino, alkoxy of one to two carbon atoms, cyclohexyl, phenyl, halophenyl, methylphenyl, methoxyphenyl, nitrophenyl, benzyl, styryl or a five-membered heterocyclic ring comprising a sulfur or oxygen atom,
R_2 is hydrogen, halogen, methyl or methoxy, and
R_3 is hydrogen or halogen, methyl or trifluoromethyl in the 7- or 8-position,
which are useful as psychosedatives, muscle relaxants and anticonvulsives in warm-blooded animals.

3,624,077

1,4-PREGNADIENE-11B-HYDROXY-(17A,16A-D)-2'-ALKYLOXA-ZOLINES

Giangiacomo Nathansohn, Milano; Giorgio Winters, Milan, Italy, and Emilio Testa, Tessin, Switzerland, assignors to Lepetit S.p.A., Milan, Italy

Filed Dec. 28, 1966, Ser. No. 605,217

Claims priority, application Great Britain, Jan. 11, 1966, 1,257/66

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 **2 Claims**

The invention relates to 1,4-pregnadiene-11β-hydroxy-(17α,16α-d)-2'-alkyloxazolines which have been found to possess antiinflammatory and hormonelike activity.

3,624,078

6H-DIBENZ[B-E]THIEPIN DERIVATIVES

Ernst Jucker, Ettingen/Basel-Land; Adolf J. Lindenmann, Basel, and Fulvio Gadient, Birsfelden Basel-Land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 19, 1962, Ser. No. 245,686

Claims priority, application Switzerland, Dec. 21, 1961, 14762/61; Apr. 11, 1962, 4431/62

Int. Cl. C07d *67/00*

U.S. Cl. 260—240 TC **16 Claims**

Disclosed are aminoalkyldibenzothiepines useful as medicaments, particularly as antihistaminics.

3,624,079
5-(PHENYLSTRYL)-3METHYLISOXAZOLES
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 20, 1969, Ser. No. 867,937
Int. Cl. C07d *85/22*
U.S. Cl. 260—240 D **11 Claims**

Novel 5-(α-phenylstyryl)-3-methylisoxazoles, processes for preparing the same and intermediates produced by said processes. The novel compounds of this invention are useful for treating hyperlipemic states in animals, including mammals.

3,624,080
DI-BENZO THIAZINO PYRROLES
Peter Dimroth, Ludwigshafen, and Manfred Gaeng, Roxheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Apr. 7, 1969, Ser. No. 814,194
Claims priority, application Germany, Apr. 5, 1968, P 17 69 114.4
Int. Cl. C07d *93/12*
U.S. Cl. 260—243 R **3 Claims**

New heterocyclic compounds of the di-benzothiazino[2,3-*b*:3′,2′*d*]-pyrrole series which are suitable as pigment dyes.

3,624,081
1-ACYL-2-ETHYLIDENEPYRROL-IDINE-3-CARBOXAMIDES
William B. Dickinson, Loudonville, and Philip C. Lang, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Feb. 15, 1967, Ser. No. 616,191
Int. Cl. C07d *27/14*
U.S. Cl. 260—247.2 A **16 Claims**

Antibacterial 2-ethyl-1-pyrroline-3-carboxamides and derivatives thereof are prepared from either 1-(2-propynyl)-2-pyrrolidinone or 1-(1,2-propadienyl)-2-pyrrolidinone and amines in the presence of base. The carboxamides react with phenyl isocyanates to produce 1-phenylcarbamyl-2-ethyl-2-pyrroline-3-carboxamides, with either an acid halide or acid anhydride to give the corresponding 1-acyl-2-ethylidenepyrrolidine-3-carboxamides and with hydrogen to give the corresponding 2-ethyl-pyrrolidine-3-carboxamides.

3,624,082
PROCESS FOR MAKING 2-HYDROXY-3-ALKOXY QUATERNARY AMMONIUM PROPANE SALTS
Morton Lewis, Skokie, and Thomas W. Findley, La Grange, both of Ill., assignors to Swift & Company, Chicago, Ill.
Filed May 26, 1966, Ser. No. 553,019
Int. Cl. C07d *87/32*
U.S. Cl. 260—247.7 A **8 Claims**

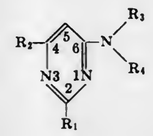
Quaternary ammonium salts are produced in substantial yields within a reasonable time by reacting, in the presence of water, a tertiary amine and 1-halo, 2-hydroxy, 3-alkoxy propane or by reacting the corresponding tertiary amine hydrohalide and glycidyl ether. The compositions possess surfactant properties and can be used as emulsifying agents, germicides, etc.

3,624,083
BASICALLY SUBSTITUTED 10,5-(EPOXYMETHANO)-10,11-DIHYDRO-5H-DIBENZO[A,D] CYCLOHEPTENES 11
Thomas A. Dobson, St. Laurent, Quebec, and Martin A. Davis, Montreal, Quebec, both of Canada, assignors to American Home Products Corporation, New York, N.Y.
Original application Jan. 1, 1967, Ser. No. 609,788, now Patent No. 3,535,340. Divided and this application Dec. 16, 1969, Ser. No. 885,642
Int. Cl. C07d *87/28*
U.S. Cl. 260—247.7 **9 Claims**

There are disclosed herein a number of 11-substituted 10,5(epoxymethano)-10,11-dihydro-5H-dibenzo[a,d]cycloheptenes in which the substituent is position 11 is a dialkylamino group in which the alkyl groups are the same or different and contain from one-six carbon atoms each, the N-methylbenzylamino, the N-propylphenethylamine, the pyrrolidino, morpholino, derivatives N′-methylpiperazino, or N′-phenylpiperazino group. The intermediate 5-methanol derivatives with the seven substituents in position 11 as listed above are also described. The compounds are useful as trichomonicidal and anticonvulsant agents, and methods for their use as well as a process of preparation are also disclosed.

3,624,084
2,4,6-TRISUBSTITUTED DERIVATIVES OF PYRIMIDINE
Jacques Mathieu, Brussels, Belgium, assignor to U.C.B. Societe Anonyme, Saint-Gilles-les Bruxelles, Belgium
Filed Jan. 22, 1968, Ser. No. 699,294
Claims priority, application Great Britain, Jan. 25, 1967, 3,774/67
Int. Cl. C07d *51/42, 87/38*
U.S. Cl. 260—256.4 N **7 Claims**

New 2,4,6-trisubstituted pyrimidine derivatives of the general formula



in which R_1 is hydrogen, lower alkyl, aralkyl,
R_2 is hydrogen, halogen, lower alkyl, hydroxyalkylamino, omega-aryl-omega-hydroxyalkylamino, morpholino,
R_3 is hydrogen, lower alkyl eventually hydroxyl-substituted, aralkyl,
R_4 is lower alkyl substituted by at least one hydroxyl group separated from N by at least two carbon atoms, or
R_3 and R_4 together with the extranuclear N are morpholino, as well as their salts with inorganic or organic acids.
These compounds are hypotensives, peripheral and coronary vasodilators, diuretics, bronchodilators, spasmolytics and circulatory and respiratory analeptics.

3,624,085
PYRAZINYLTHIOAMIDES
Charles Malen, Fresnes; Bernard Danree, St-Germain en Laye, and Xavier Pascaud, Paris, all of France, assignors to Societe em nom Collictif Science Union Et Cie, Society Francasie De Recherche Medicale, Suresnes, France
Filed July 2, 1969, Ser. No. 838,696
Claims priority, application Great Britain, July 10, 1968, 32,821/68
Int. Cl. C07d *51/76, 51/36*
U.S. Cl. 260—250 **4 Claims**

Ethane thioamides disubstituted in 2-position by Het and R—Het being 2-pyridyl, 2- and 4-pyrimidyl, 2-pyrazinyl, 2- and 4-thiazolyl, which are optionally substituted, and —R being lower-alkyl having up to six carbon atoms inclusive when Het is 2-pyridyl, and when Het is other than 2-pyridyl, R is then, lower-alkyl having up to six carbon atoms inclusive, hydrogen, phenyl, halophenyl, lower alkyl-phenyl or lower-alkyloxy phenyl.
These compounds possess antisecretory and ulceroprotector properties.

3,624,086
ADAMANTANECARBOXAMIDOALKANOIC ACID AMIDES
Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Filed Nov. 10, 1969, Ser. No. 875,556
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 R **5 Claims**

The present adamantanecarboxamidoalkanoic acid amides possess antibiotic activity against a variety of organisms. Thus, they are antibacterial, antiprotozoal, antifungal, antialgal, and anthelmintic agents. In addition, they are antiulcer agents. The compounds can be prepared by the reaction of an adamantanecarboxamidoalkanoyl halide, preferably the chloride, with an appropriate amine.

3,624,087
SYNTHESIS OF ACRONYCINE AND RELATED COMPOUNDS
James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed July 17, 1967, Ser. No. 653,667
Int. Cl. C07d *37/18*
U.S. Cl. 260—279 R **3 Claims**

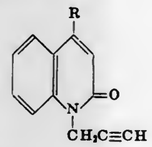
The total synthesis of acronycine and related compounds from readily available starting materials is described, as are various classes of intermediates useful in the synthesis.

3,624,088
TRICHLORO-ETHYLIDINE AMINO QUINOLINES
Pal Benko; Zoltan Budai; Laszlo Pallos, and Edit Berenyi, nee Poldermann, all of Budapest, Hungary, assignors to Egyesult Gyogyszer-es Tapszergyar
Filed Apr. 10, 1969, Ser. No. 815,238
Claims priority, application Hungary, Apr. 12, 1968, EE 1505
Int. Cl. C07d *33/52*
U.S. Cl. 260—288 **3 Claims**

Trichloro ethylidine amine derivatives of quinolines, thiazoles and tetrahydronaphthalenes having anthelmonthic and fungicidal activity are disclosed.

3,624,089
1-(2-PROPYNYL)-R-CARBOSTYRIL
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 21, 1969, Ser. No. 878,904
Int. Cl. C07d *33/46*
U.S. Cl. 260—289 R **3 Claims**

The present invention is directed to new compounds corresponding to the formula:



wherein R is hydrogen or lower alkyl groups of from one to about four, both inclusive, carbon atoms. The new compounds of the present invention are suitable for use as herbicides and fungicides, and exhibit depressant activity on the central nervous system.

3,624,090
PREPARATION OF PYRIDINE
Duncan Clark, Norton-on-Tees; Percy Hayden, Norton-on-Tees; Alan Bell, Runcorn, and John Edward Colchester, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England
Continuation of application Ser. No. 485,081, Sept. 3, 1965, now abandoned. This application Apr. 7, 1969, Ser. No. 817,251
Int. Cl. C07d *31/08*
U.S. Cl. 260—290 **10 Claims**

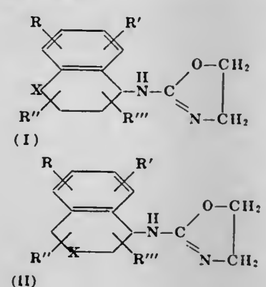
There is provided a process for preparing pyridine wherein substituted or unsubstituted glutaraldehydes or precursors thereof are reacted in the liquid phase with ammonium ions in the presence of molecular oxygen and cupric ions and in a medium comprising an alkanoic acid. The alkanoic acid preferably has up to 6 carbon atoms in the alkyl group, such as acetic acid. The cupric ions may be supplied in the form of a salt such as cupric acetate. Conveniently, the reaction temperature is up to 150° C. and the partial pressure of oxygen is at least 0.5 atmospheres.

3,624,091
OXIME-O-CARBONIC ACID ESTERS
Werner Daum, Uerdingen; Heinrich Krimm, Uerdingen; Hans Scheinpflug, Leverkusen; Paul-Ernst Frohberger, Leverkusen, and Ferdinand Grewe, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 12, 1969, Ser. No. 876,141
Claims priority, application Germany, Nov. 16, 1968, P 18 09 385.1
Int. Cl. C07c *131/00, 135/00;* **A01n** *9/20*
U.S. Cl. 260—287 R **10 Claims**

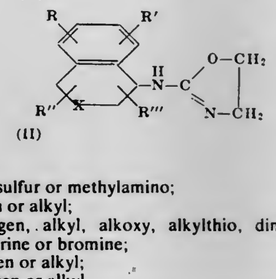
Oxime-O-carbonic acid esters, i.e., mono and di alkyl and/or phenyl ketoxime-O-carbonic acid, -(di to penta halophenyl), -[([mono and di alkyl and/or phenyl ketoxime-O′-carbonyloxy]-di to penta halo-phenyl-alkyl)-di to penta halophenyl], -diphenyl, and -quinolyl, -esters, which possess fungicidal properties and which may be produced by conventional methods.

3,624,092
CNS DEPRESSANT AMINO-OXAZOLINE COMPOUNDS, METHODS, AND COMPOSITIONS
George Levitt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Original application June 12, 1967, Ser. No. 646,154, now Patent No. 3,509,170. Divided and this application Mar. 23, 1970, Ser. No. 22,027
Int. Cl. C07d *85/36*
U.S. Cl. 260—288 R **2 Claims**

Amino-oxazolines useful as central nervous system depressants having the formula:



(I)



(II)

wherein
X is oxygen, sulfur or methylamino;
R is hydrogen or alkyl;
R′ is hydrogen, alkyl, alkoxy, alkylthio, dimethylamino, fluorine, chlorine or bromine;
R″ is hydrogen or alkyl;
R‴ is hydrogen or alkyl.
Typical is 2-(4-thiochromanylamino)-2-oxazoline useful as a central nervous system depressant.

3,624,093
5,6-DISUBSTITUTED-2,3,5,6-TETRAHYDROIMIDAZO-[2,1-α]ISOQUINOLIN-6-OLS
Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,305
Int. Cl. C07d *35/10*
U.S. Cl. 260—288 R **11 Claims**

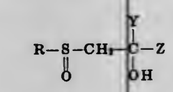
Novel 5,6-disubstituted-2,3,5,6-tetrahydroimidazo-[2,1-α]isoquinolin-6-ols have been prepared which are useful anti-inflammatory agents.

3,624,094
ALPHA-[(PHENYL SULFINYL)METHYL]-ALPHA-PHENYL DERIVATIVES OF PYRIDINEMETHANOLS

Jean A. Gautier; Marcel Y. Miocque; Henri Moskowitz; Janine L. Blanc-Guenee; Guy M. Raynaud, and Micheline Y. Sergant, all of Paris, France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine, France

Filed Sept. 18, 1969, Ser. No. 859,168
Claims priority, application France, Nov. 15, 1968, 173828
Int. Cl. C07d 31/48
U.S. Cl. 260—294.8 F 2 Claims

A compound of the formula



in which R is methyl or phenyl,
Y is H, substituted or unsubstituted phenyl or a heterocyclic radical,
Z is a substituted or unsubstituted phenyl or a heterocyclic radical,
or



is a mono- or polycyclic radical.
The compounds are prepared by reacting



with an alkali metal amide, in anhydrous liquid ammonia, and then adding



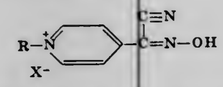
The compounds are useful as analgesics, antiinflammatory agents, antidepressants and CNS stimulants.

3,624,095
4-CYANOFORMYL-1-ALKYL PYRIDINIUM HALIDE OXIME AND ITS DERIVATIVES

Robert H. Poirier, Columbus, Ohio; Bernard W. Fromm, Edgewood; Edward J. Poziomek, Edgewood; John A. Stein, Parkville, and David N. Kramer, Stevenson, Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 11, 1962, Ser. No. 223,309
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 6 Claims

1. Compounds having the formula



where R is an alkyl group of 1 to 4 carbon atoms and X is selected from the group consisting of Cl^-, Br^- and I^-

3,624,096
PROCESS FOR PRODUCING CERTAIN AMIDE DERIVATIVES OF PYRIDINE AND REDUCING SAID AMIDES TO CORRESPONDING AMINES

Rudolph A. Abramovitch, and George M. Singer, both of Tuscaloosa, Ala., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 27, 1969, Ser. No. 837,325
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 7 Claims

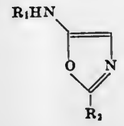
A process is described for the alkylamination or arylamination of five- or six-membered heteroaromatic N-oxides. In the process, a five- or six-membered heteroaromatic N-oxide and an appropriately substituted imidoyl chloride or imidoyl bromide or a nitrilium salt derived therefrom, are heated in an inert polar solvent at reflux temperature for a period of time sufficient to bring the reaction to completion. The amide reaction product, which is thus obtained, is subsequently converted to the amine by conventional hydrolysis procedures.

3,624,097
N-PYRIDINE 5-AMINOOXAZOLES

Maximilian Von Strandtmann, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed July 22, 1969, Ser. No. 843,762
Int. Cl. C07d 31/42
U.S. Cl. 260—296 R 4 Claims

The present invention is concerned with compounds of formula I:



I

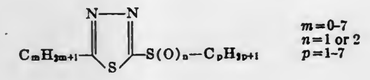
wherein R_1 is heteroaryl and R_2 is alkyl, aryl, or heteroaryl. Compounds of this invention exhibit central nervous system depressant properties.

3,624,098
1,3,4-THIADIAZOLES

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Summit, both of N.J., assignors to CIBA Corporation, Summit, N.J.

Filed June 19, 1969, Ser. No. 834,893
Int. Cl. C07d 91/62
U.S. Cl. 260—302 SD 3 Claims

New 2-sulfinyl- or sulfonyl-1,3,4-thiadiazoles, e.g. those of the formula:



m=0-7
n=1 or 2
p=1-7

and salts thereof are antibacterial agents.

3,624,099
PROCESS OF PREPARING 2 -IMINO-αPHENYL 3-THIAZOLIDINEETHANOL ACID SALTS

Milton Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 669,733, Sept. 22, 1967, now abandoned , which is a division of application Ser. No. 493,231, Oct. 5, 1965, now abandoned. This application Aug. 4, 1969, Ser. No. 847,392
Int. Cl. C07d 91/16
U.S. Cl. 260—306.7 2 Claims

A method of preparing dl 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride from dl α-phenyl-1-aziridineethanol via the intermediate 2-[(β-hydroxyphenethyl)amino]ethyl thiocyanate, is described. The products are useful as intermediates in the preparation of the anthelmintic dl 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole.

3,624,100
INSECTICIDAL AND ACARICIDAL 2-PHENYL-BENZIMIDAZOLES

Wilhelm E. Frick, Baselland; Horst Harle, Allschwil; Thomas Wenger, Riehen, and Anton Weiss, Basel, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 27, 1967, Ser. No. 634,092
Claims priority, application Switzerland, May 6, 1966, 6667/66
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 6 Claims

New 2-phenyl-benzimidazoles which are substituted by at least three halogen and/or trifluoromethyl radicals none of which, however, is present at the phenyl radical in an orthoposition relative to the link to the benzimidazole moiety, and optionally by further substituents; as well as their alkali metal and alkaline earth metal salts; which compounds are useful as insecticides and acaricides; and insecticidal and acaricidal compositions containing such compounds as active ingredients; a method of controlling insects and acarinae, and of protecting keratinous material from damage by insects or their larvae, with the aid of such novel compounds; as well as keratinous materials protected with the aid of the said compounds.

3,624,101
2,3-DIHYDRO-5-ARYL-5H-BENZ[F]IMIDAZO[2,1-A]ISOINDOL-5-OLS

Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 10, 1970, Ser. No. 18,310
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 6 Claims

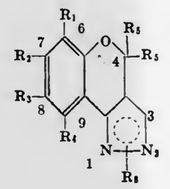
2,3-dihydro-5-aryl-5H-benz[f]imidazo[2,1-a]isoindol-5-ols have been prepared which are pharmacologically active as antidepressant.

3,624,102
SUBSTITUTED BENZOPYRANOPYRAZOLES

Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 21, 1969, Ser. No. 826,656
Int. Cl. C07d 49/18
U.S. Cl. 260—310 R 15 Claims

A class of benzopyranopyrazoles of the formula:



I

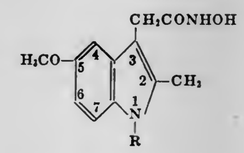
are disclosed. In the above formula R_1, R_2, R_3, and R_4 are hydrogen, hydroxy, lower alkoxy, or ω-diloweralkylaminoloweralkoxy; R_5 is hydrogen or lower alkyl; R_6 is hydrogen, lower alkyl, aryl, aralkyl, or ω-diloweralkylaminoloweralkyl group. These compounds exert a mild depressant activity on the central nervous system of a mammalian host and are useful in the relief of mild and moderate anxiety.

3,624,103
3-INDOLEACETOHYDROXAMIC ACIDS

Franco De Martiis, Turin; Edoardo Arrigoni-Martelli, Milan, and Teresio Tamietto, Turin, all of Italy, assignors to Instituto Biologico Chemioterapico "ABC" S.p.A., Turin, Italy

Filed May 6, 1969, Ser. No. 822,320
Claims priority, application Italy, May 21, 1968, 51749 A/68
Int. Cl. C07d 27/56
U.S. Cl. 260—326.13A 5 Claims

2-methyl-5-methoxy-3-indoleacetohydroxamic acid compounds of the formula:



wherein R is a member selected from the group consisting of hydrogen, phenylmethyl, allyl, vinyl, isopropenyl, benzoyl, chlorobenzoyl, methoxybenzoyl, and thiomethylbenzoyl, and process for preparing same. These compounds exhibit excellent anti-inflammatory, antipyretic and analgesic effects.

3,624,104
ARALKANOYL DERIVATIVES OF DIBENZOXAZEPINE-N-CARBOXYLIC ACID HYDRAZIDES

John W. Cusic, Skokie, Ill., and William E. Coyne, St. Paul, Minn., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,888
Int. Cl. C07d 87/54, 93/42
U.S. Cl. 260—333 4 Claims

Disubstituted hydrazines wherein the 1-substituent is a dibenzoxazepine carbonyl group or a similar group, and where the 2-substituent is an aralkanoyl group are described herein. The compounds are prepared by reacting hydrazine first with one appropriate acid chloride and then with the second appropriate acid chloride. The compounds are useful as antihypercholesterolemic agents and as anti-inflammatory agents.

3,624,105
METHOD FOR SYNTHESIZING RHODOXANTHIN

Joseph Donald Surmatis, West Caldwell, and Armin Walser, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original application Feb. 23, 1967, Ser. No. 617,827, now Patent No. 3,466,331, dated Sept. 9, 1969. Divided and this application May 19, 1969, Ser. No. 826,022
Int. Cl. C07d 13/04
U.S. Cl. 260—340.9 1 Claim

A method by which rhodoxanthin can be synthesized from 3-ethylenedioxy-β-ionone as well as new and novel intermediates produced in the synthesis. Rhodoxanthin is a well-known coloring agent for foodstuffs, including beverages, pharmaceutical and cosmetic preparations.

3,624,106
TETRAHYDROPYRANYL ETHER OF 3-ENDO-METHYL-3-EXO(4'-METHYL-5'-HYDROXYPENTYL) NORCAMPHOR

Wayne I. Fanta, and William F. Erman, both of The Procter & Gamble Co. Miami Valley Lab, Cincinnati, Ohio

Original application Mar. 29, 1968, Ser. No. 717,384, now abandoned. Divided and this application Apr. 6, 1970, Ser. No. 26,061
Int. Cl. C07c 49/30; C07d 7/14
U.S. Cl. 260—345.9 1 Claim

The novel compounds, 2-methyl-5-bromopentyl tetrahydropyranyl ether and tetrahydropyranyl ether of 3-

endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor and a process for preparing 2-methyl-5-bromopentyl tetrahydropyranyl ether, tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor and 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor comprising the steps of: (1) esterifying 2-methyl-4-pentenol; (2) hydrobrominating the ester in the presence of a free radical catalyst; (3) reducing the hydrobrominated ester to 2-methyl-5-bromopentanol; (4) etherifying 2-methyl-5-bromopentanol with dihydropyran to obtain the novel compound, 2-methyl-5-bromopentyl tetrahydropyranyl ether; (5) alkylating 3-methylnorcamphor with the 2-methyl-5-bromopentyl tetrahydropyranyl ether to obtain the novel compound, tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor; and (6) treating tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor with p-toluenesulfonic acid or hydrochloric acid to obtain 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor.

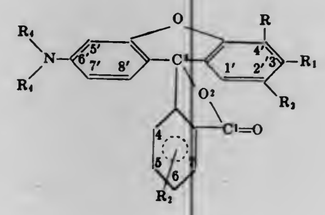
3,624,107

NITRO- AND AMINO-SUBSTITUTED FLUORANS

Chao-han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 21, 1969, Ser. No. 792,279
Int. Cl. C07d *5/00*
U.S. Cl. 260—343.3 **6 Claims**

A chromogenic material of normally colorless form is disclosed, having the structural formula:



wherein one of R, R_1, R_2, and R_3 represents nitro- or amino-radical and the remaining other of R, R_1, R_2, and R_3 comprise hydrogen, halogen, phenyl and alkyl radicals and R_4 represents alkyl radicals having less than five carbons; said material assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include 6'-diethylamino-2'-nitrofluoran; 2'-amino-6'-diethylaminofluoran; 6'-diethylamino-3'-methyl-2'-nitrofluoran; 2'-amino-6'diethylamino-3'-methylfluoran; 6'-diethylamino-2'-methyl-4'-nitrofluoran; 4'-amino-6'-diethylamino-2'-methylfluoran; 2'-chloro-6'-diethylamino-3'methyl-5-nitrofluoran; and 6-amino-2'-chloro-6'-diethylamino-3'-methylfluoran.

3,624,108

7-CARBOXYPHTHALIDES

Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, both of N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Original application Apr. 23, 1968, Ser. No. 729,487, now Patent No. 3,539,567, Continuation-in-part of application Ser. No. 583,980, Oct. 3, 1966, now abandoned , Continuation-in-part of application Ser. No. 539,303, Apr. 1, 1966, now abandoned , Continuation-in-part of application Ser. No. 445,762, Apr. 5, 1966, now abandoned. Divided and this application Dec. 15, 1969, Ser. No. 889,795
Int. Cl. C07d *5/32*
U.S. Cl. 260—343.3 **4 Claims**

Various derivatives of 8-carboxy-1(2H) phthalazinones are anti-inflammatory agents and chemical intermediates for the preparation of 3-keto-2,3-dihydro-1,2,8,9-tetraazaphenalenes.

3,624,109

EPOXYORGANOFLUOROSILANES AND AMINO-HYDROXY DERIVATIVES THEREOF

Enrico J. Pepe, Kenmore, and Bernard Kanner, Tonawanda, both of N.Y., assignors to Union Carbide Corporation

Original application Oct. 3, 1963, Ser. No. 313,418, now Patent No. 3,334,121. Divided and this application Apr. 6, 1967, Ser. No. 643,771
Int. Cl. C07f *7/12*
U.S. Cl. 260—348 SC **4 Claims**

The invention characterizes novel epoxy organo fluoro silanes wherein the fluorine is directly bonded to silicon.

3,624,110

13-ETHYLGONA-4,9-DIENES

Gordon Alan Hughes, 615 Lanmore Ave., Wayne, Pa.; Herchel Smith, 500 Chestnut Lane, Wayne, Pa., and David Hartley, 1078 Montgomery Ave., Conshohocken, Pa., assignors to said Smith, by said Hughes and said Hartley

Continuation-in-part of application Ser. No. 194,972, May 15, 1962, now Patent No. 3,502,699. This application Aug. 3, 1964, Ser. No. 386,987
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.3 **9 Claims**

This invention is related to 13-ethylgona-4, 9-dien-3-ones and to compositions containing said compounds. The compounds are pharmacologically active and exhibit antiestrogenic, anabolic, pituitary blocking, and progestational effects.

3,624,111

18-LOWER ALKYL ANDROSTENES

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of application Ser. No. 528,398, Feb. 18, 1966, now Patent No. 3,402,173, which is a continuation-in-part of application Ser. No. 441,297, Mar. 19, 1965, now abandoned. This application Mar. 30, 1966, Ser. No. 538,581
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **11 Claims**

18-Lower alkyl androstenes prepared by converting 3β, 20β-dihydroxypregn-5-en-18-oic acid 18,20-lactone 3-acetate into 3β,20β-di-hydroxy-18-alkylpregn-5-en-18-one using lower alkyl magnesium halide which is converted into 18-alkylpregn-5-en-3β,20β-diol via the hydrazone followed by oxidation to afford 18-alkyl-progesterone which is converted into the enol ether and then the 17α-hydroperoxy thereof is treated with, for example, zinc in acetic acid to furnish 18-alkyl-17α-hydroxyprogesterone. This compound upon treatment with lithium tri-t-butoxyaluminum hydride followed by lead tetraacetate yields 3β-hydroxy-18-alkylandrost-4-en-17-one which can be further modified.

3,624,112

LONG-ACTING STEROIDS OF THE ESTROGENIC SERIES

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza (Milan), and Romano Vitali, Casatenovo (Como), all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 10, 1969, Ser. No. 884,009
Claims priority, application Italy, Dec. 11, 1968, 24885 A/68
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 **42 Claims**

C_7-C_{20} 17-cycloalkenyl ethers of estradiol 3-benzoate or substituted benzoate having prolonged contraceptive and estrogenic activity are obtained by reacting estradiol 3-benzoate or substituted benzoate with a functional derivative of a cyclic ketone at a temperature higher than 70° C.

3,624,113

LONG-ACTING ESTRADIOL DERIVATIVES

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza (Milan), and Romano Vitali, Casatenova (Como), all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 10, 1969, Ser. No. 884,008
Claims priority, application Italy, Dec. 11, 1968, 24887 A/68
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 **5 Claims**

C_7—C_{12} and C_{15}—17-cycloalkenyl ethers of estradiol-3-alkanoyl ester having contraceptive and estrogenic activity are obtained by reacting estradiol-3-alkanoyl-ester with a functional derivative of a cyclic ketone at a temperature higher than 70° C.

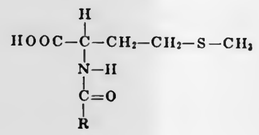
3,624,114

FATTY ACID AMIDO-METHIONINE PRODUCTS

Jean V. Morelle, 170 Avenue Parmentier, 75 Paris, 10 ime, France

Continuation-in-part of application Ser. No. 672,975, Oct. 5, 1967, now abandoned. This application Dec. 18, 1969, Ser. No. 886,384
Int. Cl. C08h *3/00*
U.S. Cl. 260—402.5 **4 Claims**

Water-insoluble, lipo-soluble compounds consisting of fatty acid amido-methionines of the formula:



wherein R is an aliphatic hydrocarbon chain of five to 29 carbon atoms. These compounds are especially useful in therapeutic and cosmetic preparations to be applied to human phaners, i.e. finger nails and hair.

3,624,115

COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 585,253, Oct. 10, 1966. This application Mar. 24, 1970, Ser. No. 22,400
Int. Cl. C10m *1/40;* **C07f** *3/06, 15/04*
U.S. Cl. 260—429.9 **13 Claims**

Metal complexes useful in organic fluids to impart detergency and neutralizing properties thereto are obtained by reacting an alkylene polyamine with a monocarboxylic acid or anhydride, followed by reacting the product thus obtained with an alkylsuccinic acid or anhydride and a metal salt.

3,624,116

NICKEL DERIVATIVES OF METHYLENE BIS-SALICYLIC ACID AND PROCESS FOR PREPARING THE SAME

Laird Gordon Lindsay Ward, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,653
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R **9 Claims**

Nickel derivatives of methylene bis-salicylic acid are prepared in which methylene bis-salicylic acid, a Group Ia metal alkoxide and a nickel salt are reacted in an essentially nonaqueous environment, and the nickel derivatives are precipitated from solution. Nickel methylene bis-salicylate is effective as a light stabilizing additive in polymers such as polyvinylchloride.

3,624,117

COMPOUNDS PREPARED FROM ALUMINIUM HYDRIDE-TRIALKYL AMINE AND DECABORANE

Edward J. Bartoszek, Norristown, Pa., and Donald J. Mangold, New Haven, Conn., assignors to Olin Mathieson Chemical Corporation

Filed Aug. 30, 1961, Ser. No. 135,411
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 R **7 Claims**

1. Organo metallic compounds of the formula:
$[R_3N{\cdot}AlH_2]_2B_{10}H_{12}$,
wherein R is an alkyl group having from one to five carbon atoms.

3,624,118

REACTION PRODUCTS OF ALKALI METAL AMIDES AND TRIALKYL ALUMINUM COMPOUNDS

Stelvio Papetti, Hamden, Conn., assignor to Olin Methieson Chemical Corporation

Filed Aug. 9, 1961, Ser. No. 130,433
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A **11 Claims**

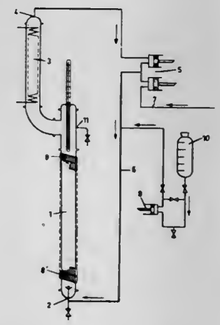
1. Organo aluminum compounds of the formula:
$M[NH_2\ AlR_3]$
Wherein M is an alkali metal and R is an alkyl group having one to eight carbon atoms.

3,624,119

PROCESS OF MAKING ALKYLTRIHALOGENOSILANES

Wilfried Rothe, Strotzbach, and Hans Pfleger, Neu-Isenberg, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 803,125, Feb. 7, 1969, abandoned
Filed May 29, 1969, Ser. No. 829,035
Claims priority, application Germany, Feb. 9, 1968, P 16 43 926.2
Int. Cl. B01j *11/64;* **C07f** *7/02*
U.S. Cl. 260—448.2 E **7 Claims**



Alkyltrihalogenosilanes are made by reacting a trihalogenosilane with a gaseous olefin at a temperature between 30° and 150° C. and normal pressure in the presence of a platinum metal catalyst.

3,624,120

QUATERNARY AMMONIUM SALTS OF CYCLIC SILOXANE POLYMERS

Jerry J. Yetter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1969, Ser. No. 887,454
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N **9 Claims**

The siloxane linkages present in salts of the compound [bis-(trialkyl siloxy)-alkyl-2-(trialkyl ammonio)-alkyl

silane]are rearranged in water to form quaternary ammonium salts of cyclic siloxane polymers useful as cationic surfactants, bactericides, and anticariogenic agents.

3,624,121
NEW CHELATES OF SILICON

Terry G. Selin, Schenectady, N.Y., assignor to General Electric Company

Original application Jan. 3, 1969, Ser. No. 788,948. Divided and this application July 20, 1970, Ser. No. 56,663
Int. Cl. C07f *7/04, 7/18*
U.S. Cl. 260—448.8 R 3 Claims

New organosilicon chelates are formed from diketones and derivatives of diketones, where the silicon atom has functional substituents other than the diketone compound residue. The materials are useful as curing agents for room temperature vulcanizing materials.

3,624,122
ALICYCLIC DIISOCYANATES

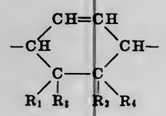
Marwan R. Kamal; John R. Nazy, and Donald H. Wheeler, all of Minneapolis, Minn., assignors to General Mills, Inc.

Filed June 24, 1966, Ser. No. 560,112
Int. Cl. C07c *87/34, 119/04*; C08c *22/24*
U.S. Cl. 260—453 A 9 Claims

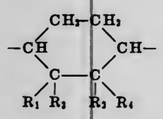
Diisocyanates of the formula

$R'—Z—R''—CH_2NCO$

where R′ is a monovalent straight chain saturated or ethylenically unsaturated aliphatic hydrocarbon radical containing 2 to 6 carbon atoms, R″ is a divalent straight chain saturated or ethylenically unsaturated hydrocarbon radical containing 7 to 11 carbon atoms, the sum of the carbon atoms in R′ and R″ is 13, and Z is a divalent radical of the structure



or



where R_1 and R_2 are H or CH_3 with the proviso that one of such radicals must be H and R_3 and R_4 are H or CH_2NCO with the proviso that one of such radicals must be H and the other must be CH_2NCO. Polymers prepared by reacting such diisocyanates with compounds having at least two active hydrogen atoms as determined by the Zerewitinoff method.

3,624,123
T-ALKYL PERESTERS OF T-HYDROPEROXIDES

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, both of Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed May 1, 1968, Ser. No. 725,931
Int. Cl. C07c *79/00*
U.S. Cl. 260—453 R 13 Claims

Tertiary alkyl peresters of tertiary hydroperoxides useful as polymerization initiators characterized by the tertiary alkyl group of the acid moiety having at least one alkyl group of two or more carbon atoms. The peresters are particularly efficient in the polymerization of certain vinyl monomers such as vinyl chloride.

3,624,124
N-ADAMANTYL AMIDES

Seymour D. Levine, and Venkatachala L. Narayanan, both of North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 837,000, June 26, 1969, now abandoned. This application Feb. 27, 1970, Ser. No. 15,205
Int. Cl. C07c *103/30, 103/32*; C07d *25/02*
U.S. Cl. 260—465 D 2 Claims

Adamantyl lactams are prepared by reacting an adamantyl amine with a 3-, 4-, or 5-halo acyl halide to yield an adamantyl amine haloamide followed by base cyclization of the latter. These adamantyl lactams possess antiviral and antibacterial activities.

3,624,125
PREPARATION OF ALIPHATIC DINITRILES BY AMMOXIDATION OF HYDROCARBONS

Clive Barnett; John Dewing, and Anthony Howden Jubb, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1968, Ser. No. 770,827
Claims priority, application Great Britain, Nov. 6, 1967, 50,336/67
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 5 Claims

A process for the preparation of aliphatic dinitriles, particularly adiponitrile, by reacting methylcyclohexane with ammonia and oxygen over an antimony or molybdenum oxide catalyst, optionally in the presence of halogen at the catalyst surface.

3,624,126
Δ^2, α-ADAMANTANE ACETIC ACID

Venkatachala L. Narayanan, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 854,724, Sept. 2, 1969, now abandoned. This application May 4, 1970, Ser. No. 34,909
Int. Cl. C07c *61/28, 69/74*
U.S. Cl. 260—468 B 4 Claims

1-Azacyclopentano[1,2-a]adamantane compounds and derivatives thereof which have antiviral and anti-inflammatory properties and which are useful cardiovascular agents may be prepared starting from 2-adamantanones or substituted 2-adamantanones and proceeding through a series of intermediate compounds to the corresponding 1-azacyclopentano[1,2-a]-adamantanes. Derivatives may be obtained by reacting the latter with an alkyl or alkenyl halide, haloalkylamine or a haloalkyl substituted amine, a haloalkylcarboxylic acid, an aralkyl halide of up to 10 carbon atoms, or a haloalkyladamantylamine or haloalkyl substituted adamantylamine. The 2-adamantane alkylamine intermediates for the 1-azacyclopentano-[1,2-a]adamantane compounds also have antiviral and anti-inflammatory properties and are useful cardiovascular agents.

3,624,127
BASIC ESTERS OF CYCLOHEXYLIDENEACETIC ACIDS AND INTERMEDIATES

Philip E. Shaw, Winter Haven, Fla.; Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 11, 1966, Ser. No. 585,759
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 R 7 Claims

Cyclohexanone, optionally substituted in the 2-position by lower-alkyl and/or in the 4-position by hydroxy or acyloxy, reacts with a trilower-alkyl α-phosphono-lower-alkanoate to give a lower-alkyl Δ^1, -cyclohexaneacetate or corresponding derivative thereof. The latter is hydrolyzed to the free acid, which, via the acid chloride, is esterified with an amino-lower-alkanol, giving basic esters having cardiovascular and antidepressant properties.

3,624,128
POLYHYDRO-2-NAPHTHYLIDENEACETIC ACIDS AND BASIC ESTERS THEREOF

Philip E. Shaw, Winter Haven, Fla.; Dol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 11, 1966, Ser. No. 585,756
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 F 8 Claims

3,4,4aα,5,6,7,8,8aβ-octahydro-2(1H)-naphthalenone, optionally substituted in the 6-position by oxo, hydroxy or acyloxy, reacts with a tri-lower-alkyl α-phosphono-lower-alkanoate to give the corresponding lower-alkyl octahydro-2-naphthylideneacetate. The latter is hydrolyzed to the free acid, which, via the acid chloride, is esterified with an amino-lower-alkanol, giving basic esters having cardiotonic activity.

3,624,129
COMPOUNDS CONTAINING A FLUORODINITROMETHYL GROUP

Mortimer J. Kamley, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 13, 1965, Ser. No. 480,258
Int. Cl. C07c *79/46*
U.S. Cl. 260—471 R 1 Claim

1,7 A compound selected from the group consisting of 2-Fluoro-2,2-Dinitroethanol, 2-Fluoro-2,2-Dinitroethyl-4,4,4-Trinitrobutyrate, 2-Fluoro-2,2,-Dinitroethyl-3,5-Dinitrobenzoate, α-Fluoro-α, α-Dinitrotoluene and αFluoro-α α, 3-Trinitrotoluene. A process for producing a compound containing a fluorodinitromethyl group which comprises reacting the alkali metal salt of the compound selected from the group consisting of 2,2-dinitroethanol and α, α, -dinitrotoluene with perchloryl fluoride to produce the corresponding fluorodinitro derivative.

3,624,130
SUBSTITUTED MALONIC ACID HYDRAZIDES AND PROCESS OF MAKING SAME

Kurt Klemm, Konstanz; Wolfgang Pruesse, Konstanz; Wolfgang Schoetensack, Hegne; Erhard Langenscheid, Konstanz, and Juergen Vogel, Konstanz, all of Germany, assignors to Byk-Gulden Lomberg, Chemische Fabrik G.m.b.H., Konstanz/ Bodensee, Germany

Filed Jan. 19, 1966, Ser. No. 521,490
Claims priority, application Germany, Jan. 22, 1965, B 80231
Int. Cl. C07c *125/04*
U.S. Cl. 260—471 A 27 Claims

Substituted malonic acid hydrazides in which at least one of the hydrogen atoms of the malonic acid moiety is substituted and wherein the hydrazide group contains phenyl substituents attached to the nitrogen atoms, and compositions containing the same; these compounds are useful in weed eradication and in the treatment of arthritis.

3,624,131
SUBSTITUTED 4,4′-(DIPHENYLMETHYLENE) DIPHENOLS

Hans-Dieter Becker, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 13, 1966, Ser. No. 578,987
Int. Cl. C07c *39/16*
U.S. Cl. 260—473 G 10 Claims

Bisphenols are disclosed which have four phenyl groups attached to a central aliphatic carbon atom, at least two and up to four of the phenyl groups having hydroxyl groups in the para position relative to the attachment to the central aliphatic carbon atom. The bisphenols are prepared by a photochemical process involving the reaction between a fuchsone and a phenol. The products are useful as antioxidants, polymerization inhibitors and as reactants for the preparation of polyesters and polycarbonate polymers.

3,624,132
ETHYL 2-(5-FORMYLPENTYL)-4,6-DIMETHOXYBENZOATE

Wilbert H. Urry, Chicago, Ill., assignor to Commercial Solvents Corporation, New York, N.Y.

Filed Jan. 30, 1967, Ser. No. 612,340
Int. Cl. C07c *69/74, 69/92*
U.S. Cl. 260—473 R 1 Claim

This application relates to 2-(5 carboxypentyl)-4, 6-dimethoxybenzoic acid, to intermediates useful in its preparation, and to methods for its preparation.

3,624,133
LIQUID ESTERS OF NAPHTHALENE DICARBOXYLIC ACIDS

Robert H. Reitsema, 406 Orchard Lane, Findlay, Ohio, and Nylen L. Allphin, Jr., 2657 Wright Ave., Pinole, Calif.

Continuation-in-part of application Ser. No. 292,495, July 2, 1963, now abandoned , Continuation-in-part of application Ser. No. 144,527, Oct. 12, 1961, now abandoned. This application Apr. 22, 1966, Ser. No. 544,419
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 FR 16 Claims

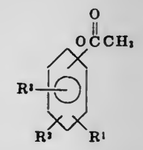
The present invention comprises esters selected from the group consisting of esters of 1,6-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol having four to eight carbon atoms; esters of 2,3-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol containing five to eight carbon atoms; and esters of a naphthalene dicarboxylic acid and a branch chain alkane alcohol having at least two carbon atoms in the branch when the branch is closer to the hydroxyl-substituted carbon atom than the gamma position.

3,624,134
PREPARATION OF ALKYLATED BENZENE ACETATE

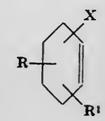
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,297
Int. Cl. C07c *69/14*
U.S. Cl. 260—479 R 5 Claims

A method of preparing an alkylated benzene compound of the formula:



where R^2 and R^3 are alkyl of from one to 20 carbons and R^1 is hydrogen or alkyl of from one to 20 carbons comprising contacting a gem polyalkylated cyclohexenone of the general formula:



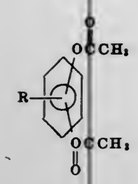
where R is said R^2 and R^3 is gem position to one another, R^1 is as heretofore defined, X is keto oxygen, with a mixture of concentrated sulfuric acid and acetic anhydride.

3,624,135
PREPARATION OF BENZENE DIACETATES

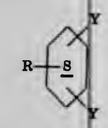
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,300
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R 6 Claims

A method of preparing a benzene diacetate of the formula:



where R is alkyl or hydrogen comprising contacting a cyclohexanedione of the formula:



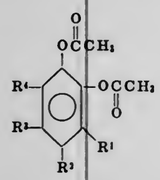
where R is as heretofore defined and Y is keto oxygen with a mixture of concentrated sulfuric acid and acetic anhydride.

3,624,136
METHOD OF PREPARING CATECHOL DIACETATES

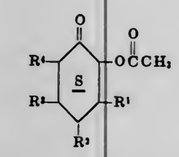
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,299
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R **4 Claims**

A method of preparing a catechol diacetate of the formula:



where R^1, R^2, R^3 and R^4 are hydrogen or alkyl comprising contacting 2-acetoxycyclohexanone of the formula:



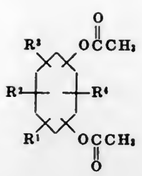
where R^1, R^2, R^3 and R^4 are as heretofore defined, with acetic anhydride, preferably in admixture with acetic acid, in the presence of boron trifuloride etherate, subsequently contacting the resultant mixture with concentrated sulfuric acid.

3,624,137
NON-GEM POLYALKYLATED BENZENE DIACETATE PREPARATION

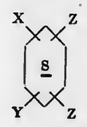
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,298
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R **3 Claims**

A method of preparing a non-gem polyalkylated benzene diacetate of the general formula:



where R^1 and R^2 are alkyl and R^3 and R^4 are both hydrogen or alkyl comprising contacting with a mixture of concentrated sulfuric acid and acetic anhydride, a gem polyalkylated cyclohexanedione of the general formula:



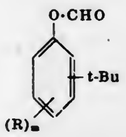
where X represents said R^1 and R^2 in gem position, Y represents said R^3 and R^4 in gem position, and Z represents keto oxygen.

3,624,138
PHENOL FORMATES

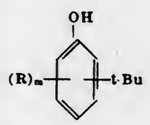
Keisuke Murayama; Shyoji Morimura; Takao Yoshioka, and Hideo, Horiuchi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Chuyuo-ku, Tokyo, Japan

Filed Sept. 29, 1966, Ser. No. 583,055
Claims priority, application Japan, Oct. 7, 1965, 40/61562; Oct. 7, 1965, 40/61563
U.S. Cl. 260—479 R **5 Claims**

New phenol formates of the formula



wherein R is a straight or branched alkyl, *m* is O to 3 and t-Bu is tert-butyl. Such phenol formates are prepared by reacting an alkyl phenol of the formula



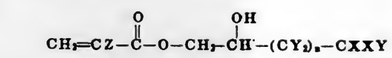
wherein R, *m* and t-Bu are as defined above with (A) a formamide derivative and a chloride or (B) formic acid in the presence of an esterification catalyst. The phenol formates are superior antidegradants and stabilizers.

3,624,139
ACRYLIC ACID ESTERS

Pauls Davis, Gibraltar, and Herwart C. Vogt, Grosse Ile, both of Mich., assignors to BASE Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of application Ser. No. 535,049, Mar. 17, 1966, now abandoned. This application Jan. 2, 1969, Ser. No. 788,644
Int. Cl. C01c *69/54*
U.S. Cl. 260—486 H **5 Claims**

A halogen containing ester composition of matter, and process for preparing same, having a structure depicted by the following formula:



wherein Z is selected from the group consisting of hydrogen and methyl group, Y is selected from the group consisting of hydrogen and halogen having an atomic weight of 19 to 80, inclusive, X is halogen having an atomic weight of 19 to 80, inclusive, and *n* is selected from 0 and 1.

3,624,140
PREPARATION OF HALOGENATED CARBOXYLIC ACID ESTERS

William C. Baird, Jr., Woodbridge, N.J., assignor to Esso Research and Engineering Company

Filed June 19, 1964, Ser. No. 376,585
Int. Cl. C07c *67/04*
U.S. Cl. 260—489 **14 Claims**

Halogenated esters of carboxylic acids are prepared by reacting a nontertiary olefinic hydrocarbon with a carboxylic acid salt, a cupric halide and palladium chloride in the presence of an anhydrous solvent.

3,624,141
PRODUCTION OF VINYL ACETATE FROM ETHYLENE USING A LIQUID REACTION MEDIUM CONTAINING A PALLADIUM COMPOUND CATALYST

Harry B. Copelin, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours, Wilmington, Del.

Filed Feb. 19, 1968, Ser. No. 706,670
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **8 Claims**

A method for producing vinyl acetate wherein a liquid composition consisting essentially of acetic acid, up to 20 percent water, a palladium II compound and copper and sodium or potassium salts providing acetate and chloride or bromide anions and also the anion of a strong acid whose pK is not greater than 4 is continuously cycled between a first stage where it is reacted with ethylene to produce vinyl acetate and a second stage where it is reacted with oxygen, and wherein the vinyl acetate product is separated from the liquid composition between the first and second stages.

3,624,142
SUBSTITUTED BIPHENYL ACETIC ACID DERIVATIVES

Tsung-Ying Shen, Westfield; Conrad P. Dorn, Jr., Plainfield, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 10, 1964, Ser. No. 395,553
Int. Cl. C07c *63/52, 69/76*
U.S. Cl. 260—515 A **3 Claims**

The invention relates to new substituted biphenyl acetic acids and derivatives thereof. These novel compounds are useful as antiinflammatory agents and for the control of arthritic conditions.

3,624,143
COMPOUNDS OF THE CLASS β-ARALKYLTHIO-SUBSTITUTED-α-AMINO ACIDS

Tsung-Ying Shen, Westfield; Gordon L. Walford, Westfield, and Conrad P. Dorn, Jr., Plainfield, all of N.J., assignors to Merck & Co.

Filed May 10, 1968, Ser. No. 728,351
Int. Cl. C07c *149/42*
U.S. Cl. 260—516 **8 Claims**

β-Aralkylthio-substituted-α-amino acids and derivatives thereof useful as antiinflammatory agents are described.
A process for preparing some of these amino acids by reaction of the corresponding aldehydes or ketones in the Strecker or hydantoin synthesis is shown.

3,624,144
ZEARALENONE INTERMEDIATES AND THEIR PREPARATION

Norman L. Wendler, Summit; David Taub, Metuchen, and Narindar Nath Girotra, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 18, 1967, Ser. No. 609,995
Int. Cl. C07c *65/02*
U.S. Cl. 260—521 **5 Claims**

d,l-zearaleneone and mono- and diethers thereof, compounds having anabolic, estrogenic and fertility control properties, are prepared by a total chemical synthesis. An aromatic ring component, a diether of 2-formyl-4,6-dihydroxy benzoic acid, is prepared by selective reduction of a diether of 3,5-dihydroxy phthalic anhydride; an aliphatic component, 2-loweralkoxy-6-methyltetrahydropyran-2-butyl triphenyl phosphonium halide, is prepared via a sequence of reactions involving the condensation of 2-hydroxyhexanoic acid-δ- lactone with pent-4-enyl magnesium bromide, subsequent treatment with alcoholic acid to form 2-(pent-4-enyl)-2-loweralkoxy-6-methyl tetrahydropyran, which substance is in turn ozonized, reduced with alkali metal borohydride, reacted with an alkyl or aryl sulfonyl halide, and then with sodium bromide or iodide to afford 2-(δ-halobutyl)-2-loweralkoxy-6-methyl tetrahydropyran, which latter substance is reacted with triaryl phosphine to afford the above-stated aliphatic component. The aromatic and aliphatic components are coupled and the resulting 1-(3,5-diether-6-carboxyphenyl)-10-hydroxy-1-undecen-6-one ring-closed with trifluoroacetic anhydride to yield d,l-zearalenone diether, which is cleaved with boron tribromide or pyridine hydrochloride to d,l-zearaleneone.

3,624,145
PURIFICATION OF TEREPHTHALIC ACID BY LIQUID-LIQUID EXTRACTION

Marvin S. Brinn, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1969, Ser. No. 799,986
Int. Cl. C07c *51/48*
U.S. Cl. 260—525 **8 Claims**

Purifying terephthalic acid by liquid-liquid extraction wherein an aqueous solution of crude terephthalic acid is contacted with a water-immiscible liquid organic extractant inert to terephthalic acid at elevated temperatures to form an aqueous phase and organic phase, subsequently separating the two phases and recovering purified terephthalic acid.

3,624,146
PROCESS FOR THE PRODUCTION OF ACRYLIC ACID FROM PROPYLENE

R. Parthasarthy, Takoma Park; Robert M. Dobres, Silver Spring, and John L. Warthen, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 25, 1965, Ser. No. 482,487
Int. Cl. C07c *57/04*
U.S. Cl. 260—533 N **1 Claim**

A vapor phase method of oxidizing alpha mono-olefinic hydrocarbon to the corresponding alpha beta unsaturated monocarboxylic acid in a single stage. The process is characterized by the use of a bismuth promoted cobalt-molybdate catalyst having a gram atom ratio of bismuth to molybdenum of from 0.05 to 0.15 and a cobalt to bismuth ratio in the range of 5:1 to 20:1.

3,624,147
PREPARATION OF ACRYLIC ACID

Reginald David, and Jean Estienne, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 20, 1969, Ser. No. 826,298
Claims priority, application France, May 21, 1968, 152605
Int. Cl. C07c *57/04*
U.S. Cl. 260—533 N **7 Claims**

Acrylic acid is prepared by oxidizing propylene with air in the presence of water and a platinum, rhodium, ruthenium or

palladium metal catalyst at a temperature above 50° C. and a pressure exceeding 5 bars gauge. A supported palladium catalyst is preferred. Acrylic acid is obtained in about 60 percent yield based on propylene converted and the small amounts of acrolein obtained may be oxidized to acrylic acid.

3,624,148
RECOVERY OF MALEIC ACID FROM ITS GASEOUS MIXTURES WITH ACETIC ACID

Sadayoshi Ninagawa; Takashi Yamashita, and Tetsuya Kato, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 3, 1970, Ser. No. 43,029
Claims priority, application Japan, June 13, 1969, 44/46097
Int. Cl. C07c *57/14*
U.S. Cl. 260—537 N **6 Claims**

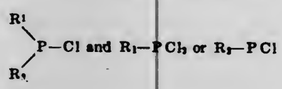
Maleic acid values are recovered from a gas mixture essentially consisting of maleic acid, acetic acid, and an inert carrier gas, such as the product obtained by catalytic oxidation of certain petroleum refinery gases or natural gas fractions with air, by passing the gas mixture through a strong solution of acetic acid at a temperature between 60° C. and the boiling point, and preferably at 70° to 85° C. If the solution is sufficiently concentrated to be in acetic acid equilibrium with the gaseous mixture at such a temperature, it retains practically the entire maleic acid and none of the acetic acid from the gas mixture, so that maleic acid values in the form of maleic acid, fumaric acid, or maleic anhydride may be recovered from the absorption liquid.

3,624,149
PROCESS FOR SEPARATING ORGANIC CHLOROPHOSPHINES

Otto Bretschneider, Bonn; Heinz Harnisch, Lovenich, near Cologne, and Werner Klose, Knapsack, near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Apr. 29, 1968, Ser. No. 724,894
Claims priority, application Germany, May 11, 1967, K 62257
Int. Cl. C07f *9/52*
U.S. Cl. 260—543 P **5 Claims**

Separation of mixtures of organic monochlorophosphines and dichlorophosphines of the general formulas:



in which R_1 and R_2 being identical with or different from one another stand for alkyl radicals having one to three carbon atoms comprising saturating the mixtures with gaseous hydrogen chloride, separating from one another the resulting two liquid phases, which include a specifically lighter phase-I and a specifically heavier phase-II, the phase-I containing substantially the dichlorophosphine and the phase-II containing substantially the monochlorophosphine, isolating the dichlorophosphine from the phase-I, and isolating the monochlorophosphine from the phase-II.

3,624,150
POLYHALO-(SULFONIC ACID ANILIDES)

Johann Albrecht Renner, Leverkusen; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 24, 1969, Ser. No. 801,823
Claims priority, application Germany, Mar. 1, 1968, P 16 68 104.2
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 AR **4 Claims**

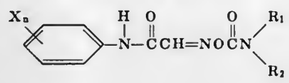
Polyhalo-(sulfonic acid anilides), i.e. 2,4- and 3,4-dichlorobenzene-sulfonic acid (2'-chloro or bromo- -3',5'-di- and 3',4',5-tri--chloro)-anilides which possess strong herbicidal properties, especially with respect to submersed aquatic plants, and which may be produced by conventional methods.

3,624,151
GLYOXYLANILIDEOXIMINO CARBAMATES

Arnold D. Gutman, Pincle, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 16, 1967, Ser. No. 675,306
Int. Cl. C07c *103/33*
U.S. Cl. 260—557 R **18 Claims**

New compounds corresponding to the formula:



in which R_1 and R_2 are, independently, hydrogen, lower alkyl, allyl, and cycloalkyl having from three to six carbon atoms, inclusive; X is halogen or lower alkyl having one to four carbon atoms, inclusive; and *n* is an integer having a value from 0 to 4, inclusive. The above compounds are effective herbicides, particularly for the control of grasses and broadleaf plants, with both preemergence and post-emergence activity. Representative compounds are: glyoxylanilideoximino-N'-allyl carbamate, glyoxylanilideoximino-N'-n-butyl carbamate, glyoxyl-3,4-dichloroanilideoximino-N'-methyl carbamate, and glyoxylanilideoximino-N'-n-propyl carbamate.

3,624,152
PERFLUORO-β-THIAGLUTARIC AMIDE

Yung Ki Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

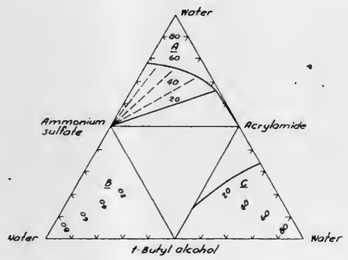
Continuation-in-part of application Ser. No. 739,155, June 24, 1968, now abandoned. This application Feb. 6, 1970, Ser. No. 9,436
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 S **1 Claim**

$H_2NOCCF_2SCF_2CONH_2$ is disclosed as being useful as lubricants additives.

3,624,153
SEPARATION OF ACRYLAMIDE FROM ACRYLAMIDE SULFATE

Edward J. Lynch, Danville, and William J. Flom, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1970, Ser. No. 16,728
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **3 Claims**



In the process for making acrylamide by reacting acrylonitrile with concentrated sulfuric acid and neutralizing the resulting acrylamide sulfate with ammonia, efficient separation of acrylamide is obtained by adding a relatively small amount of tert-butyl alcohol or a propanol to the neutralized mixture. The mixture thereby obtained separates into an alcohol layer which is largely an alcoholic solution of acrylamide with some water present, an aqueous phase which is essentially a saturated solution of ammonium sulfate, and solid ammonium sulfate.

3,624,154
CONCENTRATION OF AQUEOUS ACRYLAMIDE

Lanny A. Robbins, and Edward R. Winkler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 26, 1970, Ser. No. 23,080
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **8 Claims**

Aqueous solutions containing up to about 25 percent by weight of acrylamide are concentrated to a maximum concentration of about 30 percent by cooling the less concentrated solutions to produce a mush of ice crystals and separating the ice from the mother liquor. Adiabatic cooling under reduced pressure is preferred.

3,624,155
DIFLUOROAMINO SUBSTITUTED CYCLOHEXANE

Andrew Harper Dinwoodie, Dalry, and James Grigor, Coatbridge, both of Scotland, assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 27, 1962, Ser. No. 240,772
Claims priority, application Great Britain, Nov. 30, 1961, 42,971/61
Int. Cl. C07c *85/08*
U.S. Cl. 260—563 R **2 Claims**

1. A process for the preparation of the bis(difluoramino) compounds which comprises reacting consisting of a ketone selected from the group consisting of acetone, cyclohexanone and cyclohexan-1,4-dione with difluoramine alone to give the hydroxy (difluoramino) derivative of the ketone, and then of reacting said derivative with difluoramine in the presence of an acid selected from the group consisting of fluorosulphonic acid and chlorosulphonic acid to give the bis(difluoramino) compounds.

3,624,156
CERTAIN TRIS(DIFLUORAMINO)SUBSTITUTED AMMONIUM PERCHLORATES

Ronald A. Mitsch, St. Paul; Joseph La Mar Zollinger, Woodbury Township, Washington County; Douglas H. Dybvig, St. Paul, and Charles D. Wright, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 286,881, May 29, 1963, now Patent No. 3,624,156, dated Nov. 30, 1971. This application Mar. 29, 1966, Ser. No. 540,143
Int. Cl. C07c *87/22*
U.S. Cl. 260—584 C **19 Claims**

A compound of the formula

$$[(NF_2)_nCF_mO(CH_2)_p]_rCH_s]NH_y{}^+ClO_4{}^-$$

wherein *n* is a number from 1 to 3, *m* is 3-*n*, *p* is from 1 to 11, *r* is from 1 to 3, *s* is 3-*r*, *x* is 1 to 3 and *y* is 4-*x*, provided that at least one of *r* and *x* is 1.

3,624,157
PROCESS FOR PREPARING ORTHO-CHLOROBENZALDEHYDE

Raymond W. Ingwalson, and Nathan Dale Ledford, both of Chattanooga, Tenn., assignors to Velsicol Chemical Corporation, Chattanooga, Tenn.

Filed Dec. 17, 1969, Ser. No. 886,022
Int. Cl. C07c *47/54*
U.S. Cl. 260—599 **9 Claims**

This invention discloses a process for preparing orthochlorobenzaldehyde which comprises chlorinating the side chains of a mixture of ortho- and para-chlorotoluene containing from about 50 to about 85 percent by weight of the orthoisomer in the liquid phase with chlorine gas until the ratio of orthochlorobenzal chloride to parachlorobenzal chloride in the reaction mixture is at least about 10 to 1 by weight, hydrolyzing the resulting mixture to the corresponding benzaldehyde and benzoic acids and thereafter recovering the orthochlorobenzaldehyde therefrom.

3,624,158
HYDROFORMYLATION PROCESS EMPLOYING DIORGANO-HALO PHOSPHINES AS LEGANDS WITH COBALT CARBONYL

John F. Deffner, Glenshaw; Edmond R. Tucci, Pittsburgh, and John V. Ward, Oakmont, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 23, 1966, Ser. No. 574,298
Int. Cl. C07c *45/08*
U.S. Cl. 260—604 HF **14 Claims**

An Oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a cobalt carbonyl and a dialkyl halo phosphine or a diaryl halo phosphine, preferably in the presence of a trialkyl amine.

3,624,159
PRODUCTION OF ORGANIC HALIDES AND TERTIARY PHOSPHINE SULFIDES

Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Apr. 9, 1969, Ser. No. 815,281
Int. Cl. C07f *9/50, 19/02*
U.S. Cl. 260—606.5 P **8 Claims**

Organic halides and tertiary phosphine sulfides are coproduced by heating a thiol (e.g., alkane monothiol, alkane dithiol) with a tertiary phosphine dihalide to a suitably elevated temperature.

3,624,160
TRIS(MERCAPTOALKYL) CYCLOHEXANES

Faber B. Jones, Bartlesville, Okla., and Jack E. Reece, Willernie, Minn., assignors to Phillips Petroleum Company

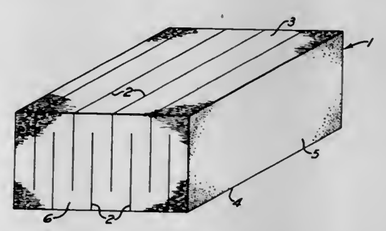
Continuation-in-part of application Ser. No. 675,054, Oct. 13, 1967, now Patent No. 3,505,166, dated Apr. 7, 1970. This application Dec. 18, 1969, Ser. No. 886,377
Int. Cl. C07c *149/00*; B32b *27/38*
U.S. Cl. 260—609 D **1 Claim**

Tristhioalkanoates illustrated by S,S,S-[2,2,2-(1,2,4-cyclohexanetriyl)trisethyl][2,2,2-(1,3,5-cyclohexanetriyl)trisethyl]tristhioacetate having utility as intermediates for the production of tris(mercaptoalkyl)cyclohexanes illustrated by 1,2,4-tris(2-mercaptoethyl)cyclohexane and 1,3,5-tris(2-mercaptoethyl)cyclohexane, which have utility as cross-linking agents for polythiols and polyepoxides which in turn are useful as adhesives and coatings upon curing.

3,624,161
ZIGZAG FILTER ELEMENT AND METHOD OF MAKING IT

Robert A. Bub, 5316 Richland Road, Gibsonia, Pa.

Filed Feb. 8, 1968, Ser. No. 703,916
Int. Cl. B01d *39/14*
U.S. Cl. 55—521 **4 Claims**

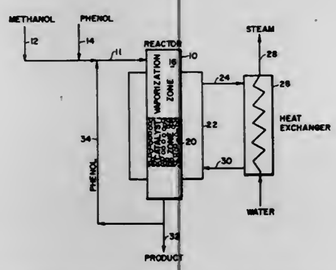


A zigzag filter element is produced from innumerable fibers that had been laid upon one another to form a batt having upper and lower surfaces. The filter element has front and back faces and parallel slots cut nearly through it from those faces, with the slots at the front alternating with those at the back. The central longitudinal planes of the slots intersect opposed surfaces of the element corresponding to said upper and lower surfaces of the batt.

3,624,162
PROCESS FOR MAKING 4,4'-DIHYDROXY STILBENES
Rolf Sieber, Cologne Longerich, Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Germany
Filed Aug. 15, 1967, Ser. No. 660,600
Claims priority, application Germany, Aug. 17, 1966, W 42235
Int. Cl. C07c *37/00*
U.S. Cl. 260—619 B 2 Claims

This invention relates to 4,4'-dihydroxy stilbenes, and it has for its object to provide a simple and efficient process for making such compounds.

3,624,163
PROCESS FOR THE PREPARATION OF META-, PARA-CRESOL MIXTURES WITH HIGH META TO PARA RATIO
Elsio Del Bel, Bethel Park, and Martin B. Neuworth, Pittsburgh, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Feb. 12, 1968, Ser. No. 704,839
Int. Cl. C07c *39/06*
U.S. Cl. 260—621 R 9 Claims



An improvement in the methylation of phenol or o-cresol resulting from the use of an activated alumina catalyst having strong acid sites, whereby a meta-, para-cresol distillate fraction having a high meta to para ratio can be recovered from the product by fractional distillation only.

3,624,164
PREPARATION OF ALKALI METAL SALTS OF NITROPHENOLS
Constantinos Georgiou, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 186,346, Apr. 11, 1962. This application Aug. 4, 1966, Ser. No. 570,162
Int. Cl. C07c *79/24*
U.S. Cl. 260—622 R 4 Claims

A continuous process for the preparation of alkali metal salts of ortho- and para-nitrophenol, which process comprises continuously contacting and reacting the ortho- and para-chloronitrobenzene with an aqueous solution of sodium or potassium hydroxide under the following reaction conditions:
a. The reaction is carried out within a temperature range of 180° to 250° C. and at autogenous pressure.
b. The time interval for the reaction is from 30 seconds to about 10 minutes.
c. At least 2.0 moles of sodium or potassium hydroxide is charged per mole of ortho- or para-chloronitrobenzene as a 5 percent to 20 percent aqueous solution.
d. The power input into the reaction system is at least 2.3 horsepower per 1,000 gallons of reaction volume.

3,624,165
PURIFICATION PROCESS
John S. Dehn, and Johnny L. Slate, both of Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.
Filed Apr. 25, 1969, Ser. No. 819,489
Int. Cl. C07c *29/24*
U.S. Cl. 260—643 F 5 Claims

A process for removing iron carbonyls from an alkanol stream, said alkanol having one to 15 carbon atoms, comprising contacting said stream with a metal oxide and separating the alkanol from the metal oxide.

3,624,166
PROCESS FOR THE SOLVENT EXTRACTION OF HALOALKANES
Robert Fuhrmann, Morris Plains; John Pisanchyn, Morristown, and Fred William Koff, Clifton, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,838
Int. Cl. C07c *17/38*
U.S. Cl. 260—652 P 11 Claims

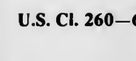
This invention relates to an improved method of separating haloalkanes from alkanes or other haloalkanes of lower halogen to carbon ratio by extraction with dialkyl sulfoxides, cyclic lactams or nitroparaffins. The haloalkanes of interest are fluoroalkanes, chloroalkanes, and bromoalkanes.

3,624,167
CONVERSION OF ACETYLENIC HYDROCARBON TO FLUOROALKENES AND FLUOROALKAPOLYENES
Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company
Original application Mar. 12, 1965, Ser. No. 439,475, now Patent No. 3,432,411. Divided and this application Dec. 30, 1968, Ser. No. 788,000
Int. Cl. C07c *17/08*
U.S. Cl. 260—653.4 5 Claims

A catalyst suitable for converting an acetylenic hydrocarbon to a fluoroalkene, a fluoroalkadiene, or a fluoroalkatriene by contacting said acetylenic hydrocarbon with HF, is formed by treating a finely divided alumina with a liquid solution of ammonium fluoride, ammonium bifluoride, or hydrogen fluoride, thereafter draining said solution from said alumina, repeating the treating and draining steps, and thereafter heating the impregnated catalyst to a temperature in the range of 300° to 1000° F. for a period of time in the range of 2 to 24 hours.

3,624,168
1,1-DIHALOALLENES
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 21, 1969, Ser. No. 878,905
Int. Cl. C07c *21/00*
U.S. Cl. 260—654 9 Claims

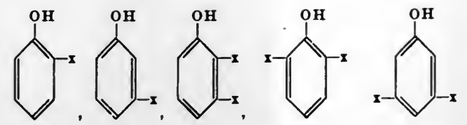
Novel 1,1-dihaloallene compounds corresponding to the formula



and their preparation from 1,3-dihalopropynes by reaction with alkali metal iodides are disclosed.
The compounds are suitable for use as antimicrobials in controlling various bacteria and fungi.

3,624,169
PROCESS FOR CHLORINATING OLEFINES
Otto Fruhwirth, Burghausen-Obb; Ludwig Schmidhammer, Burghausen-Obb, and Eduard Pichl, Burgkirchen-Obb, all of Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
Filed Dec. 15, 1969, Ser. No. 885,258
Claims priority, application Germany, Jan. 21, 1969, P 19 02 843.4
Int. Cl. C07c *17/02, 21/04*
U.S. Cl. 260—654 H 7 Claims

Process for chlorinating olefines with two to four C atoms, including butadiene, which comprises reacting chlorine with the olefine in the liquid reaction product itself, at a pressure of 0.5 to 6 atm. absolute, and at a temperature of 0° to 80° C., in the presence of a catalyst consisting of one or more ortho- and/or meta-substituted phenols having the general formula



where x is an alkyl radical with one to six C atoms, or a halogen, or a hydroxyl group. The catalyst solution may be circulated during the process, while the consumed olefine and chlorine are replaced.

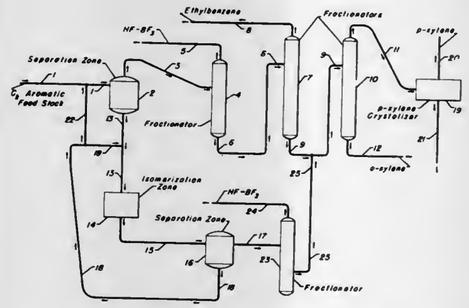
3,624,170
PROCESS FOR OXYCHLORINATION OF ETHYLENE
Satoshi Wakiyama, and Kanichi Uchida, both of Yamaguchi-ken, Japan, assignors to Toyo Soda Mfg. Co., Ltd., Yamaguchi-ken, Japan
Filed Apr. 5, 1967, Ser. No. 628,559
Claims priority, application Japan, Sept. 16, 1966, 41/61159
Int. Cl. B01j *11/78*; C07c *17/02*
U.S. Cl. 260—659 5 Claims

There is provided an improvement in the process for the catalytic gas phase oxychlorination of ethylene. The process comprises reacting ethylene, hydrogen chloride and a member of the group of air and oxygen in an iron-type reactor to produce, 1,2-dichloroethane. The improvement of the invention relates to conducting the reaction at a temperature of about 220° C. to about 300° C. and in the presence of a catalyst supported on an inert porous carrier and comprising copper, sodium and magnesium in an atomic ratio of Cu:Na:Mg of 1:0.2 to 0.7:0.3 to 1.5. The novel catalyst compositions are also provided.

3,624,171
PROCESS FOR THE PRODUCTION OF 1,8-DIBROMOOCTANE
Charles V. Goebel, Jr., Corte Madera, and Louis L. Ferstadig, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Original application Apr. 7, 1964, Ser. No. 358,079, Pat. No. 3,329,704. Divided and this application May 16, 1967, Ser. No. 651,064
Int. Cl. C07c *17/08*
U.S. Cl. 260—663 3 Claims

1,8-dibromooctane is prepared from a cyclooctene vapor phase heart-cut thermal crackate in a process which includes sulfuric acid treating, and hydrobromination under free radical catalysis at temperatures in the range −10° to 40° C.

3,624,172
PROCESS FOR THE PRODUCTION OF PARA-XYLENE
George F. Adams, Tulsa, Okla., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 3, 1970, Ser. No. 60,450
Int. Cl. C07c *5/24*
U.S. Cl. 260—668 A 4 Claims



Para-xylene is produced from a mixture of xylenes and ethylbenzene by first separating meta-xylene from the mixture, removing ethylbenzene from the residue by fractional distillation, and then recovering para-xylene and ortho-xylene from the fractionation bottoms. The separated meta-xylene is isomerized in an isomerization zone to produce a xylene mixture with the unconverted meta-xylene being separated in a separate separation zone and recycled to the isomerization zone and the produced ortho-xylene and para-xylene being recovered with the ethylbenzene fractionation bottoms.

3,624,173
GD ZEOLITE AND HYDROCARBON CONVERSION PROCESS WITH GD ZEOLITE CATALYST
Francis William Kirsch, Wayne; David S. Barmby, Media, and John D. Potts, Springfield, all of Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 581,129, Aug. 25, 1966, now abandoned. This application Mar. 26, 1968, Ser. No. 715,998
Int. Cl. B01j *11/40*; C07c *3/54*
U.S. Cl. 260—671 11 Claims

A process for converting hydrocarbons comprises contacting a hydrocarbonaceous feed in a conversion zone at an elevated temperature with a substantially anhydrous Gd alumino-silicate zeolite and recovering an upgraded hydrocarbon conversion product. The process can be used to obtain a product having a significantly greater average molecular weight than that of the hydrocarbonaceous feed. the preferred zeolite is crystalline, capable of adsorbing benzene, and, in the hydrated condition, is chemically characterized by the empirical formula $M_x(AlO_2)_x(SiO_2)_y(H_2O)_z$, where x, y and z are integers, the ratio $x:y$ being usually from 1.0 to 0.2 and where at least 25 percent (and more preferably more than 40 percent) of the negative charge associated with the aluminum of the alumino-silicate framework is satisfied by a cation of Gd or a cation of an oxide or a hydroxide of Gd.
The Gd alumino-silicate catalyst is especially useful for conversions involving the liquid phase catalytic contacting of C_2—C_9 olefin in admixture with C_4—C_6 isoparaffin to obtain liquid paraffin alkylate for gasoline blending. The catalyst is also useful for the polymerization (in liquid or vapor phase) of olefins, particularly to produce liquid polyolefins which can be converted, as by hydrogenation, to paraffins in the gasoline boiling range.

3,624,174
RECOVERY OF ANTHRACENE AND CARBAZOLE
Gerald Sugerman, Parsippany, N.J., assignor to Chem Systems, Inc., New York, N.Y.
Filed May 11, 1970, Ser. No. 36,407
Int. Cl. C07c *15/28*
U.S. Cl. 260—675 9 Claims

This invention is directed towards an improved process for obtaining anthracene and carbazole from mixtures thereof containing phenanthrene. More specifically, the invention teaches the removal of the anthracene and carbazole from such admixtures by means of azeotropic distillation and selective crystallization.

3,624,175
OLIGOMERIZATION OF BUTADIENE
Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company
Original application Jan. 15, 1968, Ser. No. 697,629, now Patent No. 3,541,176, dated Nov. 17, 1970, which is a division of application Ser. No. 541,516, Apr. 11, 1966, now Patent No. 3,393,245, dated July 16, 1968, and a continuation-in-part of 500,226, Oct. 21, 1965, now abandoned. Divided and this application June 25, 1970, Ser. No. 49,926
Int. Cl. C07c *11/02, 11/12*
U.S. Cl. 260—677 R 8 Claims

Butadiene is oligomerized with a catalyst formed by mixing a conjugated diene-organolithium adduct with a cobalt compound.

3,624,176

CATALYTIC PROCESS FOR PRODUCING GAS MIXTURES HAVING HIGH ETHYLENE CONTENTS

Pierre Lhonore, Douai; Jacques Quibel, Maisons-Laffitte, and Michel Senes, Saint-Nazaire, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques

Filed June 23, 1969, Ser. No. 835,784
Claims priority, application France, June 25, 1968, 156456
Int. Cl. C07c 3/34, 11/02; C10q 13/18
U.S. Cl. 260—683 R 9 Claims

Process for the catalytic steam reforming in a fluidized bed of light and heavy hydrocarbons, with the object of obtaining mixtures with a high ethylene and propylene content, in which the reforming in a fluidized bed is carried out under a pressure capable of reaching 50 bars absolute, in the presence of stable catalyst compositions without dehydrogenating metal or little dehydrogenating metal, composed of refractory oxides of limited porosity and with specific surfaces which are between 0.02 and 10 m²/g., with a grain size between 50μ and 5 mm., resistant to the temperatures of the fluidized bed which are between 650° and 900° C. and to the pressure, without regeneration of the said compositions.

3,624,177

OLIGOMERIZATION OF OLEFINS

Edwin Daniel Lowther, Ashford Common, England, assignor to BP Chemicals Limited, London, England

Filed May 15, 1970, Ser. No. 37,863
Claims priority, application Great Britain, June 10, 1969, 29,360/69
Int. Cl. C07c 3/20; B01j 11/82
U.S. Cl. 260—683.15E 9 Claims

A catalyst suitable for the oligomerization of olefins, comprising metallic potassium, rubidium or cesium dispersed on anhydrous lithium carbonate. A process for the oligomerization of olefins which comprises contacting an olefin or mixture of olefins with said catalyst.

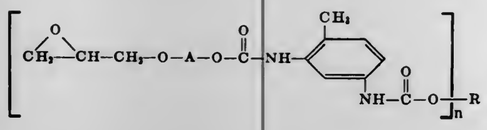
3,624,178

EPOXY TERMINATED POLYURETHANES

Friedrich Lohse, Allscheil; Daniel Porret, Binningen; Willy Fatzer, Bottmingen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 653,314, July 14, 1967, now abandoned. This application Feb. 3, 1970, Ser. No. 8,407
Int. Cl. C08g 45/00, 45/12, 22/00
U.S. Cl. 260—830 TW 16 Claims

An epoxy resin mixture containing (1) the polyepoxide of the formula



where *n* is a whole number, at least 2, preferably 2 or 3, R stands for a n-valent aliphatic residue which may be interrupted by oxygen atoms and A represents the residue of a glycol or of a polyglycol whose terminal hydroxyl groups have been removed, and (2) the diglycidyl ether of a glycol or polyglycol.

3,624,179

STABILIZED POLYURETHANE

Clifford C. Carroll, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 3, 1969, Ser. No. 830,087
Int. Cl. C08g 51/58
U.S. Cl. 260—830 P 11 Claims

A shaped structure of spandex-type elastomers stabilized against discoloration by treatment with a phosphonium compound having the formula:

$$[RCH(OH)]_4P^{\oplus}X^{\ominus}$$

wherein R is hydrogen or an alkyl radical and X is a halogen or a hydroxy radical. In addition to these phosphonium compounds, the structures also may be treated with a polymeric binder material which results in improved stabilization and durability.

3,624,180

HEAT-CURABLE COMPOSITIONS OF MATTER

Rolf Schmid, Florastrasse 7, Reinach, Basel-Land; Friedrich Lohse, Lilienstrasse 39, Allschwil; Willy Fisch, Hoelzlistrasse 42, Binningen, and Hans Batzer, Rainwig 7, Arlesheim, all of Switzerland

Filed July 29, 1969, Ser. No. 845,917
Claims priority, application Switzerland, Aug. 7, 1968, 11847/68
Int. Cl. C08g 45/14
U.S. Cl. 260—835 17 Claims

Heat-curable epoxide resin mixtures from (1) a polyepoxide with at least one carbocyclic or heterocyclic ring (e.g. ARALDIT CY 175, triglycidylisocyanurate or casting resin F), (2) a polyester containing at least one carbocyclic or heterocyclic ring with terminal carboxyl groups; the ratio of the total chain members Z_e to the ring members Z_r must be 2 to 13, and the chain contains 2 to 10 recurring structural elements (e.g. polyesters from phthalic acid anhydride and ethyleneglycol 11:10 or from succinic acid and 1,1-bis-(hydroxymethyl)cyclohexane 5:4) in a quantity of 0.2–0.8 equivalent per 1 epoxide equivalent and (3) a polycarboxylic acid anhydride (phthalic acid anhydride, hexahydrophthalic acid anhydride) containing a carbocyclic ring in a quantity of 0.8 to 0.2 equivalent per 1 epoxide equivalent. Cured shaped articles have unexpectedly high tensile strength (to over 900 kg./cm²) and show after gelling very slight shrinkage.

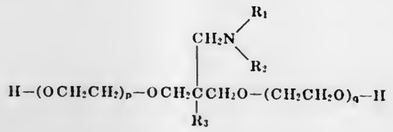
3,624,181

PROCESS FOR PREPARING POLYESTERS IMPROVED IN DYEABILITY

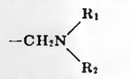
Hideaki Munakata; Kazoo Watanabe; Yoshikazu Arimatsu, and Masakazu Tanaka, all of Otsu-shi, Japan, assignors to Toyo Boseki Kabushi Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 17, 1969, Ser. No. 885,964
Claims priority, application Japan, Dec. 23, 1968, 43/94680
Int. Cl. C08g 17/06, 17/08, 39/04
U.S. Cl. 260—860 2 Claims

Process for preparing polyesters improved in dyeability with acid dyes which comprises polycondensing a dicarboxylic acid with a glycol, the whole or part of the glycol being the one represented by the formula:



wherein R_1 and R_2 are each a lower alkyl group or, when taken together, they represent a lower alkylene group, R_3 is a lower alkyl group or a group of the formula:



in which R_1 and R_2 are each as defined above and *p* and *q* are each zero or a positive integer not more than 10, or blending the resultant polymer into linear fiber-forming polyesters.

3,624,182

ABS POLYMER BLENDS FOR HIGH-SHEAR PROCESSING

Hideo Kubota, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1970, Ser. No. 54,629
Int. Cl. C08f 41/12, 29/56
U.S. Cl. 260—876 R 6 Claims

When a small amount of a relatively low molecular weight terpolymer of styrene, acrylonitrile and a saturated higher fatty alcohol ester of acrylic acid or methacrylic acid is incorporated into a conventional high impact grade ABS thermoplastic resin, the resin blend may be more readily subjected to high-shear forming processes to produce high-quality parts. The presence of the terpolymer in an ABS resin melt improves melt flow properties in extrusion or injection molding operations by markedly reducing melt viscosity and increasing melt stability.

3,624,183

GRAFT COPOLYMER PRODUCTS AND METHOD OF MAKING SAME

Benton R. Leach, and Allan G. Murray, both of Naugatuck, Conn., assignors to United States Rubber Company, New York, N.Y.

Filed Jan. 27, 1966, Ser. No. 523,286
Int. Cl. C08f 19/08
U.S. Cl. 260—876 7 Claims

A graft copolymer is prepared by polymerizing monomeric styrene and acrylonitrile in a latex of a synthetic rubbery copolymer of about 90 parts of butadiene and 10 parts of styrene having at least 80 percent gel content. The average particle diameter of the latex is 2,000 to 5,000 angstrom units. From 40 to 55 parts of the monomers are used with correspondingly from 60 to 45 parts of the synthetic rubber. The polymerization is carried at 120°–175° F. to a conversion of at least 85 percent of the styrene and acrylonitrile to copolymer. The anionic surface-active emulsifier level during the grafting is maintained at not over 5 parts per 100 parts of rubber and styrene-acrylonitrile copolymer that has been polymerized in the latex until at least 75 percent of the styrene and acrylonitrile monomer mixture to be polymerized in admixture with the synthetic rubber has been converted to polymer.

Preferably the rubber latex is prepared by at 100°–170° F. in the presence of 0.1–0.3 part of alkalimetal soap per 100 parts of butadiene and sytrene until 20–50 percent conversion, 1.5–2.3 parts of such soap being added during further conversion.

The resulting graft copolymer can be blended, preferably by latex blending, with a separately prepared copolymer resin of 60–80 parts of styrene and/or alpha-methyl styrene and correspondingly 40–20 parts of acrylonitrile.

Articles formed from the disclosed graft copolymer compositions are characterized by high surface gloss.

3,624,184

PROCESS FOR CONTROLLING MONOMER RATIO IN COPOLYMERIZATION REACTION

Roger W. Cox, Baytown, Tex., and Murray Nadler, Morris Plains, N.J., assignors to Esso Research and Engineering Company

Filed July 10, 1968, Ser. No. 743,724
Int. Cl. C08f 15/04
U.S. Cl. 260—878 10 Claims

The present invention provides a process for controlling the ratio of two monomers in the second reaction zone of a two-zone polymerization process. The first monomer is polymerized in the first reaction zone and a varying amount of unreacted first monomer is discharged in a first zone effluent from said first reaction zone, caused by uncontrollable variation in the percentage conversion in the first reaction zone. The effluent from the first reaction zone is introduced into a flash zone which is maintained at a substantially constant but controllably variable pressure and temperature, the pressure being less than the pressure in the first reaction zone, so that a stabilized effluent from the flash zone can be obtained which is saturated with dissolved first monomer. If the temperature and pressure of the flash zone are such that the maximum solubility of the first monomer in the liquid phase exceeds the amount of monomer passed from the first reaction zone, additional amounts of the first monomer can be introduced into the flash zone in order to obtain such saturation. The stabilized effluent is then charged into a second reaction zone wherein the second monomer is coreacted with the first monomer.

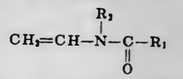
3,624,185

PROCESS FOR THE MANUFACTURE OF PLASTICS MATERIALS HAVING A GOOD IMPACT STRENGTH

Michael Lederer, Frankfurt am Main; Werner Ehmann, Frankfurt am Main, and Fritz Marktscheffel, Glashutten, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 19, 1969, Ser. No. 800,749
Claims priority, application Germany, Feb. 29, 1968, P 17 20 793.1
Int. Cl. C08f 15/04, 7/04, 1/11
U.S. Cl. 260—880 R 7 Claims

A process for the suspension polymerization of a prepolymer derived from a mixture of from 70 percent to 98 percent of a vinyl aromatic substance, 2 percent to 30 percent of one or more elastomers, which has been mass-polymerized to a conversion of 10 to 60 percent, in an aqueous phase in the presence of a dispersing agent, which comprises using, as a dispersing agent, a copolymer of an open-chain N-vinylamide of the formula



in combination with a salt of polyvinyl sulfonic acid.

3,624,186

LUBRICANT FOR ABS AND SAN POLYMERS

Hideo Kubota, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1970, Ser. No. 54,560
Int. Cl. C08f 29/56
U.S. Cl. 260—893 5 Claims

The extrusion or injection molding of ABS and SAN resin melts is aided by incorporating into the melt up to about 3 percent by weight of a stearate or palmitate ester of hydroxy terminated polybutadiene or a hydroxy terminated butadiene-acrylonitrile copolymer. The polymer ester functions as an excellent lubricant for shear processing in melts of ABS and SAN.

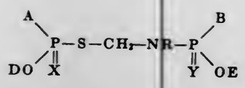
3,624,187

DIPHOSPHORYL DERIVATIVES OF THIOETHANOLAMINE

Jean Marie Cheymol, Paris; Pierre Eugene Chabrier de Lassauniere, Paris; Thuong Than Nguyen, Olivet, Loiret, and Philippe Robert Sauignac, Paris, all of France, assignors to Centre National de La Recherche Scientifique, Paris, France

Filed Nov. 6, 1967, Ser. No. 681,005
Claims priority, application France, Nov. 7, 1966, 83,766
Int. Cl. A01n 9/36; C07f 9/08, 9/24
U.S. Cl. 260—926 12 Claims

Diphosphoryl derivatives of thioethanolamine of the formula:



wherein A and B each represent an alkyl, alkoxy, haloalkoxy, alkoxyalkoxy, alkylthio, alkenyloxy, alkenylthio, aryl, aryloxy, furlalkoxy, amino or substituted amino group,
D and E each represent an alkyl or aryl group,
R is hydrogen, methyl or ethyl; and
X and Y each represent oxygen or sulfur, which are useful as anticholinesterase compounds and as agricultural acaricides.

3,624,188
HYPOHALOGENATION OF TETRAMETHYL AND TETRAETHYL METHYLENEDIPHOSPHONATES AND TRIHYDROCARBYL PHOSPHONOACETATES
John Downing Curry, Oxford, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 624,226, Mar. 20, 1967, now abandoned , Continuation-in-part of application Ser. No. 717,999, Apr. 1, 1968, now abandoned. This application Oct. 25, 1968, Ser. No. 770,805
Int. Cl. C07f 9/40
U.S. Cl. 260—986 **10 Claims**

The process of reacting either (1) a tetraalkyl (methyl, ethyl, halomethyl or haloethyl) methylenediphosphonate or (2) a trihydrocarbyl (C_1-C_4) phosphonoacetate with a hypohalite in an aqueous electrolyte solution (preferably in the presence of an inert, water-immiscible, organic solvent) to produce the corresponding mono- and di-halogenated methylenediphosphonate and phosphonoacetate esters. These esters have utility as intermediates in the synthesis of detergent builders and as extreme pressure additives for lubricant compositions.

ERRATUM

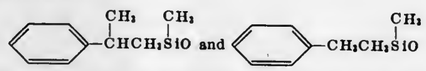
For Class 264—40 see:
Patent No. 3,624,025

3,624,189
PROCESS OF HEATING ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS WITH ELECTROMAGNETIC FIELD ENERGY
Conrad Goldman, 298, Hazelwood Terrace, Rochester, N.Y.
Filed Jan. 24, 1969, Ser. No. 793,751
Claims priority, application Great Britain, Jan. 31, 1968, 4,989/68
Int. Cl. B29h 5/26; C08d 9/08; C08f 29/56
U.S. Cl. 264—25 **1 Claim**

Methods for increasing the dissipation factor of acrylonitrile-butadiene-styrene polymers by the introduction of polar domains, thus improving the response to dielectric heating.
Also included are ABS polymers formed by the methods of the invention.

3,624,190
METHOD FOR RELEASING POLYURETHANE FOAM FROM A MOLD
Joseph Cekada, Jr., and Edwin E. Reinink, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed June 16, 1967, Ser. No. 646,474
Int. Cl. B29d 27/04; C08g 22/04, 22/46, 31/62
U.S. Cl. 264—41 **10 Claims**

The deposition of a diorganopolysiloxane in liquid form on the surface of a mold is used in making polyurethane foam articles. The diorganopolysiloxane is a release agent for polyurethane foam when applied on a mold surface which has been treated with a conventional release agent. The steps of the method include depositing a conventional mold release agent on the surface of a mold, applying the diorganopolysiloxane over the conventional mold release agent, placing a polyurethane foam composition in the mold, allowing the foam to rise, curing the polyurethane foam and demolding the polyurethane foam product. the diorganopolysiloxanes have siloxane units of $R(CH_3)SiO$, at least 50 mol percent,

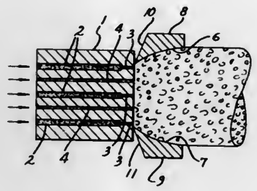


up to 40 mol percent, and $R'(CH_3)SiO$, up to 10 mol percent, wherein R is an alkyl radical of three to 30 carbon atoms and R' is methyl, ethyl, phenyl, benzyl and R''O(C_2H_4O)$(CH_2)_3$—and the diorganopolysiloxane can be end blocked by hydroxyl groups or triorganosiloxy groups.

3,624,191
FOOTWEAR
Donald Weight, Chalfont Saint Giles, England, assignor to Monsanto Chemicals Limited, London, England
Filed Jan. 23, 1969, Ser. No. 793,559
Claims priority, application Great Britain, Feb. 1, 1968, 5232/68
Int. Cl. B29d 27/00
U.S. Cl. 264—45 **3 Claims**

Footwear, such as a boot or shoe, having an insole comprising an extruded foamed resin sheet wherein the resin is an ethylene-vinyl acetate copolymer or a blend thereof with polyethylene and has a polymerized vinyl acetate content of 2–17 percent by weight. The insole has a substantially uniform thickness, a substantially closed cell structure, and a density of 17–40 pounds per cubic foot. Preferably, the insole is treated with an electric discharge prior to being bonded to the other components of the article of footwear. The insole can be bonded to these other components by any suitable means, preferably by the use of an adhesive.

3,624,192
PRODUCTION OF FOAMED RESINS
John Gerald McCoy, Newport, and William Rees Foster, Cwmbran, both of England, assignors to Mensanto Chemicals Limited, London, England
Filed May 6, 1968, Ser. No. 726,857
Claims priority, application Great Britain, May 19, 1967, 23,303/67
Int. Cl. B29d 27/00
U.S. Cl. 264—51 **9 Claims**



Die assemblies and processes for extruding a foamable thermoplastic polyvinylaromatic resin through a rectangular die orifice into a zone of lower pressure such that foaming of the resin occurs as it moves through the zone, said zone being defined by a pair of opposing concave surfaces maintained at a temperature lower than the extrusion temperature and curved so that they substantially conform to the corresponding surfaces of the freely expanding resin without exerting a substantial compressive force thereon. The die assemblies and processes are particularly useful for the production of low-density foamed boards having smooth surfaces.

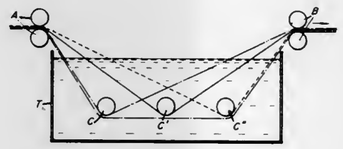
3,624,193
POLYAMIDE FILAMENTMAKING PROCESS INCLUDING SOLID-STATE POLYMERIZATION
Benjamin C. Sze, Wilmington, Del., assignor to E. I du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 25, 1969, Ser. No. 802,239
Int. Cl. D01d 5/10
U.S. Cl. 264—101 **1 Claim**

A process for preparing melt spun fibers from a polymer derived from dodecanedioic acid and bis(4-aminocyclohexyl)methane which comprises reacting said precursors in the melt to form a polyamide of from 12,000 to 15,000 molecular weight, extruding the molten polyamide as a ribbon having at least one dimension not exceeding 0.050 inch into an essentially oxygen-free atmosphere and then submerging the molten ribbon in an aqueous quench bath for at least 1 second, withdrawing the ribbon from the bath and further polymerizing in the solid phase until a polymer of molecular weight in excess of 25,000 is attained, melt spinning the polymer into filaments and drawing the filaments at least about 2.5X draw ratio to produce a high tenacity yarn essentially free from nubs and broken filaments.

3,624,194
PRODUCTION OF SPLIT FIBERS
Ernst Pirot, Wuppertal, Germany, assignor to J. P. Bemberg Aktiengesellschaft, Wuppertal, Germany
Filed Dec. 26, 1968, Ser. No. 787,211
Claims priority, application Germany, Jan. 3, 1968, P 17 10 608.0
Int. Cl. B29c 23/00, 24/00
U.S. Cl. 264—145 **2 Claims**

Process of producing split fibers in which a fiber-forming polymer film is extruded and then cut, stretched and split in the usual manner to form split fibers, the polymer consisting essentially of a mixture of polypropylene having more than 5 percent atactic content with a low-pressure polyethylene. The resulting split fibers are generally useful as continuous threads, yarns and the like or as staple fibers.

3,624,195
PROCESS FOR THE PREPARATION OF ACRYLIC MANMADE FIBER
Chozo Nakayama, Fuji-shi; Toshio Ohfuka, Fuji-shi; Hiroshi Yokoyama, Fuji-shi; Hideo Sato, Fuji-shi; Kouichi Ashikaga, Yoshihara-shi; Takashi Sakakiyam, Yoshihara-shi, and Kouji Kitashima, Fuji-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation of application Ser. No. 540,388, Apr. 5, 1966, now abandoned. This application Oct. 13, 1969, Ser. No. 866,178
Int. Cl. D01d 5/22; D02g 1/00
U.S. Cl. 264—168 **10 Claims**



A composite acrylonitrile filament is passed through a hot water bath substantially without relaxation and with a tension of less than 0.005 grams per denier and at a substantially unchanged speed relative to the spinning speed.

3,624,196
STABILIZATION OF ACRYLONITRILE FIBERS TO HOT-WET CREEP
Charles Alexander Ball, Mount Vernon, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Jan. 8, 1971, Ser. No. 1,548
Int. Cl. B29c 25/00; D01f 7/00
U.S. Cl. 264—234 **7 Claims**

A process is provided for improving the dimensional stability under hot-wet conditions of fibers prepared from acrylonitrile polymers containing at least 95 percent acrylonitrile wherein spun fibers after orienting and drying are heated with wet steam under pressure to a temperature below the temperature where they shrink until the tendency to creep under hot-wet conditions is reduced.

3,624,197
WATER-SOLUBLE TISSUE INFILTRATING AND EMBEDDING COMPOSITIONS
Philip Schain, 126 Silver Lake Road, Staten Island, N.Y.
Continuation of application Ser. No. 555,969, June 8, 1966, now abandoned. This application Sept. 4, 1969, Ser. No. 871,754
Int. Cl. G01n 1/00, 1/30
U.S. Cl. 424—3 **2 Claims**

Water-soluble tissue infiltrating and embedding compositions facilitating rapid preparation of tissue sections biopsic study comprising 50 to 60 percent of polyethylene glycol having a molecular weight of about 3700 and somewhat less than 50 percent of a mixture of nonionic surface active agents having varying consistency ranging from solid to semisolid and liquid consistencies together with small amounts of water soluble and water-insoluble waxes, whereby the hardness of the polyethylene glycol is reduced and hygroscopicity maintains substantially constant during seasonal variations of ambient temperature and humidity.

3,624,198
RODENTICIDE BAIT
Howard L. Arbaugh, Portsmouth, Ohio, assignor to The AR Chem Corporation, Portsmouth, Ohio
Filed Oct. 3, 1968, Ser. No. 764,941
Int. Cl. A01n 11/00
U.S. Cl. 424—17 **2 Claims**

A rodent bait suitable for use on crops comprising a unitary body of intimately mixed particles of metal phosphide such as zinc phosphide, citric acid and a hard wax component. The hard wax component forms a protective coating around the particles of metal phosphide and citric acid. The citric acid has been found to completely decompose the metal phosphide toxicant upon absorption of moisture by the unitary body. Thus, the rodent bait of the invention has the advantage of preventing decomposition of the metal phosphide toxicant until a preset time when it completely decomposes the metal phosphide leaving no toxic residues.

3,624,199
DENTAL CREAM
James Norfleet, 506 Lee Pl., Plainfield, N.J., and Francis D. Roberts, 22 Crest Drive, W. Millington, N.J.
Filed Apr. 21, 1969, Ser. No. 818,047
Int. Cl. A61k 7/16
U.S. Cl. 424—57 **9 Claims**

Dental cream containing hydrated alumina, calcium carbonate or insoluble alkali metal metaphosphate as polishing agent, benzyl alcohol as desensitizing agent and zinc oxide. The cream does not swell or corrode unlined aluminum tubes when incorporated therein.

3,624,200
CONTROLLING PERSPIRATION ON HUMAN SKIN WITH SCOPOLAMINE ESTERS
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of application Ser. No. 39,781, June 30, 1960, now abandoned, and a continuation-in-part of 62,563, Oct. 14, 1960, now abandoned. This application July 21, 1964, Ser. No. 384,246
Int. Cl. A61k 7/00
U.S. Cl. 424—65 7 Claims

This invention relates to compositions for controlling perspiration odors on human skin by scopolamine esters or physiologically acceptable acid addition salts thereof dispersed in topical carriers.

3,624,201
COMPOSITIONS CONTAINING CALCIUM AND MAGNESIUM SALTS OF CITRIC, PHOSPHORIC AND LACTIC ACID AND METHOD OF PROMOTING HEALING OF WOUNDS THEREWITH
Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.
Filed Feb. 12, 1968, Ser. No. 704,540
Int. Cl. A61k 17/00
U.S. Cl. 424—95 4 Claims

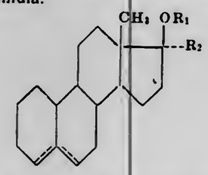
Wound-healing compositions comprising calcium and magnesium slats of citric, phosphoric and lactic acid, and mixtures of the foregoing with chitin are described as well as methods of promoting healing of wounds, and the process of producing eggshells reacted with citric, phosphoric or lactic acid.

3,624,202
PROCESS FOR STILLING PAIN
Roland Jaques, Strengigartenweg 28, Allschwil, and Bernhard Noelpp, Flughafenstrasse 31, Basel, both of Switzerland
Filed Jan. 6, 1970, Ser. No. 1,020
Claims priority, application Switzerland, Jan. 22, 1969, 916/69
Int. Cl. A61k 27/00
U.S. Cl. 424—229 10 Claims

The invention concerns a process for stilling pain which consists in administering to a patient a pharmaceutical composition containing 1-[5-(dimethylsulfamoyl)-anthraniloyl]-4-methyl-piperazine or a salt thereof.

3,624,203
PHARMACEUTICAL CONTRACEPTIVE PREPARATION
Gerhard Anthony Overbeek, Nijmegen, Netherlands, assignor to Organon Inc., West Orange, N.J.
Filed Jan. 12, 1970, Ser. No. 2,418
Claims priority, application Netherlands, Feb. 26, 1969, 6903028
Int. Cl. A61k 27/00
U.S. Cl. 424—238 5 Claims

The invention relates to the manufacture of novel pharmaceutical preparations and to oral dosage unit forms comprising as sole contraceptive material a gestagenic substance of the general formula:



in which
R_1=H or an acyl group with one to four carbon atoms or an alkyl group with
one to two carbon atoms, and
R_2 = an alkyn group with two to four carbon atoms, which may contain halogen
and in which there is one ethylenic bond starting from carbon atom five to carbon atom four or six, preferably in a quantity of from 0.1 to 0.4 mg. per dosage unit form. The invention comprises also the treatment for the prevention of conception consisting in administrating to females continuously with regular intervals, preferably daily, the dosage unit forms.

3,624,204
PROTECTIVE AGENT AGAINST MOSQUITOES, SAND-FLIES, BLACK-FLIES, GNATS, HORSE-FLIES, FLEAS AND TICKS
Mikhail Konstantinovich Stepanov, Kirovsky prospekt, 68, kv. 65; Vladimir Tevosovich Osipyan, ulitsa Pesochnaya, 24, kv. 2; Viktor Borisovich Kazhdan, ulitsa Matrosa Zheleznyaka, 13 kv. 45; Leonid Kuymich Masly, prospekt Kosmonavtov, 13, kv. 98; Boris Stefanovich Grabovsky, Lesnoi prospekt, 4, kv. 7, and Irina Dmitrievna Dunaeva, ulitsa Mokhovaya, 47, kv. 20, all of Leningrad, U.S.S.R.
Continuation-in-part of application Ser. No. 625,632, Mar. 27, 1967, now abandoned. This application Apr. 24, 1969, Ser. No. 819,094
Int. Cl. A01n 9/00
U.S. Cl. 424—244 5 Claims

A repellent agent for protecting people and animals from mosquitoes, sand-flies, black-flies, gnats, horse-flies, fleas and ticks, characterized by the inclusion of hexamethylenecarbamide in an amount between 20 and 90 percent.

3,624,205
TREATMENT OF HYPERURICEMIA IN HUMANS
George H. Hitchings, Yonkers, and Elvira A. Falco, New Rochelle, both of N.Y., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.
Continuation-in-part of application Ser. No. 574,576, Mar. 29, 1956, now abandoned, Continuation-in-part of application Ser. No. 22,394, Apr. 15, 1960, now abandoned, Continuation-in-part of application Ser. No. 221,357, Sept. 4, 1962, now abandoned, Continuation-in-part of application Ser. No. 524,873, Feb. 3, 1966, now abandoned. This application Apr. 25, 1967, Ser. No. 633,364
Int. Cl. A61k 27/00
U.S. Cl. 424—251 5 Claims

The method of treatment and prophylaxis for hyperuricemia, which comprises administering to a human patient a therapeutically effective amount of a compound selected from the class consisting of 4-hydroxy-1-H-pyrazolo(3,4-d) pyrimidine and 4,6-dihydroxy-1-H-pyrazolo(3,4-d)pyrimidine.

3,624,206
3-SUBSTITUTED AND 2,3-SUBSTITUTED-1-OXO ISOINDOLINES AND THERAPEUTIC USE THEREOF
Pier Nicola Giraldi, Milan, and Vittorio Mariotti, Pesaro, both of Italy, assignors to Carlo Erba S.p.A., Milan, Italy
Continuation of application Ser. No. 769,441, Oct. 21, 1968, now abandoned, Continuation of application Ser. No. 669,380, Sept. 21, 1967, now abandoned. This application Feb. 3, 1969, Ser. No. 812,512
Claims priority, application Italy, Sept. 23, 1966, 22,771/66; Dec. 31, 1966, 31,818A/66
Int. Cl. A61k 27/00
U.S. Cl. 424—267 6 Claims

1-Oxo-3-(aminophenyl-p-ethoxy(and propoxy) piperidino)-isoindolines and 1-oxo-2-ethyl-3-(aminophenyl-p-ethoxy(and propoxy)piperidino)-isoindolines are disclosed. These compounds have spasmolytic activity and are therapeutically useful.

3,624,207
NEMATOCIDAL USE OF 2,3,4,6-TETRACHLOROPHENYL N-METHYLCARBAMATE
George A. Buntin, Faulkland, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Original application Sept. 30, 1963, Ser. No. 312,305, now abandoned. Divided and this application July 8, 1968, Ser. No. 743,046
Int. Cl. A01n 9/20
U.S. Cl. 424—300 1 Claim

Disclosed is the use of 2,3,4,6-tetrachlorophenyl N-methylcarbamate as a nematocide.

3,624,208
FLOATING BATH OIL COMPOSITION
Irving R. Schmolka, Grosse Ile, Mich., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.
Filed Jan. 20, 1967, Ser. No. 610,477
Int. Cl. A61k 7/00
U.S. Cl. 424—365 8 Claims

A floating bath oil composition is prepared from an emollient oil, a surfactant compound insoluble in the emollient oil and an ester solvent for the surfactant compound. The composition forms a continuous, stable film on the bath water surface and has rinsibility properties.

3,624,209
COMPOSITION FOR TREATMENT OF GASTRO-INTESTINAL DISORDERS
Edmund S. Granatek, and Alphonse P. Granatek, both of Baldwinsville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
Filed Dec. 28, 1966, Ser. No. 605,231
Int. Cl. A61k 27/00
U.S. Cl. 424—79 7 Claims

A pharmaceutical composition useful for the treatment of gastro-intestinal disorders comprising a diethylaminoethyl cross-linked dextran anion exchanger and a pharmaceutical carrier or another therapeutic agent and a method of treating gastro-intestinal disorders in mammals by the oral administration of such a composition.

3,624,210
ANTIFERTILITY AGENT
Richard P. Blye, Flemington; George O. Allen, Jr., Somerville, and Roger E. Homm, Neshanic, all of N.J., assignors to Ortho Pharmaceutical Corporation
Filed July 27, 1966, Ser. No. 568,146
Int. Cl. A61k 27/00
U.S. Cl. 424—317 3 Claims

2-Methyl-3-ethyl-4-(p-methoxyphenul)-3-cyclohexenecarboxylic acid, and 2-methyl-3-ethyl-4-(p-methoxyphenyl)-4-cyclohexenecarboxylic acid when administered orally postcoitally act as antilittering and antizygotic agents.

3,624,211
FUNGICIDAL AND BACTERICIDAL METHOD
Marcel Georges Meiffren, Meudon, France, assignor to Etablissement Public: Office de la Recherche Scientifique et Technique Outre-Mer, Paris, France
Filed Mar. 3, 1967, Ser. No. 620,274
Claims priority, application France, Mar. 3, 1966, 51943
Int. Cl. A01n 9/08; A61k 27/14
U.S. Cl. 424—195 3 Claims

Process for controlling bacteria and fungi using a solvent extract of the plant "Prunus lusitanica."

3,624,212
METHOD OF CONTROLLING FUNGUS WITH SUBSTITUTED BENZIMIDAZOLES AND SUBSTITUTED SULPHENYLISATINS
Claude Hennart, St. Denis, France, assignor to Dynachim S.A.R.L., Paris, France
Filed Dec. 5, 1966, Ser. No. 598,961
Claims priority, application France, Dec. 6, 1965, 40992
Int. Cl. A01n 9/22
U.S. Cl. 424—273 4 Claims

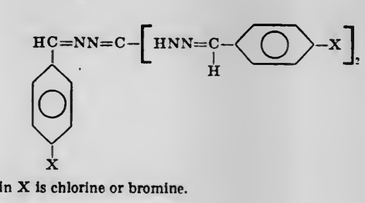
Substituted sulphenylbenzimidazoles and substituted sulphenylisatins are useful in controlling fungi.

3,624,213
METHOD OF STERILIZING AQUEOUS PHARMACEUTICAL SOLUTIONS EMPLOYING PROPYLENE OXIDE AND ENTRAINED AIR
Max A. Cherkas, Philadelphia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Oct. 30, 1963, Ser. No. 319,988
Int. Cl. A61l 1/00; A61k 27/00
U.S. Cl. 424—177 3 Claims

Aqueous pharmaceutical preparations which are to be bottled are first sterilized by adding propylene oxide to the liquid and blowing air through it to convert it to propylene glycol which destroys microorganisms.

3,624,214
GUANIDENE DERIVATIVES FOR COCCIDIOSIS
Graham T. Stevenson, Midland, Mich., assignor to The Dow-Chemical Company, Midland, Mich.
Filed Mar. 25, 1970, Ser. No. 22,698
Int. Cl. A61k 27/00
U.S. Cl. 424—326 11 Claims

Animals are treated by oral administration of a 1,2,3-tris[(p-halobenzylidene)amino]guanidine or its hydrochloride salt to allow maximum normal growth of the animals by the control of protozoan organisms and mitigate against the attack of gastrointestinal parasites. The guanidine compound is of the formula:



wherein X is chlorine or bromine.

3,624,215
8-SUBSTITUTED THEOPHYLLINES AS ANTI-ANXIETY AGENTS
Herman Hal Stein, Skokie, and Elizabeth Goodsell, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,921
Int. Cl. A61k 27/00
U.S. Cl. 424—253 4 Claims

A method of alleviating anxiety in mammals exhibiting such symptoms by administering from 1 to 50 mg./kg. daily of an 8-substituted theophylline.

3,624,216
8-SUBSTITUTED THEOPHYLLINES AS ANTI-INFLAMMATORY AGENTS
Herman Hal Stein, Skokie, and Elizabeth Goodsell, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,919
Int. Cl. A61k 27/00
U.S. Cl. 424—253 3 Claims

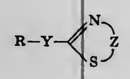
A method of relieving inflammation and its concomittant swelling, tenderness and pain by administering therapeutically effective amounts of an 8-substituted theophylline to a patient in need of such treatment.

3,624,217
2-(SUBSTITUTED)-5,6-DIHYDRO-4H-1,3-THIAZINES FOR THE CONTROL OF RICE BLAST

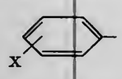
Richard C. Koch, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 788,642, Jan. 2, 1969, now abandoned. This application May 28, 1970, Ser. No. 41,532
Int. Cl. A61k *27/00*
U.S. Cl. 424—246 10 Claims

The control of rice blast disease on rice plants by contacting the plants with a fungicidally effective amount of a composition comprising, as active ingredient, a compound having the formula



and the nonphytotoxic acid addition salts thereof, and a carrier therefor, wherein R is 2-thienyl, 1-naphthyl, 2-naphthyl, 3,4-methylenedioxyphenyl or



wherein X is hydrogen, chloro, bromo, fluoro, nitro, methyl, or ethyl, with the proviso that when Y is $-(CH_2)_n-$, X is other than hydrogen;
Y is —CH CH—, $-C(CH_3)$ CH—, —CH $C(CH_3)$—, —C(OH) CH—, or $-(CH_2)_n-$
wherein *n* is an integer of from 2 to 4; and
Z is ethylene or trimethylene.

3,624,218
PROCESS FOR SUPPRESSING FOOT-AND-MOUTH DISEASE VIRUS

William Regelson, Richmond, Va., assignor to Hercules Incorporated, Wilmington, Del.

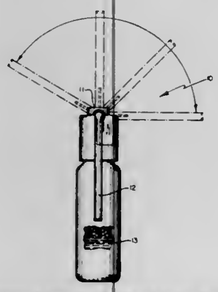
Continuation-in-part of application Ser. No. 716,257, Mar. 6, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 577,675, Sept. 7, 1966, now abandoned. This application July 10, 1970, Ser. No. 54,021
Int. Cl. A61k *27/00*
U.S. Cl. 424—78 2 Claims

Certain water-soluble copolymers prepared from divinyl ether and maleic anhydride have been found to suppress foot-and-mouth disease virus growth in cloven-footed animals.

3,624,219
PLAQUE-DISCLOSING COMPOSITION AND PACKAGE SYSTEM

Max J. Perlitsh, 20 Everett Ave., Winchester, Mass.

Filed July 6, 1970, Ser. No. 53,519
Int. Cl. G01n *31/00*; A01n *17/02*; A61k *9/00*
U.S. Cl. 424—7 6 Claims



A plaque-disclosing formulation suitable for use in aerosol form without causing undue "cold-sensitivity" -related pain to a patient. The formulation comprises a specially selected dye such as Erythrosine B, and an active solvent like ethanol to aid penetration of the dye into the plaque deposit. It is incorporated into an aerosol charge which comprises a Freon-type propellant in a quantity which contributes less than 50 B.t.u. heat of evaporation per pound of total aerosol charge at one atmosphere. It is advantageously packaged in an aerosol-type container equipped with a meter-type valve rated for discharging less than about 70 milligrams per shot. The container should be equipped with a discharge conduit of from 1.5 to 2.5 inches in length and a bore size of from about 0.010 to about 0.03 inches in diameter.

3,624,220
EXTRACTION OF ANOREXIGENIC AND FAT-MOBILIZING SUBSTANCES FROM ANIMAL URINE

John R. Beaton, and James A. F. Stevenson, both of London, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed June 1, 1965, Ser. No. 460,325
Int. Cl. A61k *17/00*
U.S. Cl. 424—99 2 Claims

This invention relates to the recovery of anorexigenic and fat-mobilizing substances from the urine of normal fasting or cold-acclimatized animals.

3,624,221
METHOD OF DISTRIBUTING THE SEBACEOUS SECRETIONS OF THE SKIN

Burkhart Lange, Basel, Switzerland, assignor to Ciba Corporation, New York, N.Y.

Filed May 4, 1965, Ser. No. 453,200
Int. Cl. A61k *7/00*
U.S. Cl. 424—365 6 Claims

A method of distributing the sebaceous secretions of the skin which comprises applying water soluble ester-ether compounds to the skin.

3,624,222
PRESERVATIVE AND NITRATE REDUCING AGENT FOR RAW AGRICULTURAL CROPS

Rolland W. Nelson, 1125 18th St., West Des Moines, Iowa

Filed Mar. 22, 1966, Ser. No. 542,441
Int. Cl. A01n *13/00*
U.S. Cl. 424—128 1 Claim

A preservative and nitrate reducing agent for raw agricultural crops consisting of an inorganic acid, namely, phosphoric acid, and an organic substance consisting substantially of propionic acid. The method of reducing the nitrate value of crops by treating said crops with the foregoing composition.

3,624,223
BLOOD TYPE INDICATOR

William J. Smythe, Rye, N.Y., assignor to Technicon Instruments Corporation, Chauncey, N.Y.

Filed Dec. 17, 1964, Ser. No. 419,128The portion of the term of the patent subsequent to July 31, 1984, has been disclaimed.
Int. Cl. G01n *31/02*
U.S. Cl. 424—11 12 Claims

A system for testing a plurality of samples for a characteristic, such as the blood group typing of blood samples, includes supplying the samples seriatim as a flowing stream, adding a reagent which will provide an agglutination-type reaction with samples having a predetermined characteristic, continuously concentrating any agglutinated-type material in each sample into a predetermined stratum and continuously separating this stratum from the remainder stratum, and continuously disposing one of these strata on the surface of a continuously advancing medium. The surface of the medium may be examined for the presence of agglutinated-type material. Each sample may be divided into quotients and each treated with a different reagent, and the resulting strata may be disposed on the same medium. In any event, the reaction occurs in the flowing stream, and the results are disposed on the medium for examination and storage.

3,624,224
NOVEL FIRST AID PRODUCTS

Ling Wei, Watchung, and Robert Marchisotto, East Brunswick, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Dec. 22, 1969, Ser. No. 887,355
Int. Cl. A61l *13/00*; A61l *15/00*
U.S. Cl. 424—28 8 Claims

Disclosed herein is a portable disposable first aid pad impregnated with a film-forming composition consisting essentially of specified amounts of germicidal quaternary ammonium halide, a local anesthetic, a water soluble polyoxyethylene-polyoxypropylene block polymer and certain nonionic surface active agents.

3,624,225
CEPHALOSPORIN COMPOSITIONS

Cynthia Hilda O'Callaghan, Gerrards Cross, England, assignor to Glaxo Laboratories Limited, Greenford, England

Filed June 20, 1967, Ser. No. 647,303
Claims priority, application Great Britain, June 24, 1966, 28,522/66
Int. Cl. A61k *21/00*
U.S. Cl. 424—246 28 Claims

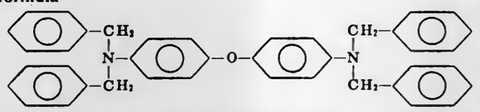
An antibiotic composition having as essential components (A) a broad spectrum cephalosporin antibiotic subject to degradation by a β-lactamase and (B) a cephalosporin antibiotic resistance to degradation by the β-lactamase whereby the broad spectrum antibiotic is protected against such degradation.

3,624,226
ELECTROGRAPHIC ORGANIC PHOTOCONDUCTOR COMPRISING OF N,N,N',N', TETRABENZYL 4,4'OXYDIANALINE

Merwin Frederick Hoover, and Dallas L. Schiegg, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1970, Ser. No. 17,932
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 4 Claims

The present invention relates to the composition of N,N,N', N,' tetrabenzyl 4,4' oxydianaline represented by the formula



and its use as an organic photoconductor for preparing photoconductive layers.

3,624,227
PROCESS OF PREPARING POSITIVE ACTING DIAZO PRINTING PLATE

Ho Chien Hwang, Peabody, Mass., assignor to Sumner Williams Inc., East Boston, Mass.

Filed Mar. 6, 1970, Ser. No. 17,344
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 4 Claims

A positive wipe-on printing plate of commercial feasibility is prepared by applying a layer of silicone resin to exposed, diazo oxide sensitizing layer and then applying developer.

3,624,228
HALOGEN LIBERATING/COLOR FORMER LIGHT SENSITIVE SYSTEMS HAVING INCREASED SPEED

Richard A. Fotland, Lyndhurst, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed June 9, 1969, Ser. No. 831,701
Int. Cl. G03c *5/24*, *1/72*
U.S. Cl. 96—48 9 Claims

Nonsilver, organic, dry-processed, violet and blue radiation sensitive free-radical films for recording and duplicating applications. The latent image may be optically developed in a period of 2 to 3 seconds by uniform exposure to red and near infrared radiation after an initial exposure in the region of 1 to 10 mj./cm.^{2} in the violet or blue regions of the spectrum. The image color is close to neutral. Fixing is accomplished by heating the film to a temperature of 150° C. for 60 seconds.

3,624,229
FIXATION OF ANIONS IN HYDROPHILIC COLLOID MEDIA

Daniel Maurice Timmerman, Mortsel; August Jean Van Paesschen, Antwerp, and Albert Emiel Van Hoof, Berchem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 26, 1969, Ser. No. 810,816
Claims priority, application Great Britain, Mar. 26, 1968, 14,523/68
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 11 Claims

Process of mordanting a hydrophilic colloid medium with an addition polymer containing 50–95 mole percent of 2-methyl,5-vinyl-pyridinium units or a water-soluble pyridinium salt thereof and the balance of N-aliphatic,2-methyl,5-vinyl-pyridinium units, and a hydrophilic colloid composition containing an acid dye mordanted with such polymer.

3,624,230
PROCESS FOR CONTINUOUSLY SCRAMBLING EGGS

Albert H. Robinson, Jr., Plymouth Meeting, Pa., assignor to Campbell Soup Company, Camden, N.J.

Filed Apr. 1, 1969, Ser. No. 811,941
Int. Cl. A23l *1/32*
U.S. Cl. 99—113 8 Claims

A process for continuously scrambling eggs to produce a product having a pleasing taste and appearance in which an egg slurry is preheated to a temperature below its coagulation point before it is introduced into a coagulating-chamber. Jets of steam are directed against the slurry as it passes through the chamber to coagulate the egg slurry. The supply of steam to the chamber is regulated to maintain the temperature of the cooked product substantially within the range of 175° to 195° F. as it is discharged from the chamber to insure the formation of a product which has a good overall appearance and pleasant taste.

3,624,231
METHOD FOR PRODUCING A USEFUL CARBON AGGREGATE FROM A PUFFING PETROLEUM COKE

Leslie H. Juel, Lewiston, and Robert W. Rosene, Grand Island, both of N.Y., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Original application May 29, 1969, Ser. No. 833,851, now Patent No. 3,506,745, dated Apr. 14, 1970. Divided and this application Sept. 29, 1969, Ser. No. 861,998
Int. Cl. C09c *1/44*
U.S. Cl. 106—307 2 Claims

A useful carbon aggregate is produced. The aggregate is made from heat-treated and/or graphitized "puffing" petroleum coke which has been heated in the presence of a puffing inhibiting agent. The heat-treated coke is advantageously employed as an aggregate in the production of graphite bodies whose thermal shock resistance properties are enhanced thereby.

3,624,232
CURABLE POWDER COATING COMPOSITION COMPRISING A MIXTURE OF AN ALKOXYLATED POLYAMINE-ALDEHYDE RESIN AND A POLYESTER RESIN

Cornelis Van Dorp, Hortensiastrant 91, Zwolle; Nantko Kloos, Verversweg 1, Heino, and Frits Visser, Koestraat 9 c, Zwolle, all of Netherlands

Filed Jan. 26, 1970, Ser. No. 5,941
Claims priority, application Luxembourg, Jan. 28, 1969, 57.855
Int. Cl. B44d *1/094, 1/095*
U.S. Cl. 117—21 **9 Claims**

Curable powder coating resin compositions comprise a small proportion of an alkoxylated polyamine-aldehyde resin and a polyester resin having an acid number below 20, a melting point between 60° and 130° C., the acid component comprising a dibasic aromatic carboxylic acid and the alcohol component comprising diols such as 2,2-di(4-beta-hydroxyethoxy-phenyl-) propane, certain glycidyl esters and certain dihydric aliphatic alcohols.
The curable powder-coating composition is applied to a substrate by a powder-coating process and the coated substrate is heated to a temperature of from 120° to 220° C. for 10 to 60 minutes.

3,624,233
METHOD TO IMPROVE THE IMPREGNATION OF WOOD

Marcel Goulet, 1529 Garnier St., Quebec, 6, Canada

Original application May 23, 1968, Ser. No. 731,626, now Patent No. 3,501,053, dated Apr. 21, 1970. Divided and this application Sept. 9, 1969, Ser. No. 856,479
Int. Cl. B44d *1/26*, **B27r** *5/04*
U.S. Cl. 117—57 **13 Claims**

A method to impregnate wood with a preservative, fire-retarding, stabilizing or the like wood treating agent, comprising compressing the wood across its grain for a short period of time, allowing the wood to recover from the compression and impregnating the wood with the agent while varying the pressure conditions of the wood environment.

3,624,234
FRICTION MATERIAL

Rudolph Edward Steck, Stratford, Conn., assignor to Raybestos-Manhattan, Inc., Passaic, N.J.

Filed May 1, 1969, Ser. No. 821,076
Int. Cl. B32b *19/08*; **C09k** *3/14*
U.S. Cl. 117—126 AF **4 Claims**

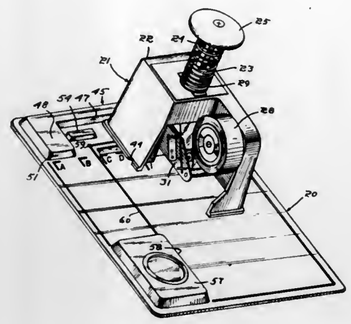
Essentially inorganic friction material comprising an asbestos matrix impregnated with a binder comprising principally lithium polysilicate and a minor amount of sodium methyl siliconate to enhance abrasion resistance.

3,624,235
SUPPORT FOR POSITIONING A DEVICE FOR APPLYING TAPE SECTIONS TO ARTICLES AND THE ARTICLES IN PREDETERMINED RELATIONSHIPS

Boris Kleid, Newton Highlands, Mass., assignor to Tapeler Corporation, Newton, Mass.

Filed Sept. 5, 1969, Ser. No. 855,557
Int. Cl. B32b *31/00*
U.S. Cl. 156—530 **20 Claims**

A support is disclosed providing predetermined positions for a device for applying a tape section to an article and predetermined positions for articles relative thereto. The support also has depressions enabling tape sections to be applied

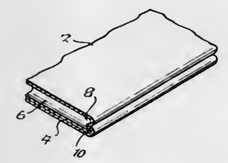


to the articles with free portions projecting from an edge thereof.

3,624,236
ROLLED EDGE SEALED CORRUGATED PAPERBOARD

Robert H. Frappier, Agawam, Mass.; Hal W. Tanner, Jr., Georgetown, S.C., and William O. Wagers, Massillon, Ohio, assignors to International Paper Company, New York, N.Y.

Filed Aug. 21, 1969, Ser. No. 852,038
Int. Cl. B32b *3/04*
U.S. Cl. 161—104 **3 Claims**



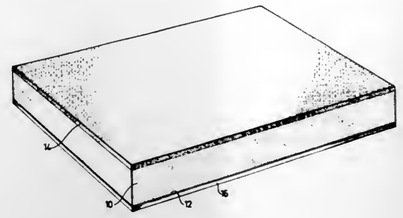
A corrugated core paperboard in which the edges of the facing sheets are rolled inwardly toward each other and tucked into the end of the corrugated core convolutions to form an enclosure therefor; the method including feeding of the board along a path, slitting the end of the core by cutting or crushing the core along a line intermediate the facing sheets and rolling and tucking the end edges of the facing sheets into the slit; the apparatus including driven belts between which the board is fed along a path, a knife support along the edge of the path through which the edge of the board is fed and dies having edge engaging surfaces for rolling and tucking the ends of the facing sheets into the core.

3,624,237
APPARATUS FOR BONDING TOGETHER METAL SHEETS BY EXPLOSIVE WELDING

Per Ingemar Persson, Huddinge, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Sept. 23, 1969, Ser. No. 860,280
Claims priority, application Sweden, Sept. 23, 1968, 12802/1968
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 **4 Claims**

Apparatus for explosively welding two metal layers together by providing one layer with a carrier of open-celled foamed plastic material and depositing explosive salt in

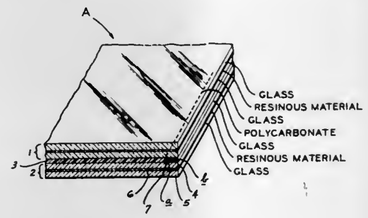


crysta state on the walls of the cells of such foamed material.

3,624,238
LAMINATED TRANSPARENT BULLET RESISTING STRUCTURE

Daniel H. McKenzie, Germantown, Tenn., assignor to Binswanger Glass Co., Richmond, Va.

Filed Mar. 24, 1969, Ser. No. 809,563
Int. Cl. B32b *17/10, 27/30*
U.S. Cl. 161—183 **8 Claims**

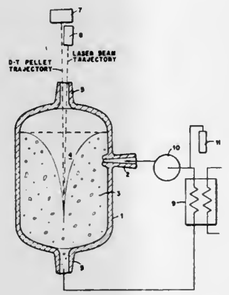


A bullet resisting structure of laminated character comprising outer faces or plies of safety glass with an intermediate ply formed of a polycarbonate resin.

3,624,239
PULSED LASER-IGNITED THERMONUCLEAR REACTOR

Arthur P. Fraas, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 11, 1970, Ser. No. 10,516
Int. Cl. G21b *1/00*
U.S. Cl. 176—1 **10 Claims**

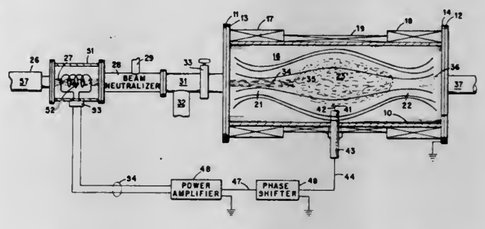


A thermonuclear reactor, for providing heat input to a power producing system or the like, wherein pellets, singly injected, of frozen thermonuclear fuel are ignited with a pulsed laser beam. Ignition takes place within a void in liquid lithium contained within a pressure vessel. The void in the liquid lithium is created by injecting the lithium tangentially into the pressure vessel, by spraying the lithium through jets, or a combination thereof. Introducing bubbles in the liquid decreases the shock wave forces at the pressure vessel wall. The lithium, which is heated by the thermonuclear reactions created within the void, is passed through a heat exchanger and tritium recovery system for heating a working fluid for the power producing system and for recovery of the tritium produced in the lithium by the reactions.

3,624,240
FEEDBACK STABILIZATION OF A MAGNETICALLY CONFINED PLASMA

Charles C. Damm, Alamo, and Richard F. Post, Walnut Creek, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 24, 1970, Ser. No. 22,294
Int. Cl. G21b *1/00*
U.S. Cl. 176—7 **10 Claims**

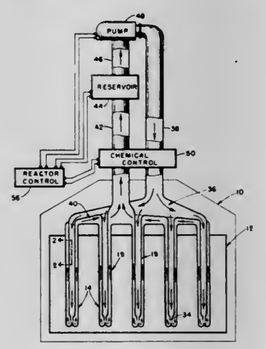


A high-temperature plasma is produced by the injection and trapping of energetic particles in a magnetic field containment zone. Detectors are arranged proximate to the plasma to detect electrostatic or electromagnetic signals produced by instabilities in the plasma containment system. The detected signals are amplified and shifted in phase either positively or negatively with respect to the instability oscillation and are then utilized to modulate an energetic particle beam which is then directed into the plasma containment zone wherein the modulation component of the injected beam interacts with the plasma to minimize or eliminate the instability oscillation of the plasma. Stable containment of the plasma is thereby promoted.

3,624,241
METHOD AND APPARATUS FOR CONTROLLING THERMAL NUCLEAR REACTORS

John L. Power, Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 10, 1970, Ser. No. 10,162
Int. Cl. G21c *7/22*
U.S. Cl. 176—86 L **4 Claims**



A power control system for a thermal nuclear reactor utilizes core tubes containing a solid sorbent, a thermal neutron

absorbing material in ionic form, and a circulating aqueous solution. Control of the reactor is achieved by regulating the amount and distribution of the ionic poison retained by the solid sorbent in the core tubes. The amount of poison retained by the solid sorbent is regulated by controlling the chemical composition of the circulating solution. This regulation may be assisted by altering the chemical properties of the solid sorbent while the reactor is operating.

3,624,242
PROCESS OF MACHINING A METAL IN CONTACT WITH A CUTTING FLUID COMPRISING A CHLOROFLUOROALKANE
Warren Ray Steinacker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 9, 1970, Ser. No. 1,850
Int. Cl. C10m *1/30*
U.S. Cl. 252—58 **1 Claim**

The process of machining a metal in contact with a cutting fluid comprising trichlorofluoromethane.

3,624,243
INHIBITION OF CORROSIVE ACTION OF FLUID DEICER COMPOSITION
Herbert F. Scott, Jr., Prince George, and William P. Moore, Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y., by said Scott and said Moore
Filed Feb. 27, 1970, Ser. No. 15,292
Int. Cl. C09k *3/18*; **C23f** *11/14*, *11/18*
U.S. Cl. 252—70 **10 Claims**

Cadmium, aluminum and magnesium metal corrosion by an aqueous deicer solution containing urea, ammonium nitrate and ethylene glycol is inhibited by incorporating therein about 0.05 percent to 0.40 percent by weight of a water-soluble mercaptobenzothiazole salt and about 0.05 percent to 0.40 percent by weight of a water-soluble chromate salt. The deicer solution is preferably for use to deice aircraft runways.

3,624,244
METHOD OF PREPARING INORGANIC POLYMERS
Piero Luigi Nannelli, King of Prussia, and Hyman David Gillman, Norristown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Mar. 11, 1970, Ser. No. 18,751
Int. Cl. C08g *33/16*, *33/20*
U.S. Cl. 260—2 M **6 Claims**

Chromium (III) hydroxyaquo bis(phosphinate) and bis(arsinate) polymers of the recurring unit of the formula $[Cr(H_2O)(OH)(OMR_1R_2O)_2]$ where R_1 and R_2 are inert organic groups and M is phosphorus or arsenic, are prepared by reacting a water-soluble chromium (III) salt with substituted potassium or sodium phosphinate or arsinate in aqueous medium, in the presence of an alkaline neutralizing agent. The polymers are used as coatings which will be subjected to high temperature environment.

3,624,245
HEAT STABILIZED ANTISTATIC POLYAMIDES
Lawrence W. Crovatt, Jr., Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 759,210, Sept. 11, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 732,826, May 29, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 674,662, Oct. 11, 1967, now Patent No. 3,388,104, which is a continuation-in-part of application Ser. No. 579,509, Sept. 15, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 422,822, Dec. 31, 1964, now abandoned.
This application Feb. 25, 1970, Ser. No. 14,206
The portion of the term of the patent subsequent to June 11, 1985, has been disclaimed.
Int. Cl. C08g *51/58*
U.S. Cl. 260—18 R **11 Claims**

Tensile strength loss on heating is reduced, in polycarbonamides containing between 0.1 and 20.0 weight percent polyalkoxylated triglyceride of a fatty acid containing from 10 to 30 carbon atoms, by adding from 0.01 to 2.0 weight percent of a sterically hindered phenol.

3,624,246
WATER-SOLUBLE OR WATER-DISPERSIBLE ALKYLATED AMINE COPOLYMERS
Hendrik H. J. Deuzeman, and Norman Lumley, both of Watford, Ontario, Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada
Filed Feb. 4, 1970, Ser. No. 8,752
Int. Cl. C08g *37/30*
U.S. Cl. 260—21 **4 Claims**

A liquid thermosetting alkylated amine copolymer resin is produced by the reaction of melamine, urea, formaldehyde, and methanol in the presence of an alkanol amine and a fatty acid. The amine-acid residue in the resulting resin product acts as an emulsifier for mineral oil and other materials which may be mixed with the resin after production. The catalyst also acts as a surfactant when the resin-mineral oil emulsion is diluted with water for use as a binder in the production of glass fiber articles, and enhances the wet-out properties of the emulsion towards pigments.

3,624,247
DEIONIZING TREATMENT FOR PHENOLIC RESINS USING A SOLUBLE AMMONIUM SALT
Kurt Paul Gladney, Sarnia, and Hendrick H. J. Deuzeman, Watford, Ontario, both of Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada
Continuation of Ser. No. 806,315, Mar. 11, 1969, abandoned, and a continuation-in-part of application Ser. No. 415,457, Dec. 2, 1964, now Patent No. 3,432,453. This application Mar. 26, 1970, Ser. No. 20,480
The portion of the term of the patent subsequent to Mar. 11, 1986, has been disclaimed.
Int. Cl. C08g *37/08*, *51/24*
U.S. Cl. 260—29.3 **10 Claims**

In the formation of a resin solution, the removal of residual calcium catalyst ions is effected by treatment with an alkaline solution of an ammonium salt having an ion which forms an insoluble salt with calcium ion, at a pH of from 5 to 6.5 and subsequently raising the pH to about 7 by the addition of ammonia.

3,624,248
NEW PHOSPHORUS-CONTAINING POLYMERS AND THE PROCESS OF MAKING SAID POLYMERS
John Eugene Santo, West New York, and Jan Edmond Vandegaer, Wayne, both of N.J., assignors to Pennwalt Corporation
Original application Mar. 7, 1967, Ser. No. 621,135, now Patent No. 3,492,380. Divided and this application Jan. 6, 1970, Ser. No. 403
Int. Cl. C08g *20/34*
U.S. Cl. 260—47 CZ **4 Claims**

Liquid or solid particles are encapsulated with a shell of solid polymeric material having phosphorus as a part of the backbone by an interfacial polycondensation reaction between a fast reacting reactant, such as hexamethylene diamine, and an arene having as substituents—COX and/or $-OPOX_2$, at least one $-OPOX_2$, such as p-(chlorocarbonyl)-phenyldichlorophosphate. Other polyfunctional reactants, such as diethylene triamine and polymethylene polyphenylisocyanate, are desirably present.

3,624,249
PYRROLONE-ANTHRAQUINONE POLYMERS
Carl S. Marvel, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.
Filed Jan. 2, 1970, Ser. No. 425
Int. Cl. C08g *20/32*, *33/02*
U.S. Cl. 260—47 CP **8 Claims**

The condensation of an aromatic tetraamine with an aromatic tetracarboxylic acid dianhydride, at least one of which contains an anthraquinone moiety, yields pyrrolone-anthraquinone polymers. These polymers are solubilized by reduction of the quinone function present to the hydroquinone form. Solutions containing the hydroquinone form are wet-spun into fibers, temperature-stable on oxidation back to the quinone form.

3,624,250
COPOLYMERS OF ETHYLENE/TETRAFLUOROETHYLENE AND OF ETHYLENE/CHLOROTRIFLUOROETHYLENE
Dana Peter Carlson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 777,166, Nov. 19, 1968, now abandoned, Continuation-in-part of application Ser. No. 853,923, Aug. 28, 1969, now abandoned.
This application Jan. 20, 1970, Ser. No. 4,394
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 **21 Claims**

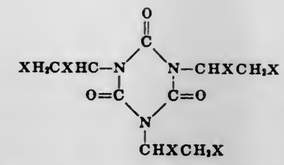
High temperature tensile properties of ethylene/tetrafluoroethylene copolymer are improved by incorporating therein a small amount of a third monomer component which is a copolymerizable vinyl monomer which is telogenically inactive and provides a side chain in the resultant copolymer, containing at least two carbon atoms. In one embodiment, the elements in the side chain have only single bonds therebetween, and in another embodiment the side chain is an aromatic ring. The same effect is obtained for ethylene/chlorotrifluoroethylene copolymer. The resultant copolymers are especially useful as insulation coating for wire to be exposed to high temperature service.

3,624,251
ORGOTEIN PURIFICATION PROCESS BY HEATING ABOVE 65° C.
Wolfgang Huber, San Francisco, Calif., assignor to Diagnostic Data, Inc., Palo Alto, Calif.
Filed Jan. 16, 1970, Ser. No. 3,492
Int. Cl. A61k *17/00*; **C07g** *7/04*
U.S. Cl. 260—113 **14 Claims**

Heat labile tenacious proteins present in samples of substantially pure orgotein produced by a process which comprises a heating step in which a mixture of proteins comprising the orgotein protein and substantial amounts of other proteins are heated under conditions which do not affect the orgotein, are eliminated therefrom by a second heating step of a solution of the substantially pure orgotein in a buffer containing divalent metal ions at a temperature higher than employed in the prior heating step.

3,624,252
TRIAZINE COMPOUNDS
Robert G. Labarge, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 2, 1970, Ser. No. 19,151
Int. Cl. C07d *55/14*
U.S. Cl. 260—248 NS **3 Claims**

New and useful s-triazine compounds corresponding to the formula



where X is bromo- or chloro- are disclosed; the compounds are suitable for use as fungicides.

3,624,253
HEXAMETHYLENETETRAMINE ADDUCTS WITH HALOACETIC ACID ESTERS
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 5, 1970, Ser. No. 16,977
Int. Cl. C07d *55/14*
U.S. Cl. 260—248.5 **9 Claims**

New compositions are made by the 1:1 molar reaction of hexamethylenetetramine with a haloacetic acid ester. The quaternary salts thus formed are colorless crystalline solids, readily soluble in water and having biological activity. They are bactericides which also have fungicidal activity.

3,624,254
HEXAMETHYLENETETRAMINE ADDUCTS WITH HALOACETONITRILES
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 5, 1970, Ser. No. 16,978
Int. Cl. C07d *55/14*
U.S. Cl. 260—248.5 **4 Claims**

New compositions are made by the 1:1 molar reaction of hexamethylenetetramine with a haloacetonitrile. The quaternary salts thus formed are colorless crystalline solids, readily soluble in water and having biological activity. They are bactericides which also have fungicidal and herbicidal activity.

3,624,255
NITRO-ACRIDONE THIOETHERS
Kurt E. Burdeska, Basel; Hans Bosshard, Basel, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Continuation-in-part of application Ser. No. 812,953, Mar. 20, 1969, now Patent No. 3,541,099, which is a continuation of application Ser. No. 609,953, Jan. 16, 1967. This application Jan. 16, 1970, Ser. No. 3,491
Claims priority, application Switzerland, Jan. 21, 1966, 849/66
Int. Cl. C07d *37/30*
U.S. Cl. 260—279 R **17 Claims**

Acridone dyestuffs bearing at the acridone nucleus in 1-position an aliphatically substituted mercapto group and in 4-position NO_2 of which those free from acidically water-dissociable solubilizing groups are suitable for the dyeing of hydrophobic synthetic organic fiber materials, especially textile materials consisting of high-molecular organic esters, of synthetic polyamide or of polyolefin fibers, for the dyeing or pigmenting of lacquers, oils and waxes and of cellulose derivatives in the mass; while acid addition salts of the above-defined acridone dyestuffs with strong inorganic or organic acids are suitable for dyeing acrylic fibers, and those containing solubilizing groups are useful for dyeing or printing natural or synthetic polyamide fibers from an acid to neutral bath; methods of dyeing organic materials and especially the aforesaid fibers with the novel dyestuffs suitable therefor, and such fibers dyed with the novel dyestuffs.

3,624,256
1,1,1-TRISUBSTITUTED-2-CYANOHYDRAZINIUM HYDROXIDE, INNER SALTS AND THE PREPARATION THEREOF

Frank Dennis Marsh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 663,212, Aug. 25, 1967, now abandoned. This application Mar. 5, 1970, Ser. No. 16,951
Int. Cl. C07d *31/46*
U.S. Cl. 260—296 7 Claims

1,1,1-Trisubstituted-2-cyanohydrazinium hydroxide, inner salts, obtained by reaction of tertiary amines and cyanogen azide, useful as dispersing agents for suspending solids in aqueous media and as intermediates for producing buffering agents are claimed.

3,624,257
4-DIMETHYLAMINOMETHYL-1,3-DITHIOLANE-2-THIONE

Michihiko Sakai, Kyoto; Masayuki Kato, Osaka; Hikoichi Hagiwara, deceased, late of Osaka (by Reiko Hagiwara, executor), and Kazuo Konishi, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Original application , Ser. No. 612,059, now Patent No. 3,501,502, dated Mar. 17, 1970, which is a division of application Ser. No. 205,088, June 25, 1963, now Patent No. 3,318,936, dated May 9, 1967. Divided and this application Feb. 13, 1970, Ser. No. 11,317
Int. Cl. A01n *9/12*; C07d *71/00*
U.S. Cl. 260—327 M 1 Claim

This invention relates to novel compounds and specified use thereof. More particularly, the instant invention is concerned with the new and useful compounds having in their molecule a tertiary amino group and two substituted thio groups, and with the utilization thereof as pesticides for e.g. agricultural and sanitary purposes.

3,624,258
PROCESS FOR THE PREPARATION OF ϵ-CAPROLACTONE

Sachio Ishimoto, Tokyo; Haruo Togawa, Iwakuni, and Yuitsu Honda, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 16, 1970, Ser. No. 20,017
Claims priority, application Japan, Mar. 22, 1969, 44/21965
Int. Cl. C07d *9/00*
U.S. Cl. 260—343 8 Claims

Epsilon-caprolactone is prepared at high yields through an easy commercial operation by heating at least one compound selected from the group consisting of ϵ-hydroxycaproic acid, low polymerization products thereof and esters of said ϵ-hydroxycaproic acid and its low polymers, in the presence of a compound containing free alcoholic hydroxyl groups at such an amount that, when one ϵ-hydroxycaproic acid unit of the formula

$$0-(CH_2)-_5CO$$

contained in said compound is calculated as one molecule of ϵ-hydroxycaproic acid, total number of free alcoholic hydroxyl groups present in the reaction system should exceed the total number of carboxyl groups present in the reaction system, under such temperature and pressure conditions as will allow distillation of ϵ-caprolactone.

3,624,259
TETRACYCLIC COMPOUNDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Original application Apr. 14, 1966, Ser. No. 542,494, now Patent No. 3,502,686, which is a continuation-in-part of application Ser. No. 455,989, May 14, 1965, now Patent No. 3,449,428. Divided and this application Dec. 30, 1969, Ser. No. 1,914
Int. Cl. C07c *49/76*, *49/82*, *131/00*
U.S. Cl. 260—479 R 5 Claims

1-nitroso-or 1-isonitroso-1,2,6,7-tetrahydro-11bH-benzo [j] benz[b[c,d]azulen-2-ones, which may be unsubstituted or substituted at the 3,4,5,8,9 and 10- positions, by hydroxy, lower alkoxy, lower alkanoyloxy or benzylocy functions, are useful as intermediates in preparation of corresponding 1-amino-1,2,6,7-tetrahydro-11bH-benzo [j]benz[c,d]azulenes which may be unsubstituted or substituted by an oxo or hydroxy function at the 2-position which compounds are useful as pharmaceuticals. Said intermediates bearing 1-nitroso or 1-isonitroso functions are obtainable by nitrosation of 1,2,6,7-tetrahydro-11bH-benzo-[j][c,d]azulen-2-one or an appropriate substituted derivative thereof.

3,624,260
NOVEL PHOSPHORUS AND SULFUR CONTAINING COMPOUNDS AND PROCESS FOR PREPARING SAME

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Original application Mar. 13, 1967, Ser. No. 622,419, now Patent No. 3,502,731. Divided and this application Jan. 19, 1970, Ser. No. 4,020
Int. Cl. C07f *9/50*; C10m *1/46*; C11d *9/34*
U.S. Cl. 260—606.5 P 7 Claims

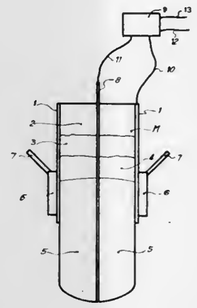
Alkylthiomethylmetal compounds prepared by reacting alkyl methyl sulfides with potent metalating agents, e.g., a complex between alkyllithium compounds and alkylenediamines; alkyl- or phenylsodium; or alkyl- or phenylpotassium; (2) the reactions of the alkylthiomethylmetal compounds with trialkyl- and triarylphosphites, mono- and dihalo and trihalo and pseudohaloalkyl- and arylphosphines, and (3) new compounds produced thereby containing phosphorous and sulfur.

ELECTRICAL

3,624,261
SELF-BAKING ELECTRODE STRUCTURE AND METHOD OF OPERATING SAME

Mario Cavigli, Mestre (Venice), Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Aug. 12, 1970, Ser. No. 63,251
Claims priority, application Italy, Aug. 22, 1969, 21150 A/69
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 8 Claims

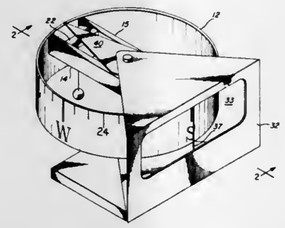


Improved results in operating self-baking electrodes are achieved by constantly maintaining a bar made of an electrically conductive material well immersed in a carbon mass contained within a metal shell, measuring the voltage drop between the bar and the metal shell and measuring a ratio between this voltage drop and the electrode current.

3,624,262
AVIATION TRAINING AID

Allan F. Greenwade, 1918 North 25th Pl., Phoenix, Ariz.

Filed Nov. 20, 1969, Ser. No. 878,516
Int. Cl. G09b *9/02*
U.S. Cl. 35—10.2 6 Claims

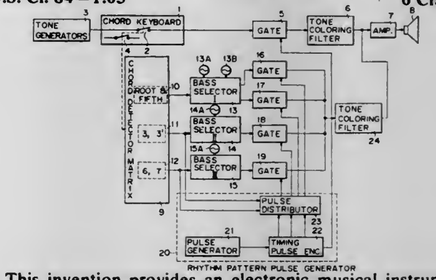


A training aid for simulating the actions of a magnetic compass under various flight conditions, including a pedestal extending upwardly from a base for supporting a compass wheel rotatably mounted thereon. A weight is suspended on a flexible cord from said compass wheel and a guide member extends from the pedestal. The flexible cord passes through an eyelet formed in the end of the guide member, thereby limiting the rotational movement of the compass wheel about the pedestal. A compass window is simulated through the utilization of a rigid sheet of material having an opening therein; the simulated compass window is positionable about the compass wheel by mounting the window frame for pivotal movement about the pedestal. The simulated compass window is provided with a lubber line.

3,624,263
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC BASS PERFORMANCE CIRCUITRY

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 16, 1971, Ser. No. 115,681
Claims priority, application Japan, Feb. 16, 1970, Feb. 16, 1970, Feb. 16, 1970, Apr. 1, 1970; 45/12786, 45/12787, 45/12788, 45/27177
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.03 6 Claims

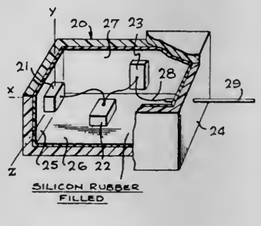


This invention provides an electronic musical instrument capable of carrying out bass performance conforming with chord performance by merely depressing keys in a keyboard for the chord performance. To this end, there are provided a chord detector for detecting the type of the chord including various notes, that is, root, fifth, major on minor third, and major sixth or minor seventh notes when the keys of the keyboard are depressed for chord performance, and bass selectors responsive to the outputs from the chord detector for selectively deriving bass tone signals corresponding to respective notes of the chord from tone generators and supplying the derived bass tone signals to respective bass gate circuits. The bass gate circuits are sequentially opened by timing pulses from a rhythm pattern pulse generator in a specific order conforming with chord performance, thereby providing automatic bass performance in a desired rhythm.

3,624,264
METHOD AND APPARATUS FOR SOUND AND VIBRATION DETECTION

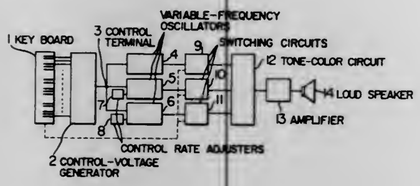
Arnold Lazarus, 43 Dore St., San Francisco, Calif.

Filed Feb. 18, 1970, Ser. No. 12,354
Int. Cl. G10d *5/00*
U.S. Cl. 84—1.14 13 Claims



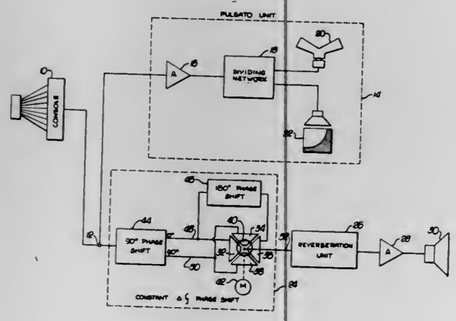
A triple-axis shockproof and waterproof vibration transducer is disclosed for detecting vibrations in general and sound from a musical instrument in particular, especially one having a resonant cavity. The transducer includes three piezoelectric vibration detectors, each oriented to detect vibrations along a different one of three orthogonal axes established by walls of a sealed enclosure filled with silicon rubber. All detectors are connected in parallel to the input of a noninverting operational amplifier which adds the separate voltages produced proportional to vibrations along the three orthogonal axes. A universal wax is employed to attach the transducer to the optimum point of the instrument as determined empirically.

3,624,265
TONE-GENERATING DEVICE FOR ELECTRONIC MUSICAL INSTRUMENT
Shigeru Yamada, 39-14, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Mar. 17, 1970, Ser. No. 20,165
Int. Cl. G10h *1/06*
U.S. Cl. 84—1.19 **2 Claims**



An electronic musical instrument comprises a keyboard associated with a DC power source to produce a controlling DC voltage, a plurality of variable frequency oscillators which produce tone signals of frequencies determined by the controlling DC voltage and which include a control rate adjuster so that the oscillators are always in harmonic relations very approximately, switching circuits for switching said tone signals, and means to convert the tone signals into sounds.

3,624,266
ELECTRONIC MUSICAL INSTRUMENT WITH DUAL CHANNELS FOR REVERBERATION AND PULSATO
Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed July 30, 1969, Ser. No. 846,117
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.24 **11 Claims**



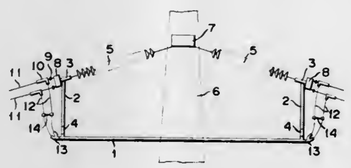
A reverberation unit derives an instrument signal through an electrical phase shift vibrato device that imposes a maximum frequency deviation that is substantially constant for all notes in the musical range. The inherent comb-shaped frequency response of the reverberation device relatively attenuates certain notes. A second channel that includes acoustic pulsato apparatus derives instrument signal independently of the electrical vibrato device and provides with the first channel a distinct component to the total pulsato effect by virtue of the independency. Cessation of primary instrument signal provides a nonpulsato decaying reverberation the frequency response characteristic of which is substantially uniform due to the constant maximum frequency deviation pattern imposed prior to the cessation of signal.

3,624,267
WRAPAROUND ELECTRICAL SHIELDING JACKET AND METHOD FOR WIRE HARNESS
Walter A. Plummer, 3546 Crownridge Drive, Sherman Oaks, Calif.
Filed Sept. 28, 1970, Ser. No. 76,072
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 **9 Claims**



Wraparound shielded jacketing for enshrouding wire harness to provide a continuous tubular conductive barrier against the passage of electrical flux fields and held snugly assembled about the harness by closely spaced servings of cording. The jacketing comprises an inner conductive layer laminated to an outer nonconductive layer and having its opposite edges respectively processed to render one conductive on both surfaces and the other nonconductive, the former being assembled to the harness to underlie the overlapped edges of the jacketing thereby to electrically interconnect the edge of the conductive layer and provide a continuous conductive tube surrounding the wire harness.

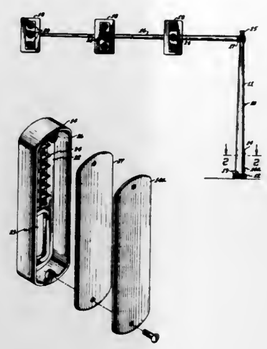
3,624,268
JUMPER ARRANGEMENT FOR OVERHEAD TRANSMISSION LINES
Akira Otsuki, and Kimikazu Numata, both of Tokyo, Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan
Filed Aug. 18, 1970, Ser. No. 64,735
Claims priority, application Japan, Aug. 27, 1969, Aug. 28, 1969; 44/80782, 44/81225
Int. Cl. H02g *7/00*
U.S. Cl. 174—43 **10 Claims**



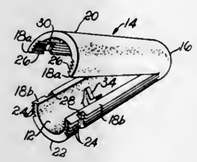
In a jumper arrangement for an overhead electric power transmission line wherein conductors of the transmission line are secured to a power transmission tower through strain insulator string assemblies and conductors on the opposite sides of the tower are electrically interconnected by a jumper conductor, main parts of the jumper conductor are formed by a rigid jumper rod and each end of the jumper rod is connected with a supporting fixture interposed between the conductor of the transmission line and the strain insulator string assembly through a pivotally connected supporting means. The jumper rod is further connected to the conductor of the transmission line through at least one electroconductive flexible connecting wire.

3,624,269
COLUMN FOR SUPPORTING ELECTRICAL DEVICES EMBODYING A HANDHOLE ELECTRICAL TERMINAL COMPARTMENT NEAR ITS BASE
Leonard H. Latta, Del City, Okla., assignor to VePed Traffic Controls, Inc., Oklahoma City, Okla.
Filed Mar. 9, 1970, Ser. No. 17,462
Int. Cl. E01f *9/01*; **F21s** *1/10*
U.S. Cl. 174—45 R **1 Claim**

A vertical shaft, pillar, or column having a base and a capital for supporting electrical devices such as lamps, traffic signals and the like and embodying an improved integrally arranged handhole electrical terminal compartment.



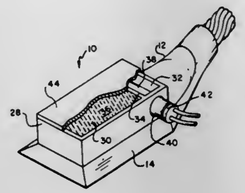
3,624,270
CONNECTING APPARATUS FOR TERMINATING ELECTRICAL CONDUCTORS
Rex O. Turner, 425 California Ave., Arroyo Grande, Calif.
Filed Feb. 24, 1970, Ser. No. 13,673
Int. Cl. H02g *15/08*
U.S. Cl. 174—87 **4 Claims**



A structure is disclosed for receiving the ends of a plurality of electrical conductors and holding them in clamped-together relationship so that the conductors are electrically interconnected yet are insulated from other objects. As disclosed, the apparatus includes an elongate body of resiliently deformable material, e.g., plastic, defining an elongate interior chamber, which body may be parted along mating edges to open the chamber. Variable-closure fastening means, in the form of interlocking ridges are defined at the mating edges to lock the body closed so that spaced-apart, opposed abutments (defined within the body and integral therewith) define a clamp (of variable size) to hold received conductors within the apparatus.

3,624,271
RAIL CONNECTORS
Robert H. Wittman, Arapahoe County, Colo., assignor to Hanlon & Wilson Company, Jeannette, Pa.
Filed Dec. 19, 1969, Ser. No. 886,658
Int. Cl. H05g *15/08*
U.S. Cl. 174—94 R **22 Claims**

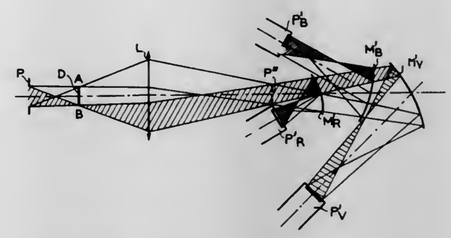
Electrical continuity of end-to-end rails having expansion and contraction gaps therebetween is established by connecting devices which are wires or cables having tabs formed with connecting portions that form an angle with the rails when the tabs are seated on the rails so that they may be conveniently explosively bonded to the rails by a charge positioned on such connecting portions. The connectors may be utilized to provide electrical connection between wires or cables and metal objects other than rails.



ERRATA

For Classes 174—129 and 174—138 see:
Patent Nos. 3,624,276 and 3,624,277

3,624,272
TRICHROMATIC OPTICAL SEPARATOR SYSTEM USING CONCAVE DICHROIC MIRRORS
Michel Favreau, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Feb. 9, 1970, Ser. No. 9,576
Claims priority, application France, Feb. 27, 1969, 05192
Int. Cl. G02b *27/10*
U.S. Cl. 178—5.4 E **5 Claims**

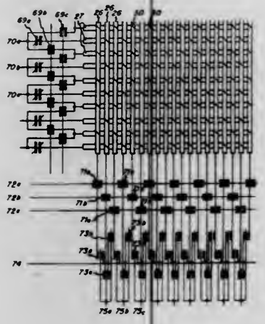


To prevent distortion during chromatic separation of images being scanned, for example by a flying spot scanner or the like, and for detection by photomultipliers associated, respectively, with red, green, and blue color components, the trichromatic separator system includes two, concave dichroic mirrors and located beyond a condenser lens which gives a real image of the output diaphragm of the objective lens, and a third, totally reflecting concave mirror, or a lens. The optical axes of the concave dichroic mirrors are inclined with respect to the optical axis of the condenser lens, and project a real image of the output diaphragm on the photosensitive surface of the photomultipliers to provide color video signals corresponding to the point being analyzed for brightness and color content. Preferably, the curvature of the mirrors is so chosen that the enlargement is in the neighborhood of unity so that the beams of light from the output diaphragm of the equipment generating the scanning light beams, falling on the mirrors, have a substantially constant angle of incidence.

3,624,273
FLAT SCREEN DISPLAY DEVICES USING AN ARRAY OF CHARGED PARTICLE SOURCES
Alfred J. Gale, 10 Diana Lane, Lexington, Mass.
Filed Nov. 22, 1968, Ser. No. 778,194
Int. Cl. H04n *3/14*, *9/30*
U.S. Cl. 178—5.4 R **34 Claims**

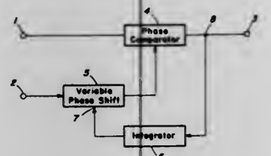
A display device utilizing an array of electron-emitting sources insulatively supported opposite a screen member so that each emitting source is in register with a selected area

element of such screen member. Means are provided for sequentially controlling the emission of electrons from such sources so that the emitted electrons impinge in an appropriate sequence upon the selected area elements of the screen member to produce an image thereon. An appropriate



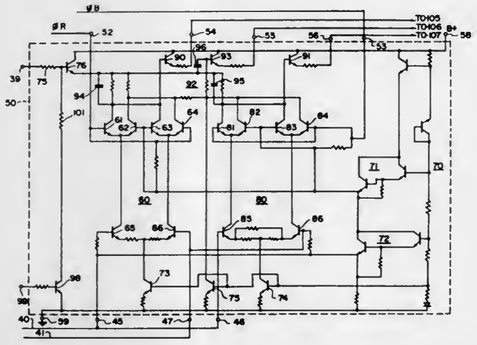
stereoscopic display of such image may be provided by using optical filters adjacent each selected area element so that certain selected portions of the visible spectrum are transmitted to the receiver from each such element as a result of the impingement of electrons thereon.

3,624,274
APPARATUS FOR DETECTING THE PHASE DIFFERENCE BETWEEN A PLURALITY OF SIGNALS AND COLOR-SHADING COMPENSATOR MEANS EMPLOYING SUCH APPARATUS
Shigeru Araki, and Masao Inaba, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed Aug. 7, 1968, Ser. No. 750,970
Claims priority, application Japan, Aug. 11, 1967, 42/51509
Int. Cl. H04n *5/78*
U.S. Cl. 178—5.4 R **9 Claims**



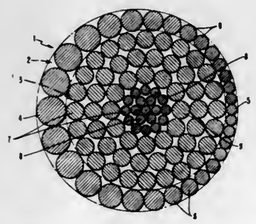
A method and the apparatus for detecting the phase difference between a pair of signals is provided wherein the DC phase difference is deleted from the output and only the AC phase difference is present therein. According to one embodiment of this invention, circuit apparatus is provided wherein a first signal whose phase is to be compared with a second signal is applied to a first input of phase comparator means. The second signal of the pair is applied to the input of variable phase shift circuit means whose output furnishes the second input for the phase comparator means. The amount of phase shift that is introduced to the second signal, to thereby remove the DC phase difference from the output of the apparatus for detecting the phase difference, is determined by the output of the phase comparator means as modified by a frequency selective circuit.

3,624,275
COLOR TELEVISION SIGNAL DEMODULATION SYSTEM WITH COMPENSATION FOR HIGH-FREQUENCY ROLLOFF IN THE LUMINANCE SIGNAL
Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 4, 1969, Ser. No. 873,839
Int. Cl. H04n *9/50*
U.S. Cl. 178—5.4 MA **7 Claims**



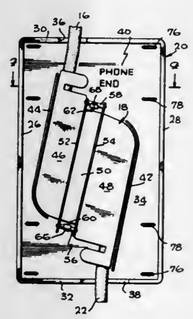
A silicon monolithic integrated circuit consisting of two sets of full-wave synchronous gated transistor demodulators is used to demodulate the red and blue color difference signals present in a composite television signal. Selected outputs of these demodulators are matrixed to provide the green color difference signal. The color difference signals are applied to the bases of emitter-follower output amplifiers which also are supplied with the brightness signals from an additional emitter-follower luminance amplifier, the output of which is coupled to the bases of the emitter-follower output amplifiers through coupling capacitors, which compensate for most of the high-frequency rolloff in the brightness signals and further provide filtering of carrier harmonics from the detected color reference signals. Collector current for the switching transistors in the demodulators is obtained from the emitter of the emitter-follower luminance amplifier, so that blanking may be accomplished by rendering the luminance amplifier nonconductive during the blanking intervals.

3,624,276
CONDUCTOR BUNDLE ARRANGEMENT
Charles B. Rawlins, and Fred R. Collins, both of Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 6, 1970, Ser. No. 78,469
Int. Cl. H01b *5/08*; **H02g** *7/14*
U.S. Cl. 174—129 R **10 Claims**



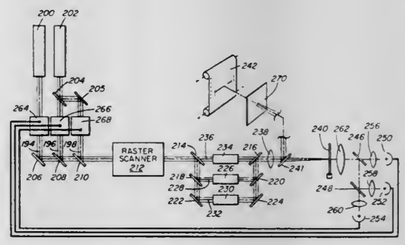
Conductor bundle arrangement comprising adjacently disposed conducting cable assemblies operatively interconnected to form a conductor bundle, each conducting cable assembly including an electrically conductive core, e.g. a helically laid multistranded core, having a composite substantially circular cross-sectional shape and a surrounding sheathing layer having a composite substantially annular cross-sectional shape with an exposed peripheral surface portion in the form of a multiplicity of helically oriented and adjacently disposed convex longitudinally extending arcuate ridges of progressively varying size, e.g. by providing said sheathing layer of varying diameter wires helically laid about the core in covering relation therewith, the sheathing layer including at each transverse section thereof at least one predetermined large size first ridge, e.g. wire, disposed at a first circumferential point and at least one predetermined small size last ridge; e.g. wire, disposed at a second circumferential point in diametric relation therewith, and a plurality of intermediately disposed ridges, e.g. wires, of progressively smaller sizes than that of the first ridge but larger than that of the last ridge adjacently disposed in the sheathing layer on each side of the at least one first ridge and occupying the remainder of the circumference thereof between said first and second points in corresponding substantially uniformly decreasing order of sizes in accord with the progressive peripheral remoteness thereof from the at least one first ridge, the exposed surface of the sheathing layer peripherally providing a composite silhouette characterized by a longitudinally repetitive variation in surface roughness around the circumference of the sheathing layer in accord with the helical disposition of the differing size ridges, e.g. wires, therein, the sheathing layer preferably being formed of round wires of size and disposition corresponding to said ridges and having a composite cross-sectional shape corresponding substantially to that of an eccentric annulus.

3,624,277
TELEPHONE CONNECTOR RETAINING COVER
King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.
Continuation-in-part of application Ser. No. 834,111, June 17, 1969. This application Aug. 3, 1970, Ser. No. 60,501
Int. Cl. H01b *17/00*; **H05k** *5/03*
U.S. Cl. 174—138 F **16 Claims**



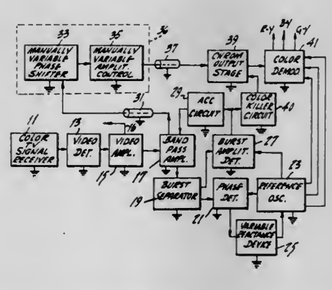
A telephone connector retaining cover with sides, ends and top. The cavity is of sufficient size to accept a telephone connector. The ends have openings for the cord and cable secured to the telephone connector. Interiorly, the cover has resilient retaining latches which snap onto the telephone connector assembly to retain it in the cover. The top carries indicia, including a molded-in partial outline of the telephone connector to indicate the proper position of the connector in the cover. The indicia include words indicating which end is the cord end. Furthermore, retention means is provided in the cover at its four corners to hold the cover in place. These retention means preferably are means for retaining magnets in place, which magnets retain the cover against metal desks or walls. Alternatively, the retention means engages a base which is secured to the wall by any conventional means.

3,624,278
AREA MULTIPLEX IMAGE RECORDING BY FLYING SPOT RASTER SCANNING EMPLOYING SPATIAL FILTERING
Helmut Heckscher, New Ton Center, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.
Filed Nov. 19, 1969, Ser. No. 877,931
Int. Cl. H04n *5/84*
U.S. Cl. 178—5.2 R **14 Claims**



A plurality of images are stored on a common area of a recording medium by impressing the images respectively on spatial carriers having like spatial frequency but predetermined azimuthal separation. The images are selectively retrievable in a spatially coherent projection system. The disclosure stresses recording with one or more flying spot scanners the separate carrier-modulating images as rasters having said predetermined azimuthal separation.

3,624,279
COLOR TELEVISION RECEIVER HUE CONTROL
Edward W. Curtis, Indianapolis, Ind., assignor to RCA Corporation
Filed May 22, 1968, Ser. No. 730,993
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 HE **2 Claims**

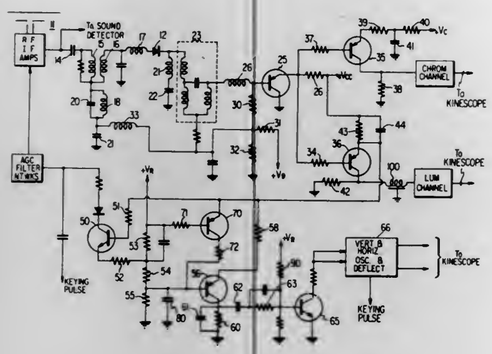


A manually variable phase shifter in the chrominance amplifier channel of a color television receiver at a point subsequent to burst takeoff permits viewer to adjust hue of reproduced color image without disturbing ACC circuit operation. A manually variable amplitude control in the same channel provides viewer control of saturation of reproduced colors. Association of both "customer" color controls with same receiver channel permits use of single pair of shielded cables to couple color controls to associated color circuitry.

3,624,280
TELEVISION AMPLIFIER CIRCUITS
George E. Anderson, Indianapolis, Ind., assignor to RCA Corporation
Filed Aug. 25, 1969, Ser. No. 852,686
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 R **8 Claims**

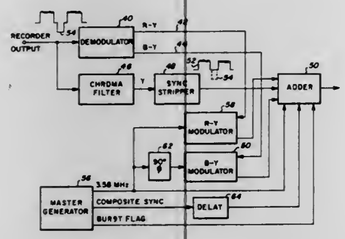
Luminance and chrominance common emitter amplifiers are driven by an emitter follower stage having an input direct coupled to a video detector.
The common emitter stages serve to isolate the chrominance

signal components from the luminance components and permit the detector to operate relatively unloaded while being terminated in a primarily resistive impedance.
The chrominance amplifier includes substantially different magnitude impedances in the collector and emitter circuits to attenuate luminance signal components while amplifying



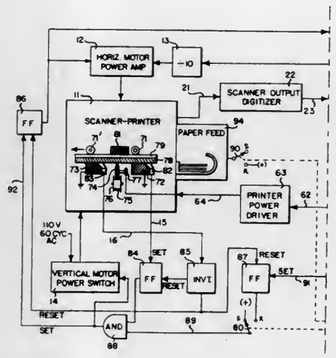
chrominance signals as applied to the chrominance channel. The luminance amplifier includes a collector load impedance for terminating a luminance delay line and an emitter impedance selected for peaking the luminance components, while further providing a low-impedance drive to sync and A.G.C. circuits included in the receiver.

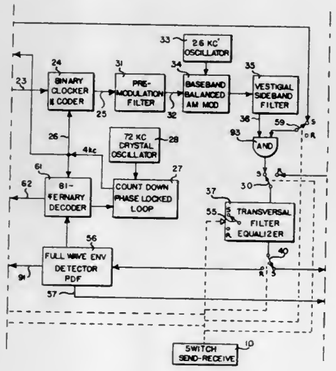
3,624,281
VIDEO RECORDER PLAYBACK SYSTEM FOR PROVIDING PHASED COLOR TELEVISION SIGNALS
John T. Phan, Redwood City, Calif., assignor to Data Memory, Inc., Mountain View, Calif.
Filed Sept. 12, 1969, Ser. No. 857,435
Int. Cl. H04n *5/78, 9/46*
U.S. Cl. 178—5.4 CD **8 Claims**

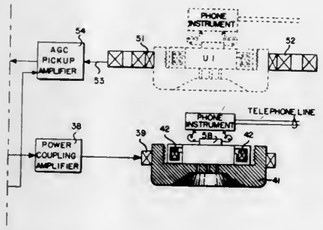


A video recorder playback system for producing a phased color television signal, comprising: a demodulator and a chroma filter responsive to the recorded signal and operative to respectively separate therefrom chrominance signals and a luminance signal having synchronization pulses; a sync stripper for stripping the synchronization pulses from the luminance signal to provide a stripped luminance signal; a signal generator for developing a subcarrier signal and synchronization pulses from a single source; a modulator responsive to the chrominance signals and subcarrier signals and operative to develop modulated chrominance signals; and a signal adder responsive to the modulated chrominance signals, the stripped luminance signal, and the new synchronization pulses, and operative to develop the phase color television signal.

3,624,282
BINARY FACSIMILE SYSTEM
Roy G. Salaman, and John B. Picchiottino, both of Boulder, Colo., assignors to Phonocopy, Inc., Wilmington, Del.
Continuation of application Ser. No. 579,591, Sept. 15, 1966. This application July 28, 1970, Ser. No. 64,096
Int. Cl. H04n *7/00*
U.S. Cl. 178—6 **10 Claims**

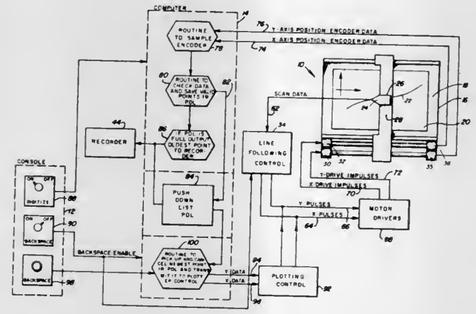






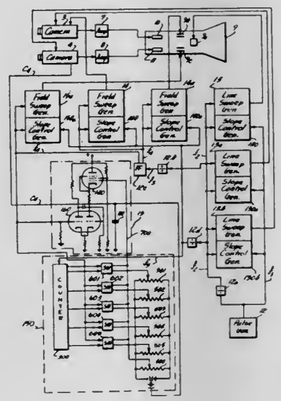
A binary-facsimile system which operates by converting the photoelectric analog scan signal to a binary signal the two levels of which represent the black and white data in the portions of the sheet being scanned. The binary signal is processed for partial response transmission and vestigal sideband amplitude modulated on a carrier for transmission in the switched telephone network to obtain increased rate of information transmissions for a given channel bandwidth. The receiver receives the binary signal and prints black or white data in accordance with the binary signal level to form a facsimile reproduction of the original sheet scanned.

3,624,283
METHOD AND MEANS FOR BACKSPACING A LINE FOLLOWER IN A DIGITIZING SYSTEM
David J. Logan, Glastonbury, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Apr. 29, 1970, Ser. No. 32,888
Int. Cl. H04n *7/02*
U.S. Cl. 178—6.8 **10 Claims**



In a digitizing system, a line follower automatically follows a line or edge to be digitized and intermittently outputs data representing the coordinates of points spaced along the line. This coordinate information is supplied to a computer and, through the computer, to a recorder or other terminal device using such information. The computer memory temporarily stores, in a pushdown list, a plurality of the most recent sets of coordinate data supplied by the line follower. Should the line follower accidentally stray from the line being digitized, the operator, by appropriately conditioning the system, may cause the system to utilize the temporarily stored coordinate data to cause the line follower to be driven in a plotting or backspacing mode to retract its path of movement for return to a previously properly taken point on the line being digitized. Any erroneous coordinate data taken during the departure of the line follower from the line being digitized is erased or destroyed during the backspacing operation so that after the full digitizing operation is completed, the result is a clean record wherein the recorded data represents points located in succession along the digitized line without any "-switch-backs" or undesirably large gaps in such data.

3,624,284
PHOTOGRAPHIC RECORD OF DIGITAL INFORMATION AND PLAYBACK SYSTEM INCLUDING OPTICAL SCANNER
James T. Russell, Richland, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio
Original application Sept. 1, 1966, Ser. No. 576,580, now Patent No. 3,501,586. Divided and this application Sept. 12, 1969, Ser. No. 857,474
Int. Cl. G02f *2/00*; **G06k** *7/016*; **G11b** *7/00*
U.S. Cl. 178—6.7 A **18 Claims**

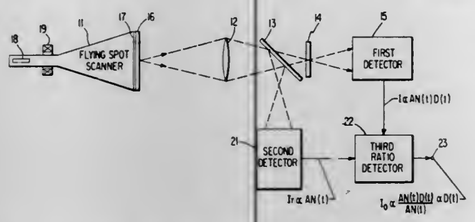


An electrical signal-recording and playback system is described in which an analog input signal is converted to a digital signal that pulses a light source to form a single, series-recorded track of binary coded digital information including information spots arranged in groups separated by synchronizing spots recorded on a photographic film which is played back in a similar manner. The photographic film is a compact, permanent record of long, useful lifetime which may be photographically copied to provide a plurality of inexpensive copies. A spiral track photographic record is used in one embodiment which can be employed to provide a music system of high quality.

3,624,285
HIGH-RESOLUTION TELEVISION SYSTEM
Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 16, 1968, Ser. No. 753,269
Int. Cl. H04n *5/30*
U.S. Cl. 178—6.8 **4 Claims**

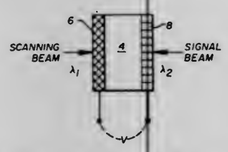
To increase resolution in a television system, a plurality of television cameras are positioned to view a common scene and to furnish video information to a common display tube which has a like plurality of electron gun systems and beam deflecting means to control each electron beam individually. Brightness is increased proportionately. Beam deflection voltages (or currents) in the display tube and in the cameras are synchronized but differ in amplitude and/or phase so that scanning lines associated with different cameras are interspaced on the display tube screen.

3,624,286
NOISE CANCELLATION IN VIDEO SIGNAL-GENERATING SYSTEMS
Douglas Robert Bosomworth, Hightstown, and Zoltan Joseph Kiss, BelleMead, both of N.J., assignors to RCA Corporation
Filed Nov. 10, 1969, Ser. No. 875,078
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 **13 Claims**



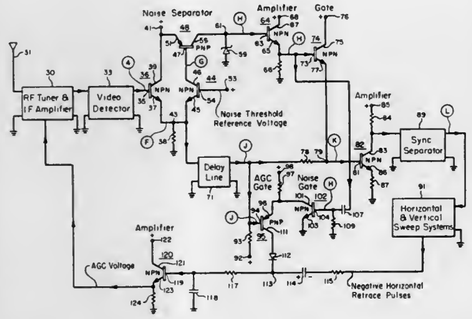
A transparent optically recorded subject is scanned by light produced by electron beam excitation of a phosphor screen, the light transmitted through the subject being modulated in intensity proportionately (1) to the desired subject representative video signal and (2) to undesired noise effects inadvertently produced by the phosphor screen excitation. The light derived from the phosphor screen and the subject is divided by a semireflecting mirror, which may be a dichroic device, and the light transmitted through the mirror and modulated proportionately to both the desired video signal and the undesired noise effects is directed to a first detector to produce a first signal representative of such light, while the light reflected by the mirror and modulated substantially only by the undesired noise effects is directed to a second detector to produce a second signal representative of the noise effects. The first and second signals are applied to a third detector which functions to determine the ratio of the first and second signals and to produce an output signal including substantially only the desired subject representative video signal. In one embodiment, the subject is a photographic transparency and the semireflecting mirror is located between the subject and a flying spot cathode-ray tube scanner. In another embodiment, the subject is a record made by a video signal modulated electron beam bombardment of a cathodochromic layer of a cathode-ray tube which also has, behind the cathodochromic layer, a light-producing phosphor layer which is scanned by an unmodulated electron beam, the first and second detector means comprising photomultipliers which, together with a dichroic semireflecting mirror and at least the screen of the cathode-ray tube, are enclosed in a light-tight structure which includes two hollow frustoconical internally reflecting light-conducting members located to direct light respectively transmitted and reflected by the dichroic mirror to the first and second photomultipliers respectively.

3,624,287
DETECTION SYSTEM
Joseph C. Scanlon, Elizabeth; Alfred Brauer, Wanaque; Robert Carvalho, Englewood, N.J., and Cecil B. Ellis, White Plains, N.Y., assignors to The Singer Company, New York, N.Y.
Filed Apr. 30, 1969, Ser. No. 820,572
Int. Cl. H04n *5/30*; **H01l** *3/00*
U.S. Cl. 178—7.2 **3 Claims**



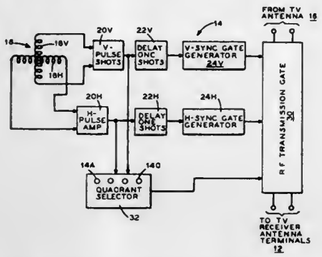
A signal detector comprising in combination a thin photosensitive element sandwiched between partially transparent electrodes; amplifier means connected to the detection element; and utilization means connected to the amplifier.

3,624,288
VIDEO SIGNAL NOISE ELIMINATION CIRCUIT
Judson A. Hofmann, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Nov. 5, 1969, Ser. No. 873,757
Int. Cl. H04n *3/16*
U.S. Cl. 178—7.3 R **15 Claims**



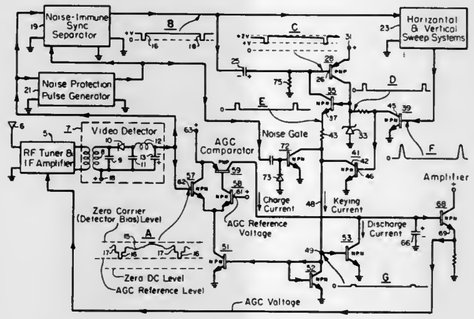
Noise components in a composite video signal are completely removed by modifying that signal with protection pulses each of which effectively anticipates and embraces an assigned respective one of the noise components. This is achieved by stretching the output pulses of a threshold-biased noise separator to form the protection pulses which are then combined with the composite video signal, but after it has been delayed in a delay network, to cancel the noise components. The sync components may then be separated from the noise-free video signal. A keyed automatic gain control system for the television receiver may also be noise gated by the protection pulses.

3,624,289
APPARATUS FOR BLANKING PORTION OF FIELDS OF TELEVISION VIDEO SIGNALS
Don J. Dudley, Brightwaters, N.Y., assignor to Data-Plex Systems, Inc., New York, N.Y.
Filed Aug. 26, 1970, Ser. No. 67,167
Int. Cl. H04n *5/46*, *7/08*
U.S. Cl. 178—7.3 E **6 Claims**



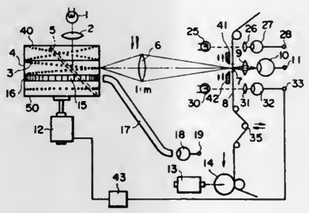
Connected between the antenna and the antenna input terminals of a conventional television receiver is an R.F. gate which controllably passes television signals from the antenna to the receiver. The gate is controlled by selected blanking signals, to pass selected portions of the television fields. The gate also receives override signals to prevent the blocking of transmission during the occurrence of the raster synchronizing signals. The override signals are derived from the raster-driving signals generated in the receiver in response to the raster-synchronizing signals. Inductive pickup means positioned outside the receiver in the vicinity of the receiver's deflection yoke radiatively receives the raster-driving signals which are then delayed to become the override signals.

3,624,290
TELEVISION RECEIVER AGC SYSTEM KEYED IN RESPONSE TO TIME COINCIDENCE OF SYNC AND FLYBACK PULSES
Judson A. Hofmann, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 30, 1969, Ser. No. 889,198
Int. Cl. H04n *5/56*
U.S. Cl. 178—7.3 DC **15 Claims**



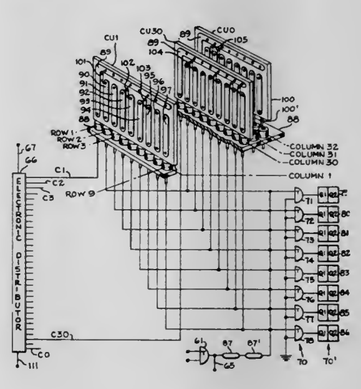
Under normal operating conditions a coincidence circuit produces keying pulses, for an AGC system of a television receiver, only when the flyback pulses from the receiver's horizontal sweep system occur concurrently with the horizontal sync components from the sync separator. The magnitude of the developed AGC voltage is held constant between keying pulses. This arrangement precludes sampling of video information, with a resulting false measure of received signal strength and an erroneous magnitude for the AGC voltage, which takes place in a conventional flyback pulse-keyed AGC system when the horizontal oscillator is out of synchronism with the sync pulses. During transient conditions, when there is a very fast and substantial increase or decrease in received signal strength causing a loss of sync pulses at the separator output, keying is achieved in the disclosed AGC system in response to the flyback pulses alone.

3,624,291
OPTICALLY INTERLACED SCANNING AND REPRODUCING APPARATUS USING MULTIPLE DRUMS TO PERMIT SCANNING OF MOTION PICTURE FILM OR STATIONARY FILM
Shoichi Miyata, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Dec. 29, 1969, Ser. No. 888,283
Claims priority, application Japan, Dec. 28, 1968, May 14, 1969; 43/96293, 44/36708
Int. Cl. H04n *3/04*
U.S. Cl. 178—7.6 **7 Claims**



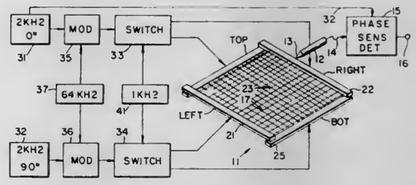
This apparatus uses one or more drums each having a number of small holes or convex lenses for converting a light ray emitted from a light source into light spots each having a small diameter. The light spots are projected onto a scanning raster region through which moves a picture film. A light passed through the film is converted into an electrical signal adapted to be supplied to a conventional television receiver.

3,624,292
COMMUNICATION SYSTEM INCLUDING AN ANSWER-BACK MESSAGE GENERATOR AND KEYBOARD
John Guzak, Jr., Waukegan, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Dec. 6, 1967, Ser. No. 688,523
Int. Cl. H04l *13/16*
U.S. Cl. 178—17.5 **8 Claims**



A communication system with a calling station and a called station interconnected by a communications channel, with an answer back message generator and a keyboard at the called station. The operation of the answer back message generator can be initiated by an inquiry signal from the calling station. The message generator includes an electronic distributor and individual successive coded units which provide network circuit links for network circuits formed in part by the electronic distributor and by gating circuits for memory devices. The memory devices and various other components of the system are common to the message generator and to the keyboard machine. As the coded units are modular in construction, the message generator can be set up initially to generate a message made up of any desired signals, and yet, one or more of the coded units can be individually removed and replaced by other and different coded units so that a different message can be generated.

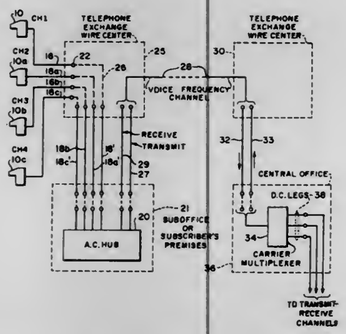
3,624,293
ELECTRICAL INSCRIBING
Larry K. Baxter, Lexington, Mass., assignor to Shintron Company, Inc., Cambridge, Mass.
Filed Mar. 19, 1970, Ser. No. 21,156
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **7 Claims**



An electrical inscribing system comprises a set of parallel resistance wires orthogonal to and insulatedly separated from another set of parallel resistance wires. The X set of wires is connected between left and right conducting strips. The Y

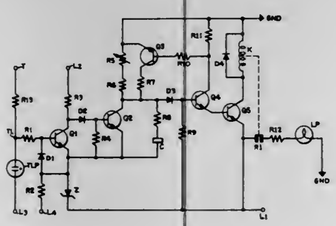
set of wires is connected between top and bottom conducting strips. Signals in time quadrature are applied between the top and bottom strips and then to the left and right strips. The X set and Y set of wires are separated by a ½-mil plastic insulating film. A ¼-inch sheet of plexiglass covers the upper set and may function as a writing surface. An electronic pen may be moved along the plexiglass and is AC coupled to the grid of resistance wires to provide an output signal from its self-contained preamplifier that is representative of the X and Y coordinates of the penpoint.

3,624,294
DISTRIBUTED MULTIPLEXING OF LOW-SPEED TELEGRAPH SUBSCRIBER LINES
John E. Cox, West Milford Township, Passaic County, and Earl D. Anderson, Jr., Oakland, both of N.J., assignors to The Western Union Telegraph Company, New York, N.Y.
Filed Mar. 24, 1969, Ser. No. 809,738
Int. Cl. H04l 27/10
U.S. Cl. 178—50 **2 Claims**



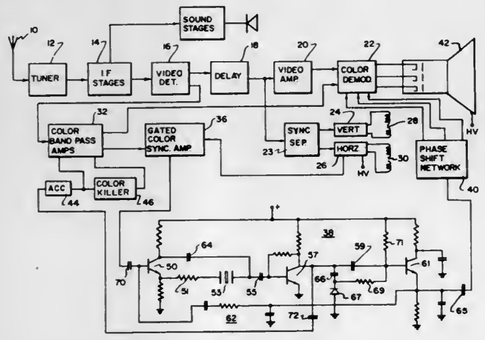
In a telegraph distribution system, a plurality of subscribers share a single voice-frequency channel on a multiplexed basis. Voice-frequency shift carrier modules are employed at each subscriber outstation. An AC mixing hub at a distribution point combines subscribers' data output on a single voice-frequency channel between the distribution point and a central office.

3,624,295
MONITORING MEANS FOR TELEGRAPH-TYPE DATA-COMMUNICATIONS SYSTEMS
Carl Norman Pederson, Westmont, Ill., assignor to The Pioneer Electric & Research Corporation, Forest Park, Ill.
Filed Nov. 26, 1968, Ser. No. 778,973
Int. Cl. H04l 25/02
U.S. Cl. 178—69 G **9 Claims**



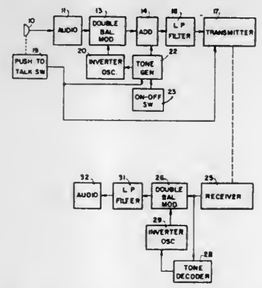
In a telegraph-type data-communications system in which a plurality of data sending stations are polled sequentially by a master controller to transmit data, a monitor in the test room of the system supervises the activity of the controller. An absence of polling signals for a predetermined time is detected and reported visually and/or audibly via remote and local alarm means, as desired. The monitoring circuit is transistorized and functions with a sudden switching action at a stable operating point with relatively inexpensive components, notwithstanding the relatively long time constant (slow rate) of its timer.

3,624,296
BURST-CONTROLLED OSCILLATOR CIRCUIT
William H. Slavik, Oak Lawn, Ill., and Carl E. Snyder, Mountain View, Calif., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 23, 1969, Ser. No. 860,216
Int. Cl. H04n 9/46
U.S. Cl. 178—69.5 CB **9 Claims**



A multistage, crystal-controlled oscillator circuit for a color television receiver provides, from an intermediate stage, a control signal indicative of the presence or absence of burst components in the received signal, with this control signal being utilized to provide ACC and color killer controls for the color television receiver. A feed-forward circuit is provided for the final stage of the oscillator, so that the output signal level obtained from the final stage remains constant, and a provision is made for providing noise immunity of the circuit during both the presence and absence of received burst signal conditions.

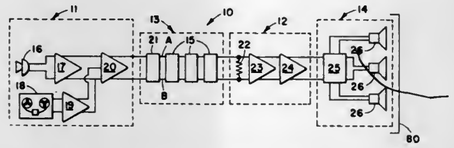
3,624,297
TONE-CONTROLLED SPEECH SCRAMBLER
Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 21, 1969, Ser. No. 817,696
Int. Cl. H04m 1/70, 3/16
U.S. Cl. 179—1.5 **8 Claims**



A speech-coding or scrambling system which operates by changing a speech signal by means of an inverter signal, also

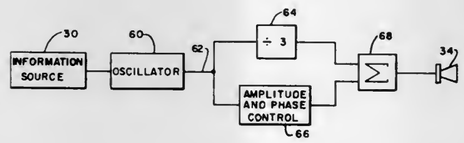
incorporates a tone signal outside of the speech frequency band to inform the receiver that the speech is being coded. Upon the receipt of the tone signal the receiver automatically operates to decode the received signal.

3,624,298
SOUND-IMPROVING MEANS AND METHOD
Arthur C. Davis, Newport Beach; Donald B. Davis, Tustin, and James J. Noble, Santa Ana, all of Calif., assignors to LTV Ling Altec, Inc., Anaheim, Calif.
Filed Mar. 5, 1969, Ser. No. 804,573
Int. Cl. H03j 5/24
U.S. Cl. 179—1 D **18 Claims**



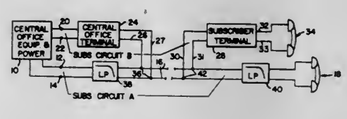
A method for eliminating undesired effects produced by reverberations from structure on the quality of sound produced by a sound system which is operated in association with the structure by smoothing the sound pressure-level versus frequency characteristics of the sound; and apparatus for practicing the method in the form of a filter network for use in combination with the sound system whereby electrical signals are attenuated by different amounts within selected ones of discrete bands of audiofrequencies to shape the sound pressure-level versus frequency characteristic of the sound.

3,624,299
APPARATUS AND METHOD
Reuven Meidan, Stony Brook, N.Y., assignor to Applied Digital Data Systems, Inc.
Filed Nov. 13, 1969, Ser. No. 876,393
Int. Cl. H04m 11/06
U.S. Cl. 179—1 C **9 Claims**



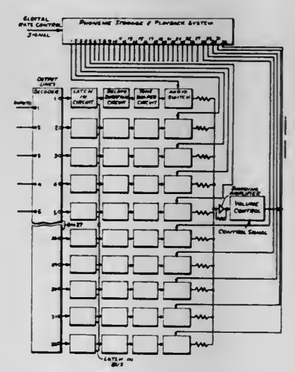
A method of and an apparatus for cancelling second harmonics in electrical signals resulting from nonlinear devices within electrical networks. The signal applied to the network includes not only the fundamental frequency of interest, but also a component at a frequency equal to the third harmonic of that fundamental frequency. If a nonlinear device is included in the network, energy at new frequencies is generated including components at the frequency of the second harmonic of the fundamental frequency of interest. These second harmonic components are adjusted to cancel each other so that the output has no component at that second harmonic frequency. This cancellation is usable in a broad range of applications including, for example, acoustic couplers utilized in data transmission over telephone networks in which the telephone microphone is nonlinear, causing second harmonics of the transmitted signal which if uncancelled would interfere with received signals during full-duplex operation.

3,624,300
CENTRAL OFFICE TERMINAL UNIT FOR TELEPHONE CARRIER SYSTEM
Lester Q. Krasin, Dallas, and Clifford E. Greene, Forth Worth, both of Tex., assignors to Superior Continental Corporation, Hickory, N.C.
Original application Aug. 2, 1967, Ser. No. 660,165, now Patent No. 3,510,584, which is a continuation-in-part of application Ser. No. 549,399, May 11, 1966, now abandoned. Divided and this application Dec. 22, 1969, Ser. No. 887,287
Int. Cl. H04h 1/08
U.S. Cl. 179—2.5 **5 Claims**



A central office terminal unit for a telephone communication system which is adapted for connection to central office power supply and to a cable transmission pair from the central office as part of a system that supplies an additional subscriber facility without affecting the original facility. The central office terminal has receiver and transmitter sections for deriving from and supplying to the transmission pair an amplitude-modulated carrier signal and utilizes a power regulation and control means for regulating the voltage from the central office power supply to a predetermined level and supplying it to said receiver and transmitter sections.

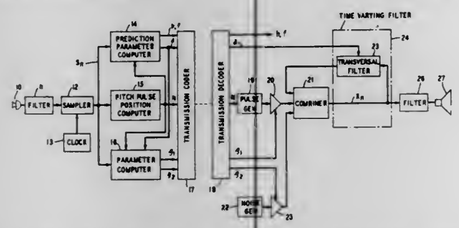
3,624,301
SPEECH SYNTHESIZER UTILIZING STORED PHONEMES
William E. Richeson, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Continuation of application Ser. No. 586,521, Oct. 13, 1966. This application Apr. 15, 1970, Ser. No. 24,360
Int. Cl. G10l 1/00
U.S. Cl. 179—15 A **4 Claims**



A system for synthesizing sounds is disclosed which has a plurality of phonemes recorded for example one phoneme

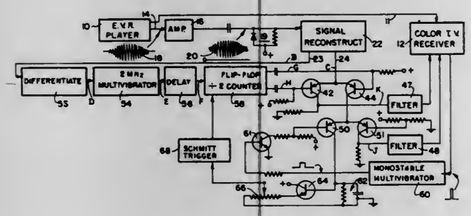
per track in each of several tracks of a recording medium. A plurality of latch circuits interconnected so that only one of the latch circuits may be energized at any given time are effective to gate out of the storage medium a prescribed phoneme in response to a digital code input specifying that phoneme. A plurality of phonemes are then concatenated to form intelligible sounds.

3,624,302
SPEECH ANALYSIS AND SYNTHESIS BY THE USE OF THE LINEAR PREDICTION OF A SPEECH WAVE
Bishnu S. Atal, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 29, 1969, Ser. No. 872,051
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **10 Claims**



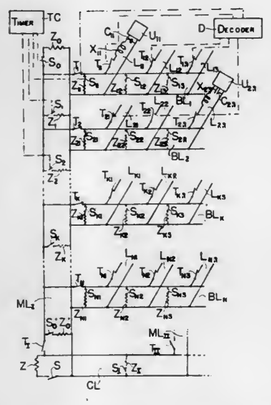
A short-time spectral analysis of a nonstationary signal, such as a speech signal, does not ordinarily yield control signal information sufficient for subsequent synthesis. However, more reliable control signals for a speech synthesizer can be obtained by making use of natural constraints, applicable to a speech wave, in the analysis procedure. For frequencies below 5 kHz., the human vocal tract can be modeled as an acoustic tube in which only plane waves propagate. Thus, for vowels and vowellike sounds, the speech output of the vocal tract at any instant of time can be assumed to be a weighted sum of its past values and the input to the vocal tract at that instant of time. In the described invention, a speech wave is represented by the output of a linear filter which simulates an acoustic tube and which is excited by a combination of a quasi-periodic pulse train and white noise. The parameters of this filter are derived from the speech wave such that the mean-squared error between the synthetic speech samples at the output of the filter and the input speech samples is minimum.

3,624,303
SIGNAL-DEMODULATING PHASE CONTROL SYSTEM
Francis H. Hilbert, River Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 9, 1970, Ser. No. 17,597
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **7 Claims**



Pulse-width modulated, time-division multiplexed pulses are used to convey two channels of color information in an electronic video-recording (EVR) system, with the color information being recovered by a demodulator gate switched in synchronism with the information signal train to alternately pass the information pulses to different outputs of the gate. At predetermined intervals, the modulation of the pulse widths of the two channels is in the form of maximum width modulation in one channel alternating with no information in the other channel; the pattern being repeated a predetermined number of times. A detecting circuit coupled to an output of the demodulator gate responds to the presence of this sequence in improper phase and corrects the phase of operation of the demodulator gate if the sequence is being demodulated in the wrong phase.

3,624,304
BRANCH-LINE SWITCHING ARRANGEMENT FOR TIME-SHARING COMMUNICATION SYSTEM
Ferdinando Formenti, and Giuseppe Valbonesi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed July 16, 1969, Ser. No. 842,160
Claims priority, application Italy, July 17, 1968, 19066 A/68
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AA **8 Claims**

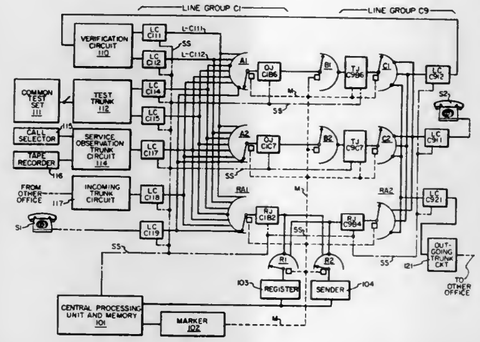


A group of subscribers associated with a common exchange are divided into subgroups connectable by way in individual line switches to a common transmission line via respective branch lines whose residual energies are individually discharged, between successive conversation time slots, into normally disconnected impedances matching the characteristic impedances of these branch lines; in like manner, and at the same time, the common transmission line is also discharged into a normally disconnected matching impedance.

3,624,305
COMMUNICATION SWITCHING NETWORK HOLD AND EXTRA CONTROL CONDUCTOR USAGE
George Verbaas, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed July 13, 1970, Ser. No. 54,138
Int. Cl. H04q *3/42*; H04m *3/22*
U.S. Cl. 179—18 E **13 Claims**

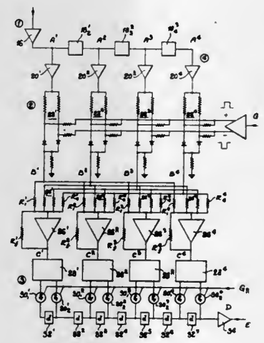
A common control switching system with a network having a main section for line to line and trunk connections and an auxiliary portion for register and sender connections. The terminal stage of the network has a multiple to both the originating and terminating sides of the main portion and to the auxiliary portion. For outgoing calls the connections are set up with the calling line having a double connection to the register and to the originating side of the main network, and the trunk circuit is set up with a double connection to the sender and to the terminating side of the network. In the auxiliary portion, diodes are provided in the hold conductor at the inlet side of each IXN switch to permit the register and sender connections to be initially held by ground potential from the register and sender circuits respectively and subsequently released, while ground on the hold conductor in the main portion of the network holds that connection.

The terminating junctors in the main portion of the network provide for call supervision for a local mode with a transmission bridge, and a trunk mode and a test mode with metallic



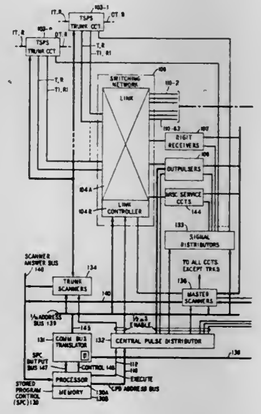
switch through. The test mode operates a test-call relay for splitting the hold conductor between the originating and terminating parts of the network, and an extra control conductor through the originating section is connected via make contacts of the test-call relay and the hold conductor of the terminating section to the cutoff relay of a line circuit, to thereby permit making a busy test for test and verification calls, and also to control the cutoff relay for tests from a common test set.

3,624,306
METHOD AND SYSTEM FOR COMPRESSING BANDWIDTH
George H. Myers, 190 Wyoming Ave., Maplewood, N.J.
Continuation-in-part of application Ser. No. 800,872, Feb. 20, 1969, now abandoned. This application Jan. 21, 1971, Ser. No. 108,286
Int. Cl. H04b *1/66*
U.S. Cl. 179—15.55 R **16 Claims**



A method and system for compressing required bandwidth for signals possessing redundancy, without substantial loss of intelligence or signal-to-noise ratio. This is effected by sampling the input signal to yield an appropriate first group of samples, transforming the said group into a second group of samples displaying reduced power but yet retaining intelligence and signal-to-noise ratio, and then operating upon the transformed sample group to recover original power levels—and in the process reducing required bandwidth. A system is disclosed wherein these operations are effected by applying the input signal to a tapped delay line—the outputs from said line comprising the aforesaid first group of samples. Such outputs are each applied through weighting networks to derive the transformed, low-power, second sample group. After being passed through analog-to-digital converters, the low-power samples, then in parallel binary form, are gated and passed through a suitable delay line to effectively combine the low-power samples into higher power signals of number per unit time reduced in comparison to the original sampling rate.

3,624,307
CALL TRANSFER SYSTEM
Michael Frank Sikorsky, Neptune City, and Herman Ewald Voigt, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 13, 1970, Ser. No. 2,578
Int. Cl. H04m *3/42*, *3/58*
U.S. Cl. 179—27 FF **31 Claims**

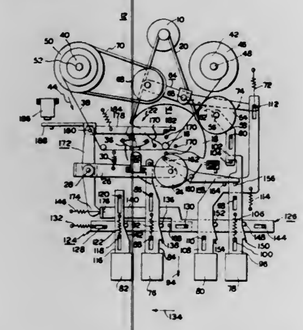


A telephone system is disclosed having a plurality of operator assistance positions together with facilities for transferring calls in a hold state between positions. These facilities are effective to transfer both the speech circuitry for the call as well as a lamp display of call status information to the new position.

3,624,308
TAPE RECORDER WITH AUTOMATIC RELEASE FROM FAST SPEED BY SENSING PAUSES BETWEEN RECORDED MATERIAL

Isao Kozu, and Yukitada Ayukawa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1970, Ser. No. 23,682
Claims priority, application Japan, Apr. 16, 1969, 44/30862; Apr. 16, 1969, 44/30863; Apr. 16, 1969, 44/30864; Apr. 16, 1969, 44/30865
Int. Cl. G11b *27/22, 27/28, 15/44*
U.S. Cl. 179—100.1VC **10 Claims**

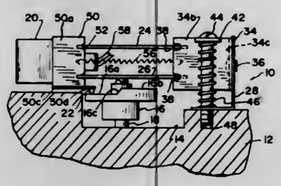


A tape recorder for detecting a pause portion between signal bands on a tape while the tape is being moved at a higher speed than a tape-playing speed and for playing back a signal band from its beginning. The tape recorder has a tape-moving drive for moving a tape at a tape-playing speed, winding drive for moving the tape at a higher speed than the tape-playing speed, operating linkage for bringing the winding drive into its operative state, holding linkage for holding the operating means linkage at an operative position, a transducing head for reproducing signals recorded on the tape according to movement of the tape, an electric amplifier connected to the head, a detecting circuit coupled to the amplifier to detect a pause portion between signal bands on the tape, an electromagnet responsive to the pause portion detected by the detecting circuit while the tape is being moved by the winding drive, a driving device driven by a motor, and releasing linkage for releasing the operating linkage from the holding linkage upon engagement of the driving device with the releasing linkage so that the winding drive is brought into its inoperative state when the releasing linkage is actuated by the electromagnet upon detection of the pause portion on the tape.

3,624,309
MOUNTING FOR SHIFTABLE MAGNETIC HEAD

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 28, 1970, Ser. No. 6,338
Int. Cl. G11b *21/08*
U.S. Cl. 179—100.2CA **6 Claims**

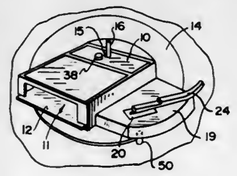


A mounting for supporting a magnetic tape head which is movable between different tracks on a multitrack magnetic tape. The mounting includes parallel spaced-apart plates formed of a sheet metal stampings. The plates have struck-out portions at their ends to form extension tabs which engage with notched members, one of which is pivotally secured to a standard and the other of which is secured to the magnetic tape head. Each of the notched members is also of a sheet metal stamping with portions thereof bent to the desired configuration. The linkage formed by the plates and the notched members maintains the face of the magnetic tape head substantially parallel to the plane of the magnetic tape engaged therewith in all positions of the head, and prevents torsional rotation thereof while the head is being moved from one position to another position.

3,624,310
TAPE PLAYER PHONOGRAPH ADAPTER PERMITTING OPERATION OF TAPE CARTRIDGES OR CASSETTES ON CONVENTIONAL PHONOGRAPH

Charles J. Mathey, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 21, 1969, Ser. No. 878,834
Int. Cl. G11b *1/00, 23/04*
U.S. Cl. 179—100.1 A **11 Claims**

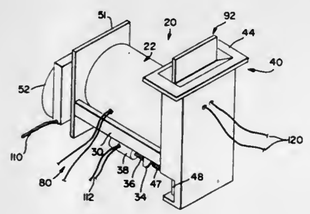


An adapter for enabling the playing of tape cartridges or tape cassettes on a conventional phonograph record player is driven by the turntable of the phonograph record player and fits over the spindle of the record player, with power for driving the capstan used to advance the tape being obtained from rotation of a driven turntable in the adapter. The coupling to the phonograph amplifier is accomplished by driving an inverted phonograph cartridge which is linked mechanically to the existing phonograph cartridge in the record player.

3,624,311
CARD HANDLER HAVING ROTATABLE MAGNETIC HEAD AND CARD-CLAMPING MEANS CARRIED BY HOUSING ASSEMBLY

Bernard M. Van Emden, Los Angeles, Calif., assignor to Advance Data Systems Corporation, Beverly Hills, Calif.

Filed Jan. 16, 1969, Ser. No. 791,680
Int. Cl. G11b *5/80, 25/04*
U.S. Cl. 179—100.2 T **12 Claims**

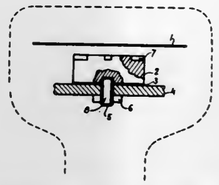


A card handler for reading information from, and writing information onto, a card or credential. The handler includes a housing assembly in which magnetic read/write heads are rotatably mounted; a card holder assembly; pressure pads carried by the housing assembly so as to encompass the path of rotary motion of the magnetic heads; and means for moving the housing assembly and the pressure pads so as to clamp the card between the pads and the card holder assembly, with the heads in operative proximity to the card.

3,624,312
ELECTRET MICROPHONE

Vlastimil Koukal, and Otokar Krakora, both of Hradec Kralove, Czechoslovakia, assignors to Tesla, narodni podnik, Prague, Czechoslovakia

Continuation-in-part of application Ser. No. 495,452, Oct. 13, 1965, now Patent No. 3,474,197, dated Oct. 21, 1969. This application Aug. 4, 1969, Ser. No. 847,379
Int. Cl. H04r *19/04, 23/00*
U.S. Cl. 179—111 E **2 Claims**

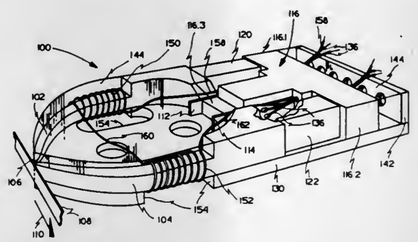


The electret member of an electret microphone is a substantially cylindrical body of barium titanate composition having a first flat end face opposite the microphone diaphragm and a second end face covered with a fixedly attached electrode which extends into a blind axial bore centered in the second end face. The electret member is attached to a supporting plate by a bolt soldered to the electrode in the bore and fastened to the support plate by a nut. The bolt provides the conductive lead for the electret.

3,624,313
COMBINED INDUCTIVE AND FLUX-RESPONSIVE TRANSDUCER

Heinz A. DeKoster, Stamford, Conn., assignor to Seggos Industries, Incorporated, Stamford, Conn.

Filed June 16, 1969, Ser. No. 833,474
Int. Cl. G11b *5/30, 15/46*
U.S. Cl. 179—100.2CH **4 Claims**



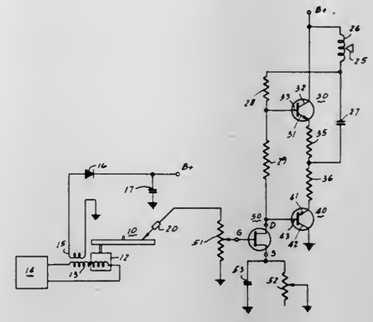
Inductive transducing means and flux-responsive transducing means are connected in any one of a variety of ways so that the relationship between their respective outputs provides information which neither transducing means alone could provide. In particular, both transducing means may be incorporated in a single magnetic sensing unit so as to sense the same or correlated signals upon a magnetic record. The difference between the flux-responsive output and the inductive output then indicates the speed of the magnetic information carrier, and can be used in a servo loop to control and/or indicate such speed.

3,624,314
COMPLEMENTARY SYMMETRY AMPLIFIER WITH FIELD-EFFECT TRANSISTOR DRIVER

Earl L. Mantor, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,640
Int. Cl. G11b *3/00;* H04m *1/60;* H03f *3/16*
U.S. Cl. 179—100.4 A **7 Claims**

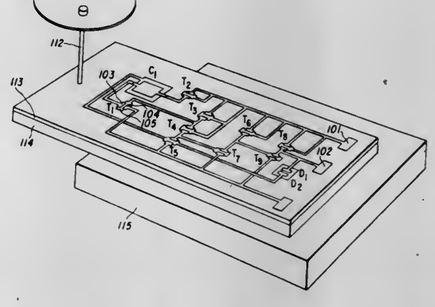
An amplifier with a pair of complementary symmetry connected output transistors driven by an N-channel field-effect transistor whose load includes the bias resistor for the output transistors.



3,624,315
TRANSDUCER APPARATUS AND TRANSDUCER AMPLIFIER SYSTEM UTILIZING INSULATED GATE SEMICONDUCTOR FIELD EFFECT DEVICES

Max E. Broce, Route 2, McKinney, Tex.; Derek Colman, 14020 Maham Road, Apt. 138, Dallas, Tex., and Jack P. Mize, 918 Beechwood, Richardson, Tex.

Original application Jan. 23, 1967, Ser. No. 610,991, now abandoned. Divided and this application July 15, 1969, Ser. No. 862,106
Int. Cl. G11b *3/00;* H04r *23/00;* H04m *1/60*
U.S. Cl. 179—100.4 A **11 Claims**



A transducer apparatus wherein the source to drain conductance of an insulated gate semiconductor field effect device is modulated by the application of mechanical stress to the channel layer of the device. Specific transducer modifications include microphone pickups and phonopickups. The pickup may include preamplifiers in either discrete or integrated circuit form.

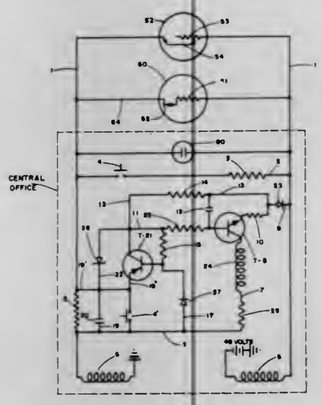
3,624,316
SUBSCRIBER PRESSURE ALARM SYSTEM

Walter L. Roberts, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Apr. 11, 1969, Ser. No. 815,321
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **28 Claims**

Disclosed herein is a fail-safe pressure alarm system, virtually transparent to a telephone subscriber circuit, adapted for use with telephone transmission pairs (electrical conductors) within a pressurized system and employed to detect not only a change in value of a predetermined ambient condition

(pressure), but also to indicate the approximate location in the pressurized system where the pressure change has taken place. Normally closed contacts of a pressure-sensitive device of a known location in conjunction with a "high"-value resistor completes a leakage path (circuit). That current flowing through this small leakage path also flows through a "low"-value resistor, a basic part of an alarm circuit made integral with one of the transmission conductors.



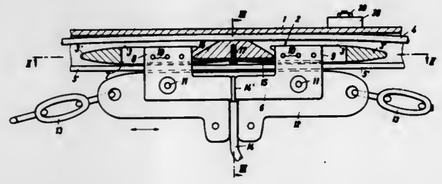
A resulting voltage drop across this last mentioned resistor is used to reverse bias a transistor in the alarm circuit thereby keeping an alarm from sounding. Any system pressure loss causes contactors of the pressure-sensitive device to open, thereby removing the leakage path ("high"-value resistor) from the alarm circuitry. This causes the transistor to become conductive, allowing current to flow through a circuit thereby causing an alarm to be activated.

3,624,317
TELEPHONE LOCK
Richard Morgan Buckingham, Temple Hills, and Robert Edward Michell, Jr., Lanham, both of Md., assignors to Mico Development Company, Inc., Bladensburg, Md.
Filed Nov. 16, 1970, Ser. No. 89,940
Int. Cl. E05b *73/00*; H04m *1/66*
U.S. Cl. 179—189 R **11 Claims**



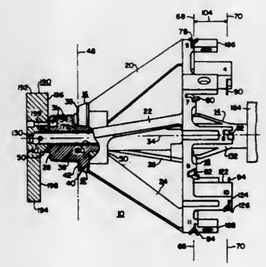
A device for locking a telephone to prevent the unauthorized use thereof is described. The device comprises a baseplate that clamps to the web located between the handset cradles of a convention desk-style telephone base. In one form, a locking plate having a pair of outwardly extending wings is used in combination with the baseplate. The wings extend outwardly to cover the switch pins located in the handset cradles. The locking plate supports a cylinder lock, the cylinder of which passes through an aperture in the baseplate. Located on the lower end of the cylinder lock is a cam. When the cylinder lock is rotated, the cam engages the lower surface of the baseplate and locks the locking plate against vertical movement. This action prevents the switch pins from raising upwardly. In a second form, the locking plate hooks under the lower front corner of the telephone and covers the pushbuttons or dial to prevent access thereto. The other end of this locking plate also includes a cylinder lock and cam that engages the baseplate to prevent the removal thereof.

3,624,318
CURRENT SUPPLY ARRANGEMENTS FOR MOBILE LOAD DEVICES
Karl Rekers, 4441 Spelle Kreis Lingen, Germany
Filed Dec. 16, 1968, Ser. No. 783,787
Claims priority, application Germany, Dec. 27, 1967, P 16 15 547.8
Int. Cl. B60m *1/34*
U.S. Cl. 191—23 A **30 Claims**



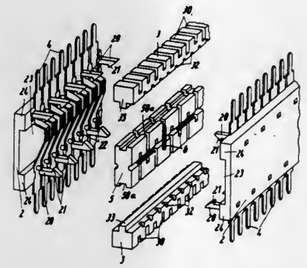
A current supply arrangement for a mobile load device consists of an elongate, flexible, stringlike member of hollow-sectioned profile forming a collection line duct accommodating a flexible conductor of corresponding length and forming a single current supply pole, and a current pickup device comprising a slide carried by the collector line duct and guided in a slot therein, the slide being connected with the load device for traction thereby. A plurality of these single current supply poles are strung in side-by-side parallel relation along a required route to form a multipole current supply unit.

3,624,319
TRANSFORMER SWITCH WITH IMPROVED ROTARY AXIAL BRIDGING CONTACT STRUCTURE
Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Company, Pittsburgh, Pa.
Filed Apr. 16, 1970, Ser. No. 29,166
Int. Cl. H01h *19/58*, *1/20*
U.S. Cl. 200—11 TC **16 Claims**



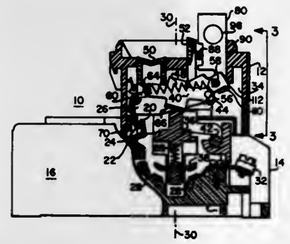
A switch adapted to be disposed within the casing of an electrical distribution transformer, which may be connected as a series-multiple switch, or as a tap changing switch. The switch includes a stator portion having a contact deck with a plurality of stationary contacts arranged in two spaced planes, and a rotor portion having electrically connected contacts disposed to engage stationary contacts in both planes.

3,624,320
SLIDE SWITCH
Bruno Eberhart, Rossmarktstr. 27, 8740 Bad Neustadt, Saale; Wolf-Erhard Steigerwald, Haus-Nr. 31 1/6, 8741 Leutershausen, and Wilhelm Hartmeyer, Hedwig-Fichtel-Str. 18, 8740 Bad Neustadt, Saale, all of Germany
Filed Dec. 9, 1969, Ser. No. 883,472
Claims priority, application Germany, Dec. 18, 1968, P 18 15 299.9
Int. Cl. H01h *15/00*
U.S. Cl. 200—16 R **13 Claims**



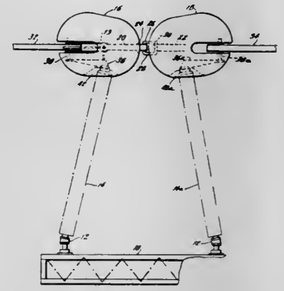
In a slide switch: a housing defining chamber; a slide movably supported by said housing within said chamber and fixedly carrying contact elements; said housing being composed of two pairs of elements, a first pair and a second pair; the elements of each one pair being identical but different from those of the other pair; the elements of the second pair being arranged between the marginal portions of said elements of the first pair; said elements of the first pair having inwardly projecting spring arms provided with surfaces engaging mating surfaces of said elements of the other pair and holding said elements of both pairs together as a rigid unit; elongated contacts supported on said marginal portions of the elements of the first pair and each having a resilient middle portion bridging the space between said marginal portions and adapted to resiliently engage said contact elements fixedly carried by the slide.

3,624,321
MANUALLY OPERATED TOGGLE ACTING SWITCH HAVING A PADLOCK RECEIVING LOCKING MEMBER
Jordan F. Puetz, and Don J. Arneberg, both of Milwaukee, Wis., assignors to Square D Company, Park Ridge, Ill.
Filed Feb. 6, 1970, Ser. No. 9,204
Int. Cl. H01h *9/28*
U.S. Cl. 200—42 T **5 Claims**



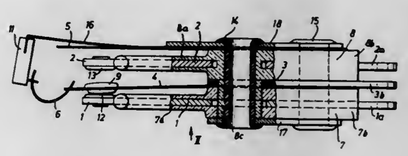
A manually operated switch having a toggle lever actuating mechanism and a locking member which will prevent actuation of the switch when the member is held in a locking position by a padlock. The locking member is arranged to move the toggle levers and a start button of the switch to an OFF operating position when the locking member is moved to the locking position and to be moved to an inoperative position when the start button and the toggle levers are moved to the ON operating position.

3,624,322
ISOLATING SWITCH FOR A HIGH-POWER ELECTRICAL DISTRIBUTION SYSTEM
Roy H. Albright, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Pittsburgh, Pa.
Filed Mar. 3, 1970, Ser. No. 16,029
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **10 Claims**



The isolating switch employs semispherical-type electrode shielding energized parts which are mounted on the top of a pair of tilted insulator columns. The columns are mounted to a support frame by means of rotor bearings, which, when rotated by an appropriate mechanism, cause the tops of the insulator columns to move in a circular path. Linkages are employed and are responsive to column rotation in a first direction to electrically contact the blade and jaw of the switch arrangement, and to withdraw the blade and jaw in response to column rotation in a second direction to break contact. The smooth surfaces of the electrodes employed face one another in this second instance and provide an open gap condition which produces a substantially uniform electrostatic field between facing surfaces.

3,624,323
MICROSWITCH
Wilhelm Peter Borgmann, Overath, Germany, assignor to W. P. Borgmann, K.G., Overath, Germany
Filed Jan. 5, 1970, Ser. No. 657
Claims priority, application Germany, Jan. 7, 1969, G 69 00 334
Int. Cl. H01h *21/44*, *37/52*, *37/60*
U.S. Cl. 200—67 D **6 Claims**

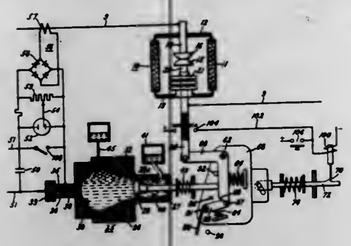


A microswitch with a flexible lamella is retained between individual contact lamellas which are cast in insulating material. The operating lamella is switchable by movement of an actuating lamella which in turn moves a scroll-spring to switch the operating lamella.

3,624,324
CIRCUIT BREAKER ACTUATED BY EXTRA-HIGH SPEED ELECTROHYDRAULICALLY OPERATED PISTON
Philip Barkan, Media, Pa., and Edward C. Schrom, Latham, N.Y., assignors to General Electric Company
Filed Nov. 4, 1969, Ser. No. 873,938
Int. Cl. H01h *3/24*, *35/38*, *33/66*
U.S. Cl. 200—82 R **8 Claims**

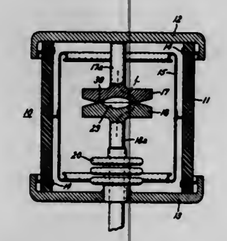
Discloses an extra-high speed circuit breaker in which the force for initial contact-separation is supplied by an elec-

trohydraulic shock wave generator. A follow-up operator is triggered into operation by the electrohydraulic operator to



continue contact-separation after the electrohydraulic operator has lost its initial effectiveness.

3,624,325
VACUUM-TYPE CIRCUIT INTERRUPTER WITH WELD-RESISTANT CONTACT MATERIAL CONSISTING ESSENTIALLY OF COPPER AND BERYLLIUM
Fordyce H. Horn, deceased, late of Schenectady, N.Y. (by Helen W. Horn, executrix), assignor to General Electric Company
Filed Dec. 29, 1969, Ser. No. 888,398The portion of the term of the patent subsequent to Feb. 24, 1987, has been disclaimed.
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **6 Claims**

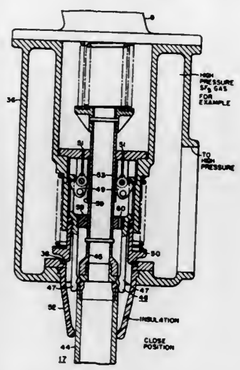


Discloses a vacuum-type circuit interrupter having a pair of contacts relatively movable into and out of engagement with each other. The contacts have their circuit-making and breaking regions formed of an alloy consisting essentially of copper and beryllium, the beryllium being present in a quantity of about 6 to 19 percent by weight of the alloy. The alloy is substantially free of additional metallic constituents that are substantially insoluble in the solid state in copper and beryllium and have effective freezing points lower than 860° C.

3,624,326
COMPRESSED-GAS CIRCUIT BREAKER WITH READILY REMOVABLE TERMINAL BUSHING MEANS
Richard Edmund Kane, Monroeville, and Robert L. Hess, North Versailles, both of Pa., assignors to Westinghouse Electric Company, Pittsburgh, Pa.
Filed Apr. 4, 1969, Ser. No. 813,441
Int. Cl. H01h *33/54, 33/86*
U.S. Cl. 200—148 R **11 Claims**

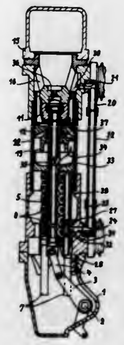
A high-voltage, high-power compressed-gas circuit interrupter is provided utilizing a grounded metal tank having a gas disposed therein at a relatively low pressure, say, for example 45 p.s.i. A pair of serially related arc-extinguishing units are supported within the metallic grounded tank and utilize a blast of gas directed through an orifice to bring about the extinction of the two series arcs simultaneously. A supporting structure disposed within the tank has lateral supports to properly locate the blast valve and contact housing associated with each arc-extinguishing unit. Additionally, the supporting structure supports an operating cylinder to accommodate a movable piston secured to the moving contact of each interrupter.

Terminal bushings are provided at the upper end of the



metallic tank and are easily dismantled therefrom by a contact stud and terminal bushing finger arrangement, which easily separates and permits dismantlement at the upper mounting flange portions of the tank for inspection. The high pressure reservoir may be accommodated at the upper end of the tank between the two terminal bushings.

3,624,327
LIQUID-POOR POWER CIRCUIT BREAKER
Siegfried Jahrig, and Irmgard Rehner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 17, 1970, Ser. No. 73,036
Claims priority, application Germany, Sept. 18, 1969, P 19 48 079.6
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 B **4 Claims**



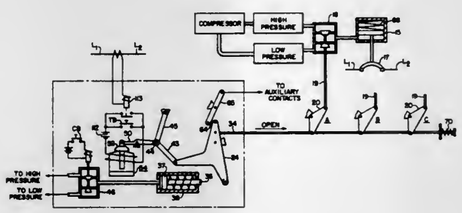
The liquid-poor power circuit breaker has a vertical pole column composed of a metallic mechanism housing, a switching chamber above the housing, and a metallic switching head on top of the chamber. A circulatory system for quenching liquid includes a thin insulating tube between the switching head and the mechanism housing outside of the switching chamber. A slider coupled with the movable switch pin of the power breaker blocks the insulating tube when the switch pin is in the break position.

3,624,328
PUSHBUTTON ALTERNATE ACTION SWITCH WITH A CONTACT ON THE CAM SURFACE OF THE ALTERNATE ACTION MECHANISM
Eric George Hansen, Milwaukee, Wis., assignor to Globe-union Inc., Milwaukee, Wis.
Filed May 18, 1970, Ser. No. 37,948
Int. Cl. H01h *13/56*
U.S. Cl. 200—153 J **5 Claims**



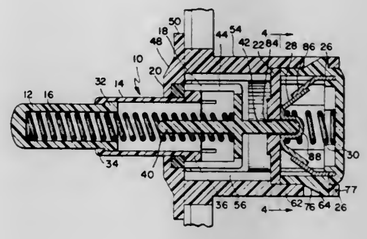
A pushbutton switch having a guide track with contact means coacting therewith arranged so that electrical circuit changeover is effected only on the release stroke of a reciprocative slider bar.

3,624,329
OPERATING MECHANISM FOR A CIRCUIT INTERRUPTER WITH TOGGLE MEANS CONTINUOUSLY IN UNDERSET CONDITION
William H. Fischer, Pittsburgh, and Wayne S. Aspey, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 18, 1968, Ser. No. 776,510
Int. Cl. H01h *3/46, 33/42*
U.S. Cl. 200—153 G **7 Claims**



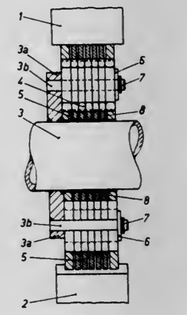
An operating mechanism for a circuit breaker is provided having a rotatable main lever, which is rotated to a closed position by an actuator, such as a piston, movable within a cylinder, and is maintained in the closed position by a latching device, such as a collapsible linkage maintained in its extended position by a magnetic trip device. The arrangement functions, during an opening operation, to actuate the tripping device, which permits collapse of the linkage and opening rotative motion of the main lever. During a subsequent closing, the piston device provides the energy for rotating the main lever to its closed position against the opposition provided by accelerating springs, and the collapsible linkage maintains the main lever in the closed position by the magnetic trip.

3,624,330
TELESCOPING SWITCH
Bela Bognar, Bellingham; Warren V. Gureghian, Watertown, and Anthony R. La Scola, Bellingham, all of Mass., assignors to TRW Inc., Cleveland, Ohio
Filed May 1, 1970, Ser. No. 33,565
Int. Cl. H01h *13/52, 3/48*
U.S. Cl. 200—159 R **5 Claims**



This is a telescoping switch having a spring in the plunger assembly which requires greater force for compression than the spring in the contact assembly with the plunger assembly directly associated with the contact assembly. The switch includes a plunger assembly in which a first plunger is telescopically associated within a second plunger and the second plunger is telescopically associated within a divider.

3,624,331
ELECTRIC CONTACT SYSTEM
Harald Strubin, Neuenhof, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Sept. 1, 1970, Ser. No. 68,681
Claims priority, application Switzerland, Sept. 22, 1969, 14259/69
Int. Cl. H01h *1/32*
U.S. Cl. 200—166 E **5 Claims**

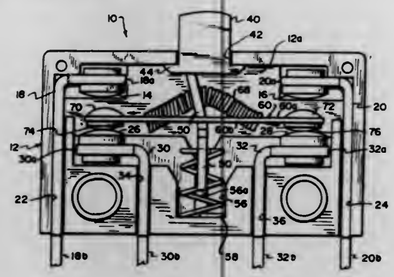


An electric contact system having spaced stationary contact members and a plurality of platelike double-armed contact members rotatably mounted on a shaft between the stationary contacts and which has driving means for rotating the double-armed contacts. Spring means are provided so that the double-armed contacts may be rotated different degrees so that each double-armed contact will form a wedging contact with the stationary contact members.

3,624,332
SNAP SWITCH

Peter Van Benschoten, Rancho Santa Fe, and Jan Albert Kilsdonk, Corona, both of Calif., assignors to Oak Electro/Netics Corp.

Filed Sept. 9, 1970, Ser. No. 70,827
Int. Cl. H01h 1/36
U.S. Cl. 200—164 11 Claims

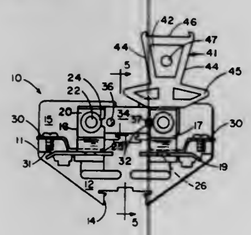


An improvement in a two circuit snap switch of a type having opposed pairs of contacts and a leaflike contact blade positioned therebetween, which is normally urged into engagement with one pair of contacts and movable into engagement with an opposed pair of contacts, wherein an actuator stem extends through the contact blade and is normally biased against a spring in the interior of the housing and, wherein another spring stems across the contact blade and is intersected by the actuator stem. The snap switch of this invention is characterized by the provision of an offset medial portion in the actuator through which the contact blade spring extends, whereby lateral wiping action is imparted to the contact blade and the contacts it engages during movement thereof toward, and away from, the opposed contacts.

3,624,333
KNIFE SWITCH

Charles Allan Schurr, Shaker Heights, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Sept. 8, 1970, Ser. No. 70,371
Int. Cl. H01h 1/50
U.S. Cl. 200—166 SD 8 Claims



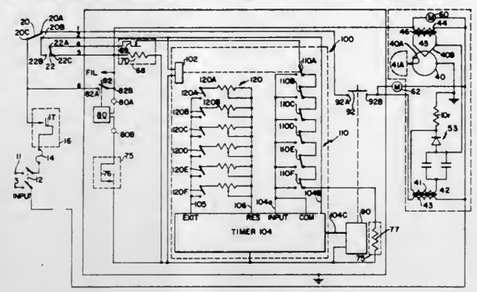
The blade of a knife switch adapted for use on channel mounted terminal block equipment is provided with bosses which interfere with engaging surfaces on identically formed blade receptacles to retain the blade against vibrationally caused motion while in either its closed or open position.

3,624,334
INTERLOCK CIRCUITRY FOR MICROWAVE OVEN

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed Apr. 1, 1970, Ser. No. 24,538
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims

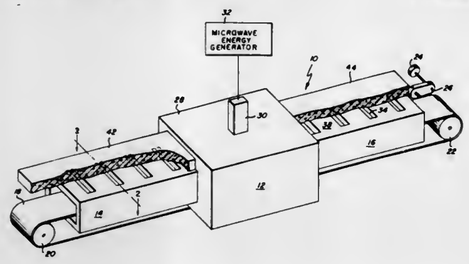
A microwave oven has first and second interlock switches operative when the door is opened to apply power to the filament only of the magnetron and when the door is closed to apply power to the magnetron plate. If either switch malfunctions when the door is opened, the other operative switch interrupts the power to the magnetron plate.



3,624,335
MICROWAVE OVEN

Edward C. Dench, Annisquam, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 25, 1970, Ser. No. 49,646
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims



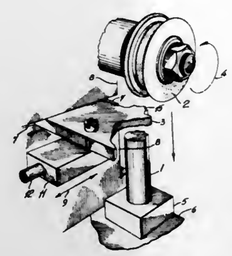
The entrance and exit access tunnels of a conveyorized microwave heating oven are provided with means for permitting the flow of the material to be processed without any significant escape of radiated energy through the open ports. Means for prevention of such radiation includes slotted tunnel wall structures with energy absorbing material disposed in such a manner as to prevent any contamination of, particularly, food products processed through the oven. The orientation and dimensions of the slotted structures is determined by dimensions of the access tunnels and frequency of operation of the energy source.

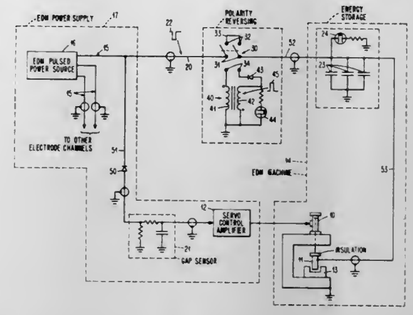
3,624,336
ELECTROCONTOUR MACHINING SETUP AND METHOD

Joseph V. Martinez, 5631 18th Ave, Montreal, Quebec, Canada

Filed Oct. 16, 1970, Ser. No. 81,381
Int. Cl. B23p 1/04, 1/12
U.S. Cl. 219—69 M 6 Claims

Equipment presently used for electromachining internal contours of hard metal tools, such as dies by spark discharge erosion, utilizing an electrode mounted on a descending head that approaches the work under control of a servosystem that maintains a small clearance, is modified for the machining of external contours by the provision of a rotatable wheel-shaped carbon electrode and a supporting structure for holding and indexing a workpiece and for holding a retractable and precisely resettable steel templet for shaping the electrode mechanically. The position of the templet just above the work facilitates preliminary alignment, which may be made on an instrument bench. External contours are machined one side at a time, using the same templet and templet setting if the configuration is symmetrical. The templet is retracted during electromachining to avoid the risk of any modification of it in the initial stages of electromachining. To prevent the progressive wear of the electrode from producing asymmetry in the work, the templet is repositioned and the electrode dressed to the design contour after every indexing of the work.

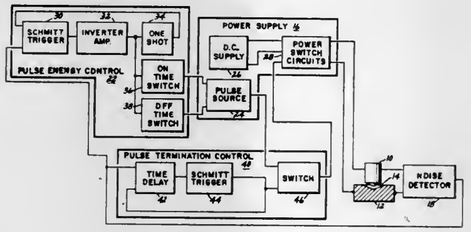




3,624,337
METHOD AND APPARATUS FOR DETECTING AND CONTROLLING THROUGH PULSE ENERGY VARIATIONS ARCING CONDITIONS IN AN EDM PROCESS

Harry D. Kauffman, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 4, 1970, Ser. No. 95,296
Int. Cl. B23p 1/08
U.S. Cl. 219—69 P 8 Claims



In an EDM process, a method and apparatus for controlling arcing conditions in a machining gap. An apparatus is provided for detecting the presence of a noise signal contained in a discharge. The absence of this noise signal is indicative of an arcing condition which may be detected during any one or a predetermined number of discharges. Upon detection of the absence of said noise signal, corrective action is taken in the power supply which is effective to alleviate the arcing condition.

3,624,338
ELECTRICAL DISCHARGE MACHINING PULSE-POLARITY-REVERSING CONTROL

Richard E. Ellis, Lakewood, and Horace O. Winters, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

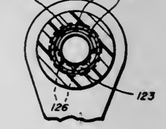
Filed Aug. 6, 1970, Ser. No. 61,556
Int. Cl. B23p 1/08
U.S. Cl. 219—69 C 9 Claims

A control for an EDM machine selectively reverses polarity of the electrical energy supply to the machining electrode. The control consists of double-pole double-throw switching means connected with a polarity reversing transformer and connected such that the energy source is either connected to the electrode directly or through a polarity reversing transformer. In the normal switch position, the polarity is such that the electrode is eroded slowly. In the reverse switch position, the electrode is eroded rapidly. A diode is provided in the servocontrols to allow normal machine operation.

3,624,339
ELECTRIC ARC-TYPE CUTTING GUN

Henry H. Jenkins, 864 West Hacienda Drive, Corona, Calif.

Continuation-in-part of application Ser. No. 648,763, June 26, 1967, now Patent No. 3,483,348, dated Dec. 9, 1969, which is a continuation-in-part of application Ser. No. 583,629, Sept. 30, 1966, now abandoned. This application Sept. 30, 1969, Ser. No. 862,259
Int. Cl. B23k 9/00
U.S. Cl. 219—70 3 Claims



An electric arc cutting gun including a housing defining an insulated handle part for gripping by an operator through which air under pressure is passaged to a head. The air is controlled through a hand-operated valve and a heat shield protects the hand of an operator. The head includes an opening extending therethrough and a tubular member mounted therein defines an annular space or chamber with the opening. The ends of the annular space are closed and a tubular chuck is included and is adapted to hold an electrode which may be inserted into either end of the chuck. The annular space is connected to the air passage. A plurality of openings are provided to exit the annular space to emit air around the electrode held by the chuck. The tubular member and tubular chuck are constructed or formed of the same member. Another chuck construction is disclosed which utilizes a spring-biased ball member which extends through an opening in the tubular member to engage an electrode which extends therethrough. A deflector means is attached to the housing to block off selected ones of the air openings as desired.

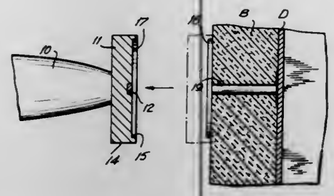
3,624,340
ATTACHMENT PIN FOR CONNECTING INSULATION TO DUCTS BY RESISTANCE WELDING

Milton Hinden, 15 Bay Link, Massapequa, N.Y.

Original application Feb. 7, 1969, Ser. No. 797,603. Divided and this application July 1, 1970, Ser. No. 60,207
Int. Cl. B23k 9/00
U.S. Cl. 219—99 2 Claims

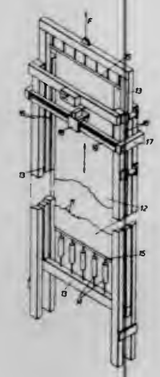
An attachment pin for attaching insulating batts to metal by a resistance welding method comprising a shank terminat-

ing at one end in a lathe-sharpened tip, the opposite end of the shank incorporating a head portion, the cross-sectional



area of which head portion is at least about 25 times the cross-sectional area of the shank.

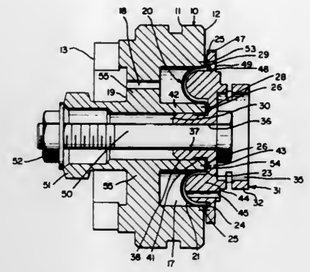
3,624,341
WELDING
Roy Howard Hazelhurst, Ashton-under-Lyne, England, assignor to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England
Filed July 7, 1970, Ser. No. 52,835
Claims priority, application Great Britain, July 23, 1969, 37,125/69
Int. Cl. B23k *11/00*
U.S. Cl. 219—117 R **5 Claims**



A welding method in which the component parts to be welded are subjected to tensile loading in the direction of the weld seam, during the actual welding process, in order to avoid undesired development of overall curvature or undulations in the welded work due to a distortion upon local heating and subsequent shrinkage. The work material can, by this tensile loading, be stressed up to 90 percent approximately of the stress at yield point of the material.

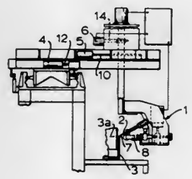
3,624,342
METHOD OF MAKING A FLEXURAL DIAPHRAGM SEAL
Herbert J. Hoffman, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Nov. 20, 1967, Ser. No. 684,126
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EM **7 Claims**

A device, such as a rocket engine fuel injector, having two coaxial parts joined by an intervening annular flexure which provides a fluid seal between the parts and/or supports the parts for relative axial movement is fabricated by positioning an annular flexible diaphragm with radially inner and outer flanges between a pair of coaxial members having confronting annular axially presented surfaces seating against opposite sides of the flanges, joining the contacting flanges and



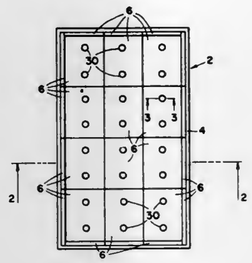
surfaces, and severing each member into two totally separate radially inner and outer portions along annular parting lines located between the joined inner and outer flanges and surfaces to provide a finished device wherein the severed portions of the members and the diaphragm constitute the parts and flexure of the device.

3,624,343
MEMBER DRIVE SYSTEM WITH CONSTANT VELOCITY IN A GIVEN PLANE
Erik Stjernstrom, Milwaukee, and John G. Bollinger, Madison, both of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.
Filed Jan. 26, 1970, Ser. No. 5,572
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 PL **22 Claims**



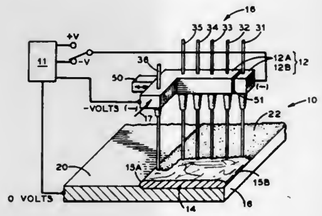
A welding electrode is positioned with a specific relationship to a horizontal plane at a constant resultant velocity. An X-axis drive motor and a Z-axis drive motor are connected to drive the electrode in mutually perpendicular directions. An angle drive motor angularly orients the electrode to the horizontal plane.
A Z-axis tachometer provides a velocity signal as the input signal to an absolute function value generator, the output of which is applied to a quarter-circle signal generator. The latter includes an operational amplifier having a feedback circuit with a plurality of parallel paths each including a diode and a slope controlling resistor to successively vary the slope to produce a circle function output. This provides the proper input to the X-axis drive. A Z-axis position transducer controls the Z-axis drive and also provides a stablilizing control input to the X-axis drive and the angle drive.

3,624,344
ATTACHMENT OF NONMETALLIC ARTICLES TO METALLIC SUBSTRATES
Louis G. Kutzer, Latrobe, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.
Continuation-in-part of application Ser. No. 749,833, Aug. 2, 1968, now abandoned. This application May 1, 1970, Ser. No. 33,935
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **7 Claims**



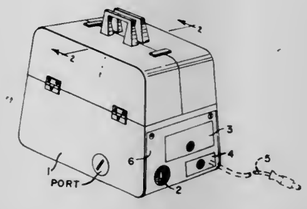
Ceramic articles such as segments in the form of blocks or plates are secured to an underlying metallic surface by means of metal retainers which are inserted in holes or openings extending through the ceramic material. The retainers have frustoconical outer surfaces which engage corresponding surfaces on the ceramic segments. The retainers are securely held to the metal surface by welding. The welding is accomplished by inserting a welding rod through a passage provided through the center of the metal retainer and forming a weld bead that extends from the metallic surface into the passage and beyond an internal flange located adjacent the inner end of said passage.

3,624,345
ARC WELDING ELECTRODE ARRANGEMENTS
Frank W. Armstrong, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Oct. 31, 1968, Ser. No. 772,326
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **1 Claim**



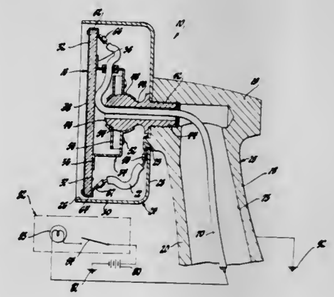
A combination of arc welding equipment and electrodes for depositing cladding material on the surface of a workpiece. The combination generally includes a welding head which carries at least two adjacently spaced continuously replenished consumable electrodes of cladding materials into arc welding relationship with respect to the workpiece to deposit a weld bead of cladding material thereon. Arcing current to the electrode is maintained while arcs are moved with respect to and over the workpiece surface and cladding material from the electrodes deposited thereon. At least one of the electrodes is positioned in lagging relationship with respect to the next adjacent electrode and laterally thereof so it deposits cladding behind and laterally of the next adjacent electrode for forming a weld bead with a more desirable contour for later fusion with a subsequently deposited weld bead. The electrode which subsequently fuses a later deposited weld bead with a previously deposited weld bead is preferably oriented over the lagging edge of the previously deposited weld bead and acts as an anode with respect to the workpiece, whereas the lagging electrode acts as a cathode with respect to the workpiece.

3,624,346
BOWLING BALL BAG
Raymond J. Guth, Rochester, N.Y., assignor to Michael Kolvan, Rochester, N.Y., a part interest
Filed Apr. 1, 1970, Ser. No. 24,568
Int. Cl. H05b *1/00*
U.S. Cl. 219—201 **9 Claims**



A bowling ball bag, including either a means to conduct heated air into the bag or an electrical heating means and a fan means to provide a forced flow of heated air within the bag, or both in combination, provides efficient, uniform and rapid heating of the contents, such as a bowling ball and bowling shoes. The heating and fan means can be thermostatically controlled to maintain a desired ambient temperature within the bag. Additionally, the power supply for the heating means and fan means can be incorporated in the bag, or a means for making an electrical connection with an external power supply can be provided as the sole or an alternative method of power supply. The bag can be insulated to promote heat retention.

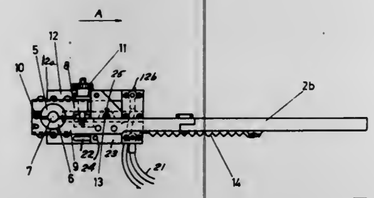
3,624,347
HEATED REARVIEW MIRROR ASSEMBLY
Harold E. Todd, Anderson, and Lloyd T. Fuqua, Fortville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 16, 1970, Ser. No. 19,943
Int. Cl. H05b *3/22*; B60r *1/06*
U.S. Cl. 219—219 **1 Claim**



A rearview mirror assembly for a motor vehicle wherein a mirror element is provided with a nontransmissive, electrically conductive reflective coating across the exterior viewing surface. Elongated contacts extending along the top and bottom edges of the coating provide a uniform current path across the coating when an electrical potential is applied thereacross to directly resistance heat the coating. The low-thermal conductivity of the mirror element acts as an insulating barrier which serves to retain heat at the coating, thereby

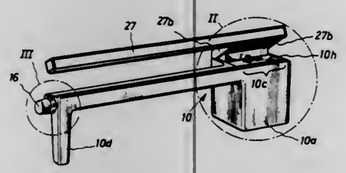
improving the thermal efficiency of the assembly. A backing plate, adhesively attached the other surface of the mirror element, mounts the mirror element on a ball stud located within the cavity of a mirror support housing on the exterior of the vehicle, thereby permitting adjustable universal movement of the mirror element about the ball stud within confines of the cavity. A manual control switch is provided for selectively applying heating current to the coating.

3,624,348
TOOL FOR WELDING TOGETHER PLASTICS MATERIALS
Robert Berset, Le Landeron, Switzerland, assignor to Ramseyer & Cie S.A., Le Landeron, Switzerland
Filed Oct. 13, 1969, Ser. No. 865,753
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **3 Claims**



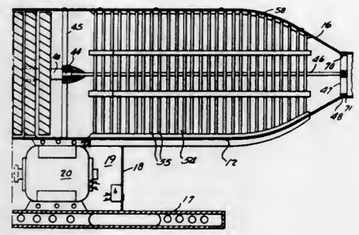
A pair of pincers are provided with means for gripping pieces of plastics material to be welded together. A heated plate is moveably attached to one of the pincer arms and is held between the pieces of plastics material by a pin on the other pincer arm until melting of the plastics material occurs. By opening the pincers, the plate is retracted by spring means and upon reclosing the pincers the pieces of material are pressed into welding contact.

3,624,349
PORTABLE WELDING DEVICE
Rolf Mayer, Giengen, Germany, assignor to Robert Bosch Hausgerate GmbH, Giengen, Germany
Filed Dec. 11, 1969, Ser. No. 884,200
Claims priority, application Germany, Dec. 14, 1968, G 68 11 478
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **10 Claims**



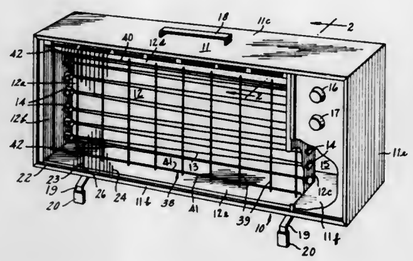
A substantially hollow supporting base made from a plastic material comprises an upper elongated supporting surface for the support of a plurality of plastic layers to be welded and a depressible pressure member cooperating with and movable relative to the supporting surface between a rest position and a welding position. An electric heating wire is connected to and extends along the elongation of the supporting surface for welding, in association with the pressure member, the plurality of plastic layers. All the other electrical components necessary for alternatingly heating the heating wire, are accommodated in the hollow interior of the supporting base.

3,624,350
TURBO-ELECTRIC FURNACE
Fred E. Sanders, 503 East 10th St., Cleveland, Ohio
Filed Feb. 17, 1970, Ser. No. 12,068
Int. Cl. F24h *3/04*; H05b *3/00*
U.S. Cl. 219—369 **12 Claims**



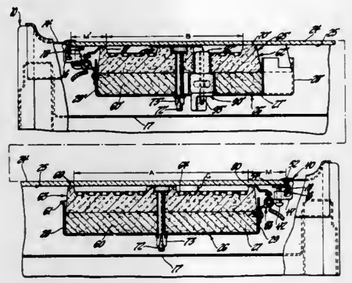
An electrically powered furnace consisting of an elongated housing having an air intake assembly at its forward end and a discharge duct at its rear end leading to a hot air distribution system. A motor-driven air impeller assembly is provided in the intermediate portion of the housing. A first multiple-turn spirally coiled heating element is mounted in the forward portion of the housing between the impeller assembly and the air intake assembly. A second multiple-turn spirally coiled heating element is mounted in the rear portion of the housing between the impeller assembly and the discharge duct. A rotatable suction vane assembly is provided in the discharge duct. to provide smooth flow from the housing and accompanying smooth distribution of the heated air therein.

3,624,351
SHOCK-PROOF ELECTRIC RADIANT HEATER
Frederick M. Kipp, Fairfield, Conn., assignor to General Electric Company
Filed Jan. 26, 1970, Ser. No. 5,711
Int. Cl. H05b *3/32*
U.S. Cl. 219—377 **10 Claims**



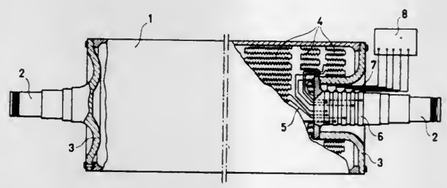
An electric heater having a housing with an open front and a reflector within the housing behind the opening and electrically insulated from the housing. Suspended within the reflector is an electrical resistance heating element. Attached to the housing and covering the open front is an outer first protective grill. A second interior grill is attached to the reflector and located between the suspended heating element and the outer grill. The electric heater construction provides protection for the user against electrical shock in the event of breakage of the heating element.

3,624,352
CERAMIC TOP RANGE SURFACE TEMPERATURE CUT-OFF THERMOSTATIC DEVICE
Homer W. Deaton, Centerville, Ohio, and Donald C. Siegla, Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 22, 1970, Ser. No. 74,399
Int. Cl. H05b *3/68*
U.S. Cl. 219—449 **4 Claims**



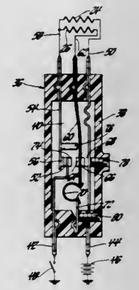
An infrared ceramic cooking assembly having a plurality of radiant heating units wherein each unit has an underlying low density refractory fiber thermal insulating heater block supporting an open coil resistance element in spaced relation to a glass-ceramic cover plate located on the heater blocks. Each unit has a surface temperature limiting device in combination therewith including a thermostat supporting bracket having a heat sensing flange in direct pressure contact with the undersurface of the cover plate and supported on the heater block surface such that the temperature of each bracket flange serves as an analog of the cover plate utensil heating area temperature influencing its associated thermostat for preventing energization of the unit when the overlying heating area exceeds a predetermined temperature.

3,624,353
DRYING CYLINDER
Nils G. H. Bjorklund, Lapinniemi, Finland, assignor to Oy Tampella Ab, Tampere, Finland
Filed Apr. 28, 1970, Ser. No. 32,553
Int. Cl. H05b *1/02*
U.S. Cl. 219—470 **4 Claims**



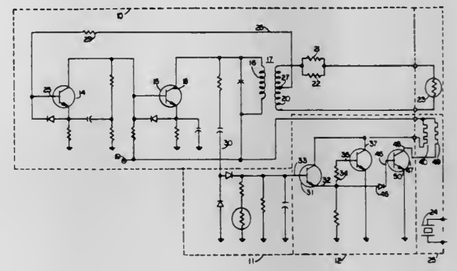
Drying cylinder for paper webs and equivalent having a rotatable cylindrical mantle, to the inside of which there have been attached several coaxially arranged annular heating elements. The heating elements are electrical resistances which are separately adjustable for achievement of desired temperature profile across the mantle surface of the drying cylinder.

3,624,354
THERMOSTATIC CONTROLLED DEFROSTER SWITCH
John H. Heldorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 5, 1970, Ser. No. 77,878
Int. Cl. H05b *1/02*
U.S. Cl. 219—494 **3 Claims**



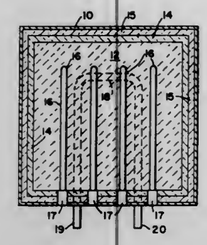
In preferred form, an automobile windshield defroster utilizing dual electric resistance elements to heat air which is then directed against the windshield. A thermostatic switch initially connects the dual resistance element in parallel for maximum heat output and subsequently connects the dual resistance elements in series for a reduced heat output.

3,624,355
TEMPERATURE CONTROL SYSTEM
Jerome P. Friedrichs, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 7, 1970, Ser. No. 78,719
Int. Cl. H05b *1/02*
U.S. Cl. 219—497 **13 Claims**



A temperature control system for a constant temperature oven wherein a thermistor in the oven changes resistance in response to changes in temperature causing an amplifier to oscillate. The amplitude of the oscillation signal is proportional to the difference between the oven temperature and a reference temperature. The oscillation is rectified and coupled to a temperature adjusting circuit, including two heater elements. The first heater element is proportionally energized in accordance with the oscillation signal amplitude. The temperature adjusting circuit also includes bias means coupled to the second heater element and operative in response to oscillation signals in excess of a predetermined amplitude to proportionally energize the second heater element.

3,624,356
HEAT STORAGE APPARATUS
Charles Dewey Havill, 22330 Holt Ave., Los Altos, Calif.
Filed May 4, 1970, Ser. No. 34,077
Int. Cl. H05b *3/06*
U.S. Cl. 219—530 11 Claims

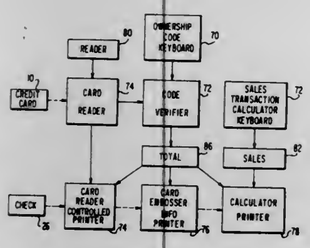


Heat storage apparatus comprising an insulated box containing a thermal energy storage body consisting essentially of a material selected from the group comprising carbon, magnesium oxide and mixtures thereof which may be in block form, sintered form and powdered form is disclosed. Means for heating the heat storage body and heat exchange means for transporting heat energy to an appropriate power system are described. Embodiments of the invention for operation at different temperatures are disclosed.

ERRATUM

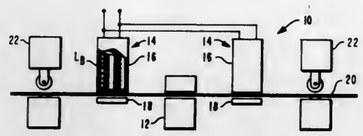
For Class 234—150 see:
Patent No. 3,624,365

3,624,357
CREDIT CARD SALES TRANSACTION SYSTEM
Lyle E. Wright, 9019 Spring Ave., Lanham, Md.
Continuation-in-part of application Ser. No. 630,782, Mar. 23, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 885,851
Int. Cl. G06k *3/00*, *1/18*; H04g *1/30*; H01k *43/08*
U.S. Cl. 235—61.7 B 4 Claims



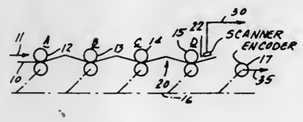
Upon verification of ownership of a credit card, the credit card, a calculator keyboard, and multiple printing apparatus, effect the inscription of all necessary sales transaction information on a voucher constituting a blank check thus giving the seller an unsigned negotiable instrument corresponding to the amount of the purchase.

3,624,358
MAGNETIC BRAKE
Jeffrey M. Bevis, Long Beach, Calif., assignor to Chalco Engineering Corporation, Gardena, Calif.
Filed May 29, 1967, Ser. No. 641,851
Int. Cl. G11b *15/22*; B65h *25/32*; G06k *7/08*; G11b *5/40*
U.S. Cl. 235—61.11 R 4 Claims



In order to achieve the high speed brake operation required for use in tape readers, without producing an accompanying objectionable high heat loss requiring auxiliary cooling systems for the tape reader, an induction coil having an inductance much higher than the inductance of the coils in the magnetic brakes is connected in series with a transistor and a constant current generator. One end of the brake coil is connected to the junction between the induction coil and a transistor. The brake coils are in series with a second transistor and the brake coils and the second transistor are in parallel with the first transistor. Appropriate circuitry is provided for causing the first transistor to become conductive while the second transistor becomes nonconductive and means are provided for causing these transistors to change their mode each time an appropriate pulse is applied to the circuitry. When the first transistor becomes nonconductive, interruption of the current in the induction coil produces a large voltage at the junction of the inductance coil and the first transistor. This high voltage rise is very rapid because of the rapid interruption of the current in the coil (L di/dt). Consequently, the high voltage connected across the brake coils abruptly actuates them. When a brake off pulse is applied to the circuitry, the second transistor becomes nonconductive and the first transistor becomes conductive. This in turn causes the energy in the brake coils to discharge through the second transistor.

3,624,359
REGISTER CONTROL SYSTEM AND METHOD
Jay C. Roote, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.
Filed Oct. 31, 1969, Ser. No. 873,048
Int. Cl. B41f *9/02*; B65h *23/22*
U.S. Cl. 235—61.11 R 15 Claims

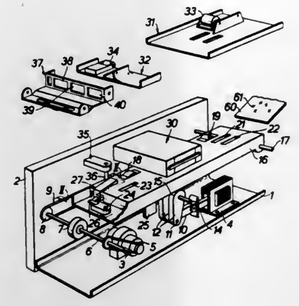


A mark discriminator circuit for a plural station web apparatus wherein marks are cyclically applied in line on a web at successive stations, and a scanner produces a series of scanner pulses in each repeat interval, the circuit being operable to respond to a pair of such scanner pulses whose spacing is a measure of a registration condition of the web.

3,624,360
CARD READER AND TRANSPORTER APPARATUS
John Covell Collier, Farnworth; Leonard John Owen, Edgware, and David William Rickards, Stanmore, all of England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 8, 1969, Ser. No. 883,077
Claims priority, application Great Britain, Dec. 9, 1968, 58,263/69
Int. Cl. G06k *13/07*; H01b *43/08*; H04g *1/30*
U.S. Cl. 231—61.11 R 5 Claims

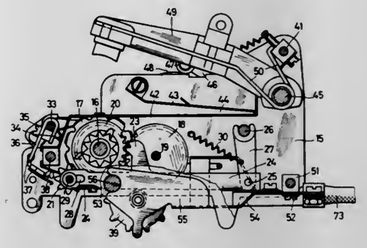
A card reader is provided with drive rollers which feed a card to a reading position. When the card is in the reading position it is closed to a reading head. Depending on the result of the data read, the card is either rejected from the reader or transported through it. Microswitches control the drive rollers and reading operation.

3,624,361
ELECTROMECHANICAL ASSEMBLY FOR RECEIVING AND TOTALING PULSES AND, PARTICULARLY, FOR REGISTERING READINGS TAKEN FROM METERS
Gianfranco Rossi; Paolo Scotuzzi, and Vittorio Ropa, all of Brescia, Italy, assignors to Gaspare Cavallina, Florence; Roberto Berti, Florence and Gianfranco Rossi, Brescia, Italy
Filed Oct. 14, 1968, Ser. No. 767,240
Int. Cl. G01d *4/00*
U.S. Cl. 235—92 AC 6 Claims



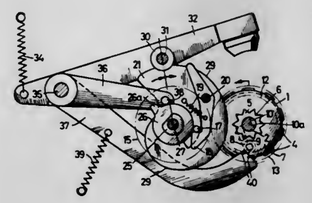
An electromechanical assembly for the collection of readings taken from meters (such as electric power-, water-, or gas-meters) and the recordal of the data on cards or other recording media, is disclosed, wherein the consecutive revolutions of the meter rotor (e.g., the unity wheel or gear) are converted into pulses by the agency of electrical contacts; the pulses are counted and summed by an adding device. Provisions are also taken for encoding the individual meters, consumers, kind of supply (e.g., water, electric power, etc.) and a wide possibility of encoding, data collection and invoicing is afforded. Readings can also be collected by a suitably equipped mobile unit: this can be mounted on a truck, for example.

3,624,362
ELECTRICAL READOUT FOR COUNTERS
Heinz Kelch, Saint Georgen, Germany, assignor to Kienzle Apparate GmbH, Villingen am Schwarzwald, Germany
Filed Oct. 10, 1969, Ser. No. 865,444
Claims priority, application Germany, Oct. 16, 1968, P 18 03 214.9
Int. Cl. G06m *3/06*
U.S. Cl. 235—92 EA 15 Claims



An arrangement for reading out through electrically coded signals, counter registrations and indications. A common shaft within a supporting frame of a unit holds a plurality of electrical contact discs which are rotatably mounted on the shaft. The counter to be read out electrically is provided with individual rotatable drums connected to the electrical contact discs so that these are rotated in correspondence with the drums when the frame is detachably mounted on the supporting means of the counter. Through the application of contact blades supported on a contact carrier block within the frame member, the counter indications are read out through digitally coded electrical signals. The counter can be used in conjunction with a printout mechanism through which printout is realized in a uniquely defined numerical order.

3,624,363
ARRESTING CLEARING APPARATUS
Heinz Kelch, Buchenberg, Germany, assignor to Kienzle Apparate GmbH, Villingen am Schwarzwald, Germany
Filed May 12, 1970, Ser. No. 36,611
Int. Cl. G06c *15/42*, *25/00*
U.S. Cl. 235—144 PN 10 Claims

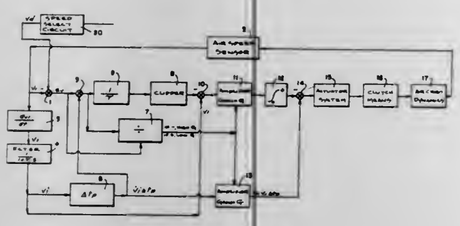


An ordinal printing register has printing wheels which are cleared by manual operations of a clearing shaft supporting the same. The clearing shaft also operates an alignment cam controlling an arresting means to arrest the printing wheels aligned in ordinal positions before printing takes place under the control of a printing alignment cam. A clearing cam driven by the clearing shaft moves, after the printing operation, the arresting means again to the arresting position when a printing wheel is turned to the zero position so that inertia movement of the printing wheels beyond the zero position is prevented.

3,624,364
PARALLEL SPEED STABILIZATION SYSTEM

Daniel O. Dommasch, Blawenburg, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 28, 1970, Ser. No. 6,635
Int. Cl. B64c *19/00*
U.S. Cl. 235—150.2 **5 Claims**

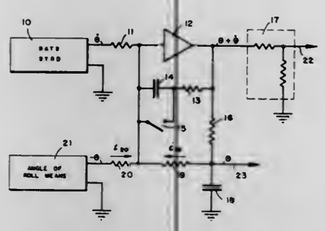


A nonproportional, adaptive, predictive control system for automatically, stabilizing the speed of an aircraft at a pilot-selected speed against changes in the trim airspeed of the aircraft. The system is designed to operate in parallel with the pilot so that it can be manually overridden at anytime; however, when the controls are left free, the system will operate the aircraft independently of the pilot.

3,624,365
VERTICAL ATTITUDE MEASURING DEVICE

William H. Woodworth, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 18, 1969, Ser. No. 843,120
Int. Cl. G06g *7/38*; **G01c** *9/12*
U.S. Cl. 235—150.2 **2 Claims**



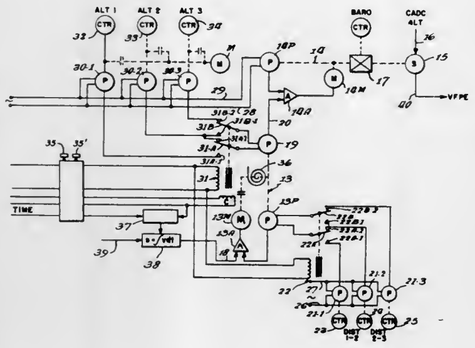
A device for detecting the angular variation of an aerodynamic vehicle measured from a line normal to the surface of the earth utilizing a rate gyro, an angle of roll means and an integrating amplifier. The signal received from the rate gyro is integrated. The integrator output is summed with the output of the angle of roll means, and fed back to the input of the integrator. The integrator output now is proportional to the angle of roll of the aerodynamic vehicle.

3,624,366
VERTICAL FLIGHT PATH ERROR ALTIMETER

James W. Angus, Baldwin, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Jan. 29, 1969, Ser. No. 794,909
Int. Cl. G06g *7/70*; **G08g** *5/02*
U.S. Cl. 235—150.22 **4 Claims**

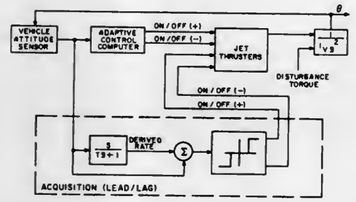
A vertical flight path error indicating system is disclosed for presenting an easily interpretable indication of vertical flight path error to show the direction and degree of the error and the rate of correction of the error. In the illustrative disclosure a typical approach and landing sequence is described and equipment is shown for computing the horizontal distance covered, the required corresponding altitude, and the true altitude. A signal is generated to represent the difference between required and true altitude and a movable index is positioned relative to an altitude deviation scale under the control of the signal.



3,624,367
SELF-OPTIMIZED AND ADAPTIVE ATTITUDE CONTROL SYSTEM

Stephen B. Hamilton, Syracuse; Robert J. Kelly, Jr., Binghamton, and Robert C. Wells, Endwell, all of N.Y., assignors to General Electric Company

Filed Nov. 12, 1968, Ser. No. 774,939
Int. Cl. G06f *15/50*; **F41g** *9/00*
U.S. Cl. 235—150.2 **10 Claims**

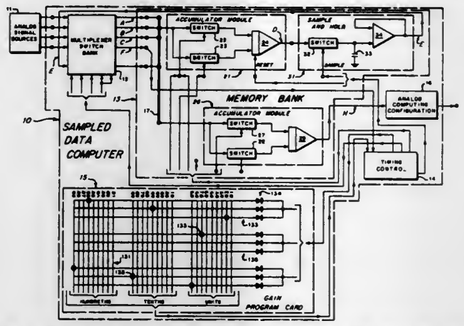


Technique, method and apparatus for obtaining optimized, self-adaptive, attitude control in space vehicles using on-off reaction motor propulsion for torquing the vehicle about its axes of attitude. Formulation to determine a time duration of known thrust to impart a calculated angular acceleration is based on angular velocities and is calculated from maximum permissible angular deviation, an appropriate lesser deviation, initial mass and initial thrust force as parameters and time as a universal variable. Technique provides for operation both in presence of and absence of directional bias forces and includes updating of data representing vehicle parameters. Disclosure includes one apparatus to accomplish the method by application of digital computation.

3,624,368
SAMPLED DATA COMPUTER

Keith E. Close, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 19, 1969, Ser. No. 886,630
Int. Cl. G06j *1/00*
U.S. Cl. 235—150.51 **8 Claims**

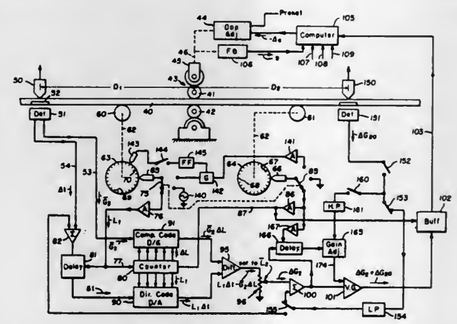


A hybrid analog computer utilizing pulse width modulation techniques wherein plural analog input signals during a sampling cycle are each sequentially applied for respective controlled portions of a sampling interval to integrator amplifiers to establish corresponding predetermined gain characteristics for the input signals. A timing control unit is connected to enable a signal multiplexer to sequentially apply each of a plurality of analog signals to the same accumulator module in order to provide over a number of such successive sampling cycles an analog signal indicative of the sum of the level or gain adjusted input analog signals. A first embodiment of a pulse width modulator includes a plurality of clock-driven counters preloaded by means of a diode matrix gain program card in order to establish a succession of sample enable signals applied to multiplexing circuitry for directing particular analog signals to particular integrators of particular accumulator modules. An adaptive gain control varies the gain imposed on a multiplier indicating analog signal magnitude with that of a ramp function from a sawtooth generator and setting the sample enable signal width upon level coincidence to enable a corresponding control gain adjustmnt of a multiplicand incidating analog signal and provide a product indicating analog output signal. A quotient pulse width modulator compares a divisor indicating signal to establish the width of a sample enable signal as a function of the quotient of the input signals which quotient pulse width modulator is used to control the integration times in a differential analyzer.

3,624,369
THICKNESS REDUCTION CONTROL SYSTEMS

Ruloff F. Kip, Jr., Inningwood Road, Ossining, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,234
Int. Cl. B21b *37/12*; **G05d** *5/02*
U.S. Cl. 235—151.1 **11 Claims**

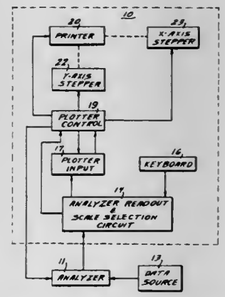


In an installation for reducing the thickness of material, the thickness reduction is controlled by computing systems based on equations in which the predicted thickness error is a function of the differential between the input and output lengths of a given volume of material passing through the installation. Greater accuracy may be obtained by disclosed modes of follow-on control. Procedures are discussed for recalibration of the systems.

3,624,370
DIGITAL PLOTTING DEVICE

James Gray, Jr., Wheaton, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 5, 1969, Ser. No. 874,192
Int. Cl. G06k *15/22*; **G01d** *9/38*
U.S. Cl. 235—151.3 **6 Claims**

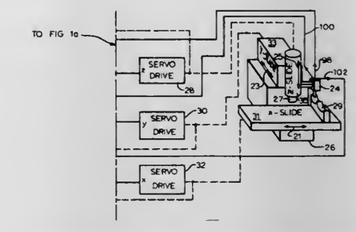


A digital plotting device receives information in digital form consisting of a most significant figure and at least one subsequent significant figure. The plotting device includes a plurality of printing hammers positioned opposite recording paper. A driving mechanism positions the plurality of hammers in response to the subsequent significant digits and actuates a particular printing hammer in response to the most significant digit. The actuated printing hammer marks the recording paper in the desired location.

3,624,371
APPARATUS FOR GENERATING AND RECORDING A PROGRAM AND PRODUCING A FINISHED PART THEREFROM

Norman D. Neal, Cincinnati; Harold D. Wiebe, Sharonville, Ohio, and Herbert M. Fuldner, Ft. Thomas, Ky., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 6, 1970, Ser. No. 61,703
Int. Cl. G05b *19/42*
U.S. Cl. 235—151.11 **6 Claims**



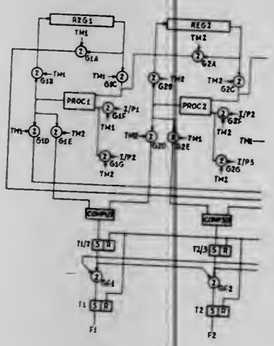
An automatic machine tool and control system having the ability to first generate and record in a storage medium a desired part configuration defined by a model, and second, to drive the machine tool in response to an interrogation and decoding of said storage medium thereby cutting the desired part configuration in a workpiece. The system is comprised of a machine tool having three mutually perpendicular axes of motion under servomechanism control. A tracing head is adapted to the machine tool, and tracing head outputs are coupled through servomechanism control circuits in a stan-

dard numerical control to an input of a computer. Also connected to the computer is an input/output device which allows for general control over the process and permits the input of auxiliary commands. The computer is responsive to its inputs and generates a part program defining the desired part configuration as represented by the model. An output of the computer is connected to an encoding device which records the part program in the storage medium. The part program may be played back by interrogating and decoding the storage medium with the numerical control input circuits. Hence, the machine tool is controlled in a standard fashion to cut a finished workpiece corresponding to the model traced.

3,624,372
CHECKING AND FAULT-INDICATING ARRANGEMENTS

Alexander Schroder Philip, and John Richard Francis, both of Liverpool, England, assignors to Automatic Telephone & Electric Company Limited, Liverpool, England

Filed Feb. 16, 1970, Ser. No. 11,760
Claims priority, application Great Britain, Feb. 17, 1969, 8,472/69
Int. Cl. G06f *11/08, 11/04, 11/00*
U.S. Cl. 235—153 **6 Claims**



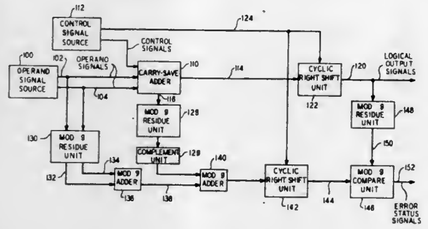
A checking and fault-indicating arrangement is provided for four or a larger even number of processors in a data processing system. During a first predetermined period, odd-numbered processors perform a processing operation and the input date applied to one of the odd-numbered processors is also applied to a particular one of the adjacent even-numbered processors and the output of the two processors is compared in a comparator which provides a significant output if one of the processors are faulty. During a second predetermined period, even-numbered processors perform a processing operation and the input data applied to the other adjacent one of the even-numbered processors is also applied to said one odd-numbered processor and the output of the two processors is compared in a second comparator which also provides a significant output if one of the processors is faulty. The significant outputs of the two comparators are applied to an indicating arrangement which indicates the faulty processor.

3,624,373
APPARATUS FOR PERFORMING AND CHECKING LOGICAL OPERATIONS

Ronald H. Birchall, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 16, 1969, Ser. No. 885,568
Int. Cl. G06f *11/02, 7/38*
U.S. Cl. 235—153 **5 Claims**

Implementation and checking of any one of the logical functions AND, OR, EXCLUSIVE-OR and IDENTITY of two *n*-bit operands A and B are accomplished by applying A and B to a carry-save adder. In addition an *n*-bit control quantity C, which is selected to be either an all-"1" or an all-

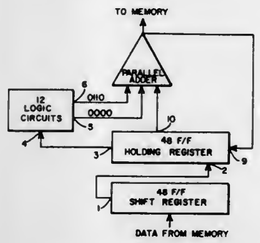


"0" word, is also applied to the adder. One output of the adder is a form of the desired logical function. The other output thereof is available for residue code checking of whether or not the logical operation has been correctly performed.

3,624,374
BINARY TO BINARY CODED DECIMAL CONVERTER

Louis Kent Steiner, Minneapolis, Minn., assignor to Control Data Corporation, South Minneapolis, Minn.

Filed Nov. 18, 1970, Ser. No. 90,503
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **7 Claims**

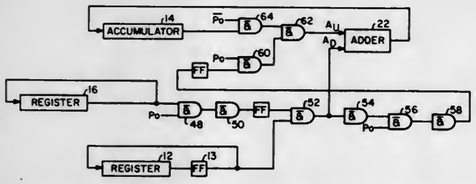


A binary-to-binary-coded-decimal (BCD) converter wherein the binary number is held in a first register and is shifted bit by bit into a second register as the number is converted. A plurality of logic circuits connected to the second register examine four-bit segments of the second register and control an adder which increments the number when the binary values of the examined four-bit segments are equal to predetermined quantities.

3,624,375
BINARY CODED DECIMAL TO BINARY CONVERSION APPARATUS

John W. Pross, Jr., Newfoundland, N.J., assignor to the Singer Company, New York, New York

Continuation-in-part of application Ser. No. 590,995, Oct. 31, 1966, now abandoned. This application Dec. 15, 1969, Ser. No. 885,289
Int. Cl. H03k *13/24*
U.S. Cl. 235—155 **5 Claims**



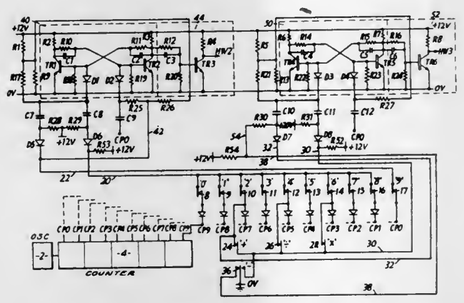
A method and means for converting B.C.D. data into pure binary form by utilizing the arithmetic section of a general

purpose digital computer. The conversion is based upon the computer's multiply function wherein the binary-coded decimal information is treated as the multiplier and a preselected set of constants are used as multiplicand. That is, a separate constant for each digit to be converted is accessed from memory every four-word times and multiplied serially bit by bit by the four-binary-coded bits representing the decimal character, low order first. If the multiplier bit is a "one," the multiplicand is added and becomes a partial product which, in turn, is stored in the computer's "A" register or accumulator and shifted right one-bit position. If the multiplier bit is a "zero" the previous partial product in the accumulator is merely shifted. The various constants or multiplicands are weighted so that each successive one is ten-sixteenths as large as its immediately preceding one.

3,624,376
CIRCUIT FOR GENERATING SIGNALS REPRESENTATIVE OF OPERATED KEYS ON A COMMON LEAD

Norbert Kitz, Uxbridge, Middlesex, England, assignor to Bell Punch Company Limited, London, England

Filed July 29, 1969, Ser. No. 845,811
Int. Cl. G06f *1/00*; G08c *9/00*
U.S. Cl. 235—160 **13 Claims**

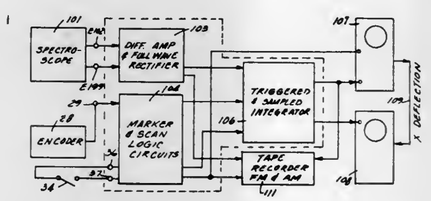


An electronic calculating machine provides electronic signals for number keys that identify each key at a common lead conveying signals from a plurality of keys. The signals are generated from a pulse generator and counter circuit so that each key produces a different waveform within a period during which the pulse generator produces 10 pulses PO to P9. Each signal contains a common reference pulse P0.

3,624,377
INTERVAL AVERAGING FILTER

Milton Zerkin, Chicago, Ill., assignor to American Medical Association Education and Research Foundation, Chicago, Ill.

Filed Oct. 30, 1968, Ser. No. 771,718
Int. Cl. G06g *7/18*; G01j *3/00*
U.S. Cl. 235—183 **10 Claims**



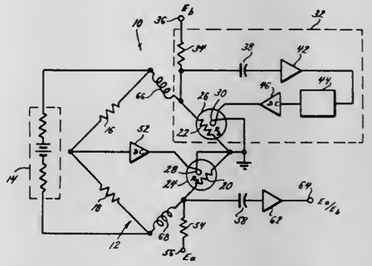
An interval averaging filter and data processing circuit which receives input signals that are normally processed and recorded at a relatively slow rate in order to resolve the in-

formation contained in the signal which increases the speed of processing the signal many times and allows the intelligence to be resolved and presented with great accuracy. The information is rectified and integrated and a pulse train of variable amplitude is obtained by periodically passing the output of the integrator to an indicator such as a memory cathode-ray scope. The integrator includes a capacitor which is discharged periodically after a pulse output has been obtained. This device embodies a dynamic low-pass filter with an electronically adjustable cutoff frequency.

3,624,378
ELECTRONIC ANALOG DIVISION MEANS

Lloyd E. Brunkhorst, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 24, 1969, Ser. No. 869,006
Int. Cl. G06g *7/16*
U.S. Cl. 235—196 **19 Claims**

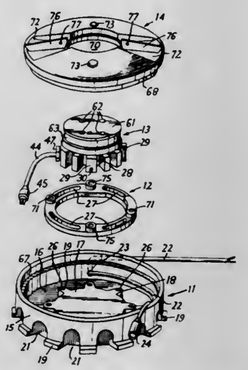


Electronic circuit means for performing the division of one or more signals by another signal, said electronic circuit means including at least one bridge circuit including electrooptical devices therein which act as variable attenuators in the performance of one or more division operations, said circuit means also including direct-current feedback means to the electrooptical devices for control purposes.

3,624,379
LIGHTING DEVICE

Ernest Noel Bliss, Gerrards Cross; David John Bridgers, London, and Harold Edward Herbert Kirby-Johnson, London, all of England, assignors to British Lighting Industries Limited, London, England

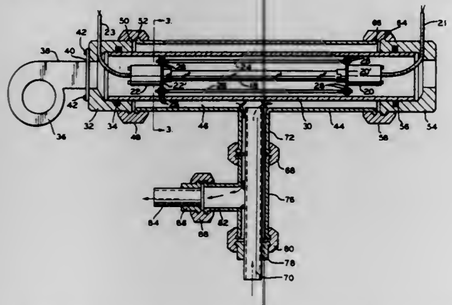
Filed July 18, 1969, Ser. No. 843,015
Claims priority, application Great Britain, July 23, 1968, 35190/68
Int. Cl. B64f *1/20*
U.S. Cl. 240—1.2 **6 Claims**



A lighting device suitable for use on aerodrome runways comprises a cover formed with a central opening and

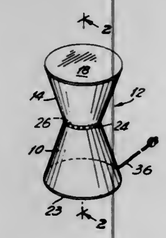
recessed portions extending from the central opening to the periphery of the cover. A lamp assembly carrying a lamp holder is mounted on a base and extends through the central opening so that light from a lamp held in the lamp holder emerges from the lighting device through the recessed portions of the cover.

3,624,380
LIGHTING ARRANGEMENT
Noel Davis, Chagrin Falls, Ohio, assignor to Integrated Development & Manufacturing Company, Chagrin Falls, Ohio
Filed Apr. 22, 1970, Ser. No. 30,662
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **5 Claims**



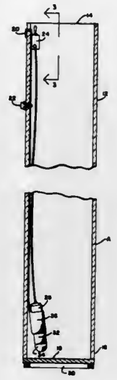
A lighting arrangement and lamp assembly particularly suitable for producing illumination with a minimum of the infrared range of wavelengths and especially suited for use in environmental growth chambers. The lamp assembly disclosed includes a tungsten-iodide lamp positioned in a first housing member formed from a material which is transparent to light of a substantial range of wavelengths including infrared. A second housing member formed from a light-transmissive material is positioned about the first housing member in spaced relationship thereto. Means are provided to seal between the first and second housing members to provide a closed chamber through which illumination produced by the lamp must pass in order to escape from the assembly. Fan means function to pass cooling air through the first housing member and about the lamp positioned therein; and, means are provided for circulating water through the sealed chamber between the first and second housing members so that all the light passing from the assembly is filtered through the circulating water.

3,624,381
FLOOR-TABLE LAMP
Ronald M. Pollack, 73-19 37th Road, and Robert J. Karl, 34-59 89th St., both of Jackson Heights, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,553
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 SL **2 Claims**



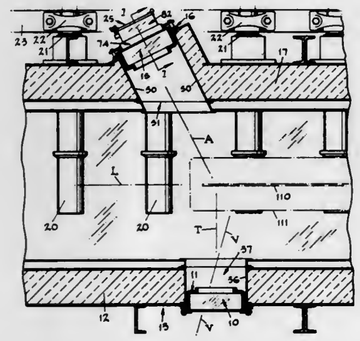
A combination floor lamp and table wherein the protection for the light source also forms the support structure for a tabletop.

3,624,382
METER-READING DEVICES
Charles W. White, 4210 Gardon, Saint Louis County, Mo.
Filed Mar. 23, 1970, Ser. No. 21,863
Int. Cl. F21l *1/00*
U.S. Cl. 240—2.18 **4 Claims**



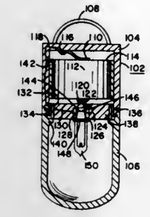
This invention relates to devices used for reading the faces of submerged meters which must be read from above and which are usually submerged in relatively opaque liquids such as muddy water, and discloses an elongated tube which is closed at one end and which is provided at that end with an elastic wiping surface for removing sediment from the face of the meter and providing a viewing passage through the liquid to the face of the meter.

3,624,383
ILLUMINATED INSPECTION APPARATUS
Robert E. Maltby, Jr., Perrysburg, and Albert W. Olson, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Oct. 31, 1969, Ser. No. 872,878
Int. Cl. F21s *1/00*; F21v *33/00*
U.S. Cl. 240—2.18 **4 Claims**



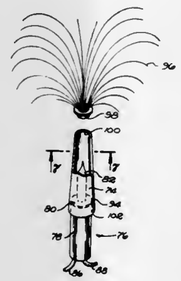
Method of and apparatus for inspecting articles while they are being treated in a heated furnace and conveyed through a brightly illuminated area. The viewing area of the apparatus is arranged in angular relation to the light sources to afford protection for an observer from the glare of the light sources while permitting satisfactory examination of an article passing through the area.

3,624,384
ILLUMINATED EARRING
Gordon R. Ledingham, and Norman L. Ledingham, both of 2486 Valle Citos Court, La Jolla, Calif.
Filed Nov. 29, 1968, Ser. No. 779,739
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W **4 Claims**



An illuminated earring having a housing secured to an earring support, which housing encloses and electrically connects a battery and light bulb and supports a removable light transmissive enclosure having selective configurations that encloses and is illuminated by the light bulb.

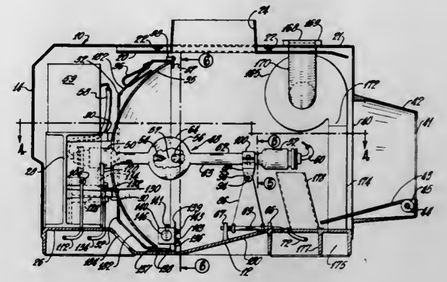
3,624,385
ORNAMENTAL ILLUMINATION DEVICE AND ADAPTER
Lamar J. Wall, Seal Beach, Calif., assignor to Poly-Optics, Inc.
Filed Apr. 9, 1970, Ser. No. 27,064
Int. Cl. F21p *1/02*; F21l *15/08*
U.S. Cl. 240—10 P **10 Claims**



An adapter is provided whereby a spray of optical fibers can be readily connected or disposed in proximity to a light source. On one embodiment a plurality of optical fiber sprays are connected for illumination by the light bulbs on a string of light bulbs which may then be used for decorating a Christmas tree or the like.

3,624,386
ARC LAMP
Harold M. Plumadore, Toledo, Ohio, assignor to The Strong Electric Corporation, Toledo, Ohio
Filed Jan. 21, 1969, Ser. No. 792,387
Int. Cl. F21v *19/02*
U.S. Cl. 240—44.2 **7 Claims**

The disclosure embraces an arc lamp construction utilizing a lamp comprising a gas-filled envelope containing spaced electrodes in combination with magnetic forces for controlling the arc flame, and a mounting for the gas-filled lamp

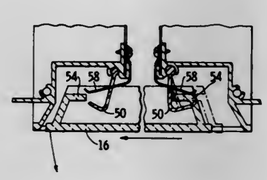


adjustable to control the relative position of the arc with respect to a reflector.

ERRATUM

For Class 240—46.05 see:
Patent No. 3,624,600

3,624,387
FRAMELESS AIR-HANDLING FIXTURE LENS SUPPORT
William R. Eargle, Jr., Vicksburg, Miss., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1969, Ser. No. 862,279
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 **9 Claims**

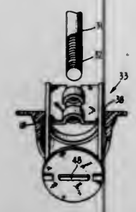


An interior lighting fixture of the air-handling type including a pair of spring-urged lens support members along the lower edge of the fixture sidewalls having outwardly directed flanges on the lower ends thereof which coact with complementary inwardly directed flanges along the length of the frameless lens to support the lens, provide for lens centering with respect to the fixture and for the simple and quick removal of the lens from the fixture. The fixture also includes a lamp holder and a ballast compartment pivotally mounted within the fixture housing to permit access to the ballast elements when the compartment is in its swing-down position.

3,624,388
HANGER ASSEMBLY FOR MODULAR PANELS
Robert A. D. Schwartz, 513 Independent Road, Oakland, Calif., and Philip W. Pfeiffer, 314 27th Ave., San Mateo, Calif.
Original application Sept. 22, 1967, Ser. No. 688,284, now Patent No. 3,480,246, which is a division of application Ser. No. 464,122, June 15, 1967, now Patent No. 3,368,070.
Divided and this application Jan. 6, 1969, Ser. No. 789,146
Int. Cl. F21s *1/06*
U.S. Cl. 240—78 LK **8 Claims**

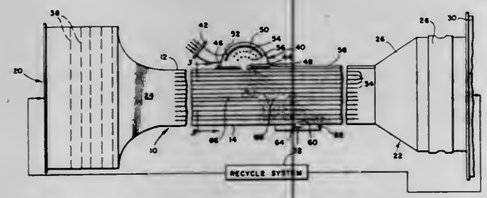
A hanger assembly for supporting a light-transmitting panel in vertically spaced positions relative to a hanger rod in

which legs depend from said rods through an aperture in the



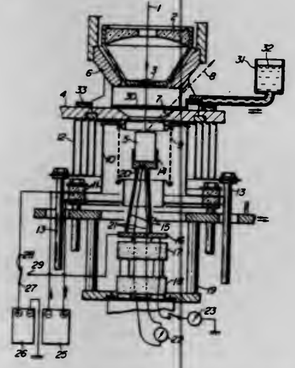
panel and a retaining disk is inserted between the legs to spread them into an operative panel supporting position.

3,624,389
TIME OF FLIGHT MASS SPECTROMETER HAVING A FLOWING GAS STREAM PERPENDICULAR TO THE ION DRIFT FIELD FOR INCREASED RESOLUTION
Martin J. Cohen, West Palm Beach; David I. Carroll, Lantana, and Roger F. Wernlund, Lake Worth, all of Fla., assignors to Franklin Gno Corporation, West Palm Beach, Fla.
Filed Nov. 26, 1968, Ser. No. 779,097
Int. Cl. B01d *59/44*; H01j *39/34*
U.S. Cl. 250—41.9 **29 Claims**



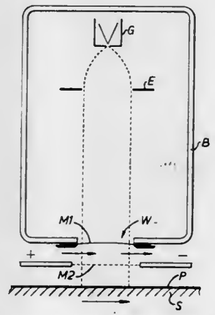
Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions. Positive or negative ions of the trace gas are formed by ion-molecule reactions between the molecules of the trace gas and primary ions from another gas. Ions are classified in accordance with their velocity in a stream of gas while subjected to an electric drift field.

3,624,390
SPECIMEN-HEATING MEANS FOR ELECTRON BEAM IRRADIATION APPARATUS
Tadao Watanabe, Katsuta, Japan, assignor to Hitachi, Ltd., Chiyoda, Tokyo, Japan
Filed Sept. 22, 1970, Ser. No. 74,412
Claims priority, application Japan, Sept. 24, 1969, 44/75249
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 B **5 Claims**



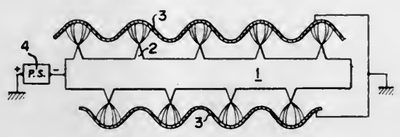
A specimen-heating means for electron beam irradiation apparatus comprising a cylindrical mesh filament concentrically surrounding a specimen, a filament support concentric with said filament, a current source feeding said filament with a heating current, and means to take up thermions given off said filament and the heated specimen, whereby the specimen may be heated through the radiation of heat from said filament and through the bombardment of the specimen with thermions given off said filament.

3,624,391
WINDOW STRUCTURE FOR ELECTRON BEAM IRRADIATION
William Henry Thomas Davison, Saffron Walden, England, assignor to T. I. (Group Services) Limited, Edgbaston, Birmingham, England
Filed Apr. 16, 1970, Ser. No. 29,231
Claims priority, application Great Britain, Apr. 16, 1969, 19,316/69
Int. Cl. H01j *37/30*
U.S. Cl. 250—49.5 TE **8 Claims**



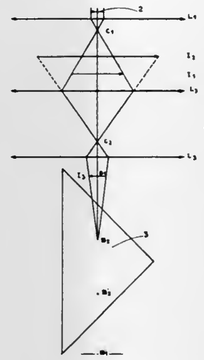
For electron beam irradiation apparatus in which electrons generated in an evacuated chamber emerge through a cooled pressuretight window to impinge on the material under treatment a window structure comprises two spaced membranes, one of which is gastight to withstand the pressure difference and the other is permeable to both gas and electrons but prevents a cooling gas passed between the membranes from disturbing the surface of the material.

3,624,392
ELECTROPHOTOGRAPHIC CHARGING APPARATUS COMPRISING NEEDLE POINT DISCHARGE ELECTRODES AND CONCAVE SHIELD ELECTRODES
Akira Kurahashi; Masayoshi Ishihara, and Gilchi Marushima, all of Tokyo, Japan, assignors to Cannon Camera Kabushiki Kaisha, Ohta-ku, Tokyo, Japan
Filed Nov. 20, 1968, Ser. No. 777,215
Claims priority, application Japan, Nov. 28, 1967, 42/76631
Int. Cl. G03g *15/00*
U.S. Cl. 250—49.5 ZC **13 Claims**



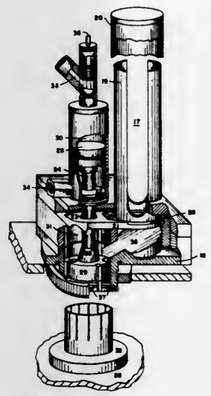
A corona discharger for electrophotography comprises at least one needle electrode structure and at least one shielding member disposed opposite to the needles of the electrode structure. Main corona discharge is generated between the end of each needle of the electrode structure and the shielding member to impress a charge on a photosensitive sheet. The unique needle electrode structure and shielding member are formed and arranged to apply uniform charge to the photosensitive sheet with high efficiencies.

3,624,393
ELECTRON MICROSCOPE COMPRISING A VELOCITY FILTER SYSTEM
Emile Torquebiau, Paris, France, assignor to Societe D'Optique Precision Electronique Et Mecanique (Sopelem), Paris, France
Filed July 13, 1970, Ser. No. 54,243
Claims priority, application France, Aug. 13, 1969, 6927880
Int. Cl. H01j *37/26, 37/12, 37/14*
U.S. Cl. 250—49.5 A **2 Claims**



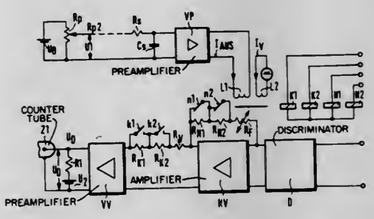
In an electron microscope having a velocity filtering system involving reflection in a prism, the normal objective lens is replaced by a complex lens comprising three electrostatic lens elements. This arrangement enables the order of image and diffraction diagram in the propagation path to be reversed, so that the diffraction diagram can be filtered as well as the image.

3,624,394
AUTOMATIC SAMPLE CHANGER FOR X-RAY FLUORESCENCE SPECTROMETER
Carl A. Youngman, and Glenn D. Roe, both of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed May 2, 1969, Ser. No. 821,308
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **6 Claims**



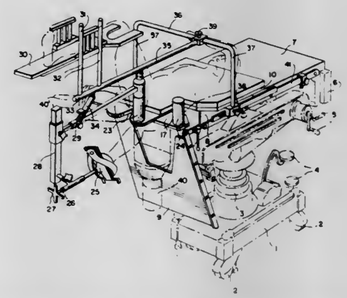
X-ray fluorescence spectrometer apparatus for automatically analyzing a predetermined number of sample discs. A turntable mounts a plurality of sample holders, each of which can receive a plurality of discs. Prior to analysis, the discs are loaded in sample storage means connected to sample injector means by special gating means. The sample injector means sequentially injects discs into the sample holders as the turntable revolves. Drive means for rotating the turntable in predetermined steps is disclosed.

3,624,395
ARRANGEMENT FOR COMPENSATING A HYPERBOLIC DEPENDENCY OF THE AMPLITUDE OF VOLTAGE PULSES PRODUCED IN A DETECTOR FOR X-RAY QUANTA
Kurt Togel; Hubert Hotzel, and Bernhard Lang, all of Karlsruhe, Germany, assignors to Siemens AG, Munich, Germany
Filed Dec. 2, 1969, Ser. No. 881,430
Claims priority, application Germany, Dec. 12, 1968, P 18 14 321.0
Int. Cl. G01n *23/00*
U.S. Cl. 250—51.5 **13 Claims**



In a linear X-ray spectrometer with an analyzer crystal displaceable along a straight guide line, a potentiometer pickup is displaceable in proportion to the linear movement of the analyzer crystal. The pickup is attached to the mount of the analyzer crystal and belongs to a potentiometer contained in an amplifier arrangement that compensates the hyperbolic dependency of the amplitude of pulses produced in an X-ray detector.

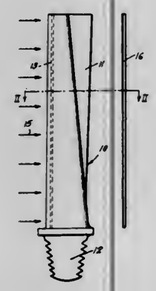
3,624,396
ORTHOPEDIC APPARATUS FOR USE WITH IMAGE INTENSIFICATION EQUIPMENT
William Sidney Watson, Pittsford, N.Y., assignor to The Pelvic Anchor Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,181
Int. Cl. G03b *41/16*
U.S. Cl. 250—53 **7 Claims**



In surgical procedures in which unilateral traction is applied to the appropriate lower extremity to immobilize the pelvis against a perineal post and an iliac post, and in which image intensification techniques are used, the iliac post is adjusted relative to the perineal post and in a direction parallel to the mesial plane according to the length of the pelvis. Tube-locating means movable with the iliac post in fixed mesial relation therewith determine the position of the intensifier tube under the patient. The foot or leg traction unit and the well leg support are carried by arms mounted on and extending outwardly from the perineal post above the patient, without obstructing access of the intensifier tube to the body of the patient. The vertical moment on the post due to the

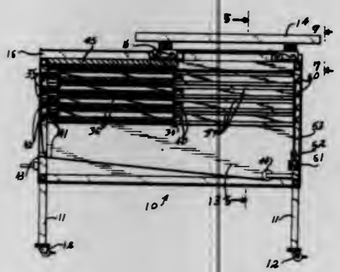
weight of these extended parts is absorbed by an arm or arms extending inwardly from the perineal post above the patient to a fixed point of support.

3,624,397
RADIOGRAPHIC METHOD FOR THE DETECTION OF RESIDUAL CORE MATERIAL COMPRISING THE USE OF RADIOGRAPHICALLY DETECTABLE POWDER
Clyde R. Honeycutt, Cleveland Heights, and Frank J. Sattler, Chesterland, both of Ohio, assignors to TRW Inc., Cleveland, Ohio
Filed Oct. 1, 1969, Ser. No. 862,658
Int. Cl. G01n *23/00*
U.S. Cl. 250—65 **11 Claims**



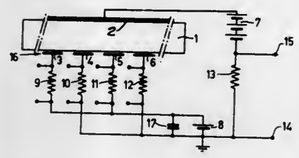
Method of detecting the presence of core material in a cored casting comprising injecting a radiographically detectable powder into the passages of the hollow casting, vibrating the casting to aid in distributing the powder throughout the passages, exposing the treated casting to penetrating radiation, and then inspecting the casting.

3,624,398
SERIAL RADIOGRAPH TABLE
Weldon D. Arndt, 1201 83rd Ave. N., Brooklyn Park, Minn.
Filed Sept. 25, 1969, Ser. No. 861,116
Int. Cl. G01n *21/00*
U.S. Cl. 250—66 **4 Claims**



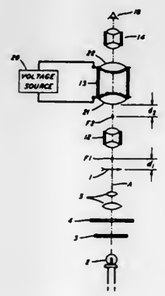
A table having a patient-receiving movable top affixed thereto with a plurality of film-receiving trays movably mounted in tracks positioned in vertical spaced apart relationship generally beneath the movable top. The tracks extend so that the trays move between a position below the top and a second position spaced horizontally therefrom. The trays are biased towards the first position and normally held in the second position until the sequential release thereof by electronic timing apparatus.

3,624,399
SEMICONDUCTOR DEVICE FOR DETECTING RADIATION
Jacob Anne Den Boer; Johan Hendrik Dieperink, and Karel Mulder, all of Amsterdam, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1968, Ser. No. 768,034
Claims priority, application Netherlands, Oct. 25, 1967, 6714455
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 **8 Claims**



A radiation detector is described comprising a semiconductor disc having crossed strip electrodes on opposite sides with the output taken from the strips of one of the electrodes. To reduce crosstalk, a small voltage is applied between the strips in addition to the usual back-biasing voltage across the electrodes.

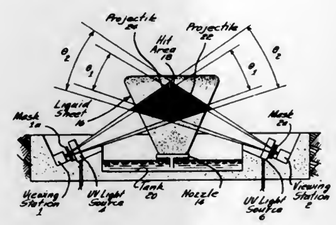
3,624,400
APPARATUS FOR THE PRODUCTION OF HIGH-RESOLUTION VISIBLE IMAGES OF OBJECTS ILLUMINATED BY OR EMITTING INFRARED RADIATION
Barry George Cohen, P.O. Box 526, Elizabeth, N.J.
Filed Jan. 28, 1970, Ser. No. 6,365
Int. Cl. H01j *31/50*
U.S. Cl. 250—83.3 HP **14 Claims**



High-resolution visible images of objects illuminated by or emitting infrared radiation are obtained by a unique combination of objective lenses and an image-converter tube adapted so that the resolution is advantageously limited by the wavelength and diffraction effects in the lenses rather than by the image-converter tube itself. Both monocular- and binocular-lens systems, as well as direct and incident illumination systems, are disclosed.

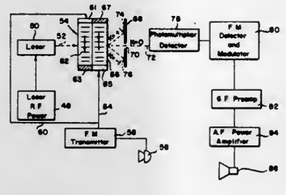
3,624,401
ULTRAVIOLET TARGET HIT SCORING SYSTEM
Milton Stoller, West Hartford, Conn., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 6, 1969, Ser. No. 864,083
Int. Cl. G01j *1/06*
U.S. Cl. 250—83.3 UV **3 Claims**

A scoring system for a nonmaterial target is provided by directing ultraviolet light across the face or front of the target in such manner that a projectile striking the target must pass through the ultraviolet light. Photoelectric sensors are arranged to detect ultraviolet light reflected from projectiles passing through the light and striking the target. The light



passes through coded masks associated with each sensor. The coding of the masks is such that the sensors respond discretely to indicate the position of the projectile with respect to the target and thus a "hit" or a "miss."

3,624,402
ELECTROMAGNETIC BEAM COMMUNICATION UNIT
William J. Thaler, Centreville, Va., assignor to President and Directors of Georgetown University, Washington, D.C.
Filed Feb. 8, 1968, Ser. No. 703,959
Int. Cl. H04b *9/100*
U.S. Cl. 250—199 **14 Claims**



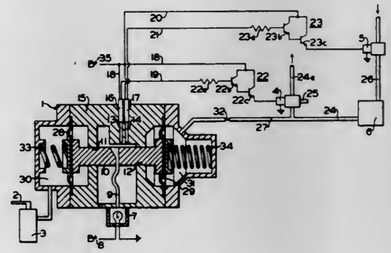
A modulation cell which has two crystals side-by-side and oppositely oriented are driven by the same electromagnetic frequency modulated signal transmitter to form in the cell two parallel but similar moving periodic electro-optic diffraction gratings. An electromagnetic signal carrier producing source, such as a laser, has its beam pass through the sides of the cell and both electro-optic diffraction gratings. The zero diffraction order of the beam after it leaves the crystal has a frequency component which corresponds to the frequency modulated signal. The modulation cell may be a liquid or gas unit, with two sets of transmitters and absorbers, or the modulation cell may contain two oppositely oriented side-by-side optical crystals having an integral electromagnetic wave guide along which the frequency modulated signal is passed to the crystal.

3,624,403
METHOD ENABLING TO LINEARIZE THE DISPLAY OF A PHOTOELECTRIC MICROSCOPE HAVING A SINUSOIDAL SCANNING
Maurice Koulicovitch, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments de Physique, Geneva, Switzerland
Filed Jan. 13, 1970, Ser. No. 2,524
Claims priority, application Switzerland, Dec. 10, 1969, 3148/69
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 **6 Claims**



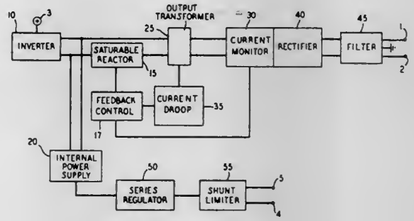
This invention relates to the linearization of the display of a photoelectric microscope. According to this method the integrator of the electronic part of the photoelectric microscope is fed by means of a bistable circuit with a current which varies in function of the time.

3,624,404
ELECTROPNEUMATIC RELAY VALVE DEVICE USING RADIATION-SENSITIVE MEANS
Claude M. Hines, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Feb. 16, 1970, Ser. No. 11,811
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 **5 Claims**



A manually or pneumatically controlled self-lapping-type valve means whereby a light from a source is transmitted by fiber-optic tube to a movable light-guide-carrying member to be accordingly positioned with respect to a plurality of photoresponsive sensors, to selectively effect energization of a plurality of control circuits. Selective energization of the control circuits effects selective energization of operational magnet valve means to serve specific control functions in a manner as that of a master controller device effecting energization of application and release magnet valves.

3,624,405
BALANCED CURRENT REGULATOR WITH CURRENT-BALANCE-RESPONSIVE FEEDBACK CONTROL CIRCUIT
John Daniel Bishop, Basking Ridge, Somerset County; Frank Fuller Judd, Madison, Somerset County; Robert Edward Schroeder, Parsippany, Somerset County, and Peter Pentti Untamo, Branchburgh Township, Somerset County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 10, 1970, Ser. No. 53,812
Int. Cl. H02m *3/22*; G05f *1/38*
U.S. Cl. 307—33 **6 Claims**

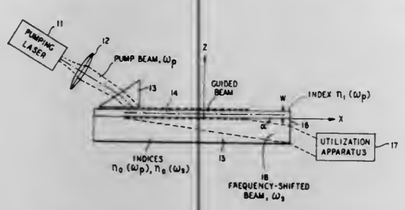


A current regulator to supply two balanced regulated currents of opposite polarity utilizes separate sum and difference current-sensing transformers to generate feedback control signals. These feedback signals control the operation level of a saturable reactor which regulates the drive signal to the output power transformer. Protection circuits responsive to the output voltage prevent it from exceeding predetermined critical levels.

3,624,406
NONLINEAR GENERATION OF A FREELY PROPAGATING BEAM BY A GUIDED BEAM

Raymond John Martin, 516 Edgeworth St., Middlesex Borough, N.J.; Ping King Tien, 19 Lisa Drive, Chatham Township, Morris County, N.J., and Reinhard Ulrich, 4 Imperia Place, Matawan, N.J.

Filed June 25, 1970, Ser. No. 49,614
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 4 Claims

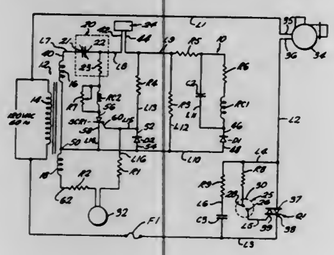


A thin-film device for second harmonic generation in which the fundamental beam is carried by the film and the second harmonic is generated as a freely propagating well-collimated beam in the substrate. The process is basically a Cerenkovlike radiation process, achieved when the optical dispersions of the film and substrate materials provide that the fundamental propagates faster in its guided mode than the second harmonic propagates freely in the substrate. An example is a polycrystalline ZnS film on a ZnO substrate, neither being significantly birefringent.

3,624,407
PRIMARY CONTROL MEANS FOR FURNACES

Frederick T. Bauer, Holland, Mich., assignor to Simicon Company, Holland, Mich.

Filed Oct. 15, 1969, Ser. No. 866,528
Int. Cl. H01h 35/00
U.S. Cl. 307—116 20 Claims



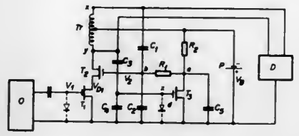
Primary control means for furnaces and the like including burner control means, means including solid state means effective to control said burner control means in response to a flame detector signal, bimetallic safety switch means, and means for interfacing between an isolated low-voltage control circuit and said burner control means.

3,624,408
FREQUENCY DIVIDER

Jakob Luscher, Carouge, Geneva, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere S.A., Geneva, Switzerland

Filed Oct. 24, 1969, Ser. No. 869,183
Claims priority, application Switzerland, Oct. 25, 1968, 15960/68
Int. Cl. H03b 19/00
U.S. Cl. 307—220 7 Claims

A frequency divider which comprises an amplifier including an impedance in series with a first MOS transistor controlled by the periodic signal whose frequency is to be divided, a DC voltage source for the supply of the amplifier, a second MOS transistor between the impedance and the first transistor controlled by the amplifier output signal and having a threshold voltage level such that it will open whenever

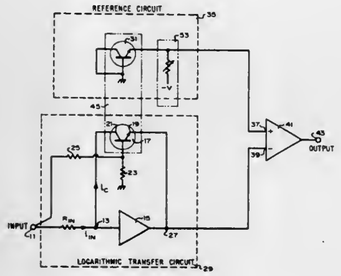


the voltage of the amplifier output signal exceeds a value such that the duration of such excess is substantially equal to the duration of one period of the signal to be divided.

3,624,409
LOGARITHMIC CONVERTER

Jerry B. Folsom, and Robert E. Hetzel, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 3, 1970, Ser. No. 69,366
Int. Cl. G06g 7/12
U.S. Cl. 307—229 2 Claims



A logarithmic converter which includes a differential amplifier with one input connected to a logarithmic transfer circuit and another input connected to a temperature compensating reference circuit for producing an output signal from the differential amplifier that is proportional to the logarithm of the ratio of a signal applied to the input of the logarithmic transfer circuit and a reference signal. The logarithmic transfer circuit includes a gain-inverting amplifier having a transistor connected in a feedback arrangement. Resistive elements are connected between the signal input connection, the transistor and a reference potential to improve the linearity of the transfer characteristic.

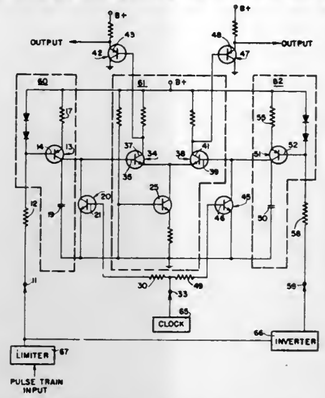
3,624,410
BALANCED INTEGRATE AND DUMP CIRCUIT FOR MEASURING DUTY CYCLE OF A PULSE TRAIN

Eugene J. Bruckert, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 1, 1969, Ser. No. 820,801
Int. Cl. H03k 5/20
U.S. Cl. 307—234 5 Claims

A balanced integrate and dump circuit includes a first integrator, differential amplifier, second integrator and timing circuit, for detecting the presence or absence of pulse train signals in a predetermined time interval, determining whether the pulse train signals are present for greater than a predeter-

mined percentage of the time interval measured and resetting the circuit for the next measurement. Differential comparison of voltages representing the presence and absence of

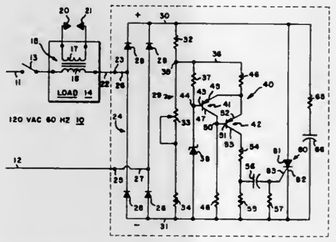


pulses in the measured time interval eliminates errors due to timing period variations, voltage variations, imperfect pulse train signals and circuit operating characteristics.

3,624,411
SWITCHING CIRCUIT FOR DELAYED PHASE FIRING OF A POWER SWITCH

Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 23, 1970, Ser. No. 21,570
Int. Cl. H03k 17/72
U.S. Cl. 307—252 W 11 Claims



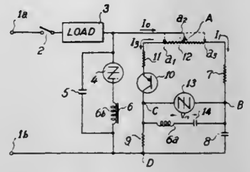
A control system is provided for energizing an electrical load in the form of a spark ignition transformer so that the load is energized for a portion of each half-wave of the applied alternating current voltage. The control circuit utilizes a Zener diode and transistor switch to keep the load deenergized during the major and initial portion of each half-cycle of the applied voltage and then switches the load on during the remaining portion of the applied voltage. The switch, in the form of a silicon-controlled rectifier, allows conduction through the spark ignition transformer primary for a portion of each half-wave of the line voltage.

3,624,412
REGULATED AC POWER SUPPLY UTILIZING A BIDIRECTIONAL POWER THYRISTOR

Kazutaka Nishimura, and Hiromi Shimizu, both of Saitama-ken, Japan, assignors to Shindengen Kogyo Kabushiki Kaisha a.k.a. Shindengen Electric Mfg. Co. Ltd., Tokyo-to, Japan

Filed June 23, 1969, Ser. No. 835,355
Claims priority, application Japan, June 25, 1968, 43/53400
Int. Cl. H03k 17/00
U.S. Cl. 307—252 B 8 Claims

An apparatus for controlling the supply of AC power from an AC source to a load by controlling, by the use of a firing circuit including a triggering thyristor, the firing angle of a bidirectional power thyristor connected through the load to the terminals of the AC source, where a bidirectional semiconductor diode, such as three-layer diode, having a voltage-current characteristic in which the terminal voltage

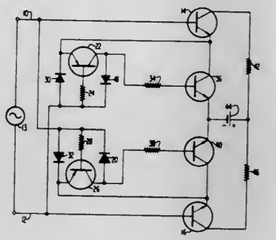


thereof is substantially constant or slightly decreases in excess of the breakover voltage thereof is provided in the firing circuit to control the firing of the triggering thyristor so as to compensate the fluctuation of the AC voltage supplied from the AC source to the load.

3,624,413
ELECTRONIC CIRCUIT

David K. Ford, 1339 Chestnut St., Terre Haute, Ind.

Filed Oct. 1, 1969, Ser. No. 862,841
Int. Cl. H03k 17/00
U.S. Cl. 307—254 8 Claims



A phase or polarity selective electronic control or amplification circuit requiring no reactive components and capable of transforming a single-ended input signal into out-of-phase output signals. The circuit includes switching or gating means to which the input signal is applied and which control one or more output circuit means. When an input signal of a first phase is applied to the switching or gating means, one or more output circuit means are permitted to pass current. When an input signal of another phase is applied, other output circuit means are permitted to pass current. The output circuit means can be connected to separate loads so that the particular load energized is determined by the phase of the input signal. Alternatively, the output circuit means can be connected to a single load so that the direction of current flow through that load is determined by the phase of the input signal, as in a push-pull amplifier.

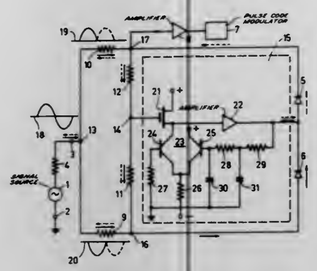
3,624,414
CIRCUIT ARRANGEMENT FOR POLARITY REVERSAL OF SIGNALS FROM A SIGNAL SOURCE

Leonardus Petrus Jozef Van Dijk, and Geerlof Jan Korevaar, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

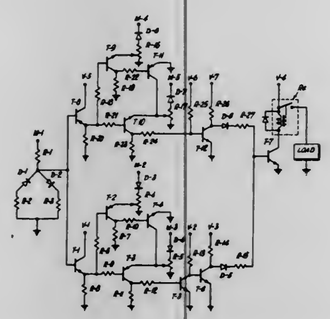
Filed Dec. 12, 1969, Ser. No. 884,449
Claims priority, application Netherlands, Dec. 21, 1968, 6818490
Int. Cl. H03k 1/12; H02m 7/00
U.S. Cl. 307—262 7 Claims

A polarity reversal arrangement provided with two series-arranged electronic switching elements, for example, for use in pulse code modulation. freedom

In order to satisfy the strict requirements of polarity reversal at the instants of an alternation of polarity of the signals from a signal source and the requirement of freedom from distortion, the polarity reversal arrangement is provided with a bridge composed of resistors wherein the signal source is connected to one end of a diagonal branch of the bridge and wherein the input circuit of an amplifier reversing the polarity of the input signal is connected to the other end of this diagonal branch and wherein the series arrangement of the two electronic switching elements is included between the ends of the other diagonal branch, the junction of the electronic switching elements being connected to the output circuit of the amplifier, while the output signals of the polarity reversal arrangement are derived from one end of the last-mentioned diagonal branch of the bridge.

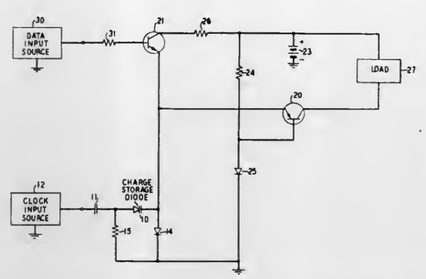


3,624,415
RESISTANCE-RESPONSIVE CONTROL CIRCUIT
Carl E. Atkins, Montclair, N.J., and Arthur F. Cake, Smithstown, Long Island, N.Y., assignors to Wagner Electric Corporation
Filed May 20, 1970, Ser. No. 38,960
Int. Cl. H03k *5/13, 5/156, 5/20*
U.S. Cl. 307—264 **9 Claims**



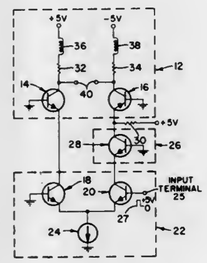
A pulse-generating circuit produces pulses of alternating polarity which are applied to two sets of potentiometers in two separate signal channels, one channel being positive-pulse responsive and the other negative-pulse responsive. When a resistive keying network is connected to the common inputs of the two channels, to the pulse-generating circuit and to ground, the pulse outputs of the two channels combine to maintain a transistor continuously conductive, thereby changing the energization state of a load. Each channel performs a discrimination function for individual components of the keying circuit, and will not generate the necessary output if the values of such components are not within a predetermined range.

3,624,416
HIGH-SPEED GATED PULSE GENERATOR USING CHARGE-STORAGE STEP-RECOVERY DIODE
Werner Bleickardt, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Dec. 19, 1969, Ser. No. 886,705
Int. Cl. H03k *5/00*
U.S. Cl. 307—269 **3 Claims**



A gated pulse signal generator using a charge-storage step-recovery diode whose recombination time is large in comparison with the period of an alternating current clock source and which is charged during excursions of one polarity of the clock signal and is discharged during excursions of the other polarity of the clock signal through a series path including the emitter collector circuit of a transistor. The transistor through which discharge occurs is part of an emitter-coupled pair of transistors, one of which is connected to receive a gating signal. The gating signal causes either the first or second of the two emitter-coupled transistors to conduct and the short pulses resulting from the discharge of the step-recovery diode only appear at the output of a transistor when that transistor is rendered conductive.

3,624,417
HIGH-SPEED PULSE DRIVER FOR MODULATORS, MAGNETIC MEMORIES, AND THE LIKE, HAVING A COMPLEMENTARY PUSH-PULL OUTPUT STAGE
Tich T. Dao, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 21, 1969, Ser. No. 817,694
Int. Cl. H03k *17/00*
U.S. Cl. 307—270 **4 Claims**

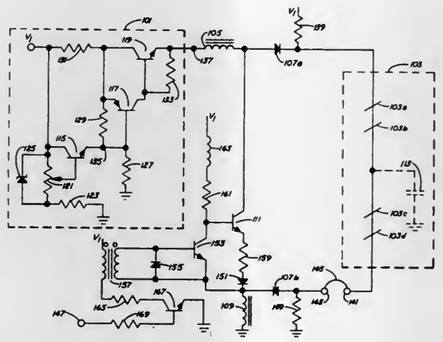


An output driver stage employs a pair of push-pull complementary transistor switches which are driven in phase, e.g., both off or both on. Two driving currents are provided to the output stage which currents are truly complementary, e.g., equal in phase with one sinking and the other sourcing. Reversed current flow is provided in one of the branches of the output stage by means of a "dummy" transistor stage and a constant current source, whereby the voltage output of the complementary transistor switches as seen between the collectors thereof will range from zero to double the possible breakdown voltage of each transistor switch.

Thus the invention simulates a center tap transformer circuit, but further provides large bandwidth characteristics down to DC.

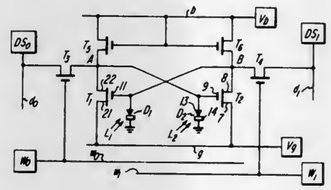
The invention herein described was made in the course of a contract with the Department of United States Army.

3,624,418
PUSH-PULL FLOATING DRIVER
Paul B. Kohl, St. Paul, and Charles L. Osterloh, Blaine, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Dec. 17, 1969, Ser. No. 885,926
Int. Cl. H03k *3/26*
U.S. Cl. 307—270 **14 Claims**



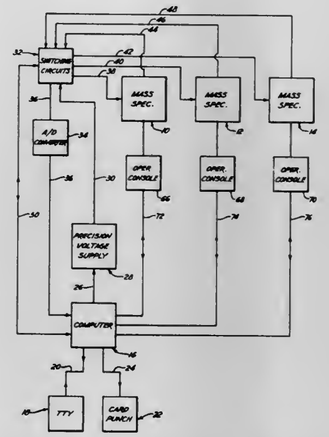
An electronic circuit using the characteristic of a pair of inductors to provide a differential potential symmetrical with respect to a reference level. The differential potential minimizing the effects of capacity and load inductance when current is switched into the load.

3,624,419
BALANCED OPTICALLY SETTABLE MEMORY CELL
Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation
Filed Oct. 19, 1970, Ser. No. 81,966
Int. Cl. H03k *3/286;* **G11c** *11/34*
U.S. Cl. 307—279 **7 Claims**



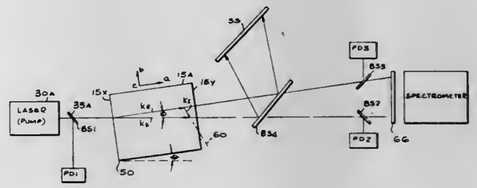
An optically settable memory cell includes two MOS transistors each having a gate cross-coupled to the drain of the other transistor to provide a bistable circuit. Each transistor has a drain extending over an area of the substrate to form a photodiode. Bias potential is applied to the sources as well as the drains of the two transistors to render them nonconductive and to charge both photodiodes to the same reverse bias potential. The application of potential to the drains is interrupted while a differential input light signal is applied to the photodiodes to cause an unequal discharging of the photodiodes. Potential is then removed from the sources and restored to the drains, whereby the transistor having its gate connected to the photodiode having the greater charge is rendered conductive, and the transistors then store an optically determined information bit.

3,624,420
CONTROL SYSTEM FOR A PLURALITY OF MASS SPECTROMETERS
Ronald L. Krutz, Irwin; Alexander P. Lezark, Monroeville, and Alvin B. Marcus, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Jan. 12, 1970, Ser. No. 2,337
Int. Cl. H02j *3/14*
U.S. Cl. 307—38 **9 Claims**



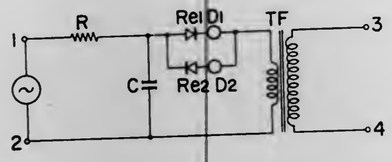
A computerized control system for a plurality of mass spectrometers, wherein voltage ranges corresponding to predetermined ions are selected and programmed into the computer. Instead of the usual scan, the computer drives a power supply to move from range to range, and to vary the voltage incrementally within each range to accurately define the peaks of interest. The voltage delivered at the spectrometer is fed back to the computer to serve as a check on the power supply and the overall system.

3,624,421
TUNABLE RAMAN LASER
Richard H. Pantell, and Harold E. Puthoff, both of Menlo Park, Calif., assignors to Research Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 619,647, Mar. 1, 1967, now abandoned. This application June 11, 1970, Ser. No. 45,440
Int. Cl. H03f *7/00*
U.S. Cl. 307—88.3 **11 Claims**



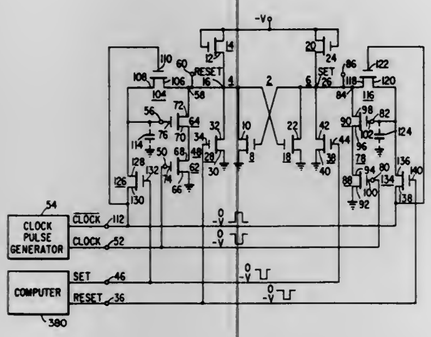
A continuously tunable laser arrangement consisting of an optical cavity, containing a Raman-type material, which is infrared active. A pump source of intense coherent radiation is employed to excite an idler frequency, which is one of the natural infrared modes of the material. The angle between the cavity axis and the direction of radiation from the pump source is adjustable to control the actual frequency of the excited idler frequency and thereby control the frequency of output radiation representing an output signal.

3,624,422
CIRCUIT GENERATING HIGH VOLTAGE
Masanari Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1970, Ser. No. 30,778
Claims priority, application Japan, Apr. 23, 1969, 44/31830
Int. Cl. H03k 3/00
U.S. Cl. 307—108 1 Claim



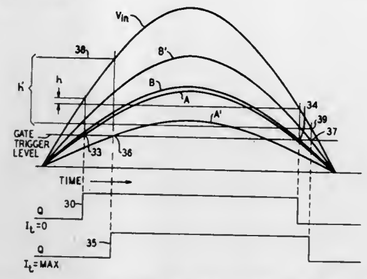
A circuit for generating high voltage comprising in combination an AC power source, an RC circuit, a pair of parallel connected switching element groups each consisting of at least one switching element exhibiting a negative resistance at a voltage in excess of a predetermined breakover voltage, pair of oppositely directed rectifier elements connected in parallel with each other to the junction of a capacitor and resistor of the RC circuit and in series to the pair of switching element groups respectively, and a transformer for inducing high voltage across its secondary. Larger output power is obtained.

3,624,423
CLOCKED SET-RESET FLIP-FLOP
Fred Borgini, Willingboro, N.J., assignor to RCA Corporation
Filed June 3, 1970, Ser. No. 42,941
Int. Cl. H03k 3/26
U.S. Cl. 307—279 10 Claims



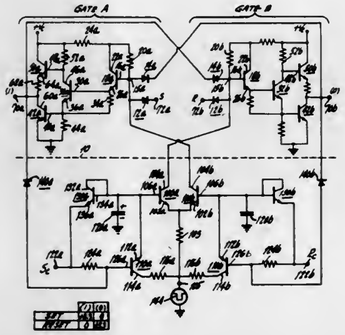
Successive clock pulses applied to the clock pulse terminals of a flip-flop cause it successively to change state. A set pulse or reset pulse may be applied to the flip-flop concurrently with a clock pulse which tends to place the flip-flop in a state different than the state intended by the set or reset pulse. The present circuit includes means responsive to the set or reset pulse for preventing the clock pulse from having any effect on the flip-flop. The means may comprise a logic gate to which the clock pulses are applied, storage means for priming the gate when charged, and means responsive to a set or reset pulse for discharging the storage means.

3,624,424
VARIABLE-HYSTERESIS BINARY TRIGGER CIRCUIT
Sun Chun Ping, Morristown; Frank Fuller Judd, Madison; Jan Mark Lieberman, Lake Hiawatha, and Helmut Wilhart, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Dec. 21, 1970, Ser. No. 100,150
Int. Cl. H03k 3/295, 19/34, 19/36
U.S. Cl. 307—290 7 Claims



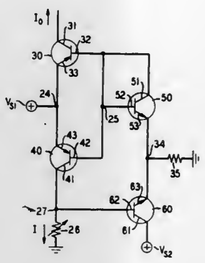
A resistance bridge is connected between the analog input terminals and a conventional two-input binary trigger to provide variable hysteresis of the input trigger levels. The analog input is connected across one pair of opposite bridge nodes; a transistor is connected across the other pair of opposite bridge nodes. Intermediate taps on a pair of opposite bridge arms are connected to the respective trigger inputs. Changes in the transistor current, which may be controlled by base drive current, produce corresponding changes in the hysteresis of the trigger levels. Equal resistance and equal tap setting of opposite bridge arms produces symmetrical hysteresis control.

3,624,425
CAPACITANCE MULTIPLICATION NETWORK
William C. Blumenstein, Cinnaminson, N.J., assignor to RCA Corporation
Filed July 9, 1965, Ser. No. 470,869
Int. Cl. H03k 3/12, 3/26
U.S. Cl. 307—291 10 Claims



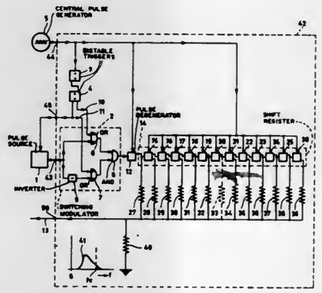
A steering network employing first and second clock switching transistors having their emitters connected in common to a clock pulse source with first and second capacitors each connected between a different base electrode and a point of reference potential is described. In addition, clock signal responsive means provides charge paths for the capacitors under the selective control of input signal responsive means.

3,624,426
CURRENT SOURCE FOR SEMICONDUCTOR CIRCUITS
Veikko Reynold Saari, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 5, 1970, Ser. No. 77,815
Int. Cl. G05f 1/10
U.S. Cl. 307—297 6 Claims



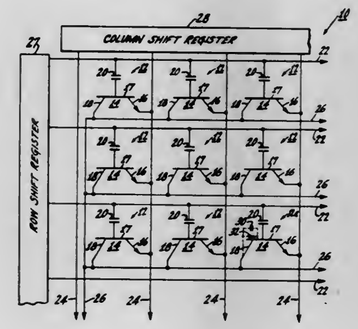
A positive current source for use in NPN majority monolithic integrated circuit technology has PNP transistors with low gains. A constant current is generated by connecting the bases and emitters of two of these PNP transistors together. The current at the output collector of the first PNP transistor is controlled by using high-gain NPN transistors to divert the large base currents of these PNP transistors from the resistance in the collector of the second PNP transistor while coupling the voltage across this resistance to the bases of both PNP transistors.

3,624,427
PULSE TRANSMISSION DEVICE INTEGRATED IN A SEMICONDUCTOR BODY
Eise Carel Dijkmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,437
Claims priority, application Netherlands, Mar. 22, 1969, 6904458
Int. Cl. H03k 5/00, 3/26
U.S. Cl. 307—303 5 Claims



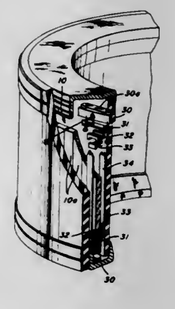
A pulse transmission device integrated in a semiconductor body comprising an output filter is formed from a shift register having a number of shift register elements which are coupled to a combination device through respective attenuation networks. Each shift register element and its respective attenuation network is formed as a topologic unit with the topologic units distributed in parallel rows. Various connections are made through tracks. The use of topologic units minimizes mutual cross talk phenomena both capacitive and galvanic in nature.

3,624,428
ELECTRIC SIGNAL PROCESSING CIRCUIT EMPLOYING CAPACITIVELY SCANNED PHOTOTRANSISTOR ARRAY
Paul Kessler Weimer, Princeton, and Frank Vanloon Shallcross, Princton Junction, both of N.J., assignors to RCA Corporation
Filed Mar. 20, 1970, Ser. No. 21,250
Int. Cl. H03k 17/00
U.S. Cl. 307—311 12 Claims



A signal processing circuit employing an array of photodetector elements, with each element including a phototransistor having a capacitor coupled to the base region. The base-collector junction integrates incident light flux, in response to an electromagnetic input, while the emitter-base diode serves as a switch when the element is sampled, to provide an electric output representative of the integrated light. The capacitor provides charge storage during the period between light flux integration and sampling.

3,624,429
FREE FLOODED DEEP SUBMERGENCE TRANSDUCER
John W. Behrendt, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 25, 1968, Ser. No. 747,517
Int. Cl. H04r 17/00
U.S. Cl. 310—9.1 1 Claim

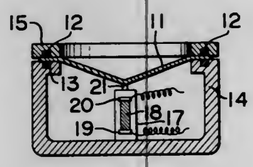


A right cylinder of piezoelectric ceramic is centered in a hollow annulus. The annulus is filled with high dielectric oil so that hydrostatic pressure regardless of magnitude is perfectly equalized inside and outside the annulus to obviate all pressure gradiants. The annulus comprises two coaxial rubberlike tubes, transparent to acoustic energy, and attached with simple hose clamps to metal rings at the ends of the cylinder.

3,624,430
SELENIUM-TELLURIUM TRANSDUCER EMPLOYING PIEZORESISTANCE EFFECT

Yoshihiko Mizushima, Takagi; Ochi Toru, Osamu, and Masahiro Seki, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Sept. 18, 1970, Ser. No. 73,431
Claims priority, application Japan, Sept. 22, 1969, 44/74690
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 2 Claims

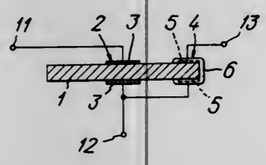


The piezoresistance coefficient of a Se-Te alloy is 50–60 times those of germanium and silicon and a few times higher than those of selenium and tellurium. The invention provides a mechanoelectric transducer employing the piezoresistance effect of a vacuum deposited Se-Te alloy film.

3,624,431
COMPOSITE CIRCUIT MEMBER INCLUDING AN ELECTROSTRICTIVE ELEMENT AND CONDENSER

Jitsuro Machida, Sawa-gun, and Takashi Tanaka, Takasaki-shi, both of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1969, Ser. No. 840,945
Claims priority, application Japan, July 12, 1968, 43/48417
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 8 Claims



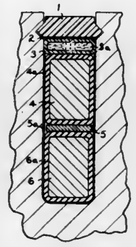
A composite circuit member is formed of a base plate of an electrostrictive material. Control elements for the electrostrictive operation are located on opposite surfaces of the base plate. Electrodes of a condenser are also mounted thereon. To control the frequency response characteristics of the condenser, the electrodes are covered with a coating of a high-polymer resin such as epoxy resin.

3,624,432
ARRANGEMENT FOR SECURING ELECTRICAL CONDUCTOR BARS WITHIN SLOTS TO PREVENT VIBRATION

Karl Merz, Mannheim-Waldhof, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 19, 1969, Ser. No. 886,502
Int. Cl. H02k 9/00
U.S. Cl. 310—53 13 Claims

A dynamoelectric machine including an arrangement for securing conductor bars in their respective slots in the iron body thereof for preventing conductor vibration. A tubular member is located in each slot and extends parallel with the conductor bar. The tubular member is made from an elastic nonmagnetic material and is connected to a fluid pressure source by means of which the fluid pressure established within the tubular member is imparted to the conductor bar. The fluid pressure within the tubular members may be static,

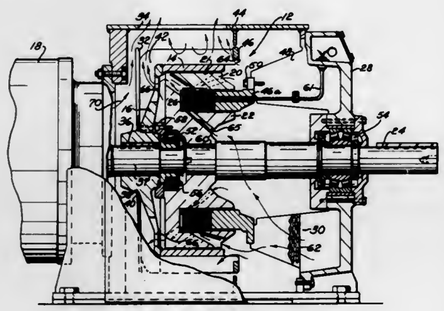


i.e. noncirculating, or the pressurized fluid, either liquid or gas, may be made to circulate through the tubular members, in which case a cooler unit may also be incorporated in the circulating system so as to remove heat developed in the slots by the conductor bars and which is transferred to the fluid.

3,624,433
COOLING SYSTEM FOR AN ELECTROMAGNETIC COUPLING APPARATUS

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed June 24, 1970, Ser. No. 49,261
Int. Cl. H02k 9/00
U.S. Cl. 310—60 9 Claims

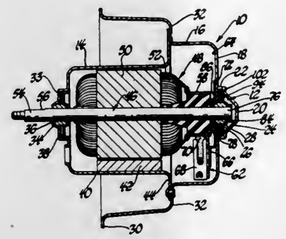


An electromagnetic coupling apparatus includes input and output members. The input member is drivingly connected with a rotatable annular inductor means and the output member is drivingly connected with rotatable pole means. The rotatable pole means and annular inductor means have a cooperative airgap relation. Field means is associated with the annular inductor means and pole means and is energizable to cause flux to traverse therebetween so that a predetermined amount of torque is transmitted from the input to the output member upon rotation of the input member. Baffle means is provided to improve the cooling efficiency of the electromagnetic coupling apparatus by reducing the amount of air heated by the electromagnetic coupling from recirculating through the electromagnetic coupling.

3,624,434
BEARING SUPPORT ASSEMBLY FOR DYNAMOELECTRIC MACHINES AND A METHOD OF MANUFACTURE THEREFOR

Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1970, Ser. No. 91,392
Int. Cl. H02k 5/16
U.S. Cl. 310—90 5 Claims

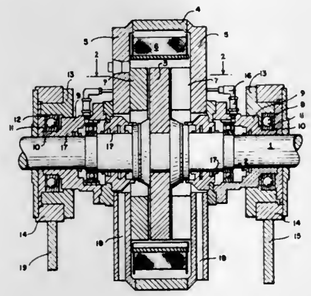


In a preferred form, a bearing support assembly for dynamoelectric machines carries one end of the machine shaft so as to limit axial shaft movement. The shaft end is rotatable in a bearing which is axially confined on the shaft by a thrust collar. First and second annular retaining springs are mounted in the end of one of the housing case parts so as to provide support for opposite sides of the bearing. The method of assembling the shaft to the case part includes mounting the first retaining spring, the bearing, and the thrust collar to the shaft end and mounting the second retaining spring within the case part. The shaft is inserted axially into the case part so that the bearing initially engages the second retaining spring. The shaft end is pressed further until the first retaining spring snaps into place within the case part, whereupon the bearing support assembly is completed and the shaft end is supported therein with a predetermined axial end play.

3,624,435
DISC-TYPE INDUCTOR EDDY CURRENT MACHINE

James E. Bunner, Erie, Pa., assignor to General Electric Company

Continuation of application Ser. No. 754,598, Aug. 28, 1968, now abandoned. This application July 29, 1970, Ser. No. 64,110
Int. Cl. H02k 49/02
U.S. Cl. 310—93 5 Claims

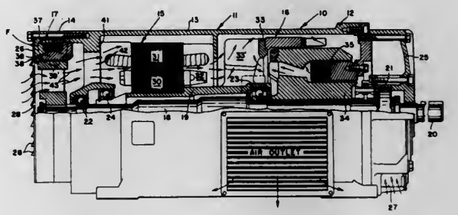


A disc-type inductor eddy current machine having pole pieces or teeth on the opposite sides of a spinning disc, the teeth being specially arranged to provide increased torque at less than the optimum speed of rotation of the disc.

3,624,436
AIR-COOLED ELECTROMAGNETIC BRAKE

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Nov. 13, 1970, Ser. No. 89,329
Int. Cl. H02k 49/04
U.S. Cl. 310—93 5 Claims

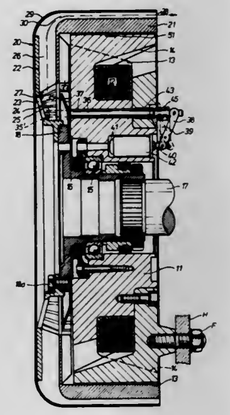


An air-cooled eddy-current brake utilized to retard and control the velocity of a driven or output shaft. The output shaft is driven by a variable speed coupling whose input or driving member is rotated at a constant velocity by a prime mover such as an AC electric motor. The eddy-current brake is in fluid communication with a fan device driven at a constant speed by the prime mover and thereby receives a substantially constant supply of cooling air regardless of the velocity of the output shaft.

3,624,437
EDDY CURRENT BRAKE

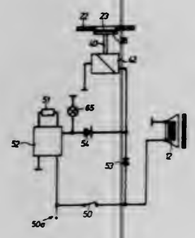
Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuffgart, Germany

Filed Jan. 18, 1971, Ser. No. 107,364
Int. Cl. H02k 49/04
U.S. Cl. 310—93 10 Claims



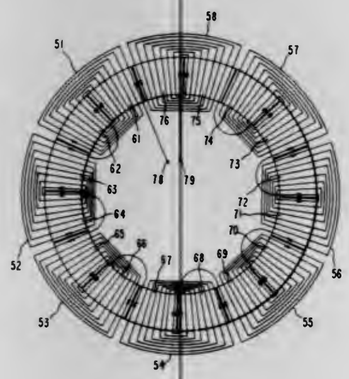
An eddy current brake wherein a cupped rotor surrounds the coil and the pole shoes of the stator and is provided with inlets for admission of cool air when the coil is excited to produce in the rotor eddy currents with attendant generation of heat. The rotor has blades which serve to draw air into an internal rotor chamber and to circulate such air along the surfaces of the stator and rotor when the coil is excited. The inlets are controlled by a valve which is mounted in the stator and is movable between closed and open positions by actuating means which are also mounted in the stator. Such actuating means comprises electromagnets or temperature-responsive devices which employ heat-expandible elements.

3,624,438
AIR-COOLED EDDY CURRENT BRAKE
Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 29, 1971, Ser. No. 111,033
Claims priority, application Germany, Feb. 5, 1970, P 20 05 139.2
Int. Cl. H02k *49/04*
U.S. Cl. 310—93 **14 Claims**



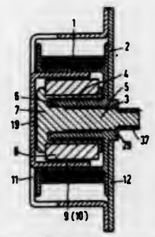
An eddy current brake wherein the rotor is braked and heated in response to energization of a coil in the stator. The rotor has a chamber which can receive cool atmospheric air by way of inlets machined into the rotor and sealable from the chamber by a valve which is carried by the stator. The rotor is further provided with blades which draw air into the chamber and expel such air into predetermined paths wherein the air exchanges heat with the stator and rotor when the valve is open. The opening of valve is controlled by electromagnets, thermostats or cylinder and piston units which cause the valve to open in response to energization of the coil and insure that the valve remains open for a predetermined or variable interval of time following deenergization of the coil to thus guarantee further cooling of the stator and rotor upon termination of a braking action.

3,624,439
ELECTROMECHANICAL ENERGY CONVERTER WITH LOW-INERTIA SPECIALLY WOUND COIL
Kiyoshi Tokutomi, 490 N. 8th St., San Jose, Calif.
Filed July 13, 1970, Ser. No. 54,190
Int. Cl. H02k *21/26*
U.S. Cl. 310—154 **18 Claims**



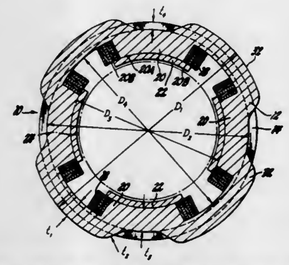
An electromechanical energy converter with low-inertia, coreless, nonmagnetic coils rotating in fields of high-magnetic flux provided by pairs of magnetic rows having connected like poles facing connected unlike poles provides increased output energy for a given input energy.

3,624,440
POLARIZED SYNCHRONOUS PILOT MOTOR
Hans-Peter Latussek, Feucht, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 11, 1970, Ser. No. 10,434
Claims priority, application Germany, Feb. 13, 1969, P 19 07 137.5
Int. Cl. H02k *21/00*
U.S. Cl. 310—162 **6 Claims**



Polarized synchronous pilot motor includes a rotary permanent magnet armature, a plurality of pole members of alternating polarity coaxially surrounding the armature, stator pole plates supporting the armature at both ends thereof, a stator coil for exciting the armature being disposed coaxially thereto, the stator coil being carried by a coil carrying member formed with projections of plastic material extending coaxially to the armature and serving directly as bearing support for the armature.

3,624,441
FIELD FRAME ASSEMBLY FOR DIRECT CURRENT DYNAMOELECTRIC MACHINES
Max E. Todd, and John V. Hellmann, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed June 10, 1970, Ser. No. 45,040
Int. Cl. H02k *1/00*
U.S. Cl. 310—179 **2 Claims**

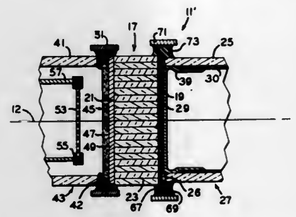


A field frame assembly for a DC motor which includes two end frames joined with a field member. The field member cross section has a serpentine configuration providing integral salient poles and an undulating exterior contour. A field coil is secured in a fixed relation to the salient poles and the field member provides a substantially constant cross section path for flux emanating from the field coil. The end frames afford mounting means for the DC motor and bearing support for the motor's rotor.

3,624,442
INDIVIDUALLY HERMETICALLY SEALED CATHODE-RAY TUBES CONNECTED BY FIBER OPTICS ARRAY
Harry E. Smithgall, and Elmer O. Stone, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated
Filed Dec. 18, 1969, Ser. No. 886,109
Int. Cl. H01j *31/00, 31/08, 29/00*
U.S. Cl. 313—2 **3 Claims**

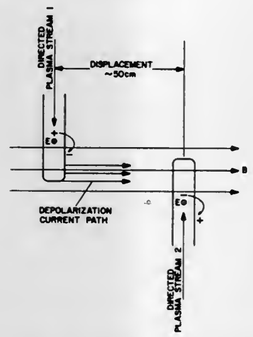
An improved scan-conversion device is provided in the form of a combination of two separate cathode-ray tube sec-

tions utilizing a common faceplate portion therebetween. A method of fabrication embodies peripherally sealing an envelope funnel to a first surface of the common faceplate, whereupon a cathodoluminescent screen is formed. Upon positioning and sealing an electron gun in the funnel portion of the first envelope, the envelope is evacuated, sealed and



processed to provide a display-forming section. A target electrode is then formed on the outer surface of the common faceplate, and a second envelope funnel, having an electron gun positioned and sealed therein, is peripherally bonded thereto; whereupon the second envelope is evacuated, sealed and processed to provide a display-reading section oriented to directly cooperate with the display-forming section.

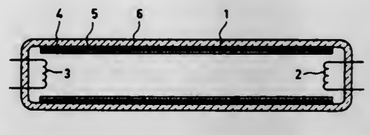
3,624,443
TWO-PLASMA GUN MAGNETIC FIELD LOADING METHOD
Jay E. Hammel, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
Continuation-in-part of application Ser. No. 766,417, Oct. 10, 1968, now abandoned. This application Aug. 31, 1970, Ser. No. 68,579
Int. Cl. H05h *1/02*
U.S. Cl. 313—161 **4 Claims**



A method of loading plasma into a containment device. Two plasma streams are directed into the containment geometry from opposite sides. The streams are offset from each other in the direction of the magnetic field so that their interaction causes the streams to stop within the containment geometry.

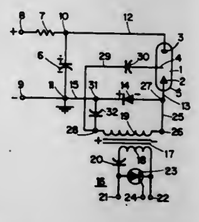
3,624,444
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP
Frank Berthold, Witten; Rolf Groth, Witten, and Rudiger Jost, Haaren, all of Germany, assignors to U. S. Philips Corporation, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,576
Claims priority, application Germany, July 5, 1969, P 19 34 299.5
Int. Cl. H01j *61/35*
U.S. Cl. 313—221 **4 Claims**

A low-pressure mercury vapor discharge lamp, having a glass envelope, whose inner side is provided with a layer of luminescent material and a light-transmitting layer of conducting tin oxide provided between this luminescent layer and the glass envelope.



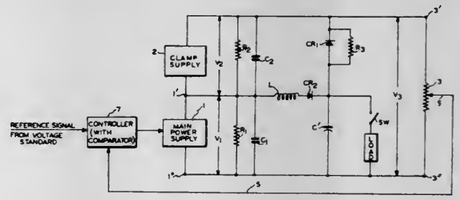
The tin oxide layer is provided with a light-transmitting protective layer of one or more of the colorless oxides of the elements from the secondary groups in column 4 and 5 of the periodical system, e.g. titanium dioxide or zirconium dioxide.

3,624,445
ELECTRIC SYSTEM FOR FIRING A GASEOUS DISCHARGE DEVICE
Ralph L. Cadwallader, Concord, Mass., assignor to EG&G, Inc., Bedford, Mass.
Filed May 8, 1970, Ser. No. 35,754
Int. Cl. H05b *41/19*
U.S. Cl. 315—241 **8 Claims**



This invention relates to circuits for initiating discharge of gaseous discharge devices having a trigger electrode. These circuits are arranged to apply a high-voltage trigger pulse between a trigger electrode and a main electrode of the discharge device and simultaneously to add a high-voltage pulse derived from the trigger pulse in series with the voltage on the main discharge capacitor to accelerate breakdown between the main electrodes of the discharge device.

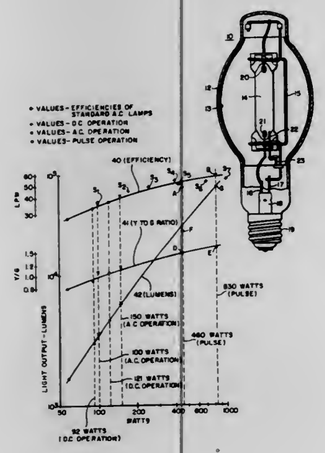
3,624,446
ELECTRICAL ENERGY STORAGE AND FLASHING APPARATUS
Jacob Goldberg, Cambridge, Mass., assignor to United States Scientific Instruments, Inc., Watertown, Mass.
Filed Oct. 6, 1969, Ser. No. 863,964
Int. Cl. H05b *37/00;* **H02m** *3/18*
U.S. Cl. 315—241 **14 Claims**



This disclosure relates to electrical energy storage apparatus in which a novel clamp supply voltage and feedback control is provided in a series resonant charging energy storage system to prevent the storage elements from developing voltages that exceed a predetermined voltage and that

would normally be produced by the action of the series resonant charging.

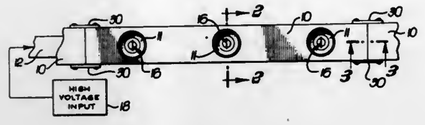
3,624,447
METHOD OF OPERATING A HIGH-PRESSURE GASEOUS DISCHARGE LAMP WITH IMPROVED EFFICIENCY
Robert G. Young, Nutley; Daniel A. Larson, Cedar Grove, and Leslie M. Marks, Jr., Nutley, all of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 25, 1969, Ser. No. 836,316
Int. Cl. H05b *37/00, 41/16*
U.S. Cl. 315—246 **6 Claims**



The efficiency of a conventional high-pressure gaseous discharge lamp, such as a 400 watt mercury-vapor lamp, is increased by pulse-operating the lamp at power loadings which are higher than the average rated power input of the lamp. The high-power pulses are of such magnitude and duration that the resultant average power input does not exceed the power loading for which the lamp is designed and rated. This is achieved by generating a series of high-voltage pulses with a suitable circuit and applying the pulses to the lamp electrodes. Optimum results in the case of conventional high-pressure mercury-vapor discharge lamps having ratings of from 100 to 1,000 watts are obtained with pulses that have a magnitude of from 60 to 600 volts, are 0.2 to 5 milliseconds in duration and have a repetition rate of from 50 to 500 pulses per second.
In order to prevent arc extinction between pulses, the latter are preferably superimposed on a "keep-alive" DC potential that constitutes from three to 20 percent of the rated average power input of the lamp.

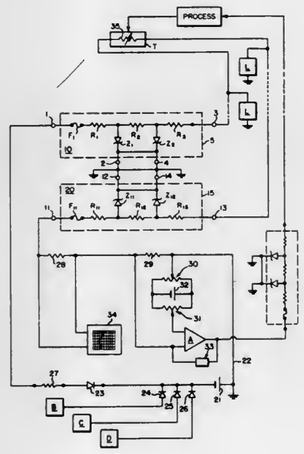
3,624,448
ION GENERATION APPARATUS
Donald G. Saurenman, Whittier, and Harold W. Smith, San Marino, both of Calif., assignors to Consan Pacific Incorporated, Whittier, Calif.
Filed Oct. 3, 1969, Ser. No. 863,522
Int. Cl. H05b *3/00*
U.S. Cl. 317—4 **15 Claims**

The invention concerns ion generation and dispensing apparatus having module form with an electrically conductive bus to which groups of ion generating radiants or clusters are connected, the modules being constructed for connection in series; the provision of means to dispense vapor in air flow created by the flow of such ions; means to use such ions to



effect particle collection on surfaces; and means to control such ion polarity in relation to external conditions.

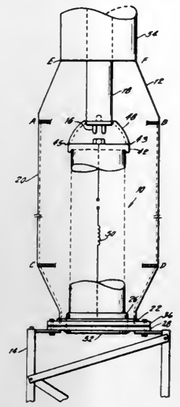
3,624,449
INTRINSICALLY SAFE TRANSMITTER SYSTEM
Martin J. Morgan, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,372
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **10 Claims**



A DC regulator-type transmitter in a hazardous area is connected by a pair of electrical barriers to a DC source in a safe area to define a closed DC loop in which the current is controlled by the transmitter in proportion to a variable condition in the hazardous area. One barrier limits the voltage with respect to ground of metering resistance in the safe area of the loop connected to the source side grounded in the safe area. The other barrier limits the source voltage with respect to ground. Voltage drop across the metering resistance provides a measure of the variable condition.

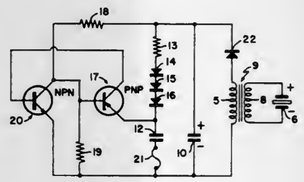
3,624,450
METAL ENCLOSED GAS INSULATED LIGHTNING ARRESTER
Howard W. Graybill, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Apr. 24, 1970, Ser. No. 31,589
Int. Cl. H02h *1/04*
U.S. Cl. 317—62 **4 Claims**

Sealing rings hermetically seal the opposite ends of a metal enclosed arrester housing to prevent leakage of pressurized, high dielectric gas inside the arrester, and a frangible diaphragm is included to permit exhaust of hot gases into the



atmosphere rather than into the pressurized gas surrounding the unit.

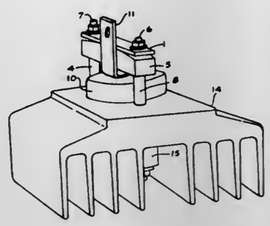
3,624,451
EFFICIENT LOW VOLTAGE PIEZOELECTRIC POWER SUPPLY
Godfrey R. Gauld, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed May 4, 1970, Ser. No. 34,239
Int. Cl. F23g *7/02*
U.S. Cl. 317—80 **2 Claims**



An electric device for efficient transfer of power from a piezoelectric crystal source to a capacitor. The piezoelectric crystal is coupled to a transformer, the secondary of which is shunted by a series combination of a rectifying device and a storage capacitor, all in such manner that energy is transferred from the piezoelectric crystal, essentially a first capacitance device, to the storage capacitor, a second capacitance device, with a new order of efficiency. In a specific embodiment of the invention the piezoelectric crystal and two capacitances are associated with biasing networks and a transistorized switching circuit and a firing circuit in such manner that the energy transferred into the storage capacitor is utilized to fire a squib.

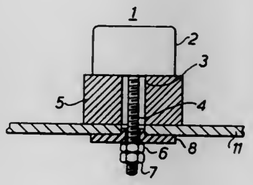
3,624,452
HEAT SINK MOUNTINGS FOR RECTIFIER DEVICES
John M. Hayward, and Christopher E. Pilkington, both of London, England, assignors to Westinghouse Brake & Signal Company Limited, London, England
Filed Nov. 3, 1969, Ser. No. 873,383
Claims priority, application Great Britain, Nov. 26, 1968, 55,964/68
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 **6 Claims**

A mounting for a semiconductor device includes a leaf spring capable of producing a predetermined pressure at a point along the length thereof responsive to a given deflection of the point, the spring bearing on a convex surface of a block and the semiconductor device being clamped between the block and a base member in the form of a heat sink. Variation in the clamping pressure is provided by tensioning screws and a gap between the leaf spring and the surface of



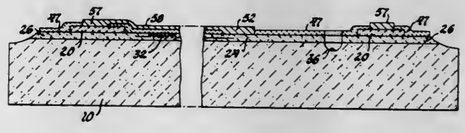
the block is accessible during the application of tension so that a predetermined deflection of the spring can be gauged and a selected pressure thus applied to the device.

3,624,453
TRANSISTOR DEVICES AND AMPLIFIERS
Ernest W. Rogers, Horley, and Lewis P. Learney, Crawley Down, both of England, assignors to Redifan Limited, London, England
Filed May 19, 1970, Ser. No. 38,727
Claims priority, application Great Britain, July 14, 1969, 35,345/69
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **10 Claims**



An integral transistor and emitter resistor assembly in which a hollow, cylindrical, low-reactance, resistive element is located around the transistor mounting stud for connection between the transistor base electrode and chassis. Optional insulating sleeve and washer members permit the resistor to be mounted above or below the chassis.

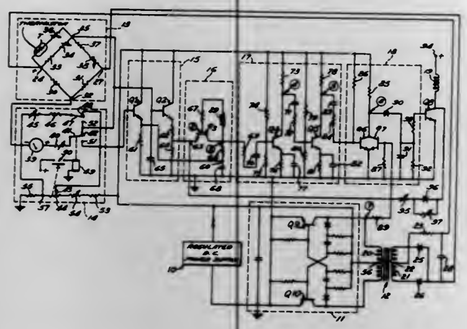
3,624,454
MESA-TYPE SEMICONDUCTOR DEVICE
Allen R. Adkinson, Sharpsville; Richard G. Carter, Sharpsville, and Glen E. Harland, Jr., Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 15, 1969, Ser. No. 857,770
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 A **9 Claims**



A mesa-type semiconductor device having integrally formed circuit components thereon including resistors. One form of this device includes, on a monolithic chip or wafer, a mesa-type Darlington amplifier having etch moats. Bleeder resistors are integrally formed between the etch moats eliminating several wire bonds which would be necessary to

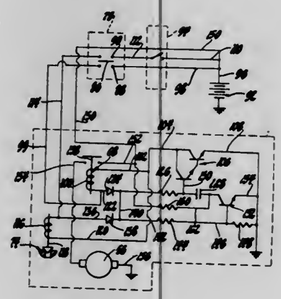
interconnect the resistors with the active regions of the wafer.

3,624,455
SIGNAL-COMPARING SYSTEM, PARTICULARLY FOR TEMPERATURE-SENSING
Melvin W. Hillman, P. O. Box 1186, Hobe Sound, Fla.
Filed Aug. 28, 1970, Ser. No. 67,744
Int. Cl. H01h *47/26*
U.S. Cl. 317—132 **25 Claims**



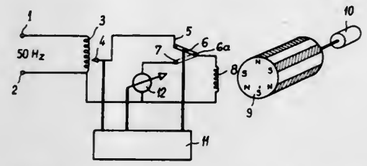
A temperature-sensing system having a Thermistor in a Wheatstone bridge whose output is compared against a reference potentiometer. The two signals are applied through emitter followers to a chopper excited by an oscillator. A phase discriminator compares the amplified chopper output against the oscillator output. The phase discriminator controls the energization of a relay coil. A feedback circuit between the relay coil and the chopper increases the apparent difference between the two input signals to the chopper, so as to increase the apparent temperature error.

3,624,456
ELECTRONIC CONTROLLER FOR AUTOMATIC LEVELING SYSTEM
James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 13, 1970, Ser. No. 19,307
Int. Cl. H01h *47/32, 47/18*
U.S. Cl. 317—141 S **4 Claims**



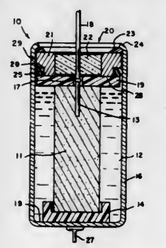
In preferred form, an electronic control for an electrically operated automatic vehicle leveling system which includes a relay coil and a solenoid operated valve coil that are both connected to one terminal of a three terminal solid-state switching device in the form of a pair of transistors in a Darlington configuration. The base emitter junction of the Darlington pair is connected to a RC timing circuit through a low cost switching transistor. An undamped height sensor switch connects the charging circuit to the positive terminal of a vehicle battery and the switching transistor closes to charge a capacitor of the RC circuit from a negative reference voltage to a positive turn on voltage at the base of the Darlington pair. Following a predetermined time delay the Darlington pair is turned on to complete an energization circuit for one or the other of the coils. If the undamped switch opens before the end of a time delay cycle, the positive side of the capacitor is recharged to the battery voltage through a reset circuit to prevent normal road movements from affecting the operation of the circuit.

3,624,457
METHOD OF STANDARDIZING THE OUTPUT VOLTAGE OF PERMANENT MAGNET CONTROL ALTERNATORS
Claude-Edmond Lombard, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France and Societe Industrielle et Commerciale des Automobiles Peugeot, Paris, France
Continuation of application Ser. No. 675,979, Oct. 17, 1967. This application Aug. 7, 1970, Ser. No. 62,124
Claims priority, application France, Nov. 9, 1966, 83148
Int. Cl. H01f *13/00;* **H02p**
U.S. Cl. 317—157.5 **4 Claims**



This application relates to a method of standardizing tachometric control alternators by demagnetizing to a standard level the permanent magnets of the armature. The armature containing permanent magnets revolves in or in front of a stator having one or more windings. The standardization is effected by rotating the permanent magnet armature at a standard speed while flowing a 50-cycle current of increasing intensity through the field windings. The permanent armature is revolved at a speed such that the frequency it generates is different from the one supplied to the windings. When the magnets have been demagnetized to the desired standard level, the control alternator is ready for use.

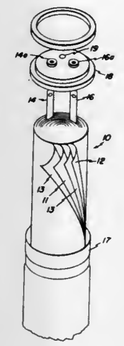
3,624,458
CAPACITOR HAVING A GLASS-TO-METAL SEAL AND AN ELASTOMERIC SEAL
John D. Howell, Lake Park, Fla., and Stanley L. Krasienko, Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Continuation-in-part of application Ser. No. 721,234, Apr. 15, 1968, now Patent No. 3,515,951, dated June 2, 1970. This application Nov. 26, 1969, Ser. No. 880,393
Int. Cl. H01g *9/06, 9/10*
U.S. Cl. 317—230 **15 Claims**



A resilient means cooperatively associated with the glass-to-metal seal and the sidewall of the can is utilized for substantially preventing electrolyte materials including gases contained within a capacitor can having an open end closed by a glass-to-metal seal from reaching the surface or surfaces of the glass-to-metal seal and the surface or surfaces of the can which are to be connected together by soldering, welding or the like. However, the resilient means contains an opening

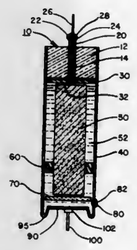
of sufficient size to allow the electrolyte to reach the film forming metal anode riser-terminal joint to cure any defects in the dielectric oxide formed thereon.

3,624,459
ELECTROLYTE COMPOSITION FOR WET ELECTROLYTIC CAPACITORS
John F. Brown, Jr., Schenectady, N.Y.; Donald R. Ochar, Columbia, S.C., and David A. Vermilyea, Schenectady, N.Y., assignors to General Electric Company
Filed Dec. 3, 1969, Ser. No. 881,852
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 **7 Claims**



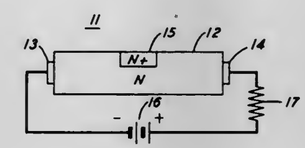
The use of surface active agents as inhibitory additives to the electrolyte in wet electrolytic capacitors employing aluminum electrodes is described. Each molecule of the inhibiting amphiphilic substances contains a strongly inhibiting hydrophilic group attached to a hydrophobic group.

3,624,460
ELECTROLYTIC CAPACITOR EMPLOYING GLASS-TO-METAL HERMETIC SEAL
Edward M. Correll, West Columbia, S.C., assignor to General Electric Company
Filed Dec. 29, 1969, Ser. No. 889,004
Int. Cl. H01g *9/10*
U.S. Cl. 317—230 **8 Claims**



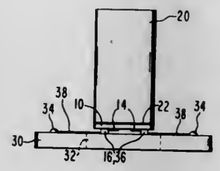
An electrolytic capacitor is provided having a metal-to-glass hermetic seal assembly wherein a glass body containing an effective amount of chromic oxide is directly bonded outwardly and inwardly to a film-forming metal such as tantalum. The glass has a mean thermal coefficient of expansion which is not greater than that of the metal of the seal and does not differ therefrom substantially over a wide temperature range, thus resulting in a substantially matched or slight compression type of seal. All components of the seal exposed to contact with the electrolyte are resistant to sulfuric acid. In one embodiment, utilizing an all-welded tantalum case, a substantial reverse voltage capability is made possible. A fluorocarbon spacer ring separating the porous anode from the casing wall and a thin ceramic heat shield for protection of the anode during welding assembly of the case also provide a cushioning effect for vibration and shock resistance.

3,624,461
TWO-VALLEY SEMICONDUCTOR OSCILLATOR
Toshiya Hayashi, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 11, 1966, Ser. No. 564,071
Int. Cl. H01l *9/00*
U.S. Cl. 317—234 R **2 Claims**



Modifications are disclosed in two-valley semiconductor oscillators, made of materials such as N-type gallium arsenide, that alter the characteristic oscillatory frequency of each device by changing the electric field within the device. Such changes are effected by varying the resistivity of the semiconductor material, either locally or continuously throughout the device; by altering the cross section of the device, either continuously or in steps; or by changing the point at which the field is applied to the semiconductor material.

3,624,462
FACE-BONDED PHOTOARRAY PACKAGE
William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y.
Filed July 3, 1969, Ser. No. 838,882
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **4 Claims**

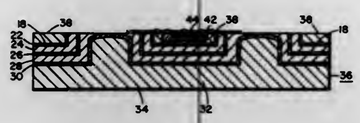


A fiber-optics shield overlying the principal light-sensitive surface of a photoarray device provides protection from mechanical damage while eliminating unwanted crosstalk between components. The package also provides a member extending from the photoarray to provide for the dissipation of heat.

3,624,463
METHOD OF AND APPARATUS FOR INDICATING SEMICONDUCTOR ISLAND THICKNESS AND FOR INCREASING ISOLATION AND DECREASING CAPACITY BETWEEN ISLANDS
Uryon Sahari Davidsohn, Scottsdale, Ariz., assignor to Motorola Inc., Franklin Park, Ill.
Filed Oct. 17, 1969, Ser. No. 867,193
Int. Cl. H01l *19/00*
U.S. Cl. 317—234 **10 Claims**

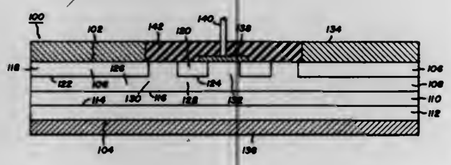
The thickness of a single crystal island, which forms part of a slab of material, is indicated by the number of lines appear-

ing on the surface of the slab. Since the lines are edges of thin layers of an insulating material, the insulating layer or



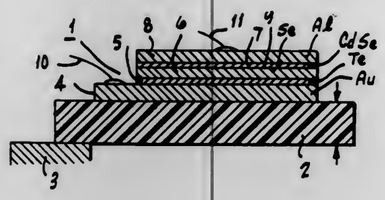
layers also act to isolate the single crystal islands from each other and also to reduce the capacity between the islands.

3,624,464
PERIPHERAL GATE SCR WITH ANNULAR BALLAST SEGMENT FOR MORE UNIFORM TURN ON
Finis E. Gentry, Skaneateles, N.Y., assignor to General Electric Company
Filed Dec. 12, 1969, Ser. No. 884,658
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **3 Claims**



An SCR is formed with a diffused region interposed between the gate and adjacent edge of the emitter layer to increase the lateral resistance offered to the gate signal and thereby assure more uniform conduction of the gate signal. The gate metallization shorts the adjacent edge of the junction associated with the diffused region, and the shorted edge is substantially uniformly spaced from the adjacent edge of the emitter layer so that the lateral resistance to signal current is substantially uniformly distributed.

3,624,465
HETEROJUNCTION SEMICONDUCTOR TRANSDUCER HAVING A REGION WHICH IS PIEZOELECTRIC
Robert M. Moore, Skillman, N.J., assignor to RCA Corporation
Filed June 26, 1968, Ser. No. 740,161
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **14 Claims**



A stress sensitive semiconductor device having two adjacent semiconductor regions at least one of which is piezoelectric, with a PN-heterojunction between the regions. Upon application of stress to the heterojunction, the polarization of the piezoelectric semiconductor is altered to modulate current flow across the PN junction.

3,624,466
DEPLETION-TYPE IGFET HAVING HIGH-CONDUCTIVITY N-TYPE CHANNEL
George L. Schnable, Lansdale, Pa., assignor to General Instrument Corporation, Newark, N.J.
Filed Mar. 2, 1970, Ser. No. 15,676
Int. Cl. H01l *5/00, 11/00, 7/00*
U.S. Cl. 317—235 **10 Claims**

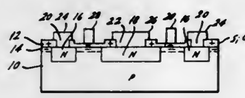
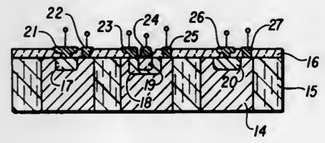


FIG. 1D. WAFER AFTER MAKING OXIDE CUTS AND METALLIZING SOURCE, DRAIN, AND GATE

A depletion-type insulated gate field effect transistor (IGFET) comprising (1) a P-type semiconductive wafer containing N-type source and drain regions, and a relatively low resistivity N-type region at the surface of said wafer which provides a conductive channel between said source and drain regions, (2) an oxide insulating layer overlying said wafer, and (3) a conductive gate electrode overlying the part of said insulating layer which overlies said conductive channel. During its fabrication, the IGFET is heat treated by baking it at at least 500° C. for about several hours or longer; this provides in said oxide layer a sufficient density of positive charges to induce more than about 5×10^{11} electrons per square centimeter at the surface of the wafer between the source and drain regions, thereby to create said N-type region at the surface of said wafer.

3,624,467
MONOLITHIC INTEGRATED-CIRCUIT STRUCTURE AND METHOD OF FABRICATION
Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 17, 1969, Ser. No. 799,721
Int. Cl. H01l *7/36, 19/00*
U.S. Cl. 317—235 R **7 Claims**

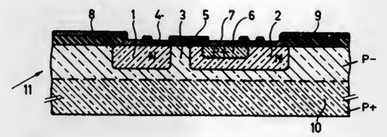


Polycrystalline silicon having a needlelike oriented grain structure is found to have anisotropic electrical and thermal properties. A monolithic integrated-circuit structure having a plurality of monocrystalline silicon islands is fabricated in a polycrystalline silicon matrix having such a grain structure, with the grain direction oriented to provide maximum electrical resistivity between the monocrystalline islands, and maximum thermal conductivity toward a header or other heat sink. In one embodiment, the monocrystalline islands and polycrystalline matrix are grown by vapor deposition of silicon on a monocrystalline substrate provided with a suitable masking pattern, whereby the polycrystalline material grows on the mask concurrently with the growth of monocrystalline silicon on the unmasked areas of the substrate.

3,624,468
INSULATED GATE FIELD-EFFECT TRANSISTOR WITH OPPOSITE-TYPE GATE CONNECTED REGION INSET IN SOURCE OR DRAIN
Frederik Leonard Sangster, Emmasingel, Eindhoven, and Rijkent Jan Nienhuis, Nijmegen, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,725
Claims priority, application Netherlands, Apr. 23, 1968, 6805785; Mar. 25, 1969, 6904620
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **5 Claims**

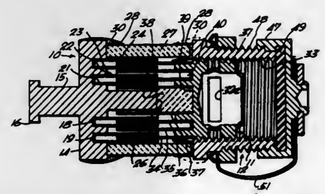
An insulated gate field-effect transistor is described in which an additional region of the opposite type conductivity

is inset in the source or drain regions and connected to the gate. The additional junction thereby formed is reverse biased during operation. When inset in the drain, the reverse-biased junction provides additional gate-drain capacitance for a Miller integrator circuit, whereas when inset in the



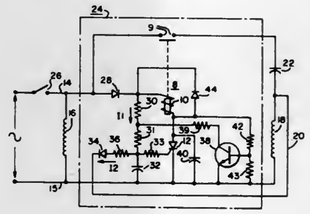
source, the additional junction can act as a safety diode between the gate and source. The low breakdown voltage of the additional junction due to the high-impurity content of the regions increases the protection afforded by the safety diode.

3,624,469
ANTIBACKLASH SCREW-THREAD ADJUSTABLE ROTOR FOR LOW-LOSS CAPACITOR
John E. Johanson, Boonton, N.J., assignor to Johanson Manufacturing Corporation, Boonton, N.J.
Filed Dec. 9, 1970, Ser. No. 96,308
Int. Cl. H01g *5/10*
U.S. Cl. 317—249 T **5 Claims**



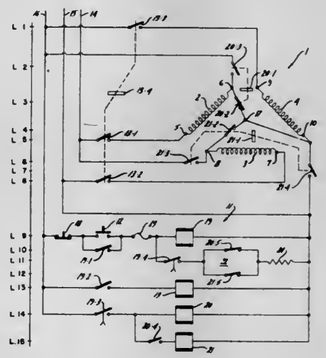
A low-loss capacitor having hollow cylindrical electrodes which are coaxially interleaved. The capacitance is varied by rotation of the rotor electrodes which are mounted on a screw member for axial displacement with respect to the stator electrodes when the screw member is turned. The screw member has a frictional-locking means in the form of a pair of diametrically opposed, outwardly bulging, thin-walled sections interspaced by through openings. A square opening is provided within the outer end of the screw member to permit adjustment thereof for tuning by use of a nonmetallic tuning rod tool of complemental square cross-sectional shape.

3,624,470
SINGLE-PHASE MOTOR-STARTING CONTROL APPARATUS
Richard A. Johnson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,849
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 G **5 Claims**



A starting circuit for a single-phase electric motor is provided that includes solid-state circuit means connected with the auxiliary winding for developing a signal proportional to motor speed and controlling an electromechanical relay that permits application of line power to the auxiliary winding only upon predetermined speed conditions.

3,624,471
APPARATUS FOR PROGRESSIVE PHASE SWITCHING FROM WYE TO DELTA CONNECTION OF THREE-PHASE MOTOR
Leslie G. Japp, Toronto, Ontario; John F. Phenix, Agincourt, Ontario, and Robert Sutherland, Scarborough, Ontario, all of Canada, assignors to A.O. Smith Corporation, Milwaukee, Wis.
Filed Apr. 22, 1970, Ser. No. 30,703
Int. Cl. H02p *5/28*
U.S. Cl. 318—225 R **8 Claims**

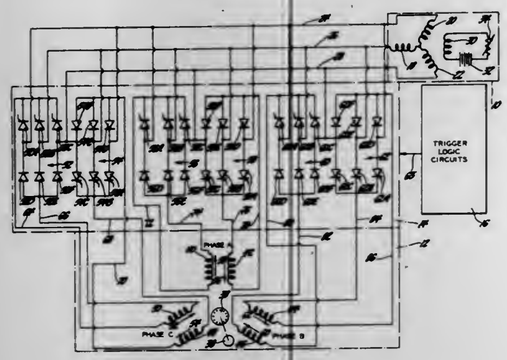


A three-phase motor has three phase windings connected in a wye configuration for starting. Contactors are progressively and in timed sequence actuated to connect the wye windings into a delta configuration by varying the winding connection with at least one winding energized at all times. A circuit provides timed switching by selectively opening and then closing related contacts to selectively disconnect and connect one or more windings according to a preselected sequence to the powerlines. The timed switching minimizes current transients and establishes a smooth transition. The control circuit includes an incomplete sequence current-sensing element to disconnect the control circuit and thereby the phase windings in response to a selected excessive or extended intermediate sequence operation.

3,624,472
CYCLOCONVERTER MOTOR SYSTEM
Donald E. Graham, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 9, 1970, Ser. No. 79,465
Int. Cl. H02p *5/40;* **H02m** *1/08, 7/44*
U.S. Cl. 318—227 **2 Claims**

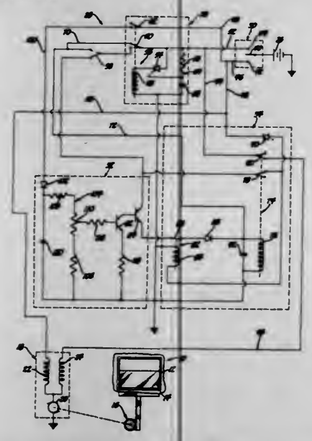
A cycloconverter motor system which includes 18 controlled rectifiers and 18 diodes connected to provide six unidirectionally conductive bridge rectifier switching means for supplying a three-phase AC induction motor from a three-phase AC source. The induction motor is provided with two identical three-phase windings, each of which is comprised of three identical electrically isolated windings. Each of the six windings is connected with a respective one of the six unidirectionally conductive switching means. In this manner, each phase winding is comprised of two identical

windings which are energized by their respective unidirectionally conductive switching means sequentially to



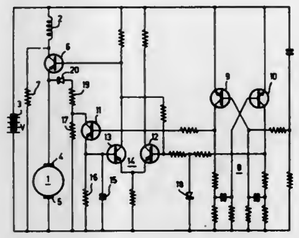
provide oppositely directed magnetic fields and motor operation.

3,624,473
CONTROL CIRCUIT FOR POWER WINDOW REGULATOR
Samuel B. Robbins, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 25, 1970, Ser. No. 40,315
Int. Cl. H02p *1/22*
U.S. Cl. 318—266 **6 Claims**



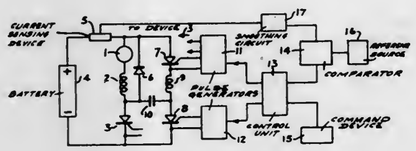
Apparatus for opening and closing a window in accordance with a manually operated switch. A reversible electric motor having first and second field windings and an armature drivably connected to the window opens the window upon placement of the switch in a window-opening setting, which causes energization of the first winding. When the switch is placed in a window-closing setting the second winding is energized and the motor closes the window. Should the motor stall when closing the window due to the window encountering an obstacle the resulting decrease in the armature voltage below a certain level causes a voltage-sensing network and a current-directing network to deenergize the second winding and energize the first winding, thereby opening the window until the switch is removed from the window-closing setting or the window is fully opened.
A time delay network is provided to prevent the voltage-sensing network from monitoring the armature voltage for a predetermined time after the switch is placed in the window-closing position so as to preclude voltage transients caused by starting the motor from effecting reversal of the motor during the predetermined time.
A limit switch is positioned so as to be responsive to the window position and prevents the current-directing network from reversing the window travel when the window is substantially closed so as to allow the motor to stall when sealing the window closed.

3,624,474
SERIES MOTOR ON-OFF SPEED CONTROL CIRCUIT HAVING MEANS FOR GENERATING A COMPLEMENTARY FIELD CURRENT
Jean Marie Nolf, Forst, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 22, 1968, Ser. No. 715,383
Claims priority, application Belgium, Mar. 24, 1967, 41,578
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **13 Claims**



A speed control circuit for a series motor includes a periodically operable transistor switch in series with the motor field winding and armature for controlling the width of the motor energizing pulses as a function of its speed. A sampling circuit samples the armature back emf only when the transistor switch is off. The sampled pulses of armature emf are fed to an integrating circuit which in turn supplies a control signal to the base of the transistor switch to vary its on-off time as a function of the sampled back emf. A resistor is connected across the armature and the transistor switch in order to energize the series field with a fixed current during each sampling period.

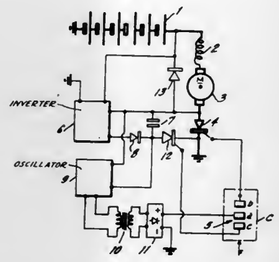
3,624,475
DUTY CYCLE CONTROL APPARATUS
Brian Turton Smith, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England
Filed Mar. 24, 1969, Ser. No. 809,877
Claims priority, application Great Britain, Apr. 11, 1968, 17,436/68
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **5 Claims**



A duty cycle control apparatus for a traction motor or the like is provided which controls the mean voltage applied to an inductive load from a direct current source in response to an applied control signal. The apparatus includes a semiconductor controllable rectifier connected between the source and load, a control circuit for rendering the semiconductor controllable rectifier alternately conducting and nonconducting in accordance with a variable mark-to-space ratio, a unidirectionally conductive freewheeling current path around the load for enabling load current to flow during the time between "on" periods of the rectifier, and a current sensing device for producing a current-limiting signal indicative of mean current flowing from the source through the rectifier.

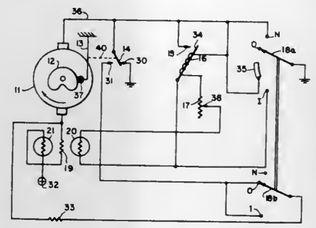
The control circuit acts, responsive to the current-limiting signal, to impose a restriction upon the available maximum mark-to-space ratio so as to tend to maintain the mean current in the controllable rectifier within predetermined limits without correspondingly limiting the current in the load.

3,624,476
ELECTRONIC DEVICE FOR REGULATING THE FEED OF A DC MOTOR, ESPECIALLY INTENDED FOR THE ELECTRIC TRACTION OF VEHICLES
Raffaello Bruscaglioni, Milan; Teodoro Vadala, Monza, and Vito Tateo, Milan, all of Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy
Filed Oct. 23, 1969, Ser. No. 868,805
Claims priority, application Italy, Mar. 25, 1969, 14505 A/69
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 **5 Claims**



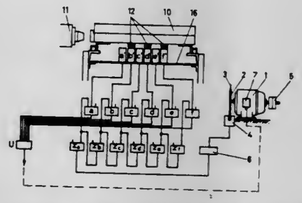
Regulation of the speed, current and torque of a DC motor is effected by a novel inverter-oscillator combination controlling the charge on a capacitor, the discharge of which serves to block a control diode through which the direct current voltage for the motor is supplied.

3,624,477
INTERMITTENT CONTROL WITH A NORMALLY OPEN THERMAL SWITCH FOR WINDSHIELD WIPER SYSTEM
Willis E. Rieman, Skaneateles; John J. Beck, Seneca Falls, and Edward R. Betz, Auburn, all of N.Y., assignors to Gulf & Western Systems Company, New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,236
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 **12 Claims**



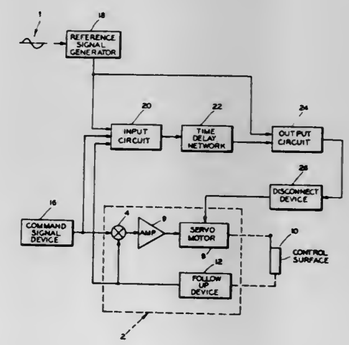
An intermittent control for a windshield wiper system. One of the two motor terminals is connected to a battery and the second motor terminal is connected to ground through the conventional park switch. In parallel with the park switch is a bimetal element whose contacts are normally open and are closed as a resistance element heats up. The resistance element is connected in series with a potentiometer between the battery and ground. During each wipe cycle, no current flows through the resistance element and potentiometer, the resistance element cools and the bimetal element contacts open. During each dwell period, current flows through the resistance element and the potentiometer to heat the bimetal element. The dwell period is determined by the setting of the potentiometer. It is also possible to automatically vary the dwell period by including a thermistor in series with the resistance element, the thermistor being heated by an additional resistance element connected in the motor circuit. The drier the windshield, the greater the motor current and the higher the temperature of the additional resistance element. The impedance of the thermistor increases with the temperature of the additional resistance element to increase the dwell period.

3,624,478
BINARY CONTROL CIRCUIT FOR MOLD-FILLING DEVICE
Johann Schwab, Vienna, and Helmut Blaha, both of Vienna, Austria, assignors to SEMPERIT Osteneichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
Continuation of application Ser. No. 697,466, Jan. 12, 1968, now abandoned. This application Sept. 3, 1970, Ser. No. 69,492
Int. Cl. H02p *3/04*
U.S. Cl. 318—470 **3 Claims**



The binary control circuit comprises a series of "OR" gates the first inputs of which are connected to a corresponding series of proximity sensors. The sensors are activated by the approach of sensor controlling members arranged according to a predetermined binary code. The second inputs of the "OR" gates are connected to a corresponding chain of bistable stages of a binary counter. The outputs of respective "OR" gates are connected to corresponding inputs of an "AND" gate. The binary counter is fed by a continuous train of pulses from a pulse generator. As soon as the binary number on the bistable counter stages equals to a complementary number of the predetermined code, all inputs of the "AND" gate are under a signal and the "AND" gate releases an output control signal that stops the mold filling operation.

3,624,479
FAIL INACTIVE, NONREDUNDANT TIME DELAY MONITOR
John G. Callas, Wood-Ridge, N.J., assignor to The Bendix Corporation
Filed May 4, 1970, Ser. No. 34,037
Int. Cl. G05b *23/02*
U.S. Cl. 318—565 **11 Claims**



A nonredundant time delay monitor for a control system of the type responsive to system command and followup signals.

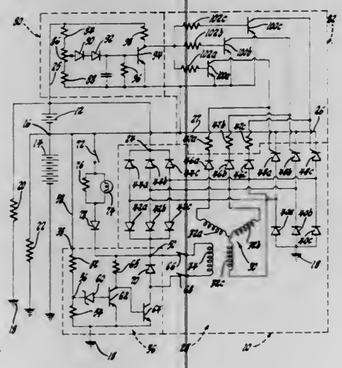
The monitor provides an alternating signal which switches to a constant level signal for disconnecting the control system from its load for internal monitor failures and for system failures when the difference between the command and followup signals exceeds a predetermined threshold for a specified interval.

3,624,480

DUAL BATTERY CHARGER HAVING DUAL OUTPUT

Robert W. Campbell, and Donald L. Cummins, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,590
Int. Cl. H02j *7/10, 7/24*
U.S. Cl. 320—15 **4 Claims**



First and second batteries are connected in series between a point of constant reference potential and the output terminal of a first full-wave bridge rectifier. The output terminal of a second full-wave bridge rectifier comprising silicon-controlled rectifiers (SCR) is connected to a junction between the batteries. The respective legs of the first and second rectifiers are each connected to the same output winding of the stator of an alternator. A first voltage detector responsive to the voltage across the first and second terminals causes the SCR's to be nonconductive when the voltage across the first and second terminals is less than a first predetermined voltage. A second voltage detector controls the current through the field winding of the alternator in response to the voltage at the junction between the batteries to maintain a second predetermined voltage thereat. The drop in current and therefore voltage at the junction occurring an instant after the SCR's are rendered nonconductive causes the second voltage detector to increase the current and voltage at the first output to increase by an amount sufficient to reestablish the second predetermined voltage at the junction.

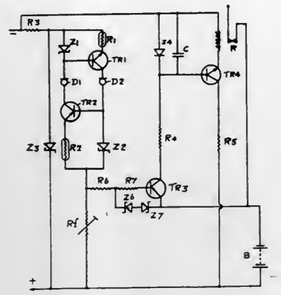
3,624,481

CONTROLLED-CURRENT BATTERY CHARGERS

James A. Macharg, 16, Elmfield Park, Gosforth, Newcastle-Upon-Tyne, 3, England

Filed May 23, 1969, Ser. No. 827,182
Claims priority, application Great Britain, May 27, 1968, 25,323/68, Aug. 27, 1968, 40858/68
Int. Cl. H02j *7/10*
U.S. Cl. 320—39 **26 Claims**

A battery charger more particularly for use in charging batteries of the nickel-cadmium type in order to avoid the undesired effects caused by overcharging, wherein a variable reference voltage is derived across a resistor from a constant-current device whose current may be controlled and this derived reference voltage is compared with the terminal voltage existing across the battery being charged, the result of this comparison causing the charging current to be switched off until the battery voltage drops below the reference voltage, whereby the state of charge of the battery is sensed through the ON/OFF ratio of the charging current and appropriate adjustments may be made to the reference voltage in order to achieve a substantially complete charging of the



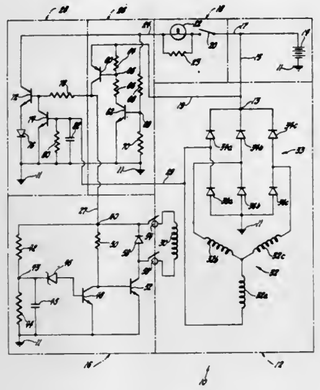
battery in the minimum time without any overcharging occuring.

3,624,482

FIELD DISCONNECT AND INDICATOR CIRCUIT FOR A VEHICLE CHARGING SYSTEM

Donald O. Ruff, Anderson, and William J. Sensing, West Lafayette, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,946
Int. Cl. H02j *7/24*
U.S. Cl. 320—48 **3 Claims**



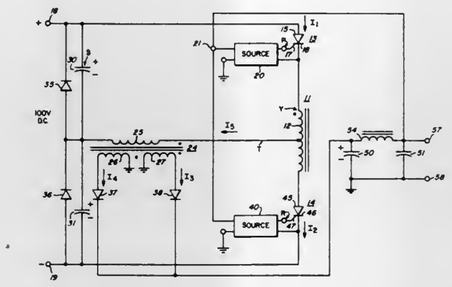
First and second NPN transistors connected by a single conductor to one side of an indicator lamp the other side of which is connected to the output of a vehicle charging system by an ignition switch. Upon closure of the switch, the first transistor is rendered conductive to turn on a PNP transistor which then connects the vehicle battery to the field winding in the alternator of the charging system. When the output of the charging system is below a predetermined value, the second NPN transistor is biased to conduct current through the indicator lamp and also through a diode connected forwardly between the second NPN and ground. The voltage drops through the diode and the second NPN provide sufficient bias to the first NPN to maintain conduction therethrough and in turn through the PNP

3,624,483

SWITCHING REGULATOR USING LOW-VOLTAGE DIODES

Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Information Systems, Inc.

Filed Aug. 24, 1970, Ser. No. 66,277
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **5 Claims**



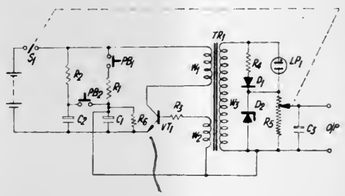
A pair of silicon-controlled rectifiers, a center tapped inductor, a pair of commutating capacitors, a transformer, and a pair of low-voltage diodes convert a relatively large value of unregulated DC voltage to a relatively small value of regulated DC voltage. A pair of conventional diodes connected across the commutating capacitors limit the reverse voltage across these capacitors and limit the operating currents and voltages in the other elements of the switching regulator.

3,624,484

OSCILLATOR OUTPUT CIRCUIT CONFIGURATION

John E. Colyer, Longueville, New South Wales, Australia, assignor to The Wellcome Foundation Limited, Incorporated, London, England

Filed Dec. 3, 1969, Ser. No. 881,901
Claims priority, application Australia, Dec. 13, 1968, 47786/68
Int. Cl. H02m *3/32;* **A61n**
U.S. Cl. 321—2 **11 Claims**



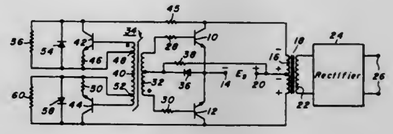
A circuit configuration and an electronic locator/stimulator device for medical purposes incorporating said circuit configuration in which a first pulse component of an output signal, which is clipped to a predetermined voltage amplitude, is impressed across load terminals of the circuit while a second pulse component of the output signal appears across a gas discharge indicator lamp.

3,624,485

SURGE CURRENT LIMITING CIRCUITRY FOR DIRECT CURRENT TO DIRECT CURRENT CHOPPER INVERTERS

John F. Ringelman, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1970, Ser. No. 43,444
Int. Cl. H02m *3/32;* **H03k** *3/281*
U.S. Cl. 321—2 **5 Claims**



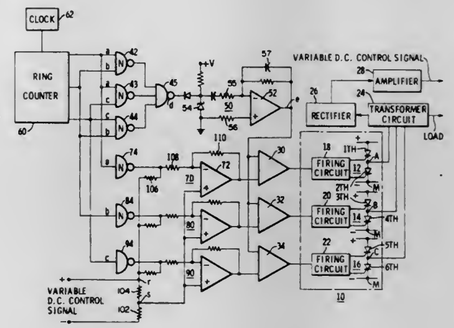
Surge current limiting circuitry for direct current to direct current inverters and the like of the type in which switching of transistors to reverse flux in a center-tapped output transformer is achieved by the use of a saturable core transformer. Surge currents in the saturable core transformer, as it saturates, are limited by means of switching transistors which switch the transformer drive currents to high impedance paths when the transformer saturates.

3,624,486

APPARATUS FOR CONTROLLING PULSE WIDTH MODULATION OF INVERTER CIRCUITS

Robert M. Oates, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,131
Int. Cl. H02m *7/52*
U.S. Cl. 321—5 **8 Claims**

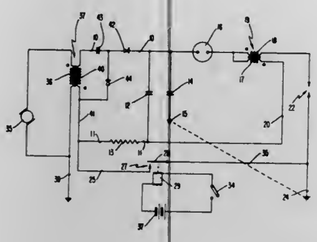


The invention comprises apparatus for providing pulse width modulation suitable to single pole, or half bridge, inverter circuits employing electronic switches wherein a comparator circuit responds to a constant magnitude sawtooth input voltage signal and a variable AC square wave input voltage signal by generating inverter switch pulses when the magnitude of the sawtooth voltage and the magnitude of the AC square wave voltage are equal. The magnitude of the square wave voltage determines the degree of inverter pulse width modulation employed and the firing angle of the inverter switches.

3,624,487
DUAL ENERGY ELECTRICAL PULSE GENERATING SYSTEM

Louis H. Segall, Sidney, N.Y., assignor to The Bendix Corporation

Filed Aug. 28, 1969, Ser. No. 853,637
Int. Cl. H02m 7/00
U.S. Cl. 321—15 8 Claims

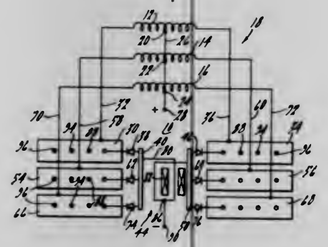


A dual energy circuit for selectively generating high or low energy electrical pulses for supplying a spark gap or other load. The circuit employs a source of power comprising a power transformer and voltage doubling means to charge condensers of different capacities, and switching from one energy system to the other is effected in the high energy condenser charging path at low current.

3,624,488
INTERPHASE TRANSFORMER CONFIGURATION

Eugene W. Rabut, Shelby Township, Macomb County, Mich., assignor to The Udylite Corporation, Warren, Mich.

Filed Nov. 10, 1970, Ser. No. 88,343
Int. Cl. H02m 7/00
U.S. Cl. 321—26 18 Claims

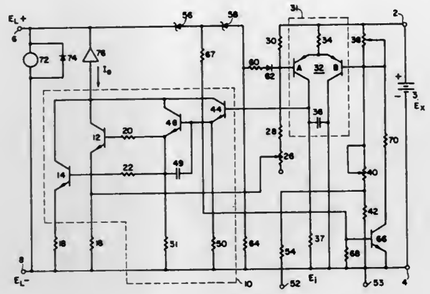


A rectifier system which includes a plurality of diodes in the secondary circuit thereof to provide rectification for the energy flowing from a main transformer connected to the source of alternating current power, the configuration including a plurality of parallel diodes in each phase to increase the current-carrying capabilities and an interphase transformer interconnected with each set of phase diodes, the interphase transformers being physically stacked in the rectifier assembly to facilitate the increasing of the number of paralleled diodes and thus the number of paralleled interphase transformers. The interphase transformers are stacked within two channels, the channels being bolted together to squeeze the cores of the interphase transformers. A common conductor is electrically connected, as by welding, to a center portion of the interphase transformer turns, the common conductor providing a common output conductor for all of the center taps of the interphase winding.

3,624,489
CONSTANT CURRENT VARIABLE LOAD REGULATOR

Arnold L. Betton, Reseda, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 2, 1970, Ser. No. 7,829
Int. Cl. G05f 1/58
U.S. Cl. 323—4 10 Claims

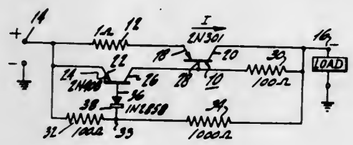


A variable electronic load simulator for testing power supplies having a variable resistance for maintaining a predetermined level of load current. The load current is monitored by means of a voltage drop across the resistor in series with the variable resistance circuit. This voltage drop is compared to a fixed reference voltage in a differential control amplifier which controls the variable resistance circuit to maintain the load current at the predetermined level.

3,624,490
TWO TERMINAL CURRENT REGULATOR

Michael Scott Fisher, Ringoes, N.J., assignor to RCA Corporation

Filed Feb. 5, 1964, Ser. No. 342,649
Int. Cl. G05f 1/58
U.S. Cl. 323—9 22 Claims



A two terminal current-limiting circuit is in series with the power supply of a circuit to be protected. An increase in load current is accompanied by an increase in voltage across the terminals. A portion of this voltage is applied to a controlling transistor which renders a series transistor less conductive.

3,624,491
DYNAMIC RANGE COMPRESSOR

Werner Fidi, Baden by Vienna, and Otto Marschall, Vienna, both of Austria, assignors to Akustische u. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria

Filed Nov. 3, 1969, Ser. No. 873,388
Claims priority, application Austria, Nov. 4, 1968, A10699/68
Int. Cl. H04b 1/64; G05f 5/00
U.S. Cl. 323—19 11 Claims

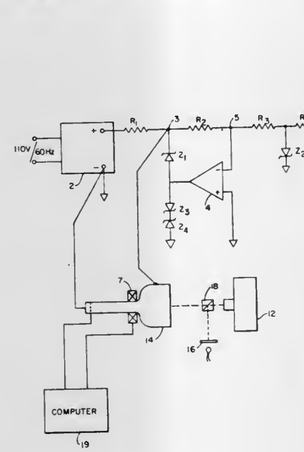
A dynamic range compressor includes a resistance controllable as a function of the level of an input signal, or a resistance network, including semiconductor elements, controllable as a function of the input level, and further includes a differential transformer having two opposing windings of substantially equal numbers of turns, and having a third winding

coupled to the two windings. The signal to be compressed is fed directly to one of the two windings and is fed to the other of the two windings through the resistance or resistance network which is controlled as a function of the level.

3,624,492
HIGH-VOLTAGE POWER SUPPLY WITH TEMPERATURE DEPENDENT ZENER IN A MICROFILM PRINTER DEVICE

Asger T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.

Filed May 18, 1970, Ser. No. 38,165
Int. Cl. G05f 1/46
U.S. Cl. 323—20 9 Claims

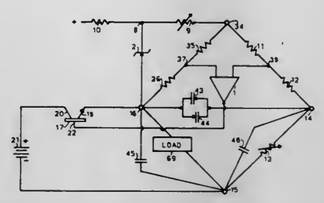


A highly reliable high-voltage power supply, having a temperature stability of 0.01 of 1 percent per °C., in a microfilm printer device, is described; it comprises, in combination with a high-voltage DC power source connected through a series resistor to an output line, a regulator device connected between the output line and the output of an operational amplifier, a feedback resistor connected between the output and the summing junction of the amplifier, and a constant-voltage reference of voltage lower than that at the summing junction connected through a resistor to the summing junction, the output of the regulator device being subject to variation with change in temperature and the amplifier, constant-voltage reference, and their resistors being adapted to vary the voltage of the amplifier output oppositely to the variation of the output of the regulator device, thereby to maintain the output line at a constant voltage.

3,624,493
REGULATED POWER SUPPLY EMPLOYING INTEGRATED CIRCUITS

Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,509
Int. Cl. G05f 1/56
U.S. Cl. 323—40 7 Claims



A bridge-controlled regulated power supply employs an integrated circuit control amplifier and reference with external circuit additions which improve the current-limiting characteristics, provide protection for the amplifier, uses single control of bridge current and offset zeroing, and automatically cancels noise from the reference voltage zener diode.

3,624,494
APPARATUS FOR MONITORING THE RESPONSE OF A RESONANT CIRCUIT

Orhan Turan, 102 Eashin Drive, Fayetteville, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,821
Int. Cl. G01n 27/00
U.S. Cl. 324—57 R 17 Claims

An oscillator circuit applies variable-frequency test signals to a resonant circuit in a manner to sweep across the bandpass of the resonant circuit. A control pulse is generated while the resonant circuit transmits the test signals above a preset amplitude. The control pulse is processed to provide an indication of the response of the resonant circuit to the test signals.

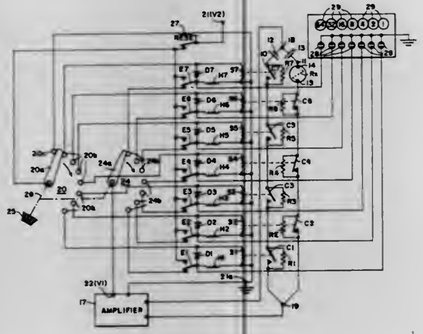
3,624,495
ELECTRICAL BRIDGE CIRCUIT FOR MEASURING A PARAMETER OF AN ELECTRICAL ELEMENT

Richard Freund, 273 Lawton Ave., Cliffside Park, N.J.

Filed Dec. 24, 1969, Ser. No. 887,911
Int. Cl. G01n 27/02
U.S. Cl. 324—62 R 6 Claims

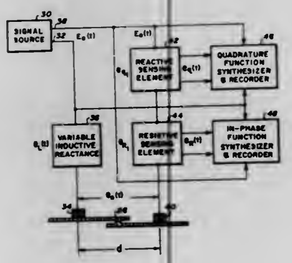
An electrical bridge circuit for measuring a given parameter of an electrical element such as a resistor, inductor, or capacitor comprises a pair of power-supply input terminals and a first pair of bridge arms connected across the input terminals to establish a point of fixed intermediate potential. The bridge circuit further includes a second pair of bridge arms connected in series across the terminals, the first arm initially effectively including only terminals for connection to the electrical element to be measured. A control circuit is

connected between the point of intermediate potential and the junction of the first and second arms. The bridge circuit includes a series of reference electrical elements having parameters of the type to be measured, for example resistance, of values progressing in approximately a geometric series, and the second bridge arm initially includes a plurality of such reference elements having a total parametric value greater than the largest value to be measured. The circuit further includes means responsive to an electrical output of the control circuit of only a given polarity for sequentially and selectively including in the second bridge arm reference elements of alternate parametric values in the series, commencing with the reference element of highest parametric



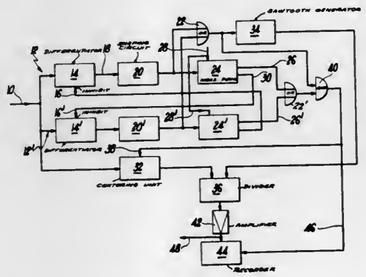
value, and for selectively including one or more of the other reference elements in the first bridge arm, thereby progressively to reduce the arithmetic difference between the total parametric values of the electrical elements in the two bridge arms. The means for changing the circuit relationships of the reference elements as described includes a plurality of switching relays individually connected to switch the reference elements in or out of one or the other of the bridge arms, a selector switch effective to energize the relays in sequence, a plurality of holding relays for individually maintaining their energization and the energization of the switching relays, and a second selector switch effective to energize the holding relays in sequence.

3,624,496
METHOD AND APPARATUS FOR SWEPT-FREQUENCY IMPEDANCE MEASUREMENTS OF WELDS
Lester Feinstein, Palo Alto, and Ronald J. Hruby, Campbell, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 31, 1969, Ser. No. 889,583
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **10 Claims**



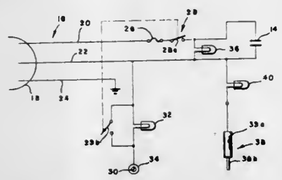
A method and apparatus for testing integrated circuit microtab welds which includes preparing a set of reference signatures for a set of welds of known characteristics and then comparing a signature obtained from a tested weld to these reference signatures to evaluate the integrity of the tested weld. The reference and test signatures are obtained by passing high-frequency electric signals through the various welded structures and sweeping the frequency thereof through the resonance frequencies of the welds. In-phase variations and quadrature variations produced in the electric signals passed through the welds are measured and compared against the reference signatures in order to qualitatively evaluate the integrity of the tested weld.

3,624,497
METHOD AND APPARATUS FOR MEASURING THE SLOPES OF ELECTRIC PULSES WHICH MAY BE ACCOMPANIED BY HIGH-BACKGROUND NOISE
Jacques Max, Saint-Egreve; Francis Merdrignac, Grenoble, and Jules Ratahiry, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Feb. 26, 1969, Ser. No. 802,484
Claims priority, application France, Mar. 1, 1968, 142 151
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 R **11 Claims**



In order to measure the slopes of pulses which make up a signal which may be accompanied by high-background noise, a sawtooth wave of slope is generated. The sawtooth wave is generated in synchronism with each pulse of the signal and the amplitude of each pulse is continuously divided by the amplitude of the sawtooth wave.

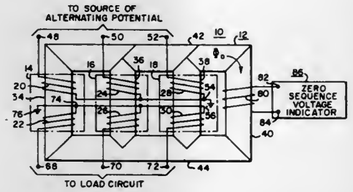
3,624,498
SHOCKPROOF EXTENSION BOX INCLUDING POLARITY TESTING MEANS
Charles Edward Smith, 126 Selma Blvd. RD #2, Dover, N.J., and Gennaro Joseph Vollero, 12 Sycamore St., Bloomfield, N.J.
Filed Sept. 9, 1969, Ser. No. 856,421
Int. Cl. G01r *31/04*
U.S. Cl. 324—51 **6 Claims**



A shockproof extension box providing plural outlets includes an insulated terminal screw connected to the neutral lead of the input cable through a first light and a probe connected to the neutral lead through a second light. A switch disconnects the positive input lead for the first testing step wherein the input cable is plugged into a wall outlet and the finger of the operator is used to contact the terminal screw. If under these circumstances the first light lights up the inlet plug should be reversed. In a second testing step, the switch is closed so that the extension box outlets are energized and a piece of equipment is plugged into one of the box outlets.

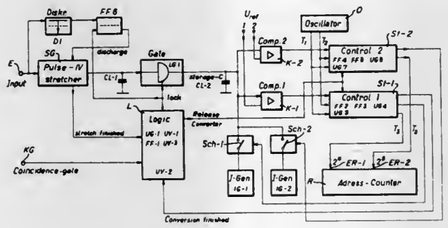
The probe is then brought into contact with the equipment and if the second light lights up the equipment plug is reversed. If the second light lights up for both plug positions the equipment should not be used.

3,624,499
ELECTRICAL TRANSFORMER WITH ZERO SEQUENCE VOLTAGE INDICATOR
David R. Smith, McKeesport, Pa., and Alvin Y. Broverman, Crystal Springs, Miss., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 29, 1970, Ser. No. 76,541
Int. Cl. G01r *25/00*
U.S. Cl. 324—86 **8 Claims**



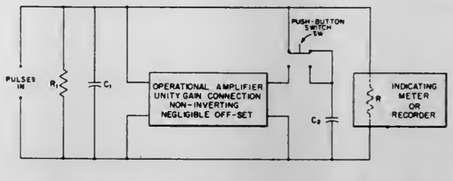
A three-phase electrical transformer of the core-form type including wye-wye connected primary and secondary windings having grounded neutrals. The magnetic core has three winding legs for the primary and secondary windings, and at least one additional leg. An auxiliary winding is disposed on the additional leg and connected to indicating means which provides a signal when the voltage induced into the auxiliary winding by zero sequence flux flowing through the additional leg reaches a predetermined magnitude.

3,624,500
METHOD AND AN ARRANGEMENT FOR DETERMINING PULSE AMPLITUDES
Rupert Patzelt, Vienna, Austria, assignor to Osterreichische Studiengesellschaft Fur Atomenergie Ges m.b.H., Vienna, Austria
Filed July 22, 1968, Ser. No. 746,518
Claims priority, application Austria, July 26, 1967, A 6962/67
Int. Cl. G01r *17/06, 1/00*; H03k *13/02*
U.S. Cl. 324—99 D **16 Claims**



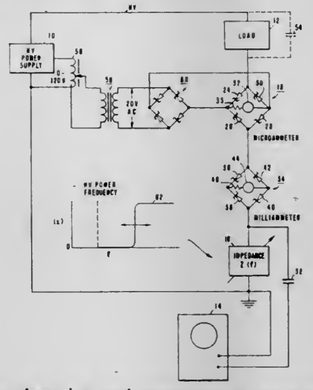
An analog-digital converter includes a storage capacitor, an oscillator, and a counter, such as a binary counter, a decade counter, or the like. Each input pulse charges the storage capacitor. The storage capacitor is initially rapidly discharged until it approaches the zero charge point, and thereafter is discharged slowly. During the rapid or quick discharge, oscillator pulses delivered to the counter have a higher value than during the slow discharge. Thereby, after complete discharge of the capacitor, the number stored in the counter corresponds to the amplitude of the input signal. The required stability and linearity of the conversion is ensured by continuous calibration of the converter by a pulse generator.

3,624,501
TIME CONSTANT SWITCHING SYSTEM FOR A METER APPARATUS
Walter Francis Joseph, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 12, 1970, Ser. No. 63,139
Int. Cl. G01r *1/00, 1/22*
U.S. Cl. 324—111 **6 Claims**



A time constant switching device which will allow the integrating time constant of a rate meter to be changed without affecting the average output voltage, even when zero suppression and scale expansion are employed to obtain high sensitivity meter readings. This is accomplished by switching an additional capacitor into an integrating circuit said additional capacitor being precharged by an operational amplifier, to the voltage of the capacitor in the integrating circuit.
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,624,502
CORONA-ARCING DETECTING TEST SYSTEM USING ZENER DIODES
Earle R. Bunker, Alhambra, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed July 18, 1969, Ser. No. 842,880
Int. Cl. G01r *1/36, 15/08, 19/22*
U.S. Cl. 324—131 **4 Claims**

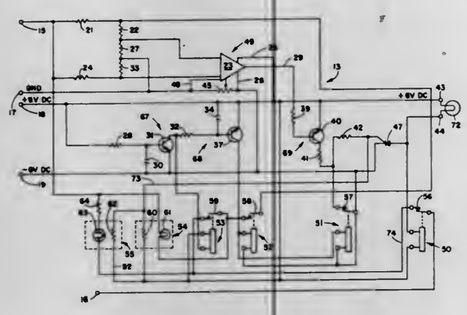


A corona detection and measurement apparatus is provided which detects AC, DC corona discharge or combinations of both, which balances out stray capacitance current, and which employs a sensitive corona current-measuring circuit with protection from possible damages due to arcing which may occur.

3,624,503
MEANS AND METHOD FOR DETECTING STRAY ELECTRICAL ENERGY, ABOVE A PREDETERMINED LEVEL, ON A CONDUCTOR
George W. Barrowcliff, Euless, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Apr. 4, 1969, Ser. No. 813,452
Int. Cl. G01r *19/16*
U.S. Cl. 324—133 **17 Claims**

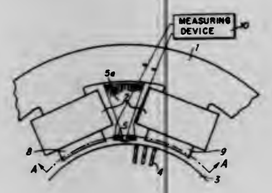
A method and apparatus for detecting stray electrical energies imposed on a conductor whereby the levels of the ener-

gies to be detected range from a given, low level to a given, higher level and the detection is accomplished by detecting



any energies present at successively reduced levels from the given, higher level to the lowest energy level desired to be detected.

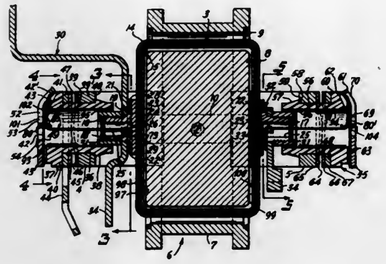
3,624,504
METHOD OF AND APPARATUS FOR MEASURING THE DIRECT CURRENT SUPPLIED BY A RECTIFIER ARRANGEMENT FED BY AN ALTERNATOR
Jacques Joly, Champagne-sur-Seine, France, assignor to Societe de Constructions Electromecaniques Jeumont-Schneider, Paris, France
Filed Dec. 23, 1968, Ser. No. 785,871
Claims priority, application France, Dec. 29, 1967, 134405
Int. Cl. G01r 29/00
U.S. Cl. 324—158 MG **9 Claims**



The disclosure relates to a method of measuring the direct current supplied by a rectifier arrangement fed by an alternator including the steps of detecting the harmonic fluxes created by the armature reaction field, and measuring the detected output, which output is directly proportional to the direct current supplied by the rectifier arrangement of the alternator. The apparatus for detecting the harmonic fluxes is a reference coil which is positioned adjacent to the armature of the alternator.

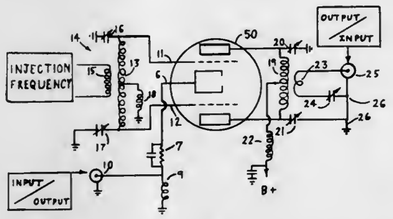
3,624,505
HIGH-IMPACT WITHSTANDING TAUT BAND SUSPENSION INSTRUMENT
Willem J. L. Boreas, Sayreville, N.J., assignor to Weston Instruments Division, Newark, N.J.
Filed June 26, 1969, Ser. No. 836,828
Int. Cl. G01r 1/00
U.S. Cl. 324—154 R **14 Claims**

A taut band suspension instrument capable of withstanding severe impact without permanent damage to the taut band suspension. The suspension system is characterized by a taut band which extends between the movable element and frame of the instrument, and has its respective ends mounted to slide along smooth surfaces spaced from the points of connection of the band with both the movable element and the frame. The smooth surfaces along which the band can slide allow the axis of the band to shift when the instrument is subjected to severe impact, and as a result, stresses in the band



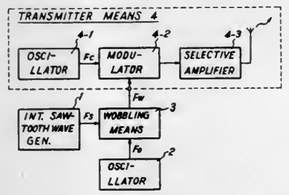
are substantially lessened. In the preferred embodiment, the instrument is a meter and two taut bands, one extending from each end of a movable coil of the meter, are used.

3,624,506
TWO-WAY ELECTRONIC FREQUENCY CONVERTER
John S. Townsend, 124 S. Douglas St., Wilson, N.C.
Filed Mar. 23, 1970, Ser. No. 21,720
Int. Cl. H03d 7/14
U.S. Cl. 325—18 **2 Claims**



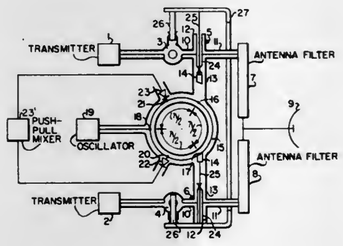
A two-way electronic frequency converter is operable in forward or reverse modes without switching.

3,624,507
COMMUNICATION SYSTEM OF A CUE SIGNAL OR SIGNALS
Masao Fukata, 94, Shimorenjaka Mitaka-shi, and Shozo Takahashi, 95-4, Ohaza-Kumagawa Fussa-cho, Nishtama-gun, both of Tokyo-to, Japan
Filed Apr. 21, 1967, Ser. No. 632,674
Int. Cl. H04l 27/10
U.S. Cl. 325—45 **5 Claims**



Disclosed herein is a system for transmitting a cue signal or signals by use of at least one wobbled wave obtained by slightly wobbling a low-frequency sinusoidal wave, in an intermittent periodic manner, along a substantially sawtooth wave pattern the number of cycles of which is determined in accordance with the cue signal to be transmitted: in which the transmitted wobbled wave is applied to a narrow passband filter and changed into a pulse train the number of pulses of which is equal to the number of cycles of the sawtooth wave pattern, wherein the pulses have a constant period irrespective of slight deviation of the wobbling frequency range and/or slight deviation of the center frequency of the narrow passband filter; and, in which the transmitted cue signal is detected by counting the number of pulses of the pulse train in consideration of the constant period of pulses.

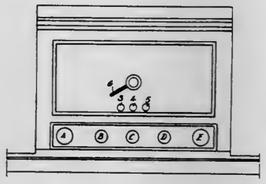
3,624,508
UNITARY MICROWAVE TRANSMIT-RECEIVE DUPLEX SYSTEM WITH COAXIAL RING HYBRID TRANSFORMER
Alfred Kach, Untersiggenthal, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro- Holding AG, Glarus, Switzerland
Filed Sept. 25, 1969, Ser. No. 861,032
Claims priority, application Switzerland, Oct. 15, 1968, 15393/68
Int. Cl. H04b 1/52
U.S. Cl. 325—24 **9 Claims**



Unitary microwave transmit-receive apparatus for duplex operation comprises a pair of transmitters having different carrier frequencies, a common antenna, a pair of T-junction microwave switches, a common beating oscillator having a frequency substantially midway between the transmitting carrier frequencies, and a hybrid transformer composed of a coaxial ring conductor having two signal input coupling points, a beating oscillator coupling point and two output coupling points connected to a balanced modulator frequency changer. Each of the microwave switches is connected to a transmitter, the common antenna and one of the input coupling points of the coaxial transformer in a manner to enable a transmission on either carrier frequency and simultaneous reception on the other carrier frequency, and vice versa.

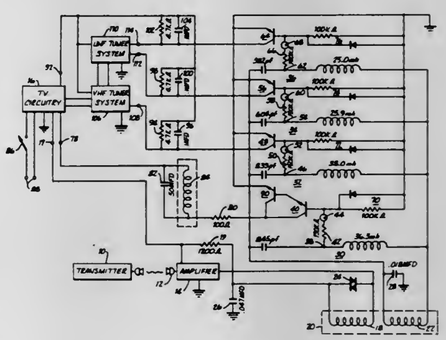
3,624,509
ELECTRICALLY CONNECTED REMOTE CONTROL FOR AUTOMATICALLY TUNED RECEIVER
Emanuele Morici, 9, Via Monte delle Gioie, and Carmelo Zimatore, 10, Via del Nuoto, both of Rome, Italy
Filed Aug. 7, 1969, Ser. No. 848,184
Claims priority, application Italy, Aug. 13, 1968, 39073 A/68
Int. Cl. H04b 1/06
U.S. Cl. 325—316 **4 Claims**

A remote control for receivers tuned by means of variable capacity diodes, wherein the turning of a first-knob connects the receiver to the power supply and actuates a volume potentiometer, the turning of a second knob lowers the upper cutoff frequency of the LF response curve by inserting a capacitor across the LF input, a three-position switch controls the waveband ranges, while a further knob switches the set from manual to automatic tuning by switching the base of a transistor to the output of the electronic-tuning circuit, the



latter being readied for automatic operation by disconnecting a resistor from ground.

3,624,510
THRESHOLD DIGITAL SWITCH CIRCUIT FOR REMOTE CONTROL SYSTEM
Lyle Bruce Juroff, Indianapolis, Ind., assignor to RCA Corporation
Filed Apr. 22, 1969, Ser. No. 818,222
Int. Cl. H04b 1/06
U.S. Cl. 325—392 **15 Claims**



A threshold digital switch circuit for a television receiver remote control system includes a transistor having its collector-emitter electrodes operably connected with the receiver's control circuit. Remotely transmitted signals are picked up by a microphone associated with the television receiver, amplified and applied to a resonant circuit which is coupled to the base electrode of the transistor by means including a neon tube switch. When the signal voltage at the tube reaches a threshold level, actuating the neon tube, signal current flows through the neon tube and into the transistor's base electrode causing the transistor's emitter-collector current path to be conductive. A capacitor connected in the collector electrode circuit of the transistor reduces collector electrode voltage change due to short duration noise voltages which may render the transistor momentarily conductive.

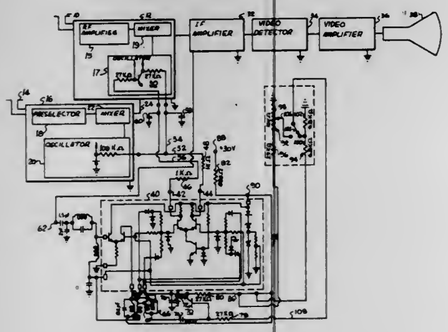
3,624,511
NONLINEAR PHASE-LOCK LOOP
James Chin-Chun Sui, Washington, D.C., assignor to Communications Satellite Corporation
Filed Aug. 7, 1969, Ser. No. 848,244
Int. Cl. H04b 1/16; H03b 3/04
U.S. Cl. 325—420 **3 Claims**

A conventional phase-lock loop modified by inserting a

nonlinear element to provide a faster loop response for small phase differences thereby providing an accelerated lockup time.



3,624,512
AUTOMATIC FREQUENCY CONTROL SYSTEM
Wayne Wheeler Evans, Indianapolis, Ind., assignor to RCA Corporation
Filed June 2, 1969, Ser. No. 829,403
Int. Cl. H04b *1/16*
U.S. Cl. 325—422 **5 Claims**



A television receiver includes automatic fine-tuning circuits which are coupled to a voltage responsive variable capacitance device in the heterodyne local oscillator resonant circuit to control the oscillator frequency. The automatic fine-tuning circuits include a tunable resonant discriminator circuit and provide an output voltage having a magnitude determined by the frequency deviation of the output signal from the television mixer stage from the resonant frequency of the discriminator circuit. The discriminator circuit is tuned over a band of frequencies by varying the voltage across a voltage-responsive variable capacitance device in the discriminator circuit.

3,624,513
IMAGE FREQUENCY SUPPRESSION CIRCUIT
John P. Costas, Fayetteville, N.Y., assignor to General Electric Company
Filed Jan. 29, 1970, Ser. No. 6,769
Int. Cl. H04b *1/26*
U.S. Cl. 325—437 **8 Claims**

In a heterodyne circuit, an input signal is applied to an adder circuit which produces an intermediate frequency signal. Suppression of the image frequency is provided by a feedback loop connected between the output and an input of the adder circuit. In the feedback loop, the image frequency is cancelled by negative feedback and replaced by the complex conjugate of the desired frequencies. The complex conjugate is added coherently to the input signal at the adder.

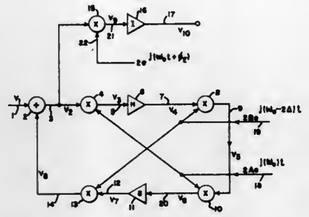
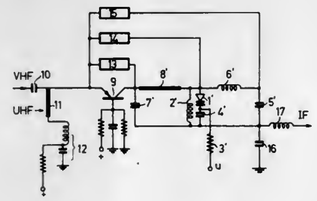


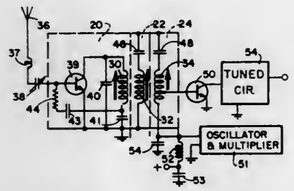
Image suppression is determined by the gain of the feedback loop.

3,624,514
TUNING CIRCUIT HAVING COMMON TUNING ELEMENT FOR THREE FREQUENCY RANGES AND SELF-OSCILLATING MIXER USING SAME
Walter Putzer, Krefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,717
Int. Cl. H04b *1/28;* **H03j** *3/18*
U.S. Cl. 325—440 **7 Claims**



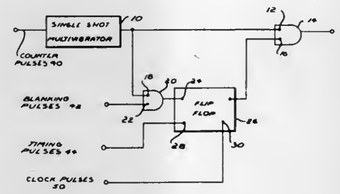
A tuning circuit for the reception of signals from three spaced frequency ranges, comprising parallel resonant circuits having at least one common tuning element for all the frequency ranges. The tuning of the resonant circuits is varied by the common tuning element to produce resonance in only one of the frequency ranges at a time. Signals within the frequency ranges of the other circuits not being used are rejected.

3,624,515
ULTRAHIGH FREQUENCY TUNER WITH HELICAL RESONATORS COUPLED THROUGH APERTURES IN SHIELDS
John R. Rezek, Addison, and Joseph F. Cramer, Jr., Downers Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed July 15, 1968, Ser. No. 744,836
Int. Cl. H04b *1/16, 1/08*
U.S. Cl. 325—462 **6 Claims**



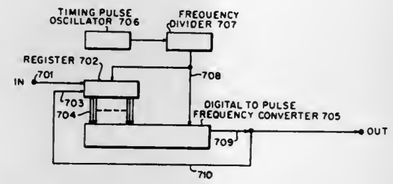
Tuner for miniature radio receiver operating at ultrahigh frequency including coils and individual conductive shields forming helical resonators. The coils are tuned at the low-impedance end by aluminum slugs providing low loss, and may be capacitively loaded at the high-impedance end. Apertures in the shields provide coupling between the adjacent resonators, with the aperture in one shield being of the size to control the coupling and the aperture in the adjacent shield being larger so that it does not affect the coupling.

3,624,516
SELECTIVE BLANKING OF VIDEO DISPLAY
Frederic D. Rando, Cherry Hill, and William P. Rogers, Collingswood, both of N.J., assignors to Ultronic Systems Corporation
Filed Sept. 3, 1968, Ser. No. 756,916
Int. Cl. H03b *19/00*
U.S. Cl. 328—14 **6 Claims**



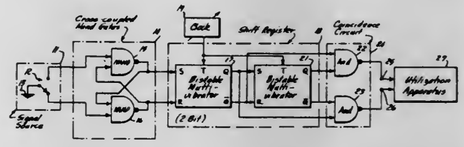
Alpha numeric information supplied in the form of electrical signals from a plurality of input sources can be fed to a central control unit and rearranged therein for subsequent transmission to one or more video display monitors, each monitor employing a separate cathode-ray tube. Each source can be assigned a preselected portion of the display area on each tube whereby each tube can display the information from each of the sources in its preassigned areas in the form of a complete display of all of the sources apparently simultaneously.
Our invention is adapted for use in systems as described above. It employs circuitry located partially in the common unit and partially in each monitor for the selective blanking of one or more display areas in one or more tubes. In other woeds, information from some of the sources may be displayed by any one monitor while at the same time information from others of the sources can be blanked out on the same monitor. To this end, control pulses identified with corresponding input sources are sequentially introduced at the unit for transmission to all of the monitors. Circuitry at each monitor can be selectively enabled to detect such control pulses and to utilize the detected pulses for selective blanking.

3,624,517
CIRCUIT ARRANGEMENT FOR MAKING SPACES IN A PULSE TRAIN MORE NEARLY UNIFORM
Kengo Kobayashi, Kawasaki-shi, and Mitsuo Manabe, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 19, 1969, Ser. No. 851,316
Claims priority, application Japan, Aug. 21, 1968, 43/59747
Int. Cl. H03k *3/72*
U.S. Cl. 328—61 **16 Claims**



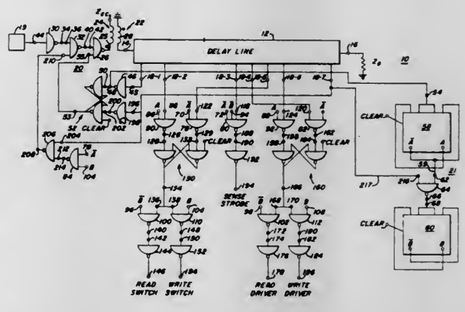
A digital to pulse frequency converter converts command pulses accumulated in a memory to a pulse train having a frequency directly proportional to the accumulated value in the memory. The frequency converter has a plurality of inputs connected to corresponding outputs of the memory and an output connected in negative feedback arrangement to an input of the frequency converter thereby feeding back the output of the frequency converter negatively and in a digital manner to the memory and providing an output pulse train free of abrupt frequency change. Fixed frequency pulse trains are supplied to each of the memory and the frequency converter.

3,624,518
SINGLE PULSE SWITCH CIRCUIT
Clell A. Dildy, Jr., Panama City, Fla., and The United States of America as represented by the Secretary of the Navy
Filed Mar. 24, 1970, Ser. No. 22,267
Int. Cl. H03k *1/00, 3/12*
U.S. Cl. 328—63 **10 Claims**



A logical switching circuit is disclosed which produces a single, noise-free output pulse of one clock pulse duration in response to a noisy input data signal and a predetermined clock signal. It incorporates signal sources, effectively connected to flip-flops or complement signal generators, shift registers shifted by timely provided clock pulses, and AND-gate coincidence circuits, all of which are serially connected.

3,624,519
TAPPED DELAY LINE TIMING CIRCUIT
William W. Beydler, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1969, Ser. No. 875,349
Int. Cl. H03k *1/00, 5/159*
U.S. Cl. 328—66 **7 Claims**

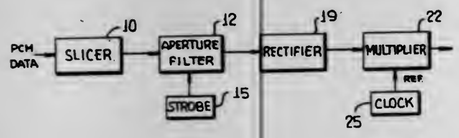


A tapped delay line timing circuit for producing timing pulses for a ferrite core memory. The electrical length of the delay line employed is one-quarter that of the total memory cycle time required for a single timing cycle of the memory core for which the timing circuit produces timing pulses. An initiate pulse is utilized to initiate delay line operation and delay line pulses traversing the delay line are recirculated through the delay line. A two-stage, four-state counter is employed to determine the number of times the pulse has been recirculated through the delay line. At the same time, the counter states are used to control the opening and closing of gate devices which select the timing pulses off the delay line.

3,624,520
WIDE BAND DIGITAL PHASE DETECTOR

Frank A. Perkins, Jr., 6595 Sheridan Road, Melbourne Village, Fla., and James A. Proctor, 420 2nd Ave., Melbourne Beach, Fla.

Continuation-in-part of application Ser. No. 638,809, May 16, 1967. This application Jan. 5, 1970, Ser. No. 684
Int. Cl. H03k *1/00*
U.S. Cl. 328—72 10 Claims

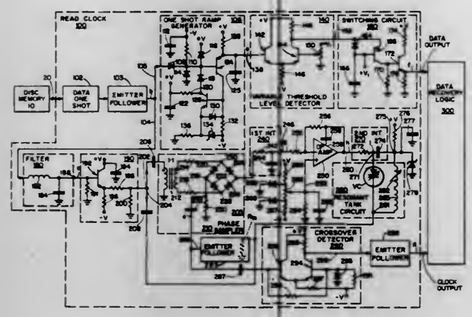


A wholly digital system for processing incoming PCM data which lacks a frequency component at bit rate, to provide signals which can be compared with a clock output to develop a phase-locking signal for the clock, by digitally filtering a sliced version of the PCM data, digitally rectifying the digital output of the filter and digitally comparing the rectified output with clock output in a digital multiplier to derive phase information.

3,624,521
SYNCHRONOUS READ CLOCK APPARATUS

Alfred J. Dellicicchi, West Newton, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 19, 1970, Ser. No. 47,696
Int. Cl. H03k *13/00*
U.S. Cl. 328—119 22 Claims

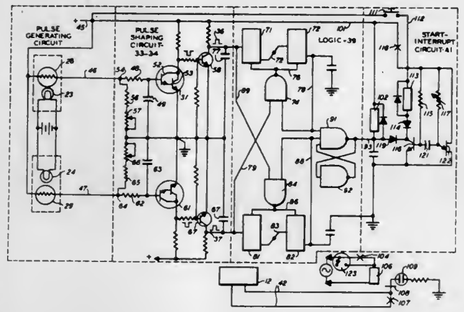


A self-synchronizing read apparatus receives an encoded information pulse stream consisting of data and clock pulses from a random access device and applies this train across a normally inactive resonant tank circuit. The tank circuit generates a first reference signal and a detection circuit derives a reference clock waveform from predetermined reference points of the reference signal. The read apparatus further includes a generator circuit which generates a second linear reference signal from each of the pulses of the pulse stream and derives pulses of a data output waveform by applying the linear signals to a variable threshold switching circuit. The apparatus further includes circuits for generating an error voltage whose magnitude is proportional to the discrepancy in phase between the data train and reference signal and applies a correction voltage to the tank circuit which adjusts its frequency at a critically damped rate to decrease the discrepancy in phase.

3,624,522
LOGIC CIRCUITRY FOR MONITORING THE CYCLIC OPERATIONS OF A PAIR OF DEVICES

John J. Glosek, Roselle, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,611
Int. Cl. H03k *5/18*
U.S. Cl. 328—120 9 Claims

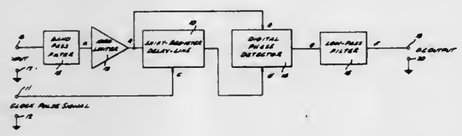


Logic circuitry is utilized to monitor the continued cyclic operation of a pair of devices, e.g., strand-feeding devices. As the devices function a pair of trains of pulses are generated and the logic circuit detects and generates a malfunction signal upon the generation of two pulses within one train without the intervening generation of a pulse in the other train. The logic circuit accepts concurrent generation of pulses, and the subsequent reversal of the lead pulse in the trains without the generation of malfunction signals. Facilities are also provided to allow the devices to commence operation independent of control by the logic circuits.

3,624,523
DIGITAL FREQUENCY DISCRIMINATOR

Joel Katz, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 19, 1969, Ser. No. 862,634
Int. Cl. H03b *3/04*
U.S. Cl. 328—141 4 Claims

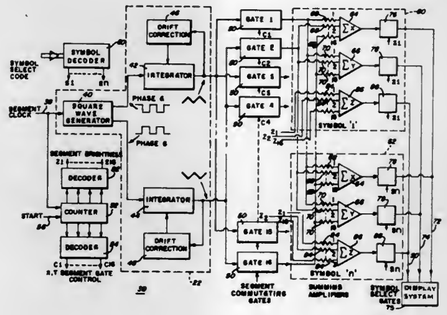


The digital discriminator of the present invention provides a linear DC voltage vs. input frequency transfer characteristic utilizing two-level logic circuitry including a shift register in a manner to minimize temperature sensitivity, eliminate need for alignment, and obviating the need for critical or expensive components such as crystals and/or transformers. The device has theoretically perfect response linearity, high reliability, and is adaptable to packaging in microminiature form, thereby requiring less volume than its analog counterparts.

3,624,524
ANALOG CHARACTER GENERATOR

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 4, 1968, Ser. No. 757,422
Int. Cl. G06k *3/00*
U.S. Cl. 328—143 11 Claims

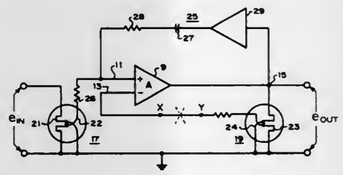


An analog character generator which continuously generates X- and Y-position signals to write symbols and a brightness unblanking signal. The selected symbol waveforms are approximated by joining a number of points by straight line segments. Each straight line segment is generated by using displaced triangular voltage waveforms sequentially applied to input resistors of a summing amplifier. The straight line segment joining two points of a waveform is produced by summing the correct proportions of a positive and negative going ramp. Segment commutation is achieved by gating the triangular pulse train with switching actually taking place when the waveform is at zero, which minimizes ringing and other spurious effects.

3,624,525
TRUE RMS CONVERTER

William G. Smith, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 20, 1969, Ser. No. 878,345
Int. Cl. G06g *7/20*
U.S. Cl. 328—144 4 Claims

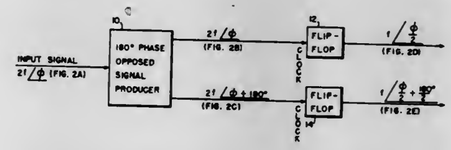


A pair of thermocouples having elements connected respectively to receive an applied signal and the output signal of an amplifier are connected to apply the resultant thermocouple signals to the input of the amplifier in polarity opposition. An additional feedback signal which varies directly with the output level of the amplifier and which has a square-law characteristic similar to the thermocouple elements is applied to the input of the amplifier to reduce the effects of signal level on the response time of the circuit and allow ultralow signal frequencies to be accurately measured.

3,624,526
WIDE BAND DIGITAL QUADRATURE CIRCUIT

Irving Silverman, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1970, Ser. No. 34,281
Int. Cl. H03b *1/04*
U.S. Cl. 328—166 2 Claims

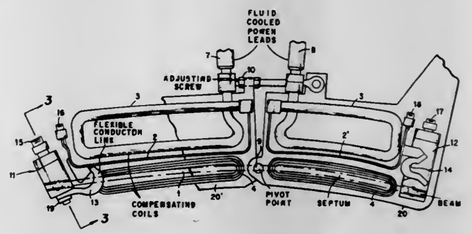


A circuit for producing digital quadrature signals over a very large frequency range wherein an input signal of frequency $2f$ is processed to provide two phase-opposed signals which are in turn processed by flip-flops to thereby provide digital quadrature signals of frequency f.

3,624,527
MAGNETICALLY SELF-SHAPING SEPTUM FOR BEAM DEFLECTION

Ed D. Hudson, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 15, 1970, Ser. No. 72,387
Int. Cl. H05h *13/00*
U.S. Cl. 328—234 9 Claims

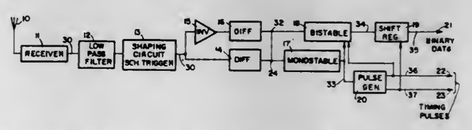


A beam deflection septum magnet assembly for separating an extracted beam from a confined beam of a cyclotron. The separating member is a thin current-carrying sheet conductor that is self-shaping and assumes the same radius of curvature as the beam to be deflected when the end points are properly adjusted. The maximum field reduction obtained is limited mainly by the tensile strength of the septum and by the power that can be removed from the thin sheet conductor.

3,624,528
DIGITAL DEMODULATOR

Richard H. Adlhock, Bellwood, and Gerald L. Giacomino, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

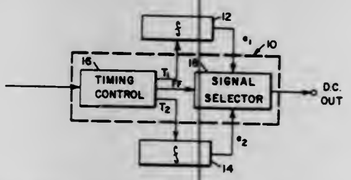
Filed June 23, 1970, Ser. No. 49,000
Int. Cl. H04l *27/14*
U.S. Cl. 329—104 15 Claims



A digital demodulator for demodulating a received bit signal containing binary and timing information wherein the

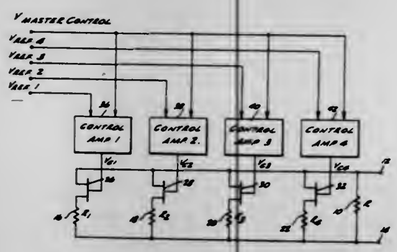
signal shifts between two levels. Transition detectors respond to shifts between the two levels to produce pulses. A pulse at the beginning of each bit period represents timing information and is followed by pulses representing binary information. The timing pulse energizes a monostable which in turn enables a bistable to count pulses occurring while the monostable is energized. The monostable remains energized for 75 percent of the bit period, and when the monostable is deenergized, the state of the bistable is sampled and stored by a shift register. The energization and deenergization of the monostable is used to produce first and second timing pulses. The binary information and timing pulses are used to operate a digital decoder.

3,624,529
PULSE WIDTH SIGNAL DEMODULATOR
Edward F. Gebelein, Jr., Harwinton, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Nov. 25, 1969, Ser. No. 879,849
Int. Cl. H03k 9/08
U.S. Cl. 329—104 **7 Claims**



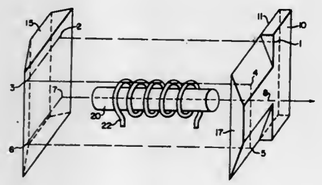
A demodulator circuit for providing a DC output signal which is unaffected by variations in pulse amplitude or repetition rate of a pulse width modulated input signal. The demodulator comprises switching circuitry and a pair of integrators. The switching circuitry controls the integrators whereby they function as holding generators with a short time lag; input pulses being applied alternately to the integrators which in turn provide DC output levels which are alternately measured.

3,624,530
ELECTRONICALLY CONTROLLED VARIABLE RESISTANCE DEVICE
Robert Zwirn, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed July 25, 1969, Ser. No. 844,890
Int. Cl. H03f 5/00, 21/00
U.S. Cl. 330—3 **8 Claims**



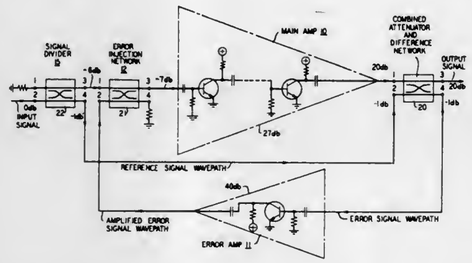
A resistor and a plurality of electrical circuit branches are connected in parallel, each branch including a resistor connected in series with the source-drain path of a field effect transistor. Respective outputs from a plurality of control amplifiers, each including an operational amplifier and responsive to a common master control voltage and a different reference voltage, are applied to respective gate electrodes of the field effect transistors. Each control amplifier provides a linearly varying field effect transistor control voltage over a preselected range of the master control voltage and first and second essentially constant field effect transistor control voltages when the master control voltage is respectively below and above the preselected voltage range.

3,624,531
LASER RESONATOR ASSEMBLAGE
Victor J. Norris, Jr., Towson, and James B. Hovis, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 5, 1969, Ser. No. 855,601
Int. Cl. H01s 3/02, 3/05
U.S. Cl. 330—4.3 **6 Claims**



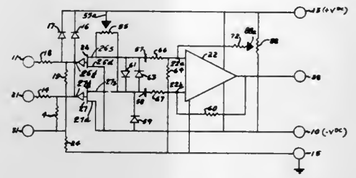
Described is a laser resonator assemblage which includes two flat mirrors, one of which is the partial mirror and both of which are formed in the same plane surface on a common substrate joined to a first Porro prism disposed at one side with its hypotenuse face extending the length of the mirrors and disposed in the same plane. A second Porro prism, having its hypotenuse face equal in height and width to the first Porro prism and mirror unit, is arranged at right angles to such first Porro prism to form a rectangular three dimensional optical path between the mirrors.

3,624,532
REENTRANT SIGNAL FEEDBACK AMPLIFIER
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 23, 1970, Ser. No. 21,855
Int. Cl. H03f 1/02
U.S. Cl. 330—9 **3 Claims**



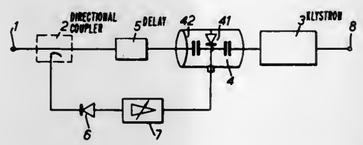
This application describes a feedback amplifier which utilizes the input signal at least twice. In the first instance, the input signal is applied to the main amplifier and experiences the full gain of the amplifier. Secondly, the input signal is used as a reference against which the amplified output signal is compared. Any difference between the reference signal and the output signal due to noise and/or distortion is identified as an error signal which is amplified in a separate error amplifier, and then injected into the input terminal of the main amplifier in phase to degenerate the error. Because the feedback only degenerates the error signal, and not the useful signal, a reentrant signal feedback amplifier is capable of operating over a greater stabilized bandwidth than conventional feedback amplifiers. In addition, an overall improvement in the signal-to-noise ratio can be realized.

3,624,533
DIFFERENTIAL PREAMPLIFIER
Peter Schiff, R. D. #2, Lambertville, N.J.
Filed July 8, 1969, Ser. No. 839,888
Int. Cl. H03f 3/16, 3/68
U.S. Cl. 330—30 **7 Claims**



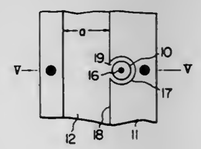
A differential preamplifier of the AC coupled type for measuring very small voltage differences between two input signals. The circuit employs an operational amplifier accepting the input signals at its inverted and noninverted input terminals, respectively. The first and second input signals being compared are applied to the inputs of respective field effect transistors which exhibit high-input impedance and low-output impedance. The field effect transistors are operated as current amplifiers yielding substantially unity voltage gain. Their outputs are connected through capacitive elements to the inverted and noninverted inputs, respectively, of the operational amplifier. The capacitors compensate for any constant or DC offset which may occur in the signal sources. Oppositely polarized semiconductor elements are connected in parallel across the input leads of the capacitors to severely limit overload voltage conditions. The low output impedances of the FET's connected thereto are such that the relatively low impedance of the diodes which are operated in a forward biased mode just below their threshold voltage, has no effect upon the low-impedance signals appearing at the source electrodes of the FET's so as to yield excellent common mode rejection characteristics. Diode clamps are provided to prevent overdrive and burn out of the FET's. Adjustable resistors are provided for balancing the FET outputs and for nulling the offset voltage of the operational amplifier at 0 volts when the signals applied to the circuit input terminals are of equal value.

3,624,534
A UHF KLYSTRON AMPLIFIER HAVING A SUBSTANTIALLY LINEAR INPUT/OUTPUT CHARACTERISTIC
Geoffrey Thomas Clayworth, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England
Filed Feb. 17, 1970, Ser. No. 11,953
Claims priority, application Great Britain, Feb. 20, 1969, 9,189/69
Int. Cl. H03f 3/56
U.S. Cl. 330—47 **2 Claims**



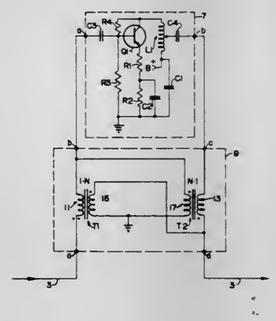
Known Klystrons are not linear amplifying devices, and so it is not possible to use a Klystron for the common amplification of UHF carriers modulated with a number of different modulating signals. In the invention a multimodulated UHF Klystron amplifier comprises an amplifying Klystron and a correcting circuit having a nonlinear operating gain/signal level characteristic so chosen in relation to the nonlinear output/input characteristic of the Klystron that the overall output/input characteristic of the combination of Klystron and correcting circuit is substantially linear over a desired wide range of input.

3,624,535
PARAMETRIC AMPLIFIERS
Takeo Fukuda, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha (a/k/a Tokyo Shibaura Electric Co., Ltd.), Kawasaki-shi, Kanagawa-ken, Japan
Filed Nov. 17, 1969, Ser. No. 877,228
Claims priority, application Japan, Nov. 29, 1968, 43/86950
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 **5 Claims**



In a parametric amplifier wherein a diode is disposed in a pumping waveguide at the junction between a pumping waveguide and a coaxial line including central conductor connected to the diode, a recess for receiving the diode is formed in the pumping waveguide with a portion of the periphery of the recess disposed to intersect one wall defining the hollow passage of the waveguide. As nearly all portions of the periphery of the diode are surrounded by the metal of the waveguide, the reactance exhibited by a portion of the pumping waveguide can be decreased.

3,624,536
HIGH-DYNAMIC-RANGE AMPLIFIER
David E. Norton, Framingham, Mass., assignor to Adams-Russell Co. Inc., Waltham, Mass.
Filed Apr. 7, 1969, Ser. No. 814,105
Int. Cl. H03f 3/60
U.S. Cl. 330—53 **7 Claims**

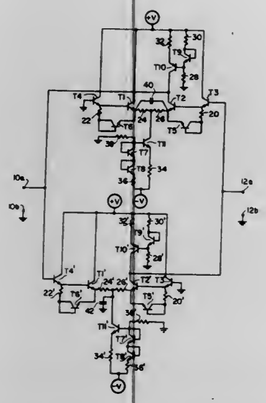


An amplifier for amplifying radiofrequency signals having a low-noise figure and the ability to handle relatively large amounts of power with low distortion. The high-dynamic-range amplifier comprises a dual directional coupler, having two ports coupled to the signal source and load and two ports coupled to an inverting amplifier, in which the input and output impedances of the amplifier are equal and are equal to the characteristic impedance of the source and load.

3,624,537
GYRATOR NETWORK

John Matarese, New City, N.Y., assignor to GTE Laboratories Incorporated

Filed July 7, 1969, Ser. No. 839,327
Int. Cl. H04f 9/00
U.S. Cl. 330—63 6 Claims

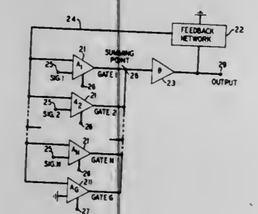


A gyrator network having a pair of oppositely phased voltage-to-current converters connected between two ports. Unlike prior art networks, each voltage-to-current converter is a single-stage circuit, namely, a difference amplifier in which the output resistor is replaced by a constant current source. This has the effect of producing a current change in a load connected to the output of the difference amplifier, which current change is proportional to a change in the input voltage. The resulting gyrator network has reduced power dissipation requirements.

3,624,538
TIME MULTIPLEXER WITH FEEDBACK

Edward A. Gere, Piscataway, and Hans P. Lie, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 21, 1969, Ser. No. 826,496
Int. Cl. H03f 1/36, 3/68
U.S. Cl. 330—84 4 Claims

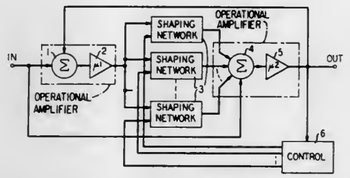


Time-multiplexing networks for analog signals are subject to spurious transmissions such as leakage signals and switching transients. This disclosure proposes to solve these problems by the provision of a feedback path from the common portion of the network to each of the input branches, each feedback loop containing at least one active device. In addition to the above advantages, such a network realizes all of the usual advantages accruing from the application of feedback to an amplifier.

3,624,539
EQUALIZER HAVING A PLURALITY OF MAIN PATH SHAPING NETWORKS AND FEEDFORWARD AND FEEDBACK PATHS

Chih-Yu Kao, Lawrence, and Carl F. Kurth, Andover, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 17, 1969, Ser. No. 885,751
Int. Cl. H03f 3/68
U.S. Cl. 330—84 11 Claims

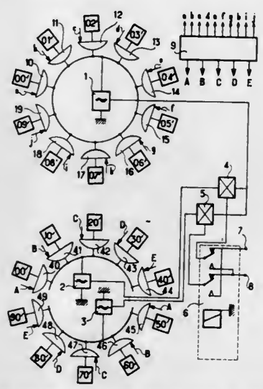


A multibump equalizer wherein a plurality of shaping networks are serially connected between a first summing network-amplifier combination and individual inputs to a second summing network-amplifier combination. A frequency independent feedforward path connects the input to the equalizer, which is also connected to an individual input of the first summing network, to an individual input on the second summing network. A frequency independent feedback path connects the output of the equalizer, which is also connected to the output of the first amplifier, to an individual input of the first summing network.

3,624,540
FREQUENCY SYNTHESIZER

Didier Leonard, Boulogne, France, assignor to C. I. T. Compagnie Industrielle Des Telecommunications, Paris, France

Filed Dec. 22, 1969, Ser. No. 887,232
Claims priority, application France, Dec. 20, 1968, 179756
Int. Cl. H03b 21/02
U.S. Cl. 331—38 6 Claims



The simplified synthesizer supplying pairs of frequencies spaced at regular intervals comprises three oscillators, 24-quartz crystals, two modulators, but only 20-AND gates instead of the 30 previously required.

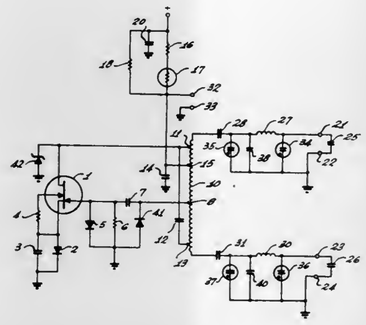
3,624,541
OSCILLATOR CIRCUIT

John W. Lundstrom, Glendora, Calif., assignor to Moisture Register Company, Alhambra, Calif.

Filed Nov. 3, 1969, Ser. No. 873,274
Int. Cl. G01r 27/26
U.S. Cl. 331—65 9 Claims

A field-effect transistor connected in a class C Hartley oscillator circuit has a diode connected to the gate to provide

bias. A similar diode is connected in series with the source to provide temperature stabilization of the operating point. Further temperature stabilization is obtained by means of a thermistor-compensated load network. The biasing diode protects against positive high-voltage transients developed in the vicinity of moisture-sensing electrodes coupled to the

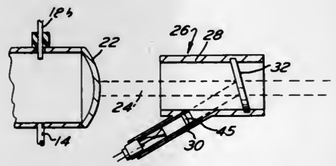


tank circuit. A second diode is reverse-biased and coupled to the gate with opposite polarity to protect against negative transients. A zener diode connected to the drain prevents it from developing transients of negative voltage. To further protect against high-voltage transients, the moisture-sensing electrodes are coupled to the tank circuit through low-pass filters loaded by neon glowtubes.

3,624,542
CONTROL FOR POWER OUTPUT OF GAS LASER

Alexander L. Pugh, Jr., Paoli, Pa., assignor to TRW Inc., Philadelphia, Pa.

Filed July 26, 1968, Ser. No. 748,011
Int. Cl. H01s 3/11, 3/22; G02b 27/14
U.S. Cl. 331—94.5 2 Claims

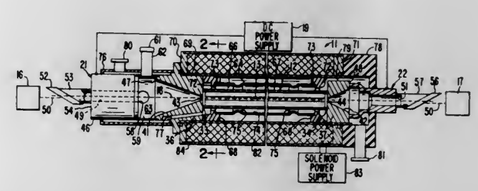


A control for maintaining uniform the luminous power output of a laser comprising a beam splitter, a temperature sensitive device and a device to vary the power input to the laser. The beam splitter diverts a portion of the output beam of the laser and directs the diverted portion of the beam onto the temperature sensitive device. The temperature sensitive device provides an electrical output which will vary to correspond with any variation in the output of the laser. The temperature sensitive device is electrically connected to the electrical input to the laser so that any variation in the output of the laser will vary the electrical input to the laser and thereby maintain the output of the laser substantially uniform.

3,624,543
GAS COHERENT RADIATION GENERATOR WITH SEGMENTED CERAMIC DISCHARGE TUBE HAVING INTEGRAL GAS RETURN PATHS

Albert M. Rockwell, Jr., East Palo Alto, Calif., assignor to Laser Sciences, Inc., Bethel, Conn.

Continuation of application Ser. No. 641,965, May 29, 1967, now abandoned. This application Aug. 10, 1970, Ser. No. 62,635
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 10 Claims

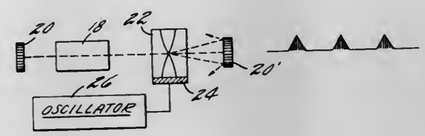


B,0 ceramic discs are provided with a centrally located bore and smaller bores radially spaced therefrom. The discs are joined together in a stack by copper rings brazed to facing metallized portions of adjacent discs of the stack. The copper rings are selected to have an inside diameter so that the rings will not mask the bores when the discs are assembled in a stack. The discs are joined to define a capillary discharge tube with the centrally located bore aligned along an optically straight path, and to have the radially spaced smaller bores intercommunicated to define gas return paths.

3,624,544
SELF MODE-LOCKING OF LASERS USING DYES

Anthony J. De Maria, West Hartford; David A. Stetser, Jr., Manchester, and Hans A. Heynau, Wapping, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 23, 1966, Ser. No. 536,898
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 5 Claims



A laser is self mode-locked by placing an expander element comprising a saturable absorber which has a faster recovery time than the loop time delay of the laser within the optical cavity of the laser. Acoustic waves may be propagated within the saturable absorber to gate the laser output.

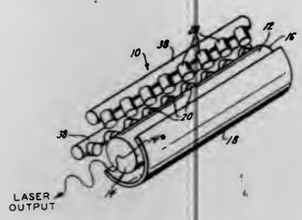
3,624,545
SEMICONDUCTOR PUMPED LASER

Monte Ross, Ladue, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 23, 1968, Ser. No. 769,836
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 18 Claims

A laser device employing laser means to pump laser means and including a main laser element constructed of materials such as yttrium aluminum garnet (YAG) that is capable of lasing and one or more semiconductor diodes capable of

being stimulated to operate as lasers, said diodes being positioned to pump their outputs into the main laser element,



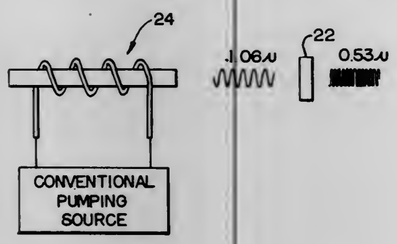
said device requiring relatively little energy to produce a laser action.

3,624,546
VARIABLE COUPLING LASER RESONATOR
Carl M. Ferrar, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 28, 1969, Ser. No. 794,624
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **8 Claims**



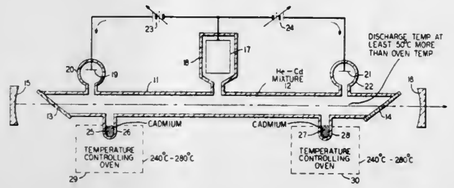
A pair of flat-reflecting mirrors are positioned at approximately right angles to each other with a small variable gap between the mirrors. The mirror pair is used as the output mirror for a laser oscillator. Variation of the gap between the mirrors will vary the extraction of laser beam power from the laser oscillator, and simultaneous rotation of both mirrors permits steering of the laser output beam.

3,624,547
SOLID-STATE LASER PRODUCED BY A CHEMICAL REACTION BETWEEN A GERMINATE AND AN OXIDE DOPANT
Cortland O. Dugger, 118 Fayerweather St., Cambridge, Mass.
Filed Feb. 4, 1969, Ser. No. 796,413
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **10 Claims**



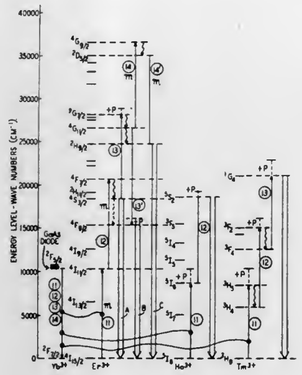
A system of germinates is provided which can be synthesized as single crystals, glasses or polycrystalline (powder) substances. New germinate compositions are disclosed as well as new processes for producing germinates. Luminescence observed in the germinates is believed to be caused by dopants or by self-activation. The germinates are employed as lasers, electronic semiconductive devices, thermoelectric devices and other applications.

3,624,548
DISCHARGE TUBE CONFIGURATION OF METAL-VAPOR ION LASER
Thomas P. Sosnowski, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 9, 1969, Ser. No. 814,617
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 **5 Claims**



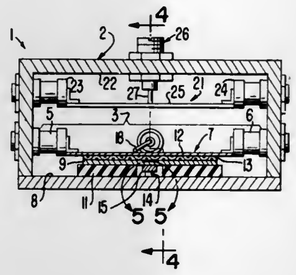
A discharge tube configuration for a cadmium-ion laser is disclosed which prevents deposition of cadmium on the interior surfaces of the Brewster's-angle windows of the discharge tube. A split excitation arrangement is employed with a cathode in the center and an anode at either end; and the phenomenon of cataphoresis is used to advantage by disposing a pair of reservoirs of metallic cadmium nearer to respective ones of the anodes than to the cathode. The reservoirs have openings adjacent the discharge path, and are controlled in temperature independently of the discharge tube temperature. An appropriately uniform density of cadmium ions as a minority constituent in an auxiliary gas of helium is also achieved by this arrangement in cooperation with the cataphoresis.

3,624,549
INFRARED DIODE-PUMPED VISIBLE LASER
Joseph E. Geusic, Berkeley Heights; Leo F. Johnson, Bedminster, and LeGrand G. Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 16, 1969, Ser. No. 816,614
Int. Cl. H01s 3/00; C09k 1/00
U.S. Cl. 331—94.5 **16 Claims**



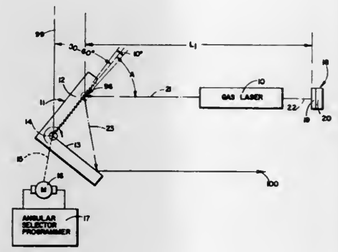
Laser action in the visible spectrum is achieved by use of an infrared-emitting GaAs diode. Second photon or higher order photon processes are involved.

3,624,550
MICROWAVE OSCILLATOR CIRCUIT FOR A BULK-EFFECT NEGATIVE-RESISTANCE DEVICE
Arthur B. Vane, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed June 16, 1969, Ser. No. 833,478
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **5 Claims**



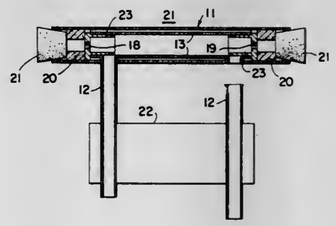
A microwave oscillator circuit for a high-power high-efficiency negative-resistance bulk-effect device is disclosed. The circuit includes a half-wavelength open-circuited length of stripline transmission line provided with variable lumped capacitors at opposite ends thereof, such capacitors serving to tune the stripline for a fundamental mode of resonance at the operating frequency of the oscillator. The low-impedance bulk-effect device is connected across the stripline at a point near the voltage null of the fundamental resonance. The characteristic impedance and the length of the stripline are adjusted such that the reactance of the line and the reactance of the capacitors at the ends allow the circuit to support full wave resonance at precisely twice the fundamental frequency and therefore develop a second harmonic voltage across the bulk-effect device to improve the conversion efficiency of the oscillator. Power is extracted from the oscillator circuit by means of a filter circuit tuned to pass the fundamental frequency and reject the harmonic. The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Air Force.

3,624,551
SELECTIVELY TUNABLE GASEOUS LASER
Richard A. Gudmundsen, Orange County, and James E. Rau, Anaheim, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Filed June 27, 1969, Ser. No. 837,249
Int. Cl. H01s 3/10, 3/05
U.S. Cl. 331—94.5 **8 Claims**



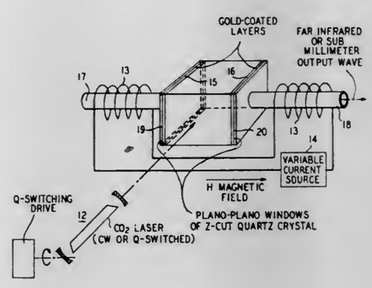
The invention relates to a laser device which comprises in combination laser generation means including a laser cavity which has a gaseous medium in at least a portion of the cavity and which produces directed energy comprised of a group of frequency bands. Also included are apparatuses which react with the directed energy, so designed so as to avoid translation and angular rotation of the directed energy. The apparatuses provide selective tuning of the laser cavity to at least one of the frequency bands. Included are equipments for programming the apparatuses so that the laser is tuned to either one of the frequency bands, to all of the frequency bands in a predetermined sequence, or to some of the frequency bands in a random access manner. An additional component interposed in the path of the directed energy beam enables the laser beam to act as a carrier of the electrical signals provided by this additional component.

3,624,552
GLASS LASER COUPLING REFLECTOR
Charles A. Bennett, Camden, N.J., assignor to The United States of America as represented by the Secretary of the Army
Continuation of application Ser. No. 635,984, May 2, 1967, now abandoned. This application Aug. 5, 1969, Ser. No. 849,281
Int. Cl. H01s 3/02, 3/05, 3/09
U.S. Cl. 331—94.5 **2 Claims**



A method for fabricating a distortion-free glass laser device having generally concentric tubes, a reflective powder thereinbetween and port holes communicating between the tubes.

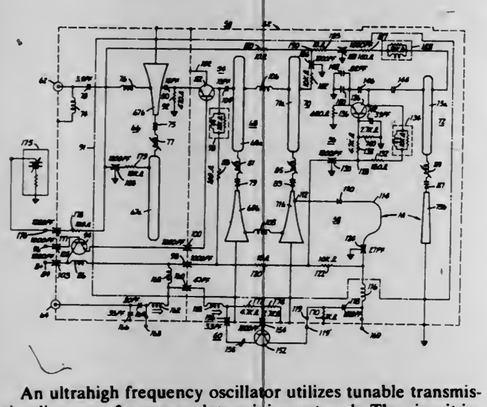
3,624,553
CYCLOTRON RESONATOR LASER IN A P-TYPE SEMICONDUCTOR
Nguyen Van-Tran, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 6, 1969, Ser. No. 863,960
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 **5 Claims**



There is disclosed a cyclotron resonance laser of the type in which the Landau-level ladder is truncated either by the optical phonon or unequal spacings of the levels, in which the semiconductive crystal consists essentially of P-type ger-

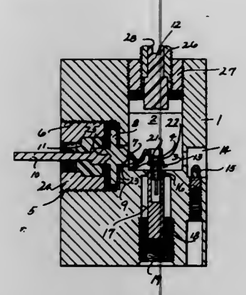
manium nearly compensated with antimony and in which, typically at low temperatures, the only effective acceptor level is a zinc energy level so deep in the band gap that the population inversion can be established by pumping radiation at 10.6 microns or 9.6 microns by a carbon dioxide molecular laser. In order to reduce the effective mass of heavy holes and to avoid reabsorption of the stimulated radiation by transitions between the heavy-hole and light-hole bands, suitable pressure, for example, uniaxial pressure, splits the heavy-hole and light-hole bands by about 0.02 electron volts.

3,624,554
ULTRAHIGH FREQUENCY OSCILLATOR UTILIZING TRANSMISSION LINE TUNABLE RESONANT CIRCUITS
Stephen Earl Hilliker, Mooresville, and John Barrett George, Indianapolis, both of Ind., assignors to RCA Corporation
Filed Mar. 23, 1970, Ser. No. 21,901
Int. Cl. H03b *5/18*
U.S. Cl. 331—99 **13 Claims**



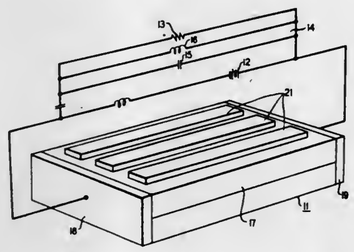
An ultrahigh frequency oscillator utilizes tunable transmission lines as a frequency determining network. The circuit includes a dielectric plate having a conductive section disposed on a first plate face opposed on the second plate face by a conductive ground plane. The oscillator active device has one of its electrodes coupled to a first point located on the conductive section and another of its electrodes coupled to a point on the ground plane located directly opposite the first point. A window may be provided in the ground plane with conductive areas disposed within the window area. The conductive areas provide circuit capacitances for the oscillator.

3,624,555
MICROWAVE CAVITY OSCILLATOR
Carl F. Klein, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 2, 1970, Ser. No. 015,478
Int. Cl. H03b *7/12*
U.S. Cl. 331—107 R **17 Claims**



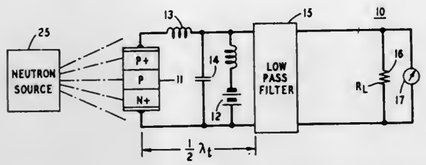
A microwave cavity oscillator includes a cavity block of a suitable metal having a cavity in one wall. A microwave diode is secured to the closed end of the open-ended cavity with a tubular center conductor secured to the diode. A dielectric tuning element of "Rexolite" is mounted for axial adjustment within the open end of the cavity. The element provides a direct capacitive coupling of the open-ended cavity to the center conductor to change cavity impedance and the frequency without loading the cavity with the consequent losses. A bias wire is connected to the center conductor and extends laterally through an opening to a bias disc within a recess. A dielectric plate is placed between the disc and recess base. A bias pin is carried by a dielectric member within a bias plug which threads into the recess. The pin bears on the back of the disc to clamp the dielectric plane and element against the base recess. The diode package defines a current-dividing network around the diode permitting adjustment of the circulating current through the diode.

3,624,556
BULK-EFFECT SEMICONDUCTOR DEVICES
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 29, 1970, Ser. No. 50,567
Int. Cl. H03b *7/00*
U.S. Cl. 331—107 G **4 Claims**



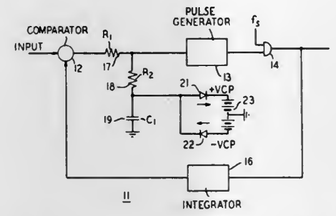
Traveling electric field domains are suppressed in a bulk-effect negative resistance device by including on the semiconductor wafer a plurality of dielectric stripes extending between the cathode and the anode contacts. The stripes tend to break up any incipient domains by reducing the localized velocity of the domain in the wafer region immediately contiguous to the stripe.

3,624,557
METHOD FOR MAKING DIODES FOR USE IN TRAPATT OSCILLATORS
Bernard C. De Loach, Jr., Murray Hill, and Donald L. Scharfetter, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Sept. 2, 1969, Ser. No. 854,678
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **5 Claims**



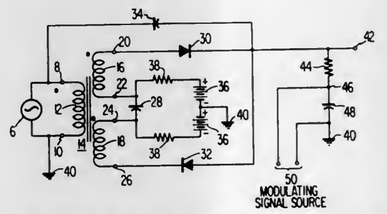
A diode for use in a TRAPATT oscillator circuit is made in a known manner with care being taken to minimize internal defects. Recombination centers are then introduced into the diode for reducing the diode lifetime to a sufficient value to give a reverse saturation current I_r appropriate for TRAPATT mode operation. The recombination centers may be introduced by high energy particle radiation, gold doping or quenching.

3,624,558
DELTA MODULATION ENCODER HAVING DOUBLE INTEGRATION
Stephen Joseph Brolin, Bronx, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 16, 1970, Ser. No. 3,312
Int. Cl. H03k *13/22*
U.S. Cl. 332—11 D **3 Claims**



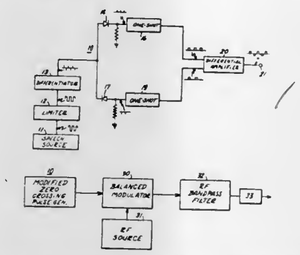
A delta modulation encoder has a second integrator for producing more rapid alternations in the noise signal, thereby removing a portion of the noise from the signal frequency band. The integrator is clamped to prevent excessive overshoots.

3,624,559
PHASE OR FREQUENCY MODULATOR USING PIN DIODES
Louis Carl Schaeperkoetter, Jr., McMurray, Pa., assignor to RCA Corporation
Filed Jan. 2, 1970, Ser. No. 254
Int. Cl. H03c *3/26*
U.S. Cl. 332—24 **12 Claims**



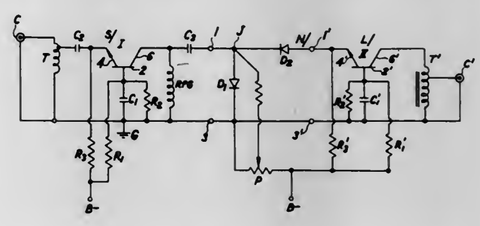
An angle modulator employing PIN diodes in a balanced circuit to provide improved linear angle variation over a wide range of modulating signal amplitudes and frequencies.

3,624,560
MODULATION TECHNIQUE FOR A LIMITED ENERGY SPEECH TRANSMISSION SYSTEM EMPLOYING PHASE REVERSAL OF ALTERNATE PULSES
Robert T. Milton, Burnt Hills, N.Y., assignor to General Electric Company
Filed Dec. 16, 1969, Ser. No. 885,562
Int. Cl. H03c *1/52*
U.S. Cl. 332—31 R **6 Claims**



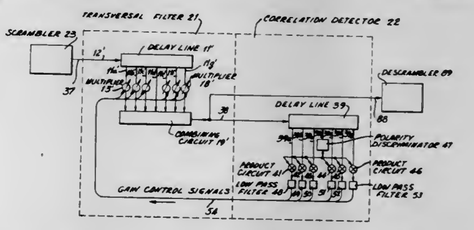
A modulation technique for a limited energy speech transmission system (LEST) is disclosed wherein either alternate speech zero crossing pulses or alternate radio frequency pulses are phase reversed prior to transmission.

3,624,561
BROADBAND APERIODIC ATTENUATOR APPARATUS
Ben H. Tongue, 41 Ferris Drive, West Orange, N.J.
Continuation of application Ser. No. 561,103, June 28, 1966, now abandoned. This application Feb. 24, 1970, Ser. No. 14,731
Int. Cl. H01p *1/22*; **H03g** *3/10, 3/30*
U.S. Cl. 333—6 **3 Claims**



This disclosure deals with a broad band aperiodic attenuator using networks of nonlinear direct-current-energy controllable variable impedance elements with critical relationships between signal source and load to eliminate third order distortion effects and the like despite the presence of such nonlinear elements.

3,624,562
AUTOMATIC EQUALIZER FOR RANDOM INPUT SIGNALS
Noriaki Fujimura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 19, 1970, Ser. No. 21,053
Claims priority, application Japan, Mar. 26, 1969, 44/22860
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **5 Claims**
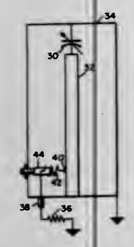


Input signals to a transversal filter are made random by the scrambler which is provided at the sender side. The transversal filter includes multipliers. A correlation detector having filters is connected to the transversal filter. A descrambler connected to the transversal filter converts the equalized random signals provided by the transversal filter into signals which are similar to the input signals. A connector connects the filters of the correlation detector to the multipliers of the transversal filter to control the multipliers by control signals produced by the filters.

3,624,563
COIL AND FIXED TAP INPUT COUPLING FOR VARIABLY END-LOADED COAXIAL FILTER, GIVING LINEAR Q WITH TUNING CHANGE, SUITABLE FOR MULTICOUPLER APPLICATIONS
Henry E. Burley, Baltimore, Md., and William H. Martin, Leesburg, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 3, 1969, Ser. No. 838,999
Int. Cl. H03h *13/00*; **H01p** *7/04, 5/04*
U.S. Cl. 333—24 R **7 Claims**

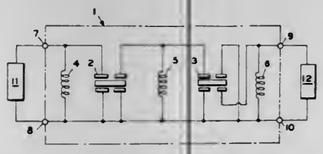
An input coupling for a multicoupler filter wherein the inner conductor of the input cavity is connected to a genera-

tor through a choke which is connected at one end to the generator and at the opposite end by a tap to the inner conductor of the cavity. The inductance magnitude of the choke and the position of the tap on the inner conductor are selected to provide a predetermined loaded Q of the cavity at one end of the frequency range of interest and to provide



another predetermined loaded Q of the cavity at the opposite end of the frequency range of interest. The loaded Q of the cavity has been found to vary linearly over the frequency range of interest when the inductance magnitude of the choke and the position of the tap are determined in the aforementioned manner.

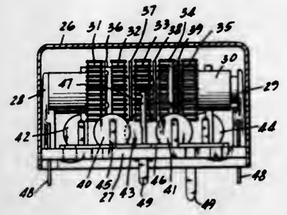
3,624,564
PIEZOELECTRIC CERAMIC BAND-PASS FILTER
Yukihiko Ise; Yuichi Kaname, and Kingo Wada, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Jan. 20, 1970, Ser. No. 4,196
Int. Cl. H03h *9/00*
U.S. Cl. 333—72 **5 Claims**



A band-pass wave filter comprising of a first piezoelectric ceramic resonator which is provided with a pair of first input electrodes and a pair of first output electrodes, and which has a resonant mode of vibration at a predetermined frequency, a second piezoelectric ceramic resonator which is provided with a pair of second input electrodes and a pair of second output electrodes, and which has a resonant mode of vibration at a said predetermined frequency, a first shunt inductance combined in parallel with said pair of first input electrodes, a second shunt inductance connected between said pair of first output electrodes and said pair of second input electrodes, and a third shunt inductance which is connected in parallel with said pair of second output electrodes and which is opposite in the polarity to said pair of second input electrodes.

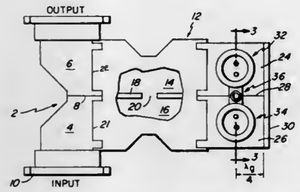
3,624,565
TOROIDAL FILTER
Samuel Harris, Cherry Hill; Edward C. Horton, Cherry Hill, N.J., and Otto P. Tader, Chicago, Ill., assignors to TRW Inc., Cleveland, Ohio
Filed Nov. 3, 1969, Ser. No. 873,549
Int. Cl. H03h *7/08*
U.S. Cl. 333—76 **3 Claims**

Filter assembly particularly useful as an intermediate frequency filter for FM radios, the filter including a nonmagnetic form having a plurality of toroidally wound cores positioned in spaced coaxial relation along the form, with a capacitance for each of the coils providing a tuned circuit at a predetermined frequency, the spacing between the coils



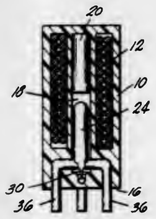
being sufficiently close so that stray capacitances between the coils are sufficient for coupling the tuned circuits at the operating frequency of the filter.

3,624,566
HIGH-POWER CONTROL MEANS FOR ATTENUATING MICROWAVE ENERGY
Henry W. Perreault, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Apr. 24, 1970, Ser. No. 31,707
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 B **13 Claims**



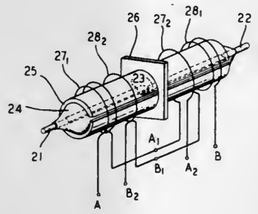
Compact high-power control means for attenuating electromagnetic energy at microwave frequencies are disclosed providing energy reflection as well as adjustable absorption load means, in a terminated branch line coupled by energy splitting means to a first transmission line. Adjustment of the load-to-line coupling results in variation of the magnitude of the reflection and control of the energy propagated in a transmission system with negligible insertion loss and substantially flat attenuation frequency response. The device exhibits no frequency-sensitive characteristics to thereby afford a broadband frequency response.

3,624,567
ELECTRIC RELAY
Merrill B. Gordon, 90 Colburn Court, Worthington, Ohio
Filed Mar. 19, 1970, Ser. No. 21,069
Int. Cl. H01h *1/08*
U.S. Cl. 335—58 **8 Claims**



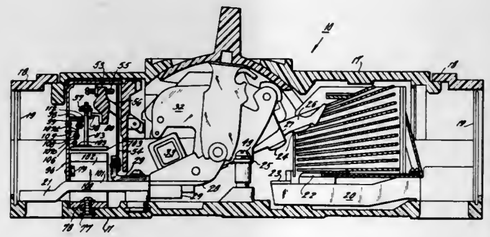
An electric relay including a movable armature wherein the armature includes an electric conducting portion adapted to engage and bridge spaced electrical contacts at a predetermined armature position. During the conducting position of the armature, a mercury applicator mounted on the armature is immersed within a small reservoir of mercury wherein small particles thereof adhere to the applicator upon removal of the armature from engagement with the electrical contacts. Such disengagement of the armature from the contacts positions the applicator adjacent the effective contact surfaces, for random engagement therewith, wherein small mercury particles are transferred to the contact surfaces, to utilize mercury in establishing the electrical circuit between the contacts and the armature electrical conducting portion during subsequent cycles of operation.

3,624,568
MAGNETICALLY ACTUATED SWITCHING DEVICES
Karl Martin Olsen, Madison, and Raymond Christian Stoffers, Newark, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 26, 1970, Ser. No. 83,808
Int. Cl. H01h *51/27*
U.S. Cl. 335—153 **2 Claims**



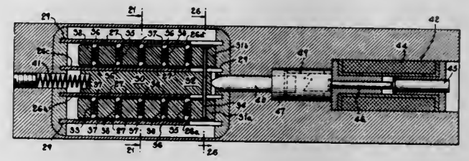
The remanent magnetization for cobalt-iron compositions in the category known as "Remendur" is increased by a critical series of processing steps. The most significant departure from conventional processing is in hot working reduction with the alloy maintained at a temperature in which both the α and γ phases are in thermal equilibrium. The alloys are designed for use in magnetically actuated reed switches.

3,624,569
NONLINEAR POSITIVE GRADIENT FORCE MECHANISM
Howard R. Shaffer, Glenside, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.
Filed Feb. 9, 1970, Ser. No. 9,658
Int. Cl. H01h *7/08*
U.S. Cl. 335—172 **5 Claims**



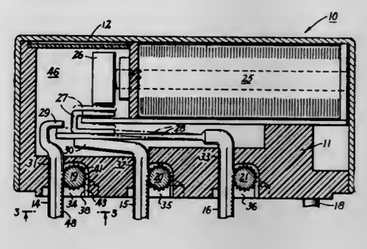
A mechanical linkage interposed between the armature and opening spring for an electromagnet cooperates with the spring to provide a nonlinear positive spring gradient component acting on the armature, which gradient component closely follows the flux force gradient generated by the minimum current required for pulling in the armature. Very near the end of the armature stroke the flux force gradient diverges from the spring gradient component to provide extra force which overcomes contact pressure spring forces.

3,624,570
ELECTROMECHANICAL RELAY
John S. Lory, Commack, N.Y., assignor to Lory Electronics, Inc., Deer Park, N.Y.
Filed Apr. 2, 1970, Ser. No. 25,132
Int. Cl. H01h *3/00*
U.S. Cl. 335—190 **9 Claims**



There is disclosed a multicontact electromechanical relay wherein a relatively large slidable switching assembly is moved by a relatively large slidable switching assembly is moved by a relatively small solenoid to "on" and "off" positions by successive operations of the solenoid through a ratchet-cam arrangement.

3,624,571
PRECISION METHOD AND MEANS FOR POSITIONING CONTACT POINTS IN MINIATURE ELECTRICAL RELAYS
Nathan H. Magida, Westport, Conn., assignor to Thermosen, Incorporated, Stamford, Conn.
Filed Dec. 15, 1969, Ser. No. 884,987
Int. Cl. H01h *1/48*
U.S. Cl. 335—197 **8 Claims**

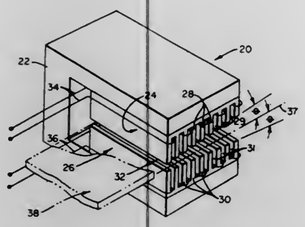


A small cylindrical hardened steel drive shaft having knurled serrations formed circumferentially in a continuous band around a central portion is rotatably mounted in bearing recesses formed in a molded plastic base of a miniature relay adjacent and at right angles to a contact pin hole formed in the base. A contact supporting pin inserted through the pin hole is brought into forced engagement with the serrated portion of the drive shaft which, when rotated, forms racklike mating serrations in the engaging surface of the relatively softer contact supporting pin. A wrench-engaging head formed on the external end of the drive shaft enables partial rotation of the drive shaft to impart linear motion of the order of 0.00005 inch, or less, to the contact supporting pin during final assembly of the relay. After all pins have thus been precisely positioned epoxy is applied to the drive shafts and pins to set and seal them in final position.

3,624,572
MAGNETS FOR GENERATING SPATIALLY VARYING MAGNETIC FIELDS

John C. Mallinson, and Charles W. Steele, both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 30, 1970, Ser. No. 33,214
Int. Cl. H01f 1/00
U.S. Cl. 335—209 8 Claims

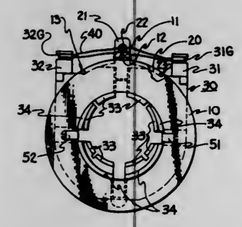


Magnet device for generating a spatially periodic magnetic field of decreasing magnitude, while employing a direct current DC source, or permanent magnets, as the field generating source of power. The invention contemplates at least one plurality of poles of selected configuration, adapted to receive a magnetic medium in magnetic bridging relation. A second plurality of poles of selected configuration may be disposed in confronting relation to the first plurality, in selected orientation therewith, defining therebetween a gap of selected dimensions and shape for receiving therethrough the magnetic medium. Accordingly, a magnetic medium passing along a preselected path adjacent the single plurality of poles, or through the gap between the confronting plurality of poles, experiences a spatially varying, symmetrical, magnetic field of selectable constant or varying magnitude. Several arrangements and various modifications are contemplated within the invention concepts to effect the desired operating parameters.

3,624,573
BLUE LATERAL MAGNET STRUCTURE

Paul Ernest Wiseman, Carmel, Ind., assignor to RCA Corporation

Filed May 15, 1970, Ser. No. 37,574
Int. Cl. H01f 3/02
U.S. Cl. 335—212 8 Claims

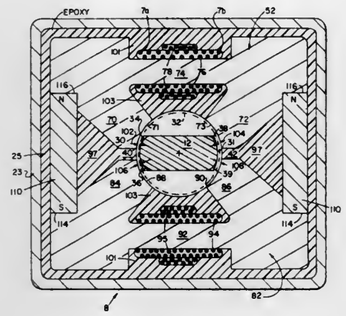


"Blue lateral" correction of beam positions in color kinescope is provided by structure having a pair of rotatable six-pole magnet rings eccentrically disposed about kinescope neck. Equal-and-opposite rotations of the rings provide lateral shift of blue beam and opposing lateral shifts of red and green beams, of an adjustable magnitude and sense. Magnet rings have peripheral tabs, and are oriented on a mount with the tabs positioned between the locations of a pair of posts projecting from mount surface. Drive cord, secured to each tab, is looped about the projecting posts. When either ring is rotated, drive cord causes other ring to undergo equal-and-opposite rotation.

3,624,574
ACTUATOR

Jean I. Montagu, Boston, Mass., assignor to General Scannings, Inc., Watertown, Mass.

Filed Nov. 24, 1969, Ser. No. 879,411
Int. Cl. H01f 7/08
U.S. Cl. 335—230 26 Claims

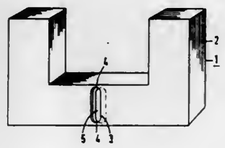


Elimination of unwanted motion of limited rotation actuators of the moving iron, permanent magnet type, is described. In this type, biasing flux from a permanent magnet and control flux from a coil are applied to a permeable armature along different paths through split pole pieces. Damping of unwanted residual oscillation is achieved by an independent short-circuited coil surrounding a permeable member in the control flux path. Other erratic movement is found to be due to bearing tolerances and is avoided by intentional misalignment or biasing of the armature shaft relative to its bearings, this also improving bearing life. Telescoped construction of a torsion bar within a tube which mounts armature laminations between bearings is shown. Compensation for improper relation of movement vs. current is achieved by a distinctly different shaping of the curvature of portions of the surfaces relative to other cylindrical portions of the surfaces defining the gaps between armature and pole pieces, obtained for large size armatures by offcenter machining. In various combinations these features achieve improved sets of characteristics relating to overall size and the amount of delivered torque, deflection, damping, linearity and heating obtained. Electro-optical scanners and choppers having resonant frequencies in the 1,000 Hz. range are described.

3,624,575
LAMINATED MAGNET CORE

Otto Muller, and Gunter Rauter, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 2, 1970, Ser. No. 69,003
Claims priority, application Germany, Sept. 4, 1969, P 19 44 888.5
Int. Cl. H01f 3/00
U.S. Cl. 335—281 7 Claims

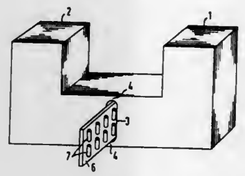


A laminated magnet core for contactors or the like has a working airgap. The magnet core is made up of stacked metal sheets having respective slitlike openings extending across a portion of the width of the sheets, the openings being at least partly overlapping and jointly defining a gap for reducing the core remanence.

3,624,576
LAMINATED MAGNET CORE

Gunther Rauter, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 2, 1970, Ser. No. 69,002
Claims priority, application Germany, May 2, 1970, P 20 21 659.5
Int. Cl. H01f 3/00
U.S. Cl. 335—281 4 Claims

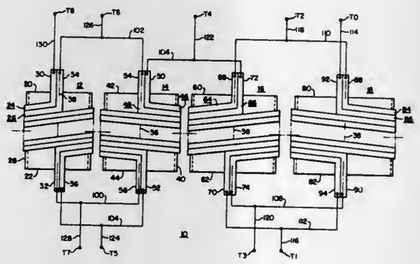


A laminated magnet core for contactors and the like has a working airgap. The magnet core is made up of a stack of metal sheets having respective slitlike openings extending across a portion of the width of the sheets. The openings overlap and jointly form a slot extending transversely through the core. At least one perforated ferromagnetic sheet extends into the slot for reducing the magnetic effective width of the slot so as to define a remaining gap for reducing the core remanence and for reducing core losses in said core.

3,624,577
TAPPED MULTILAYER WINDING FOR ELECTRICAL INDUCTIVE APPARATUS

John T. Barrow, Jr., Rolla, Mo., and Robert D. Morris, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1969, Ser. No. 867,319
Int. Cl. H01f 21/12, 15/10, 27/28
U.S. Cl. 336—150 7 Claims

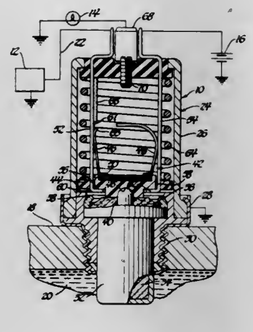


A tapped winding for electrical inductive apparatus having at least first, second, third and fourth concentrically adjacent layers of conductor turns. Each layer of conductor turns is formed of first and second axially interleaved conductors, the ends of which extend outwardly from the axial ends of the winding structure. Predetermined adjacent ends of the first and second conductors are interconnected between predetermined adjacent layers, at each axial end of the winding structure, to provide a single series circuit through the winding which sequentially traverses the first, second, first, second, third, fourth, third and fourth layers, with the interconnected ends being adapted for connection to external tap leads.

3,624,578
THREE FUNCTION THERMAL-ELECTRICAL SWITCH

Alan F. Stocker, North Tonawanda; Lynn S. Brock, Williamsville, and Raymond E. Graf, Youngstown, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,681
Int. Cl. H01b 37/52
U.S. Cl. 337—299 7 Claims

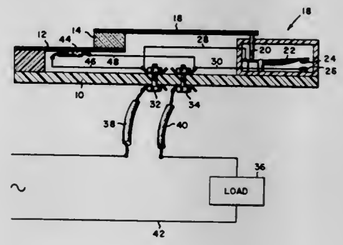


A switch that is responsive to both the temperature within an enclosure and the ambient temperature near the exterior of the enclosure. A wax-mixture-filled container at one end of the switch housing monitors the internal temperature of the enclosure and moves a contact assembly within the housing along a pair of terminals in response to the monitored temperature. A bimetal member in the contact assembly effects an electrical connection between the terminals in response to the ambient temperature as sensed within the switch. An insulating member precludes the electrical connection when the wax mixture is above a certain temperature. When the wax mixture is at an even higher temperature the contact assembly completes another current path between one of the terminals and a third terminal.

3,624,579
ANTICIPATING THERMOSTAT

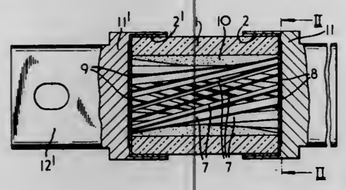
Elmer A. Carlson, Agoura, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 23, 1970, Ser. No. 74,578
Int. Cl. H01h 61/00
U.S. Cl. 335—100 5 Claims



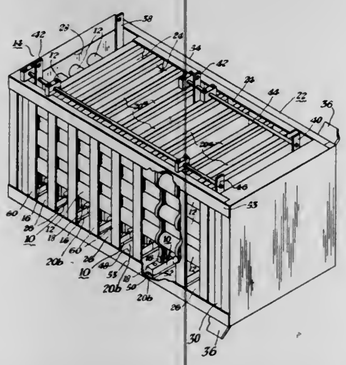
A room thermostat for heating systems having an anticipating heater energized when the thermostat is not calling for heat and acting on an auxiliary temperature sensing element acting in a reverse sense from the main sensing element. A two-wire thermostat is thus provided which has a fixed value anticipating heater that need not be changed to match the load.

3,624,580
CARTRIDGE FUSES
William James Elliott, Loughborough, England, assignor to Brush Electrical Engineering Company Limited, Loughborough, England
Filed Feb. 11, 1970, Ser. No. 10,443
Claims priority, application Great Britain, Mar. 1, 1969, 11,079/69
Int. Cl. H01h *85/12*
U.S. Cl. 337—161 7 Claims



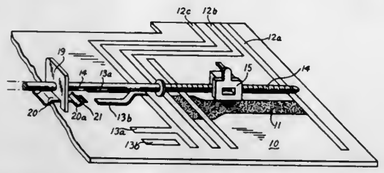
A cartridge fuse comprising a tubular body, a pair of end caps for the body and a plurality of fusible metallic strips extending through the body between the ends caps, the strips being secured to each end cap at positions spaced apart in the circumferential direction thereof, such that the strips are spaced apart from each other along their whole lengths intermediate the end caps, the position of one end of each strip being circumferentially staggered with respect to the other end thereof. Also one end portion of each strip is inclined to a radius of the end cap to which it is secured in one direction circumferentially of the end cap and the other end portion of the strip is inclined to a radius of the end cap to which it is secured in the other direction circumferentially of the end cap, whereby an intermediate portion in the length of the strip is directed widthwise of the strip radially of the tubular body to reduce thermal shock on the body when the fuse blows.

3,624,581
SUPPORTING AND INSULATING ARRANGEMENT FOR ELECTRICAL RESISTOR OR THE LIKE
Albert G. Owen, Sun City, Ariz., assignor to Mosebach Manufacturing Company, Pittsburgh, Pa.
Filed Apr. 4, 1969, Ser. No. 813,513
Int. Cl. H01c *1/08*
U.S. Cl. 338—57 5 Claims



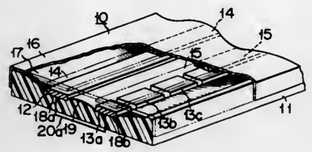
I disclose an electrical resistor having a plurality of elongated resistor elements arranged in a closely spaced generally parallel array and connected electrically for electrical loading purposes. A supporting and insulating arrangement for the elements is disposed intermediate the ends of the elements. The arrangement has a plurality of metallic supporting straps and insulating members detachably joined.

3,624,582
ROTATABLE PUSHBUTTON CONTROL OF MOVABLE RESISTOR CONTACT AND OF SWITCH CONNECTIONS THERETO
Sadayoshi Iwasaki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1969, Ser. No. 869,717
Claims priority, application Japan, Nov. 20, 1968, 43/101570
Nov. 11, 1968, Japan, 43/98459
Int. Cl. H01c *9/08*
U.S. Cl. 338—129 11 Claims



Pushbutton control of a tuner is achieved by selectively positioning individual contacts on resistor strips formed on a baseplate together with lead wires cooperating with those resistor strips. Each pushbutton is associated with a shaft on which a resistor-contactor is adjustably mounted, the pushbutton in its known position being normally rotationally disengaged from the shaft but being rotationally engaged with the shaft when pushed inwardly. The shaft actuated by a given pushbutton moves a flexible ribbon which serves as a tuning indicator. One of the pushbuttons controls a rotary switch in which springs move into corners of an appropriately shaped opening in order to hold the switch in its various operative positions.

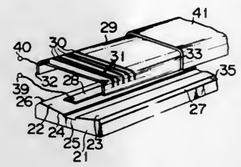
3,624,583
PLAYING DEVICES FOR ELECTRONIC MUSICAL INSTRUMENTS
Akira Nakada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Feb. 17, 1970, Ser. No. 12,096
Claims priority, application Japan, Feb. 20, 1969, 44/12440
Int. Cl. H01c *9/06*
U.S. Cl. 338—69 6 Claims



A fingerboard-type playing device for an electronic musical instrument comprises an elongated resistor, a plurality of conductor taps spaced apart from each other and contiguously aligned in a row parallel to and by the resistor, and a flexible contact disposed over the elongated resistor and the conductor taps with a small space normally apart therefrom. A depression of the flexible contact makes an electric connection between the flexible contact and the elongated resistor or between the flexible contact and the conductor tap to sound a tone having the pitch determined by the depression point.

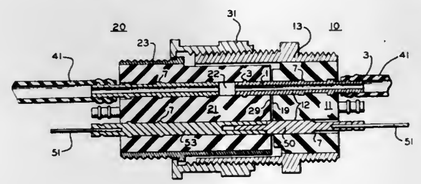
3,624,584
VARIABLE RESISTANCE DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT
Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Feb. 13, 1970, Ser. No. 11,283
Claims priority, application Japan, Feb. 20, 1969, 44/14390
Feb. 20, 1969, 44/14391; Feb. 20, 1969, 44/14392; Apr. 15, 1969, 44/34149; Apr. 17, 1969, 44/34932
Int. Cl. H01c *9/00*
U.S. Cl. 338—69 13 Claims

A variable resistance device adapted for use in a portamento performance combined with an electronic musical instrument comprises a narrow base made of electrical insulating material, an elongated resistance element disposed on said base and used as an element for determining the oscillating frequency of a tone signal generator and a flexible sheet-like conductor arranged above said resistance element at a prescribed space from each other. When a finger depressing



the conductor to bring it into contact with the resistance element is shifted in the longitudinal direction of the element, resistance prevailing between the conductor and one end of the element successively varies with the resultant continuous change in the oscillator frequency, thereby obtaining the portamento effect.

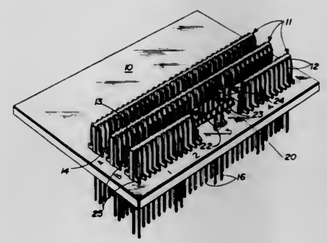
3,624,585
DUAL ELECTRICAL AND FLUIDIC CONNECTOR ASSEMBLY
Edward Kokalas, and Edward S. Yablonski, both of Sidney, N.Y., assignors to The Bendix Corporation
Filed Mar. 27, 1970, Ser. No. 23,124
Int. Cl. H01r *3/04*
U.S. Cl. 339—16 R 4 Claims



A quick-connect connector for connecting a plurality of fluid and electrical conductors. In combination with an electrical connector of the type having a male and female member each of which includes an insert having a plurality of passages of a given diameter and wherein one of said inserts includes male electrical contact members disposed in the passages of the inserts and female electrical contact members disposed in the passages of the other insert for connecting a plurality of noncommunicating electrical conductors and predetermined circuit relationship, the improvement wherein one of the inserts is comprised of a resilient material and wherein at least one duct is disposed in one of the passages of the other insert, the duct having an end portion with a boss thereon which extends beyond the insert, the diameter of the boss being greater than the diameter of the passage in said resilient insert so that when the male and female members are in mated relationship, the boss on the duct is in pressurized contact with the wall of the passage of the resilient insert to form a fluidtight seal therebetween whereby said connector connects in a predetermined relationship electrical and fluid conductors.

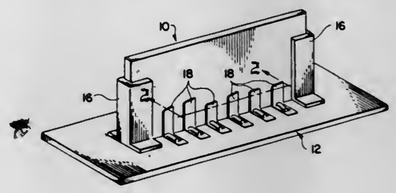
3,624,586
INTEGRATED CIRCUIT CONNECTOR SYSTEM
Frederick T. Inacker, Dallas, Tex., assignor to Ammon & Champion Company, Inc., Dallas, Tex.
Filed Feb. 9, 1970, Ser. No. 9,611
Int. Cl. H01l *1/14*; H02b *9/00*; H05k *7/08*
U.S. Cl. 339—17 CF 19 Claims

A plurality of insulative strips having recessed contact-receiving grooves formed in opposite sides are mounted upon the upper face of an insulative mounting board parallel to one another to define spaced areas therebetween. A metal contact is mounted with a connector portion lying within each one of the contact-receiving grooves of the insulative strips and with the shank portion extending through to the underside of the insulative mounting board. The contact-receiving grooves are spaced from one another at a distance to grip the leads of a dual in-line integrated circuit package.



Integrated circuit packages are inverted and inserted down into the space between the insulative strips so that the conductive leads of the packages contact the connector portion of the contacts lying within the grooves. The contacts on opposite sides of the strips are in conductive engagement with the leads of different packages. Adjacent insulative strips are so spaced from one another that the integrated circuit devices are held within the mounting areas by firm frictional engagement between the leads and the contacts.

3,624,587
CLINCHED-WIRE INTERCONNECTION DEVICE FOR PRINTED CIRCUIT BOARDS
Albert R. Conrad, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Feb. 9, 1970, Ser. No. 9,632
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 M 10 Claims

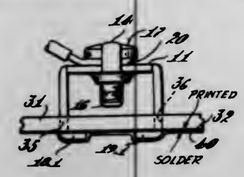


The disclosed connector is adapted for directly mounting and electrically interconnecting printed circuit boards. Loops of resilient conductive wire project into openings in a receiving printed circuit board such that oppositely disposed pairs of these loops in each opening engage fingerlike insertion strips of a mating printed circuit board.

3,624,588
SCREW TERMINAL AND CONDUCTIVE DEVICES INCORPORATING SUCH TERMINALS
Edward B. Farmer, Waban, Mass., assignor to Farmer Elecric Products Co., Inc., Natick, Mass.
Filed Feb. 26, 1970, Ser. No. 14,338
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 C 9 Claims

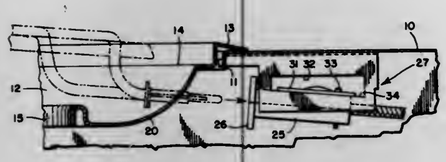
The terminal herein described is stamped from a single blank with a rectangular plate which is tapped for a terminal screw, which has two ears bent over on opposite sides of the head of a screw inserted in the tapped plate for holding a wire, and which has on opposite sides of the plate, between the two ears, two supporting legs bent over oppositely to the ears. The legs are somewhat higher than the fully inserted screws, and each leg has a solid rectangular tab extending between two coplanar ledges on either side of the tab. The

tabs are inserted in round holes of a supporting panel with printed circuitry to project at the circuitry side, and the tabs are then bent over to hold the terminal with the ledges pressed against the panel. The tabs of the connector which rest against parts of the printed circuit opposite the ledges, are then wave soldered to the circuit, whereby the legs which



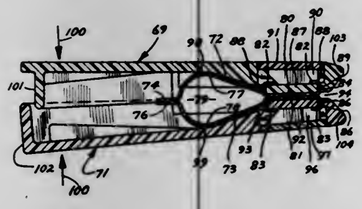
distance the screw from the panel, and the tabs, prevent solder from reaching the threads of the screw in the plate. Further described is a plurality of the said terminals in combination with a panel which supports a connector for edge contacts of a printed circuit board and has printed circuitry contacting the terminals and edge contacts of the board.

3,624,589
RANGE ELEMENT TERMINAL BLOCK AND BRACKET ASSEMBLY
Claude Drouin, Montmagny, P.Q., Canada, assignor to The Tappan Company, Mansfield, Ohio
Filed Dec. 4, 1969, Ser. No. 881,966
Int. Cl. H01r *13/60*
U.S. Cl. 339—34 **4 Claims**



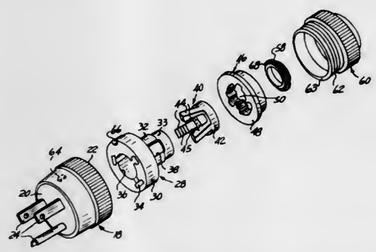
A terminal block is suspended within an inverted channel bracket my means of a coupling plate which bridges and is secured to the top of the block and extends through windows in the bracket sidewalls. The window bottom edges are inclined so that the socket end of the block is normally at an upwardly facing angle to aid plugging in of the element and a flange at such end of the block abuts the bracket sides to act as a positioning stop.

3,624,590
CLAMP FOR DISPOSABLE GROUND PLATE ELECTRODE
Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.
Filed Sept. 25, 1968, Ser. No. 762,582
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 R **9 Claims**



An electrosurgical unit using high-frequency currents having an active electrode and a patient indifferent ground plate. The plate is a disposable flexible ground plate electrode having an electrically conductive skin releasably attached to a clamp connected to a line leading to a power supply. A test circuit tests the electrical connection between the clamp and the skin of the plate electrode. The releasable connector has a flat contact plate in surface engagement with the skin of the ground plate electrode. One form of the connector has a pair of connected plate contacts attached to and pivotally mounted on flat electrically insulative covers.

3,624,591
ELECTRICAL CABLE CONNECTOR ASSEMBLY
Harry P. Buberniak, 12372 DeVoe, Southgate, Mich.
Filed June 1, 1970, Ser. No. 42,384
Int. Cl. H01r *13/58, 33/06*
U.S. Cl. 339—103 R **9 Claims**

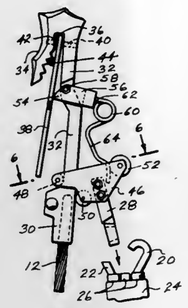


A cable connector assembly to connect an electrical cable to a plug or a light socket and positively securely retain the cable in assembly with the plug or socket. The assembly is comprised of a main body portion defining the plug or socket provided with prongs extending therefrom for electrical connection with an outlet or the like, and which is constructed in the form of a cup member to receive a cable and wire retaining member which is provided with conductor means in contact with the wires of the cable which are adapted to be engaged by the inner ends of the prongs of the plug or socket. The cable-retaining member is constructed and has provisions to cooperate with a cable-clamping member adapted to be inserted over a portion of the cable-retaining member and which is provided with resilient cable-clamping means in the form of resilient fingers extending through slots provided in the cable-retaining member, and a pressure ring is provided having internal cam surfaces located on varying radii adapted to be pushed over the clamping and cable-retaining member to cam the resilient fingers inwardly through the slots in the cable-retaining member into engagement with the cable to lock the cable to the cable-retaining member; the assembly of the electrical connector is completed by a sealing ring and an end cap adapted to be screwed into the main body portion of the plug or light socket to thereby confine the cable retaining and clamping members in between them. All of the parts, except for the prongs on the plug or light socket and the wire-connecting means in the cable-retaining member, are made of a nonconductive material.

3,624,592
HOT STICK OPERABLE CONNECTOR FOR ATTACHMENT TO AND DETACHMENT FROM A HIGH-VOLTAGE CONDUCTOR
Louis M. Walter, 16709 Highway 99, Lynnwood, Wash.
Filed Aug. 22, 1969, Ser. No. 852,343
Int. Cl. H01r *11/14*
U.S. Cl. 339—109 **10 Claims**

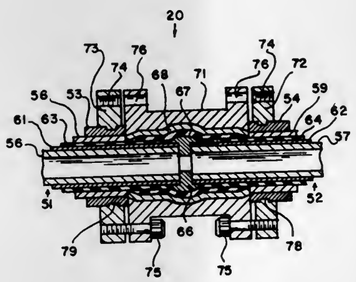
There is disclosed a connector which may be attached to or detached from a bare high-voltage conductor through the use of a "hot stick" which is manually operable by an electrician but which insulates the electrician from the conductor. The connector includes a shank member and a first leg member which are fixedly secured to each other to form an inverted V-shaped hook. A second leg is pivoted to, and at the throat of, the hook by a cross pin carried by the shank member and the first leg. A compression spring urges the second leg away from the first leg to form a normally open hook. The second leg is movable toward the first leg by a lever-operated cam which is pivoted to, and carried by, the

shank member. The means to operate the lever of said lever-operated cam means includes a carriage mounted for travel



on said shank member, a spring member connected as an extension of said lever, and a roller on said carriage traveling on an end portion of said spring.

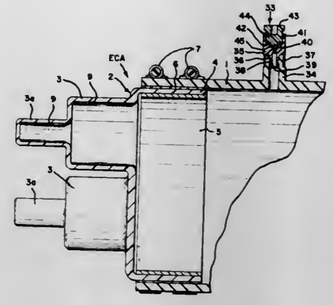
3,624,593
HIGH-VOLTAGE, HIGH-CURRENT COAXIAL CONNECTOR
Gamon B. Hayward, P.O. Box 609, Del Mar, Calif.
Filed Dec. 15, 1969, Ser. No. 884,845
Int. Cl. H01r *17/04, 13/00*
U.S. Cl. 339—112 L **1 Claim**



A high-voltage, high-current coaxial connector utilized with a coaxially coupled parallel capacitor bank coupled through an electronic switch.

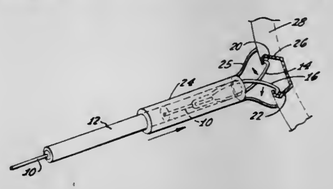
3,624,594
ELECTRICAL CONNECTOR ASSEMBLY
John Omer Trimble, Malvern; Arthur Llewellyn Mueller, Berwyn; George Edwin Pupek, Norristown, and William Francis Doyle, Philadelphia, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 14, 1969, Ser. No. 799,320
Int. Cl. H01r *7/00*
U.S. Cl. 339—116 C **1 Claim**

An electrical connector assembly comprises a sleeve within which electrical terminals effect electrical connections between conductors of cables. The cables enter the sleeve



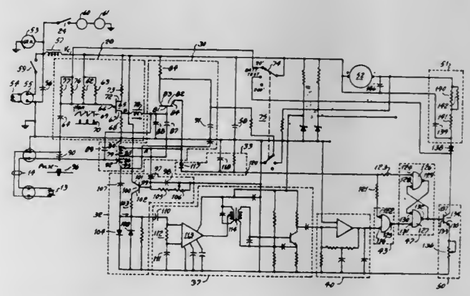
through heat-shrinkable members that are heat shrunk and sealed onto the cables.

3,624,595
HIGH-VOLTAGE CONNECTOR
Walter C. Severin, 2626 West Ave., Lancaster, Calif.
Filed Aug. 28, 1969, Ser. No. 853,690
Int. Cl. H01r *11/22*
U.S. Cl. 339—201 **6 Claims**



A high-voltage connector is provided which includes a pair of contact members that are normally in a noncontacting position. The connection is made from the high-voltage conductor to a desired open contact area using a sliding member which produces an outward motion of the contact members to engage the contact area.

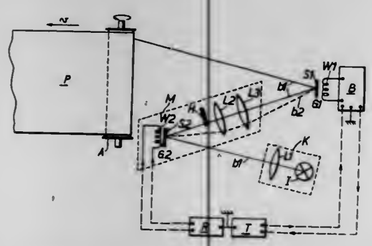
3,624,596
ULTRASONIC RANGE-ATTENUABLE DEPTH-MEASURING SYSTEM
Harry R. Dickenson, East Elmhurst, and George S. Hamilton, St. Albans, both of N.Y., assignors to Sona Labs, Inc., Brooklyn, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,087
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **7 Claims**



An ultrasonic depth-measuring system wherein a highly accurate pulse-generating timing circuit having voltage com-

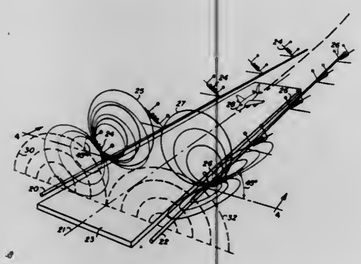
pensation provides a keying signal for Hartley-type oscillator whose output is applied to an underwater transducer. A portion of the transmitter output is also applied to the receiver, lockout circuit, and to a variable-range attenuator which effectively attenuates the receiver input inversely proportional to the range squared. The receiver output is amplified and detected and applied to one input of a NOR gate. The lockout circuit detects the transmitter output and provides a lockout logic signal to the NOR gate and the flip-flop connected to the NOR gate output to reset the flip-flop. The output of the lockout is an RC discharge which blocks the receiver output until the discharge voltage has decreased below a predetermined value. The flip-flop in turn controls the time duration of a current generator (e.g., from transmit pulse to received echo) whose current is integrated and applied to the meter for indication of depth.

3,624,597
ECHO-RECORDING APPARATUS
Arne J. Johansen, Horten, Norway, assignor to Forsvarets Forskningsinstitutt, Horten, Norway
Filed Aug. 19, 1969, Ser. No. 851,271
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 **12 Claims**



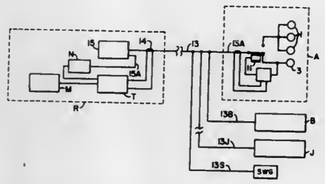
Echo-recording apparatus comprising a first mirror galvanometer adapted and disposed to effect a time-base scan of a light beam across a paper strip, which is moving in its longitudinal direction, the light beam being intensity modulated by a light modulator including a second mirror galvanometer or a Kerr cell, and said recording apparatus also including digital control means for control of the time-base scan in conjunction with the triggering of an auxiliary pulse transmitter connected to the apparatus.

3,624,598
MAGNETIC POSITION DETECTION METHOD AND APPARATUS
John V. Foster, Los Altos, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Aministration
Filed June 20, 1969, Ser. No. 835,058
Int. Cl. G08g *5/00*
U.S. Cl. 340—26 **18 Claims**



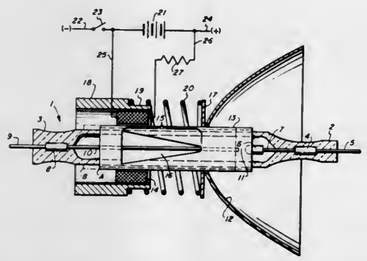
A method and apparatus for establishing the position of an aircraft or other vehicle with reference to a predetermined set of coordinates using magnetic field techniques. Magnetic fields are generated by long linear conductors and magnetic dipole means and the ratio of the fields created thereby is measured at a given point to determine the distance between the sources and the given point. In a preferred embodiment, the electrical signals obtained by the apparatus of the invention are used to provide a visual display of the relative position of an aircraft to the runway upon which it is to land and/or a visual or audible indication of the aircraft's position relative to a predetermined glide slope.

3,624,599
APPARATUS FOR SWITCHING GEOPHONES
Haines C. Hibbard, Houston, Tex., assignor to Esso Production Research Company
Filed Dec. 3, 1969, Ser. No. 881,781
Int. Cl. G01v *1/22, 1/24*
U.S. Cl. 340—15.5 TS **4 Claims**



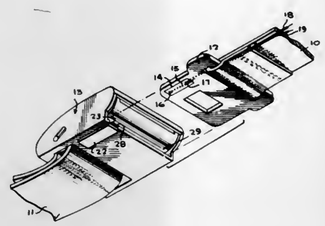
Apparatus for switching a seismic recorder from an areal array of geophones to a direct arrival seismic wave detector, controlled a radio signal at the recorder location which is transmitted to the geophone location to control the apparatus. The array of geophones is normally connected to a conductor line leading to the recorder. When the radio signal is detected, the direct arrival detector is connected to the line. Either detection of direct arrivals or passage of a given time interval from detection of the radio signal operates to reconnect the areal array to the line.

3,624,600
SEARCHLIGHT OF THE HIGH-PRESSURE ARC LAMP-TYPE HAVING AUTOMATIC SHUTTER MEANS
Dietmar M. Schoeffel, Hillsdale, N.J., assignor to Schoeffel Instrument Corporation, Westwood, N.J. and Canrad Precision Industries, Pelham, N.Y., part interest to each
Filed June 27, 1969, Ser. No. 837,121
Int. Cl. F21v *11/18;* **H01f** *3/00*
U.S. Cl. 240—46.05 **5 Claims**



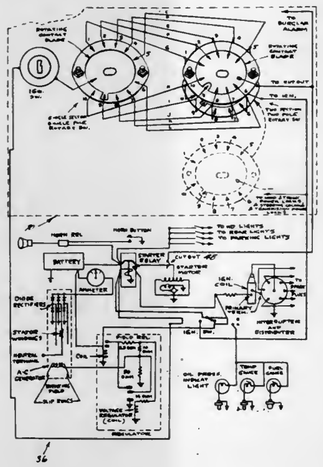
A searchlight comprising a high-pressure compact arc-type arc lamp containing a high-pressure ionizable atmosphere and a pair of electrodes spaceable from each other for establishing an arc discharge therebetween a reflector mounted on the lamp with the portion of the lamp containing the arc producing ends of the electrodes positioned in the reflector at the reflector optical axis e.g., at the focal point, an automatic shutter for instantaneously shielding the after glow of the lamp when the lamp operating current is interrupted or shutoff, the shutter being in the form of a shielding tube reciprocatingly movable over the lamp along the lamp axis to selectively cover and uncover the arc discharge providing ends of the electrodes.

3,624,601
VEHICLE SEATBELT WARNING AND IGNITION CONTROL SYSTEM
William S. Routzahn, 614 Marshall Road, Glen Burnie, Md., and Denis S. Moeser, 1301 Centerville Ave., Belleville, Ill.
Filed Aug. 13, 1969, Ser. No. 849,661
Int. Cl. G08b *5/00;* **B60q** *1/00*
U.S. Cl. 340—52 E **1 Claim**



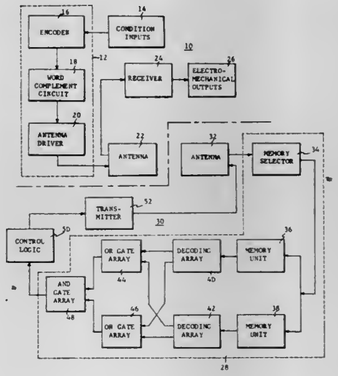
A safety seatbelt that is constructed so that a vehicle cannot be operated until the seatbelt is properly fastened about a person, and wherein the seatbelt is electrically connected to the ignition switch of a vehicle, so that the circuit cannot be completed and the engine operated until the seatbelt is properly connected in place. In one form of the device, a seatbelt is provided for aircraft, buses and trains, and wherein a lighting system of warning panel is provided to indicate when one or more passengers does not have his or her seatbelt engaged.

3,624,602
DECOY ANTI-CAR-THEFT SYSTEM
Herbert C. Le Doux, 136 Seaman Ave., New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,156
Int. Cl. G08b *13/00;* **B60r** *25/00*
U.S. Cl. 340—63 **1 Claim**



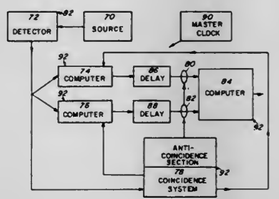
An accessory assembly for an automotive vehicle for prevention of car theft, the device comprising a unit mounted on the dashboard and another unit mounted in the engine compartment, each of the units having a manually operated selector switch for closing in series an electrical circuit between the vehicle power battery and the vehicle starter, and each of the selector switch units having a relatively large number of selector switch positions so to increase the improbability of aligning the correct positions so to close the circuit.

3,624,603
DIGITAL DATA COMMUNICATIONS SYSTEM WITH MEANS FOR IMPROVING SYSTEM SECURITY
William E. Delcomyn, Melbourne, Fla., assignor to General Electric Company
Filed Sept. 16, 1969, Ser. No. 869,991
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 **10 Claims**



For reducing the possibility that unsafe machine operation may result from distorted digital code words representing commands or conditions, a communications system in which both the machine and a central control unit include transceivers which repetitively transmit a digital word sequence consisting of a digital word and its complement. Decoder logic in the other transceiver must recognize both an acceptable digital word and the complement of that word before machine operations will be ordered or initiated.

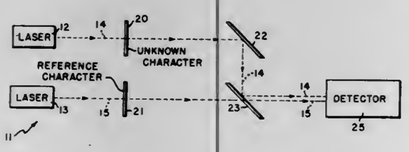
3,624,604
IMAGE ANALYSIS
David William Gibbard, Royston, England, assignor to Image Analysing Computers Limited, Royston, England
Filed Oct. 30, 1970, Ser. No. 85,384
Claims priority, application Great Britain, Oct. 31, 1969, 53,403/69
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3AC **30 Claims**



The invention relates to image analysis systems which provide for the computation of primary and secondary parameters of detected features in a field of view, typically relating to their geometrical or densitometric properties. The primary parameters relating to each feature are accurately associated therewith by means of a coincidence circuit which generates an anticoincidence pulse immediately following the comple-

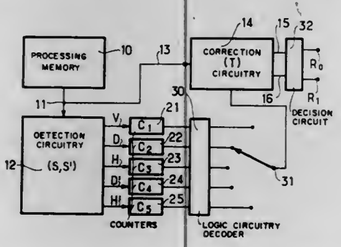
tion of scanning of each detected feature in the field of view. A first computer generates the primary associated parameters in response to the anticoincidence pulse and a second computer is provided to generate the secondary parameter or parameters from the output from the first computer. The first mentioned computer means may comprise a number of computers operated in parallel synchronism to provide their different outputs simultaneously. Alternatively a single computer may be used which is capable of being switched to perform each of the different functions to generate the primary parameters and the information required for their generation is supplied during a corresponding number of successive intervals of time to the input of the first computer and the output is stored in a corresponding number of signal stores which are all addressed at the anticoincidence point. The switching rate is typically at the frame scan frequency or is at a high multiple of the line scan rate.

3,624,605
OPTICAL CHARACTER RECOGNITION SYSTEM AND METHOD
Roger L. Aagard, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 13, 1968, Ser. No. 783,546
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3 P **14 Claims**



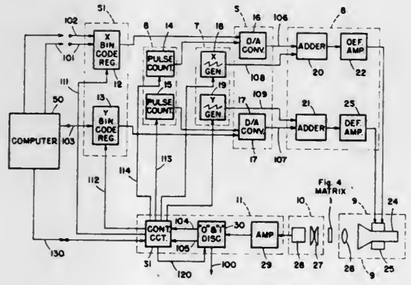
A system and method for identifying an unknown character by superimposing two coherent light beams containing diffraction patterns of an unknown and a reference character. The two light beams have either different phase or frequency so that the diffraction patterns generate a beat frequency in areas where they overlap. When the reference and unknown characters are identical, there is total overlap of the two diffraction patterns and the beat frequency intensity of the overlapped patterns is a maximum. When the reference and unknown characters are dissimilar, the intensity of the beat frequency is less than a maximum; the actual value depending upon the degree of similarity. a detector tuned to beat frequency provides an output indicative of the correlation between the unknown and reference characters.

3,624,606
DATA CORRECTION SYSTEM
Roger Lefevre, Villebon-sur-Yvette, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunications, Paris, France
Filed Dec. 12, 1969, Ser. No. 884,520
Claims priority, application France, Dec. 12, 1968, 178011
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3AG **20 Claims**



The information contained in the memory passes through an assembly of windows corresponding to various positionings, and a counter associated with each window counts the sequences of identical valences seen through each window. The result is the validation of the direction which enables the validation of the contents of a division receiving an interference signal, seen through a correction window parallel to the validated direction.

3,624,607
APPARATUS FOR THE ELECTRONIC SELECTION AND IDENTIFICATION OF CHARACTERS
Yoshinari Mita; Masamichi Shuto, and Masahiro Moriwaki, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Feb. 26, 1970, Ser. No. 14,526
Claims priority, application Japan, Aug. 25, 1969, 44/67448
Int. Cl. G06k *15/18*
U.S. Cl. 340—146.3AH **9 Claims**

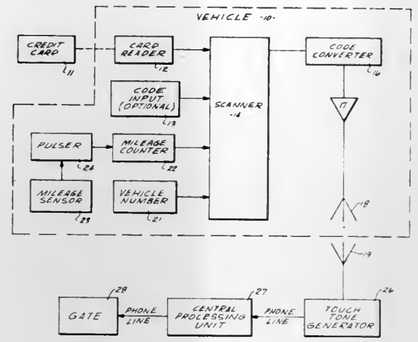


A system for electronically selecting characters, one at a time, from a matrix including a plurality of different characters spaced in columns and rows, a computer providing predetermined binary code signals, indicating particular character rows and columns in which the preselected characters are located, converting the binary code signals into corresponding voltages including successively increasing steps, using the converted voltages to move an electron beam to final positions proximate to the preselected characters, and thereafter moving the electron beam in a coordinate pattern to scan the latter characters, one at a time, to transmit appropriate output "1" and "0" video signals identifying the latter characters.

3,624,608
VEHICLE SHARED-USE SYSTEM
Manfred Altman, 15 W. Montgomery Ave. Apt. 3B, Bala Cynwyd, Pa., and Donald Friedman, 4628 Via Coennita, Santa Barbara, Calif.
Filed June 8, 1970, Ser. No. 44,056
Int. Cl. G06k *17/00;* **H04q** *9/00*
U.S. Cl. 340—149 A **8 Claims**

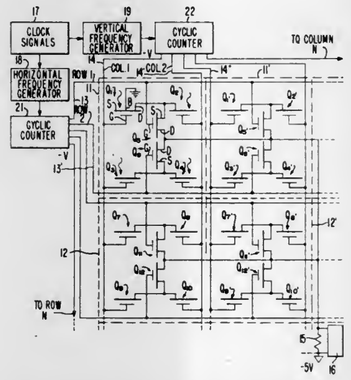
A system is described having a plurality of vehicles, the use of which is available to a number of individuals. An identification and information system is provided for regulating vehicle access, recording the time any individual uses a vehicle, and also the extent of use so that billing and other control functions can be performed at a central processing facility. In this system the access to a vehicle is controlled by a credit card or the like in possession of a user. Vehicle identification and mileage are recorded in the vehicle and upon command are transmitted by a sonic or electromagnetic radiation link to a receiving antenna from which these data

and the user identification are transmitted by phone lines to a central processing station. The potential user's credit is



verified and, if approved, the vehicle is permitted to leave the rental site.

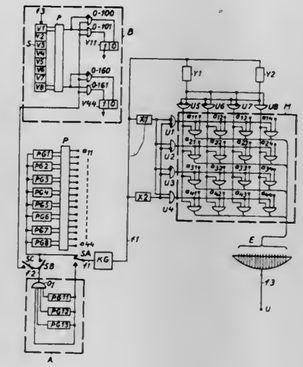
3,624,609
TWO-DIMENSIONAL PHOTODIODE MATRIX ARRAY
Gene P. Weckler, Campbell, Calif., assignor to Fairchild Camera and Instrument Coporation, Syosset, Long Island, N.Y.
Filed Jan. 8, 1970, Ser. No. 1,475
Int. Cl. H04q *1/00, 3/00, 9/00*
U.S. Cl. 340—166 **15 Claims**



A two-dimensional photodiode array including insulating-gate field-effect transistor switching elements for the photodiodes is described. The photodiodes operate in the photon flux integration mode and means are provided for sequentially scanning the photodiodes in the array. The array is fabricated by metal oxide semiconductor (MOS) techniques or by the more preferred silicon gate fabrication method.

3,624,610
ARRANGEMENT FOR GENERATING A SERIES OF DIGITAL SIGNALS
Stig Erik Warring, Skarholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed May 21, 1970, Ser. No. 39,419
Claims priority, application Sweden, June 11, 1969, 8289/69
Int. Cl. H03b *29/00*
U.S. Cl. 340—166 R **2 Claims**

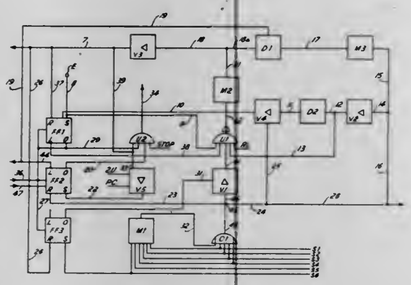
An arrangement for generating a series of digital signals for use as a superimposition series in ciphering and deciphering digital signals. The arrangement comprises a contact matrix in which each contact can have two different conditions, "one" condition and "zero" condition. Said contacts are selected by a pseudorandom generator including a number of pulse generators corresponding to half the number of matrix points. Said generators generate individually a pseudorandom



3,624,612
METHOD AND SYSTEM FOR CONTROLLING ELECTRIC PRINTOUT MECHANISMS

Klaus Joerg Hecker, Oberursel Taunes, and Franz Spiroch, Eschborn/Taunes, both of Germany, assignors to Eichner Organisation GmbH, Frankfurt am Main, Germany

Filed Mar. 11, 1968, Ser. No. 712,299
Claims priority, application Germany, Mar. 11, 1967, E 33583
Int. Cl. B41j 9/26
U.S. Cl. 340—172.5 **20 Claims**

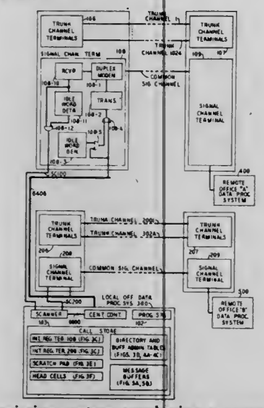


Logic circuits cause one type-bar of the printout mechanism to be operated only upon completion of the operation of a previous type-bar. Logic circuits, consisting of differentiating means and monostable multivibrators cause a repeat signal for activating the same type-bar to be activated if a control signal, signifying movement of the type-bar, is not received within a predetermined time period of a first activation signal. Logic means also prevent activation of a type-bar if a machine function such as a space bar operation or a backspacing is taking place. Also, the interval between activation of type-bars is lengthened when the same type-bar is to be activated successively.

3,624,613
COMMON CHANNEL SIGNALING ARRANGEMENT

William B. Smith, RR #1, Box 894, Silver Glen Road, St. Charles, Ill., and Judson B. Synnott, III, 6095 Chase Ave., Downers Grove, Ill.

Filed June 6, 1969, Ser. No. 831,006
Int. Cl. H04m 7/00
U.S. Cl. 340—172.5 **5 Claims**

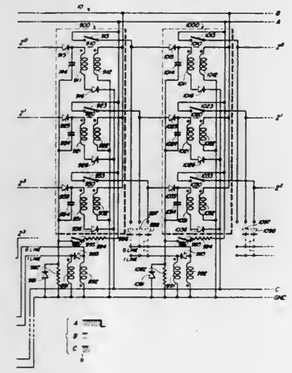


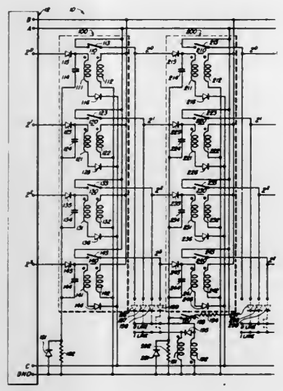
A data transmission system employing a common signaling channel for transmitting messages is disclosed. A data-processing system is provided at each terminal of the channel and messages transmitted from each terminal over the channel are obtained from the respective data-processing system's memory unit. The signaling channel transmits blocks of words continuously in both directions, idle words being inserted in a block when there are no data messages available to be transmitted from the storage unit. An acknowledgement word is part of every transmitted block of words and identifies the positions of any erroneous words in a previously transmitted block of words. The data-processing system recognizes any data word messages required to be retransmitted from storage and retransmits only the data word message, or the incorrect word itself in the case of a single word message, rather than retransmitting the entire block which may have contained idle words.

3,624,614
SHIFT REGISTER AND DECODER USING SEALED REED SWITCHES

Donald P. Schulze, La Mirada, Calif., assignor to C. P. Clare & Company, Chicago, Ill.

Filed Oct. 28, 1969, Ser. No. 871,936
Int. Cl. H03k 13/00
U.S. Cl. 340—172.5 **27 Claims**



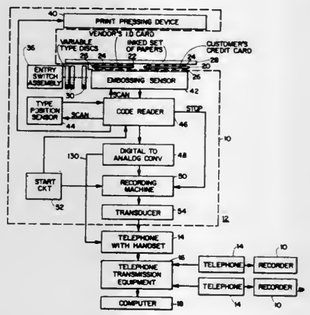


A shift register and decoder controls the operation of a plurality of external devices. Each external device is actuated a predetermined time interval after a code corresponding to the device is presented to the shift register input. The shift register stores the codes and presents them to a plurality of dual winding reed relay decoder circuits, each corresponding to one of the external devices, at approximately the proper times. Each decoder circuit then acts jointly with one of several periodic strobe signals to actuate the corresponding device at precisely the desired time. The decoder circuits erase decoded codes from the shift register, thus reducing the number of codes which can reach the more remote shift register stages and allowing simpler decoder circuits to be associated with the more remote stages.

3,624,615
TRANSACTION-RECORDING DEVICE

William A. Lippold, Worcester Park, England, and Robert W. Gould, Southboro, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 19, 1969, Ser. No. 877,905
Int. Cl. G06f 3/04
U.S. Cl. 340—172.5 **13 Claims**

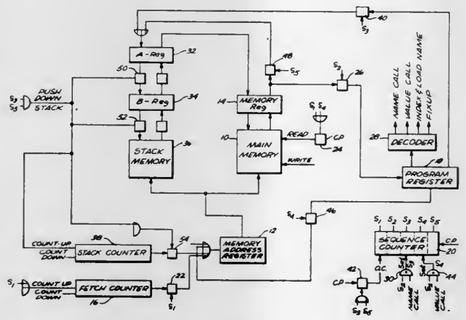


In a transaction recorder, a printer imprints legible information embossed on plastic identification cards and information entered manually with variable types, onto a set of papers. An electrical circuit responds to machine readable embossings on the cards and to the manual entries to furnish audiofrequency signals corresponding to the information printed. A recorder records these signals on magnetic tape. Batches of such recorded signals are played back at convenient intervals, through a telephone handset acoustically coupled to the recorder, to a central processing station.

3,624,616
DYNAMIC ALLOCATION OF MULTIDIMENSIONAL ARRAY MEMORY SPACE

Rajani Manibhai Patel, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1969, Ser. No. 882,105
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 **17 Claims**

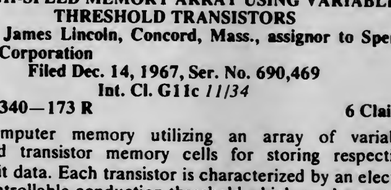


A method and apparatus by which all the dope vectors and data of a multidimensional array can be allocated space in memory when needed during execution of a computer program. Only a single descriptor including the size of the first dimension of the array and a table of sizes of higher dimensions of a data array are made available in memory at the start of the program. When the program calls for a particular data location in the array, only the necessary dope vectors for each dimension of the array are generated and stored in memory to make the particular data location present in memory.

3,624,617
MEMORY PROTECTION CIRCUIT

Harry Putterman, Elizabeth; Peter A. Jager, Haledon; Theodore Urbanik, Jr., Dover, and Joseph A. Lake, Jr., Butler, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,746
Int. Cl. G11c 7/02
U.S. Cl. 340—172.5 **14 Claims**



A memory protection circuit for a computer having a destructive readout memory. In such memories, data stored in the memory cores may be lost if computer operation is attempted when any one of a plurality of power sources for the computer memory section is not operating within its specified tolerance. Means are provided for sensing the output of each of the power sources and producing a signal when all of the sources are at their proper level to permit operation of the computer. In a preferred embodiment, sensing circuits are provided for each of the power sources. The outputs from the sensing circuits provide inputs to a gate circuit. When all of the supply voltages are within specific tolerances, the gate circuit provides a signal which indicates that the memory operation may be initiated. If any one of the power sources fails during operation, the signal from the gate circuit causes a detection logic circuit to provide an output signal which indicates power failure. The power failure signal is provided to the computer logic to inhibit operation of the computer clock source and to cut off an enabling voltage source to the read/write current regulators in the computer until the voltages reassume their proper value and a logic initialization pulse is produced in the manner previously described. However, in order to prevent the loss of data, circuit means are provided which permit a memory cycle which has been initiated to be completed.

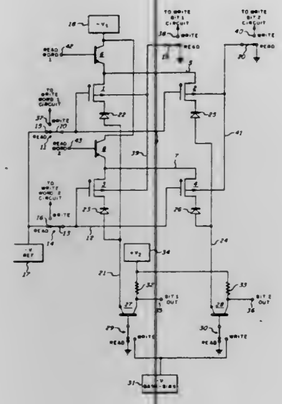
3,624,618
A HIGH-SPEED MEMORY ARRAY USING VARIABLE THRESHOLD TRANSISTORS

Andrew James Lincoln, Concord, Mass., assignor to Sperry Rand Corporation

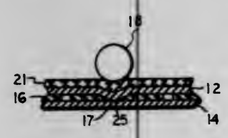
Filed Dec. 14, 1967, Ser. No. 690,469
Int. Cl. G11c 11/34
U.S. Cl. 340—173 R **6 Claims**

A computer memory utilizing an array of variable threshold transistor memory cells for storing respective digital bit data. Each transistor is characterized by an electrically controllable conduction threshold which can be set to a binary value upon the application of a pulse voltage of respective polarity and sufficient amplitude across the gate electrode and substrate. The binary states of addressed transistors are sensed by applying a reference voltage having an amplitude intermediate the binary conduction thresholds simultaneously to the gate electrodes of every transistor in

the array and then applying a pulsed voltage to the source and drain electrodes of the addressed transistors. The addressed transistors conduct if in state ONE and do not conduct if in state ZERO.



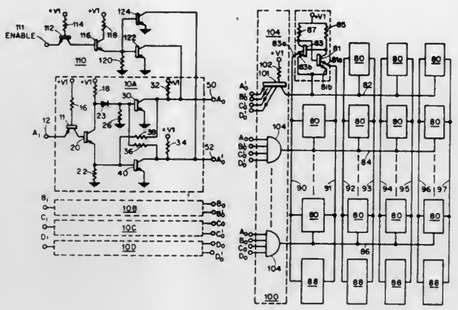
3,624,619
PRESSURE-SENSING TABLET
Biagio F. Ambrosio, Woodland Hills, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.
Filed Jan. 17, 1969, Ser. No. 792,118
Int. Cl. G11c *5/02, 7/00, 17/00*
U.S. Cl. 340—173 R **12 Claims**



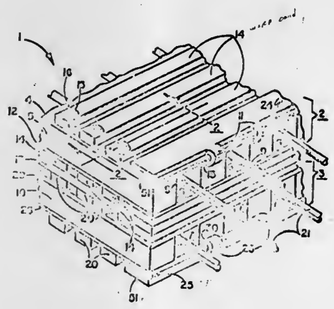
A pressure-sensing encoder tablet which detects the movement of a pointed writing instrument is disclosed. The tablet includes a resilient, perforated insulating elastoner sheet disposed between the conductive surfaces of first and second incoder sheets. The perforations are spaced in a uniform pattern and are of a diameter sufficient to permit the writing point under normal writing pressure to deform said first sheet into contact with said second sheet. The perforations are formed by disposing the elastoner sheet in front of a laser and pulsing the laser to form a repeating line pattern of uniformly spaced and sized perforations.

3,624,620
MEMORY ADDRESS SELECTION CIRCUITRY
John R. Andrews, Framingham, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed June 23, 1969, Ser. No. 835,495
Int. Cl. G11c *7/00, 5/02*
U.S. Cl. 340—173 R **14 Claims**

In a memory system a selection circuit adapted to operate in a manner to avoid the multiple selection of memory address lines, thereby preventing the attendant destruction of data. The circuitry in the present invention includes first and second binary circuit means, both of which are adapted to respond to an input excitation signal, thereby producing output signals which are the complement of each other. These complementary signals, which are fed to address decoding means and thence to memory address lines, have noncoincident leading and trailing edges that prevent multiple address selection.



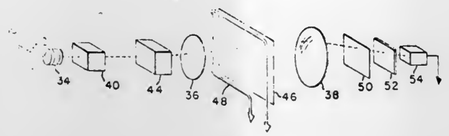
3,624,621
FOLDED BACKGROUND PLANE FOR INTERSTITIAL CONDUCTORS
Gerald J. Moser, Yorba Linda, Calif., assignor to North American Rockwell Corporation
Filed June 12, 1970, Ser. No. 45,739
Int. Cl. G11c *11/04, 11/16*
U.S. Cl. 340—174 PW **3 Claims**



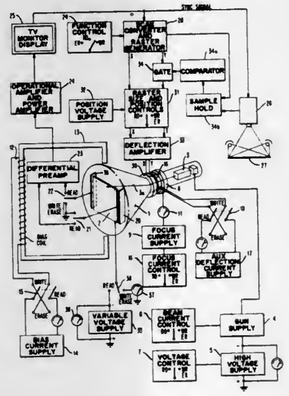
A metal plate at the terminations of interstitial conductors comprising part of plated wire memory, is folded back and secured to the outer surface above the plated wire memory for forming a ground plane for the interstitials. The metal plate may be formed on the flexible substrate on which the interstitials were formed.

3,624,622
OPTICAL INFORMATION STORAGE SYSTEM
Di Chen, Minnetonka, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Aug. 15, 1969, Ser. No. 850,571
Int. Cl. G11c *11/14, 11/42;* **G02f** *1/22*
U.S. Cl. 340—174 YC **8 Claims**

An information storage system in which bits of information are stored on quenched high-temperature phase magnetic film by utilizing a laser to heat the film above it's high-temperature phase Curie point. The laser beam is attenuated to provide nondestructive readout utilizing either the magneto-optic Kerr or Faraday effects.

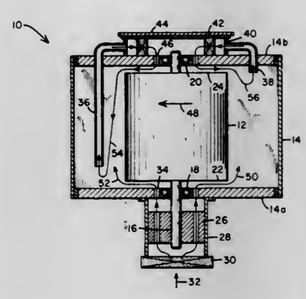


3,624,623
THERMOREMANENT MAGNETIC MEMORY SYSTEM
Ernest J. Breton, Jr., Wilmington; John C. Harden, Wilmington; Stephen C. Thayer, New Castle, and Eustathios Vassiliou, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 5, 1969, Ser. No. 821,899
Int. Cl. G11c *11/42;* **H01v** *3/04;* **G11b** *5/00*
U.S. Cl. 340—174 YC **22 Claims**



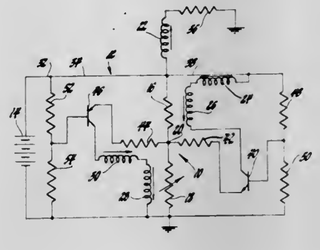
In a thermoremanent magnetic memory system, secondary electron readout is used in combination with thermoremanent writing. A thermomagnetic memory element is selectively addressed during readin and readout by an electron beam. Such a memory system is used for fast access, high capacity storage of analog or digital information. Secondary electron readout techniques are provided for obtaining a good signal-to-noise ratio. In one disclosed system, the thermoremanent memory operates in conjunction with a digital computer.

3,624,624
MAGNETIC DRUM AIR FILTRATION AND PURGING SYSTEM
Wesley R. Johnson, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed July 24, 1969, Ser. No. 844,477
Int. Cl. G11b *5/76*
U.S. Cl. 340—174.1 E **11 Claims**



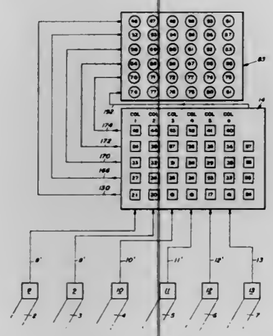
A filtration and purging system for use in a magnetic drum system, and utilizing the pumping effect of the rotating magnetic drum is described. A magnetic drum housing is provided with an input portion for receiving filtered air from the atmosphere, and a plurality of recirculation pickup tubes for circulating the internal housing air through a purging filter and returning the air to the drum housing is shown. The pumping action is performed by the rotating magnetic drum and the pressure inside the drum housing is maintained higher than the external ambient pressure. Additionally, apparatus is described for maintaining a positive pressure in the bearing region for forcing any aerosol through vents to the atmosphere rather than into the interior of the magnetic drum housing.

3,624,625
GAUGE WITH A SOLID STATE DRIVE
Stephen P. Stonestreet, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 7, 1969, Ser. No. 839,574
Int. Cl. G08c *19/04*
U.S. Cl. 340—177 R **16 Claims**



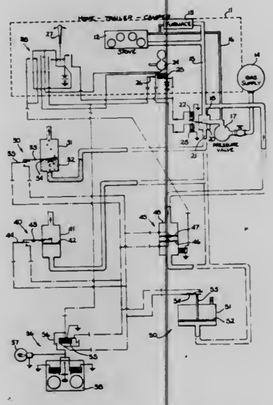
A gauge circuit for producing an angularly displaceable magnetic field that is the vector sum of magnetic fields produced by a first winding that is continuously energized and by second, third, fourth and fifth windings that are variably energized in accordance with a voltage generated by a sender unit, first and second transistors of opposite conductivity types controlling the energization of the variably energized windings.

3,624,626
SEQUENCE RESPONSIVE RELAY MATRIX
William T. MacCreadie, R. D. No. 2 408 21st St., Lewisburg, Pa.
Original application Feb. 20, 1967, Ser. No. 617,111, now Patent No. 3,544,989, Continuation-in-part of application Ser. No. 585,961, Oct. 11, 1966, now abandoned. Divided and this application Sept. 4, 1970, Ser. No. 69,750
Int. Cl. G08b 21/00
U.S. Cl. 340—223 14 Claims



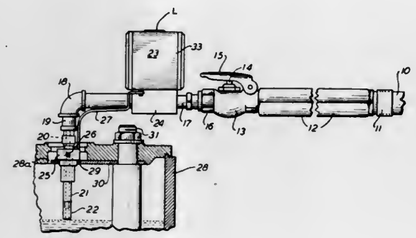
A relay matrix for monitoring electrical signals and for determining and registering the sequential order in which they arrive.
The relays have multicontacts which are wired to lock out all but one register relay per row and column.

3,624,627
GAS LEAK DETECTION SYSTEM
Jack L. Evans, 10241 La Tuna Canyon Road, Sun Valley, Calif.
Filed May 11, 1970, Ser. No. 36,317
Int. Cl. G08b 21/00
U.S. Cl. 340—242 9 Claims



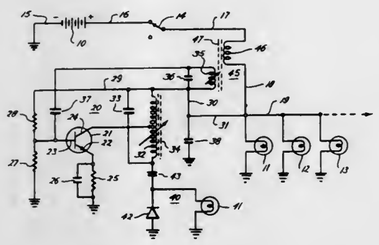
A system for sensing the presence of a leak in a closed gas network interconnecting a gas source with a plurality of gas consuming appliances including thermostatic controls for automatically signalling demand to supply the selected appliances. A manual switchover to leak detection means is provided as well as automatic switchback means to appliance-feed operation that bypasses the leak detection circuit when a demand-controlled appliance call for gas, and that switches over to the leak-detection circuit again when the demand ceases. Means are operably coupled in the network to indicate the detection of a leak in the system which may take the form of an alarm involving audible, visual or other attention-attracting media.

3,624,628
BATTERY-FILLING APPARATUS WITH ELECTRONIC SIGNALING UNIT
Jacob E. Schmidt, Great Notch, N.J., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Nov. 24, 1969, Ser. No. 879,362
Int. Cl. G08b 21/00
U.S. Cl. 340—244 2 Claims



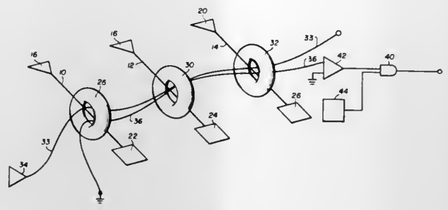
A battery-filling apparatus is provided having a wholly self-contained signaling unit connected to the handle of the filler nozzle. The signaling unit comprises a signal light, and a miniature cell, solid-state oscillator and small speaker for giving an audio signal when the electrolyte in the battery rises into contact with the tip of the filler nozzle.

3,624,629
WARNING SYSTEM FOR WARNING OF DEFECTIVE HEADLIGHTS, TAILLIGHTS AND THE LIKE ON MOTOR VEHICLES, AIRCRAFT, MARINE CRAFT AND THE LIKE
Charles A. Donaldson, Del Rio, Tex., assignor to Wesley Green and J. D. Cavaness, part interest to each
Filed Oct. 30, 1968, Ser. No. 771,948
Int. Cl. H05b 37/03
U.S. Cl. 340—251 2 Claims



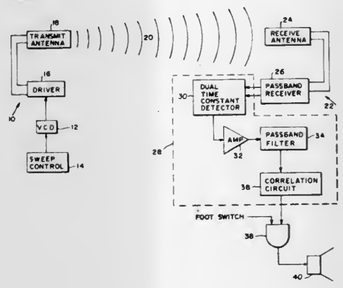
In one embodiment, an oscillator circuit is used to drive a warning light which is located on the dashboard of the vehicle. One winding of a coil device having a saturable core is connected in series in the direct current supply circuit for the vehicle lights, while a second winding is included in an oscillation-determining portion of the oscillator circuit. Proper flow of direct current to the vehicle lights saturates the core and disables the oscillator. Improper operation of one of the vehicle lights takes the core out of saturation and enables the oscillator to energize the warning light circuit. In another embodiment, the oscillator signal is supplied by way of a tuned amplifier circuit to the warning light and the saturable core device is used to detune a tuned circuit in the amplifier when the warning light should not be lit.

3,624,630
CURRENT DETECTION SYSTEM
George F. Schroeder, Wayne, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Dec. 4, 1969, Ser. No. 882,169
Int. Cl. G08b 21/00
U.S. Cl. 340—253 B 3 Claims



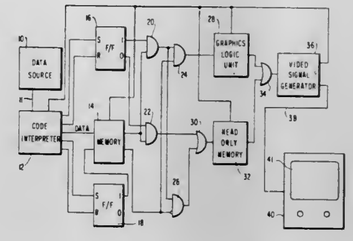
Apparatus for detecting the presence of current in at least one conductor connected in an electrical circuit, wherein a pulsating magnetic field is applied in the vicinity of a permeable member in flux exchange relation with the conductor to effect a change in flux density through the permeable member. A circuit is provided which produces an output signal in response to predetermined changes in the flux density.

3,624,631
PILFERAGE CONTROL SYSTEM
Marc Chomet, East Northport; Donald E. Ellison, Sea Cliff, and Robert F. Watterson, Lake Ronkonkoma, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Apr. 27, 1970, Ser. No. 31,902
Int. Cl. G08b 13/00, 21/00
U.S. Cl. 340—280 12 Claims



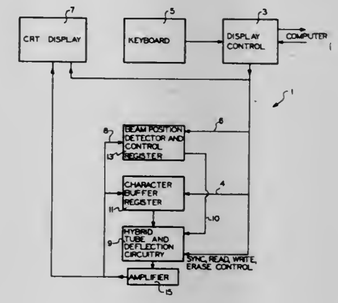
An antipilferage system comprising a cooperating radio frequency transmitter and receiver pair. The transmitter directs swept radio frequency energy to the cooperating receiver circuit wherein balanced oscillating conditions are maintained in a normally steady state. Passive tuned circuits, preferably in the form of printed circuit elements are placed on the merchandise in a store and if an attempt is made to remove unpurchased merchandise from the store without first destroying a fusible link in the passive tuned circuit an unbalance is caused in the receiver oscillator circuits which operates to actuate a suitable alarm. A fully automatic deactivation circuit is also included as part of the invention.

3,624,632
MIXED ALPHAMERIC-GRAPHIC DISPLAY
David Ophir, Melville, N.Y., assignor to Applied Digital Data Systems, Inc.
Filed Sept. 9, 1970, Ser. No. 70,674
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 7 Claims



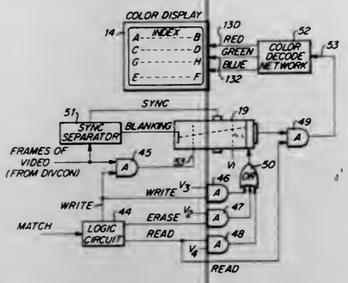
An apparatus for providing a mixed alphanumerical and graphical display of coded data. The coded data is stored in a memory. Those data characters to be displayed graphically have an additional control bit stored with them. As the data is read from the memory for display, those characters accompanied by such a control bit are directed to a graphics logic unit, while those characters lacking the control bit are directed to a read-only memory. The outputs of these two components control a video signal generator which generates the necessary video signal for application to a display device such as a commercial television receiver.

3,624,633
DISPLAY SYSTEM UTILIZING MULTIFUNCTION STORAGE TUBE
Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.
Filed Nov. 13, 1969, Ser. No. 876,286
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 9 Claims



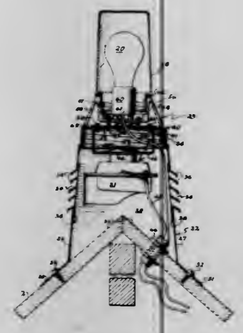
A display system is disclosed, utilizing a hybrid storage tube the target of which includes a matrix area, an information storage area, and beam-readable coordinate indicia thereon. Display control means, which may be in communication with a computer and a keyboard, are present in the system, and serve to control transfer of data from matrix to information storage areas, as well as read out from the storage area. Said control means also activate a CRT display means to display information read out from said storage area.

3,624,634
COLOR DISPLAY
Robert John Clark, Dorion, Quebec, Canada, assignor to RCA Corporation
Filed Dec. 22, 1969, Ser. No. 887,275
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **11 Claims**



A data source transmits data signals, which represent information to be displayed and the colors in which it is to be displayed, to a display means such as a kinescope. The color-indicating data signals are stored for one line time and the stored signals are employed to cause the display means to display the remaining data signals of the line in the color called for by the stored signal.

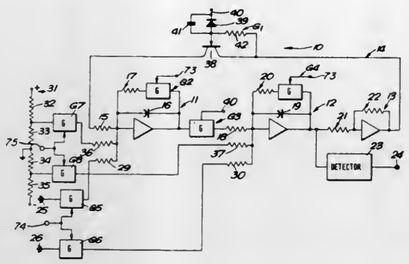
3,624,635
DISTRESS SIGNAL
Raymond L. Less, 478 Goundry Ave., North Tonawanda, N.Y.
Filed Aug. 19, 1968, Ser. No. 753,562
Int. Cl. G08b *7/06, 13/02*
U.S. Cl. 340—326 **1 Claim**



A distress signal including electrically operated audible and visual signals for aid, which is adapted to be mounted on the roof or other prominent portion of a dwelling and be operated in an emergency by occupant-manipulated switches appropriately placed within the dwelling.

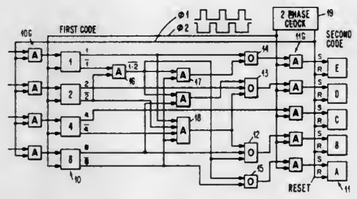
3,624,636
DIGITIZERS FOR SINE AND COSINE ANALOGUE SIGNALS
Marie Alphonse Paul Eugene Pierre Diederich, London, England, assignor to Decca Limited, London, England
Filed Mar. 11, 1970, Ser. No. 18,566
Int. Cl. G06g *7/22*; **H03k** *13/20*
U.S. Cl. 340—347 AD **16 Claims**

A digitizer for analogue signals representing the sine and cosine of an angle. The digitizer includes two integrating amplifiers and an inverter in a series closed loop. The amplifiers have inputs for receiving the analogue signals. A digital counter is fed with clock pulses while the rotor circuit oscillates from an initial phase determined by the analogue voltages to a datum phase. The number counted by the counter is representative of the said angle. Before such a digitizing operation, reference voltages are set into the rotor circuit which executes a test cycle. According to whether the



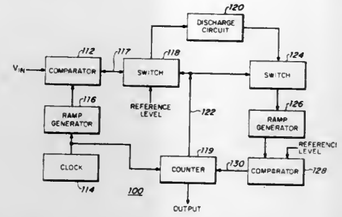
counter is partially full or has overflowed during the test cycle the frequency of the clock pulses is varied in preparation for a digitizing operation. Bistable arrangements controlling switches alternately operative to allow the rotor circuit to oscillate and allow the application of analogue signals to the inputs of the amplifiers are also provided.

3,624,637
DIGITAL CODE TO DIGITAL CODE CONVERSIONS
John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1970, Ser. No. 32,883
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **13 Claims**



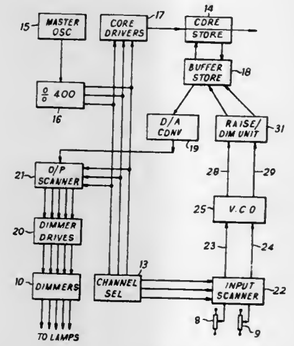
Correlation between digit positions of code groups of the two digital codes having different code group size, enables conversion with minimum logic. One of the digit positions in each of the code groups may have a one-for-one relationship with the corresponding digit position in another code group. The larger code group may have a set of digit positions having unique relationships to a like number of digit positions in the smaller code group. Such relationships effect predetermined permutation characteristics within each of the code groups. The larger code group may be a run-length limited code. The number of digit positions in the set of related digit positions is equal to the limit of the run length. The position of a digit fed directly through a converter without conversion is preferably located adjacent the set of related digit positions. In a specific form of the invention, conversions are made between a four-bit binary code and five-bit run-length-limited code. The conversion from a small code group to a larger code group is effected by adding binary 1's during the conversion process. In converting from a larger or second code group to a smaller or first code group, 1's are subtracted from the code representations.

3,624,638
SIGNAL-CONVERTING METHOD AND APPARATUS
John H. Riseman, Cambridge; Harold S. Goldberg, Lexington, and John Grimes, Framingham, all of Mass., assignors to Orion Research, Inc., Cambridge, Mass.
Filed Sept. 23, 1970, Ser. No. 74,729
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **12 Claims**



A method and apparatus for converting an input analog signal to an antilog output signal which comprises the generation of a linear ramp signal which increases toward a predetermined response level. A clock signal having a predetermined cycle is provided so that when coincidence is detected between the ramp signal and the input signal, an exponential signal asymptotically approaching a predetermined amplitude with a time constant of predetermined value is then generated until the clock signal reaches the end of its predetermined cycle. At that time, a second linear ramp signal having an instantaneous absolute value of slope determined in accordance with the absolute value of slope of the first ramp signal and an initial absolute value determined in accordance with the absolute amplitude value of the exponential signal at the end of the predetermined cycle is generated. The antilog output signal is proportional to the time period measured from the end of the predetermined cycle until coincidence occurs between the second ramp signal and a reference signal which has a predetermined relationship to the input analog signal.

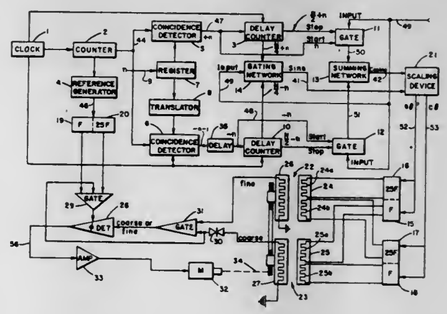
3,624,639
ANALOGUE-TO-DIGITAL CONVERTER
Anthony Leonard Isaacs, London, England, assignor to Thorn Electronics Limited, London, England
Filed Oct. 23, 1967, Ser. No. 677,217
Claims priority, application Great Britain, Oct. 21, 1966, 47,339/66
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **3 Claims**



The present invention relates to an analogue-to-digital converter whose output is a cyclic series of pulses, the pulse count of each cycle being proportional to an analogue input signal.

The invention is useful, for example, in stage and studio lighting control systems, where the output pulses are used to control the fading of lamps and the occurrence of a burst of pulses may produce a visible step in the brightness of the lamps and it is therefore desirable for the pulses to be distributed over the cycles of the digital output.

3,624,640
MULTIPLE-SPEED POSITION-MEASURING SYSTEM
Robert Z. Geller, Wantagh, N.Y., assignor to Inductsoyn Corporation, Carson City, Nev.
Filed June 17, 1968, Ser. No. 737,416
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **2 Claims**

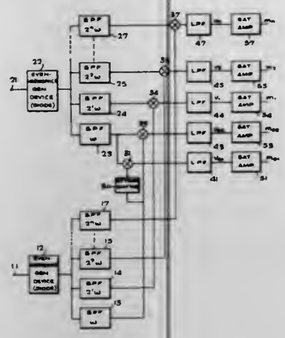


A multiple-speed position-measuring system comprising a plurality of position-measuring devices of different significances, the relatively movable members of the devices being connected together for movement at the same mechanical speed. The improvement resides in supplying analog signals, at a certain frequency, to one of the devices, and supplying to other of the devices analog signals at frequencies harmonically related to the certain frequency, the devices thereby having sensitivities in proportion to the respective frequencies. For example, a device supplied with a fundamental frequency F may provide a coarse error signal, and another device supplied with the 25th harmonic (25F) may provide a fine error signal. Analog signals at harmonically related frequencies may be provided by appropriately filtering a rectangular wave signal produced by a digital to analog converter.

3,624,641
PHASE CONVERTER WITH A REFLECTED BINARY CODE OUTPUT
Lawrence E. Brennan, Los Angeles, and Irving S. Reed, Santa Monica, both of Calif., assignors to Technology Service Corporation, Santa Monica, Calif.
Filed June 5, 1969, Ser. No. 830,792
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **9 Claims**

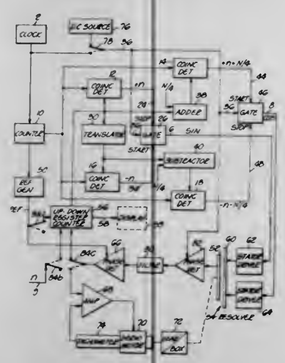
A phase converter is disclosed in which a selected number of higher order even harmonics of each of two signals, whose phase difference is to be converted to digital form, are generated. Corresponding even harmonics are mixed in separated mixers and filtered to provide an output in binary

digital form. The fundamental harmonics of the two signal are combined to provide two outputs in binary digital form



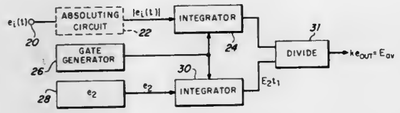
which together with the outputs of the other harmonics represent an output in the form of a reflected binary code.

3,624,642
DIGITAL AND ANALOG CONVERTER
Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 645,161, June 12, 1967, now Patent No. 3,514,775, dated May 26, 1970, Continuation-in-part of application Ser. No. 739,579, May 14, 1968, now abandoned. This application Sept. 3, 1969, Ser. No. 854,816
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **19 Claims**



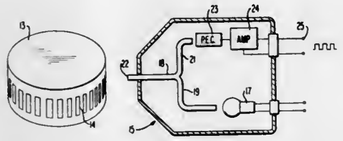
A digital and analog converter incorporating a counter adapted to count repetitively through N counts, a register-counter storing a digital number n, and means cooperating therewith for producing first and second trains of pulses symmetrically spaced about a reference phase of the counter cycle. A first gate, operated by pulses of the two trains, and a second gate, operated by delayed pulses of the two trains, each produce analog signals having pulse widths representative of trigonometric functions of an angle $\theta=2\pi n/N$.
The digital and analog converter may be used in a position control system to supply trigonometrically related signals to a position-measuring device having relatively movable, inductively related elements. The measuring device produces an error signal, depending on the relative displacement of the inductively related elements as compared with the angle represented by the trigonometric signals. The error signal causes the register-counter to operate and to change the production of the trigonometrically related signals in a direction reducing the error signal to a small value. The count developed in the register-counter constitutes a digital indication of the relative position of the measuring device elements. Alternatively, the error current may be used in a servosystem to drive the measuring device elements to a command position specified by a digital number n supplied to the system.

3,624,643
SIGNAL-TO-TIME CONVERTER
Peter L. Richman, 22 Barberry Road, Lexington, Mass.
Filed Sept. 17, 1969, Ser. No. 858,682
Int. Cl. H03r *13/02*
U.S. Cl. 340—347 NT **30 Claims**



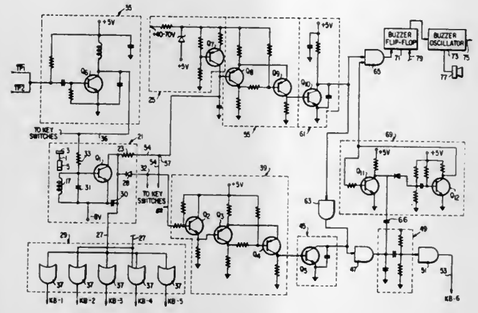
A system for converting an input AC signal into a output signal having a time period or duration proportional to the full-wave average value of the input signal. The system is formed of a pair of integrators, one of which is connected to accept a reference voltage, the other connected to accept a full-wave rectified version of the input signal. Both integrators operate for the same time, following which the voltage on one is fed to the input of the other so that the latter reversely integrates back to its initial or zero condition. The time required to perform the reverse integration is the desired time period.

3,624,644
ELECTROOPTICAL ENCODING DEVICE
Leonard James Higgins, Schenectady, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.
Filed Mar. 14, 1969, Ser. No. 815,248
Int. Cl. G06f *3/00*
U.S. Cl. 340—365 **14 Claims**



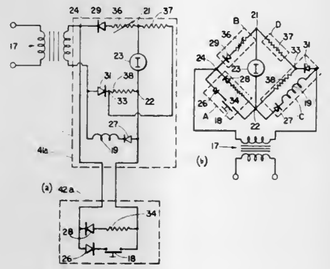
An electrooptical encoding device comprising a moveable member having a characteristic coded pattern of intermixed light reflecting and nonreflecting stripes representative of data to be electrically encoded. An electrooptical monitoring assembly is positioned adjacent the path of movement of the coded moveable member for serially illuminating the coded pattern of light reflecting and nonreflecting stripes with an interrogating light beam as the moveable member moves past the electrooptical monitoring assembly. The electrooptical monitoring assembly also includes an arrangement for serially receiving back pulses of light returned by the coded pattern of light-reflecting stripes and deriving serially coded output signals which are representative of the data encoded on the side of the moveable member. The electrooptical monitoring assembly comprises a source of illumination, a first optical subassembly for directing light from the source of illumination onto the characteristic coded pattern of light-reflecting stripes formed on the sides of the moveable member, a second optical subassembly for receiving light pulses reflected back from the pattern of light-reflecting stripes and for directing the received light pulses to the photosensitive surface of an electro-optic converter such as a photocell for converting the intelligence contained in the received light pulses into coded electrical signals representative of the data encoded on the moveable member.

3,624,645
OSCILLATOR KEYBOARD WITH ROLL AND DOUBLE-STRIKE CONTROL
Julius Gluck, Glenbrook; Warren R. Wines, Norwalk; Joseph J. Laszlo, West Redding; Nanjundiah N. Murthy, West Redding, Conn., and Klaus E. Grund, Ann Arbor, Mich., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 884,789
Int. Cl. G08b *29/00*
U.S. Cl. 340—365 **12 Claims**



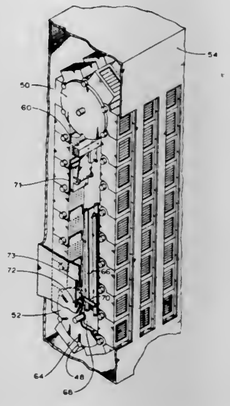
A solid-state keyboard for producing a coded output to an associated data processor. Depression of any single key activates an encoder and a circuit which produces a signal for gating the encoder output into the processor. A further circuit detects when a second key is depressed before a first key is released and, if the time between depression of the keys is less than a fixed interval, an alarm is sounded. If the time between depression of the two keys is greater than the fixed interval, the gating signal for the data represented by the second key is inhibited until after the first key is released.

3,624,646
THERMOMETER AND DOORBELL CHIME IN WHEATSTONE BRIDGE CIRCUIT
Joseph Weiss, 17542 Rainier Drive, Santa Ana, Calif.
Filed Sept. 16, 1970, Ser. No. 72,636
Int. Cl. G08b *5/00*
U.S. Cl. 340—371 **7 Claims**



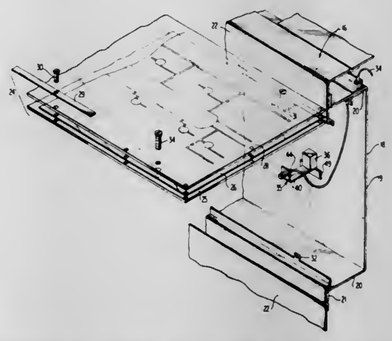
A thermometer/chime combination wherein the usual chime circuitry is modified to indicate the outdoor temperature during the period of time that the chime is not in actual use. Thus, the composite circuitry normally indicates the temperature; but sounds the chime tone when the exterior pushbutton is activated.

3,624,647
TRANSLATABLE DISPLAY SIGN
Charles N. Smith, Cooksville, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada
Filed Dec. 4, 1969, Ser. No. 882,106
Int. Cl. G08b *5/22*
U.S. Cl. 340—373 **18 Claims**



A carriage or series of carriages carrying electromagnetically actuable display elements is moved intermittently in a path. At a location in the path magnetizing means exterior to the carriage is used to magnetize carriage-mounted control elements for the display elements, which control elements act to hold the display elements in a desired position until the control element are differently magnetized.

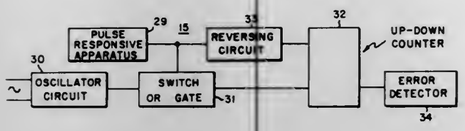
3,624,648
GRAPHIC DISPLAY ANNUNCIATOR
John G. Willoughby, Leeds, Ala., assignor to Reliance Electric Company, Cleveland, Ohio
Filed Aug. 15, 1969, Ser. No. 850,607
Int. Cl. G09f *9/38*
U.S. Cl. 340—381 **8 Claims**



An annunciator system for displaying and controlling operating conditions of a plant process, including a graphic display which indicates the changing conditions of the plant operation. The graphic display comprises a metal sheet with a high iron content, a translucent display panel positioned in parallel and spaced relationship with respect to the metal sheet, and at least one lamp positioned in the space between the metal sheet and the panel. The lamp includes a magnetized base which engages and is supported from the metal

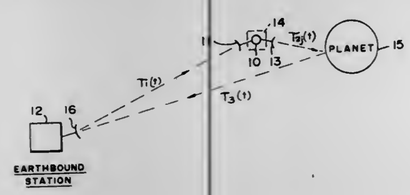
sheet. Circuitry is connected between the lamp and the components of the annunciator system whereby the lamp illuminates a portion of the display panel in response to a condition in the annunciator system.

3,624,649
PERIOD READOUT ERROR CHECKING APPARATUS
Michael A. Ranieri, Bensenville, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Oct. 10, 1969, Ser. No. 865,419
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 4 Claims



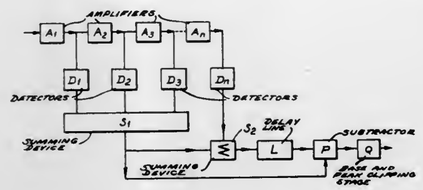
A system for supervising the reliability of a pulsating output device in which the period between adjacent pulses is indicative of a measured condition wherein a counter is energized in a first direction by a separate signal source having a fixed frequency during a first of said periods and the counter is energized in the opposite direction during a second of said periods whereby the difference indicated by the counter between the starting count and the finish count is indicative of the difference between the first and second periods.

3,624,650
METHOD AND APPARATUS FOR MAPPING PLANETS
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Richard L. Horttor, Pasadena, and Richard M. Goldstein, La Canada, Calif.
Filed Sept. 9, 1969, Ser. No. 856,279
Int. Cl. G01s *9/02*; B64g *9/00*
U.S. Cl. 343—6.5 R 14 Claims



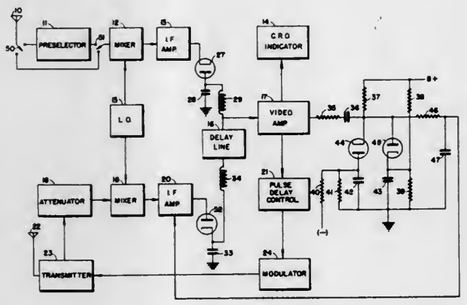
A radar system is disclosed for obtaining data to map planets employing and S-band ranging transponder (RT) that is widely separated from and in motion relative to a stationary transmitter-receiver station (STRS) on earth. The STRS transmits a ranging signal which is biphase modulated by a pseudonoise (PN) code, and the RT retransmits the PN-modulated signal on a different carrier frequency. The STRS receives the retransmitted signal as a reflected signal from an area of the planet (AP) being mapped. Three time-varying delay times (STRS to RT, RT to AP and AP to STRS) are involved in the round trip communication delay. That round trip delay and a doppler shift of the reflected signal are tracked by the STRS for mapping. That is done by recording the received signal in phase quadrature at baseband. The technique for obtaining mapping data then consists of multiplying the recorded signal by a locally generated PN code after synchronizing the PN code modulation of the signal to the local PN code, and separating the synchronized PN-code-modulated signal from the rest of the received signal by a low-pass filter. The separated PN-code-modulated signal corresponds to a narrow strip or contour line at constant range from the RT which is substantially orthogonal to virtually parallel contours of doppler shift caused by motion of the RT relative to the AP A filter which matches the doppler shift can thus be employed to resolve individual mapping points for display.

3,624,651
RADAR RECEIVERS OF THE SUCCESSIVE DETECTIONS TYPE
Andre Charles Robert, Eaubonne, and Maurice Pierre Rodolphe Gerlach, Saint-Maur, both of France, assignors to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, Seine, France
Filed Apr. 8, 1969, Ser. No. 814,326
Int. Cl. G01s *7/30*, *9/06*
U.S. Cl. 343—17.1 2 Claims



The present invention relates to a method of shaping radar signals upon reception, characterized by the fact that it includes the step of subjecting each signal received to successive amplifications and to detections respectively associated thereto, the step of making a first summing of the signals detected up to the penultimate detection, the step of making a second summing of the signals resulting from the first summing and of the signals resulting from the ultimate detection, the step of subjecting the signals resulting from said second summing to a constant time delay, the step of effecting s subtraction operation between the time-delayed signals and the signals resulting from the first summing, and the step of subjecting the signals resulting from said subtraction to a base-clipping and peak-clipping operation whereby to generate usable signals the leading edges of which are produced at instants independent of the amplitude of the signals received and hence, most notably, of the range of the target.

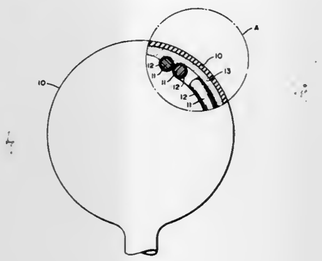
3,624,652
PULSE GENERATION SYSTEM
Andrew V. Haeff, Washington, D.C., assignor to The United States Government as represented by the Secretary of the Navy
Filed Jan. 16, 1946, Ser. No. 641,549
Int. Cl. H04k *3/00*
U.S. Cl. 343—18 E 10 Claims



1. A method of impairing the effectiveness of radio echo location operations in which radio frequency impulses are transmitted to an obstacle and the reflections thereof

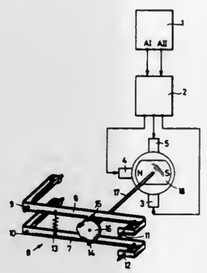
received at the echo location station, which comprises the steps of initiating the transmission of an interfering signal before the receipt of each said radio frequency impulse, maintaining transmission of the interfering signal during receipt of that impulse, and terminating the transmission of the interfering signal after receipt of that impulse but before the receipt of a succeeding radio frequency impulse.

3,624,653
RADAR-REFLECTIVE BALLOONS
Andrew J. Kelly, 32 Vogel St., West Roxbury, Mass.; John J. Lynch, 45 Oakland Ave., Arlington, Mass., and Robert G. Steele, 33 Ridgeway Ave., Billerica, Mass.
Filed Sept. 19, 1969, Ser. No. 859,438
Int. Cl. H01q *15/00*
U.S. Cl. 343—18 B 6 Claims



Metallized polymeric dipoles are affixed to the surface of balloons which are tracked by radar.

3,624,654
APPARATUS FOR MAKING ZIGZAG RECORDINGS OF DIFFERENT WIDTH
Karl Vogtlin, Villingen, and Norbert Helmschrott, Schwenningen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany
Filed Mar. 27, 1970, Ser. No. 23,336
Claims priority, application Germany, Mar. 28, 1969, P 19 15 917.2
Int. Cl. G07c *5/06*; G01d *9/28*
U.S. Cl. 346—49 14 Claims

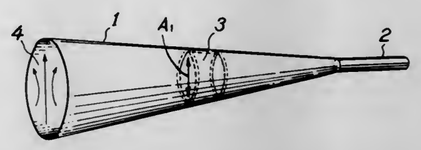


Angularly spaced windings of a rotary armature are selectively energized by an astable multivibrator under the control of two selector switches correlated with two recording means so that the armature oscillates between different end positions and effects by a cam corresponding oscillations of the two recording means which record beam-shaped zigzag recordings of different width representing conditions selected by setting the selector switches to different selector positions.

ERRATUM

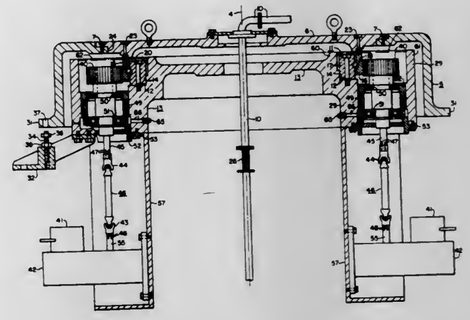
For Class 343—715 see:
Patent No. 3,624,662

3,624,655
HORN ANTENNA
Toshio Sato, Sagamihara-shi, and Matsuichi Yamada, Yokohama-shi, both of Japan, assignors to Kobusai Denkshin, Denwa Kabushiki Kaisha, Tokyo-To, Japan
Filed Nov. 4, 1969, Ser. No. 873,988
Claims priority, application Japan, Nov. 5, 1968, 43/80417
June 7, 1969, 44/44980
Int. Cl. H01q *13/02*, *15/08*
U.S. Cl. 343—756 5 Claims



A horn antenna produced by angularly flaring the end of a circular of rectangular waveguide into the shape of a horn to be used for radiating or receiving radio waves directly into or from space or to be used as the feed radiator of an antenna for illuminating a mirror and/or a reflector, in which a band of dielectric material is arranged circumferentially on a part of the inner surface of the horn so as to be symmetrical with the axis of the horn to obtain a field pattern having low side lobes and substantially the beam width with respect to at least two perpendicular planes of polarization. The circumferential band of dielectric material may be replaced by two pairs of opposed plates of dielectric material, which pairs are spaced longitudinally of the horn.

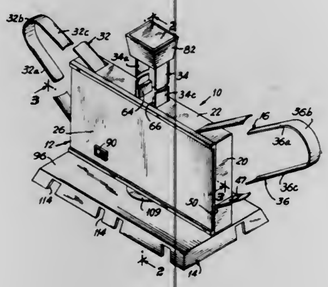
3,624,656
RADAR ANTENNA SUPPORT AND DRIVE ASSEMBLY
Michael Kaschak, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 30, 1970, Ser. No. 51,098
Int. Cl. H01q *3/00*
U.S. Cl. 343—762 3 Claims



Disclosed is an assembly including a horizontally extending radar antenna and feed horn mounting frame secured to side edges of a rotary upper pedestal part supported and driven by a combined bull gear and ball bearing mounted on a fixed pedestal part and removable via the top of the assembly without disturbing such mounting frame or the antenna and feed horn mounted thereon. Two drive assemblies each including bearings, shafts, and pinion gears engaging the bull gear at diametrically opposite locations and normally driven simultaneously by separate motor means via respective clutch means, are so mounted on the fixed pedestal part as to

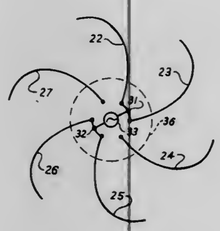
permit removal and replacement of either one while rotation of the assembly is maintained by the other. Normally retracted stud bolts are effectuable for providing rotary locking temporary support of the upper pedestal part by the lower pedestal part during a removal and replacement of the combined bull gear and ball bearing.

3,624,657
ADJUSTABLE FOLDED DIPOLE WITH ROTATABLE HOUSING
Robert D. Kahn, Rockville Center, N.Y., assignor to Fedtro, Inc., Rockville Center, N.Y.
Filed May 15, 1970, Ser. No. 37,599
Int. Cl. H01q *9/26*
U.S. Cl. 343—803 **2 Claims**



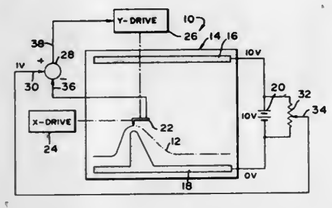
A television antenna which includes a housing and an elongated flexible signal-receiving loop. The loop is formed into a three-lobed configuration, each of these lobes projecting outwardly from the housing. A series of guides and rollers fixed in the housing permit the central projecting lobe of the loop to be retracted into or extended from the housing to any desired degree, with a corresponding extension or retraction, respectively, of the other two lobes on either side of the central lobe. Further, the housing is mounted for rotation on a base, which is adapted to be stationed on any flat surface.

3,624,658
BROADBAND SPIRAL ANTENNA WITH PROVISION FOR MODE SUPPRESSION
George N. Voronoff, San Francisco, Calif., assignor to Textron Inc., Belmont, Calif.
Filed July 9, 1970, Ser. No. 53,563
Int. Cl. H01q *1/36*
U.S. Cl. 343—895 **8 Claims**



A six-arm spiral antenna backed by a reflective surface is energized to activate four arms with the other two arms being parasitic and Mode 5 radiation is suppressed to achieve broadband operation.

3,624,659
AUTOMATED EQUIPOTENTIAL PLOTTER
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Earle R. Bunker, Jr., Los Angeles, Calif.
Filed Dec. 9, 1969, Ser. No. 883,524
Int. Cl. G01d *9/40*; **G01r** *13/08*
U.S. Cl. 346—1 **6 Claims**

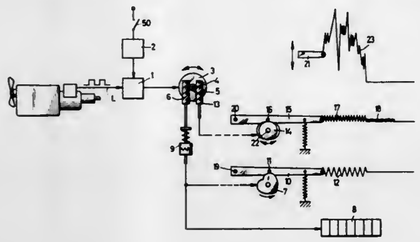


Apparatus for automatically drawing equipotential lines on a sheet of resistance paper, that has areas connected to different voltages of a voltage supply. An ordinary X-Y-plotter is used, but the ink pen is insulated from its surroundings, and a wire is connected from the pen to the terminal where the slide wire is normally connected. The plotter is set for automatic X-Sweep, and a preset voltage equal to that of the equipotential line to be drawn, is connected to the Y-input of the plotter. As a result, the difference between the voltage at the pen and the preset voltage drives the pen up or down, so that it always contacts points on the resistance paper which are of the voltage of the equipotential line to be drawn.

ERRATUM

For Class 346—49 see:
Patent No. 3,624,654

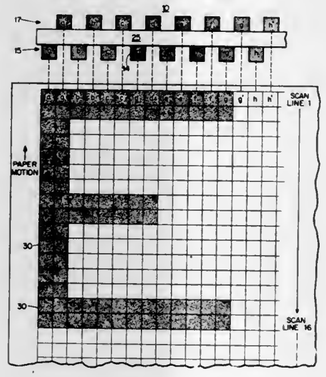
3,624,660
DRIVE FOR APPARATUS RECORDING OPERATIONAL CONDITIONS OF A CAR
Manfred Fichter, Weiler, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany
Filed July 2, 1970, Ser. No. 51,766
Claims priority, application Germany, July 9, 1969, P 19 34 731.0
Int. Cl. G07c *5/12*; **G01d** *9/30*
U.S. Cl. 346—49 **15 Claims**



The distance travelled by a car, and the time periods during which one, or two operators, actually drive the car or are performing auxiliary services like waiting or loading, are simultaneously recorded by at least two oscillatory recording means driven by rotary operating means rotated by one synchronous motor receiving pulses from two pulse generators, one of which is activated when the car travels a distance, and the other of which is activated by a manual switch. The polarity of every alternate pulse is reversed by an electronic control circuit so that the synchronous motor is driven by alternating current. Switch means cause a rotation

of the synchronous motor in opposite directions during movement and standstill of the car. The operating means associated with the travelled distance, is driven only when the motor rotates in one direction, while the operating means associated with the working time periods, causes different oscillations of the respective recording means when the motor rotates in opposite directions.

3,624,661
ELECTROGRAPHIC PRINTING SYSTEM WITH PLURAL STAGGERED ELECTRODE ROWS
Michael S. Shebanow, and Ronald F. Borelli, both of Medfield, Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed May 14, 1969, Ser. No. 824,419
Int. Cl. G03g *15/00*
U.S. Cl. 346—74 ES **17 Claims**



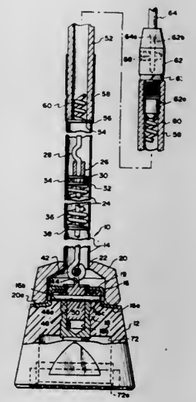
In an electrographic printing system, a multiple row electrode structure wherein successive rows are mutually spaced from each other, each row including mutually spaced electrodes, the electrodes of successive rows being positioned in a staggered manner with respect to each other. The system further comprises improved electrode drive circuitry, including a plurality of high-voltage drivers and a selection matrix wherein a plurality of passive elements are coupled to the drivers. A plurality of output lines couple the matrix to the electrodes so as to selectively apply a high voltage to the electrodes in order to produce a latent image on a dielectric medium. Toning means subsequently make the latent image visible.

ERRATA

For Classes 2—3 R thru 431—93 see:
Patent Nos. 3,624,663 thru 3,624,824

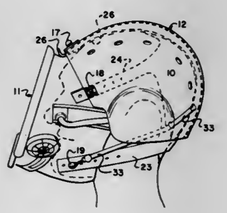
3,624,662
MOBILE DEFLECTABLE ANTENNA WITH IMPEDANCE MATCHING
Alvin Feder, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 5, 1970, Ser. No. 637
Int. Cl. H01q *1/32*
U.S. Cl. 343—715 **9 Claims**

A tiltable monopole antenna of the type to be mounted on an automobile rooftop or the like as a transmitting-receiving antenna for mobile radio communication equipment. A novel antenna-to-mounting base structural connection greatly simplifies the antenna and mounting base assembly as these parts provide a rigid pivotal connection and are held together by a transversely extending pin. Impedance matching means is provided within the mounting base of the antenna to match



the antenna with the given transmission line connected thereto over a given frequency range.

3,624,663
DIVER'S FACEPLATE AND HELMET HEAD GEAR
Richard F. Jones, Santa Barbara, Calif., assignor to General Aquadyne, Inc., Santa Barbara, Calif.
Filed June 15, 1970, Ser. No. 46,004
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **8 Claims**

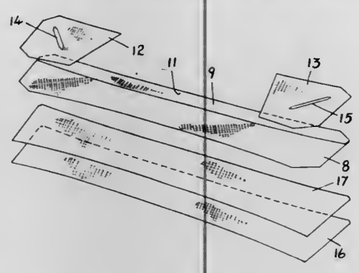


A diver wearing a face mask is protected from blows on other portions of his head by a helmet that is detachably connected to the face mask. Blows on the helmet are absorbed by the mounting system that holds the face mask to the diver's head. The connection of helmet to the face mask is by means of a pair of fulcrums, one on each side of the face mask, and a resilient member pulls one extreme of top and bottom of the helmut against a pin and hold connector on the other extreme, acting across the fulcrum points.

3,624,664
SHIRT COLLAR AND METHOD OF MAKING SAME
Reg Dowsett, Kitchener, Ontario, Canada, assignor to John Forsyth Co. Limited, Kitchener, Ontario, Canada
Filed Aug. 11, 1970, Ser. No. 62,950
Int. Cl. A41b *3/00*, *3/06*
U.S. Cl. 2—131 **9 Claims**

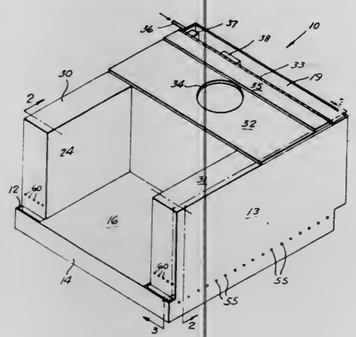
A shirt collar of the turned-down type having an attachment edge and a seamed outer edge, comprises inner and outer plies and an interlining confined between the plies. A strip of one-sided fusing fabric is stitched and fused to the inner side of the interlining, the strip extending along a lon-

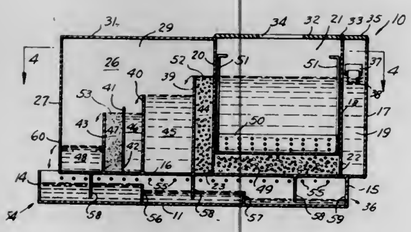
gitudinal edge of the interlining adjacent to the seamed outer edge of the collar. The strip serves to prevent puckering of



the collar at its seamed outer edge through stretching of the interlining.

3,624,665
MINIATURE SANITARY DISPOSAL PLANT
Francis L. Klingle, Sr., 105 5th Ave. West, Cresco, Iowa
Filed July 10, 1970, Ser. No. 53,892
Int. Cl. A47k *11/02*; A61l *11/00*
U.S. Cl. 4—115 **7 Claims**

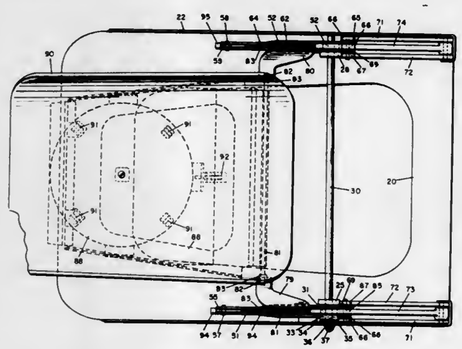




A miniature sanitary disposal plant which includes a toilet combined with an enzyme digester tank, an activated carbon-leaching bed, a separating tank, a chemical-neutralizing tank, a plurality of evaporating tanks, and a discharge of purified nonpolluting fluid. A sludge trap is provided for removing sludge collecting in the system.

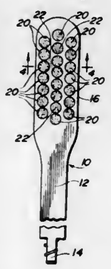
3,624,666
DEVICE FOR ASSISTING HANDICAPPED PERSONS TO GET INTO AND OUT OF A BATHTUB
Warren P. Higgins, Sr., 1125 Grace St., San Leandro, Calif.
Filed Aug. 5, 1970, Ser. No. 61,289
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **6 Claims**

A self-assistance device for enabling handicapped persons to get into and out of a bathtub. A rack-and-pinion system is operated in opposite directions by a pair of ratchets, each having a pawl, and a clutching device for selecting which ratchet and pawl means is to be engaged for moving its pinion and the rack in one direction during one mechanical stroke of a control lever, the other stroke being a return stroke. An arm pivotally attached to each of the two racks has one or more rollers engaging and moving up or down an inclined plane track means. Each arm has another roller for engaging a front support member, there being two such,



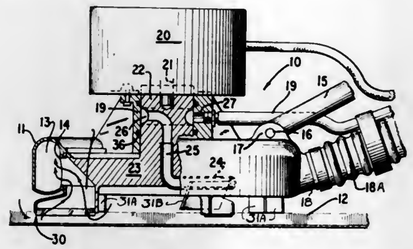
rigidly connected together by a transversely extending rod. An upper plate is pivoted to this rod and is mounted through hinge means to an additional support member which is hinged to the base, so that when the front support members are raised the upper plate is elevated while being kept horizontal. A seat is swiveled on top of the plate. Thus, an entirely mechanical system is provided for elevating and lowering a person in the tub, with the seats swiveling to enable one to get into and out from the seat when the seat is level with or slightly above the upper edge of the tub.

3,624,667
TOOTHBRUSH
Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.
Filed Apr. 1, 1970, Ser. No. 24,522
Int. Cl. A46b *15/00*
U.S. Cl. 15—167 R **3 Claims**



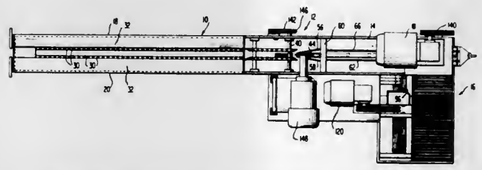
An improved toothbrush head, especially adapted for use in association with an automatic toothbrush power handle including as an energy source a source of vibratory energy in the sonic range, comprises a plurality of first bristle tufts and a plurality of second bristle tufts, the individual bristles in the first and second tufts of bristles being of different diameter. About four times as many bristles are provided in the tufts of smaller diameter bristles. The large diameter bristles are designed to clean the oral hard tissues, whereas the softer smaller diameter bristles are designed to polish the oral hard tissues and stimulate the gingival tissues. The bristle tufts are arranged on a brush head in three rows, with all peripheral bristle tufts being formed of relatively smaller diameter bristles and with the centrally disposed tufts being formed of relatively larger diameter bristles.

3,624,668
RUG CLEANING AND RINSING DEVICE
Helmuth W. Krause, 5 Evergreen Parkway, Westport, Conn.
Filed July 23, 1970, Ser. No. 57,543
Int. Cl. A47l *11/30*
U.S. Cl. 15—322 **7 Claims**



A surface cleaning device has a housing with an annular channel which is continuously opened on its inner face and positioned adjacent the outer peripheral edge of a rotor. The underside of the rotor is provided with a spray and a plurality of nozzles adjacent its peripheral edge with the spray communicating with a cleaning liquid and the nozzles communicating through passages to the outer periphery of the rotor, so as to be in continuous communication with the annular channel. A vacuum is applied through the annular channel to the nozzles to pick up liquid discharge upon the surface by the spray.

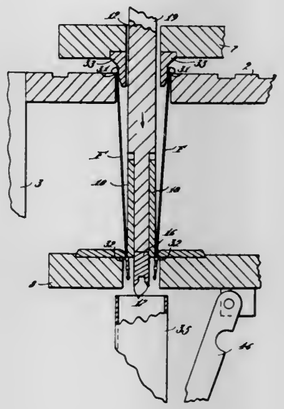
3,624,669
POULTRY GIZZARD PROCESSING MACHINE
Eugene J. Lewis, Gainesville, Ga., assignor to Gainesville Machine Company Inc., Gainesville, Ga.
Filed Apr. 29, 1970, Ser. No. 32,895
Int. Cl. A22c *21/06*
U.S. Cl. 17—11 **7 Claims**



A machine for splitting, cleaning and removing the liner sac from the gizzards of fowl. After splitting, the gizzards are spread open and cleaned and they are then caused to be deposited upside-down onto an inclined flume where they are flushed onto a pair of helically ribbed rotating peeling rolls for removing the sac. A pivoted V-shaped tamping plate overhangs the peeling rolls and is driven with a vertical tamping motion to assure that the sac is engaged and removed by the rolls while the gizzards are fed along the rolls due to the action of the helical ribs. The plate also prevents the gizzards from turning over. Near the end of the peeling rolls a deflector plate turns the gizzards over again and pushes them to one side onto an inspection table formed by a series of spaced rods. A second pair of peeling rolls is exposed so that the inspector may remove any incompletely removed sac by manually applying a gizzard against the exposed rolls.

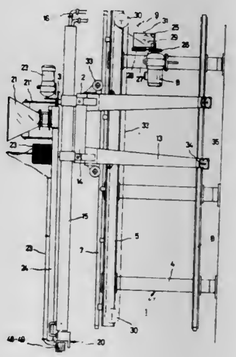
3,624,670
APPARATUS FOR STRETCHING PLASTIC FILAMENTS
George F. Gordon, Nashua, N.H., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Feb. 27, 1969, Ser. No. 803,041
Int. Cl. B29c *17/02*
U.S. Cl. 18—1 FT **7 Claims**

For stretching plastic filaments attached to a runner, each filament having an inner heat at its inner end adjacent the runner and an outer head at its outer end, apparatus comprising first and second pairs of abutments for engagement with said heads respectively, means for moving said pairs apart to



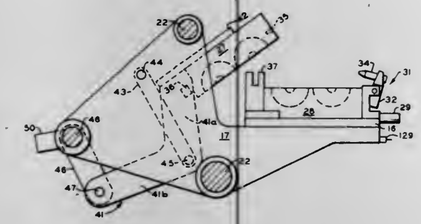
stretch the filaments, means for severing and ejecting the runner after the heads have been engaged by the abutments, a hopper for catching the stretched filaments, and means for removing the hopper while the runner is being ejected.

3,624,671
REINFORCED PLASTIC TUBING
Carlos Fradera Pellicer, and Fradera Pellicer, both of Plaza Conde de Rodezno 11, Pamplona, Spain
Filed Aug. 20, 1969, Ser. No. 851,657
Int. Cl. B29c *5/00*
U.S. Cl. 18—26 RR **6 Claims**



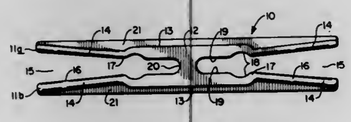
Apparatus for the manufacture of tubes of plastic material whereby a succession of measured quantities of material are disposed by projection within a rotary tubular mould to form concentric layers, the first layer being of synthetic resins, at least one following layer being of a mixture of resins and glass or similar fiber chopped by a chopping means and fed as a reinforcement means and a last layer being of resin, the various layers being bound together by embedding the said fiber, which is arranged in orderly orientation.

3,624,672
MOLDING OF CELLULAR OBJECTS
Paul L. Spivy, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 13, 1968, Ser. No. 736,732
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 LM **9 Claims**



A molding apparatus which utilizes two-section split molds which are particularly adapted for molding foamable material and are provided with opening devices which automatically remove the top mold section from each mold, then swing it down to the position adjacent the bottom section of each mold. In operation, the mold is closed around elongated extrusion nozzles which are withdrawn as the mold is filled with the expandable thermoplastic material.

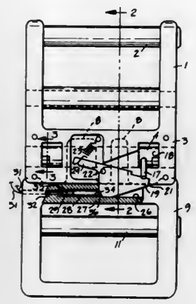
3,624,673
DOUBLE-ENDED PLASTIC CLOTHESPIN
Paul A. Merchant, Kansas City, and John C. Armbruster, Independence, both of Mo., assignors to Ethyl Development Corporation, Kansas City, Mo.
Filed Nov. 19, 1969, Ser. No. 878,110
Int. Cl. D06f *55/00*
U.S. Cl. 24—137 R **1 Claim**



A double-ended, one-piece, plastic clothespin which includes a pair of juxtaposed, spaced-apart leg members joined by an integrally formed, transverse web at the midpoint of the leg members. The web is sufficient thickness and resiliency to provide the spring action for gripping of an article on a clothesline between a pair of spaced-apart legs provided at either end of the clothespin.

3,624,674
RELEASING DEVICE FOR STRAP CONNECTORS
John A. Gaylord, San Rafael, Calif., assignor to H. Koch & Sons, Inc., a division of Global Systems, a Gulf & Western Company, Corte Madera, Calif.
Filed Dec. 15, 1969, Ser. No. 885,057
Int. Cl. A44b *19/00*
U.S. Cl. 24—230 AV **11 Claims**

The use of a cartridge which is fired, and the expansion of the gas in the cartridge operates a device for releasing the web. The movement caused by the expansion releases an obstruction from the part of the ring or the bar on which the web is hung. In one form it will turn a cutaway shaft which obstructs the removal of prongs. In another form it will



remove an obstruction which prevents the swinging open of the hook which holds the ring in place.

3,624,675
FELTING NEEDLE
Edson P. Foster, 409 S. 29th St., P.O. Box 527, Manitowoc, Wis.
Filed Aug. 11, 1970, Ser. No. 62,876
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **9 Claims**

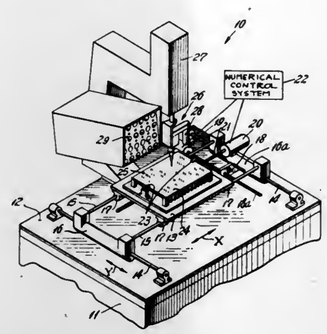


A felting needle constructed in the form of an elongated body having a shank portion and a barbed portion. The barbed portion has a plurality of barbs and terminates in a pointed end. A V-shaped or U-shaped circumferential indentation is provided somewhere along the length of the shank portion to define the weakest structural location along the length of the elongated body, which is called the fracture point.

3,624,676
NUMERICALLY CONTROLLED WIRE TERMINATING APPARATUS
Charles A. Whitney, Canton, and Walter J. Hutengs, Plainville, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.
Filed June 20, 1969, Ser. No. 835,043
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 B **3 Claims**

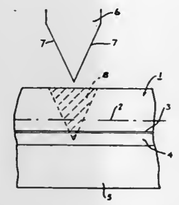
An apparatus for automatically positioning work held on a support with respect to a tool according to programmed commands effectuated by a numerical control system. The tool performs an operation on the work which requires an operator to manually select a specific size workpiece for each

operation from a plurality of different sizes. The apparatus includes an operator sensible indicator for each specific size workpiece and the system through programmed commands



causes the indicator for the immediately required size of workpiece to be energized to inform the operator which workpiece must be selected.

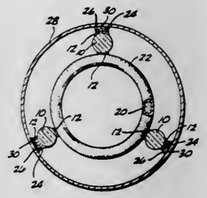
3,624,677
MANUFACTURE OF SEMICONDUCTOR ELEMENTS
Allan Pearson, Tewin, England, assignor to Westinghouse Brake and Signal Company Limited, London, England
Filed June 10, 1968, Ser. No. 735,625
Claims priority, application Great Britain, June 27, 1967, 29,560/67
Int. Cl. B01j *17/00*; H01l *7/66*
U.S. Cl. 29—583 **2 Claims**



A method of manufacturing semiconductor elements of truncated pyramidal form, which method includes the steps of forming in a wafer of semiconductor material having opposed major faces a PN junction extending parallel to and lying between the major faces of the wafer, and subsequently cutting the wafer into a plurality of discrete semiconductor elements by a plurality of crisscross cuts the sidewalls of each of which are inclined at an angle of other than 90° to the PN junction.

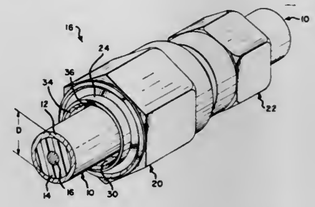
3,624,678
METHOD FOR MAKING DIELECTRIC-TO-METAL JOINTS FOR SLOW-WAVE STRUCTURE ASSEMBLIES
Louis R. Falce, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Original application Sept. 15, 1966, Ser. No. 579,648, now abandoned. Divided and this application Apr. 15, 1969, Ser. No. 830,173
Int. Cl. H01p *11/00*
U.S. Cl. 29—600 **8 Claims**

In the disclosed method for fabricating a slow-wave structure supporting and encasing assembly, a film of elemental chromium is vapor deposited onto a portion of each of a plurality of beryllia rods. The rods are assembled about the peripheral surface of a molybdenum slow-wave structure, at least a portion of which has been provided with a coating of copper braze material. The assembly is heated in a dry hydrogen atmosphere to a temperature sufficient to braze the rods to the slow-wave structure. Chromium is selectively removed from regions of the inwardly facing surface of the rods not contacting the slow-wave structure, and a coating of copper-silver braze material is deposited over portions of the outwardly facing surfaces of the rods. The slow-wave structure and the rods are inserted into an encasing barrel of a



material having a thermal coefficient of expansion substantially the same as that of the rods, with the braze material on the outwardly facing surfaces of the rods contacting the encasing barrel. The assembly is heated in a dry hydrogen atmosphere to a temperature sufficient to braze the rods to the encasing barrel.

3,624,679
COAXIAL STAKE FOR HIGH-FREQUENCY CABLE TERMINATION
George William Ziegler, Jr., R.D. #1, Carlisle, Pa.
Filed Jan. 23, 1970, Ser. No. 8,761
Int. Cl. H01r *43/00*; H05k
U.S. Cl. 29—628 **4 Claims**

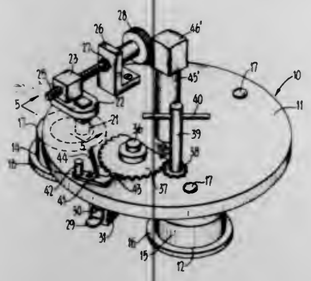


A connector and method of connection for high-frequency coaxial cable is disclosed featuring a soft ferrule driven by dies to expand inwardly and outwardly as it is compressed axially through inelastic deformation to develop hoop stresses in a center tubular portion of a connector and in the outer conductor of the cable. The length and thickness dimensions of the ferrule relative to the diameter of the cable outer conductor are controlled to provide a broad area of contact between the stressed elements to provide a permanent-sealed termination with minimized cable deformation. The connector structure is arranged to facilitate a ready measurement of the extent of ferrule deformation to ascertain proper installation.

3,624,680
METHOD OF AND APPARATUS FOR OPENING CAP-EQUIPPED DRUMS AND THE LIKE
Llewellyn W. Evans, deceased, late of Orinda, Calif. (by Agnes J. Evans, executrix), assignor to Rheem Manufacturing Company, New York, N.Y.
Filed Sept. 20, 1968, Ser. No. 761,350
Int. Cl. B67b *7/30, 7/38*
U.S. Cl. 30—21.5 **7 Claims**

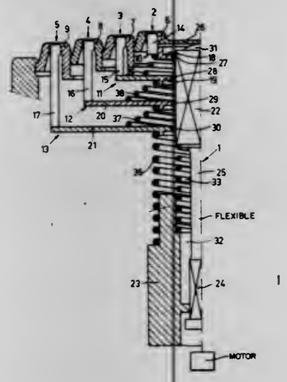
Method of and apparatus for opening drums and other containers by removing the closure caps from the filler openings thereof. Typically, such a filler opening is located in the top wall or head of the drum, and it is an annular-rim-equipped opening through which the closure cap extends and within which it is confined by laterally extending annular flanges respectively disposed inside and outside of the drum on opposite sides of the rim.

The method of opening such drum includes the steps of enforcing substantial circularity upon the cap along the ring-shaped area thereof in engagement with the annular rim, and of then cutting the cap along such area, the enforced circularity of which prevents inadvertent cutting of the drum head and the opening-defining rim thereof. After the cap is so cut, the outer portion thereof is removed and the remaining portion, while being held, is pressed or driven downwardly through the opening to free the cap therefrom. The cap is



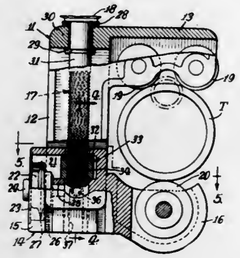
then deformed or collapsed while held within the drum to reduce its size and thereby permit it to be withdrawn through the opening. The apparatus includes a plurality of rollers that lie along a circle and one of which is adjustable inwardly and outwardly relative to the circumference of such circle to enable the rollers to be brought into rolling engagement with the cap to enforce such circularity thereon. An adjustable knife provided by the apparatus is engageable with the cap to cut the same along the area of circularity enforced thereon by the rollers.

3,624,681
RESILIENTLY SUPPORTED SHEAR PLATE
Frans Zuurveen, Emmasingel, Eindhoven, and Eduard Willem Tietjens, Oliemolenstraat, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,305
Claims priority, application Netherlands, Aug. 31, 1968, 6812446
Int. Cl. B26b *19/16*
U.S. Cl. 30—43.5 **8 Claims**



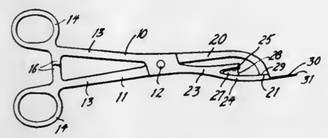
A dry-shaving apparatus having a single driving shaft and at least one shaving head which is actuated by the driving shaft and is adapted to be axially depressed and comprises a shear plate and a cooperating movable cutter member which is maintained in resilient engagement with the shear plate, the central shear plate being also supported by a separate, axially adjustable spring.

3,624,682
TUBE CUTTER
Leonard J. Kowal, Prospect Heights, Ill., assignor to I.T.E. Imperial Corporation
Filed May 8, 1969, Ser. No. 823,008
Int. Cl. B26d *1/22*
U.S. Cl. 30—102 **4 Claims**



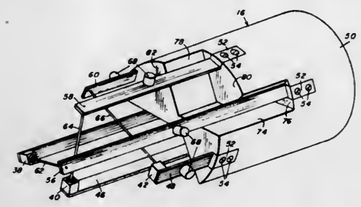
A tube cutter having a body defining a guide and a support portion. Rollers are provided on the support portion for supporting a tube to be cut. A holder is slidably mounted on the guide for movement toward and from the support portion and a cutting wheel is carried on the holder to bite into the tube supported on the support portion as a result of an advance of the holder toward the support portion. The holder is provided with a recess in which a second cutting wheel is provided. The cutting wheel is removably retained in the recess by means of a closure plate. The holder is moved on the guide by a threaded rod engaging a nut transversely adjustably positioned in a cavity in the holder.

3,624,683
SUTURE CUTTING AND REMOVAL INSTRUMENT
Arthur L. Matles, 4 East 78th St., New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,850
Int. Cl. B26b *11/00*
U.S. Cl. 30—124 **6 Claims**



A suture cutting and removal instrument is provided which includes hinged members for suture gripping, one member having a suture-lifting portion and an integral cutting blade for severing the sutures.

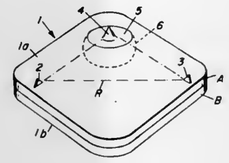
3,624,684
BOREHOLE DEFORMATION GAGE
John G. McCaslin, Butte, Mont., assignor to The United States of America as represented by the Secretary of the Interior
Filed Nov. 19, 1969, Ser. No. 878,127
Int. Cl. G01b *7/10, 7/14, 7/18*
U.S. Cl. 33—174 **7 Claims**



LVDT transducers in a deformation gauge respond to deformation stimuli for measuring subsurface stress patterns

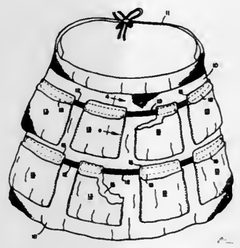
along multiple radial lines in a single plane perpendicular to the longitudinal axis of a borehole. The transducers are symmetrically grouped in a semicircular pattern and spaced along the axis of the gauge so that a maximum number of transducers fit within a small diameter. Similarly proportioned cantilever arms transmit deformation stimuli from the measurement plane to the spaced transducers. Stimuli of equal strength, because of the cantilever arm proportions, have the same effect on all transducers, regardless of the distance between the transducer and measurement plane.

3,624,685
MECHANICAL STRAIN OR DISPLACEMENT GAGE
Clarence O. Babcock, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior
Filed Dec. 16, 1969, Ser. No. 885,514
Int. Cl. G01b *5/30*
U.S. Cl. 33—174 **10 Claims**



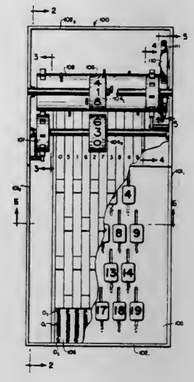
A displacement gage having three contact legs one leg of which is movable in all strain directions by being attached to a ball and socket joint while each of the other legs is immovable in the direction of said one leg but is movable normal to this direction. A mirror is attached to the ball and socket to translate movement of said one leg to a readout device. The two displacement directions are at right angles to one another to simultaneously provide Poisson's ratio and the modulus of elasticity.

3,624,686
POCKETED APRON FOR TEACHING COLOR RECOGNITION
Jean A. Beals, Route 8, Box 915 E, Pleasant Hill, Oreg.
Filed Nov. 21, 1969, Ser. No. 878,645
Int. Cl. G09b *1/06*
U.S. Cl. 35—8 R **1 Claim**



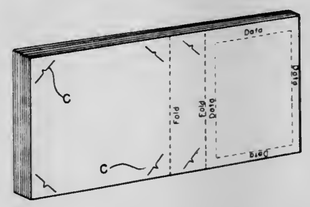
An apronlike article of apparel having strips of attachment material thereon with cooperating strips of pressure-sensitive material on the backside of a multitude of pockets for removable attachment to the apron body. The pockets are of various colors for the teaching of color recognition.

3,624,687
APPARATUS FOR TEACHING ADDITION OF PAIRS OF ONE-DIGIT NUMBERS
Lloyd A. Cagnolatti, 115 Patricia St., Gonzales, La., and John Drew, 3759 Jose Terrace, Jacksonville, Fla.
Filed May 28, 1970, Ser. No. 41,395
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 C **9 Claims**



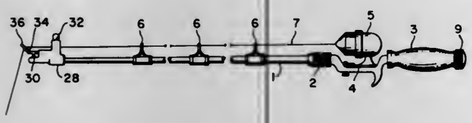
Apparatus comprising an educational toy for instructing beginning students in addition of pairs of one-digit numbers. Preselected pairs of numbers are displayed, each on a different rotating cylinder, or roll. Each roll of the pair is scribed with a set of one-digit numbers. Each is rotated through a series of fractional rotations, of constant angle, via action of a drive roll which rotates in similar manner, and which in turn is actuated by a series of keyed slide bars which represent answers to the problems displayed. When the correct key, of the keyboard, is manipulated, a roll of the scribed pair is rotated, in response to a movement of the drive roll, through a fraction of a revolution to present the next problem, and a signal to indicate a correct solution is given. No response is given to an incorrect solution.

3,624,688
PHOTO FRAME FORMS
Melvin M. Miller, 6206 Kellogg Drive, McLean, Va.
Filed Jan. 28, 1970, Ser. No. 6,421
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **5 Claims**



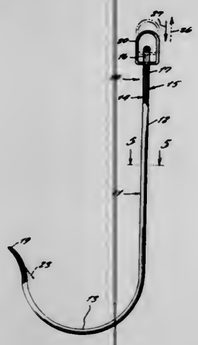
The photo frame form is a rectangular sheet of stiff paper adapted to be folded substantially midway of its length for making it stand upright on a horizontal surface, and having diagonal slits cut in the four corners of at least one of the folded portions for receiving the corners of a photo print to be framed therein, and having a gummed coating on at least one side of said form for adhesively mounting at least one of the folded portions in an album if desired, space being provided on the uncovered sides of the folded portions for data inscription relative to the framed photo prints.

3,624,689
FISHING ROD WITH STRIKE-SIGNALLING MEANS
Frank F. Rizzo, 1429 Chapman Ave., North Madison, Ohio
Filed Mar. 5, 1970, Ser. No. 16,856
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 5 Claims



A fishing rod characterized in that the line guide at the tip of the rod constitutes a movable switch element which lights a flashlight bulb when there is a pull on the line as caused by a fish being hooked on the lure or striking thereat. The fishing rod herein is further characterized in that it has electric conducting leads therein providing plug-socket connections at its ends with a reel-supporting handgrip having batteries therein and with a switch- and bulb-containing unit, said connections serving to align the line guides on the rod with respect to the reel on the handgrip and with respect to the line guide switch element on said switch- and bulb-containing unit.

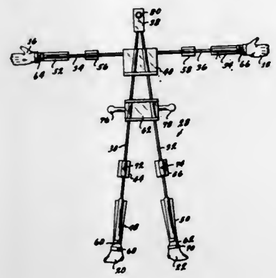
3,624,690
FISHHOOK WITH RETRACTABLE BARB
James G. Ashley, P.O. Box 1 Middleboro Road, East Freetown, Mass.
Filed Nov. 4, 1969, Ser. No. 873,926
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.16 1 Claim



A sleeve member in the form of a fishhook is slotted adjacent each of its closed ends. A spring wire member is slidably received in the sleeve and has one end formed to provide a barb retractable into the sleeve through one slotted end. The other end of the wire is looped and extends through the other slotted end of the sleeve.

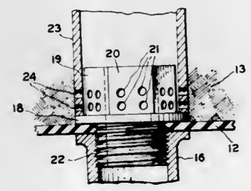
3,624,691
REALISTIC TOY FIGURE
George E. Robson, Torrance, and Berne E. Danielsen, Pacific Palisades, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 20, 1970, Ser. No. 13,075
Int. Cl. A63h *3/36*
U.S. Cl. 46—162 2 Claims

A toy figure with an armature which includes bendable wires and flesh-colored plastic molded over hand and foot areas of the wires. The armature is covered with a soft plastic in a form representing the figure of an aquanaut covered with a rubber swimsuit at all regions except the hands and feet. A separate face member of a material which can be easily



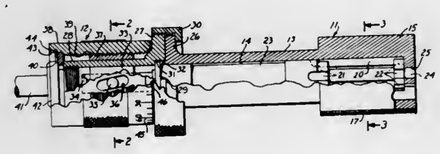
painted, is inserted into the head part of the figure. The armature has bracing portions molded over certain parts of the wire, which locate the armature in the mold where it is covered with plastic representing the swimsuit.

3,624,692
NUTRIENT DISTRIBUTOR FOR HYDROPONIC CELLS
Ivan E. Lux, 143 West Fifth St., Minden, Nebr.
Filed Oct. 29, 1969, Ser. No. 872,239
Int. Cl. A01g *31/02*
U.S. Cl. 47—1.2 6 Claims



A hydroponic cell, filled with granular material, is provided with a flow path for liquid nutrient extending through one of its walls. The terminal portion of the flow path in the cell is encircled by an apertured member which is movable relatively to the terminal portion of the flow path whereby the flow path is cleared of roots which are either cut off or wiped back into the cell.

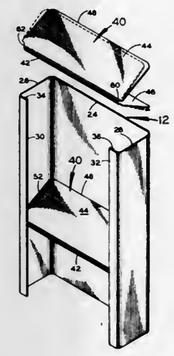
3,624,693
METAL FINISHING TOOL
Wilfred M. Werner, Arcadia, and Herman P. Hommerson, San Gabriel, both of Calif., assignors to Advance Honing Products, Inc., El Monte, Calif.
Filed Mar. 4, 1970, Ser. No. 16,317
Int. Cl. B24b *9/02*
U.S. Cl. 51—351 4 Claims



A tool for honing, grinding, lapping or otherwise finishing internal cylindrical surfaces comprising an abrading head unit including a hollow mandrel having a plurality of slots in the wall thereof through which abrasive stones are slidable

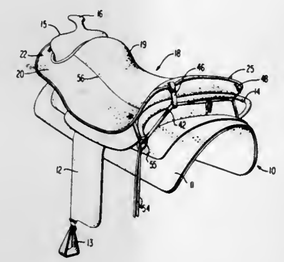
and a shaft rotatable to cause inward and outward adjustment of the stones. The unit is readily removably connected to an actuator unit adapted to rotate the head unit and to adjust the shaft whereby to adjust the stones relative to the mandrel.

3,624,694
REINFORCED STUD CONSTRUCTION
Henry L. Byland, Lighthouse Point, Fla., assignor to Futuristic Building Products Inc., Northbrook, Ill.
Filed Dec. 4, 1969, Ser. No. 882,209
Int. Cl. E04c *3/32*
U.S. Cl. 52—241 8 Claims



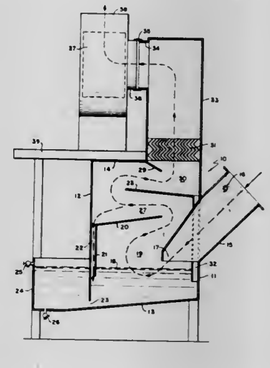
A reinforced stud construction for use in partitions of buildings, wherein a channel member has a base and side flanges with retainers at outer edges of the side flanges, and a stiffener fits in the channel with end edges of the stiffener providing backing for the channel's flanges to stiffen them for example when a screw or nail is being driven into the flange. The stiffener flexes resiliently when inserted into the channel so as to hold itself in place.

3,624,695
REMOVABLE SADDLE SEAT
John R. Roberts, Jr., P.O. Box 106, Buford, Ga.
Filed Nov. 17, 1969, Ser. No. 877,288
Int. Cl. B68c *01/20*
U.S. Cl. 54—46 5 Claims



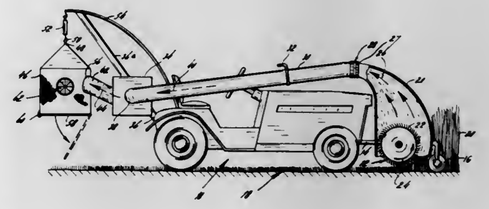
A removable saddle seat for horse saddles and the like, which includes a seat section for placement on the seat of the saddle and side jockeys which extend down from the side edges of the seat section. The side jockeys extend forwardly and curve around the pommel of the saddle, and tie straps are connected to the forward and rearward portions of the side jockeys. The tie straps at the forward portion of the side jockeys are normally tied together in front of the pommel, while the tie straps at the rearward portions of the side jockeys are normally tied together behind the cantle, to connect the forward and rearward portion of the saddle seat to the saddle. The saddle seat comprises an outer leather covering and an internal layer of padding which includes foam rubber and a tufted fabric.

3,624,696
GAS SCRUBBING APPARATUS
Irving Cohen, Flushing, and Harold J. Byrne, Garden City, both of N.Y., assignors to Aqua-Air Systems, Corp., New York, N.Y.
Filed May 2, 1969, Ser. No. 821,318
Int. Cl. B01d *19/00*
U.S. Cl. 55—223 4 Claims



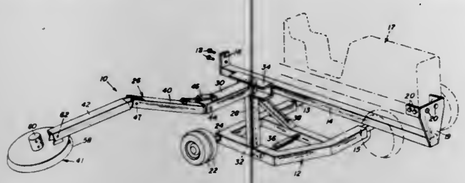
Air contaminated with particles enters an enclosure at relatively high velocity through an inlet passage having a water spray blanket projected thereacross. Within the enclosure, the air impacts against a water pool maintained at a constant level and has its direction of flow changed abruptly thereabove several times by a system of overlapping baffles. Extreme turbulence is induced in this zone and means are provided to induce some recirculation toward the water pool. Substantially cleaned air expands through a moisture eliminator into a drying chamber and discharges through the outlet of a blower which also serves to move the air through the entire apparatus.

3,624,697
FORAGE PLOT HARVESTER
William W. Fuller, 424 Kingsway, Muskogee, Okla.
Filed Feb. 3, 1970, Ser. No. 8,252
Int. Cl. A01d *43/00*
U.S. Cl. 56—16.6 7 Claims



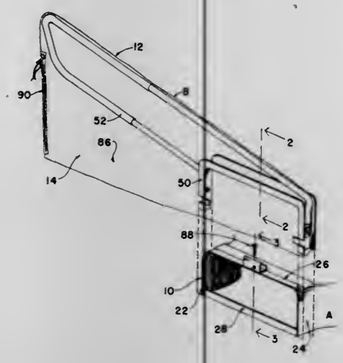
A forage plot harvester including a vehicle, a flail mower, a vacuum device and a weighing container, the weighting container being connected through the vacuum device to receive forage cut by the mower for weighing selective cut forage increments.

3,624,698
BRUSH-MOVING ATTACHMENT FOR TRACTOR
Nelson Storm, 213 Perry, Rossville, Ill.
Filed Aug. 17, 1970, Ser. No. 64,188
Int. Cl. A01d *35/26*
U.S. Cl. 56—25.4 **8 Claims**



A brush-mowing attachment for tractors comprising an outrigger frame adapted to be secured to the chassis of the tractor. The outrigger frame extends laterally from the tractor between the front and rear wheels thereof and is supported at its free end by ground-engaging wheels. An articulated boom is mounted on the outrigger frame and is provided at its free end with power driven cutting means. The articulated boom is adapted to move the cutting means both vertically and horizontally relative to the tractor.

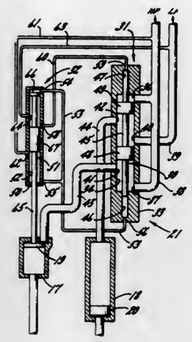
3,624,699
GRASS-CATCHING ATTACHMENTS
Ralph L. Hoffmann, St. Louis County, Mo., assignor to Perfection Manufacturing Company
Filed Mar. 11, 1970, Ser. No. 18,502
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 **2 Claims**



A device for attaching grass catchers to power driven lawn mowers, and discloses a pair of complementary rigid frames, one at the mouth of the mower and the second at the inlet to the catcher, which interlock with each other to form a sturdy cantilever-type attachment.

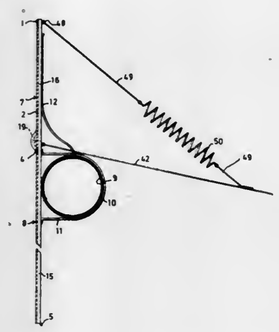
3,624,700
FLUID ISOLATOR
Donald K. Schaeve, and Edward H. Ashby, both of Rockford, Ill., assignors to Barber-Coleman Company, Rockford, Ill.
Filed Nov. 24, 1969, Ser. No. 879,490
Int. Cl. F15b *15/18, 11/08*
U.S. Cl. 60—51 **14 Claims**

A fluid isolator for use between a high-pressure fluid line and a low-pressure fluid line for actuating one of a plurality of operators from a common source of pressure fluid. Through first and second free-floating pistons mounted in first and second cylinders, power is transferred from a primary fluid circuit to a secondary fluid circuit to actuate the operator. A valving arrangement comprising a spool-type control valve actuated by a spool-type pilot valve is operable to direct high-pressure fluid alternately to the cylinders to drive the pistons through power strokes. The pilot spool is physically attached to the first piston so that the movement of the piston shifts the pilot spool to cause the control spool



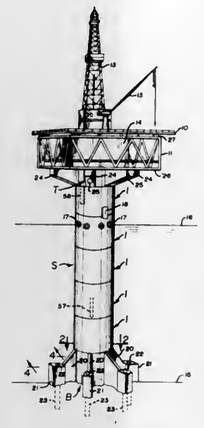
to shift. To accommodate changes in the volume of the fluid, herein hydraulic fluid, in the secondary circuit, the second cylinder is larger in volume than the first cylinder. In one embodiment, the pilot valve is formed concentric with the control valve, and the pilot spool slides within a central passage in the control spool.

3,624,701
OIL RECLAIM CURTAIN
William L. Kingsley, El Cerrito, Calif., assignor to Warren J. Curry and Norman G. Daniels, San Lorenzo, Calif., part interest to each
Filed Mar. 5, 1970, Ser. No. 16,723
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 A **7 Claims**



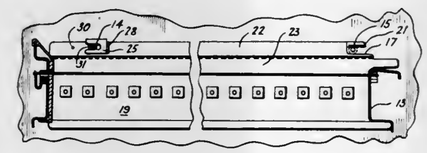
A collapsible, continuous, generally annular, curtain floatably supported at the surface of a large body of water, and projecting above and below said surface to retain within the area surrounded by said curtain, oil surfacing from a leak or blowout occurring in a subsea oil well during or after drilling. Guy lines connected with and extending radially outwardly from said curtain have anchoring means at their outer ends for quick anchoring of the curtain around the oil-surfacing area, said lines including yieldable means connected with the portion of the curtain projecting above the surface of the water to enable any section of the curtain to yield radially inwardly under outside wave force thereagainst to permit water to spill into the area enclosed by the curtain but to resist outward movement of such section.

3,624,702
OFFSHORE PLATFORM SUPPORT
Homayoun J. Meheen, 6464 West 14th Ave., Denver, Colo.
Filed Oct. 20, 1969, Ser. No. 867,848
Int. Cl. E02b *17/02;* **E02d** *5/30*
U.S. Cl. 61—46 **11 Claims**



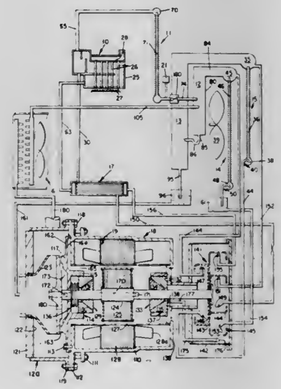
A column formed of annular segments made of reinforced concrete, having longitudinal holes therethrough in which prestressing tendons are installed, is utilized to support an offshore-drilling platform. Holes in outwardly extending ribs or wings of the top and bottom segments guide the piles into the sea floor, while being driven. The piles are cut off at the top of the outwardly radial ribs of the lower segment. In the larger sizes, the bottom segment is provided with a floor having holes with removable plugs, for inflow of sea water to sink the column at the installation site. Holes provided with removable plugs adjacent the bottom of the column permit the column to be used for separating a mixture of oil and sea water and sand. Such columns may also be used for oil storage purposes. Larger platforms, such as consisting of a number of similar platform components, may be supported by two or more columns.

3,624,703
ICEMAKER CUTTER-GRID-MOUNTING MEANS
George E. Pavek, St. Paul Park, Minn., assignor to Whirlpool Corporation
Filed Dec. 5, 1969, Ser. No. 882,632
Int. Cl. F25d *19/00;* **F25c** *1/00*
U.S. Cl. 62—298 **14 Claims**



Apparatus for releasably mounting a subdividing heated wire grid in the cabinet of an icemaker in which a slab of ice is formed and this slab transferred to the slab dividing grid all within the cabinet. This invention includes improved means including interengaging projections and projection receiving means such as slots together with movable catches for some of the slots with the result that the interengagement of the projections and slots provides effective but easily released mounting means for positioning the subdividing grid in the cabinet. The invention is particularly useful for large commercial icemakers in which there is located a plurality of the ice slab forming means positioned closely together vertically and in which the subdividing means or heated grid is located closely adjacent each vertical pair of slab forming means which in each instance is usually a refrigerant evaporator plate.

3,624,704
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,769
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **4 Claims**

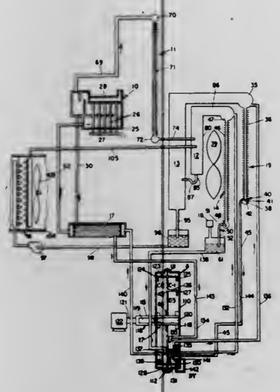


An absorption refrigeration system employing a pair of staged air-cooled absorbers and a pair of staged adiabatic evaporators. Strong solution from the generator passes first to the low-pressure absorber from which it flows through the high-pressure absorber back to the generator. Refrigerant liquid is flash-cooled in the high-temperature adiabatic evaporator stage from which it passes to the low-temperature adiabatic evaporator for further flash-cooling and from which it is passed through a refrigerant heat exchanger for cooling a refrigeration load and back to the high-temperature adiabatic evaporator. Liquid transfer apparatus is provided for pumping liquid in the system driven by a single hermetically sealed motor, the shaft of which mounts at one end a centrifugal pump for circulating liquid refrigerant and at its opposite end a scoop pump for circulating absorbent solution. The shaft is journaled in tapered refrigerant cooled and lubricated bearings which additionally function as seal means to minimize the possibility of intermixture of refrigerant and solution.

3,624,705
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,771
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **4 Claims**

An absorption refrigeration system employing a pair of staged air-cooled absorbers and a pair of staged adiabatic evaporators. Strong solution from the generator passes first to the low-pressure absorber from which it flows through the high-pressure absorber back to the generator. Refrigerant liquid is flash-cooled in the high-temperature adiabatic evaporator stage from which it passes to the low-temperature adiabatic evaporator for further flash-cooling and from which it is passed through a refrigerant heat exchanger for cooling a refrigeration load and back to the high-temperature adiabatic evaporator. The system further embodies a scoop pump for circulating solution to and from the absorber and generator which includes a hermetic housing formed with an annular embossment and mounting therewithin a rotatable trough

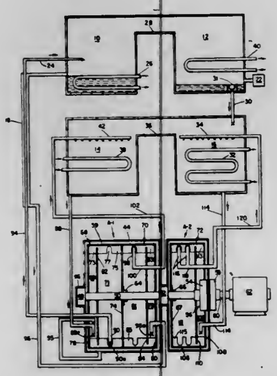
provided with an annular flange which cooperates with the embossment to provide a hydrodynamic seal dividing the interior of the housing into high-pressure and low-pressure zones.



3,624,706
ABSORPTION REFRIGERATION SYSTEM

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,773
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 5 Claims

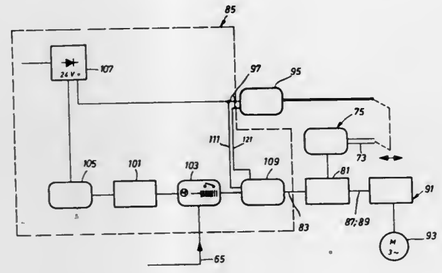


An absorption refrigeration system which includes a scoop pump having a stationary housing mounting therein a plurality of scoop pumps for circulating absorbent solution through the system. Each of the pumps comprises a rotatable pan having at least one inlet conduit leading thereto and at least one eduction conduit leading therefrom. The pan is divided into a fluid accelerating chamber and a pickup chamber and is provided with fluid acceleration inducing vanes effective to assist the rotation of fluid upon entry to the pan so that it is at substantially the circumferential velocity of the pan, thereby significantly improving pump efficiency.

3,624,707
PATTERN TICKLER MACHINE FOR FLAT HOSIERY KNITTING MACHINES

Hans Scheller, Farundau, Germany, assignor to Gebr. Scheller Textilmaschinenfabrik GmbH, Eislingen-Fils, Germany

Filed Feb. 4, 1970, Ser. No. 8,607
Claims priority, application Germany, Sept. 26, 1969, P 19 48 614.7
Int. Cl. D04b *15/04*
U.S. Cl. 66—96 10 Claims

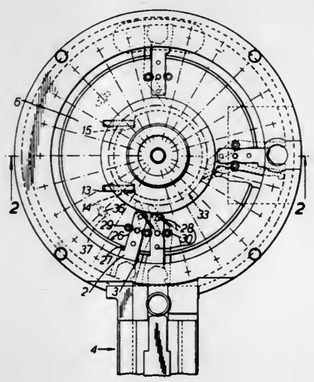


A pattern tackler apparatus for flat hosiery knitting machines having at least one tickler needle supported by a pattern tickler rod, and a device for the positioning of the tickler needle controlled by a programmed control device, control means connected to the tickler needle and means for regulating the control means so that the stitching needle is picked up according to a program and transferred to a neighboring needle and forms a new stitch in the next following row.

3,624,708
HANDLING WORKPIECES

Barry Anthony Richardson, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, England

Filed Oct. 1, 1969, Ser. No. 862,816
Claims priority, application Great Britain, Oct. 2, 1968, 46,760/68
Int. Cl. B21d *43/20*; B65g *47/24*
U.S. Cl. 72—424 18 Claims



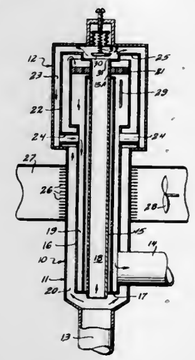
A feeding device comprising a carrier which is to be loaded with a workpiece and which has a fixed arm and a movable arm, the movable arm being provided with means to urge it towards the fixed arm and a notch being formed between the two arms to receive the workpiece in a particular orientation, and a loading device being provided to load the workpiece into the notch in this particular orientation.

The loading device preferably comprises a pusher member which is movable towards the opening of the notch and a guide member which is movable along a line transverse to the direction of movement of the pusher member in the plane of the notch, the guide member being displaced by the workpiece as it is pushed into the notch and in turn acting to press the workpieces against a fixed shoulder. Where the feeding device is to handle regular-polygonal blanks the guide shoulder is preferably straight, and edges at the ends of the pusher member, the guide member and the movable arm are inclined to the guide shoulder so as to engage sides of each blank and to orientate the blank by urging one side against the guide shoulder as it is loaded into the notch. This carrier may possess several notches and may move relative to the loading device to align each notch in turn with the loading device so that it can be loaded. The carrier may be in the form of a rotary, index plate assembly in use in a coining press.

3,624,709
CONTINUOUS-READING PLUGGING-TEMPERATURE METER

John P. Petrek, Kennewick, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 19, 1969, Ser. No. 886,631
Int. Cl. G01n *11/00*, *25/02*
U.S. Cl. 73—61 LM 8 Claims



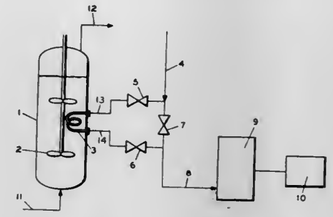
A continuous-reading plugging-temperature meter includes an orifice in the flow path of a liquid metal. Prior to its passage through the orifice, the liquid metal first is cooled to a temperature below that at which impurities in the liquid metal will deposit on the orifice and then is reheated to a steady-state condition in which impurities going out of solution on the orifice equal those going into solution. Reheating is accomplished with part of the flow of liquid metal which has not been cooled. The uncooled liquid metal passes through a spring-loaded valve before reheating the cooled liquid metal. As the orifice becomes more or less plugged due to changes in the impurity content of the liquid metal, the pressure of liquid metal on the spring-loaded valve changes and the amount of hot liquid metal available for heating the cooled liquid metal changes. The temperature of the liquid metal near the orifice thus gives an indication of the impurity content of the liquid metal.

3,624,710
SYSTEM FOR ANALYSIS

Don E. Carter, Creve Coeur, and Henry S. C. Yang, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 3, 1969, Ser. No. 838,974
Int. Cl. G01n *13/00*
U.S. Cl. 73—61.1 R 11 Claims

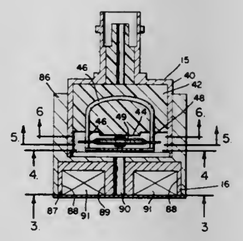
A fluid mixture is analyzed by permeating at least one component through a permeable or porous material for a period of time into a collection zone, sweeping out the collected fluid sample by a carrier fluid for a specific period of time, and passing the resultant mixture to analytical means.



3,624,711
MATERIAL TESTER

Milton F. Zeutschel, Bellevue, Wash., assignor to Automation Industries, Inc., Century City, Calif.

Filed July 30, 1969, Ser. No. 846,191
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.7 29 Claims



A combination acoustical eddy current search unit is described for use in an ultrasonic nondestructive test instrument. The eddy current transducer of the search unit provides vibrational projections into a workpiece under test and the acoustical transducer of the search unit detects the acoustical vibrations and any change in mode thereof.

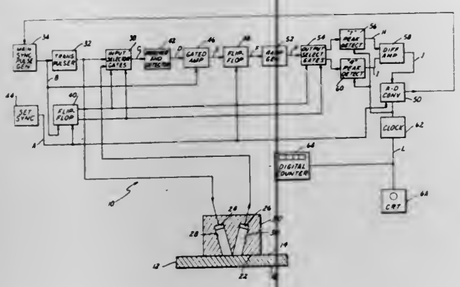
3,624,712
ULTRASONIC PULSE ECHO THICKNESS-MEASURING DEVICE

Frederick G. Weighart, Brookfield, Conn., assignor to Automation Industries, Inc., Century City, Calif.

Filed July 22, 1969, Ser. No. 843,301
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 5 Claims

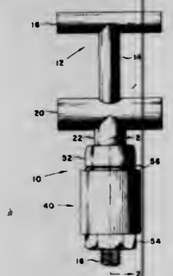
An ultrasonic thickness-measuring instrument having a dual transducer search unit wherein a transmitter-receiver transducer and a receiver transducer are mounted at an angle to provide overlapping beam patterns below the workpiece surface and are recessed to provide a fixed time delay. The transmitter-receiver transducer measures the distance to the surface, and the receiver transducer measures the distance to the back surface. The input of a receiver and ramp generator is alternately connected to each of the transducers, and the ramp function outputs are alternately connected to peak detectors to give two signals representative of the distance to

the front surface and to the rear surface of the workpiece. The two signals are applied to a difference amplifier, and the



difference output is digitized to provide a digital representation of workpiece thickness.

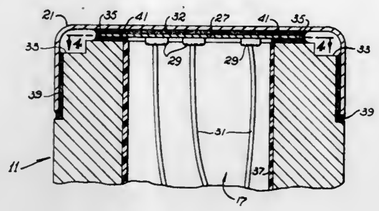
3,624,713
LOAD-LIMITING FASTENING DEVICE
Leonard Z. Goldberg, Canoga Park, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Sept. 23, 1969, Ser. No. 860,259
Int. Cl. G01l 5/06
U.S. Cl. 73—141 A **5 Claims**



A load-limiting fastening device is disclosed which is used so as to visually indicate when a desired load has been placed on a bolt. The device includes conventional trunnions and a trunnion stem which are adapted to be located around a bolt extending through the stem. A series of Bellville spring washers are held with respect to the end of the stem remote from the trunnions by a moveable retainer. When a bolt is located so as to extend through the stem, the spring washers and the retainer and when the nut is torqued down on the bolt, pressure is applied so as to tend to compress the washers and so as to simultaneously move the retainer. Indicator means such as a groove are provided on the stem so that the position of the retainer with respect to such indicator means will indicate the loading on the bolt.

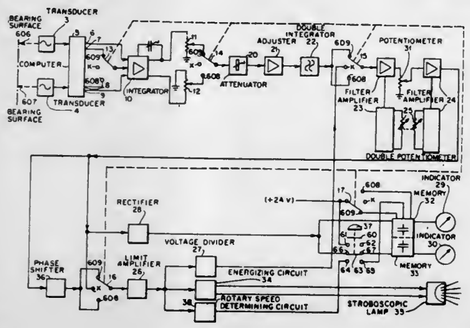
3,624,714
PIEZORESISTIVE MINIATURE PRESSURE TRANSDUCER
James E. Frassrand, Arcadia, Calif., assignor to Dynasciences Corporation, Los Angeles, Calif.
Filed Apr. 23, 1970, Ser. No. 31,258
Int. Cl. G01l 9/04
U.S. Cl. 73—398 AR **9 Claims**

A miniature pressure transducer has an edge-supported flexible diaphragm with a semiconductor chip providing a bridge arrangement of the piezoresistive strain gauge areas bonded to its inner surface to position active tension gage areas at the center of the diaphragm and active compression gage areas at the periphery. The chip is also bonded along its outer periphery to the annular inner surface of the trans-



ducer body supporting the edges of the diaphragm to prevent slippage during deflection of the diaphragm, thus placing the effective compression gage areas of the chip outside of the neutral circle within the compression zone on the diaphragm.

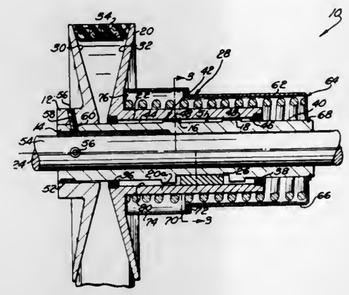
3,624,715
BALANCING MACHINE FOR SUBCRITICAL OPERATION INDICATING MAGNITUDE AND ANGULAR POSITION OF UNBALANCE MASS
Paul Holdinghausen, Bickenbach; Karl Homilius, Nieder-Ramstadt, and Alfred J. Giers, Rossdorf, all of Germany, assignors to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany
Filed Sept. 18, 1968, Ser. No. 760,605
Int. Cl. G01m 1/22
U.S. Cl. 73—466 **7 Claims**



A computer including a logarithmic voltage divider and potentiometer for taking into account the balancing radii is connected to mechanical to electrical transducers at the bearing surfaces of a balancing machine for subcritical operation and functions to separate the balancing planes. A filter amplifier arrangement which is adjustable to the bearing frequency is coupled to the computer and the output of such filter amplifier arrangement is coupled to its input via a feedback path which includes a limit amplifier. An indicator connected to the filter amplifier arrangement has a calibrated amplification degree for frequency selective direct determination of the magnitude of the unbalance mass. A stroboscope connected to the limit amplifier determines the angular position of the unbalance mass.

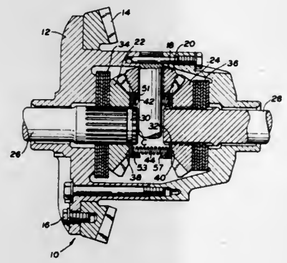
3,624,716
ADJUSTABLE SPEED PULLEY
Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 20, 1970, Ser. No. 30,113
Int. Cl. F16h 55/52
U.S. Cl. 74—230.17 **13 Claims**

An adjustable speed pulley comprises first and second flange members which define a belt-receiving groove therebetween. A body member supports the second flange member for axial movement toward and away from the first flange member. The second flange member and the body member have cooperating bearing surface portions. The body member and the second flange member also define a pair of lubricant chambers on opposite axial sides of the cooperating bearing surface portions. Seal means for sealing the lubricant chambers is carried by the second flange member and is movable with the second flange member upon



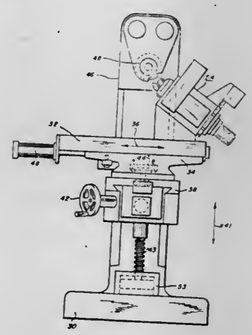
axial movement thereof. One of the lubricant chambers increases in volume and the other of the lubricant chambers decreases in volume upon axial movement of the second flange member relative to the body member. The adjustable speed pulley includes means providing for fluid communication between the pair of lubricant chambers and for directing lubricant from the chamber of decreasing volume into the chamber of increasing volume upon axial movement of the second flange member.

3,624,717
AXLE SHAFT RETENTION SYSTEM
Richard K. Brubaker, Warren, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Feb. 6, 1970, Ser. No. 9,354
Int. Cl. F16h 1/44, 1/40; F16b 21/09
U.S. Cl. 74—711 **7 Claims**



A differential drive mechanism having a housing includes a pair of oppositely extending rotatable shafts. The shafts are coaxial and have spaced ends. A keyed element cooperates with the shafts to maintain said shafts within the housing and to prevent excessive axial movement thereof with respect to the housing. The keyed element also is effective to exert a biasing force on side gears within the housing to bias said side gears into engagement with clutch plates when said keyed element is used in a limit slip differential type mechanism.

3,624,718
METHOD FOR PRODUCING A BALL-END MILL
Thomas A. Ribich, Cleveland, Ohio
Filed Dec. 16, 1970, Ser. No. 98,610
Int. Cl. B21k 5/00
U.S. Cl. 76—101R **7 Claims**

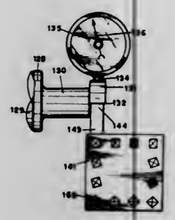


A ball-end end mill is produced by a method and apparatus which performs machining operations on a ball-end end mill blank which blank includes a shank from which extends a plurality of helically extending peripheral teeth which terminate short of the end of the blank which end is a substantially hemispherical surface. The end of the blank is machined so as to complete the teeth by presenting the end to a rotating milling cutter whose axis is generally parallel to a horizontal reference plane. A vertical reference plane normal to the axis of the milling cutter is also normal to the horizontal reference plane. The axis of the blank lies in this vertical reference plane and is preferably disposed at an acute angle of on the order of 35 degrees with the hemispherical end above the horizontal reference plane. The end of the angularly disposed blank is brought longitudinally into the milling cutter a short distance and then a pivoting action occurs to pivot the blank about an axis parallel to the vertical reference plane through an angle of on the order of the same number of degrees as the helix angle of the peripheral teeth, to arcuately form the cutting face on one tooth and the trailing edge on an adjacent tooth. The blank and cutter are separated, the pivoting action reversed, the blank is indexed about its own axis to bring another portion of the end of the blank into position relative to the cutter, and the above operation is repeated to arcuately form the cutting face on another tooth and the trailing edge on another adjacent tooth. This procedure is repeated until all of the teeth are formed. The teeth are finally finish formed by use of another milling cutter of slightly different form by essentially the same operations. A machining operation is next performed on the end of the formed teeth where they all meet at the axis of the tool which involves making an axial cut or notch in all but two diametrically disposed teeth, to separate them slightly from the tool axis. The above operations are accomplished in the unhardened condition of the blank. The blank is then hardened and thereafter ground to form a cutting edge on the two diametrically disposed teeth, each of which extends substantially to the axis of the tool and includes primary and secondary relief surfaces. Cutting edges are also ground on the other teeth and include primary and secondary relief surfaces.

3,624,719
METHOD FOR PRESETTING A LATHE TOOL
Romeu Romi, Sao Paulo, Brazil, assignor to Industrias Romi S.A., Sao Paulo, Brazil
Original application Nov. 1, 1967, Ser. No. 679,698, now Patent No. 3,548,693. Divided and this application Oct. 28, 1970, Ser. No. 084,793
Int. Cl. B23b 1/00
U.S. Cl. 82—1 C **8 Claims**

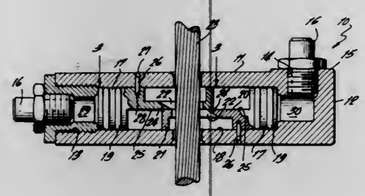
A cross tool slide with a master bar is set in a zero position in the main axis of a lathe whereupon indicating counters for

the distance of displacement of the slide are set to zero. A tool is substituted for the master bar and also set to a zero



position by a gauge on the slide so that the movements of the slide and tool for machining a workpiece are indicated by the indicating counters.

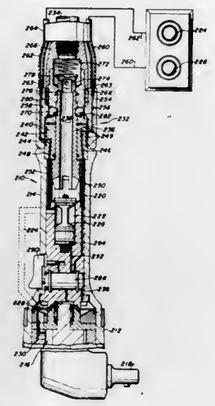
3,624,720
CABLE CUTTER
Elmer Laky, Cranford, N.J., assignor to Breeze Corporation, Inc., Union and Breeze Corporations, Inc., Union, N.J.
Filed Apr. 27, 1970, Ser. No. 31,949
Int. Cl. B23d *15/14*
U.S. Cl. 83—198 **5 Claims**



An emergency cable cutter in which opposed pistons are provided with overlapping cable-cutting blades. The blades have cable-cutting openings therein through which the cable is threaded. Upon the application of pressure to the pistons they are driven toward each other causing the knife edges on the openings to sever the cable. Either of the pistons alone, can sever the cable in the event of failure of the other.

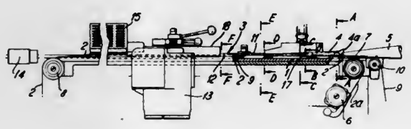
3,624,721
SIGNAL-TRANSMITTING COUPLING FOR PNEUMATIC TOOL
William Workman, Jr., 15688 Longview Lane, Spring Lake, Mich.
Filed June 26, 1970, Ser. No. 50,205
Int. Cl. F01b *25/26*; F16t *35/00*
U.S. Cl. 91—1 **8 Claims**

A quick release coupling for pneumatic tools operable to connect a compressed-air supply line to the tool and including means for transmitting a signal from the tool to a remote indicating device. One embodiment of the coupling in combination with a tool includes electrical conductors in the coupling in communication with a pressure switch in the tool and a remote indicator device. An alternate embodiment comprises a coupling having passageways for transmitting a



pressure signal from the tool to a remote fluid-actuated indicator.

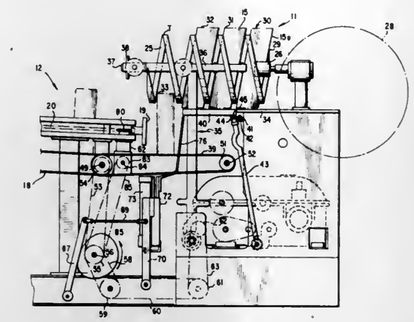
3,624,722
CONTINUOUS ROD MAKING MACHINES
Horace A. Stone, London, England, assignor to Molins Machine Company Limited, London, England
Filed Apr. 7, 1970, Ser. No. 026,315
Claims priority, application Great Britain, Apr. 10, 1969, 18,392/69
Int. Cl. B31d
U.S. Cl. 93—1 C **8 Claims**



A continuous rod making machine, especially for making cigarette filter rods includes a garniture tape passing over a garniture bed and through a tongue assembly of inverted-channel cross section positioned over the garniture bed to carry a wrapper tape and a filler into the tongue to compress the filler and form a continuous rod of filler enclosed by the wrapper tape, the tongue assembly having one or more divergent portions along its length.

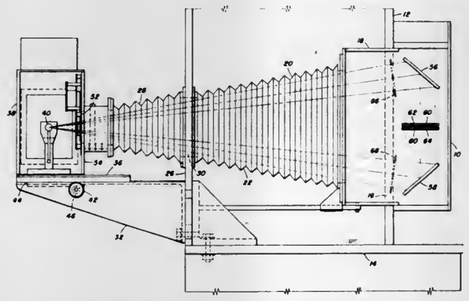
3,624,723
AUTOMATIC BAG ACCUMULATING, ADVANCING AND CHARGING APPARATUS
Donald R. Cannon, West Monroe, La., assignor to Olinkraft, Inc.
Filed July 22, 1970, Ser. No. 057,100
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **15 Claims**

An apparatus and method for collecting paper bags as they are being discharged from bagmaking machinery, and for accumulating the same in collated groups of equal bag numbers



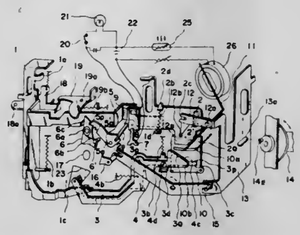
and charging a predetermined number of bag groups into a bundling machine.

3,624,724
MEDICAL X-RAY SENSITOMETER
Barnard C. Sheffer, Binghamton, N.Y., assignor to GAF corporation, New York, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,948
Int. Cl. G03b *27/70*
U.S. Cl. 95—1 R **6 Claims**



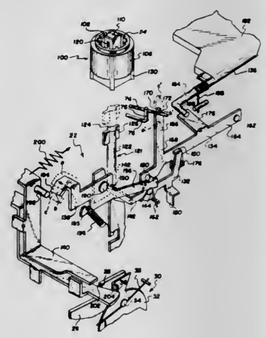
A rectangular housing is provided with a rear wall opening from which a bellowslike light tunnel extends to the front of a box containing a light source. The light-source box is carried by a platform extending rearwardly from the bottom of the housing and under the bellows, for manual adjustment toward and away from the housing. Upper and lower mirrors are mounted in the housing for rotation about parallel axes arranged so that the mirrors reflect light from such source as they are rotated at a selected speed through a single cycle of 360°. The housing is also provided with a drawer assembly carrying a bottom tablet holder which can be manually pulled out with the drawer for insertion of a film strip to be exposed; and when pushed back automatically locks such tablet holder in position with a top tablet holder, with the film strip to be exposed held firmly between multistep sensitometer tablets mounted in the holders. The film strip is thus held for exposure between the mirrors in a central horizontal plane, with the upper surface of the film facing the upper mirror and the lower surface of the film facing the lower mirror. Suitable light aperture plates are disposed in the housing between the mirrors and light source, and the mirrors are rotated in angular synchronism with each other, and with a shutter in the front of the light box, whereby both sides of two 35 mm. wide × 10 in. long sensitometric film strips, or a single film strip 70 mm × 10 in. long, can be automatically exposed from such single light source, for a selected time interval, at the end of which the top tablet holder retracts, releasing the drawer assembly for removal of the exposed film, and reloading thereof with the next film strip or strips to be exposed.

3,624,725
CAMERA HAVING A MECHANISM FOR AUTOMATICALLY CHANGING FROM AN AUTOMATIC PROGRAMMING EXPOSURE RANGE TO A FLASH AUTOMATIC EXPOSURE RANGE
Tatsuo Kobayashi, Osaka, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Dec. 9, 1969, Ser. No. 790,001
Claims priority, application Japan, Dec. 9, 1968, 43/683
Int. Cl. G03b *7/14*, *7/16*
U.S. Cl. 95—10 C **3 Claims**



In an automatic exposure camera for changing from the minimum diameter of the camera diaphragm and the highest speed of the shutter to the maximum diameter of the diaphragm and the lowest speed of the shutter, namely, from the minimum exposure quantity to the maximum exposure quantity, in accordance with the indicator position of an exposure meter, a control stroke is provided for changing the shutter speed from the highest speed to the lowest speed of the shutter which is appropriate for the flash photographing while maintaining the diaphragm diameter constant, in accordance with the indicator position, and a control stroke for changing the diaphragm from the minimum diameter to the maximum diameter while maintaining shutter speed constant, and when the indicator position turns the shutter speed to the lowest speed and is in a location where the diaphragm takes the maximum diameter, the camera is changed over automatically to the automatic flash photographing and controls the diaphragm diameter in accordance with the photographic distance, while keeping the shutter speed in the lowest.

3,624,726
FLASH-FIRING AND SENSING MECHANISM FOR CAMERA OR ATTACHMENT ADAPTED TO USE PERCUSSIVELY FIREABLE FLASHLAMPS
William H. Horton, and Chester W. Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,701
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 **27 Claims**



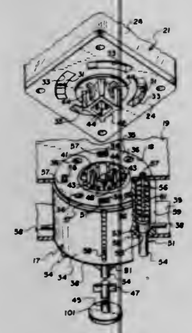
A camera or attachment, adapted to receive and fire percussively ignitable flashlamps, is provided with a pivotal sensing and actuating arm that mechanically senses the

operative or inoperative condition of the flashlamp as soon and as long as the flashlamp is received on the camera. The arm is particularly adapted for use with flashcubes supporting a plurality of percussively ignitable flashlamps, each having a pre-energized striker wire, and is adapted to move into the cube to mechanically sense the operative or inoperative position of the striker wire and to position a warning signal such as a flag or other member in one of two positions indicative of such sensed striker position. To permit rotation of the cube, the arm includes a cam surface adapted to cooperate with the cube for temporarily camming the arm out of the cube upon cube rotation. The arm further has operative and inoperative positions, and mechanisms are provided for holding the arm in the inoperative position except when a flashlamp is positioned on the camera and for setting an exposure aperture for proper flash exposure when a flashlamp is positioned on the camera.

3,624,727
SOCKET FOR PERCUSSIVELY IGNITABLE MULTIPLE-LAMP FLASHBULB UNITS

William H. Horton, and Edward L. Sturm, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 855,467
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **13 Claims**



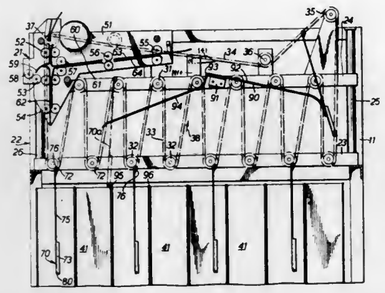
The disclosure relates to the provision of a camera with a socket member for supporting a so-called flashcube or related multiple-flashbulb unit comprising a plurality of percussively ignitable flashbulbs, each of which is adapted to be fired in response to displacement of a corresponding percussion element within the flashbulb unit. The socket member can be rotatively indexed to transport each flashbulb to a predetermined firing position and includes a corresponding plurality of firing members which remain in alignment with the respective percussion elements and which are movable independently to effect displacement of those elements. An ignition member operated by the camera's shutter release mechanism is adapted to move the firing member associated with the flashbulb at the firing position, thereby causing that bulb to fire in predetermined synchronism with the opening of the camera shutter.

3,624,728
PHOTOGRAPHIC APPARATUS

Charles W. Clark, Kings Grove, Maidenhead, Berkshire, England

Filed Nov. 20, 1968, Ser. No. 777,324
Claims priority, application Great Britain, Nov. 20, 1967, 52,749/67
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **5 Claims**

Automatic development apparatus for dipping a sheet of exposed photosensitized sheet material successively into liquids contained in a number of process tanks by use of a carrier suspended from a conveyor which follows a sinuous or zigzag path. The apparatus includes control device whereby the exposed sheet is fed through rollers into a carrier, the carrier is moved by the conveyor to dip the sheet and

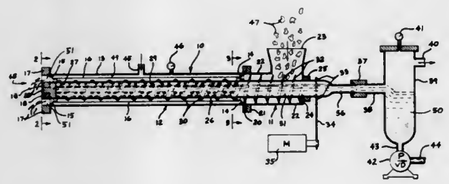


the developed sheet is withdrawn from the carrier by rollers and delivered from the apparatus.

3,624,729
CONTINUOUS JUICE EXTRACTOR

Maurice W. Hoover, 3620 Merwin Road, Raleigh, N.C.

Original application Jan. 29, 1968, Ser. No. 701,173, now Patent No. 3,550,526. Divided and this application Sept. 15, 1970, Ser. No. 072,281
Int. Cl. B30b *5/02*
U.S. Cl. 100—117 **4 Claims**



In abstract, a preferred embodiment of this invention is a continuous operation juice extractor using a perforated screw conveyor to move the pulp through the device. A flexible sleeve or bladder applies selectively either constant or varying pressures to the perforated screw conveyor to press the juice from the pulp. A vacuum may be applied to the hollow center portion of the perforated screw to assist in removing the juices therefrom as well as deaerate the same.

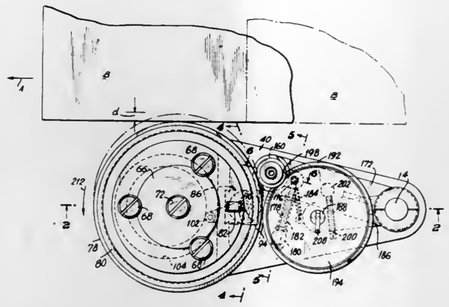
3,624,730
DEVICE FOR IMPRINTING SUCCESSIVE NUMBERS ON MOVING BOXES OR THE LIKE

Ira S. Gottscho, Milburn, N.J., assignor to Adolph Gottscho Inc., Union, N.J.

Filed Apr. 17, 1970, Ser. No. 29,595
Int. Cl. B41f *17/26*
U.S. Cl. 101—35 **13 Claims**

A device for imprinting symbols such as successive numbers on articles such as boxes as the latter travel along a given path. The device includes a support which carries a swingable base urged by a spring toward the path of movement of the articles. This base carries a rotary drive which is frictionally driven by the articles as the latter move along the path. This rotary drive carries the imprinting symbols which print identifying numbers or the like on the article during rotation of the rotary drive by the article itself. The imprinting device is adjusted from one number to the next automatically during rotation of the rotary drive in response to actuation of an adjusting member by a stationary cam with respect to which the rotary drive rotates. Also ink is transferred from an inking roll to the imprinting unit through a transfer roll

with the latter driven by frictional engagement with the rotary drive. Thus the entire device is driven solely from the

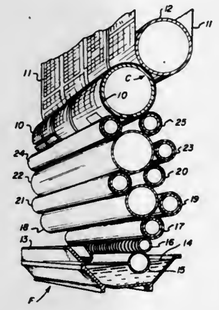


movement of the articles which are to be imprinted with the successive numbers or the like.

3,624,731
PRINTING APPARATUS AND PROCESS FOR CONTROLLING INK FOG

Eugene T. Lindberg, Denver, Colo., assignor to The Denver Post, Inc., Denver, Colo.

Filed July 16, 1969, Ser. No. 842,121
Int. Cl. B41f *31/06*
U.S. Cl. 101—350 **14 Claims**



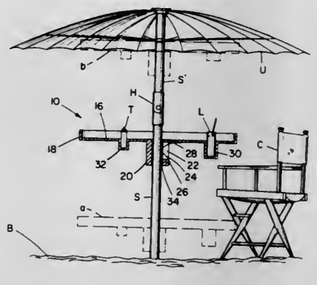
Ink fog is controlled or reduced by mixing with the ink finely divided particles of a magnetic material, such as iron oxide, and feeding the ink from the ink fountain to the impression cylinder by a series of rollers, at least some of which are magnetized, so as to attract ink-fog-containing magnetic particles. The magnetized rollers preferably include alternating north and south poles on the outside, as through the use of a series of magnetic rings having alternating poles on the outside, interspaced between unmagnetized discs, by electromagnetic coils wound to produce the alternating poles on spools formed of a core material, or by induced magnetism. In the latter instance, the outer layer of the roller may be formed of a magnetizable metal, or of rubber in which is embedded finely divided magnetic particles. The spacing of the permanent magnet discs may also be adjusted by sponge rubber discs interspaced therebetween.

3,624,732
BEACH UMBRELLA TABLE

Lloyd N. Bowden, 204 Headington Court, Timonium, Md.

Filed May 20, 1970, Ser. No. 38,925
Int. Cl. A47b *37/04*
U.S. Cl. 108—50 **4 Claims**

A quick-adjustment, self-protective beach umbrella tray with a central sleeve having special means for fitting umbrella shafts, including in various embodiments spring retention with and without cooperative thimble inserts. The table is

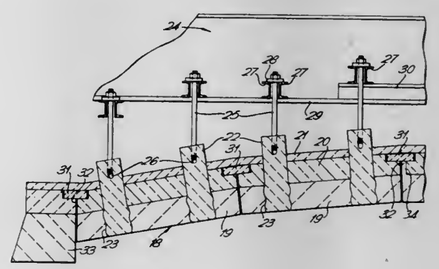


provided with recesses for receiving sundry articles and in one embodiment with stiffening ribs.

3,624,733
SUSPENDED ROOF FOR HIGH-TEMPERATURE INDUSTRIAL FURNACES

George Patrick Eadie, Linlighgow, and William Halliday, Balerno, both of Scotland, assignors to Laidlaw Drew and Company, Limited, Edinburgh, Scotland

Filed Mar. 11, 1970, Ser. No. 18,679
Claims priority, application Great Britain, Mar. 17, 1969, 13,857/69
Int. Cl. F23m *5/02*
U.S. Cl. 110—99 R **8 Claims**



A roof structure primarily for a regenerative glass furnace comprising a plurality of monolithic facing blocks suspended from a support structure via ceramic anchor tiles formed integral with said facing blocks, said facing blocks being backed up by high and low temperature layers of insulating material. Expansion gaps are provided between said facing blocks and these are closed by filler tiles positioned in one of said indulation layers.

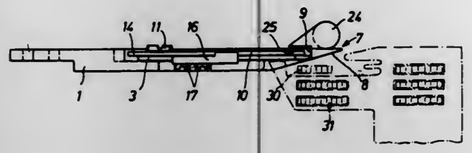
3,624,734
THREAD-CUTTING DEVICE ON SEWING MACHINES

Helmut Schips, Kirch str. 63a, 9400 Rorschach, Switzerland

Filed Mar. 27, 1970, Ser. No. 23,239
Claims priority, application Switzerland, Apr. 2, 1969, 5136/69
Int. Cl. D05b *65/06*
U.S. Cl. 112—252 **6 Claims**

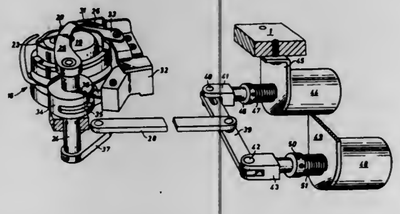
A device for use in conjunction with sewing machines for cutting the thread between successive workpieces by means

of a suction tube which is arranged on the delivery side of the stitch-forming point and which determines the position of the



free thread and further by means of a pair of cutting blades of which one at least is driven.

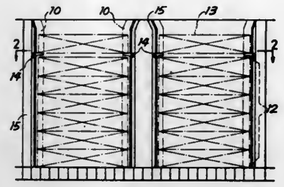
3,624,735
THREAD CUTTING DEVICE FOR LOCK STITCH SEWING MACHINES
Kristen Hedegaard, Gentofte, Denmark, assignor to Firma G. M. Pfaff AG., Kaiserslautern am Pfalz, Germany
Filed Aug. 10, 1970, Ser. No. 62,575
Claims priority, application Germany, Aug. 16, 1969, P 19 41 794.8
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **3 Claims**



Thread-cutting device for lock stitch sewing machines having a looper rotating in a horizontal plane, a bobbin housing having an outlet opening for the looper thread which is secured against rotational movements by means of a stop finger below the stitch plate and a thread catcher cooperating with a cutter that rocks in a path of movement disposed perpendicularly to the shaft of the looper, which has a V-shaped incision defining a catcher point having legs disposed in a plane generally parallel to the looper shaft which is movable between the bobbin housing and the retaining finger that extends from the wall surface of the housing laterally and upwardly, where the upper leg of the thread catcher is of greater length than the lower leg, and that the rocking movement of the thread catcher for seizing the threads to be cut is moved by its drive arrangement in a manner that the point of the upper leg first moves between the looper thread outlet opening of the bobbin housing and the retaining finger above the surface of the looper thread outlet opening and upon seizing the looper thread below the surface of the bobbin housing surface.

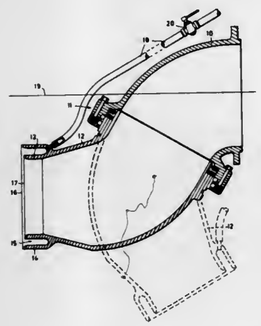
3,624,736
CONTAINER-SUPPORTING APPARATUS FOR CONTAINER SHIP
Akira Iwami, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Dec. 9, 1969, Ser. No. 883,654
Int. Cl. B63b *25/22*
U.S. Cl. 114—72 **3 Claims**

Apparatus is provided for use in conjunction with vertical container corner guideways in the hold of a containerized ship to enable the number of container stacked in the hold to be greater than would normally be permitted within safe compression limits of the bottommost container. The apparatus comprises support fingers pivotally mounted adjacent each guideway and selectively operable by means of an air cylinder between a retracted position for permitting loading of lower containers in the hold and an extended position for



engaging the corners of an upper container to keep its load from being superimposed in the lower containers.

3,624,737
WATER-JET PROPULSION
Ainslie E. A. Keller, 37 Bourbond St., Indooroopilly, Brisbane, Queenland, Australia
Filed Dec. 15, 1969, Ser. No. 884,818
Claims priority, application Australia, Dec. 19, 1968, 48,106/68
Int. Cl. B63h *11/00, 11/02*
U.S. Cl. 115—12 R **2 Claims**

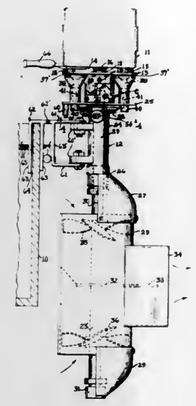


An underwater jet propulsion nozzle includes means for injecting air into the jet stream issuing from the nozzle, to give increased thrust when stationary or at low speeds. The nozzle is mounted for swiveling movement on a fixed jet pipe, and the plane of the swivel joint is inclined downwards in the direction of forward motion.

3,624,738
OUTBOARD MOTOR HAVING SEPARABLE POWER AND PROPULSION UNITS
Ferdinand Gill, 7849 North Keeler Ave., Skokie, Ill.
Filed Mar. 20, 1970, Ser. No. 21,290
Int. Cl. B63h *21/28*
U.S. Cl. 115—17 **10 Claims**

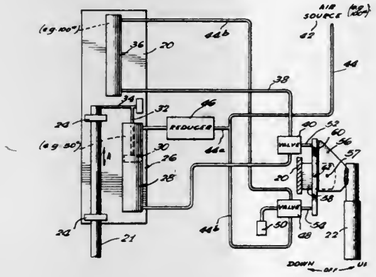
An outboard motor having a power unit including a driving shaft and a propulsion unit including a driven propeller shaft releasably coupled to the driving shaft for rotation therewith when the units are superimposed upon one another, the power unit having mounting studs extending from the bottom thereof and removably projected in socket-bearing posts on the propulsion unit and releasably latched therein by a

latching arrangement, thus to latch the units together in superimposed position one upon the other, with the shaft of the



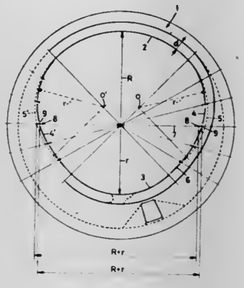
power unit coupled to the shaft of the propulsion unit for rotation about a vertical axis.

3,624,739
POWER-OPERATED MILKER SUPPORT
Chester A. Thomas, Lake Forest, Ill., assignor to Babson Bros. Co.
Filed July 9, 1969, Ser. No. 840,370
Int. Cl. A01j *09/08*
U.S. Cl. 119—14.1 **14 Claims**



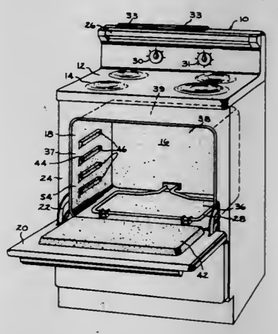
A power-operated adjustable support means for carrying a milking apparatus at any one of a plurality of vertically related positions during a milking operation. A combination pneumatic-hydraulic control means is provided for adjusting the support, the control means including a double-acting piston and cylinder device with pneumatic pressure admitted to the cylinder on one side of the piston at a constant pressure and with hydraulic pressure admitted to the cylinder on the opposite side of the piston at a varying pressure greater than, less than or the same as the constant pneumatic pressure to effect reciprocating movement of the piston to adjust the support or to hold the piston at a desired position to maintain a given position for the support.

3,624,740
ROTARY PISTON INTERNAL COMBUSTION ENGINE
Fredrik Jeremias Hogguer, Nieuw Loosdrechtsedijk 264, Netherlands
Filed May 1, 1970, Ser. No. 33,619
Claims priority, application Netherlands, May 2, 1969, 6906731, Dec. 19, 1969, Netherlands, 6919089
Int. Cl. F02b *53/06, 55/08*
U.S. Cl. 123—8.07 **8 Claims**



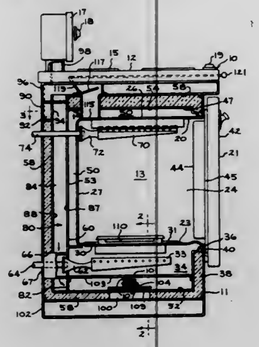
The rotary piston of an internal combustion engine has a geometrical configuration such that all lines through the axis of rotation of the piston are of equal length.

3,624,741
RACK SLIDING SURFACES FOR CATALYTIC COATED OVEN
Raymond L. Dills, Louisville, Ky., assignor to General Electric Company
Filed July 24, 1970, Ser. No. 58,040
Int. Cl. A21b *1/00*; **F24c** *15/16*
U.S. Cl. 126—19 R **5 Claims**



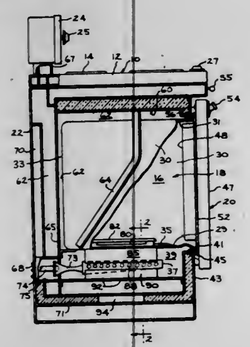
This invention pertains to a cooking oven having a boxlike oven liner and a front-opening access door. The oven liner has a plurality of vertically spaced embossments that serve as adjustable support means for one or more food supporting racks that are suspended between opposite sidewalls of the oven liner. The walls of the oven liner have a first corrosion resisting coating; and, except for the top surfaces of the embossments which engage the oven rack, a second coating of porcelain enamel including an oxidizing catalyst exposed on the surface thereof. Any food soils lodged on the second catalytic coating during normal cooking operations will be oxidized at oven temperatures above about 400° F.

3,624,742
SELF-CLEANING GAS OVEN WITH HEAT EXCHANGER
Bohdan Hurko, and James A. Dooley, both of Louisville, Ky., assignors to General Electric Company
Filed June 15, 1970, Ser. No. 46,113
Int. Cl. F24c 15/32
U.S. Cl. 126—39 D 7 Claims



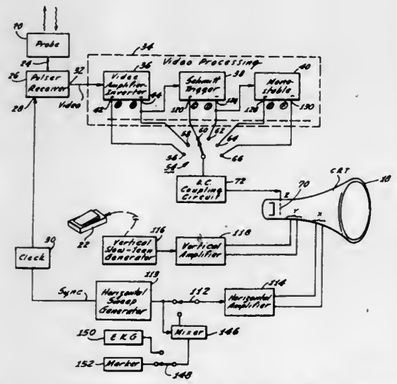
A heat exchanger system for a self-cleaning gas cooking oven where the oven is operated as a muffle oven for both baking and heat-cleaning operations. A heat exchanger is employed for cooling the flue gases as well as preheating the secondary air for the bake burner. There is an auxiliary secondary air supply for the bake burner, and it includes a normally open temperature-responsive damper means that serves to close the auxiliary air supply when the firebox temperature reaches a predetermined amount. This same auxiliary air supply is used when an upper broiler burner is operated during closed door broiling, and it cooperates with a normally closed oven vent that is opened for use during the broiling operation.

3,624,743
GAS-COOKING OVEN WITH OVEN SCAVENGING MEANS
Raymond L. Dills, Louisville, Ky., assignor to General Electric Company
Filed June 15, 1970, Ser. No. 46,338
Int. Cl. F24c 15/32
U.S. Cl. 126—39 D 9 Claims



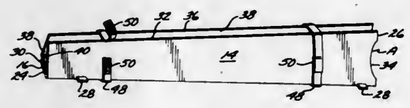
A scavenging system for a gas oven whereby smoke and odors generated during normal baking operations or during a pyrolytic self-cleaning operation are entrained in an airflow passing through the cooking cavity, and they exit through an exhaust vent in the bottom wall of the oven liner and enter the gas flames of the bake burner where they are oxidized, and the air is combined with the flue gases to heat the oven. Deflector means are present in the firebox above the bake burner to act as an aspirator and create a suction for creating the airflow through the oven cavity. Other deflectors are positioned beneath the burner in association with air inlets in the bottom of the firebox to create a second suction that draws room air into the firebox so as to pass them into the gas flames to improve the efficiency of combustion.

3,624,744
ULTRASONIC TESTER
Donald W. Munger, New Milford, Conn., assignor to Automation Industries Inc., El Segundo, Calif.
Continuation of application Ser. No. 440,205, Feb. 26, 1965, now abandoned. This application Feb. 26, 1970, Ser. No. 14,764
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 R 16 Claims



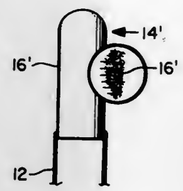
Herein described is improved means for ultrasonically inspecting a workpiece. An ultrasonic tester is disclosed herein which is particularly adapted for ultrasonically inspecting moving workpieces like living organs (for example, the mitral valve in the heart) and producing a visual display showing the movement of the living organ whereby the operator can readily determine whether the movement is normal. In addition, a reference trace is provided in the display for comparison with the movement.

3,624,745
DISPOSABLE SPLINT
Don Bowers, 422 East 19th St., Long Beach, Calif.
Filed Jan. 28, 1970, Ser. No. 6,341
Int. Cl. A61f 5/04
U.S. Cl. 128—93 6 Claims



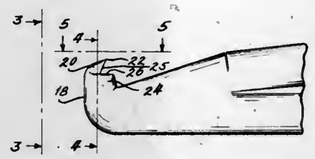
A disposable splint for the temporary support of the injured leg of an accident victim, which splint is formed from a heavy, bendable sheet material such as cardboard, or the like, that may be carried in a flattened condition to the scene of the accident, and by proper folding and expanding thereof, said support may be formed into a splint configuration to partially encircle the damaged leg. A flat, foldable extension is also provided for removably engaging the splint to provide temporary protection for the thigh of an accident victim.

3,624,746
CATAMENIAL TAMPON
Martin Grad, Cincinnati; Richard C. Miller, North College Hill, and Grace L. Smith, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 768,425, Oct. 17, 1968, now abandoned. This application Sept. 17, 1969, Ser. No. 864,934
Int. Cl. A61f 13/20
U.S. Cl. 128—285 4 Claims



A highly compressed catamenial tampon, the side surfaces of which comprise loosened fiber ends and the method of producing the same by relative rolling motion of the tampon on a multiplicity of wirelike prongs which penetrate the tampon to a depth of from about one one-hundred twenty-eighth to about one-sixteenth inch.

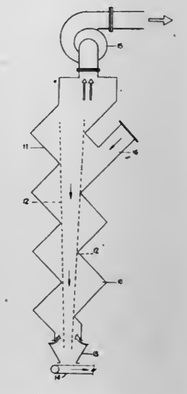
3,624,747
SURGICAL INSTRUMENT FOR RUPTURING MEMBRANES
Charles Allen McKnight, 2914 Painted Valley Drive, Little Rock, Ark., and Anita L. Gilbert, 4234 East Avalon Drive, Phoenix, Ariz.
Filed May 1, 1969, Ser. No. 820,882
Int. Cl. A61b 17/42, 17/34; B26b 29/00
U.S. Cl. 128—361 12 Claims



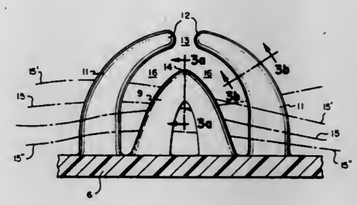
A surgical instrument for rupturing membranes such as the amniotic membrane, said instrument having a head portion that represents an improvement over the head portion of an instrument used for similar purposes covered by copending U.S. Pat. application Ser. No. 656,210, filed July 26, 1967 now U.S. Pat. No. 3,533,411, dated Oct. 13, 1970 by the same inventors. The improved head portion includes means to limit the amount of penetration of the hook portion thereof into the membrane and the subject device is constructed to make it safer to use and to provide more controlled incision of the membrane. The subject instrument is a relatively simple inexpensive instrument preferably of one piece construction and is well suited for packaging in a sterile condition.

3,624,748
CIGARETTE MAKING
Mauritz L. Strydom, 75 Bulle Kringiveg Dalseg, Stellenbosch, South Africa
Filed Dec. 12, 1968, Ser. No. 783,213
Claims priority, application South Africa, Dec. 18, 1967, 67/7564, May 22, 1968, 68/3288
Int. Cl. A24c 01/02
U.S. Cl. 131—110 2 Claims

Shredded tobacco is carded by feeding it to a tower down which the tobacco gravitates against an airstream. The tower is formed of opposed walls of zigzag shape. The inner peaks of the zigzags touch planes that converge downwardly and are spaced apart. Tobacco thus falls in countercurrent to an airstream with constantly decreasing velocity and passes successive areas of vortex flow as it gravitates down.



3,624,749
HAIR CURLERS
Laurent H. Girard, Bedford, N.H., and William A. Ribich, Lexington, Mass., assignors to American Velcro Inc., Manchester, N.H.
Filed Oct. 16, 1970, Ser. No. 81,269
Int. Cl. A45d 2/00
U.S. Cl. 132—40 8 Claims

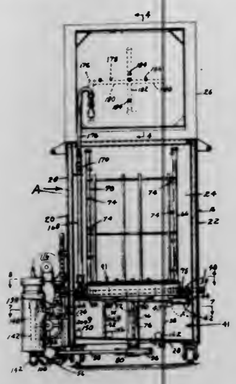


A hair curler is disclosed having a cylindrical body member and a plurality of hair-gripping elements projecting from the outer surface of the body member. Each hair-gripping element includes generally two outer arms and an inner loop disposed in spaced relation to each other and between which loops strands of hair are held in a wound condition about the curler.

3,624,750
PARTS WASHER
Thomas Peterson, Box 222, McKinley, Minn.
Filed Jan. 30, 1970, Ser. No. 7,025
Int. Cl. B08b 3/02
U.S. Cl. 134—96 6 Claims

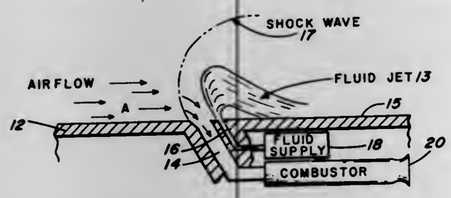
An article-cleaning device comprising a housing open at the top and having a drainboard dividing the interior thereof into an upper cleaning chamber in which is disposed a revolvable article support and into a tank for cleaning liquid below the drainboard, a U-shaped manifold mounting spray nozzles within the cleaning chamber for spraying the cleaning liquid on the articles on the article support. The sprayed liquid is drained back into the tank through an opening in the

drainboard and recirculated by recirculating mechanism. Rinsing mechanism is provided for connecting the spraying manifold to a source of liquid under pressure, and handle



means for closing the opening in the drainboard together with a drain means for directing the rinsing liquid directly out of the cleaning chamber.

3,624,751
AERODYNAMIC AIR INLET FOR AIR-BREATHING PROPULSION SYSTEMS
Ronald F. Dettling, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 23, 1970, Ser. No. 31,099
Int. Cl. F15d *1/10*
U.S. Cl. 137—81.5 **4 Claims**

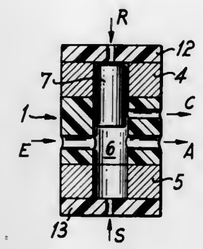


FLOW FIELD WITH JET ON

Means for effecting the induction of outside air into the combustion process of an air-breathing propulsion system such as ram jets, ducted rockets, and air-augmented rockets. A jet of fluid is exhausted at high velocity into the airstream just behind an open port in the skin of the vehicle. The injection of this fluid causes the formation of a shock wave some distance upstream of the point of injection. Air between this shock wave and the injection point is at a high pressure and thus flows into the open port in the skin of the vehicle. Thus, no external obstruction need be attached to the vehicle to divert air into the port.

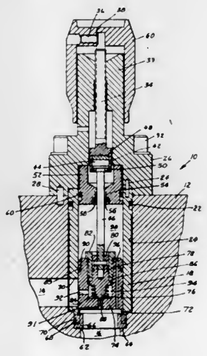
3,624,752
STORAGE UNITS FOR PNEUMATIC LOGIC SYSTEMS
Helmut Schmidt, Essen-Haarzopf, Germany, assignor to Bergwerksverband GmbH, Essen, Germany
Filed Dec. 12, 1969, Ser. No. 884,557
Claims priority, application Germany, Dec. 21, 1968, P 18 16 443.7
Int. Cl. F15c *3/00*; F16k *11/00*
U.S. Cl. 137—625.49 **14 Claims**

A storage unit for pneumatic logic systems, especially systems for control and adjustment purposes in underground mining, comprising a body of nonmagnetic material having a passage to receive a piston made of magnetizable material which can assume in the passage two terminal positions defined by permanent magnets, and which can be shifted



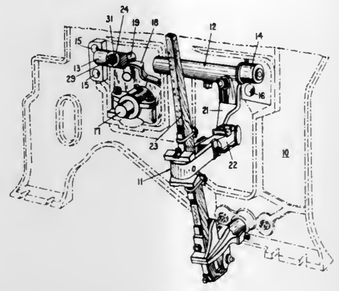
from one terminal position to the other under the influence of the signals for setting and resetting, the piston being formed as a blocking spool to control the inlet and outlets relating to the operative input and output signals, which have port in the passage.

3,624,753
TWO-STAGE OPENING VALVE
Richard S. Brumm, Orinda, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed Apr. 27, 1970, Ser. No. 32,267
Int. Cl. F16k *1/02*
U.S. Cl. 137—630.14 **5 Claims**



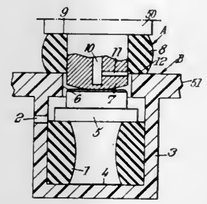
A two-stage opening globe valve including the main valve member with a chamber therein receiving the valve stem to permit limited relative axial movement between them. Coaxial and lateral primer ducts connect the chamber to the upstream and downstream flow passages, and on the end of the stem is a primer valve that opens and closes the coaxial duct. When the stem is moved to open the valve it opens the primer valve first while an imbalance in opposing areas of the main valve closure which are exposed to upstream pressure produces a force differential biasing the valve toward closed position.

3,624,754
LOOM-PICKING DEVICE
Umberto V. Tosti, Milford, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Feb. 17, 1970, Ser. No. 12,001
Int. Cl. D03d *49/24*
U.S. Cl. 139—142 **2 Claims**



A picking device for a loom comprising a pick ball supporting stud and a cooperating locking element therefor for fixedly attaching it to and releasing it for disassembly from the loom's pickshaft.

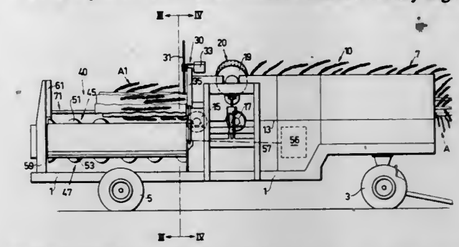
3,624,755
CONNECTING DEVICES FOR THE FLUIDTIGHT FLOW OF FLUID BETWEEN TWO ENCLOSURES
Jacques Lambert, Paris, France, assignor to Flaminaire Marcel Quercia, Paris, France
Filed Feb. 3, 1970, Ser. No. 8,185
Claims priority, application France, Feb. 7, 1969, 69 02966
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—293 **10 Claims**



The connecting device is constituted of two parts each of which is adapted to communicate with a respective enclosure. When the two parts are urged together a fluidtight passage between the two enclosures is opened. One part is a male part and includes a cylindrical tip containing a duct connected to the enclosure and opened also on the cylindrical portion of the tip between its end and an axial shoulder. An elastic sleeve is threaded on the tip, supported on the shoulder and masks the outlet with the duct in fluidtight manner. The other part, the female part, has a junction zone communicating with the other enclosure through an orifice of greater diameter than the cylindrical tip and less than the outer diameter of the elastic sleeve. When the two parts are urged together the elastic sleeve seals against the junction zone.

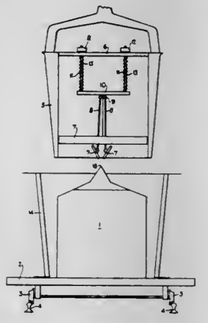
3,624,756
APPARATUS FOR TREATING FELLED TREES
Per Gustaf Mellgren, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderham, Sweden
Filed Oct. 27, 1969, Ser. No. 869,810
Claims priority, application Sweden, Nov. 13, 1968, 15401/68
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z **9 Claims**

An apparatus for simultaneously treating a bunched group of undelimbed felled trees comprising in combination an elongated bin into which the bunched group of undelimbed trees is deposited and caused to crowd more closely together



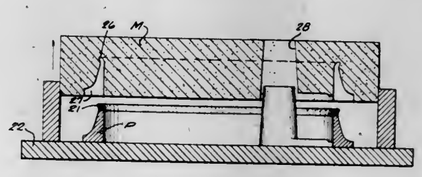
as they move in a downward direction and feeding means for feeding the bunched group out of said bin, said feeding means including a vertically movable upper roll.

3,624,757
METHOD OF LINING INGOT MOLD HEAD BOXES
Roger Fieldhouse, and Kenneth Thomas Eccleston, both of Nechells, Birmingham, England, assignors to Foseco Trading A. G., Langenjohnstrasse, Switzerland
Filed Sept. 5, 1969, Ser. No. 864,921
Claims priority, application Great Britain, Sept. 5, 1968, 42,224/68
Int. Cl. B22c *9/12*
U.S. Cl. 164—33 **2 Claims**



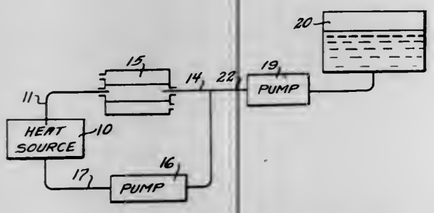
Ingot mold head boxes may be lined by inserting a first former therein, to leave an annular gap between itself and the head box, placing hot-topping composition in the gap, and by passing a second former into the gap, and thereby squeezing the hot-topping material onto and against the head-box walls. The two formers are then removed.

3,624,758
METHOD OF MAKING A SAND MOLD WITH A BACK DRAFT
George V. Harris, Racine, Wis., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application July 12, 1968, Ser. No. 744,484, now Patent No. 3,552,480. Divided and this application May 13, 1970, Ser. No. 36,869
Int. Cl. B22c *9/00*
U.S. Cl. 164—44 **9 Claims**



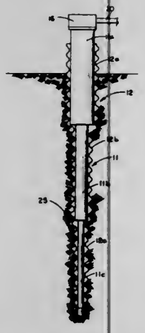
A method of making a sand mold of the heat-cured type by using a composite metal and flexible material pattern. An improved product made from such a method.

3,624,759
CLOSED FLUID SYSTEM PRESSURIZATION
Roger D. Carlson, La Grange, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 17, 1970, Ser. No. 11,991
Int. Cl. F28d 15/00
U.S. Cl. 165—107 6 Claims



A closed fluid system is pressurized by using a fluid pump instead of a cover gas. In nuclear reactor closed fluid systems where the fluid is a liquid metal, electromagnetic pumps can be used. In addition, an electromagnetic pump which develops a high pressure gradient within the pump while maintaining the inlet and outlet pressures substantially equal can be used to separate gases from the fluid.

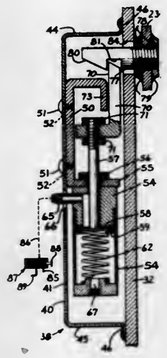
3,624,760
SONIC APPARATUS FOR INSTALLING A PILE JACKET, CASING MEMBER OR THE LIKE IN AN EARTHEN FORMATION
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.
Filed Nov. 3, 1969, Ser. No. 873,298
Int. Cl. B06b 1/10; E21b 5/00
U.S. Cl. 175—56 6 Claims



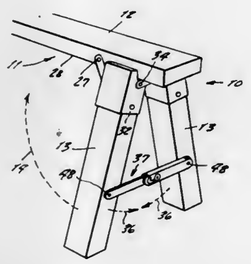
A jacket member is placed over a bar which forms a mandrel and is acoustically coupled thereto by means of adjustable couplers at a plurality of points therealong. A sonic oscillator of the orbiting mass type is coupled to the mandrel and driven at a frequency such as to set up resonant standing-wave vibration of the mandrel. Sonic energy is thus coupled to the jacket and in turn into the earthen formation into which the jacket is to be installed, thereby fluidizing the earthen material and causing the jacket to be driven into the ground.

3,624,761
SAFETY LOCK FOR TRAILER DOORS
Raymond F. Kohn, Chicago, Ill., assignor to Sara Silverman, Miami Beach, Fla.
Filed July 14, 1969, Ser. No. 841,392
Int. Cl. B60r 27/00
U.S. Cl. 180—112 2 Claims

A lock for the door of a trailer to inhibit pilfering from an unattended trailer as when a trailer is in "piggy-back" transit by rail or when it is in a yard unattended by a tractor operator, or without an attached tractor. The lock is spring-actuated to its closed position and pneumatically actuated to its open position by air pressure received through the coupling between the tractor and the trailer. The pneumatic unit is substantially completely contained within a housing that is located within the channel of the rear crossmember that supports the trailer.

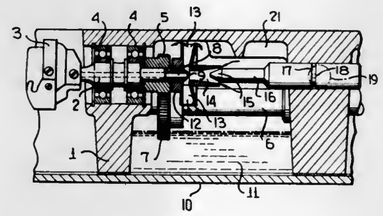


3,624,762
FOLDING SAWHORSE BRACKETS
John L. Hankins, Box 725, Richlands, Va.
Filed June 29, 1970, Ser. No. 50,389
Int. Cl. E04g 1/32; F16m 11/00
U.S. Cl. 182—155 2 Claims



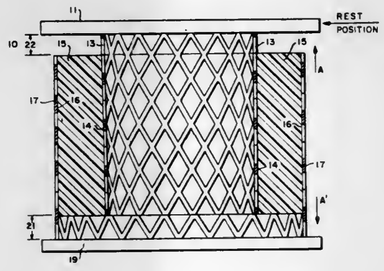
A plurality of fixtures for securely holding together wooden beams in the form of a sawhorse, the fitting including for each sawhorse a pair of main brackets one of which is secured pivotally beneath each opposite end of the sawhorse backbone beam, a cap bracket for fitting over the upper end of each of the four sawhorse legs, and a pair of expander brace units, one set of each being secured to each of the pair of sawhorse legs.

3,624,763
LOOP TAKER LUBRICATION SYSTEM
Gunter Rohr, Stuttgart-Kaltental, Germany, assignor to Union Special Maschinenfabrik GmbH, Stuttgart, Germany
Filed Jan. 6, 1970, Ser. No. 1,000
Claims priority, application Germany, Jan. 16, 1969, P 19 02 000.9
Int. Cl. D05b 71/02
U.S. Cl. 184—6.15 9 Claims



Apparatus for lubricating a loop taker raceway in a sewing machine wherein a current of air forces an oil mist through a hollow loop taker shaft and deflects the air laterally at the inlet port of the shaft.

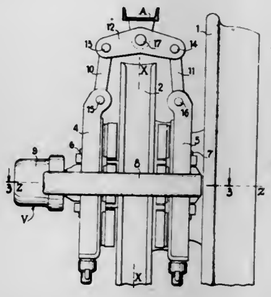
3,624,764
VIBRATION ISOLATION MOUNT AND SHOCK ABSORBER
Kenneth W. Goben, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 13, 1970, Ser. No. 36,722
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 2 Claims



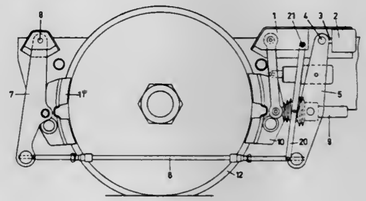
An elastomer vibration or sound attenuating material isolates two elastic-plastic spring shock absorbers. Expected operational sound or vibrational loads are essentially absorbed by the elastomer and for these loads the device acts as a low-frequency isolation mount. For mechanical shock forces beyond limits of sound or vibration the elastic-plastic springs responsively deform thereby absorbing and attenuating the shock force transmitted through it.

3,624,765
DISC BRAKE
Jean-Marc Laurent Hauth, Pont-a-Mousson, France, assignor to Centre de Recherches de Pont-a-Mousson, Pont-a-Mousson, France
Filed Jan. 2, 1970, Ser. No. 152
Claims priority, application France, Jan. 27, 1969, 6901503
Int. Cl. F16d 55/224; B61h 5/00
U.S. Cl. 188—72.6 5 Claims

A disc brake for a vehicle wheel. The brake pad carriers are disposed on each side of the plane of the disc. Two links are respectively pivoted to the carriers and disposed on each side of the plane of the disc. The links are pivoted at their upper ends to a compensating member which is pivoted to the chassis. The carriers are interconnected by a rigid yoke which carries an actuator for shifting the brake pad carriers toward the disc.

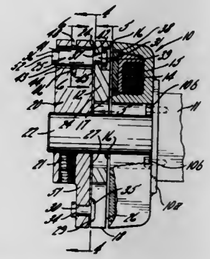


3,624,766
RAILWAY VEHICLE WHEEL BRAKE RIGGING
Nils Borje Lennart Sander, Malmo, Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden
Filed Feb. 4, 1970, Ser. No. 8,609
Claims priority, application Great Britain, Feb. 14, 1969, 8,051/69
Int. Cl. F16d 65/66; B61h 15/00
U.S. Cl. 188—202 4 Claims



A railroad automatic-adjusting braking system is disclosed with a dead and live lever arrangement wherein a slack adjusting unit is located in the linkage between the brake shoe and one of the brake levers.

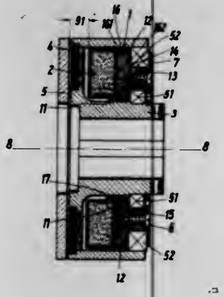
3,624,767
SELF-ADJUSTING CLUTCH OR BRAKE
Edward R. Kroeger, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, Beloit, Wis.
Filed Aug. 5, 1970, Ser. No. 61,193
Int. Cl. F16d 13/75, 65/52
U.S. Cl. 192—18 B 14 Claims



The armature ring of a magnetic friction brake or clutch is supported on a rotary hub through the medium of a plurality

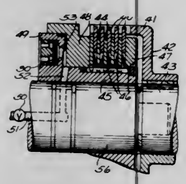
of angularly spaced leaf springs extending along secants of the armature, riveted at opposite ends to the armature and hub, and stressed to bias the armature axially away from its coating magnet face. Pins rigid with the armature project loosely into holes in the hub and carry split resilient rings which constitute frictionally held stops movable between axially spaced abutments on the hub, one abutment acting when the brake is energized to shift the ring along the pin a distance corresponding to the wearing off of the armature face in previous brake applications. The other abutment coacts with the stop ring to determine the extent of separation of the armature from its magnet when the latter is deactivated and thus determine the width of the idle air gap between the rings.

3,624,768
SINGLE-PLATE ELECTROMAGNETIC CLUTCH
Werner Nussli, Gams Saint Gall, Switzerland
Filed Mar. 3, 1970, Ser. No. 15,974
Claims priority, application Austria, Mar. 4, 1969, A 2110/69
Int. Cl. F16d *27/10*
U.S. Cl. 192—84 C **6 Claims**



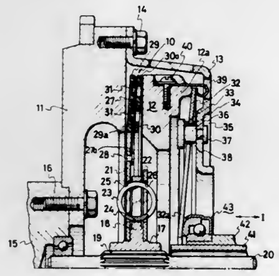
The invention of this disclosure relates to an electromagnetic clutch, without sliprings, comprising a coil support unit an armature plate movable relative to the coil support unit and a hub unit, preferably carrying a friction lining for the armature plate, in which the coil support unit has an inner and outer periphery formed with seatings for support bearings.

3,624,769
PRESSURE VENTING CONTROL
Quinten A. Hansen, Franksville, Wis., assignor to Eaton, Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 20, 1970, Ser. No. 30,042
Int. Cl. F16d *25/063*; F16k *15/14*
U.S. Cl. 192—85 AA **12 Claims**



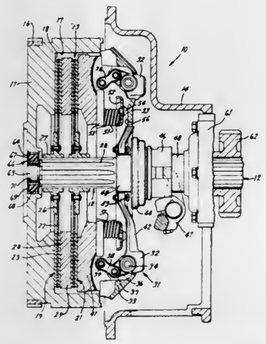
A ram to which fluid pressure is supplied for actuation of any desired article (exemplified both by a Reeves pulley rate changer and by a disk clutch) is automatically vented when fluid is no longer supplied, thereby allowing the actuated article promptly to resume its initial position. The vent controlling valve includes a centrally apertured resilient disk which normally assumes a position in which its central aperture is spaced from a seat which the central portion of the disk engages when under pressure. Vent ducts radially offset from the opening in the valve disk discharge fluid when the disk is not subject to substantial pressure. However, when the ram is actuated the differential pressure across the disk causes the disk to engage the seat, thus substantially terminating fluid discharge by closing either or both of the discharge ducts.

3,624,770
CLUTCH DISC
Saburo Fujita, and Keizo Yasui, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Aug. 6, 1969, Ser. No. 848,045
Claims priority, application Japan, Aug. 11, 1968, 43/56833
Int. Cl. F16d *13/46*, *13/64*
U.S. Cl. 192—52 **3 Claims**



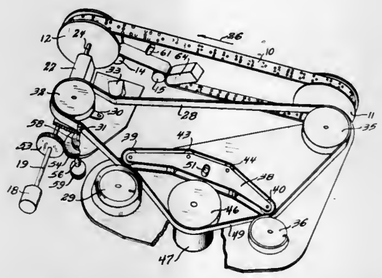
A clutch disc for use on an automotive vehicle, wherein a pair of friction facings provided between a pressure plate and a flywheel are inclined towards the pressure plate in a disengaging position by means of inclined leaf springs or disc plate, so that when the clutch is being disengaged the frictional facings are rapidly released from the rotating members without any drag.

3,624,771
RESILIENT MOUNT FOR CLUTCH SHAFT PILOT BEARING
Thomas V. McNamara, Kalamazoo, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Feb. 20, 1970, Ser. No. 12,942
Int. Cl. F16d *13/60*
U.S. Cl. 192—110 B **7 Claims**



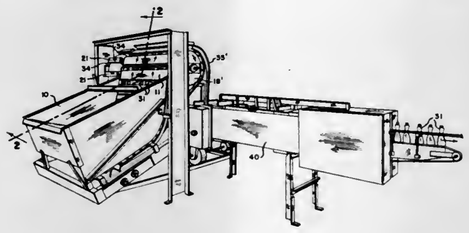
A flywheel and clutch assembly for drivingly connecting an engine to a transmission, and having a resilient mounting for supporting the forward end of the transmission input shaft within the flywheel for accommodating both angular and radial misalignment between the flywheel and the transmission.

3,624,772
READING AND WRITING MACHINE USING RAISED PATTERNS
Arnold P. Grunwald, Chicago, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 7, 1969, Ser. No. 874,734
Int. Cl. B41j *3/32*; G09b *21/00*
U.S. Cl. 197—6.1 **6 Claims**



A reading and writing machine which uses raised patterns to convey information includes a reading belt upon which the patterns are formed and a tape which stores the information. The tape is divided into a plurality of different information portions which the machine can selectively read. Provision is made for writing on selected portions of the tape on blank tape. A simple tape drive mechanism is provided which prevents slack in the tape yet does not require a variable speed drive. The reading belt is formed of plastic with bubbles having two stable positions molded therein.

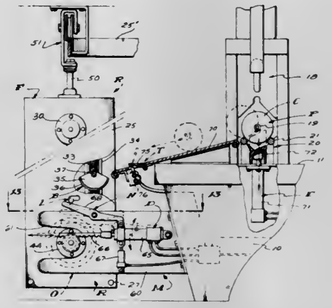
3,624,773
CONTINUOUSLY MOVING APPARATUS FOR UPRIGHTING BOTTLES
Robert J. Krooss, Mountain Lakes, N.J., assignor to Pace Packaging Corporation, Fairfield, N.J.
Filed June 17, 1970, Ser. No. 47,513
Int. Cl. B65g *15/14*, *47/24*
U.S. Cl. 198—33 **21 Claims**



Bottles in a hopper are picked by a flight bar conveyor and delivered between a pair of conveyor belts spaced apart to grip the bottles and convey them past orienting fixtures which erect the bottles while held between the belts. The flight bars are cantilevered and pass laterally between the conveyor belts to deliver bottles in a generally horizontal position, and the tops of the belts are spaced apart to form a V-shaped opening of decreasing size where the flight bars pass between the belts.

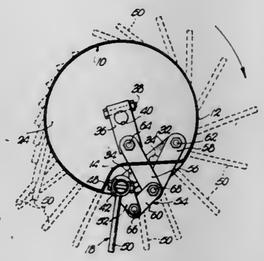
3,624,774
SAUSAGE SMOKING APPARATUS
James W. Marietta, Jr., c/o D-Mar Co., 1116 West 24th St., Los Angeles, Calif.
Filed Feb. 12, 1970, Ser. No. 10,892
Int. Cl. B65g *17/16*
U.S. Cl. 198—158 **8 Claims**

A means and apparatus for handling sausages from a sausage-stuffing station and throughout a cooking period; said means and apparatus including an inclined ramp at said station and down which sausages roll, a wheeled truck-supported rack in cooperative relationship with the ramp and having a plurality of horizontal sausage-receiving baskets carried in spaced relationship on endless chains and automatically operated drive means to rotate the chain-supported



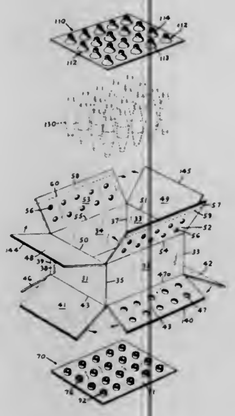
baskets to move each basket from sausage-receiving relationship with the ramp each time a sausage is deposited into a basket and to move the next adjacent basket into sausage-receiving relationship with the ramp. The rack is movable from said station and ramp and into a cooking area to cook the sausages in the baskets.

3,624,775
KNEE ACTION CONTROL FOR ROTOR TINE BARS
Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.
Filed Nov. 12, 1969, Ser. No. 876,028
Int. Cl. B65g *29/00*; A01d *77/04*
U.S. Cl. 198—211 **7 Claims**



Knee action linkage is provided to control the tine bars or shafts for rotating cylinders, drums or the like. The linkage simulates the control action of a cam and is designed to control the tine bars so as to maintain a desired position for maximum pickup and feeding ability. A main or primary link is actuated by an offset crank arm. Attached to the main link are two follower links which interconnect the tine bar and the drum. When the drum is rotated, and because the crank arm is held stationary, a unique tine position relative to drum rotation occurs. The tines are caused to remain extended for a considerable period of drum rotation; then at a certain point in the rotation the tine bars rotate about their axes very abruptly, while the drum continues to rotate only a relatively few degrees. This has the effect of leaving the fingers or tines in an extended position for a longer period of time, which is most desirable and very necessary when applied to pickup reels, feeder beaters, auger conveyors, and rotary windrow pickups. The simplified linkage actuated by a crank arm on a fixed axle eliminates the need for a cam track and cam follower bearings which require lubrication and are very noisy in operation, yet function and finger action are duplicated as when controlled by a cam.

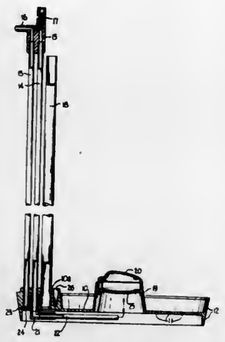
3,624,776
CASE FOR SHIPPING ARTICLES IN AN UPRIGHT POSITION AND IN SPACED LATERAL SEPARATION
Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.
Filed May 12, 1970, Ser. No. 36,554
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 Y **26 Claims**



A case is provided for shipping one or more articles in a substantially upright position and in spaced lateral separation from adjoining articles and portions of said case; the case comprises wall panels, an external bottom panel, a bottom indexing panel for supporting and engaging the bottom of the article by means of one or more projections rising upwardly therefrom, an internal bottom panel foldably connected to a wall panel which contains apertures adapted to fit over the projections on the bottom indexing panel to lock the bottom indexing panel in a sandwich configuration between the external and internal bottom panels.
The shipping case further comprises a top indexing panel containing female recesses projecting upwardly therefrom which are adapted to fit over the top of the article, an internal top panel foldably connected to a wall panel containing apertures which are adapted to fit over the female recesses, to lock the top indexing panel in position, and an external top panel; the internal top panel is sandwiched between the top indexing panel and the external top panel.
The shipping case can be provided with an article separator layer assembly when the case is used to package a plurality of layers of articles.

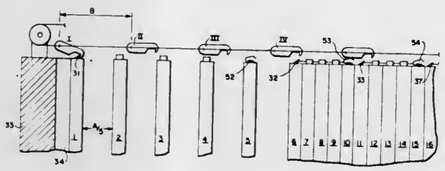
3,624,777
FISH TANK FILTER
William James Gardner, 472 Oldham Road, Miles Platting, Manchester M10, 7JA Lancashire, England
Filed Mar. 20, 1970, Ser. No. 21,459
Claims priority, application Great Britain, Mar. 20, 1969, 14,621/69
Int. Cl. B03d *1/14*
U.S. Cl. 210—169 **13 Claims**

A fish tank filter having a perforated base which is arranged to seat spaced from the bottom of a fish tank, there being two air supply tubes and one tube for delivering a stream of air and water upwardly, one air supply tube together with said latter tube serving to cause a syphonic effect in the water in said tank so that foreign matter in the water is filtered through gravel or like permeable material placed on said base, the other of said air supply tubes being arranged to deliver a supply of air to a position beneath a hinged lid so that when an amount of air has collected in an air collection chamber beneath said hinged lid, the lid is lifted to allow a relatively large bubble of air to rise up through the water. The ratio of air pressures supplied to the



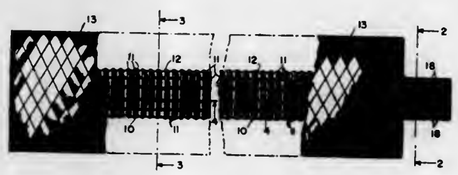
two air supply tubes is controlled by a control valve attached to the inlet ends of said tubes.

3,624,778
FILTER PRESS
Josef Weber, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed May 26, 1970, Ser. No. 40,507
Int. Cl. B01d *25/00*
U.S. Cl. 210—230 **7 Claims**



A filter press with a multiplicity of filter plates movable on guides and interconnecting means for said filter plates having as the interconnecting means an elongated, flexible cable means, the points of attachment of which are at the top of the interconnected plates.

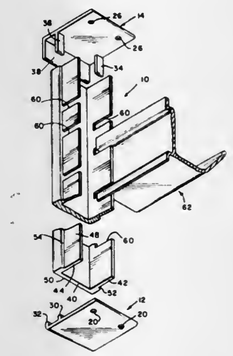
3,624,779
FILTER UNIT
Charles A. Miller, Jr.; Joseph B. Masaschi, and Robert Miller, Jr., all of Baltimore County, Md., assignors to Filterite Corporation, Timonium, Md.
Continuation of application Ser. No. 743,485, July 9, 1968, now abandoned. This application Mar. 9, 1970, Ser. No. 17,973
Int. Cl. B01d *23/06*
U.S. Cl. 210—457 **1 Claim**



A fluid filter unit having a rigid perforated core and a filter covering extending over a substantial area thereof, the core

having a projecting end portion adapted to fit into a supporting means, or ferrule mounted in a header in a filter housing or casing, in which the header is provided with one or more openings therethrough, the projecting end portion of the core being made adaptable to the diameter of the supporting means associated with the said header openings, which vary in diameter by rendering the projecting end portion of the core compressible by corrugating, slotting, or otherwise equivalently fashioning the same to accomplish this result.

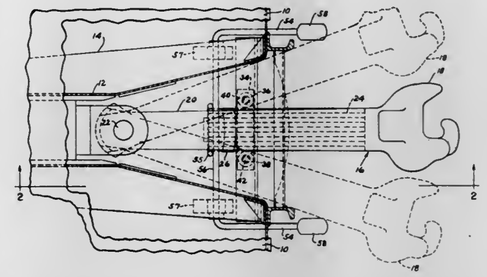
3,624,780
FLOOR AND CEILING MOUNTING FOR RACK AND SHELVING SYSTEM
Michael M. Elliott, and John M. Thomas, both of Indianapolis, Ind., assignors to Elliot-Williams Company, Inc., Indianapolis, Ind.
Filed Dec. 12, 1969, Ser. No. 884,493
Int. Cl. A47f *5/00*
U.S. Cl. 211—86 **7 Claims**



For use in a storage space providing a floor and a ceiling, a rack system comprising a plurality of vertically extending standards, a baseplate for connecting each standard to such a floor and supporting it thereon, and a ceiling plate for connecting each standard to such a ceiling, the base and ceiling plates being provided in pairs to be securely fastened, respectively, to such floor and ceiling in vertical registry. The baseplates, ceiling plates, and standards are proportioned and designed so that each standard can be connected to a pair of the plates by engaging the upper end of the standard with downwardly extending means of the ceiling plate, lifting the standard vertically upwardly and, then, lowering the lower end of the standard into secure engagement with upwardly extending means of the baseplate. Thus, tools and fastening elements are not required to assemble and disassemble the rack system of the present invention.

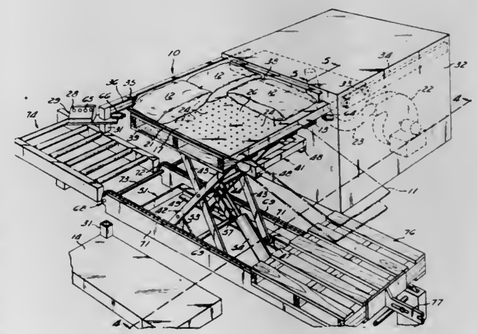
3,624,781
TORSIONAL RAILWAY CAR COUPLER CENTERING DEVICE
Robert W. Randolph, St. Charles, and Charles E. Reedy, Bridgeton, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,298
Int. Cl. B61g *7/12*
U.S. Cl. 213—20 **9 Claims**

A coupler-centering devices includes a rack on the bottom of the coupler shank having longitudinal gear teeth so that lateral movement of the coupler causes rotation of a gear segment. The gear segment is adjustably spring mounted and is connected to a torsion rod through a hand-operated clutch. The torsion rod extends parallel to the centerline of the car immediately below the coupler shank, and its inner end is fixed to the car. Alternatively, the rod may serve as a shaft to turn a torsional rubber shear structure. The teeth of the rack



are long enough to permit buff and draft movement of the coupler.

3,624,782
SEMIAUTOMATIC PALLETIZER
Orlin A. McPeek, Whittier, and Arnold B. Nordstrom, La Habra, both of Calif., assignors to Aircraft Mechanics, Inc., Colorado Springs, Colo.
Filed Apr. 14, 1969, Ser. No. 815,891
Int. Cl. B65g *57/24*
U.S. Cl. 214—6 P **4 Claims**

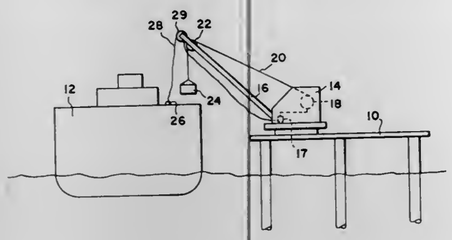


A semiautomatic machine is provided to load parcels layer by layer onto a pallet. The machine includes an elevated arranging table on which parcels are manually arranged into desired patterns. After a layer has been assembled, the table may be retracted to drop the layer onto a pallet or preceding layer. An elevator is provided to support the pallet or preceding layer at a level immediately below the arranging table. When the desired number of layers are accumulated, the pallet is discharged and a new one is automatically supplied. The upper surface of the arranging table is perforated to permit the flow of pressurized air therethrough to support the weight of the parcels thereon to minimize sliding friction and, therefore, manual effort.

3,624,783
MOTION CONTROL SYSTEM
Nuke Ming Chang, San Francisco, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.
Filed June 12, 1970, Ser. No. 45,719
Int. Cl. B65g *47/00*
U.S. Cl. 214—16 R **20 Claims**

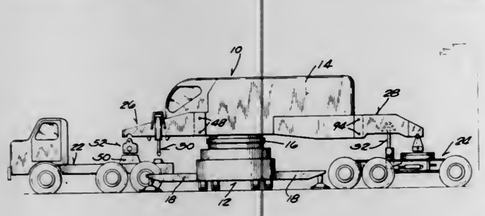
Disclosed is an open loop control for maintaining constant tension in a cable connecting two bodies. Among the applications of the system are transfer of a load between a pier and a vessel or between two vessels, maintaining constant tension

in a cable between two vessels, barge towing, underwater pipelaying, etc. The system includes a motion sensor, and a motion-compensator subsystem to generate a control signal in synchronism with the motion being sensed but at a fixed



phase offset in relation thereto. The control signal operates a motor or the like at a fixed speed forward or reverse to compensate for the sensed motion with the phase offset compensating for the reversal time lag between full speed in opposite directions present in the motor system.

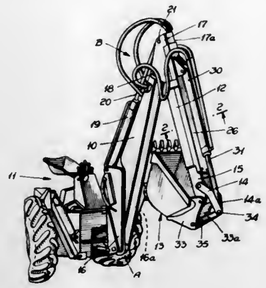
3,624,784
DECKING AND UNDECKING APPARATUS FOR A TRUCK CRANE
Thomas M. Larson, Milwaukee, Wis., and Melvin E. Putnam, Escanaba, Mich., assignors to Harnischfeger Corporation, West Milwaukee, Wis.
Filed June 30, 1970, Ser. No. 51,126
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 CC **18 Claims**



A self-powered decking and undecking assembly for assembling or removing the superstructure for a truck crane from the carrier, said assembly including a tractor having a front strut and a trailer having a rear strut, the front and rear struts being adapted to be connected to the superstructure. The front strut includes a fifth wheel kingpin adapter for connection to the tractor and a first pair of vertical hydraulic piston and cylinder assemblies for raising the front strut relative to the tractor. The rear strut is connected to a rotatable strut mount provided on the trailer which includes a second pair of vertical hydraulic piston and cylinder assemblies for raising the rear strut relative to the trailer. The vertical hydraulic piston and cylinder assemblies are pivotally mounted on their respective supports and are pivoted by a third pair of hydraulic piston and cylinder assemblies for adjusting the lateral position of the superstructure with respect to the carrier. The trailer includes rear steering wheels which can be placed in a caster mode of operation.

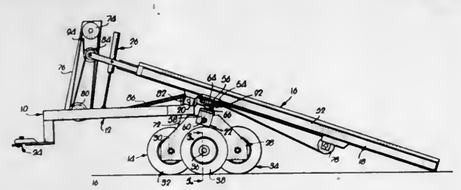
3,624,785
EXTENDABLE DIPPER-STICK
Morton A. Wilson, 6956 Wystone Ave., Reseda, Calif.
Filed Dec. 7, 1970, Ser. No. 95,582
Int. Cl. E02f *5/22*
U.S. Cl. 214—138 **6 Claims**

An extendable dipper-stick adapted to be attached to ordinary backhoe equipment, which dipper-stick includes an extension member slidingly received within an outer, hollow, elongated support bar, with the said member thereof being extended or retracted relative to said support bar by hydraulic means contained within said support bar; and means at-



tached to the exposed end of said member so as to connect said end to a conventional backhoe bucket.

3,624,786
WHEEL SUSPENSION
Ezra Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Hesston, Kans.
Filed Nov. 14, 1969, Ser. No. 876,943
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 **4 Claims**



A tilt bed vehicle is supported by both a chassis and a separate wheeled undercarriage, all interconnected such that the undercarriage is moved forwardly of the bed as the latter is tilted. The undercarriage includes a pair of wheeled trucks which swing about horizontal and vertical axes, each trunk including a front, a rear, and an intermediate wheel and axle assembly with the intermediate assembly pivotally mounted for swinging movement about an axis extending fore and aft of the vehicle.

ERRATUM

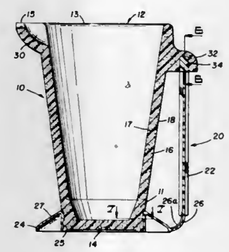
For Class 319—243 see:
Patent No. 3,624,836

3,624,787
UTENSIL CARRYING CLOSURE MEMBER
Yetty Newman, 910 Park Ave., New York, N.Y.
Filed June 3, 1970, Ser. No. 43,007
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **9 Claims**



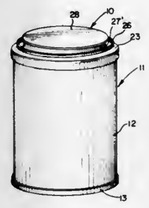
A closure member carrying two sterile utensil portions for use with a circular cross section receptacle, said utensil portions being characterized by socket members mounted on the end thereof to allow the assembly of a rigid elongated utensil. Said utensil portions further providing rigidity to the receptacle and improving the sealing of the closure member on the receptacle.

3,624,788
DISPOSABLE LIQUID SERVING SYSTEM
Martin J. McMahon, 6 Rolling Ridge Road, Windham, N.H., and Sidney Z. Smith, 583 Chandler St., Worcester, Mass.
Filed Jan. 15, 1970, Ser. No. 3,128
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **8 Claims**



A disposable carafe comprises a container of cellular plastic material, such as expanded polystyrene, in combination with a detachable handle of higher density, easily moldable plastic material. The container is tapered from an open top to a closed bottom such that it will nest with other similarly designed containers for purposes of storing and/or shipping. The handle is a one-piece, injection molded member having a base into which is fitted the bottom of the container. A thin, flexible or bendable hinge section extends from the base to an elongated, stiffened, gripping portion. The end of the gripping portion is adapted to connect with a lug which extends from the container near the top thereof.

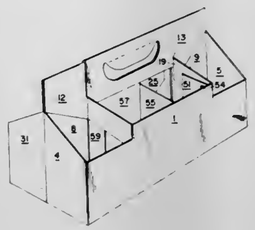
3,624,789
CONTAINER STACKING AND SEALING OVERCAP
Harry A. Peyser, Olympia Fields, and Sally J. Stevenson, Crestwood, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,719
Int. Cl. B65d *21/02, 41/18*
U.S. Cl. 220—97 B **3 Claims**



An overcap for container having a stacking flange for retaining stacked containers in alignment and a sealing flange insertable into the opened end of the container for sealing the opening.

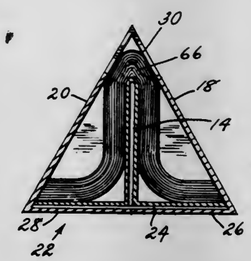
3,624,790
ARTICLE CARRIER
James T. Stout, Doraville, Ga., assignor to The Mead Corporation
Filed July 6, 1970, Ser. No. 52,370
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **7 Claims**

An article carrier having bottom and sidewalls and end wall panels foldably joined together in conventional fashion and provided with medial handle structure is arranged with partition structure on each side of the handle, the partition structures each including a medial panel secured to an auxiliary panel struck from the handle and folded downwardly together with a transverse partition panel foldably joined to the medial partition panel. If desired, a reinforcing and



anchoring panel may be foldably joined to the transverse partition panel and secured to the sidewall and anchoring flaps foldably secured to edges of the medial partition panel and to the reinforcing and anchoring panel may be secured to transverse partition straps foldably joined both to the handle and to the sidewalls.

3,624,791
DISPENSING PACKAGE FOR PLASTIC BAGS AND THE LIKE
Hersh Taub, Brooklyn, N.Y., assignor to Instrument Systems Corporation, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,702
Int. Cl. B65h *1/08*
U.S. Cl. 221—59 **1 Claim**

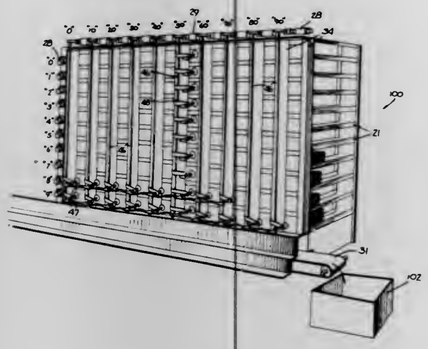


A dispenser box for polyethylene bags, tissues, or other such types of items. The dispenser consists of a triangular box with a cutout for dispensing along both sides of its top edge. Inside the box is a support, preferably made of corrugated cardboard and shaped in the form of a "T," positioned in an inverted manner inside of the box. The bags are draped about the bridge of the support and exposed through the cutout of the dispenser. The natural springiness of the corrugated cardboard has a tendency to force the bridge of the support upwards, pushing the bags against the dispenser opening. If necessary, rubber bands or other such similar elastic material can be placed along the bottom legs of the support to provide extra resiliency.

3,624,792
ORDER PICKING SYSTEM
Donald Ernest Lipfert, Woolwich, Maine, assignor to The McCall Pattern Company, New York, N.Y.
Filed Jan. 30, 1970, Ser. No. 7,192
Int. Cl. B65g *59/00*
U.S. Cl. 221—129 **24 Claims**

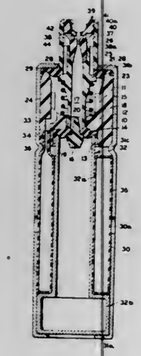
An electromechanical system which can select from a multiplicity of storage compartments any item corresponding to a decimal number input. The storage compartments are arranged in a grid pattern. One portion of the decimal number

input triggers a solenoid which activates a picking mechanism along a coordinate axis. The other portion of the number input activates a second picking mechanism along a coordinate axis which intersects with the first coordinate axis. The point of intersection of the two axes occurs at the storage bin form which it is desired to select an article, by the



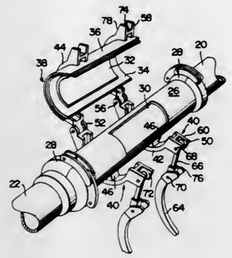
interaction of the two complementary operating mechanisms on a picking mechanism. Picking of an article occurs only at such a point in the grid network. The device may operate on two or more crossed coordinates simultaneously or in rapid succession to provide ultrarapid assembly of a number of items to complete a specific order therefor.

3,624,793
MINIATURIZED DOUBLE AEROSOL DISPENSER
Jean Marand, Norwalk, Conn., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,101
Int. Cl. B65d *35/28, 85/13*
U.S. Cl. 222—95 **13 Claims**



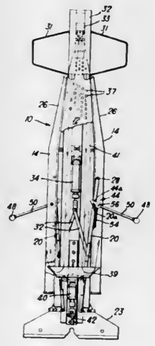
A double-aerosol-type dispenser in which the product to be dispensed and the propellant are kept separate until actually dispensed, in which the product is contained in a sac positioned in a space around a reduced diameter portion of a propellant cartridge and between a valve assembly and a lower portion of the propellant cartridge. The assembly is contained in a housing and has an outside diameter no greater than the outside diameter of the valve assembly. The nozzle assembly can be an integral part of the valve stem, or can be contained separately in a holder into which the subassembly of the valve, propellent cartridge, product sac and housing is inserted.

3,624,794
INSPECTION MEANS FOR CONCRETE-HANDLING SYSTEM
Robert C. Futty, Willow Street, Pa., assignor to Iri Daffin Associates, Incorporated, Lancaster, Pa.
Filed Dec. 17, 1968, Ser. No. 784,376
Int. Cl. F16l *55/00*
U.S. Cl. 222—154 **3 Claims**



An improved concrete-handling system comprising a concrete pump, delivery conduit means to carry the concrete from the pump to a remote worksite, and inspection means interposed between the concrete pump and the conduit is disclosed. The inspection means includes a pipe section with a portion cut away to provide easy access to the same and with cover means to close the opening during normal use. Clamps are provided to hold the cover means in position. The inspection means is especially useful to determine the location of a possible stoppage in the system as well as to sample the concrete flowing therethrough.

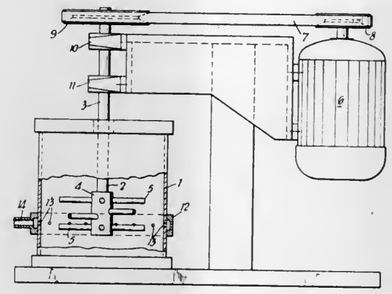
3,624,795
BUCK FOR SYNTHETIC GARMENTS
Terrence David Martin, Kent, England, assignor to Weston Laundry Machine Company Limited, Kent, England
Filed Mar. 19, 1970, Ser. No. 21,078
Int. Cl. A41h *5/00;* **D06c** *15/00, 79/00*
U.S. Cl. 223—70 **5 Claims**



This invention relates to bucks for laundry cabinet presses and in particular to one intended for use with synthetic garments. The buck is provided with arms which can be moved outwardly to fill the garment and the finishing operation is then carried out in two stages. In the first stage, hot air and steam or stem alone are blown through the garment to relax the fibers, and then hot air alone is blown through it to dry it out.

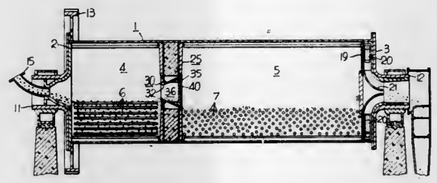
The buck has been provided with a latch mechanism which enables the arms to be moved outwardly in a different way for short and long garments without any further adjustment, and is designed to fit a conventional cabinet press with only minor modification of the press.

3,624,796
GRINDING OF MINERALS
Ronald Eric Brociner, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England
Filed May 8, 1970, Ser. No. 35,668
Claims priority, application Great Britain, May 15, 1969, 24,930/69
Int. Cl. B02c *11/08*
U.S. Cl. 241—23 **14 Claims**



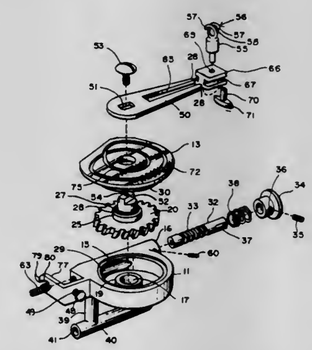
A process for grinding a dry, or substantially dry, material in which the material is ground with a particulate grinding medium consisting of particles ranging in size from 150 microns to one-fourth of an inch, the weight ratio of particulate grinding medium to material being in the range from 2:1 to 5:1. The mixture of material and grinding medium is cooled to prevent agglomeration of the particles of the material.

3,624,797
MULTIPLE COMPARTMENT GRINDING MILLS
Eugene P. Waddell, Brookfield, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 11, 1969, Ser. No. 884,149
Int. Cl. B02c *17/06, 17/18*
U.S. Cl. 241—153 **4 Claims**



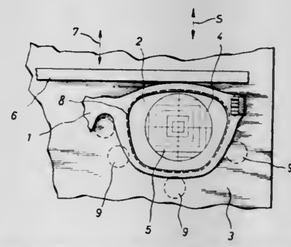
A grinding mill is disclosed having a cylindrical shell for rotation about its central axis and a division head that divides the interior of the shell into axially disposed compartments, one compartment containing steel rods for relatively coarse grinding and another compartment containing steel balls for finer grinding. The division head is an assembly of elements in which a pair of the elements are annular bulkheads perpendicular to the central axis and spaced apart from each other. The annular bulkhead on the coarse grinding side of the division head assembly defines a central opening of smaller diameter than the central opening defined by the annular bulkhead on the fine grinding side of the division head assembly. A liner extends between the radially inner peripheries of the two annular bulkheads and defines a central passage through the division head assembly with a surface having the configuration of a truncated cone with its central axis coincident with the central axis of the shell and with its apex end pointed toward the coarse grinding compartment. A shielding disk is concentrically mounted within the conical central passage in a plane perpendicular to the shell axis and supported by a plurality of arcuately spaced mounting blocks between the outer periphery of the shielding disk and the inner periphery of the conical central passage. The shield blocks a mass of grinding balls which tends to surge from the ball compartment toward the rod compartment during periods of mill acceleration at startup and during periods of deceleration when being stopped. The normal flow of pulp from the rod compartment into the ball compartment passes through the passage in channels between the mounting blocks and radially outward of the shielding disk.

3,624,798
LEVEL WIND GUIDE ATTACHEMENT FOR FISHING REELS
Oscar Fleischer, Miami, Fla., assignor to Helen Krohn Fleischer, executrix, by said Oscar Fleischer
Continuation-in-part of application Ser. No. 4,216, Jan. 20, 1970. This application June 19, 1970, Ser. No. 47,747
Int. Cl. A01k *89/00;* **B65h** *57/28*
U.S. Cl. 242—84.41 **8 Claims**



A level wind guide attachment for fishing reels adapted to be pivotally secured between the end housings of the fishing reel with an enclosed gear and worm gear in mesh engagement with each other; the worm gear being mounted on a shaft that extends beyond a housing and having a spring loaded friction wheel mounted thereon that is adapted to engage and rotate with one of the flanges of the line receiving spool. Rotating with the gear is an arm having a slot in which a cam follower and swiveled eyelet receiving the fishing line are positioned. The housing is provided with spiral interconnected slots of different diameters, one within the other in which the cam follower is slidably mounted whereby upon the revolving of the arm during the winding action of the fishing line, the latter is placed evenly on the spool.

3,624,799
DEVICE FOR THE DETACHABLE FASTENING OF THE GLASS MOUNT OF GLASS FRAMES ON A WORKTABLE
Thomas Sotonyi, Wuppertal-Barmen, Germany, assignor to Firma Wernicke & Co., Dusseldorf-Eller, Germany
Filed Oct. 9, 1969, Ser. No. 865,083
Claims priority, application Germany, Oct. 29, 1968, P 18 05 760.8
Int. Cl. B62b *35/00;* **B25b** *29/00*
U.S. Cl. 248—361 R **5 Claims**

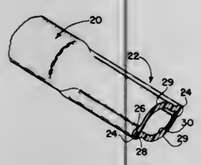


The invention relates to a device for the detachable fastening of the glass mount of frames for glasses on a worktable, etc., for example, an apparatus for the production of templets according to the glass or lens mount.

3,624,800
FLUID FLOW CONTROL MEANS

Edwin Grant Swick, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 29, 1969, Ser. No. 861,967
Int. Cl. F16k 7/02
U.S. Cl. 251—4 4 Claims

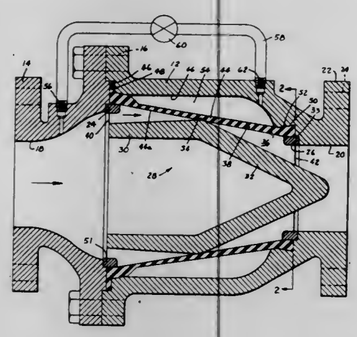


A device for controlling the flow of fluids which includes tubing having an axial preflattened section, a clamp and means for orienting the tubing relative to the clamp.

3,624,801
FLEXIBLE TUBE VALVE

Thomas E. Gannon, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Apr. 3, 1970, Ser. No. 25,494
Int. Cl. F16k 7/07
U.S. Cl. 251—5 10 Claims



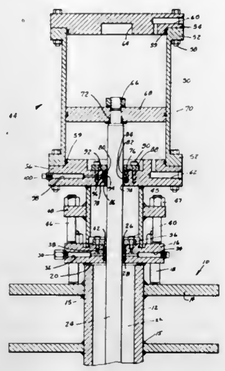
A flexible tube valve including a core having an annular series of longitudinal ribs, the outer surfaces of which define an interrupted frustoconical surface that merges with an annular sealing surface on a barrier between the inlet and outlet flow passages. The barrier includes a reinforcing conical portion integral with the ribs and extending toward the outlet, with spaces between the ribs forming outflow passages around the cone. A frustoconical expansible tube is stretched around the ribs and the sealing surface with a control pressure around the tube normally causing it to seal against flow.

3,624,802
FLOATING STEM SEAL ASSEMBLY

Roger Louis Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company

Filed June 29, 1970, Ser. No. 50,841
Int. Cl. F16k 31/143
U.S. Cl. 251—31 5 Claims

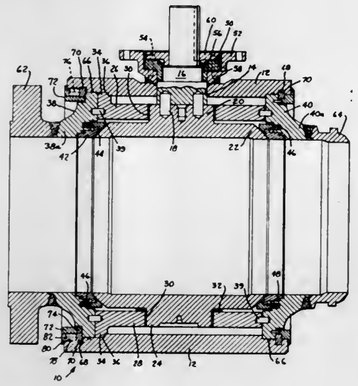
A gate valve operated by a pressure-fluid-actuated ram with a piston mounted on the end of the stem. The stem is slidably received in stem seal assemblies on the valve bonnet and the fluid cylinder, with the valve stem seal assembly being in a floating mount to facilitate alignment with the valve stem seal while maintaining the integrity of the fluid seal.



3,624,803
BOLTED VALVE BODY CONSTRUCTION

Austin U. Bryant, Walnut Creek, and Jack E. Piccardo, Oakland, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.

Filed Jan. 19, 1970, Ser. No. 3,735
Int. Cl. F16k 27/00
U.S. Cl. 251—367 3 Claims



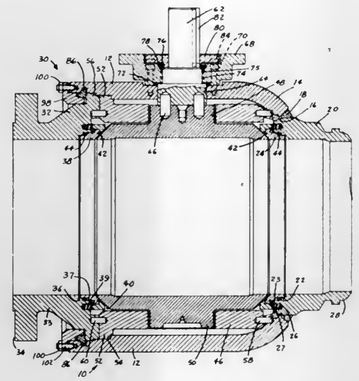
A valve body construction comprising a tubular body member with a closure received in one end thereof against an internal shoulder or other inward abutment. A thrust ring is also received in the one end of the body member outward of the closure with retainer means locking the thrust ring against outward movement to hold the closure in place. In a preferred embodiment, the retainer means comprises a ring received in the end of the body with a plurality of shear screws threaded into tapped holes around the juncture between the ring and end of the tubular body member.

3,624,804
FABRICATED VALVE BODY CONSTRUCTION

Jack E. Piccardo, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed May 18, 1970, Ser. No. 38,178
Int. Cl. F16k 27/00
U.S. Cl. 251—367 6 Claims

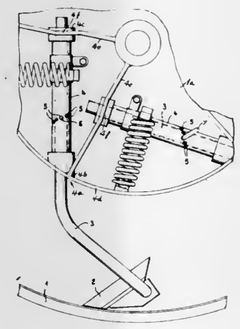
A valve body construction comprising a tubular body member with a closure received in one end thereof against an internal shoulder or other inward abutment. A segmented thrust ring is received in a groove around the inner wall of the body member outward of the closure to hold it in place. A lock ring has a conical axial extension that engages complementary conical inner surfaces on the thrust ring segment to force the segments radially outward, whereby complementary wedging surfaces on the thrust ring and the wall of the retainer groove force the segments axially against the closure to clamp it in place.



3,624,805
ARRANGEMENT FOR RESETTING MIXING TOOLS IN DRUM MIXING MACHINES

Rudolf Hagemuller, Hassloch, Germany, assignor to Firma Lico AG, Glarus, Switzerland

Filed May 4, 1970, Ser. No. 34,136
Claims priority, application Germany, May 19, 1969, P 19 25 328.2
Int. Cl. B01f 7/00
U.S. Cl. 259—106 2 Claims

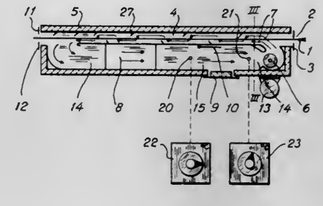


Arrangement for resetting mixing tools in drum mixing machines where mixing tools are coaxially supported by means of adjustable supporting arms in sleeves disposed in a mixing spider, where each sleeve is loosely disposed between two collars and has a plurality of apertures 5 that extend obliquely along its circumference, and the supporting arm has a bore 6 which corresponds in given positions with one of the apertures to place a latching pin therein.

3,624,806
METHOD OF HEAT TREATING BY CONVECTION OBJECTS, SUCH AS FLAT INDIVIDUAL BLANKS, MOLDED PULP ARTICLES OR CONTINUOUS WEBS OR THREADS, FOR EXAMPLE FOR PLASTIC FIBERS, AND A KILN FOR USE IN THE METHOD

Per Haakon Lytzen, Klampenborg, Denmark, assignor to Aktieselskabet Brodrene Hartmann, Lyngby, Denmark

Filed Mar. 2, 1970, Ser. No. 15,388
Claims priority, application Denmark, Mar. 4, 1969, 1202/69
Int. Cl. F27b 9/28
U.S. Cl. 263—3 15 Claims

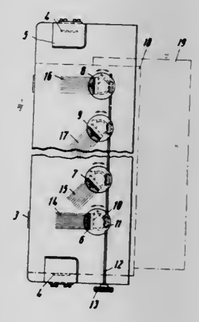


Painted blanks as well as extruded or molded objects are exposed to heat-conditioned air by passing through a kiln in which the air is recirculated. The heat convection is intensified and better distributed over the entire width of the kiln by producing transverse layers of a high pressure in the air just before it meets the material. For instance the compression layers may be produced in a continuous series by passing the air through a transverse-flow blower or a series of concentric radial blower wheels with a distance between them to secure air inlet.

3,624,807
SHEET-CONVEYING DEVICE

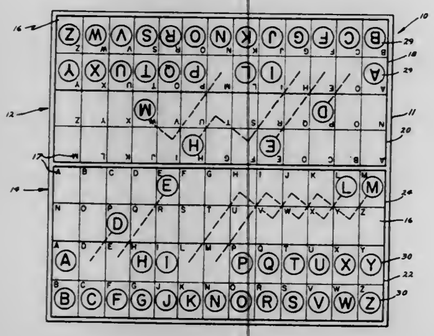
Bernd Schwebel, Offenbach am Main, Germany, assignor to Mabeg Maschinenbau GmbH, Nachf. Hense & Pleines GmbH & Co., Offenbach am Main, Germany

Filed Apr. 21, 1969, Ser. No. 817,679
Claims priority, application Germany, May 24, 1968, P 17 61 468.5
Int. Cl. B65h 29/24
U.S. Cl. 271—74 4 Claims



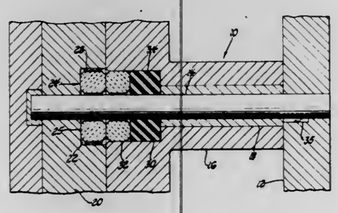
A conveying device for conveying sheets of cardboard, paper, or synthetic plastic foil upon a table of a sheet processing machine and into abutment with front and/or side stops on the table effects correct location of the sheets with respect to the stops by airflows directed upon the sheets from below. These airflows constitute moving air cushions supporting and conveying the sheets toward the stops and retaining the sheets in abutment therewith.

3,624,808
BOARD GAME APPARATUS
Reuben F. Anderson, Route #1, Box 149, Swanville, Minn.
Filed Apr. 20, 1970, Ser. No. 29,853
Int. Cl. A63f 3/02
U.S. Cl. 273—131 G 1 Claim



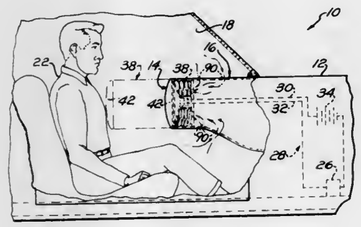
A game board for play by two persons comprising a pair of independent playing sections each consisting of a pair of related playing areas respectively divided into playing positions identified by indicia, one of said pair of related playing areas comprising initial positions and the other of said pair of related playing areas comprising ultimate playing positions the indicia on each initial position being the same as that on the corresponding ultimate position, and playing pieces bearing indicia corresponding to indicia of said playing positions, said playing pieces to be moved from said initial to said ultimate playing positions in a competitive manner by said players.

3,624,809
CERAMIC SEAL
Duane H. Beninga, Arvada, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Mar. 23, 1970, Ser. No. 21,856
Int. Cl. F16j 15/34
U.S. Cl. 277—92 1 Claim



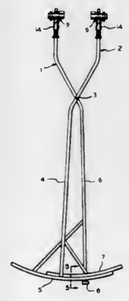
A composite ring seal for rotary shafts and the like including an aluminum oxide base ceramic ring, the outer diameter face being metallized and having a rubber annulus bonded thereto. This article may be secured to a rotating assembly such that an axial face of the ceramic ring abuts the axial face of another ring on a fixed assembly to effect a seal. The rubber annulus operates to support the ring and may be compressed by maintaining the seal rings in engagement.

3,624,810
VEHICLE SAFETY APPARATUS
David P. Hass, Detroit, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Feb. 25, 1969, Ser. No. 801,986
Int. Cl. B60r 21/10
U.S. Cl. 280—150 AB 25 Claims



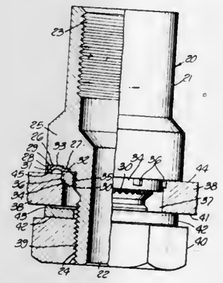
An improved safety device for protecting an occupant of a vehicle during an accident includes a confinement which is operable from a collapsed condition to an expanded condition in which it restrains movement of the occupants. The confinement is expanded by detonation of an explosive charge which propels a member outwardly to effect the expansion.

3,624,811
TOW BARS WITH DIFFERENT SELECTIVELY USABLE COUPLINGS
Robert R. Brackett, Route 6, Box 251, Kenosha, Wis.
Filed Apr. 29, 1970, Ser. No. 32,940
Int. Cl. B60d 1/16
U.S. Cl. 280—415 A 4 Claims



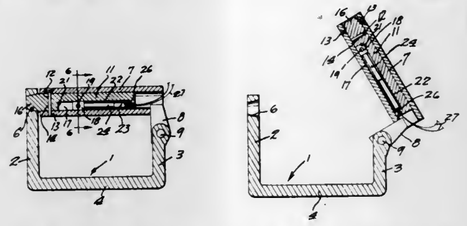
Two opposed heads each pivotally mounted on an end of one of the opposed members of the jaws of a tow bar. Each such head consisting of a series of faces each designed to engage an attaching device on an object to be towed. In order to lock the heads with the desired faces opposed spring-actuated locking dogs are fixed against rotation about each jaw to allow locking of the heads in as many positions as there are faces to be used. Optional means are provided to actuate the jaws and to adapt the invention to either a hand-towed or a power tractor-towed tow bar.

3,624,812
REPLACEABLE BULKHEAD CONNECTOR TUBE
Jose Rosan, Sr., San Juan Capistrano; Robert D. Weber, Costa Mesa; Marvin P. Reece, Dana Point, and William A. Knoll, Santa Ana, all of Calif., assignors to Rosan Engineering Corp., Newport Beach, Calif.
Continuation-in-part of application Ser. No. 785,141, Dec. 19, 1968, now abandoned. This application July 22, 1970, Ser. No. 57,048
Int. Cl. F16l 5/02
U.S. Cl. 285—161 22 Claims



A replaceable leakproof connector tube for passing electrical cables and the like therethrough which utilizes a mechanical antirotational lock for securing the same to workpieces and a compression member to seal the same against leakage.

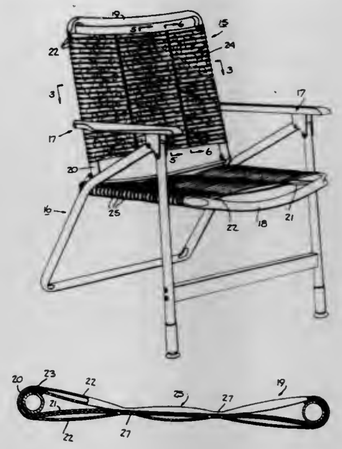
3,624,813
WEB RELEASE DEVICE
John A. Gaylord, San Rafael, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif., a division of Global Systems, a Gulf/Western Company
Filed Nov. 28, 1969, Ser. No. 880,771
Int. Cl. B64d 17/38; A44b 11/00
U.S. Cl. 294—83 AE 5 Claims



One of the webs wherein two webs are connected, is looped around a crossbar pivoted on one leg of a generally U-shaped frame, the other leg of which has a keeper hole. A bolt slideable in the tubular crossbar is initially in engagement with the keeper hole thereby to hold the webs connected. A shearpin holds the bolt in locked position. One side of the bolt is cut away to form a receptacle for a cartridge with a plunger pin in the cartridge pressed against a stop by the gases of combustion in the cartridge so as to shear the shearpin and pull the bolt into the tubular crossbar thereby to withdraw it from the keeper hole and release the web.

3,624,814
FRAME FOR FOLDING FURNITURE
Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.
Filed Mar. 12, 1969, Ser. No. 806,467
Int. Cl. A47c 7/02, 4/28
U.S. Cl. 297—452 11 Claims

The back and seat of the chair or chaise are each constructed of a U-shaped frame to which a decorative sheet of vinyl film is secured and over which a clear or slightly tinted vinyl tube is wound. In addition, the vinyl tube is heat-sealed

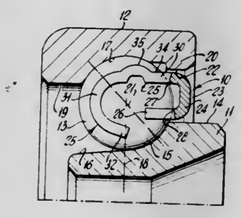


to the sheet of vinyl film along a pair of lines so as to provide a further reinforced seat or back.

ERRATUM

For Class 307—221 see:
Patent No. 3,624,838

3,624,815
BALL RETAINER AND BEARING
Michael Schweitzer, Southington, Conn., assignor to Textron Inc., Providence, R.I.
Filed Jan. 27, 1970, Ser. No. 6,081
Int. Cl. F16c 33/38
U.S. Cl. 308—201 14 Claims

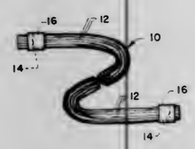


The invention contemplates the particular construction of a bearing-ball retainer whereby not only may the ball complement be fully assembled to the retainer prior to bearing-ring assembly therewith but also the retainer-and-ball subassembly may be selectively assembled to and disassembled from a double-shouldered race ring for unitary handling therewith. The foregoing is achieved solely by coaction between the race ring and the retainer ring, without permanent deformation of any parts, and without requiring any additional parts. Bearing assembly is completed using a single-shouldered (i.e., open end) construction for the other race ring, so that the preassembled ring with retained balls may be manipulated as a unit into overlap with the open or nonshouldered end of the said other race ring.

ERRATUM

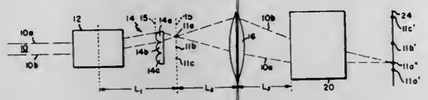
For Class 318—331 see:
Patent No. 3,624,837

3,624,816
FLEXIBLE FIBER OPTIC CONDUIT
Richard R. Strack, and Roland A. Phaneuf, both of Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Jan. 28, 1970, Ser. No. 6,470
Int. Cl. G02b 5/16
U.S. Cl. 350—96 B 5 Claims



A flexible fiber optic conduit formed of a multiplicity of juxtaposed light-conducting fibers all connected together adjacent opposite ends of the conduit by a matrix of silica-free acid soluble glass with said connecting glass having been leached from the intermediate portion of the bundle leaving corresponding lengths of individual fibers thereof unconnected and free to flex individually. Short lengths of semiflexible heat-shrunken plastic tubing tightly surround transitional zones between unconnected and connected together portions of the individual fibers adjacent opposite ends of the conduit. These lengths of tubing strengthen and protect the aforesaid transitional zones against undue breakage during use of the conduit as a light and/or image transmitting device.

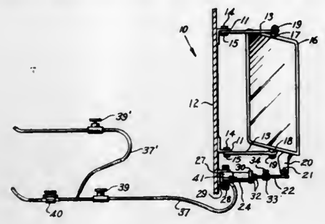
3,624,817
LIGHT-DEFLECTION SYSTEM
Tzuo-Chang Lee, Minneapolis, and James David Zook, Burnesville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed July 11, 1969, Ser. No. 841,057
Int. Cl. G02f 3/00
U.S. Cl. 350—150 11 Claims



In a system for deflecting a light beam, a separate lens is positioned at each of the distinguishable beam positions (resolvable spots) produce by a first light beam deflector. The focusing action of the lenses separately reduces the size of each resolvable spot. The increases separation generated between any two adjacent resolvable spots of reduced size is advantageously utilized by incorporating a second light beam deflector into the deflection system. The second light beam deflector selectively deflects the light beam into the separations between the reduced resolvable spots, thereby obtaining the product of the number of resolvable spots obtainable from the first and second deflectors separately.

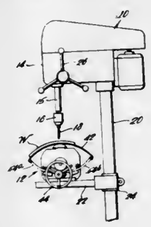
3,624,818
REMOTE-CONTROLLED TRUCK MIRROR
Bradford O. Stanfield, 9449 Grace St., Fontana, Calif.
Filed Oct. 9, 1970, Ser. No. 79,378
Int. Cl. G02b 5/08
U.S. Cl. 350—289 3 Claims

A mirror which is controlled by the truck driver from the interior of the cab of the truck. This device includes an air or vacuum cylinder with a piston and rod on its interior which when actuated by a controlled valve will rotate the mirror from is normal position so that the driver will be able to keep



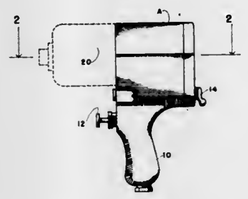
the rear end of the trailer in constant view when backing up the vehicle.

3,624,819
VARIABLE RADIUS SUPPORT TABLE
Robert A. Schickling, 346 Avon Raod, Philadelphia, Pa.
Filed Feb. 27, 1970, Ser. No. 15,123
Int. Cl. B23b 41/00
U.S. Cl. 408—92 6 Claims



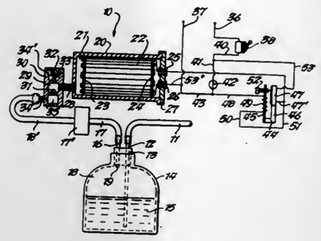
A variable radius support table for apparatus for performing machining operations comprising a main frame including a fixed support member, a flexible work support plate engaging said fixed support member and actuating means for flexing said work support plate relative to said fixed support member to selectively vary the curvature of said work support plate.

3,624,820
REVERSIBLE IMPACT WRENCHES
Lowell N. Brown, 11612 Bowling Green Drive, St. Louis County, Mo.
Filed Aug. 13, 1970, Ser. No. 63,422
Int. Cl. F01d 1/30; E03b ; B25d 15/00
U.S. Cl. 415—152 8 Claims



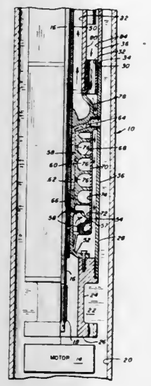
This invention relates to a reversible impact wrench in which the rotation director and exhaust are provided in a single continuous bore which may be machined after casting, thereby reducing the cost thereof, and further which provides a manually regulatable trigger valve which utilizes overlapping bores in a sleeve rotatably mounted in a fixed shell to adjust the amount of air delivered to the rotor.

3,624,821
SUCTION PUMP
Stanford A. Henderson, 49 Wansfell Road, Snyder, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,704
Int. Cl. A61m 1/00; F04f 1/06, 3/00
U.S. Cl. 417—137 11 Claims



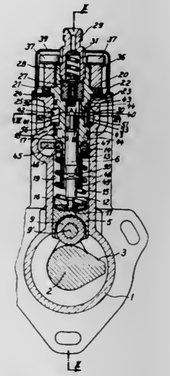
A medical suction pump including a pump housing having a filament therein which is alternately heated and cooled by passing electric current therethrough in response to the operation of a thermostatically controlled switch which is alternately heated and cooled by a resistance element, an inlet conduit in communication with the pump which communicates suction pressure produced by the pump to a patient during the cooling of gases within the housing, the parameters of the electrical circuit being such as to always heat the filament sufficiently so as to cause the pump to always be capable of producing a suction pressure in excess of predetermined value regardless of the variable conditions to which the pump is subjected, and a control valve assembly in the suction line responsive to the suction pressure created by the pump to selectively bleed a variable amount of air into the inlet conduit to maintain the suction pressure at said predetermined value.

3,624,822
GAS SEPARATOR FOR A SUBMERSIBLE OIL PUMP
Joseph T. Carle, and Charles L. Choate, both of Tulsa, Okla., assignors to Oil Dynamics, Inc., Tulsa, Okla.
Filed Apr. 17, 1970, Ser. No. 29,474
Int. Cl. F04b 21/00; F28d 15/00
U.S. Cl. 417—313 3 Claims



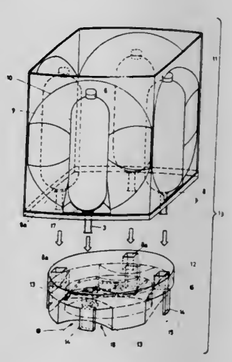
A gas separator interposed between a submersible pump and electric motor includes a plurality of flow diversion means including a coaxial impeller for impelling well fluid through a spiral gas separator chamber wherein entrained gas is centrifugally separated from the well fluid. The disentrained gas is subsequently returned to the well fluid basin while the well fluid passes from the gas separator chamber into the inlet of a submersible pump.

3,624,823
MULTICYLINDER FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Heinrich Staudt, Markgroningen-Talhausen, and Eberhard Hofmann, Kirchberg, Murr Neuhof, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Mar. 17, 1970, Ser. No. 20,217
Claims priority, application Germany, Mar. 18, 1969, P 19 13 520.7
Int. Cl. F04b 7/04, 27/00
U.S. Cl. 417—454 2 Claims



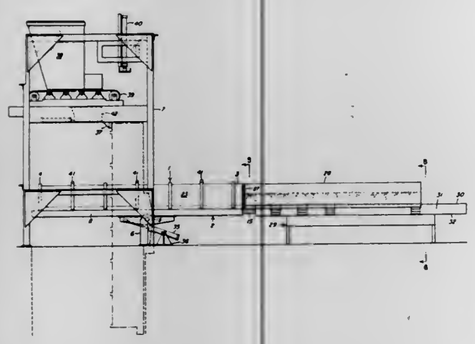
For providing a sturdy, simplified and easily adjustable and disassemblable multicylinder fuel injection pump, the sidewalls and base walls of the pump housing are uninterrupted by openings for servicing; the pump pistons operate in cylinder sleeves each of which is directly insertable in an associated housing bore and supported therein by a collar integral with said cylinder sleeve and engaging said pump housing; said cylinder sleeves are held and secured in said housing bores by means of clamping yokes.

3,624,824
PHOTOFLASH LAMP
Karl Herrmann, Augsburg, Germany, assignor to Patent-Treuhand-Gesellschaft Fur Elektrische Gluhlampen mbH
Filed July 3, 1969, Ser. No. 838,758
Int. Cl. F21k 5/02
U.S. Cl. 431—93 3 Claims



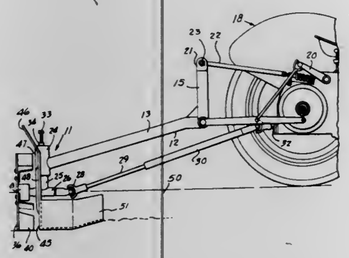
A flash lamp containing oxygen under pressure and also a pyrogenic ignitor activatable by percussive force mechanically applied externally while the lamp envelope remains intact and pressure therein maintained; the disclosure including a cubical holder for mounting a plurality of the flash lamps for successive percussive actuation.

3,624,825
CONCRETE MOLDING MACHINE
Charles J. Heitzman, 1260 Laukahi, Honolulu, Hawaii
Filed Feb. 17, 1969, Ser. No. 799,564
Int. Cl. B28b *7/10*
U.S. Cl. 25—41 R **9 Claims**



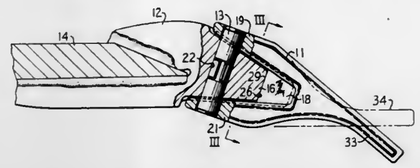
A machine for molding articles of concrete and other self-hardening material in which a mold box containing a mold open at one end, a stripping ram and a push plate driven by the ram for pushing a finished article and its pallet from the mold's open end, are all mounted on a pivoted bed for swinging therewith between a vertical loading position and a horizontal stripping position, the parts other than the ram and bed being selectively changeable and the connection between the ram and push plate adjustable for molding articles of different shapes and lengths, and a releasing connection enabling the ram on retraction to feed a new pallet into the mold.

3,624,826
ROTARY MECHANICAL DITCH CLEANER
Charlie M. Rogers, Mancos Rt. 2, Colo.
Filed Feb. 28, 1969, Ser. No. 803,308
Int. Cl. E02f *5/08*; **A01b** *33/04*
U.S. Cl. 37—92 **3 Claims**



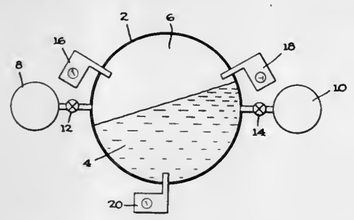
An irrigation ditch cleaner consisting of a T-shaped frame bar adapted to be attached to a tractor. A transverse rotor is journaled to the frame bar and has cutting blades and fins. The rotor is adapted to be drivingly connected to the power takeoff shaft of the tractor. The frame bar has a transverse guard shield with an inclined top deflection flange, the shield being located forwardly adjacent the rotor flange overlying the rotor. The shield has spaced parallel longitudinal forwardly extending supporting skids at its bottom end adapted to slidably support the rotor in a ditch to be cleaned.

3,624,827
EARTHWORKING TOOTH AND SUPPORTING ADAPTER
Richard K. Liess, and Max J. Teasdale, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 11, 1968, Ser. No. 782,845
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 **16 Claims**



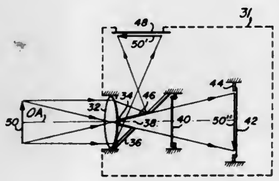
An earthworking tip suitable for mounting on an adapter which is wedge-shaped in vertical cross section. The tip defines a rearwardly facing V-shaped projection which mates with a V-shaped opening in the adapter to transfer loads from the tip to the adapter. The tip has rearwardly extending upper and lower flanges to generally mate with the wedge-shaped adapter. Retaining means secure the tip upon the adapter.

3,624,828
VOLUME MEASURING SYSTEM
Harrison F. Edwards, Norwich, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Continuation of application Ser. No. 406,996, Oct. 28, 1964. This application Oct. 17, 1968, Ser. No. 768,320
Int. Cl. G01f *17/00*
U.S. Cl. 73—149 **4 Claims**



A system for measuring the quantity of fluid in a container having an ullage space provided therein which utilizes a trace gas introduced into the ullage space and a detecting means for measuring the density of the trace gas. By measuring the density of the trace gas the volume of the ullage space and hence the volume of the fluid in the container can be ascertained.

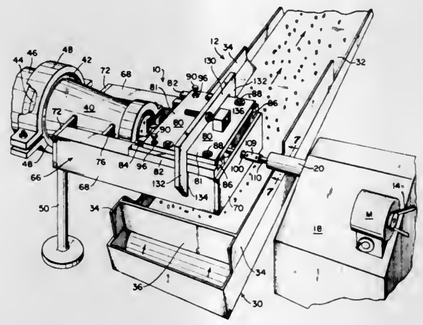
3,624,829
REFLEX CAMERA APPARATUS
Richard F. Crone, 2101 Beach St., San Francisco, Calif.
Filed Nov. 8, 1968, Ser. No. 774,238
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **6 Claims**



A single lens reflex camera apparatus having a continuously observable view-finding feature. An apertured mirror is

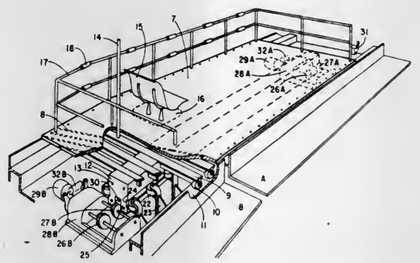
provided between the entrance aperture and shutter of a camera with the mirror aperture positioned along the optical axis of the camera, so that the film-exposing light passes therethrough and the remaining light passing into the camera is reflected onto the view-finder.

3,624,830
FOOD-PROCESSING APPARATUS
Donald J. Stehower, and Lloyd M. Koops, both of Hamilton, Mich., assignors to HI-Life Packing Company, Chicago, Ill.
Filed Nov. 28, 1969, Ser. No. 880,766
Int. Cl. A23k *1/00*
U.S. Cl. 99—235 R **11 Claims**



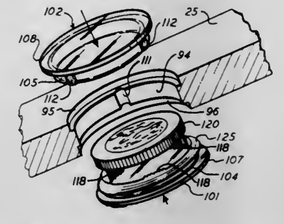
A food-processing apparatus, especially useful in the preparation of dog food of the chunk or kibbled variety. A rotary cutter assembly coacts with a stationary perforated extrusion plate to shear extruded material therefrom and by way of a novel mounting means is capable of adjustment toward and away from the extrusion plate without shutting down or stopping the operation of the apparatus thus compensating for wear of the blades of the cutter assembly.

3,624,831
APPARATUS FOR MOVING VEHICLE PASSENGER TRANSFER
Tibor Z. Harmathy, 1834 Playfair Drive, Ottawa 8, Ontario, Canada
Filed Apr. 1, 1969, Ser. No. 811,823
Int. Cl. B61k *1/00*
U.S. Cl. 104—20 **3 Claims**



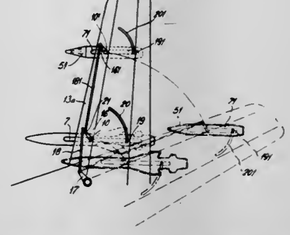
Transportation vehicles are divided longitudinally into two areas; a strip area which is continuously available for the passengers, and an operational area formed to accommodate a mobile people-platform. The people-platform is built on a flexible spine guided in its movement along the center line of the vehicles. The platform assembly is propelled by some power source or power sources located either in the said operational areas of the vehicles or on the platform itself.

3,624,832
DISPLAY HOLDER FOR DISCS
John Malcolm Dunn, 305 Via Montego, San Clemente, Calif.
Filed Feb. 27, 1969, Ser. No. 802,782
Int. Cl. A45c *11/28*
U.S. Cl. 206—0.83 **4 Claims**



Transparent, flanged, mating cups encapsulate a coin, medallion or other disc. A cup holder having one or more recesses receives the cups and disc. Each recess is countersunk in obverse and reverse faces to receive the cup flanges. Each cup has locator protuberances. The outer cup locators fit cavities in the holder recess wall. The inner cup locators grip the disc. The cups have mechanically latching annuli which engage to hold the cups together and retain the cups in the holder.

3,624,833
DEVICE FOR ATTACHING EXTERNAL LOADS TO THE WINGS OF AIRCRAFT OF VARIABLE GEOMETRY
Armand G. Ricard, Viroflay, Yvelines, France, assignor to Breguet-Aviation, Yvelines, France
Filed Apr. 9, 1969, Ser. No. 814,596
Claims priority, application France, Apr. 19, 1968, 148733
Int. Cl. B64c *3/40*
U.S. Cl. 244—118 **6 Claims**



An attachment for bombs and other loads under the wings of variable geometry aircraft comprises a load support articulated to the wing whereby the loads are enabled to pivot or rotate as the variable sweep wing pivots so that the loads are always maintained parallel to the direction of flight of the aircraft.

3,624,834
OPTICAL CONCENTRATOR WITHOUT FLUX LOSS
Pierre Malifaud, Paris, France, assignor to Agence Nationale De Valorisation De La Recherche (Anvar), Puteaux, France
Filed June 12, 1969, Ser. No. 832,762
Claims priority, application France, June 12, 1968, 154665
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 **2 Claims**

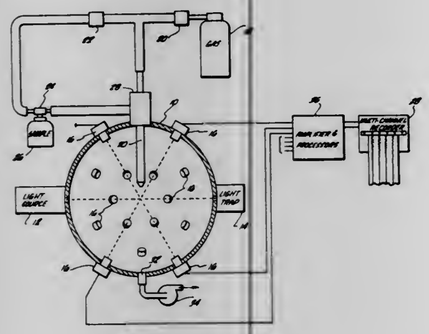
The present invention relates to an optical concentrator without flux loss, comprising a parabolic frontal mirror with half opening θ_1 (angle made to the optical axis by a straight line that joins the focus to the mirror edge) effecting a primary concentration of a flux captured from a distance source of radiation, forming a spot image in the smallest section of a beam of convergent rays with half angle opening θ_1 with the optical axis, and a truncated cone mirror whose entrance sec-

tion of diameter d_1 is disposed in coincidence with the total spot image furnished by the said frontal parabolic mirror and



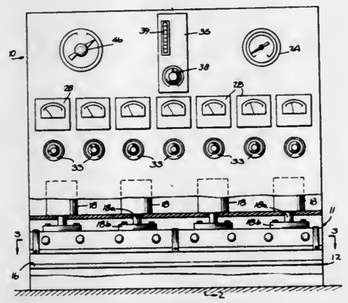
whose terminal section which is of smaller diameter is associated with a sensitive element or radiation transformer of a receiver.

3,624,835
MICROPARTICLE ANALYZER EMPLOYING A SPHERICAL DETECTOR ARRAY
Philip J. Wyatt, Santa Barbara, Calif., assignor to Science Spectrum, Inc., Santa Barbara, Calif.
Filed Nov. 21, 1968, Ser. No. 777,837
Int. Cl. G01n *21/00*
U.S. Cl. 356—103 **4 Claims**



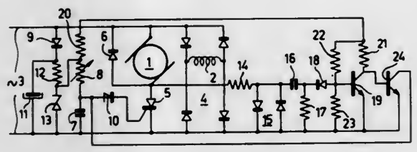
There is described a method and apparatus for identifying submicroscopic particles by directing the particles through a highly collimated beam of light and simultaneously measuring the light intensity at a plurality of different angles relative to the point where the particles move through the beam.

3,624,836
TEMPERATURE GRADIENT BAR SEALER
Howard A. Rohdin, Waquoit, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.
Filed Apr. 11, 1969, Ser. No. 815,477
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **9 Claims**



Apparatus for and a process of heat-sealing various materials such as plastics, papers, laminates and coatings. The apparatus can be used for several purposes such as determining the optimum temperature at which a given heat-sealing operation should be conducted under given conditions of pressure and dwell time and to effect increased quality control by maintaining the temperature at which the heat is supplied during the heat-sealing operation under given conditions of pressure and dwell time.

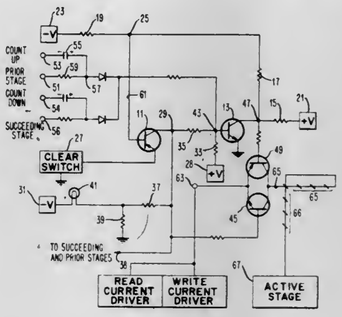
3,624,837
MOTOR SPEED AND TORQUE CONTROL CIRCUIT WITH E.M.F. FEEDBACK
Scato Albarda, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 11, 1969, Ser. No. 806,193
Claims priority, application Netherlands, Mar. 16, 1968, 6803778
Int. Cl. H02p *5/06*
U.S. Cl. 318—331 **14 Claims**



A motor speed control circuit that includes an SCR in series with the motor across a source of AC supply voltage. A control circuit controls the SCR firing angle so that the effective current applied to the motor is substantially independent of the motor back e.m.f. The SCR control circuit includes a timing circuit that produces a time variable ignition pulse for controlling the SCR firing angle. The reference point for the timing circuit is that instant when the motor back e.m.f. equals the voltage of the trailing edge of the forward half cycle of the AC supply voltage. This choice of the reference point causes the SCR control circuit to advance the ignition of the SCR when the back e.m.f. increases, whereas prior art circuits delay the SCR ignition for increased back e.m.f. However, the overall conduction angle of the SCR remains

approximately constant by virtue of a reset switch that resets the timing circuit at the aforesaid reference point. Thus, the effective motor current stays approximately constant within given limits.

3,624,838
ADDRESS COUNTER STAGE CIRCUITRY
George R. Cogar, R.D. #3, Frankfort, N.Y. 13340
Filed Feb. 28, 1966, Ser. No. 534,583
Int. Cl. G11c *19/00;* **H03k** *21/00*
U.S. Cl. 307—221 **8 Claims**

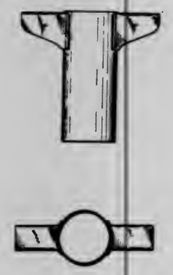


The present device is a stage of a data processing register which is capable of either incrementing or decrementing, depending upon the conditions of the previous or succeeding stages. The present device incorporates a bistable device which provides two identical output signals when the bistable device is in one condition and provides two other kinds of output signals each of which is different from the other and different from the first mentioned output signal when the bistable device operates in the second condition. The output signals are coupled to a bidirectional current driver composed of two conducting elements and operate on that bidirectional current driver such that when the bistable device is in the first condition the bidirectional current driver has either conducting element available for operation while when the bistable device is in the second condition both of the conducting elements of the bidirectional driver are turned off.

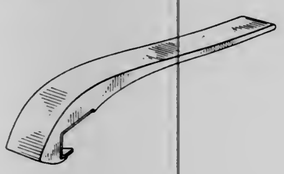
DESIGNS

NOVEMBER 30, 1971

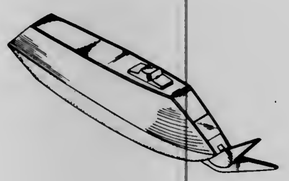
222,658
PLANT TRANSPLANTER
Norman G. Carlson, 2431 S. Shore Blvd., White Bear Lake, Minn. 55110
Filed Sept. 30, 1970, Ser. No. 25,283
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—7



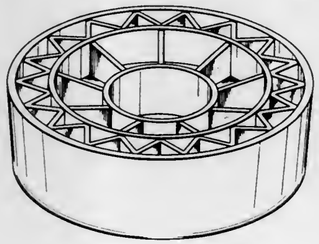
222,659
BOTTLE OPENER
Donald A. Hillis, 27 Kingslake Road, Willowdale, Ontario, Canada
Filed July 23, 1970, Ser. No. 24,079
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—40



222,660
ELECTRIC SCISSORS
John K. Miles, Columbus, Ind., and Jack F. Baker, Glenview, Ill., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Aug. 12, 1970, Ser. No. 24,433
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61



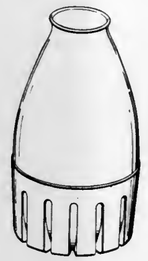
222,661
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 17, 1970, Ser. No. 23,996
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



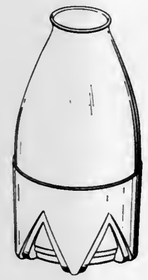
222,662
COMBINED BOTTLE AND CLOSURE THEREFOR
Giorgio Fabbri, Via Emilia Ponente 276, Bologna 40132, Italy
Filed Aug. 7, 1970, Ser. No. 24,375
Claims priority, application Italy May 8, 1970
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—1



222,663
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,136
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



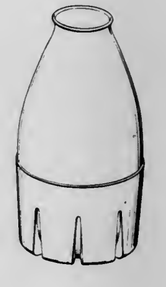
222,664
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,137
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



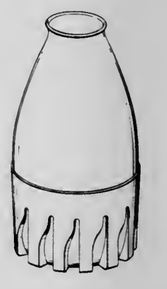
222,665
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,138
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



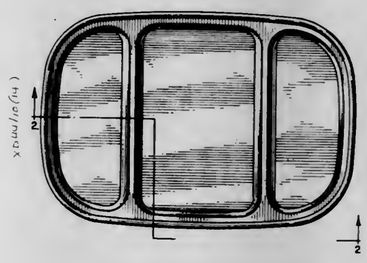
222,666
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,139
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



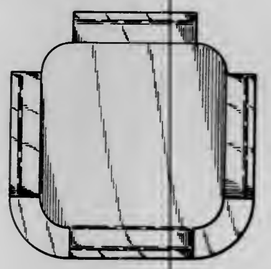
222,667
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,141
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



222,668
COMPARTMENTED TRAY
Donald H. Gregor, Chicago, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Oct. 26, 1970, Ser. No. 25,640
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



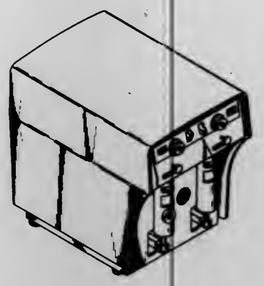
222,669
COMBINED SHIPPING AND DISPLAY PACKAGE FOR DISHES OR THE LIKE
David J. Freiman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 30, 1970, Ser. No. 25,280
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—250



222,670
INDUSTRIAL PALLET TRUCK
Cecil Goodacre, Basingstoke, and Roy Haynes, Danbury, England, assignors to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Nov. 3, 1970, Ser. No. 25,799
Claims priority, application Great Britain May 4, 1970
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



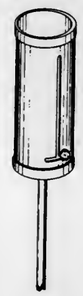
222,671
AUTOMATIC PIPETTE
Alfred M. Blumenfeld, Jenkintown, Pa., assignor to Micromedic Systems, Inc., Philadelphia, Pa.
Filed Nov. 16, 1970, Ser. No. 25,976
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2



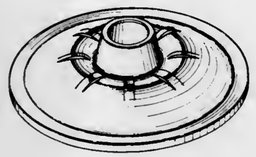
222,672
COMBINATION TRAILER HITCH SUPPORT AND FISHING POLE HOLDER
Chester J. Sather, 1215 26th St., Ames, Iowa 50010
Filed July 27, 1970, Ser. No. 24,129
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



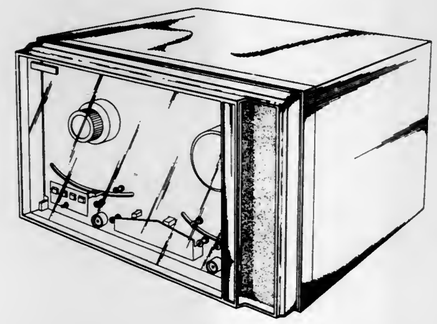
222,673
FISHING POLE HOLDER
Willis E. Green, 6216 Main Ave., Orangevale, Calif. 95662
Filed Aug. 11, 1970, Ser. No. 24,424
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



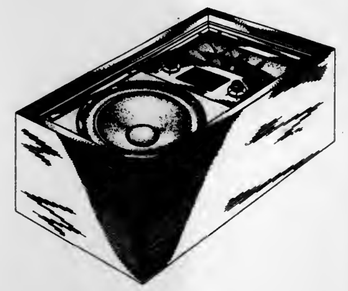
222,674
SPRINKLER HEAD SHIELD
Paul Engel, Beaumont, Calif., assignor to A-E-G Mfg. Co., Beaumont, Calif.
Filed Aug. 10, 1970, Ser. No. 24,404
Term of patent 14 years
Int. Cl. D23—*07*
U.S. Cl. D23—7



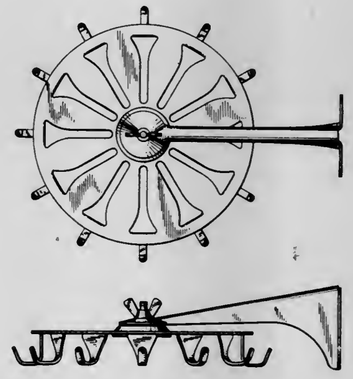
222,675
MAGNETIC TAPE TRANSPORT
Leon C. Sanderson, Culver City, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Oct. 21, 1970, Ser. No. 25,591
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



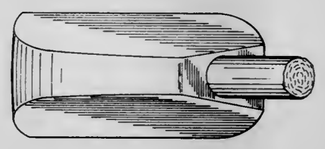
222,676
SPEAKER CABINET
Haruo Ishikawa, 314, 12–35, 1-chome, Matsunoki, Suginami-ku, Tokyo, Japan
Filed Nov. 6, 1970, Ser. No. 25,863
Claims priority, application Japan June 12, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



222,677
REVOLVING TOOL RACK
Bela B. Nevai, Dobbs Ferry, N.Y., assignor to Nevco Wood Products Co., Inc.
Filed Sept. 14, 1970, Ser. No. 24,955
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—17



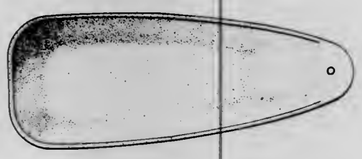
222,678
GOLF CLUB
George M. Dick, 3063 Brighton Blvd., Denver, Colo. 80216
Filed Aug. 28, 1970, Ser. No. 24,742
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



222,679
GOLF CLUB HEAD
Marcel Gryseels, 21753 McCormick, Detroit, Mich. 48236
Filed Nov. 6, 1970, Ser. No. 25,854
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



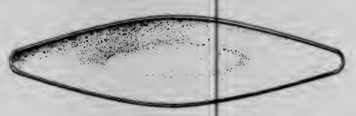
222,680
BREAD TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,256
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



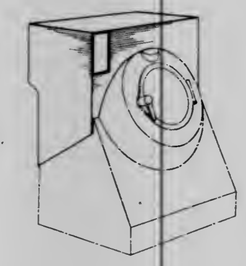
222,681
ROLL TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,259
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



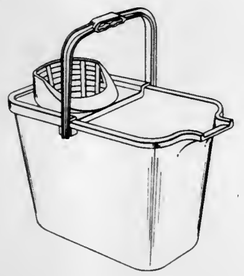
222,682
RELISH TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,261
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



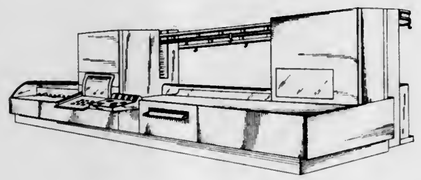
222,683
LAUNDRY WASHER ADAPTER
Miles R. Leach, 2025 W. 10th St., Santa Ana, Calif. 92703
Filed Aug. 28, 1970, Ser. No. 24,745
Term of patent 7 years
Int. Cl. D15—*05*
U.S. Cl. D49—1



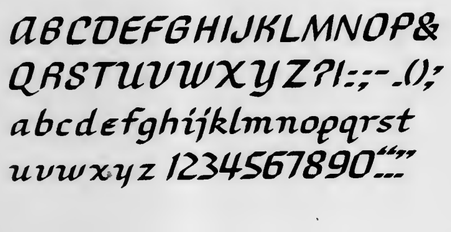
222,684
COMBINED PAIL AND MOP WRINGER
Juan Gunfaus, Tarrasa, Barcelona, Spain, assignor to Mery, S.A., Barcelona, Spain
Filed Nov. 2, 1970, Ser. No. 25,784
Claims priority, application Spain May 8, 1970
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—29



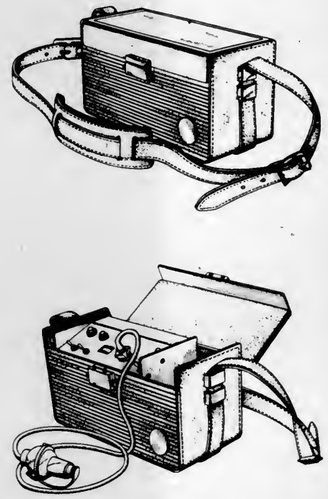
222,685
PRINTING PLATE PROCESSING MACHINE
Hugh T. Greenlee, Gates Mills, Ohio, and Wesley W. Miller, Wyncote, and Gerold Litschi, Lansdale, Pa., assignors to W. R. Grace & Co., New York, N.Y.
Filed Aug. 21, 1970, Ser. No. 24,640
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D55—1



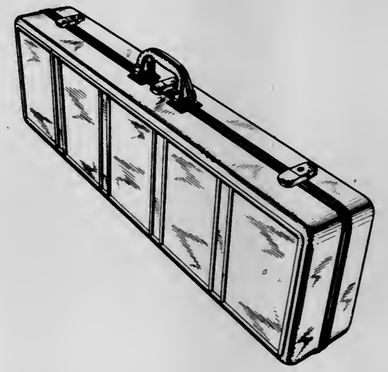
222,686
FONT OF TYPE
Ernst Budke III, Wilkens Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Sept. 16, 1970, Ser. No. 25,314
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12



222,687
RESPIRATOR
William W. Adams, 8332 Verona Drive, Hyattsville, Md. 20784
Filed Sept. 11, 1970, Ser. No. 24,950
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



222,688
ARCHERY CASE
Joaquin J. Canton, Riverdale, N.Y., assignor to Challenger Mfg. Corporation, Jamaica, N.Y.
Filed Sept. 30, 1970, Ser. No. 25,281
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF NOVEMBER, 1971

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Adler, Seymour; and Taylor, Jason H., to United States of America, Navy. Oceanographic release hook. 3,623,759, Cl. 294-83.

Adlhart, Otto J.; and Terry, Peter L., to Engelhard Minerals & Chemicals Corporation. Fuel cell system. 3,623,913, Cl. 136-86.

Adlhoch, Richard H.; and Giacomino, Gerald L., to Motorola, Inc. Digital demodulator. 3,624,528, Cl. 329-104.

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Aiken Industries, Inc.: *See—*
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Mita, Yoshinari; Shuto, Masamichi; and Moriwaki, Masahiro, to Nippon Electric Company, Limited. Apparatus for the electronic selection and identification of characters. 3,624,607, Cl. 340-146.3
Mitarai, Hajime; Nelson, Carroll E.; and Youmans, Albert P., to Signetics Corporation. Method for determining depth of lapping of dielectrically isolated integrated circuits. 3,623,218, Cl. 29-577.
Mitsch, Ronald A.; Zollinger, Joseph La Mar; Dybvig, Douglas H.; and Wright, Charles D., to Minnesota Mining and Manufacturing Company. Certain tris (difluoramino) substituted ammonium perchlorates. 3,624,156, Cl. 260-584.
Mitsuda, Hisateru, to Kyowa Hakko Kogyo Co., Ltd. Amino acid-enriched grains and process of preparation. 3,623,886, Cl. 99-83.
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Monsheimer, Rolf; Pfleiderer, Ernst; and Uhlig, Helmut, to Rohm Gesellschaft mit beschrankter Haftung. Enzymatic dehairing process. 3,623,950, Cl. 195-6.
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Moore, Robert A.; and Ryan, Patrick W., to Atlantic Richfield Company. Reaction products of an ortho-silicate and a hydroxy terminated diene polymer and the preparation thereof. 3,624,014, Cl. 260-18.
Moore, Robert M., to RCA Corporation. Heterojunction semiconductor transducer having a region which is piezoelectric. 3,624,465, Cl. 317-235.
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Zwirn, Robert, to Hughes Aircraft Company. Electronically controlled variable resistance device. 3,624,530, Cl. 330-3.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 30TH DAY OF NOVEMBER, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bagnall, Michael J., M. W. Miller, L. K. Osdal, and E. J. Welch, to E. I. du Pont de Nemours and Co. Process for improving release properties and lubricity of perfluoroolefin polymer films. T892,026, 11–30–71, Cl. 117—64.
Burton, Paul E.: *See*—
Wellman, William E., Burton, and Diana. T892,018.
Diana, William D.: *See*—
Wellman, William E., Burton, and Diana. T892,018.
Du Pont de Nemours, E. I., and Co.: *See*—
Bagnall, Michael J., Miller, Osdal and Welch. T892,026.
Erickson, Leland. Method for varying the contrast of duplicate radiographs. T892,020, 11–30–71, Cl. 355—132.
Filbert, Kenneth W., and P. J. Wayne. Process for nonmelt forming webs of thermoplastic resin and article formed thereby. T892,023, 11–30–71, Cl. 161—116.
Hagemeyer, Hugh J., Jr., and S. H. Johnson, Jr. Process for preparation of 2,2-dialkylpropane-1,3,-diol. T892,025, 11–30–71, Cl. 260—635.
Hochreiter, William T. Mechanism for effecting synchronous percussive flash exposures. T892,022, 11–30–71, Cl. 95—11.5.
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McConnell, Wayne V.: *See*—
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Thweatt, John G., and W. V. McConnell. Process for the isomerization of dimethyl cis-1,4-cyclohexanedicarboxylate of the trans-isomer. T892,024, 11–30–71, Cl. 260—468.
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Filbert, Kenneth W., and Wayne. T892,023.
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LIST OF DESIGN PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Douglas, David. Relish tray or similar article. 222,682, 11–30–71, Cl. D44—10.
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Freiman, David J., to Corning Glass Works. Combined shipping and display package for dishes or the like. 222,669, 11–30–71, Cl. D9—250.
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CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 30, 1971

NOTE.—First number, class; second number, subclass; third number, patent number

2– 3	3,624,663	29–577	3,623,218	52– 98	3,623,286	73– 4	3,623,354	95– 11.5	3,624,727	116– 70	3,623,448
19	3,623,163	580	3,623,219	236	3,623,296	15	3,623,355	14	3,624,728	114	3,623,449
131	3,624,664	583	3,624,677	241	3,624,694	17	3,623,356	31	3,623,414	133	3,623,450
3– 1	3,623,164	598	3,623,220	282	3,623,287	32	3,623,357	42	3,624,829	117– 9	3,623,900
4–115	3,624,665	599	3,623,221	293	3,623,288	49.7	3,623,372	50	3,623,415	21	3,624,232
172.15:	3,623,165	600	3,624,678	309	3,623,289	61	3,624,709	89	3,623,417	22	3,623,901
185	3,624,666	628	3,624,679	481	3,623,290	.1	3,624,710		3,623,418	57	3,624,233
191	3,623,166	30– 21.5	3,624,680	615	3,623,291	67.2	3,623,358	93	3,623,416	104	3,623,902
225	3,623,167	43.5	3,624,681	53–331.5	3,623,292	.7	3,624,711	96– 1.5	3,624,226	124	3,623,903
5– 10	3,623,168	102	3,624,682	374	3,623,293	.9	3,624,712	27	3,623,865	126	3,624,234
81	3,623,169	124	3,624,683	54– 8	3,623,294	84	3,623,359	33	3,624,227	135.1	3,623,904
90	3,623,170	190	3,623,222	46	3,624,695	141	3,623,360	36.1	3,623,867	201	3,623,905
351	3,623,171	220	3,623,223	55–103	3,623,295		3,624,713	48	3,623,866	211	3,623,906
7– 1	3,623,172	32– 8	3,623,225	223	3,624,696	147	3,623,361		3,623,868	224	3,623,907
8.1	3,623,173	10	3,623,226	257	3,623,297	149	3,624,828		3,624,228	118– 62	3,623,451
8– 21	3,623,831	60	3,623,224	521	3,624,161	189	3,623,362	49	3,623,869	267	3,623,452
25	3,623,832	64	3,623,227	56– 2	3,623,298	194	3,623,363		3,623,870	309	3,623,453
40	3,623,833	33– 1	3,623,228		3,623,299	204	3,623,364	56.5	3,623,871	637	3,623,454
172	3,623,834	46	3,623,229	6	3,623,300	209	3,623,365	61	3,623,872	119– 3	3,623,455
12–146	3,623,174	118	3,623,230	10.4	3,623,301	231	3,623,835	66.5	3,623,873	14.1	3,624,739
13– 18	3,624,261	173	3,623,232	14.6	3,623,302	301	3,623,366	73	3,623,874	98	3,623,456
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42	3,623,176		3,624,684	25.4	3,624,698	343	3,623,368	91	3,623,875	264	3,623,458
50	3,623,177		3,624,685	44	3,623,303	354	3,623,369	100	3,623,876	123– 8.07:	3,624,740
99	3,623,178	34– 9	3,623,233	202	3,624,699	363.9	3,623,370		3,623,877	32	3,623,459
104	3,623,179	25	3,623,234	208	3,623,304	393	3,623,371	111	3,623,878		3,623,460
167	3,624,667	48	3,623,235	295	3,623,305	398	3,624,714	115	3,623,879		3,623,461
230.11:	3,623,180	57	3,623,236	328	3,623,306	418	3,623,373	127	3,623,881	41.54:	3,623,462
250.02:	3,623,181	201	3,623,237		3,623,307	462	3,623,374	137	3,623,882	70	3,623,463
.17:	3,623,182	35– 8	3,624,686		3,623,308	466	3,624,715		3,623,883	102	3,623,464
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322	3,624,668	10.2	3,624,262	57– 34	3,623,310	125.5	3,623,376	40	3,623,420	148	3,623,466
16– 42	3,623,184	12	3,623,240		3,623,311	230.17:	3,623,377	99– 2	3,623,884	149	3,623,467
142	3,623,185	13	3,623,241	58.83:	3,623,312		3,624,716	17	3,623,885	124– 24	3,623,468
17– 11	3,623,186	19	3,623,239	90	3,623,313	242.9	3,623,378	83	3,623,886	125– 11	3,623,469
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21	3,623,187	35	3,623,242	115	3,623,314	540	3,623,380	113	3,624,230	39	3,624,742
32	3,623,188	72	3,623,243	116	3,623,316	711	3,624,717	118	3,623,888		3,624,743
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30	3,624,672	86	3,623,246	.66:	3,623,318	865	3,623,383	178	3,623,891	273	3,623,472
23– 60	3,623,836	92	3,624,826	.74:	3,623,319	75– .5	3,623,859	194	3,623,892	128– 2	3,623,473
143	3,623,837	142	3,623,247	51	3,624,700		3,623,860	204	3,623,893		3,623,474
146	3,623,838		3,624,827	52	3,623,320		3,623,861	212	3,623,894		3,623,475
208	3,623,839	38–141	3,623,248		3,623,321	57	3,623,862	234	3,623,421	.05:	3,623,478
230	3,623,840	40– 2	3,623,249	53	3,623,322	76	3,623,863	235	3,624,830		3,624,744
	3,623,841	16	3,623,250	97	3,623,323	170	3,623,864	400	3,623,422	.06:	3,623,479
	3,623,842	28.1	3,623,251	102	3,623,324	76–101	3,624,718	446	3,623,423	.1	3,623,477
252	3,623,843	104.1	3,623,252	108	3,623,325	81– 9.5	3,623,384	100–117	3,624,729	25	3,623,480
253	3,623,844	107	3,623,253	219	3,623,327	82– 1	3,624,719	214	3,623,424	36	3,623,481
262	3,623,845	129	3,623,254	226	3,623,328	83– 71	3,623,385	233	3,623,425	66	3,623,482
294	3,623,846	145	3,623,255	243	3,623,329	151	3,623,386	101– 35	3,624,730	92.05:	3,623,476
301	3,623,847	152.1	3,624,688	61– 1	3,624,701	198	3,624,720	45	3,623,426	93	3,624,745
312	3,623,848	42– 50	3,623,256	36	3,623,330	355	3,623,387	93	3,623,427	276	3,623,483
24– 3	3,623,189	71	3,623,257	46	3,624,702	582	3,623,388		3,623,428	285	3,624,746
74	3,623,190	43– 17	3,624,689	62– 63	3,623,331	617	3,623,389		3,623,429	350	3,623,484
77	3,623,191	.2	3,623,258	88	3,623,332	84– 1.03:	3,624,263	350	3,624,731	361	3,624,747
90	3,623,192	19.2	3,623,259	104	3,623,333	.14:	3,624,264	365	3,623,430	402	3,623,485
137	3,624,673	43.16:	3,624,690	140	3,623,334	.19:	3,624,265	102– 42	3,623,431	419	3,623,486
211	3,623,194	129	3,623,260	180	3,623,335	.24:	3,624,266	56	3,623,432	467	3,623,487
230	3,624,674	44– 63	3,623,851	233	3,623,336	294	3,623,390	104– 20	3,624,831	549	3,623,488
261	3,623,193	46– 30	3,623,261	293	3,623,337	380	3,623,391	148	3,623,433	131– 9	3,623,489
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4	3,624,675	162	3,624,691	476	3,624,704	85– 1	3,623,394	106– 2	3,623,895	132– 39	3,623,491
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.14:	3,623,197	47– 1.2	3,624,692		3,624,706	86– 20	3,623,395	54	3,623,897	134– 4	3,623,908
.18:	3,623,198	.3	3,623,265	64– 11	3,623,339	87– 6	3,623,397	109	3,623,898	5	3,623,909
.42:	3,623,199	56	3,623,266	32	3,623,340	89– 1.5	3,623,398	307	3,623,899	34	3,623,910
78	3,623,200	49–131	3,623,267	65– 2	3,623,853	90– 13.6	3,623,399		3,624,231	96	3,624,750
96	3,623,201	394	3,623,268	30	3,623,854	91– 1	3,624,721	108– 50	3,624,732	143	3,623,492
148.4	3,623,202	410	3,623,269	43	3,623,855	47	3,623,401	111	3,623,435	136– 83	3,623,911
155	3,623,203	51– 5	3,623,270	169	3,623,856	411	3,623,400	109– 77	3,623,436	86	3,623,912
156.8	3,623,204	92	3,623,27.	347	3,623,857	421	3,623,402	110– 1	3,623,437		3,623,913
182.8	3,623,849	105	3,623,272	66– 42	3,623,341	458	3,623,403	8	3,623,438	120	3,623,914
196	3,623,205	119	3,623,273	96	3,624,707	93– 1	3,623,404	99	3,624,733	133	3,623,915
.1	3,623,850	166	3,623,274	126	3,623,342		3,624,722	111– 85	3,623,439	161	3,623,916
203	3,624,676	206	3,623,275	68–139	3,623,343	58.2	3,623,405	112– 79	3,623,440	171	3,623,917
240	3,623,206	209	3,623,276	70–134	3,623,344	93	3,624,723	235	3,623,441	175	3,623,918
401	3,623,207	225	3,623,277	366	3,623,345	94– 50	3,623,406	252	3,624,734	137– 2	3,623,493
407	3,623,208		3,623,852	424	3,623,346		3,623,407		3,624,735	15.2	3,623,494
413	3,623,209	317	3,623,278	71– 62	3,623,858	95– 1	3,624,724	113–121	3,623,442	69	3,623,495
429	3,623,210	328	3,623,279	72– 60	3,623,347	.1	3,623,413	114– 16	3,623,443	81.5	3,623,496
445	3,623,212	351	3,624,693	165	3,623,348	10	3,623,408	61	3,623,444		3,623,497
448	3,623,211	370	3,623,280	169	3,623,349		3,623,409	72	3,624,736		3,624,751
470.3	3,623,213	377	3,623,281	362	3,623,350		3,623,410	204	3,623,445	296	3,623,498
	3,623,214	399	3,623,282	424	3,624,708		3,623,411	115– 12	3,624,737	329.01:	3,623,499
477.3	3,623,215	52– 19	3,623,283	445	3,623,351		3,623,412	17	3,624,738	344	3,623,500
568	3,623,216	34	3,623,284	453	3,623,352		3,624,725	18	3,623,446	355.17:	3,623,501
571	3,623,217	36	3,623,285	456	3,623,353	11	3,624,726	70	3,623,447	400	3,623,502

137–454	3,623,503	176– 50	3,623,948	198– 33	3,624,773	220– 42	3,623,628	248–119	3,623,688	260– 49	3,624,034
525	3,623,504	86	3,624,241	103	3,623,596	60	3,624,787	187	3,623,689	53	3,624,038
592	3,623,505	177– 1	3,623,559	109	3,623,597	63	3,623,629	361	3,623,690	64	3,624,039
613	3,623,506	52	3,623,560	158	3,624,774	64	3,623,630		3,624,799	67	3,624,036
625.49:	3,624,752	81	3,623,561	165	3,623,598	69	3,623,631	454	3,623,691	.6	3,624,035
.66:	3,623,507	178– 5.2	3,624,278	209	3,623,599	90.2	3,623,632	249–107	3,623,692		3,624,037
630.14:	3,623,508	.4	3,624,272	211	3,624,775	94	3,623,633	250– 41.9	3,624,389	75	3,624,040
	3,624,753		3,624,273	219	3,623,600		3,624,788	49.5	3,624,390		3,624,041
.15:	3,623,509		3,624,274	200– 11	3,624,319	97	3,623,634		3,624,391		3,624,042
636.3	3,623,510		3,624,275	16	3,624,320		3,624,789		3,624,392		3,624,043
138– 30	3,623,512		3,624,279	42	3,624,321	113	3,624,790		3,624,393	77.5	3,624,044
39	3,623,511		3,624,280	48	3,624,322	221– 23	3,623,635	51.5	3,624,394		3,624,045
114	3,623,513		3,624,281	67	3,624,323	59	3,624,791		3,624,395	78	3,624,046
139–142	3,624,754	6	3,624,282	82	3,624,324	64	3,623,636	53	3,624,396		3,624,050
140– 71	3,623,514	.7	3,624,284	144	3,624,325	129	3,624,792	65	3,624,397	.3	3,624,047
141–130	3,623,515	.8	3,624,283	148	3,624,326	211	3,623,637	66	3,624,398	.4	3,624,049
293	3,624,755		3,624,285	150	3,624,327	222– 78	3,623,638	83.3	3,624,399	.5	3,624,051
143– 6	3,623,516	7.2	3,624,286	153	3,624,328	95	3,624,793		3,624,400	79	3,624,052
32	3,623,517		3,624,287		3,624,329	105	3,623,641		3,624,401	.3	3,624,053
43	3,623,518	.3	3,624,288	159	3,624,330	108	3,623,639	199	3,624,402		3,624,054
46	3,623,519		3,624,289	164	3,624,332	154	3,624,794	214	3,624,403	.7	3,624,055
164	3,623,520		3,624,290	166	3,624,331	223– 70	3,624,795	231	3,624,404	80.6	3,624,056
144– 2	3,624,756	.6	3,624,291		3,624,333	114	3,623,640	251– 4	3,624,800	.75:	3,624,250
309	3,623,521	17.5	3,624,292	201– 40	3,623,959	224– 42.1	3,623,642	5	3,624,801	83.7	3,624,057
145– 50	3,623,522	18	3,624,293	204– 1	3,623,960	225– 65	3,623,643	26	3,623,693	86.1	3,624,058
146– 3	3,623,523	50	3,624,294	15	3,623,961	226– 89	3,623,644	31	3,624,802	88.2	3,624,059
43	3,623,524	69	3,624,295	28	3,623,962	197	3,623,645	61.4	3,623,694		3,624,060
124	3,623,525	.5	3,624,296	59	3,623,963	227–136	3,623,646	75	3,623,695		3,624,061
148– 6.14:	3,623,919	179– 1	3,624,298	61	3,623,964	149	3,623,647	85	3,623,696	91.3	3,624,062
12.3	3,623,920		3,624,299	148	3,623,965	153	3,623,648	261	3,623,697	92.1	3,624,064
22	3,623,921		3,624,302	158	3,623,966	228– 15	3,623,649	294	3,623,698	93.7	3,624,063
35	3,623,922	.5	3,624,297	196	3,623,967	229– 31	3,623,650	330	3,623,699	113	3,624,251
175	3,623,923	2.5	3,624,300	197	3,623,968	35	3,623,651	331	3,623,700	146	3,624,065
188	3,623,925	15	3,624,301	271	3,623,969	44	3,623,652	367	3,624,803	152	3,624,067
150– 52	3,623,526		3,624,303	314	3,623,970	87	3,623,653		3,624,804	197	3,624,066
152–354	3,623,527		3,624,304	206– .83:	3,624,832	231– 2	3,623,654	252– 8.55:	3,623,979	199	3,624,068
356	3,623,528	.55:	3,624,306	45.14:	3,623,601	232– 35	3,623,655	.75:	3,623,880	215	3,624,069
361	3,623,529	18	3,624,305	46	3,623,602	233– 7	3,623,656		3,623,980	233.3	3,624,070
410	3,623,530	27	3,624,307	65	3,624,776	19	3,623,657	12.2	3,623,981	239	3,624,071
156– 51	3,623,924	100.1	3,624,308	208– 11	3,623,971	20	3,623,658	33.3	3,623,982		3,624,072
73	3,623,926		3,624,310		3,623,972	235– 61.11:	3,624,358	.4	3,623,983		3,624,073
161	3,623,927	.2	3,624,309	60	3,623,973		3,624,359	47.5	3,623,984		3,624,074
175	3,623,928		3,624,311	97	3,623,974	.7	3,624,357	51.5	3,623,985		3,624,075
190	3,623,929		3,624,313	209– 74	3,623,603	92	3,624,361	58	3,624,242	.3	3,624,076
250	3,623,930	.4	3,624,314	80	3,623,604		3,624,362	62.1	3,623,986	.55:	3,624,077
306	3,623,931		3,624,315	166	3,623,605	144	3,624,363	70	3,624,243	240	3,624,078
503	3,623,932	111	3,624,312	210– 6	3,623,975	150.2	3,624,364	79	3,623,987		3,624,079
530	3,624,235	175.3	3,624,316	7	3,623,976		3,624,365	89	3,623,988	243	3,624,080
552	3,623,933	189	3,624,317	12	3,623,977		3,624,367	137	3,623,990	247.2	3,624,081
157– 13	3,623,531	180– 1	3,623,562	54	3,623,978	.22:	3,624,360	180	3,623,991	.7	3,624,082
161– 57	3,623,934	5	3,623,563	94	3,623,606		3,624,366	182	3,623,992		3,624,083
	3,623,935		3,623,564	106	3,623,607	.51:	3,624,368	194	3,623,993	248	3,624,252
68	3,623,936	6.2	3,623,565	169	3,624,777	151.1	3,624,369	301.4	3,623,994	.5	3,624,253
89	3,623,937	7	3,623,566	221	3,623,608	.11:	3,624,371		3,623,995		3,624,254
104	3,624,236	14	3,623,567	230	3,624,778	.3	3,624,370		3,623,996	250	3,624,085
159	3,623,938	65	3,623,568	242	3,623,609	153	3,624,372	316	3,623,997	256.4	3,624,084
160	3,624,237	112	3,624,761	321	3,623,610		3,624,373	359	3,623,998	268	3,624,086
173	3,623,939	114	3,623,569		3,623,611	155	3,624,374	421	3,623,999	279	3,624,087
175	3,623,940	181– .5	3,623,570	356	3,623,612		3,624,375	429	3,624,000		3,624,255
	3,623,941	24	3,623,571	370	3,623,613	160	3,624,376	431	3,624,001	287	3,624,091
183	3,624,238	47	3,623,572	457	3,624,779	183	3,624,377		3,624,002	288	3,624,088
206	3,623,942	182–155	3,624,762	486	3,623,614	196	3,624,378	445	3,624,004		3,624,092
218	3,623,943	184– 6	3,623,573	211– 40	3,623,615	239– 56	3,623,659	455	3,624,003		3,624,093
242	3,623,944	.15:	3,624,763	86	3,623,616	114	3,623,660	506	3,624,005	289	3,624,089
162–273	3,623,945	188– 1	3,623,574		3,624,780	127	3,623,661	513	3,624,007	290	3,624,090
164– 33	3,624,757		3,624,764	213– 20	3,624,781	177	3,623,662	529	3,624,006	294.8	3,624,094
44	3,624,758	31	3,623,575	214– 1	3,623,617		3,623,663	254–122	3,623,707	.9	3,624,095
76	3,623,532	71.6	3,623,576	.6	3,623,619	214.11:	3,623,664	134.3	3,623,701		3,624,096
82	3,623,533		3,623,577	6	3,624,782	227	3,623,665		3,623,702	296	3,624,097
	3,623,534	72.6	3,624,765	8.5	3,623,618	230	3,623,666	259– 3	3,623,703		3,624,256
87	3,623,535	79.5	3,623,578	16	3,624,783	237	3,623,667	4	3,623,704	302	3,624,098
89	3,623,536	202	3,624,766	38	3,624,784	265.17:	3,623,668	8	3,623,705	306.7	3,624,099
133	3,623,537	218	3,623,579	138	3,624,785	307	3,623,669	29	3,623,706	309.2	3,624,100
173	3,623,539	190– 41	3,623,580	313	3,623,620	428.5	3,623,670	106	3,624,805	.6	3,624,101
262	3,623,540	191– 23	3,624,318	505	3,624,786	240– 1.2	3,624,379	164	3,623,708	310	3,624,102
337	3,623,541	192– 18	3,624,767	515	3,623,621	2	3,624,380	260– 2	3,624,008	326.13:	3,624,103
165– 1	3,623,542	45	3,623,581	215– 9	3,623,622		3,624,381		3,624,244	327	3,624,257
2	3,623,543	46	3,623,582		3,623,623	.18:	3,624,382	.3	3,624,009	333	3,624,104
8	3,623,544	51	3,623,583	38	3,623,624		3,624,383	.5	3,624,010	340.9	3,624,105
26	3,623,545	52	3,624,770	219– 10.55:	3,624,334	6.4	3,624,384	9	3,624,011	343	3,624,258
51	3,623,546	56	3,623,584		3,624,335	7.1	3,623,671	17.4	3,624,012	.3	3,624,107
60	3,623,547	84	3,624,768	69	3,624,336	10	3,624,385	18	3,624,013		3,624,108
87	3,623,548	85	3,624,769		3,624,337	44.2	3,624,386		3,624,014	345.9	3,624,106
107	3,623,549	110	3,624,771		3,624,338	46.05:	3,624,600		3,624,245	348	3,624,109
	3,624,759	195– 1	3,623,949	70	3,624,339	51.11:	3,624,387	21	3,624,246	397.3	3,624,110
166–125	3,623,550	6	3,623,950	99	3,624,340	78	3,624,388	28.5	3,624,015	.4	3,624,111
134	3,623,551	29	3,623,951	117	3,624,341	241– 23	3,624,796	29.2	3,624,016	.5	3,624,112
274	3,623,552		3,623,952	121	3,624,342	36	3,623,672		3,624,017		3,624,113
275	3,623,553	31	3,623,953	125	3,624,343		3,623,673	.3	3,624,247	402.5	3,624,114
293	3,623,554	51	3,623,954	127	3,624,344	153	3,624,797	.6	3,624,018	429.9	3,624,115
299	3,623,555	66	3,623,955	130	3,624,345	189	3,623,674		3,624,019	439	3,624,116
172–371	3,623,556		3,623,956	201	3,624,346	242– 18	3,623,675		3,624,020	448	3,624,117
173– 12	3,623,557		3,623,957	219	3,624,347	55.53:	3,623,676	32.8	3,624,021		3,624,118
57	3,623,558	103.5	3,623,958	243	3,624,348	67.3	3,623,677	37	3,624,022	.2	3,624,119
174– 36	3,624,267	197– 6.1	3,624,772		3,624,349	84.41:	3,624,798		3,624,023		3,624,120
43	3,624,268	17	3,623,587		3,624,836	194	3,623,679	40	3,624,024	.8	3,624,121
45	3,624,269	19	3,623,585	369	3,624,350	198	3,623,678	41	3,624,026	453	3,624,122
87	3,624,270	71	3,623,588	377	3,624,351	201	3,623,680	45.75:	3,624,028		3,624,123
94	3,624,271	175	3,623,586	449	3,624,352	244– 1	3,623,681	.9	3,624,027	465	3,624,124
129	3,624,276	198– 16	3,623,589	470	3,624,353	17.13:	3,623,682		3,624,029	.3	3,624,125
138	3,624,277		3,623,590	494	3,624,354	118	3,624,833	46.5	3,624,030	468	3,624,126
175– 56	3,624,760	24	3,623,591	497	3,624,355	122	3,623,683	47	3,624,031		3,624,127
176– 1	3,624,239	30	3,623,592	530	3,624,356	134	3,623,684		3,624,032		3,624,128
7	3,624,240	33	3,623,593	220– 9	3,623,625	248– 38	3,623,685		3,624,033	471	3,624,129
29	3,623,946		3,623,594	15	3,623,626	60	3,623,686		3,624,248		3,624,130
39	3,623,947		3,623,595	41	3,623,627	74	3,623,687		3,624,249	473	3,624,131

260–473	3,624,132	273– 1	3,623,723	307–279	3,624,423	324– 99	3,624,500	338– 69	3,624,583	350– 3.5	3,623,798
475	3,624,133	26	3,623,724	290	3,624,424	111	3,624,501		3,624,584	9	3,623,789
479	3,624,134		3,623,725	291	3,624,425	131	3,624,502	129	3,624,582	46	3,623,790
	3,624,135	105.3	3,623,726	297	3,624,426	133	3,624,503	339– 16	3,624,585	96	3,624,816
	3,624,136		3,623,727	303	3,624,427	154	3,624,505	17	3,624,586		3,624,834
	3,624,137	109	3,623,728	311	3,624,428	158	3,624,504		3,624,587	150	3,623,795
	3,624,138	130	3,623,729	308– 72	3,623,781	325– 18	3,624,506		3,624,588		3,624,817
	3,624,259	131	3,624,808	187	3,623,782	24	3,624,508	34	3,624,589	220	3,623,791
486	3,624,139	132	3,623,730	201	3,624,815	45	3,624,507	75	3,624,590	229	3,623,792
489	3,624,140	176	3,623,731	310– 9.1	3,624,429	316	3,624,509	103	3,624,591	289	3,624,818
497	3,624,141	179	3,623,732	.5	3,624,430	392	3,624,510	109	3,624,592	295	3,623,793
515	3,624,142	183	3,623,733		3,624,431	420	3,624,511	112	3,624,593		3,623,796
516	3,624,143	274– 1	3,623,734	53	3,624,432	422	3,624,512	116	3,624,594	311	3,623,797
521	3,624,144	4	3,623,735	60	3,624,433	437	3,624,513	201	3,624,595	316	3,623,794
525	3,624,145	277– 27	3,623,736	90	3,624,434	440	3,624,514	340– 3	3,624,596	351– 32	3,623,799
533	3,624,146	92	3,623,737	93	3,624,435	462	3,624,515		3,624,597	169	3,623,800
	3,624,147		3,624,809		3,624,436	328– 14	3,624,516	15.5	3,624,599	352– 91	3,623,989
537	3,624,148	132	3,623,738		3,624,437	61	3,624,517	17	3,624,619	173	3,623,801
543	3,624,149	163	3,623,739		3,624,438	63	3,624,518	26	3,624,598	353– 23	3,623,802
556	3,624,150	237	3,623,740	154	3,624,439	66	3,624,519	52	3,624,601	25	3,623,803
557	3,624,151	279– 1	3,623,741	162	3,624,440	72	3,624,520	63	3,624,602	77	3,623,804
561	3,624,152	65	3,623,742	179	3,624,441	119	3,624,521	146.1	3,624,603	355– 3	3,623,805
	3,624,153	280–103	3,623,743	312–208	3,623,783	120	3,624,522	.3	3,624,604	14	3,623,806
	3,624,154	106	3,623,744	263	3,623,784	141	3,624,523		3,624,605	18	3,623,807
563	3,624,155	124	3,623,745	307	3,623,785	143	3,624,524		3,624,606	40	3,623,808
584	3,624,156		3,623,746	313– 2	3,624,442	144	3,624,525		3,624,607	66	3,623,809
599	3,624,157	150	3,624,810	161	3,624,443	166	3,624,526	149	3,624,608	67	3,623,810
604	3,624,158	202	3,623,747	221	3,624,444	234	3,624,527	166	3,624,609	356– 4	3,623,811
606.5	3,624,159	242	3,623,748	315–241	3,624,445	329–104	3,624,528		3,624,610	103	3,624,835
	3,624,260	278	3,623,749		3,624,446		3,624,529	172.5	3,624,611	105	3,623,812
609	3,624,160	415	3,624,811	246	3,624,447	330– 3	3,624,530		3,624,612	108	3,623,813
619	3,624,162	446	3,623,750	317– 4	3,624,448	4.3	3,624,531		3,624,613	114	3,623,814
621	3,624,163	285– 55	3,623,751	16	3,624,449	.9	3,624,535		3,624,614	159	3,623,815
622	3,624,164	91	3,623,752	62	3,624,450	9	3,624,532		3,624,615	176	3,623,816
643	3,624,165	161	3,624,812	80	3,624,451	30	3,624,533		3,624,616	179	3,623,817
652	3,624,166	330	3,623,753	100	3,624,452	47	3,624,534		3,624,617	209	3,623,818
653.4	3,624,167	287– 20	3,623,754	101	3,624,453	53	3,624,536	173	3,624,618	218	3,623,819
654	3,624,168	.94:	3,623,755		3,624,454	63	3,624,537		3,624,620	401– 8	3,623,820
	3,624,169	92	3,623,756	132	3,624,455	84	3,624,538	174	3,624,621	78	3,623,822
659	3,624,170	292– 1	3,623,757	141	3,624,456		3,624,539		3,624,622	86	3,623,821
663	3,624,171	347	3,623,758	157.5	3,624,457	331– 38	3,624,540		3,624,623	408– 76	3,623,823
668	3,624,172	293– 86	3,623,760	230	3,624,458	65	3,624,541	.1	3,624,624	92	3,624,819
671	3,624,173	294– 83	3,623,759		3,624,459	94.5	3,624,542	177	3,624,625	415–152	3,624,820
675	3,624,174		3,624,813		3,624,460		3,624,543	223	3,624,626	416– 21	3,623,824
683	3,624,176	295– 36	3,623,761	234	3,624,461		3,624,544	242	3,624,627	96	3,623,825
.15:	3,624,177	296– 23	3,623,762		3,624,462		3,624,545	244	3,624,628	237	3,623,826
830	3,624,178		3,623,763		3,624,463		3,624,546	251	3,624,629	417– 9	3,623,827
	3,624,179		3,623,765		3,624,464		3,624,547	253	3,624,630	137	3,624,821
835	3,624,180	50	3,623,764	235	3,624,465		3,624,548	280	3,624,631	152	3,623,828
860	3,624,181	297–188	3,623,766		3,624,466		3,624,549	324	3,624,632	313	3,624,822
876	3,624,182	330	3,623,767		3,624,467		3,624,551		3,624,633	454	3,624,823
	3,624,183	390	3,623,768		3,624,468		3,624,552		3,624,634	418–171	3,623,829
878	3,624,184	452	3,624,814	249	3,624,469		3,624,553	326	3,624,635	201	3,623,830
880	3,624,185	299– 5	3,623,769	318–225	3,624,471	96	3,624,550	347	3,624,636	424– 3	3,624,197
893	3,624,186	6	3,623,770	227	3,624,472	99	3,624,554		3,624,637	7	3,624,219
926	3,624,187	12	3,623,771	266	3,624,473	107	3,624,555		3,624,638	11	3,624,223
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6	3,623,710	302– 2	3,623,775	345	3,624,476	24	3,624,559		3,624,642	65	3,624,200
19	3,623,711	303– 6	3,623,776	443	3,624,477	31	3,624,560		3,624,643	78	3,624,218
41	3,623,712	19	3,623,777	470	3,624,478	333– 6	3,624,561	365	3,624,644	79	3,624,209
47	3,623,713	21	3,623,778	565	3,624,479	18	3,624,562		3,624,645	95	3,624,201
50	3,623,714	305– 13	3,623,779	320– 15	3,624,480	24	3,624,563	371	3,624,646	99	3,624,220
52	3,623,715	38	3,623,780	39	3,624,481	72	3,624,564	373	3,624,647	128	3,624,222
264– 25	3,624,189	307– 33	3,624,405	48	3,624,482	76	3,624,565	381	3,624,648	177	3,624,213
40	3,624,025	38	3,624,420	321– 2	3,624,483	81	3,624,566	409	3,624,649	195	3,624,211
41	3,624,190	88.3	3,624,406		3,624,484	335– 58	3,624,567	343– 6.5	3,624,650	229	3,624,202
45	3,624,191		3,624,421		3,624,485	153	3,624,568	17.1	3,624,651	238	3,624,203
51	3,624,192	108	3,624,422	5	3,624,486	172	3,624,569	18	3,624,652	244	3,624,204
101	3,624,193	116	3,624,407	15	3,624,487	190	3,624,470		3,624,653	246	3,624,217
145	3,624,194	220	3,624,408	26	3,624,488		3,624,570	715	3,624,662		3,624,225
168	3,624,195	221	3,624,838	323– 4	3,624,489	197	3,624,571	756	3,624,655	251	3,624,205
234	3,624,196	229	3,624,409	9	3,624,490	209	3,624,572	762	3,624,656	253	3,624,215
266– 6	3,623,716	234	3,624,410	19	3,624,491	212	3,624,573	803	3,624,657		3,624,216
25	3,623,717	252	3,624,411	20	3,624,492	230	3,624,574	895	3,624,658	267	3,624,206
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269– 91	3,623,718	262	3,624,414	57	3,624,494	336–150	3,624,577		3,624,660	317	3,624,210
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27	3,623,720	269	3,624,416	71	3,624,496	161	3,624,580	350– 3.5	3,623,786	365	3,624,208
53	3,623,721	270	3,624,417	77	3,624,497	299	3,624,578		3,623,787		3,624,221
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74	3,624,807	279	3,624,419								

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61	222,660		222,666	D16– 2	222,671	14	222,676		222,681	D64– 12	222,686
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